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Friday, June 2nd, 1933

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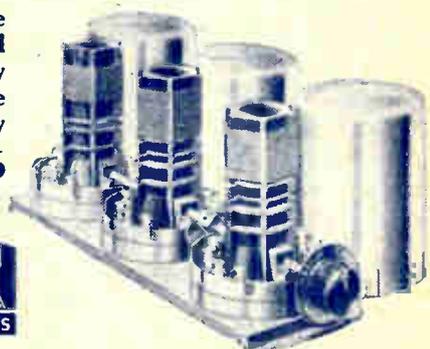
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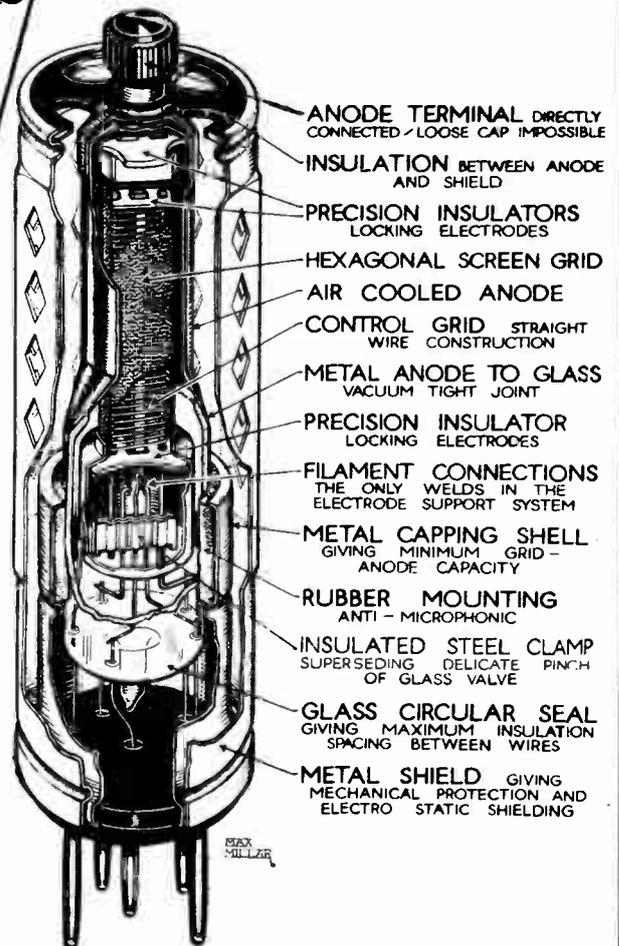
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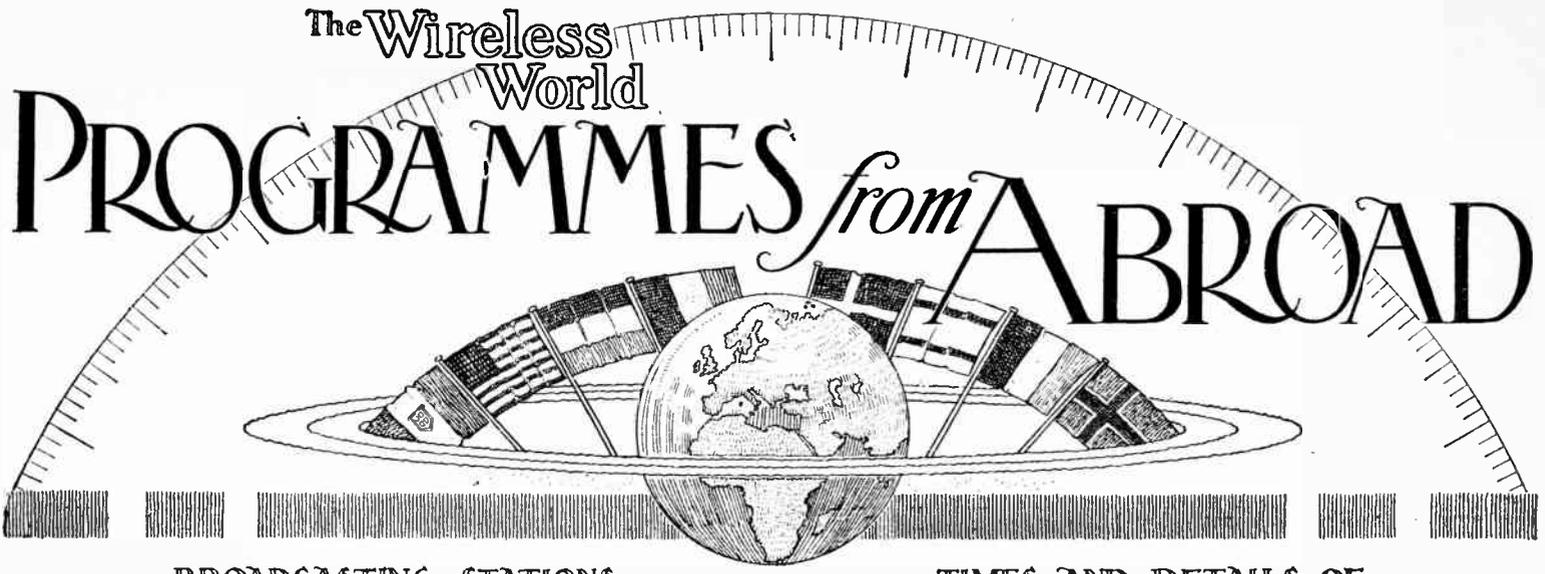
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**BROADCASTING STATIONS
ARRANGED IN ORDER
OF WAVELENGTH**

**TIMES AND DETAILS OF
FULL WEEK'S FOREIGN
TRANSMISSIONS**

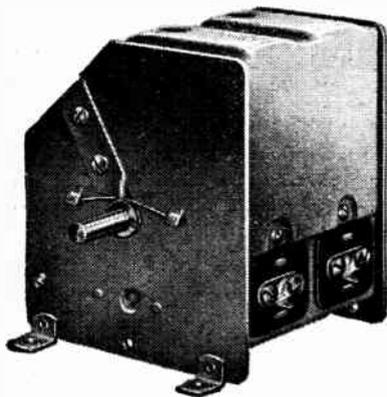
Metres.	kc/s.	kW.	Station.	Tuning Positions.	Metres.	kc/s.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania) .. .. .	.....	453.2	662	0.25	Agen (France) .. .. .	.....
1875	160	8.5	Huizen (Holland) .. .. .	.....	453.2	662	7	Milan (<i>Experimental Relays Rome</i>) .. .. .	.....
1796	167	40	Lahti (Finland) .. .. .	.....	450.3	666	20	Madona (Latvia). (<i>Relays Riga</i>) .. .. .	.....
1725	174	75	Radio Paris, C.F.R. .. .. .	.....	447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Ijjukan (0.15 kW.); Notodden (0.08 kW.); Aalesund (0.35 kW.) (Norway) (<i>relays Oslo</i>).	.....
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (S.-W. Stn. DJA on 31.38 m., DJB on 19.73 m., DJC on 49.83 m., DJD on 25.51 m., DJE on 16.80 m.)	.....	441.2	680	50	Rome, IRO. (S.-W. Station, 2 RO on 25.4 m.)	.....
1554.4	193	30	Daventry National .. .. .	.....	435.4	689	55	Stockholm, SANA (Sweden) .. .. .	.....
1538	195	7	Ankara (Angora) (Turkey) .. .. .	.....	430.4	697	2.5	Belgrade (Yugoslavia) .. .. .	.....
1481	202.5	100	Moscow, RVI (Old Komintern) (Russia) ..	.....	424.3	707	2	Madrid, EAJ7 (Union Radio). (<i>After 7.0 p.m.</i>)	.....
1446	207.5	13	Eiffel Tower, FL, Paris .. .. .	.....	424.3	707	100	Moscow, Imini Stalina (Russia) .. .. .	.....
1412	212.5	120	Warsaw 1 (Poland) .. .. .	.....	419.5	715	1.5	Berlin, No. 1, Witzleben (Germany) .. .. .	.....
1380	217.5	100	Novosibirsk, RV6 (Russia) .. .. .	.....	416.4	720.5	5	Rabat (Morocco) .. .. .	.....
1354.4	221.5	30	Motala (Sweden). (<i>Relays Stockholm</i>) ..	.....	413	725	60	Athlone (Irish Free State) .. .. .	.....
1304	230	500	Moscow, WZSPS (Trade Union) (Russia)	.....	408.7	734	16	Katowitz (Poland) .. .. .	.....
1275	235	0.5	Tunis-Kasbah (Tunisia) .. .. .	.....	403.8	743	25	Sottens (Radio Suisse Romande) (<i>Switzerland</i>)	.....
1230	244	0.6	Boden (Sweden). (<i>Relays Stockholm</i>) ..	.....	398.9	752	25	Midland Regional. (Daventry) .. .. .	.....
1200	250	5	Stamboul (Turkey) .. .. .	.....	394.2	761	12	Bucharest (Roumania) .. .. .	.....
1200	250	21	Reykjavik (Iceland) .. .. .	.....	389.6	770	120	Leipzig (Germany) .. .. .	.....
1190	252	200	Luxembourg (<i>Testing</i>) .. .. .	.....	385.1	779	8	Toulouse (Radiophonie du Midi) (France)	.....
1170	256	25	Tashkent, RV11 (Russia) .. .. .	.....	385.1	779	10	Stalino, RV26 (Russia) .. .. .	.....
1154	260	7.5	Kalundborg (Denmark). (<i>Relays Copenhagen</i>)	.....	381	788	16	Lwow (Lemberg) (Poland) .. .. .	.....
1117	268.5	40	Moscow, Popoff RV58 (Russia) .. .. .	.....	376.4	797	50	Scottish Regional (Falkirk) .. .. .	.....
1083	277	60	Oslo (Norway) .. .. .	.....	372.2	806	1.5	Hamburg (Germany) .. .. .	.....
1071	280	35	Tiflis, RV7 (Russia) .. .. .	.....	370.1	810.5	0.8	Radio, L.L. Paris .. .. .	.....
1035	290	36	Kiev, RV9 (Russia) .. .. .	.....	368.1	815		Seville, EAJ5 (Union Radio) (1.0 kW.); Galicia EAJ4 (0.2 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Helsinki (10 kW.) (Fin- land) (<i>relays Lahti</i>); Kharkov, RV20 (10 kW.) (Russia).	.....
1000	300	100	Moscow (Russia) (S.-W. Stn. on 50 m.)	.....	337.2	817	0.7	Fredriksstad (Norway). (<i>Relays Oslo</i>) ..	.....
938	320	20	Kharkov, RV4 (Russia) .. .. .	.....	364.1	824	1	Bergen (Norway) .. .. .	.....
857	350	100	Leningrad (Russia) .. .. .	.....	363.6	825	13	Algiers (Algeria) .. .. .	.....
840	357	18.5	Budapest (Hungary) .. .. .	.....	360.6	832	60	Mühlacker (Stuttgart) (Germany) .. .. .	.....
825	363.6	50	Sverdlovsk, RV5 (Russia) .. .. .	.....	355.9	843	50	London Regional (Brookmans Park) ..	.....
760	395	1.3	Geneva (Switzerland). (<i>Relays Sottens</i>) ..	.....	352.1	852	7	Graz (Austria). (<i>Relays Vienna</i>) .. .. .	.....
720	416.6	15	Monte Ceneri (Switzerland). (<i>Testing</i>) ..	.....	348.8	860	7.6	Barcelona, EAJ1 (Spain) .. .. .	.....
720	416.6	20	Moscow, RV2 (Experimental) (Russia)	.....	348.8	860	10	Leningrad, RV70 (Russia) .. .. .	.....
690	434.6	1.5	Oulu (Uleaborg) (Finland) .. .. .	.....	345.2	869	11.5	Strasbourg, PTT (France) .. .. .	.....
680	441.2	0.6	Lausanne (Switzerland). (<i>Relays Sottens</i>)	.....	341.7	878	35	Brno (Brunn) (Czechoslovakia) .. .. .	.....
574.7	522	7	Ljubljana (Yugoslavia) .. .. .	.....	338.2	887	15	Brussels II, Velthem (Belgium). (<i>In Flemish</i>)	.....
569	527	0.25	Freiburg-im-Breisgau (Germany). (<i>Relay Stn.</i>)	.....	335	896	5	Cádiz (Spain) .. .. .	.....
568.1	528	2	Grenoble (France) .. .. .	.....	334.4	897	1.9	Poznan (Poland) .. .. .	.....
566	530	0.25	Hanover (Germany). (<i>Relays Hamburg</i>) ..	.....	331.5	905	50	Milan (Italy). (<i>Relays Turin</i>) .. .. .	.....
563	533	16	Wilno (Poland). (<i>Relay Station</i>) .. .. .	.....	328.2	914	60	Poste Parisien (France) .. .. .	.....
560	536	0.25	Angsburg (Germany). (<i>Relays Munich</i>) ..	.....	325	923	60	Breslau (Germany) .. .. .	.....
560	536	1.5	Kaiserslautern (Germany). (<i>Relays Munich</i>)	.....	321.9	932	10	Göteborg (Sweden). (<i>Relays Stockholm</i>)	.....
550	545	18.5	Budapest No. 1 Lakihegy (Hungary) ..	.....	318.8	941	0.25	Dresden (Germany). (<i>Relays Leipzig</i>) ..	.....
542	554	10	Sundsvall (Sweden). (<i>Relays Stockholm</i>) ..	.....	318.8	941	1.5	Naples, INA (Italy). (<i>Relays Rome</i>) ..	.....
537.6	558	3	Palermo (Italy) .. .. .	.....	315.8	950	1.6	Marseilles, PTT (France) .. .. .	.....
533	563	60	Munich (Germany) .. .. .	.....	312.8	959	0.7	Radio Vitus (Paris). (S.-W. Stn. on 43.75 m.)	.....
525	571	15	Riga (Latvia) .. .. .	.....	312.8	959	1.7	Cracow (Poland) .. .. .	.....
517	580	15	Vienna (Rosenhügel) (Austria) .. .. .	.....	312.8	959	10	Genoa, IGE (Italy). (<i>Relays Turin</i>) ..	.....
509	589	15	Brussels No. 1, Velthem (Belgium). (<i>In French</i>)	.....	309.9	968	1	Cardiff .. .. .	.....
507.2	591.5	100	Bisamberg (Austria) .. .. .	.....	309.9	968	50	West Regional (Washford Cross) .. .. .	.....
500.8	599	20	Florence, IPI (Italy). (<i>Relays Turin</i>) ..	.....	307	977	0.75	Zagreb (Yugoslavia) .. .. .	.....
495.8	605	1.2	Trondheim (Norway) .. .. .	.....	304	986	13	Bordeaux Lafayette, PTT (France) .. .. .	.....
488.6	614	120	Prague, No. 1 (Czechoslovakia) .. .. .	.....	301.5	995	50	North National (Manchester) .. .. .	.....
480	625	50	North Regional (Manchester) .. .. .	.....	298.8	1004	11	Tallinn (Esthonia) .. .. .	.....
472.4	635	60	Langenberg (Germany) .. .. .	.....	296.1	1013	20	Hilversum (Holland). (<i>7 kW. before 4.40 p.m.</i>)	.....
465.8	644	1.5	Lyons la Doua, PTT (France) .. .. .	.....	293.5	1022	0.7	Limoges, PTT (France) .. .. .	.....
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland) .. .. .	.....	293.5	1022	2.6	Kosice (Czechoslovakia) .. .. .	.....
453.2	662		San Sebastian, EAJ8 (0.6 kW.); Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (<i>relays Heilsberg</i>); Klagenfurt (0.5 kW.) (Austria) (<i>relays Vienna</i>); Pörsgründ (0.7 kW.) (<i>relays Oslo</i>); Tromsø (0.1 kW.) Bodo (0.5 kW.) (Norway); Uppsala (0.15 kW.) (Sweden) (<i>relays Stockholm</i>).	.....	291	1031	13.2	Viiipuri (Viborg) (Finland). (<i>Relays Helsinki</i>)	.....
				.....	288.3	1040	50	Scottish National (Falkirk) .. .. .	.....
				.....	288.3	1040	1	Bournemouth (Relay Station) .. .. .	.....

BROADCASTING STATIONS ABROAD

(In Order of Wavelength).

Metres.	kc/s.	kW.	Station.	Tuning Positions.	Metres.	kc/s.	kW.	Station.	Tuning Positions.
281.5	1053	0.7	Lyons (Radio-Lyon) (France)		244.1	1229	0.5	Basle (Switzerland). (Relays Beromünster)	
283.6	1058	0.5	German Relays (Berlin, Magdeburg, Stettin)		242.3	1238	1	Belfast (N. Ireland)	
283.3	1058	0.5	Innsbruck (Austria). (Relays Vienna)		240.6	1247	0.5	Stavanger (Norway)	
282.2	1063	2	Lisbon C.T. 1AA (Portugal). (Short-wave Station on 31.25 m.)		238.9	1256	2	Nürnberg (Germany). (Relays Munich)	
					238	1260	1	Nimes (France)	
281.2	1067	0.75	Copenhagen (Denmark)		237.2	1265	3	Bordeaux, Sud-Ouest (France)	
278.8	1076	13.5	Bratislava (Czechoslovakia)		235.5	1274	0.5	Kristiansand (Norway)	
276.5	1085	60	Heilsberg (Germany)		235	1283	1.65	Lodz (Poland). (Relay Station)	
273.7	1096	7	Turin (Italy)		232.2	1292	0.25	Kiel (Germany). (Relays Hamburg)	
271.5	1105	1.3	Rennes, PTT (France)		230.6	1301	—	Swedish Relay Stations. (Malmö, Norrköping, Karlstad and Trollhättan).	
269.8	1112	20	Bari (Italy)						
269.8	1112	0.25	Bremen (Germany). (Relays Hamburg)		227.4	1319	0.5	Flensburg (Germany). (Relays Hamburg)	
267.6	1121	1.5	Valencia (Spain)		225.9	1328	10	Fécamp, Radio-Normandie (France)	
265.8	1128.5	1.3	Lille, PTT (France)		224.4	1337	1	Cork (Irish Free State)	
263.8	1137	11.2	Moravska Ostrava (Czechoslovakia)		222.9	1346	0.15	Hudiksvall (Sweden)	
261.5	1147	50	London National (Brookmans Park)		219.9	1365	1.5	Béziers (France)	
259.3	1157	17	Frankfurt-a.M. (Germany)		218.5	1373	0.2	Plymouth	
259.3	1157	2.3	Trier (Germany). (Relays Frankfurt)		218.5	1373	0.5	Salzburg (Austria). (Relays Vienna)	
257.1	1167	10	Hörby (Sweden). (Relays Stockholm)		217	1382	0.5	Königsburg (East Prussia) (Germany)	
255.1	1176	0.7	Toulouse, PTT (France)		217	1382	0.25	Karlstad (Sweden)	
253.1	1185	5	Gleiwitz (Germany). (Relays Breslau)		215.6	1391	0.2	Halmstad (Sweden)	
252	1193	1	Barcelona, EAJ 15 (Assoc. Nat.) (Spain)		214.3	1400	1	Aberdeen	
249.6	1202	0.8	Juan-les-Pins, Nice (France)		211.3	1420	1	Newcastle	
247.7	1211	10	Trieste (Italy). (Relays Turin)		209.8	1430	1.25	Magyarovar, Miskolcz and Pecs (Hungary)	
245.9	1220	0.12	Swansea		207	1450	0.15	Boras (Sweden)	
245.9	1220		Berne (0.5kW.) (Switzerland) (relays Beromünster); Eskilstuna (0.2 kW.), Sjöfö (0.4 kW.) (Sweden) (relays Stockholm); Cassel (0.25 kW.) (Germany) (relays Frankfurt); Liuz (0.5 kW.) (Austria) (relays Vienna); Pietarsaari (0.5 kW.), Turku (Abo) (0.5 kW.) (Finland) (relays Helsinki).		206	1460	0.2	Ornsköldsвик (Sweden)	
					204.1	1470	0.2	Älvle (Sweden)	
					202.7	1480	0.25	Kristineham (Sweden)	
					201.3	1490	0.25	Hälsingborg (Sweden)	
					195	1530	0.2	Karlskrona (Sweden)	

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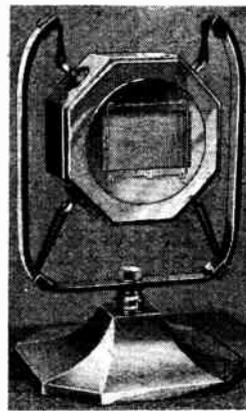
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FINAL ANNOUNCEMENT

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FOREIGN SUNDAY PROGRAMMES

JUNE THE FOURTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL LONDON** Regional
MIDLAND REGIONAL
NORTH REGIONAL
SCOTTISH REGIONAL
BELFAST
- Orchestral Concert.
Service from Crausley Church, Nr. Kettering.
Service from Leicester Cathedral.
Service from Central Methodist Church, Newcastle-upon-Tyne.
Service from St. Cuthberts' Church, Edinburgh.
Service from Carlisle Memorial Methodist Church, Belfast.

ABROAD

- BERLIN (Deutschland-sender)** 7.0 p.m. Act I of "Lohengrin" (Wagner), from the Opera House.
- BERO-MUNSTER** 8.30 p.m. Bach and Handel Concert from Berne.
- HUIZEN** 7.50 p.m. "Peer Gynt," drama by Ibsen, with incidental music by Grieg.
- LEIPZIG** 6.20 p.m. Beethoven's Quartet in F (Op. 59, No. 1). 8.0 p.m. Operetta: "The Bird Fancier" (Zeller), from Dresden.
- PALERMO** 8.45 p.m. Symphony Concert, conducted by A. La R. Parodi.
- PITTSBURGH** 8.0 p.m. National Opera Concert from New York.
- PRAGUE** 6.10 p.m. Offenbach Concert.
- ROME** 8.45 p.m. Concert of Italian Opera Music.
- STUTTGART** 8.45 p.m. Concert by the Württemberg Symphony Orchestra.
- TURIN** 8.30 p.m. Opera: "I Cavalieri di Ekebu," by Zandonai, conducted by the composer.

ATHLONE
725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Sponsored Programme—Irish Hospitals' Trust. 8.30, Carillon Recital, from Cork Cathedral. 8.45, Mai Vizes Trio. 9.5, Reading. 9.50, Mai Vizes Trio. 10.10, Reading. 10.25, Fiddle and Accordion Music by M. Grogan and J. Howard. 10.35, Variety Items. 10.50, Fiddle and Accordion Music. 11.0, Sports Talk, Time, News, and Close Down.

BARCELONA
EAJ1, 860 kc/s, 348.8 metres; 8 kW.—2.0 p.m., Gramophone Records. 2.30 (in the interval), Theatre Notes. 3.0, Film Review. 3.5 (approx.), Concert by the Station Sextet. 4.0, Programme for Hospitals and other Benevolent Institutions with Gramophone Records. 5.0 to 6.30, Interval. 6.30, Agricultural Talk in Catalan, followed by Gramophone Records. 7.0, Concert by the Station Orchestra. 7.30, Song Recital. 8.0, Concert by the Station Orchestra. Soloist: R. Fusté (Baritone). 9.0, Dance Music relayed from the Hollywood Bar Dance Hall. 10.0, An Opera on Gramophone Records. 11.45, Chess Lesson. 12 Midnight (approx.), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—10.45 a.m., Agricultural Report. 11.15, Address and Bible Reading. 11.35, Sacred Music from the Church of San Domenico. 11.35, Religious Programme. 1.0 p.m., Giornale Radio. 1.10 to 2.15, Variety Music on Gramophone Records. In the intervals at 1.55, Weather, and at 2.0, Time and Announcements. 5.30 to 6.30, Gramophone Music. 8.0, Sports Notes and Giornale Radio. 8.30, Time and Announcements. 8.35, Variety Concert; Soloists, Andrea Mongelli (Bass) and Luigi de Grandi (Violin). Reading in the interval. 10.30, Popular Music on Gramophone Records. 10.55, News Bulletin.

BASLE—See Schweizerischer Landessender.

BELGRADE
697 kc/s, 430.4 metres; 2.8 kW.—5.0 p.m., National Melodies by the Xenia Gramann Orchestra. 6.55, Time Signal and Programme Announcements. 7.0, National Melodies by the Aranički Tambourine Orchestra. 8.0, Arias from Yugoslav Opera by Milan Pichler. 8.30, A Radio Comedy. 9.15, Concert of Slav Music by the Radio Orchestra. 10.0, National Songs by Milan Timotic. 10.30, Time Signal, News and Cigány Music, relayed from the Potrosacka Zadruga Restaurant.

BERLIN
DEUTSCHLANDSENDER; 183.5 kc/s, 1,635 metres; 60 kW.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, See Heilsberg. In the interval at 12.55 p.m., Time Signal. 2.0, Gramophone Concert. 2.30, A Whitsun Excursion—A Play for Young People. 3.0, Song Recital by Tedwig Geissler. Songs with Clarinet obbligato, Op. 103 (Ludwig Spohr): (a) Sei still, (b) Zwiagesang, (c) Wiegenlied, (d) Wach auf. Two Songs (Bräuns): (a) Wie Melodien zieht es, (b) Feldesblaukeit; Two Songs (Hugo Wolf): (a) Sie bliesen zum Ahmarsch, (b) Elfenlied. 3.30 to 5.30, Programme from Stuttgart. 5.30, The Four Musketeers—Play (Sigmund Graf). 6.30, Reading: Whitsun Hymns (B. Dierich). 7.0, First Act of Lohengrin—Opera (Wagner), relayed from the Opera House, Uter deo Linden. 8.15, Concert from Langenberg. 10.0, News, followed by Radio Report on the Davis Cup Match, Japan v. Germany. 10.45, Weather for Shipping. 11.0, Programme from Berlin (Witzleben). 12 Midnight, Close Down.

BERLIN
WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, See Hamburg. 2.0, Programme of Talks for Garden City Dwellers. 3.0, Orchestral Concert, conducted by Bernhard Homola. 4.25, Folk Song Recital. 4.45, Running Commentary on the German Derby Trotting Races. 5.10, Literary and Musical Programme in Dialect. 5.40, Johann Strauss Concert. 6.0, Religious Fervour—a Radio Sequence (Fritz Dehn). 6.40, Adolf Sandberger Concert by the Berlin Philharmonic Orchestra, conducted by the Composer; Symphony Poem, Op. 17, Violin; Königs-marsch, Op. 21. 7.0, The Whitsun Bowl—Radio Sequence (Werner Finck). 7.40, Sports Notes. 8.5, Concert by the Berlin Philharmonic Orchestra, conducted by Rudolf von Sehmidsseck; Soloist, Walter Ludwig (Tenor). 10.0, News. 10.15 (approx.), Orchestral Concert; Soloist, Rost Seegers (Soprano). In the interval at 11.30

(approx.), Report on World Politics. 12 Midnight, Close Down.

BERNE—See Schweizerischer Landessender.

BEROMUNSTER. See Schweizerischer Landessender.

BODEN—See Stockholm.

BODO—See Oslo.

BORDEAUX-LAFAYETTE
986 kc/s, 304 metres; 13 kW.—6.30 p.m., Radio Journal, relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres. 7.40, Sports Notes. 7.55, Running Commentary on the First Stage of the Cycling Race, Bordeaux-Toulouse-Bordeaux. 8.0, Programme for Ex-Servicemen. 8.15, Lottery Results. 8.30, Gramophone Concert. 9.0, A Comedy.

BRATISLAVA
1,076 kc/s, 279 metres; 14 kW.—6.20 p.m., Concert by the Orpheus Mandoline Club. March, Regiments-Kinder (Fucik); Waltz, Donausager (Fucik); Stéphanie Gavotte (Czibulka); Russian Songs (Kovarik); March from The Bartered Bride (Smetana). 6.55, Talk for Housewives. 7.0, See Prague. 7.30, Relay from Nitra. 8.30, See Prague. 9.10, See Brno. 10.0, See Prague. 11.0 (approx.), Close Down.

BREMEN—See Hamburg.

BRESLAU
923 kc/s, 325 metres; 60 kW.; and Gleiwitz, 1,184 kc/s, 253 metres.—11.0 a.m., Peter Dörfler reads from his own Works. 11.30, Transmission for all German Stations, relayed from Leipzig. 12 Noon, Military Concert by a Nazi Band. In an interval at 12.50 p.m., Talk: A "Brown Shirt" Whitsunlied in Liegnitz, relayed from Liegnitz. Beautiful Carlruhe. 2.0, News. 2.10, Chess Lesson. 3.0, Concert by a Trombone Chorus, relayed from Gnadenfrei. 3.30, Programme for Children. 4.0, Reading of Short Stories (Paul Ernst). 4.30, See Heilsberg. 5.50, Recital of Sacred Songs for Whitsunlied, by Paul Losse (Baritone). 6.30, Programme of Folk Music, Chamber Music, and Recitations for Speaking Choir. 7.30, Weather. 7.35, Humorous Programme, with Robert Nonnenbruch. 8.0, Concert by the Silesian Philharmonic Orchestra, conducted by Franz Marszalek. Soloist, Lula Mysz-Güeneier (Mezzo-Soprano). 8.50, News. 9.0, Concert of Operetta Music by the Silesian Philharmonic Orchestra, conducted by Franz Marszalek. Soloist, Kurt Mühlhardt (Tenor). 10.0, News. 10.30, Light Music and Political Report, relayed from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

BRNO
878 kc/s, 342 metres; 35 kW.—5.30 p.m., Songs and Duets from Czech Opera Music. 6.0, German Transmission: Recital by Lia Kroupa (Soprano) and Rolf Ondruschka (Bass). Soprano Solos: (a) Aria from the Wedding Cantata (Bach), (b) Two Songs (Krieger), (c) Recitative and Aria (Bach). Bass Solos: (a) Aria from the St. Matthew Passion (Bach), (b) Aria from the St. John Passion (Bach); Soprano Aria (Bach). 7.0, A Sketch. 7.35, See Moravská-Ostrava. 8.50, Mandoline and Guitar Recital. 9.10, From the Mountains—A Radio Sequence. 10.0, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)
590 kc/s, 509 metres; 15 kW.—9.45 a.m., Gardening Talk. 10.0, Concert by Mickey's Club Jazz Attraction, conducted by L. Langlois. 11.0, Gramophone Concert of Variety Music. 12 Noon, Concert by the Radio Orchestra, conducted by Franz André. 1.0 p.m., Journal Parlé. 1.10, Organ Recital by Louis Joos, relayed from the Eglise des Carmes. 1.30, Un vrai médecin—Sketch (Blaudin). 1.40, Gramophone Records. 5.0, Dance Music, relayed from the St. Sauveur Palais de Danse. 5.30, Football Results. 6.0, Violin Recital by Edmond Harvant. 6.30, Programme for Children. 7.0, Classical Music on Gramophone Records. 7.15, Religious Address. 7.30, Talk on Music. 8.0, Concert by the Station Symphony Orchestra, conducted by J. Kumps: Overture, Phédre (Massenet); Concerto for Pianoforte (Barbier). 8.45, Readings from the Works of Heine, Mallarmé, Baudelaire, Moréas, Tailhade, Proust, Paul Fort, and Max Elskamp. 9.0, Concert by the Radio Orchestra, conducted by Franz André. Soloists: Durand (Tenor) and Steurs (Accordion). Hungarian Overture (Köler-Béla); Selection from Paganiini (Leblar); Songs with Accordion Accompaniment: Tangos and Javas; Waltz, Estudiantina (Waldteufel); Polka for Flute, Souvenir de Spa (Meurice); Airs (Hert); (a) Extracts from Histoires, (b) Suite No. 2, (c) Extract from Escules, (d) Le cortège de Balkis; Fantasia (Raillhand); Indian March (Selleniek). 10.0, Journal Parlé. 10.10, Jazz Concert by Robert de Kers and his Cabaret Kims, relayed from the Century Hotel, Antwerp. 12 Midnight (approx.), Close Down.

BRUSSELS (No. 2)
N.I.R.; 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish. 10.0 a.m., Gramophone Music. 11.0, Concert by Mickey's Club Jazz Attraction. 12 Noon, Gramophone Music. 1.0 p.m., Le Journal Parlé. 1.10, Concert by

the Radio Orchestra, conducted by Franz André. Soloist: Paul Gilson (Songs). 6.0, Concert by the Station Symphony Orchestra, conducted by J. Kumps. 5.30, Sports Notes. 6.0, Gramophone Concert of Accordion Music and Instrumental Solos. 6.30, Song Recital by Mr. Toutenel. Part I: Spanish Songs: El contrabandista (Traditional); Songs (Falla): (a) El paño Moruno, (b) Seguidilla Murcianna, (c) Asturiana, (d) Jota, (e) Polo, (f) La canción del Olvido (Serrano). Part II: Italian Folk Songs. Sul margine del rio, (b) Tie e tie e toe; La molinara; Te voglio bene assai; Santa Lucia. 7.0, Gramophone Music. 7.15, Religious Address. 7.30, Music Review by Jef Van Durme. 8.0, Concert by the Radio Orchestra, conducted by Franz André. Soloist: Mlle. de Woldemirov (Songs). 8.45, Recitations. 9.0, Concert by the Station Symphony Orchestra, conducted by Jean Kumps. Soloist: Mme. Scapus (Pianoforte). Spanish Fantasia (Hans); Pianoforte Concerto (De Boeck); Gramophone Records: (a) Carnaval de Paris (Benedict), (b) Aria from Prince Igor (Borodin); Milenka (Blockx). 10.0, Le Journal Parlé. 10.10, Dance Music from the St. Sauveur Palais de Danse. 11.30, Gramophone Music.

BUCHAREST
761 kc/s, 394 metres; 12 kW.—9.0 a.m., Divine Service Relay. 10.30, Religious Notes. 10.45, Programme for Workers. 11.0, Light Music and Romanian Music. 12 Noon, Gramophone Records. In the interval at 1.0 p.m., Radio Journal. 4.0, Programme for Peasants. 5.0, Light Music and Romanian Music by the Marco Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Programme. In the interval at 7.20, Gramophone Records. 8.0, An Operetta. In the Intervals Radio Journal.

BUDAPEST
545 kc/s, 550.5 metres; 18.5 kW. Programme also relayed on 840 metres from 7.45 p.m. till Close Down.—11.30 a.m., Protestant Service. 12.35 p.m., Radio Report on the University Boat Race. 1.15, News and Rides Report, followed by Radio Chronicle. 1.30, Gramophone Records. 3.0, Agricultural Talk. 3.45, School Children before the Microphone. 4.45, News. 4.50 (approx.), Orchestral Concert, conducted by Béla Melles. 6.0, Talk. 6.30, Orchestral Concert from the Stadtwaldchen. 7.30, Sports Notes. 7.45, Concert by the Catholic Choral Society, relayed from Kecskemet. 8.45, News. 9.0, Recital of Hungarian Folk Songs with Accompaniment by a Cigány Band. 10.10, Concert from the Café Simphon. 11.15, Dance Music from the Ritz Hotel. In the interval, Popular Songs.

CASSEL—See Frankfurt.

COPENHAGEN
1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—10.0 a.m., Divine Service, relayed from the Cathedral, Roskilde. 11.30, Weather Forecast. 11.40, News. 12 Noon, Time and Chimes from the Town Hall. 12.2 p.m., Concert by Louis Prell's Instrumental Ensemble. 1.30, Programme for Children. 2.0 (also relayed by Skamleback on 31.51 m.), Divine Service relayed from Christ-Uansborg Castle Church. 3.30, Concert by the Radio String Orchestra, conducted by Launy Gröndahl, a Male Voice Choir and Julius Foss (Organ). 5.30, Gramophone Concert. 6.0, Interval. 6.20, Talk. 6.50, Weather Forecast. 7.0, News and Sports Results. 7.15, Time Signal. 7.30, Talk by Thit Jensen. My Impressions of California. 8.0, Chimes from the Town Hall. 8.2, Farinelli—Musical Comedy in Three Acts (Heiberg), arranged for Radio. 10.0, News. 10.10, Septet for Violin, Viola, Horn, Clarinet, Bassoon, Cello and Double Bass (Bethoven). 11.0 (approx.), Close Down.

CORK—See Athlone.

DANZIG—See Heilsberg.

DRESDEN—See Leipzig.

FECAMP
1,328 kc/s, 225.9 metres; 10 kW.—4.0 to 8.0 p.m., Programme in English by the I.B.C. 4.0, Programme for Children. 5.0, Organ Recital: O'Connell's (O'Henry); Just humming along (Myers); Organ and Xylophone Duet: The Whistler and his Dog (Pryor); There's Something about a Soldier (Gay); Organ and Xylophone Duet: Down South (Myddleton); Rain on the Roof (Rouell); Butterflies in the Rain (Sherman); Weymouth Chimes (Lindsay). 5.30, Songs and Orchestral Music: Singing a Song to the Stars (Meyer); Songs: (a) Stop the Sun, Stop the Moon (Cook), (b) Hand me down my Walking Cane, (c) You're still in my Heart (Donaghy); Evolution of Dixie (Lake); Songs: (a) Brother, can you spare a Dime? (Harburg), (b) Doggone, I've done it, (c) Just an Echo in the Valley (Woods). 6.0, Club Concert for Southend Listeners. Relayed in conjunction with the Pier Pavilion. Part I: The Pierhead Municipal Orchestra, conducted by Adam Seehold; Selection from Mignon (Thomas); London

JUNE 4th

SUNDAY

continued

Suite (Eric Coates): (a) Covent Garden, (b) Meditation (Westminster), (c) Knightsbridge; Special Message by Alderman F. Tweedy-Smith, L.D., J.P.: Movement from The Moonlight Sonata (Beethoven); Manx Suite (Fould); Russian Rhapsody (arr. Lange); Talk by George Jennings, Publicity Officer. Part II: Edgar Spencer and his Silver Pavilians: Waltz, You gave me your Heart (Edgar Spencer); Brother, can you spare a dime? One little Kiss from You; Farewell to Arms; Novelty Number, Sylvia; The Girl in the Little Green Hat. 7.0, Celebrity Concert of Gramophone Records; My Love Parade, by Maurice Chevalier; Nip and Nunk, in Firewords, by Lupino Lane and Wallace Lupino; She didn't say Yes, by Edith Baker; Sweet Sue, just you (Young), by the Mills Brothers; So long, Lads, we're off (Low), by Gracie Fields; The Aria of the Miller, from Roussalka (Dargomizhsky), by Chaliapine; Sunday on the Rhine (Schumann), by Marek Weber and his Orchestra. 7.30, Instrumental Music; Accordion Band: Yip-I-add-I-ay (Cobb and Flynn); Guitar Solo: Picking my Way (Lang, Kress); Song: For Good or Bud (Pearson); Accordion Band: After the Ball (Harris); Mandoline Solo: Capriccio Mazurka (Arioso); Accordion Solo: Waltz, Morella (Charlier); Hawaiian Band: What Aloha Means (Alphin). 8.0, Concert of Opera and Operetta Music. 9.0 till Close Down. Programme in English by the I.B.C. 9.0, Dance Music: The Girl in the Little Green Hat; What have I got to lose? If I ever get a job again; Gipsy Moon; Twenty Million People; Farewell to Arms; Moon Song; When you've fallen in love. 9.30, Orchestral Music, with Songs; Charming Episode (Ormandy); Tenor Solo: The Vagabond (Vaughan Williams); Soprano Solo: Fairy Tales of Ireland (Coates); Ballet Music from Nala (Delibes); Violin Solo: Chanson Bohemienne (Boidi); Tenor Solo: My Old Shako (Trotter); My Hero, from The Chocolate Soldier (O. Strauss). 10.0, Military Band Music: In a Persian Garden (Kettebey); Bells of Somerset; Potpourri of Regimental Marches; Jolly Fellows; Birthday Serenade; A Hunting Scene (Bucalossi); Regimental Marches. 10.30, Popular Melodies; Melody from No. No, Nanette (Youmans); Won't you stay to Tea; Someone to care for; Sylvia; Sittin' in the Dark; You're getting to be a Habit with me; My Heart's to let; When you've fallen in love; Twenty Million People. 11.0, Popular Music: Poor Butterfly (Hubell-de Filippi); Song: Farewell (Fraser-Simson); Love will find a Way (Fraser-Simson); Maurice Chevalier Medley; At Dawning (Cadmán); My Lovely Celia (arr. Lane Wilson); Some of these Days (Brookes). 11.30, Programme of Special Request Items: The Lion and Albert, by Stanley Holloway; Clarinetitis (Goodman); Paradise (Brown); Three ha'pence a foot, by Stanley Holloway; When you look in my Eyes (Greer); Morning aboard the Saucy Sue; Old Sam, by Stanley Holloway. 12 Midnight, Club Concert for Southend Listeners. Transmitted in conjunction with the Pier Pavilion. Part I: The Pierhead Municipal Orchestra, conducted by Adam Seebold. Selection from Miknon (Thomas); London Suite (Eric Coates): (a) Covent Garden, (b) Meditation (Westminster), (c) Knightsbridge; Special Message by Alderman F. Tweedy-Smith, L.D., J.P.: Movement from The Moonlight Sonata (Beethoven); Manx Suite (Fould); Rhapsody Russe (arr. Lange); Talk by George Jennings, Publicity Officer. Part II: Edgar Spencer and his Silver Pavilians: Waltz, You gave me your Heart (Edgar Spencer); Brother, can you spare a dime? One little Kiss from You; Farewell to Arms; Novelty Number, Sylvia; The Girl in the Little Green Hat. 1.0 a.m. (Monday), A Little Humour from Town and Country; There beant no Flies on me (Drake); Wo!s ther price o' Swedes (Vinncombe); The Barrers in the Walworth Road; Gooseberry Tart (Matthews); Soft as oil looks (Lyster); My Old Dutch (Chevalier); Mrs. 'Orsfield 'as 'er Fortune told. 1.30, Songs, Duets, and Orchestral Music. Songs: (a) The Dance down at Jones' Place (Luther-Robison). (b) Tariff Bill Song (Gaskill). (c) Peg Leg Jack (Luther-Robison); Dreams; Duets: (a) His Old Cornet (Robison), (b) Smoky Mountain Bill (Robison); Song, Don't Marry a Widow (Robison); Four Little Blackberries. 2.0, Dance Music by the Icolians: Tell me To-night (Spellansky); Same Old Moon (Baskette); Where is this Lady? (Lehar); Goodbye Blues (McHugh); Marry Me (Krausz); Rock your cares away (Towers); After To-night we say Goodbye (Towers); A Bedtime Story (Towers); Silver Hair and Heart of Gold (Gilbert); Kalua (Kern); Song of the Bells (Pola); Dancing Time (Kern); Happy Feet (Ager); Harlem Madness (Ager); You know what I'll do? (Buehl); Blue turning Grey over you (Waller). 2.57, I.B.C. Goodnight Melody. 3.0 (approx., Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, See Stuttgart. 1.0, See Langenberg. 2.30, See Stuttgart. 3.30, Programme for Young People. 4.30 to 6.0, See Stuttgart. 6.0, Talk: Whitsuntide in Old

Frankfurt and the Neighbourhood. 6.15, Sports Notes. 6.25, See Stuttgart. 8.0, See Langenberg. 10.0, Radio Report. 10.20, Time and News. 10.45, Serenade from Berlin (Witzleben).

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon (from Hanover), Orchestral Concert conducted by Otto Ebel von Sosen. In an interval at 12.55 p.m., Time and Weather. 2.0 (from Flensburg), Programme by Young Hitlerites. The German Frontier—a Festival Programme of Recitations for Speaking Choir and Addresses. 3.0, Radio Report on the Seventh Berging Races in Teterow. 3.30 (from Bremen), Programme for the Dedication of the New West-Turm on the Island of Wangerooge. Programme of Music and Addresses. 4.15 (from Hanover), Wind Instrument Concert. 5.30 (from Hanover), Song Recital by Alice Brandt-Rau (Soprano). 6.0, The Strange Musician—A Musical Play (Erich Noether). 6.45, Reading Travel and Adventure Stories—Crime and Criminals in East Siberia (Dörries). 7.15, Organ Recital from the Deutsches Haus, Flensburg. 7.45, Talk: Athletes and the Doctor. 7.55, Weather. 8.0, Whitsun Concert by the Station Orchestra, conducted by José Eibenschütz. Soloist: Fritz Leue (Violin). First General News in the interval. 10.0, Second General News. 10.10, A Review of Outstanding Events in Hamburg, Bremen and Lübeck. 10.25, Light Music and Dance Music from Berlin (Witzleben).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres. 11.30 a.m., Transmission for all German Stations relayed from Leipzig. 12 Noon, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky. Overture. Elisa (Cherubini); Walter's Prize Song from The Mastersingers (Wagner); Finale from the First Symphony (Beethoven); Second Suite of Classical Arias (Gluck); Sphärenklänge (Hallen); Extracts from the Suite, Op. 43 (Tchaikovsky); Norwegian Artists' Carnival (Svendsen); Overture, Romeo and Juliet (Zingarelli); Potpourri of Russian Gipsy Songs and Dances, Sasehinka (Schirrmann); Waltz, Bei uns zu Hause (Joh. Strauss); Gallop, Im Sturm-schritt (Joh. Strauss). 2.0, Chess Lesson. 2.30, Talk for Young People. 3.0, Report from the Young Hitlerites' Camp at Rantau. 3.30, See Stuttgart. 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken. 6.0, Talk: Research into Germany's Past. 6.20 (from Danzig), Talk: The Advisability and Possibility of Travelling under Present-Day Conditions. 6.40, Chamber Music Concert by the Opera House Wind Instrument Society. Soloists: Honka von Ferenczy (Soprano), and Karl Niinke (Pianoforte). Songs: Op. 103 for Soprano, Clarinet and Pianoforte (Spolir): (a) Zwiegsang, (b) Selmsucht, (c) Wiegensied, (d) Das heimliche Lied; Suite, Aus Litauen, Op. 23, for Flute, Oboe, Clarinet, Horn and Bassoon (Laurischkus); Auf dem Strom, Op. 119, for Soprano with French Horn and Pianoforte Accompaniment (Schubert). 7.30, Reading: Michael Kohlhaas (Heinrich von Kleist). 8.0, A Whitsun Journey through East Prussia. 10.0, News. 10.5 (approx.), Dance Music from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. to 4.40 p.m., Programme of the Algemene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time Signal. 11.41, Concert of Light Music, conducted by Otto Hendriks. In the interval, Gramophone Music. 1.10 p.m., Book Review. 1.40, Orchestral and Choral Concert. 2.40, Organ and Cello Recital by Piet van Edmond and Carel van Leeuwen Boonkamp; Organ Solos: (a) Prelude and Fugue in G (Bach), (b) Adagio (Mendelssohn), (c) Finale in F Minor (Rheinberger); Suite for Cello in G (Bach); Triumphant March (Lemmens); Song (Gray); Cello and Organ: (a) Air (Hurt), (b) Melody (Popper). (c) Romance (Voor-molen); Tocata (Renaud); Improvisation (Edmond). 3.40, Gramophone Music and Sports Notes. 4.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.),

4.40, Concert by De Stem des Volks Choir, conducted by A. Krelage. In the Interval, Gramophone Music. 5.40 to 6.25, Interval. 6.25, Concert by De Flierfluiters, conducted by J. van de Horst. Soloist: M. J. Lammen (Bass). 6.55, Talk. 7.10, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot. 7.40 till Close Down, A.V.R.O. Programme. 7.40, Time and News. 7.55, Concert by the Wireless Orchestra, conducted by Nico Treep. Soloist: K. von Pataky (Tenor). Overture, Joseph (Méhul); Selection from L'Africaine (Meyerbeer); Meditation from Thaïs (Massenet); Tenor Solos from: (a) L'Elisir d'amore (Donizetti), (b) La Bohème (Puccini); Selection from The Merry Widow (Lehar); Selection from Frederica (Lehar); Waltz from Polenblut (Nedba); Selection from The Czarevitch (Lehar); Gallop (Joh. Strauss). 8.55, Light Music by Kovacs Lajos and his Orchestra with Songs by Bob Scholte and the Kardosch Singers. In the Interval: Talk by W. Vogt, Director of the A.V.R.O. 10.40, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.55 a.m. to 4.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Sextet: Amsterdam vooruit! (Stabel); Zwergenhochzeit (Anzer); Military Fanfare; Amoretteigen (Fucik); Lehar Potpourri (arr. Geiger); Ich möchte einmal wieder verliebt sein (Stolz); Gramophone Records: Farewell; Grieg Potpourri (arr. Urbach); Waltz, The Whirlwind (Mattei); Dutch Windmills (Heykens); Au revoir! (Schootenmeyr). 1.40, Religious Address. 2.10, Concert by the K.R.O. Boys. Soloist: J. Mossel (Songs). 3.0, Talk. 3.20, Concert by a Children's Choir, conducted by P. Brill. 3.40, Programme for Invalids. 4.40 to 7.25, Programme of the Christian Radio Society (N.C.R.V.). 4.40, Divine Service, relayed from the Groote Kerk, Hilversum. 6.25, Sacred Music on Gramophone Records. 6.40, Organ Recital by M. van Driehouzen. 7.25 till Close Down, K.R.O. Programme. 7.25, Talk: Whitsuntide. 7.50, Peer Gynt—Drama (Ibsen), with incidental music by Grieg. In the intervals at 8.40 and 10.10, News. 10.20, Epilogue by the Small Choir, conducted by J. Pickkers.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide and Radio Varieties. 8.45, News. 9.15, Radio Concert. 10.0, Answers to Correspondence. 10.30 to 11.30, Programme in English by the I.B.C. H. K. Hitchcock announcing. 10.30, Concert of Light Music. Sweet Genevieve (Tucker); As your Hair grows whiter (Shapiro); Mother Maehree (Dleott); Popular Irish Medley (arr. O'Henry); For the sake of the Days gone by (Wallace); Love's Old Sweet Song (Molloy); Who am I (Newman); The End of a Perfect Day (Jacobs-Bond). 11.0, Dance Music. Dip your Brush in the Sunshine; The Minor Drag; Goodnight, Vienna (Posford); I'll always be True (Benatzky); Dick Turpin's Ride; Let a little Pleasure interfere with Business; Harlem Fuss. 11.27, I.B.C. Goodnight Melody. 11.30, Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.59 p.m., Time and Weather Report. 7.10, Sonata in D minor for Pianoforte (Beethoven). 7.35, Talk. 8.0, Concert by the Station Orchestra, conducted by Erkki Linko: Overture, Le Roi Fa dit (Delibes); Melody from Faust (Gounod); Minuet (Lullu); Arabesque (Debussy); Melody from Vid midsummareldarna (Merikanto). 9.0, Concert of Military Music relayed from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12.5 p.m., Talk: The Future of the German Race. 12.30, Radio Report and Address; In the Camp of the German Biblical Society at Bielefeld. 1.0, Concert by the Station Orchestra, conducted by Kühn. 2.30, Interval. 2.45, Reading (Victor Friedrich Streck). 3.10, Talk on Anselm Feuerbach. 3.35, The World on Gramophone Records: Swedish Music. 4.5, Talk: Education in Town and Country in the Münster District. 4.30, Military Band Concert, relayed from Wuppertal-Barmen. In the interval, Reading. 6.0, Whitsun Service, relayed from the Münsterkerche, Gladbach. 7.5, Variety Programme. 7.45, Sports Notes. 8.0, Concert by the Station Orchestra, conducted by Kühn; Soloist, Rudi Rhein (Violin): Overture, Fidelio (Beethoven); Gavotte from Idomeno (Mozart); Minuet

from the Divertimento in D (Mozart); Violin Solo, Variations on a Hungarian Theme (Haydn); Entry of the Guests into the Wartburg from Tannhäuser (Wagner); Symphony in B Minor—the Unfinished (Schubert); Overture, Der Betelstudent (Müll-ler); Theme, Variations and Polonaise from Suite No. 3 (Tchaikovsky); Waltz, The Blue Danube (Joh. Strauss). In the intervals, readings and Topical Announcements. 10.0, Announcements. 10.30, Relay of the Opening of the Chicago World Exhibition: A Century of Progress; Part I, Extracts from The Messiah—Oratorio (Handel) by the Chicago Symphony Orchestra and a Massed Choir; Part II, Report by Kurt G. Schl on the World Exhibition and Germany's Share in it (on Gramophone Records). 11.0, Serenade. 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—11.30 a.m., Transmission for all German Stations. Wer mich liebet, der wird mein Wort halten; Cantata (Bach), by the Gewandhaus Orchestra, the St. Thomas's Choir and Soloists. 12 Noon, Reading: Greetings to Bautzen (Hans Christoph Kaerger). 12.10 p.m., Military Band Concert, in Honour of the Millenary of the Town of Bautzen, relayed from the Corn Market. 1.0, Concert, relayed from Hamburg. 2.0, Time and Weather. 2.5, Programme Announcements. 2.25, Agricultural Notes. 2.35, Zither Recital. 3.0, The King of the Alps and the Devil—Radio Play (Ferdinand Raimund). 4.30, Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen. 5.55, Talk on Gramophone Records: The Spiritual Unrest of To-day. 6.20, Quartet in F. Op. 59, No. 1 (Beethoven), by the Reitz Quartet of Weimar. 7.0, Concert of Folk-Songs, in Honour of the Millenary of Bautzen. 7.45, Topical Talk. 8.0 from Dresden, The Bird Fancier—Operetta in Three Acts (Zeller). 10.25, Dance Music Relay. 12 Midnight, Close Down.

LINZ.—See Vienna.

MADRID

UNION RADIO, Call EA7J, 707 kc/s, 424.3 metres; 2 kW.—9.0 to 10.0 a.m., Topical Review. 12.30 p.m., Municipal Band Concert from the Retiro. Conductor: M. Villa. 3.0, Chimes, Time Signal, Amusement Guide, and Concert of Popular Music. 5.0 to 8.0, Interval. 8.0, Chimes, Announcements, Radio Journal, and Dance Music. 9.0 to 11.0, Interval. 11.0, Chimes and Time Signal. 11.5 (approx.), Spanish Celebrities before the Microphone, followed by Variety Programme. 1.30 a.m. (Monday), Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.35 p.m., Military Band Concert. 8.30, See Prague. 8.45, Brahms and Wolf Song Recital by Zdenka Spackova. 9.10, See Brno. 10.0 See Prague. 11.0 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres, and Nürnberg, 1,256 kc/s, 239 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Concert by the Station Orchestra, conducted by Karl List. Soloists: Marianne Hölscher (Pianoforte) and Max Hartmann (Baritone). Overture, Die Heirat wider Willen (Humperdinck); Pianoforte Concerto in D (Bach); Variations on Death and the Maiden (Schubert); Two Arias from Don Carlos (Verdi). 1.0 p.m., Time and Weather. 1.10, Agricultural Talk. 1.30, Gramophone Concert of Light Music. 2.30, Reading. 3.0, Verträumtes Land—a Moorland Sketch (Wilhelm Carl). 3.50, Variety Items. 4.10, Orchestral Concert, with Songs to the Date. 5.35, Radio Report on the Air Pageant in Fürth. 6.20, Light Music. 6.40, Weather and Sports Notes. 6.55, Chamber Music: String Trio, Op. 16 (Werner Trunkner); String Trio in B flat (Schubert). 7.40, The History of Alchemy. 8.0, Programme from Berlin (Witzleben). 10.0, In the Night... a Radio Picture, with Gramophone Records. 1.20, Time and News. 11.0, Programme from Langenberg. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.30 p.m., Gramophone Concert. 5.30, Recitations. 6.0, Choral Concert. 7.0, Padamantary Review. 7.15, Weather and News. 7.30, Pianoforte Recital by Daniel Lövald. 8.30, Concert by the Station Orchestra, con-

ducted by Hugo Kramm. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Concert. 10.45, Dance Music.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—10.25 a.m., Religious Address. 10.40, Sacred Music. 11.0, Agricultural Talk. 12.45 p.m., Giornale Radio. 1.0 to 2.0, Concert of Light Music. In the interval at 1.30, Time Signal, Announcements, and Weather. 5.30 to 6.30, Gramophone Music. 8.0, Dopolavoro Announcements. 8.20, Sports Notes. 8.20 to 8.45, Gramophone Music. In the interval at 8.30, Time Signal and Announcements. 8.45, Symphony Concert, conducted by A. La Rosa Parodi: Symphony No. 6, The Pastoral (Beethoven); Symphonie Poem, Le fontane di Roma (Respighi); Overture, Oberon (Weber). In the interval, Talk. 10.0, Light Music on Gramophone Records. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE. 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (preliminary and six-dot signals).—1.0 p.m., News. 1.15, Weather Report. 1.30, Concert by Jean Ibos and his Orchestra. 6.45, Le Journal Parlé. 8.30, Gramophone Concert: Part I, Messenger's Operetta Music; Part II, Variety Music. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—9.15 a.m., Gramophone Records. 9.35, Press Review. 9.45, Bible Reading. 10.0, News. 10.5, Sponsored Concert. 11.40, Gramophone Records. 12 Noon, Interval. 12.15 p.m., Sponsored Concert of Music from Sound Films. 12.45, Sponsored Programme. Half-an-hour of Fantasy by Paul Weill, Yvonne Gaharoché and Debort. 1.20, Interval. 1.30, Sponsored Programme. 2.0 to 6.45, Interval. 6.45, Journal Parlé. 7.0, Sports Notes. 7.15, Gramophone Records. 7.30, Catholic Review. 8.0, Gramophone Records. 8.15, Interval. 8.30, Gramophone Records. 9.0, Interval. 9.15, Obsession—Radio Play (Suzanne Mallart). 9.45, Gramophone Records. 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—7.45 a.m., Gramophone Music. 8.0, Press Review and Weather. 8.30, Physical Culture. 12 Noon, Religious Address. 12.20 p.m., Sacred Music: Sonata No. 6 (Mendelssohn); Choral (Bach). 12.30, Billboard. 12.45, Press Review, News and Weather. 1.0, Gramophone Concert of Popular Music. 2.0 to 3.0, Programme in English by the I.B.C. Announcers: Miss Faith Shipway and T. St. A. Ronald. 2.0, Dance Music: Signature Tune: Two Tickets for Georgia: You're getting to be a habit with me; Silenciamiento; Play, Fiddle, play; That's my Home; Georgia on my Mind; Forty-second Street; You got me crying again; Signature Tune. 2.30, Gramophone Concert. 3.0 to 6.0, Interval. 6.0 to 7.0, Programme in English by the I.B.C. Variety Hour. Announcer: Mr. St. H. C. Williams. 7.0, Popular Concert. 8.0, Radio Paris Music Hall. In the intervals at 8.30, News and Weather, and at 9.15, News. 10.0 to 10.30, Programme in English by the I.B.C. Mr. T. St. A. Ronald announcing. Light Music: March, With Sword and Lance (Starke); Selection from Mother of Pearl (O. Strauss); Onstep, All aboard for Dixie Land (Cobb); Selection from Hold Everything (de Sylva, Brown and Henderson); Waltz, Rendezvous (Zuñetta); Selection, The Gay Nineties. 10.30 (approx.), Close Down.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.0 p.m., Programme to be announced. 7.15, The Boys of Wyncastle. 7.30, The North-western Chronicle, from New York. 8.0, National Opera Concert, from New York. 9.0, Programme to be announced. 9.15, Symphonette, from New York. 9.30, Vesper Services from Shadyside Presbyterian Church. 10.30, Pages of Romance, from New York. 11.0, Time Signal and Programme to be announced. 11.15, Weather Report. 11.16, Sport Review. 11.22, Press News-Reader. 11.29, Temperature Report. 11.30, L'Heure Exquis, from New York. 11.45, Programme to be announced. 12 Midnight, Time Signal and Jack Pettis and his Orchestra. 12.30 to 2.30 a.m. (Monday), New York Relay. 12.30 a.m. (Monday), Moments in History. 1.0, Viennese Programme. 2.0, Will Rogers with Orchestra. 2.30, Programme to be announced. 2.45, Pickens Sisters, from New York. 3.0, Time Signal and Popular Melodies by Will Ryshawk.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—12.5 p.m., Concert of Folk Music and Light Music by a Village Orchestra. 1.30, Agricultural Talk. 1.45 to 1.55, Announcements. 3.30, Report on the Masaryk Games, relayed from the Stadium, Letna. 4.0, Programme (not yet announced) from Bratislava. 5.30, Talk: Touring Norway in the Summer.

JUNE 4th

SUNDAY

continued

5.45, Report from the Stadium (cont'd.). 6.10, German Transmission: Offenbach Concert. Part I, Songs and Arias. Part II, The Betrothal by Lantern-light—Opera in One Act. After the Concert, News. 7.0, (Czech and Moravian Folk Songs by a School-boys' Choir. 7.35, See Moravská-Ostrava. 8.30, Reading. 8.45, Concert of Light Music. 9.10, See Brno. 10.0, Time, News, and Sports Notes. 10.20, Popular Orchestral Concert. 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW., and Geneva, 395 kc/s, 760 metres. 9.0 a.m., See Vatican City. 9.45 (from Lausanne), Protestant Service, relayed from La Chapelle des Terreaux. 11.15 (from Lausanne), Gramophone Music. 12.30 p.m., News and Weather. 12.40, Concert, relayed from Martigny. 1.15 (from Lausanne), Gramophone Music. 2.0 to 3.30, Interval. 3.30 (from Lausanne), La Bohème—Opera in Four Acts (Puccini), on Gramophone Records. 5.30 to 7.0, Interval. 7.0 (from Lausanne), Religious Address. 7.40 (from Lausanne), Sports Talk. 8.0 (from Lausanne), Musical and Dramatic Programme. The Station Orchestra, conducted by Ed. Moser. Soloists: Mme. Nicod-Burton (Songs) and M. Burger (Cello). 9.50, News and Weather. 10.0 (from Lausanne), Harpsichord and Violin Recital. 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call **1R0**, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres, and **2R0**, 11,810 kc/s, 25.4 metres.—10.10 a.m., News, Sports Notes, and Amusement Guide. 10.30, Agricultural Talk. 10.45, Bible Reading. 11.0 to 12 Noon and 12.30 to 2.30 p.m., See Turin. 3.45 (Naples), Programme for Children, Weather, and Sports Notes. 4.0, Orchestral Concert. In the interval from 4.45 to 5.0, Sports Notes. 6.15, Announcements. 7.30, Sports Report and News. 8.0, Time and Announcements. 8.15, Song Recital by Virginia Brunetti (Soprano) and Arturo Dalmonico (Baritone): Aria and Duet from La cambiale di matrimonio (Rossini); Duet from Crispino e la comare (Ricci). 8.30, Sports Notes. 8.45, Concert of Italian Opera Music: Overture, Nebuchadnezzar (Verdi); The Second Act of Silvano (Mascagni); Talk: Selection from Nero (Boito); The Third Act of Tosca (Puccini). 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—8.0 to 9.45 p.m. (approx.), New York Relay. 8.0, Wayne King's Orchestra. 8.30, Dr. Ralph Sockman in the Radio Pulpit. 9.0, Fiddlers Three. 9.15, Wildroot Institute. 9.30, Temple of Song. 9.45 (approx.) to 12.45 a.m. (Monday), Interval. 12.45 a.m., Horse Sense Philosophy. 1.0 to 3.45, New York Relay. 1.0, Chase and Sanborn Hour. 2.0, Manhattan Merry-Go-Round. 2.30, American Album of Familiar Music. 3.0, Talk by David Lawrence: Current Government. 3.15, Highlights and Shadows.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—10.0 a.m. (from Berne), Protestant Service from St. Paul's Church. 10.45 (from Berne), Magnificat and Passacaglia in C Minor (Bach) on Gramophone Records. 11.10 (from Berne), Music from Berne Cathedral. 11.45 (from Berne), Emil Schibli reads his Short Story, Notizen über Bingleli. 12.15 p.m. (from Berne), Ballet Music from Faust (Gounod), on Gramophone Records. 12.28, Time and Weather. 12.30, News. 12.40 (from Zürich), Concert by the Radio Orchestra. 1.30 (from Berne), Agricultural Programme. 2.0 (from Berne), Dialect Programme. 2.30 to 5.0, Interval. 5.0 (from Berne), Extracts from an Opera on Gramophone Records. 6.30 (from Berne), Talk: Modern French-Swiss Literature. 7.0 (from Berne), Time and Sports Notes. 7.5 (from Berne), Concert by the Russian Echo Balalaika Orchestra. 7.30 (from Berne), Brahms' Folk Songs and Waltzes. 8.0, Concert by the Radio Orchestra. 8.30 (from Berne), Music in the Old Style—Bach and Händel Concert. 9.0, News. 9.10, Concert by the Radio Orchestra. 9.30 (from Berne), Das Herzwunder—Miracle Play (W. von Scholz). 10.0, Concert by the Radio Orchestra. 10.15 (from Berne), Sports Notes and Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres;

Ostersund, 380 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—10.0 a.m., Gramophone Records. 11.0, Divine Service Relay. 12.45 p.m., Weather and Ice Report. 3.0, Sacred Concert, relayed from Linköping. Conductor: Eskil Olsson. Soloists: Brita Darell (Songs) and Ragnar Darell (Organ). 3.30, Programme for Children. 4.0 (from Göteborg), Orchestral Concert of Light Music. 5.5, Reading. 5.30, Beethoven Concert on Gramophone Records. 6.0 (from Göteborg), Evensong. 7.15, Weather and News. 7.30, Military Band Concert. Conductor: Ivan Widner. 8.30, Aecostis—Play (Euripides). 9.45, Weather. 9.50, Concert by the Station Orchestra. Soloist: Bronislaw Gimpel (Violin). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s 345 metres; 11.5 kW.—9.30 a.m., Chimes, Procession and Pontifical Mass from the Cathedral. 10.45, Protestant Service in German. 11.30, Catholic Service in French. 12 Noon, Gramophone Music. 12.45 p.m., News. 1.0 p.m., Time Signal. 1.1, Operetta Music on Gramophone Records. 2.0, Dance Music on Gramophone Records. 3.0 to 3.30, Interval. 3.30, Gramophone Music. 5.0, Concert of Jazz Music conducted by Roskam. 6.0, Medical Talk in German. 6.15, Sports Talk. 6.30, Orchestral Concert, conducted by Maurice de Villers. Soloists: Mme. Juncker (Songs) and Mlle. Lepp (Pianoforte). Overture, Die Geschöpfe des Prometheus (Beethoven); Three Prayers (Beethoven); Pianoforte Concerto in G Minor (Mendelssohn); Prayers (Cuplet): (a) Oraison dominicale, (b) Salutation angélique, (c) Symboles des Apôtres; Religions March in the Form of a Symphonie Poem, The Procession (Dupuis). 7.30, Time and News. 7.45, Talk, with Gramophone Illustrations: Music of the Last Generation. 8.15, Press Review in German and Lottery Results. 8.30, Dramatic Programme: Le coquer—Radio Sketch (Henri Picard); La double imposture—Play (Henri Picard); Le chien enragé—One-Act Play (Guillot de Saix), after the Story by Gaston de Pawlowski; L'Hôtel garni—One-Act Comedy in Verse (Desaugiers). In an interval at 9.20 (approx.), Press Review in French. 10.30, Dance Music from the Savoy. 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon (from Mannheim), Concert by the Philharmonic Orchestra, conducted by Hans Leger. 1.0 p.m., Topical Talk. 1.15, Gramophone Music. 2.30, Recital of Ballads by Emil Petschling, Sung by Max v. Wistinghausen (Baritone). 3.0, Swabian Homeland Day—Report on the Festival Procession. 3.30, Programme for Young People. 4.30 (from Glotterbad), Concert by the Freiburg Concert Orchestra, conducted by Heinrich Pfaff. 5.30, Cello and Pianoforte Recital by Ferdinand Merten (Cello) and Edwin Kähler (Pianoforte): Abendlied (Schumann); Allegretto grazioso (Schubert); Intermezzo (Granados); Chanson sans Paroles (Tchaikovsky); Chant d'Amour (Casella). 6.0, Sports Notes. 6.25, Three Swabian Authors—Ehler, Linck and Gerhard Schumann; Talk and Readings. 7.10, Programme of Polkas, Waltzes and Songs by Heinz Mönch (Zither), Fritz Mühlhölzl (Accordion), and a Folk-Song Double Quartet. 8.0, A Picture-Book without Pictures—Stories with Music (Hans Andersen). 8.45, Concert by the Württemberg Symphony Orchestra, conducted by F. Drost; Soloists: Gerda Hansi and Margarete Teschemacher (Soprano); Part I, Mozart; Overture, The Magic Flute; Aria from The Magic Flute; Symphony No. 39 in E flat; The Letter Duet from Figaro; Aria from Figaro; Part II, Suite from Le Bourgeois Gentilhomme (R. Strauss). 10.10, Time and News. 10.35, Programme from Berlin (Witzleben). 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 358 metres; 8 kW. 6.30 to 7.0 p.m., Programme in English by the I.B.C. W. Brown-Constable announcing: Light Music; Selection from Congress Dances; My heart's to let; Freddy the Freshman; Puss, Puss, Puss; I'm playing with Fire; Someone to care for; Can't do without Love; Round about Sundown. 7.0, Violin Solos. 7.15, News. 7.30, Arias from Opera. 7.45, Viennese Music. 8.15, Songs from Sound Films. 8.30, Military Music. 8.45, Accordion Solos. 9.0, Two Symphonie Poems (Respighi): (a) Le pini di Roma, (b) Le fontane di Roma. 9.30, Humorous Songs. 9.45, Light Music. 10.0, Argentine Music. 10.15, North African News. 10.30 to 11.30, Programme in English by the I.B.C. 10.30, Dance Music: Jolly Good Company; My Old Dutch; Down the Lane to Home Sweet Home; Berceuse de Jocelyn; Medley, Fireside Memories; Danny Boy; Around the Corner; Goodbye. 11.0,

Variety Programme: My Lover; A Music Hall Show in Grandpa's Day; Poppies; The Mountain Refrain; Blue Hawaii; Sweeping the Clouds Away; Maggie and me and the Baby. 11.27, I.B.C. Goodnight Melody. 11.30, Opéra-Comique Songs. 12 Midnight, News and Announcements. 12.5 a.m. (Monday), Instrumental Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—9.40 to 9.55 a.m., See Turin. 9.55, Mass from the Cathedral of San Giusto. 11.0, Religious Address. 11.20 to 11.40, Agricultural Report. 12 Noon till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—9.40 a.m., Gloriate Radio. 9.55 to 10.40, Interval. 10.40, Agricultural Talk. 11.0, Mass from the Church of the Annunciation, Florence. 12 Noon to 12.15 p.m., Bible Reading. 12.30, Concert of Variety Music. In the interval at 1.0, Time and Announcements. 1.30 to 2.30, Orchestral Concert, conducted by Ugo Tansini. 4.0, Concert of Variety Music. Sports Notes in the intervals. 6.15, Giornale Radio and Sports Report. 7.0, Time and Dopolavoro Notes. 7.10, Light Music on Gramophone Records. 8.0, News and Gramophone Music. 8.20, Notes on the following Transmission. 8.30, I cavalieri di Ekebi—Opera (Zandonati), conducted by the Composer. In the intervals, Talk and Theatre Notes. Giornale Radio after the Opera.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—Whit Sunday Programme. 9.0 to 10.0 a.m., Pontifical High Mass in Honour of the Canonisation of André Fournet, relayed from St. Peter's. 10.0 to 11.0, Reading from the Acts of the Apostles in Thirty-five Languages.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—10.0 a.m., Pontifical High Mass, relayed from the Cathedral, Graz. 11.15, Talk on Saints. 11.40, Concert by the Vienna Symphony Orchestra, conducted by Rudolf Nilius. Soloist: Georg Steiner (Violin). Leonora Overture, No. 3 (Beethoven); Violin Concerto in D, Op. 77 (Brahms); Symphonie Poem, Don Juan (R. Strauss). 12.55 to 2.30 p.m., Concert of Light Music. 3.0, Time and Announcements. 3.5, Review of Books. 3.30, Chamber Music by the Mairecker Quartet: Serenade for String Quartet (Max Ast); String Quartet in G, Op. 161 (Schubert); Italian Serenade (Hugo Wolf). 4.30, Talk: The Prater of New York. 5.0, Concert by the Josef Ludwig Gunglino Orchestra. 6.30, Hermann Broch reads from his own Works. Introductory Talk by Dr. Franz Horch. 7.0, Concert by the Vienna Symphony Orchestra, conducted by Robert Heger. 7.55, Time and News. 8.0, Report on the International Football Match Glasgow Rangers v. Rapid. 8.10, Who laughs last . . . —A Village Comedy in Three Acts (Julius Pohl). 10.0, News. 10.15, Concert of Light Music.

WARSAW

212.5 kc/s, 1,411 metres; 129 kW.—11.57 a.m., Time Signal and Fanfare from Torun Cathedral. 12.5 p.m., Programme Announcements. 12.10, Weather Forecast. 12.15, Talk. 12.30, Opening of the Music Festival, relayed from Torun. 2.0, Agricultural Talk. 2.20, Concert by the Station Orchestra. Soloists: Marie Olena (Soprano). 2.40, Agricultural Programme. 3.0, Weather for Farmers. 3.5, Concert (cont'd.). 4.0, Programme for Young People. 4.35, Gramophone Music. 4.45, Talk from Wilno, 533 kc/s, 563 metres. 5.0, Concert of Light Music by the St. Rachon Orchestra. In the interval, News. 5.55, Programme Announcements. 6.0, Programme relayed from Torun. 6.55, News. 7.0, Miscellaneous Items. 7.25, Programme relayed from Wilno, 533 kc/s, 563 metres. 7.55, Interval. 8.0, Concert by the Station Orchestra, conducted by J. Oziminski. Soloist: Mme. Plat (Soprano). Pieces (Noskowski): (a) Overture, (b) Melody, (c) Gipsy Dance, (d) Dance, Kolomyjka; Aria from Fedora (Giordano); Aria from Don Carlos (Verdi); Aria from Manon Lescaut (Puccini); Selection from The Girl of the Golden West (Puccini); Meditation from Thais (Massenet); Aubade (Lacombe); Ballet Music from William Tell (Rossini); Three Songs; Berceuse (Mlynarski); Die Spinnerin (Moniuszko-Cielewicz); Perpetuum mobile (Joh. Strauss); Waltz, The Blue Danube (Joh. Strauss); Mazurka from The Haunted Castle (Moniuszko). In an interval, Sports Notes. 10.0 till Close Down, Dance Music. In the interval at 10.55, News, Aviation Weather Report and Police Notes.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW.—Relayed by Cork, 1,337 kc/s, 224.4 metres.—6.0 p.m., Gramophone Music, 6.30, Talk: Old Dublin Theatres, 6.45, News, 7.0, Talk, 7.15, Popular Orchestral Concert, Soloist, N. O'C. Redmond (Tenor), 8.5, At the End of the Dance—Play by H. Fraser and Company, 8.45, Irish Music, 9.0, Reading, 9.15, Band Concert, 9.45, Sponsored Programme, 10.45, Time, News and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert: Selection from Parsifal (Wagner); Ochsennuett (Haydn); Berceuse (Delmas); Prelude, Op. 28, No. 17 (Chopin); The Cuckoo (Daquin); Selection from Martha (Flotow), 8.0, Request Gramophone Records, 8.20, Sports Notes, 8.30, Exchange Quotations and Talk in Catalan, 9.0, Gramophone Records and News, 10.0, Chimes, Weather, Exchange and Market Prices, 10.5, Humorous Review of the Week in Verse, 10.15, Concert of Sardanas, 11.0, Concert by the Station Orchestra, 11.30, Radio Gazette in Catalan, 12 Midnight, News, 12.5 a.m. (Tuesday), Scenes pittoresques (Massenet), 1.0 (approx.), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Report, Tourist Talk and Dopolavoro Announcements, 8.20, Giornale Radio and Weather, 8.30, Time and Announcements, 8.35, Maria di Magdala—Opera in Three Acts (Pedrollo). In the intervals, Talk and Miscellaneous Announcements. After the Opera, News.

BASEL.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.55, Time and Programme Announcements, 7.0, Talk, 7.40, Gramophone Music, 8.0, Relay of an Opera from the National Theatre. In the interval at 9.30, Time and News.

BERLIN

DEUTSCHLANSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—11.30 a.m., Transmission for all German stations relayed from Leipzig, 12 Noon, See Leipzig. In the interval at 12.55 p.m., Time Signal, 2.0, Programme for Children, 2.30, Talk: The German Primeval Forest, 3.0, See Vienna, 3.45, Reading, 4.10, Carillon Recital from the Potsdam Garrison Church, 4.30, Concert from Breslau, 6.0, Talk: The Educational Tasks of the Evangelical Church, 6.30, Pianoforte Trio in E flat, Op. 1, No. 1 (Beethoven), 7.0, Celestial Orchestra—Verse and Prose by Robert Hohlbaum, with Music by Bach, Haydn, Strauss, and Schubert, 8.0, See Breslau, 9.0, Concert from Hamburg, 10.0, News, 10.45, Weather Report for Shipping, 11.0, Programme from Leipzig, 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig, 12 Noon, See Breslau, 2.0 p.m., Programme of Talks for Garden City Dwellers, 3.0, See Vienna, 3.45, Concert of Mandoline and Zither Music, 4.50, Folk Songs, 5.10, Concert (contd.), 6.0, A Dialogue on the Cinema, 6.30, Chamber Music for Wind Instruments, 7.0, In the Pressen from Swinemünde to Pillau, 7.50, Sports Notes, 8.10, Through the Provinces—a German Radio Potpourri (Prof. Otto Urack). In the interval at 9.10, Topical Talk, 10.0, News, followed by Dance Music from the Roof Garden of the Eden Hotel, 1.0 a.m. (Tuesday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal, relayed from Paris (Ecole Supérieure), 6.71 kc/s, 447.1 metres, 7.30, News, 7.35, Talk: Bordeaux One Hundred Years Ago, 7.50, Lottery Results, 7.55, Running Commentary on the Second Stage of the Cycling Race Bordeaux—Toulouse—Bordeaux, 8.0, Talk on Hygiene, 8.15, Charades, 8.20, News, 8.30, Instrumental Concert of Classical and Modern Music.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—7.20 p.m., Talk for Housewives, 7.25, See Prague, 10.30, Concert of Light Music and Dance Music, 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW.; and Gleiwitz, 1,184 kc/s, 253 metres.—12 Noon, Concert by the Station Orchestra, conducted by Franz Marszalek, Overture, Alessandro Stradella (Flotow); Suite, Aus dem Morgenlande (Heuberger); Waltz, Kroll's Balklänge (Lumby); Selection from Liselott (Kün-

MONDAY

JUNE THE FIFTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Songs from the Shows, feature programme by John Watt.
- LONDON REGIONAL** Act 2 of "Othello" (Verdi), from Covent Garden.
- MIDLAND REGIONAL** Military Band programme.
- NORTH REGIONAL** Eye-witness' Account of Match—Lancashire v. Yorkshire—from Old Trafford, Manchester.
- WEST REGIONAL** Orchestral Concert from the National Museum of Wales.
- SCOTTISH REGIONAL** "Wood an' Mairrit an' a'," a Comedy, by J. D. Kelly.
- BELFAST** Light Orchestral Concert.

ABROAD

- BARI** 8.35 p.m. Opera: "Maria di Magdala," by Pedrollo.
- EIFFEL TOWER** 8.20 p.m. Opera: "The Barber of Seville" (Rossini), from the Opéra.
- HAMBURG LANGENBERG** 8.0 p.m. Concert by the Station Orchestra.
- 7.15 p.m. Instrumental Concert of Seventeenth and Eighteenth Century Music.
- OSLO** 8.0 p.m. Orchestral Concert.
- ROME** 8.30 p.m. Opera: "Othello," by Verdi.
- STRASBOURG** 8.30 p.m. Operetta: "Le jour et la nuit," by Lecocq.
- VIENNA** 8.0 p.m. Operetta: "Der Orlov," by Granichstaedten.
- WARSAW** 8.0 p.m. Orchestral Concert.

neke); Nutteracker Polka (Bayer); Overture, Paraphrase Three (Suppé); Two Military Marches (Schubert); Lagunen-Walzer (Joh. Strauss); Selection from The Bird Fancier (Zeller); Als der Grossnater die Grossmutter nahm (Spohr); Selection from Die Puffperle (Bayer), 2.0 p.m., News, 3.0, Description of the Procession and Costume Festival in connection with the Association for Germans abroad, relayed from Klagenfurt, 3.45, Weather Forecast and Talk on the Heavens in June, 4.0, Concert by the Silesian Philharmonic Orchestra, conducted by Dr. Herbert Lindner, relayed from Bad Reinerz, Slav March (Tchaikovsky); Overture, Rienzi (Wagner); A Wedding Day on Toldhagen (Grieg); Walter's Prize Song from the Mastersingers (Wagner); First Movement from the Unfinished Symphony (Schubert); Rhapsody No. 1 (Liszt); Selection from Der Bettelstudent (Müllacker); Waltz, Wiener Bouhous (Joh. Strauss); March, Fridericus Rex (Rauke), 6.0, Song Recital by Lotte Roschütz (Soprano): Four Songs (Schubert); (a) Der Wanderer an den Mond, (b) Lachen und Weinen, (c) An die Quelle, (d) Der Mosensohn; Trennung (Brahms); Er ist's (Wolf); Morgentau (Wolf); Three Songs (Trunk); (a) Meine Mutter hat's gewollt, (b) Mir träumte von einem Königs-kind, (c) Frühlingssonne, 6.30, Weather Forecast and Sports Notes, 7.0, The Whiteside Ramblers return Home—a Radio Report, 8.0, A German Folk Song Play (Zilcher)—Sixteen Folk Songs, by the East German Oratorio Quartet, 9.0, News, 9.10, A Musical Medley—Folk Music on Various Instruments. In an interval at 10.15, News and Announcements, 11.0, Dance Music, relayed from Berlin (Witzleben), 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—5.0 p.m., Report on a Peasant Festival, relayed from Vlcov, 5.45, Gramophone Music, 6.0, German Transmission: Light Music on Gramophone Records, 7.0, See Prague, 10.30, See Bratislava, 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

1,590 kc/s, 509 metres; 15 kW.—10.0 a.m., Concert by the Mickey's Club Jazz Attraction, conducted by Langlois, 11.0, Gramophone Concert, 12 Noon, Concert for Wallon Listeners by the Small Station Orchestra, conducted by Leemans: Selection from Les Dragons de Villars (Maillart); Danse lente (Franck); La petite maerale (Rogister); Cantabile (Belport); Violin Solo, Reverie (Vieuxtemps); The Skaters' Waltz (Waldteufel); Foxtrot, Souvenir de Spa (Meurice); Valseaux Liégeois (Ramous), 1.0 p.m., Journal Parlé, 1.10, Gramophone Concert, 5.0, Concert by the Radio Orchestra, conducted by C. Walpot: Dramatic Overture,

Pélias (Caludi); Suite variée (Pierné); Dance and Oriental Music for Violin and Orchestra (Marsick); Eternelle cantilène (Goffin); Poursuite (Guillaume); Seduction (Guillaume); Coq et poules (Paradis); Carnaval à Paris (Popy), 6.0, Talk: Why Belgium commemorates the Defeat of Waterloo, 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans, 7.15, Wallon Song Recital by Eugénie Fassin (Baritone), 8.15, Talk on Wallon Theatre, 8.30, Fauteur à bâches—One-Act Operetta (Dupuis), 9.0, Concert by the Symphony Orchestra, conducted by Meulmans; Soloist, Mlle. A. Groinet (Songs): Symphonie Poem, La lune et les peupliers (Rogister); Symphonie Prelude, Dans la forêt (Leclercq); Songs: Les roses d'Isphahan (Fauré); Poème (Léon); Les roses de Saadi (Fontenailles); Tableaux grecs (Marsick); Ballet Music from Henry VIII (Saint-Saëns), 10.0, Journal Parlé, 10.10, Dance Music on Gramophone Records, 11.0, Light Music on Gramophone Records.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish, 10.0 a.m., Gramophone Music, 11.0, Concert by Mickey's Club Jazz Attraction, 12 Noon, Overture and Act II of Tannhäuser—Opera (Wagner) on Gramophone Records, 1.0 p.m., Le Journal Parlé, 1.10, Concert by the Little Station Orchestra, conducted by P. Leemans: Spanish March (Gyldmark); Waltz from The Chocolate Soldier (O. Strauss); Salut d'amour (Elgar); Selection from Véronique (Messager); Capriccio for Pianoforte (Benoit); Italian Melodies (Löhrl); Bruissement sous bois (Razigade); Selection from Die Puffperle (Bayer), 5.0, Concert by the Station Symphony Orchestra, conducted by Arthur Meulmans: March, Pomp and Circumstance (Elgar); Roxelane (Van Nieuwenhove); Bloemlezing (Cleymans); Andante for Violin and Orchestra (Rozls); Ballet Music from Faust (Gounod), 5.45, Programme for Children, 6.30, Recital of Flemish Folklore Music, arranged by Roland Clymans, 7.15, Talk on Folklore, 7.20, Talk, 7.30, Variety Items, 8.0, Concert by the Radio Orchestra, conducted by Charles Walpot; Soloist, Mlle. Mathilde Springand (Songs): March, Ange d'amour (Waldteufel); Overture, Pique Dame (Suppé); Song, Suzanne's Aria from Figaro (Mozart); Selection from The Tales of Hoffmann (Offenbach); Song, Margaret's Aria from Faust (Gounod); La voix des cloches (Luignin), 8.35, Recitations, 8.45, Talk on Scandinavian Literature: The Eddas, 9.0, Concert (contd.): Overture, La Poupee (Adam), 9.5, By Telephone—Radio Play (Frans Dirieckx), 9.20, Concert (contd.): Selection from Madame Butterfly (Puccini); La fèria (Lacôme); Was die Donau erzählt (Morena); Contrastes (Robrecht), 10.0, Le

Journal Parlé, 10.10, Gramophone Concert, 11.0, Dance Music by Robert de Kers and his Cabaret Kings, relayed from the Century Hotel, Antwerp.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Military Band Concert. In the interval at 6.0, Radio Journal, 7.0, Educational Programme. In the interval at 7.20, Gramophone Records, 8.0, Trio for Clarinet, Cello, and Pianoforte (Beethoven), 8.30, Talk, 8.45, Recital on Two Pianofortes: Suite, Dolly (Lauré); Petite Suite (Debussy), 9.15, Light Music and Romanian Music, relayed from a Restaurant, 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—Programme also relayed on 840 metres from 8.0 p.m. till Close Down, 5.35 p.m., Pianoforte Duet: Recital of Hungarian Songs, 6.35, Violin Recital, 7.10, Sports Notes, 7.25, Dialogue: African Trav. Experiences, 8.0, The Bride of Hamburg—Operetta (Sigmund Vincze) after a Comedy by Ernst Kulinyi, 10.30, News, 10.40, (approx.), Cigany Concert from the St. Gellert Hotel.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time and Chimes from the Town Hall, 12.2 p.m., Concert by the Municipal Band; Soloist: Immanuel Franksen (Songs), 2.0 (also relayed by Skamlebaek on 31.51 metres), Divine Service, relayed from Christiansborg Castle Church, 3.30, Accordion Duets by Holger Hasselgreen and Overgaard Nielsen, 3.55, Gramophone Music, 4.15, Relay of a Political Meeting from Holstebro, 6.0, Selection from the Serenade in D, Op. 8, for Violin, Viola, and Cello (Beethoven), 6.20, Talk, 6.50, Weather Forecast, 7.0, News and Sports Results, 7.15, Time Signal, 7.30, Talk, 8.0, Time Signal from the Town Hall, 8.2, Song and Harpsichord Recital of Eighteenth Century Music by Edith Schmidt and Folmer Jensen; Songs: (a) Ach, dass ich Wasser g'm' hätte (Bach), (b) Prüfung am Abend (C.P.E. Bach); Sonata No. 6 in B Minor for Harpsichord (C.P.E. Bach); Songs: (a) Ari from Mein Freund ist mein (Böhm), (b) Herr der starken Himmelsheer (Telemann), 8.25, Reading, 8.45 to 2.0 a.m. (Tuesday), A Radio Ball, 8.45, Concert by Louis Preisl's Dance Band. In the interval at 10.0, News, 11.15, Dance Music by the Valencia Orchestra, 12 Midnight, Time and Chimes from the Town Hall, 12.2 a.m. (Tuesday), Dance Music, relayed from the Ritz Restaurant, 1.0, Dance Music, relayed from Nimb's Restaurant, 2.0 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C., C. Danvers-Walker and B. McNabb announcing, 4.30, Concert for Chichester and Dognor Listeners: The Jug and the Bottle (Noble); Pianoforte Solo: One alone, from The Desert Song (Romberg); Accordion Solo: Flower of Spain (Alexander); Zigarette (Alexander); Underneath the Arches (Flanagan); Seven Veils (de Sylva); The Flies crawl in the Window (Ellis); Dear Old Fashioned Thing (Harrington); Mad about the Boy (Conrad); Song: Wine, Women and Song (Stanss); The Younger Generation (Coward); Song: The Doll's Song (Offenbach), 5.15, Concert for Hastings and Eastbourne Listeners: Selection from The Maid of the Mountains (Fraser-Simson); Air (Verdi); The Grasshoppers' Dance (Bucalossi); Room for Facotum, from The Barber of Seville (Rossini); Kashmiri Love Song (Woodford-Finden); The Girl in the Little Green Hat; Spring Song (Mendelssohn); Le Cygne Saint-Saëns; Song: Till the Sands of the Desert grow Cold (Ball); The Golden Music Box, 6.0, Programme in French, 10.0 till Close Down, Programme in English by the I.B.C., 10.0, Dance Music by the Ibeolians: Happy Feet (Ager); Bessie couldn't help it (Warner); Like to do things for you (Ager); Cinderella Brown (McHugh); Let's put out the Lights (Hupfeld); Sous les toits de Paris (Moretti); I can't write the Words (Fields); Beyond the Blue Horizon (Whiting); Hero comes Emily Brown (Conrad); When Work is through (Sherman); Cheer up and smile (Conrad); Gosh Darn (Young); Yes, Mr. Brown (Abraham); Love is the Sweetest Thing (Noble); Take a Spot of Happiness (Reisfeld); Round the Bend of the Road (Kleiner), 11.0, Light Orchestral Music: Humoresque (Dvorák); March from Sylvia (Delibes); The Fortune Teller (Puccini); Violin Solo: Souvenir (Drdia); Pulcinello (Aletier); Serenade (Hebert); Ay, ay, ay (Freme); Waltzes from A Waltz Dream (Strauss), 11.30, Pianoforte Solos and Songs: If you haven't got love; Come to me (Henderson); Butterflies in the Rain (Leaves and Myers); Songs: (a) Her Name is Mary (Sievier), (b) My Darling (Heymann); Selection from Nina Rosa (Romberg); Evryone says I love you (Kulmar); Selection from

JUNE 5th

MONDAY

continued

Words and Music (Coward). 12 Midnight, Club Concert for St. Neots Listeners: Coal Black Mammy; For the likes of you and me; Maire my Girl (Aitken); Dear Old Fashioned Thing (Harrington); El Dia que me Quieras (Donato); Everybody loves my Baby (Palmer); Guitar Solo: Old Folks at Home (Traditional); Stop the Sun, stop the Moon (Robinson); El Amor Hace Francias; Moon over Dixie (Ellington); Seven Veils (de Sylva); Annie Laurie (Traditional); Love is a Dreamer; Baby, when you ain't there. 1.0 a.m., Light Music: Beautiful Lady (Caryl); Mama (Oscar Denes); Bless this House (Taylor); Violets (Wright); Alice Blue Gown (Tierney); Tell me To-night; Night aboard the Saucy Sue; After the Ball (Harris). 1.30, Military Band Concert: Marche Iorraine (Ganne); Majah General Thing-a-me Bob (Hargreaves); Old Comrades (Teike); Selection from Floradora (Stuart); The Bonnie Briar Bush; Hobomoko (Reeves); The Bullfighters' March (Kottam). 2.0, Dance Music by the Ibrolians: How'n I doin' (Fowler); White we danced at the Mardi-Gras (Mercer); Say it isn't so (Berlin); Love me Tonight (Young); Don't tell a Soul (Pepper); How are you (Steininger); What makes you so adorable? (de Rose); Let's all dance the Polka (Lowton); Let's put out the Lights (Hupfeld); Moonlight, the Danube and You (Mannheimer); Moon (Miles); You're my Everything (Dixon); Was that the Human thing to do? (Young); Mad about the Boy (Coward); An Evening in Caroline (Donaldson); The Younger Generation (Coward). 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLensburg.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW., and Cassel, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Concert by Unemployed Musicians. 3.45, Programme for Young People. 4.30, In the Pressen from Swinemünde to Pillau—a Radio Report. 5.30, See Munich. 6.40, Report of the Wiesbaden Horse Riding and Jumping Tournament. 6.50, Sports Notes. 7.0, An Entertainment. 8.0, Das Veilchenmüdel—Operetta in Two Acts (Hellmesberger). 10.15, Time and News. 10.35, Radio Report of the Motor Races round the Schottenhof. 11.0, See Munich. 12 Midnight (approx.), Close Down.

FREDRIKSTAD.—See Oslo.

Freiburg.—See Stuttgart.

Geneva.—See Radio-Suisse Romande.

Genoa.—See Turin.

Gleiwitz.—See Breslau.

Göteborg.—See Stockholm.

Graz.—See Vienna.

Hamar.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—11.30 a.m. to 12 Noon, Transmission for all German Stations, relayed from Leipzig. 4.10 p.m. (from Hanover), Concert of Light Music. 6.0, Wilhelm Kotzde reads from his own Works. 6.30, Concert by the Station Choir, with Recitations. Part I—Songs of Olden Times, Part II—Modern Songs. 7.15 (from Kiel), Twelve Variations on a Theme by Schubert for Oboe and Pianoforte (Sinigaglia). 7.35, Sports Notes and Weather. 8.0, Concert by the Station Orchestra, conducted by Adolf Secker. Soloists: Erna Kroll-Lange, Eva Schlee, Willy Schlee, Willy Frey, Erwin Bolt and Bernhard Jackschlat. Overture, La finta giardiniera (Mozart); Duet from the First Act of The Magic Flute (Mozart); Aria from the First Act of Czar and Carpenter (Lortzing); Overture, The Barber of Bagdad (Cornelius); Duet from the Second Act of The Flying Dutchman (Wagner); Overture, Die Abreise (d'Albert); Duet: Your little hand is frozen, from La Bohème (Puccini); Overture, Die Fledermans (Joh. Strauss); Song from Der Bettelstudent (Millöcker); Melodies by Joh. Strauss, Millöcker and Suppé (Zieler); Duet from Gasparone (Millöcker); Jonathan-Walzer (Millöcker); Duet from Paganini (Lehár); Selection from The Land of Smiles (Lehár). 10.0, News. 10.20, Topical Talk. 10.30 (from Kiel), Orchestral Concert: Overture, The Daughter of the Regiment (Donizetti); Selection from Graziella (Mattausch); Idyll for Flute, Erste Liebe (Suppé); Selection from Der Mann mit den drei Frauen (Lehár); Waltz, Immortelle (Gungl); Suite, At the Circus (Armandola); Waltz Song from Lisclott (Künneke).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—11.30 a.m.,

Transmission for all German Stations, relayed from Leipzig. 12 Noon, See Leipzig. 2.0, With Rucksack and Nailed Shoes: Discussion on Hiking Books by Two Boys. 2.15, Radio Report from the Sarkan Youth Hostel. 2.45, Music by the Königsberg Concertina Club. 3.30, Talk: East Prussian Legends and Stories. 4.0, Concert by the Königsberg Opera House Orchestra, conducted by Karl Hrubetz: March, Eber Land und Meer (Kochmann); Overture, The Pirates (Gené); Waltz, Sommerlust (Lincke); Egyptian Suite in Five Movements (Tiele); March, Fröhliches Wochenende am Galtgarten (Hrubetz); Prelude to Eva (Lehar); Gaunkler im Orient (Lindemann); Marien-Walzer (Bayer); Potpourri, Wien bei Nacht (Komzak); J'y pense (Drdla); Der Zug kommt (Müller); March, Knabenhort (Raimann). 5.45, Talk on Problems of the Ruhr. 6.15, Recital of Fifteenth and Sixteenth Century Folk Songs. 6.40 (from Danzig), Talk: The History of West Prussia from 1786-1906. 7.5, Organ Recital of Music of the Baroque Period by Gert Broede: Airs (Pachelbel): (a) Tocata in F, (b) Organ Choral, Vater unser im Himmelreich, (c) Ciaconne in D Minor; Passacaglia in D Minor (Buxtehude); Prelude and Fugue in E Minor (Bach). 7.30, Reading of Poems by Gertrud Liebisch, Leo Gottman, and Hans Müller. 7.45, Sports Notes. 8.0, See Frankfurt. 10.15, News. 10.20 (approx.), Dance Music from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.) 11.40 a.m., Time Signal. 11.41, Gramophone Music. 12.10 p.m., Light Music by Kovacs Lajos and his Orchestra, with Songs by Bob Scholte. 1.40 to 1.55, Interval. 1.55, Gramophone Music. 2.10, Book Review. 2.40, Gramophone Music. 3.10, Song Recital by Annie Hermes. 3.40, Gramophone Music. 4.40, Play for Children. 5.40, Concert: Pierre Palla (Organ), Arnold Stanowsky (Songs), and Boris Lensky (Violin). 7.10, Talk on the Taming of Wild Animals. 7.40, Time Signal. 7.41, News. 7.55, Light Music by Kovacs Lajos and his Orchestra, with Songs by Bob Scholte and Items by the A.V.R.O. Girls. 8.40, Violin Recital by Leopold Premyslav; Caprice in E (Paganini); Caprice in A Minor (Paganini); Le Couron (Daquin); The Lark (Tchaikovsky). 8.55, Johann Strauss Concert by the Wireless Orchestra, conducted by Albert van Raalte; Soloist, Vera Schwarz (Soprano); Overture, Prinz Methusalem; Soprano Solo from The Gipsy Baron; Mazurka, Fraucherz (Jos. Strauss); Soprano Solo, Liebeswalzer from Wienerblut; Polka, Fritsch-Tratsch; Czardas from Cagliostro in Wien; Overture and Soprano Solo from Die Fledermans; Perpetuum mobile; Persian March, O schöner Mai; Radetzky March. 9.55, Gramophone Music. 10.10, Concert by the Wireless Orchestra; Soloist, Leopold Premyslav (Violin); Violin Concerto in E Flat (Mozart); Overture, Oberon (Weber). 10.40, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW. Programme of the Christian Radio Society (N.C.R.V.).—12.10 p.m., Organ Recital from Amsterdam. 1.40, Recitations. 2.10, Concert by the Henriks Trio: Trio in E Flat (Haydn); Trio in B Flat (Mozart); Trio in E Flat, Op. 1, No. 1 (Beethoven). 3.10, Request Gramophone Records. 4.10, Concert by the Ars et Labor Maudoline Ensemble and the Sursum Corda Male Voice Quartet. 5.25, Organ Recital. 6.10, Concert by the Amsterdam Chamber Orchestra, conducted by M. Kieken: Adagio (Gounod); Barcarolle (Tchaikovsky); Three Movements from the Suite Aus dem Nordlande (Juel-Frederiksen); Spanish Dance (Sarasate); Finnish Melodies (Herrmann); Overture, Barbe bleue (Offenbach); Czardas (Monti); Serenade (Widor); Adagio (Beethoven); Händels Reichtum (F Bach); Symphony (Friedemann Bach). 7.40, Bach Concert from the Bethlehem Church, The Hague: Cantata No. 155; Mein Gott, wie lang ich lerne—For Soprano, Contralto, Tenor, Bass, Choir, Orchestra, and Organ; Cantata No. 172: Erschallet, ihr Lieder—for Choir, Four Soloists, Strings, Three Trumpets, Kettledrums, and Organ. 8.40, Talk: The London Conference. 9.0, News. 9.10, Concert by the Small Station Orchestra, conducted by Piet van den Hurk: Overture, Marinarella (Enck); Potpourri, Waldteufel - Reigen (Weinger); Neu Wien (Joh. Strauss); March Potpourri (Roland); Gramophone Music: Overture, Poet and Peasant (Suppé); Potpourri of International Folk Songs (Intrator); Ullanen-Attacke (Bohm); Stolzenfels an Rhein (Meissler); The Butterfly Chase (Keler-Bela). In the interval at 9.55, News. 10.50, Gramophone Music. 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., News Bulletin. 8.15, Sports Talk. 8.30,

Radio Concert. 9.0, Weather Report and News. 9.15, Dramatic Programme. 12 Midnight to 1.0 a.m. (Tuesday), Programme in English by the I.B.C., H. K. Hitchcock announcing. 12 Midnight, Pianoforte Music: The King's Horses (Graham); I got a Home in dat Rock (Brown); When you wore a Gingham Gown (Gilbert); The Vicar of Bray (arr. Tait); I know de Lord's laid His Hand on me (Brown); If you were the only Girl in the World (Ayer); The Lincolnshire Poacher (Borrett); You're gonna be Young (Nicholls). 12.30 a.m. (Tuesday), Dance Music: Love will find a Way; I'm one of the Lads of Valencia; Butterflies in the Rain; Put a little Springtime in the Winter of your Lives; What a perfect Combination; A Letter to my Mother; Look what you've done; Standing on the Corner. 12.57, I.B.C. Goodnight Melody. 1.0 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.15 p.m., Announcements and Gramophone Music. 7.25, See Warsaw. 10.0, The Letter Box. 10.15, Sports Talk. 10.25, Dance Music.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—7.10 p.m., Talk. 7.30, Concert. 8.0, Time and Weather. 8.5, Talk. 8.25, Variety Programme. 8.45, Talk. 9.5, Concert. 9.30, Talk. 9.50, Evening Concert. 11.0 (approx.), Close Down.

KIEL.—See Hamburg.

KLagenfurt.—See Vienna.

Kosice.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.35 p.m., Chamber Music: Concerto in A minor (Vivaldi-Nachaz); Sonata in A minor (Purcell). 7.0, A Play. 7.35, Choral Music. 8.0, Talk. 8.15, Popular Music by the Station Orchestra. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Military Music, relayed from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—11.20 a.m., Transmissions for all German Stations, relayed from Leipzig. 12.5 p.m., Talk on Fishing. 12.35, Talk: Regent and History in the Rhineland and Westphalia. 1.0, Orchestral Concert, conducted by Eysoldt; Soloists: Franz Fiege (Songs to the Lute) and Jakob Brann (Violin); Overture, Jocosia (Clemens); Suite from The Sleeping Beauty (Tchaikovsky); Songs to the Lute: (a) Denn right (Lons-Licht), (b) Verschwiegene Nachtigall (Kühnen), (c) Folk Melody, Rottraut, (d) Folk Melody, Der Mönch von Waltrams; Selection from Das Nachtlager in Granada (Kreutzer); Violin Solos: (a) La capriciosa (Ries), (b) Czardas, Hejre Kati (Hulbay); Waltz Fantasia, Bel paré (Rupprecht); March, Mit Leier und Schwert (Hammer). 2.30, Interval. 2.45, Gardening Talk. 3.0, See Vienna. 3.50, Variety Programme. 4.30, Concert by the Station Chamber Quintet and the Glückerl Male Voice Choir of Siegen: Songs for Choir; Chamber Quintet: (a) Waltz, Dorfswalben (Jos. Strauss), (b) Ständchen (Heykens), (c) Rustle and Spring (Sinding), (d) Salut d'amour (Elgar); Songs for Choir; Chamber Quintet: (a) Overture, The Italian Girl in Algiers (Rossini), (b) Brise de mer (Leoncavallo), (c) Czardas (Nicklass-Kemper), (d) Musica proibita (Gastaldon), (e) Flirtation (Steek); Songs for Choir. 6.5, Talk on Brazil. 6.35, Reading. 7.0, Reading (Gerrit Engelke). 7.15, Instrumental Concert of Seventeenth and Eighteenth Century Music: Two Fantasia for Four Violins (Purcell); Solfeggietto (P. E. Bach); Two Inventions (Bach); Prelude, (Eberlin); Courante (Muffa); Gigue (Mattheson); Sonata in A for Violin, Viola de Gamba and Harpsichord (Buxtehude). 7.45, Sports News. 9.0, See Munich. 9.10, Topical Talk. 9.30, See Munich. 10.25, Announcements and Sports Notes. 10.50, Serenade and Dance Music, conducted by Eysoldt. 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW., and Dresden, 941 kc/s, 319 metres.—11.30, Transmission for all German Stations: Er ruft seinen Schafen mit Namen-Cantata (Bach), by the Gewandhaus Orchestra, the St. Thomas' Choir and Soloists. 12 Noon, Concert by the Leipzig Symphony Orchestra, conducted by Werner Ludwig: Overture, Armida (Gluck); Serenade in D, Op. 49 (Draescke); German Dances (Beethoven); Three Movements from the Suite in G, Op. 4 (Zieler); Selection from Tosca (Puccini); Two Symphonic Dances (Grieg); Overture, Aber Herr Amtmann (Rüsel); Military March, Op. 101 (Kann); Dance of the Gnomes (Bleyle). 2.0, Talk on Max Reger. 2.20, Talk on Old

Scandinavian Lure and Dance Music with Illustrations. 3.0, See Vienna. 3.45, Die Schilddränger—Radio Play (Karl Wilhelm), after the Book, Denkmürdige Gesichtschonk, by Ludwig Tieck. 5.0, Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber: Overture, L'Épreuve villageoise (Gretry); Selection from Der Freischütz (Weber); Suite, A Summer's Day in the Country (Gade); Suite, Musikalische Dorfgeschichten (Kretschmar); Peasant Dance from the Suite, Op. 36 (Sinigaglia); Tanz unter der Dornlinde (Reinecke); Three Pieces from the Pastoral Suite (Chabrier). In the interval, Poetry and Prose Recitations. 6.30, Discussion: Weather and Clothes for Rambling. 7.0, Pianoforte Recital of Romantic Music, by Franz Wagner. 7.30, Topical Talk. 8.0, See Munich. 9.30, Radio Report of a Military Display, relayed from the Parade Ground, Altengrabow. 10.20, News. 10.30 (approx.), Light Music and Dance Music by the Arno Kaufmann Orchestra of Dresden. 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—5.0 p.m., Concert of Light Music. 8.0, Cello Solos by G. Müller. 9.0, Weather and News. 9.15, Concert by the Station Orchestra. 11.0 (approx.), Close Down.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Concert of Popular Music. In the interval at 11.45, Radio Chronicle. 12.35 a.m. (Tuesday), Sports and Bull-fighting Notes. 12.40, Light Music. 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Announcements, Radio Journal, and Request Gramophone Records. 9.15, News. 9.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.0 p.m., Concert by the Cossack Balalaika Orchestra, conducted by J. Cymliansky. 7.25, See Prague. 10.30, See Bratislava. 11.0 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Relay of a Concert. 1.0 p.m., Time and Weather. 1.10, Gramophone Concert of Classical Music. 2.20, Talk: The National Revolution. 2.50, Whitsuntide in the Bavarian Forest—Folklore Programme. 3.40, Reading. 4.0, Pianoforte Recital. 4.30, Radio Report: A Coastal Voyage in the "Preussen," from Swinemünde to Pillau. 5.30, Orchestral Concert, conducted by Ernst Hagel; Overture, Il Giullare (Ragni); Selection from Gaudemus (Humperdinck); Waltz, Wenn Rosen erwachen (Grützfeld); Potpourri, Jetzt wird's gemütlich (Leuschner). Interlude: Nicotine Poisoning—A Play (Hans Knan). The Venetian Gondola (Lchmann); Mariana-Walzer (Joh. Strauss); Parade in Liliput (Kunze); March from L'Amico Fritz (Mascagni). 6.40, Weather and Sports Notes. 6.50 (from Nürnberg), German Music of the Eighteenth Century—At the Court of the Counts of Schönborn: Partie for Flute, Violin, Cello, and Harpsichord (J. Sehnell); Cantata Puppilette Sdegnosette—for Soprano and String Quartet (Wilderer); Partie in G for Flute, Violin, and Cello (J. Sehnell). 7.40, Talk: The Life of the Rhön Peasantry. 8.0, Styrian Programme, directed by Willibald Frankl of Graz: Zither Music; Alpine Songs; Reading and a Play. 9.0, Josef Stolzinger—Corny reads from his Novel, Christian de Wet. 9.30, He, Zigeuner, griel' in die Saiten!—A Gypsy Rhapsody by the Small Station Orchestra, conducted by Erich Kloss; Soloists: Hugo Becker (Violin), Elizabeth Holzbauer (Contralto), Georg Grauert (Baritone), and Ferdinande Vetke (Recitatives). 10.20, Time and News. 11.0 (approx.), Dance Music, with Vocal Refrains. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.30 p.m., Concert by Norwegian and Swedish Matted Choirs. 6.15, Recitations. 6.45, Violin Recital by Trygve Christensen. 7.15, Weather and News. 7.30, Talk on Röras and its Copper Mines. 8.0, Concert by the Station Orchestra, conducted by Hugo Kraum: Soloist: Björn Tälén (Songs); Prelude and The Death of Isolda, from Tristan

JUNE 5th

MONDAY

continued

und Isolde (Wagner); Aria and Walter's Prize Song, from The Mastersingers (Wagner); Suite (Gjerström); Aria from L'Africaine (Meyerbeer); Aria from L'Pagliacci (Leoncavallo); La donna è mobile, from Rigoletto (Verdi); Symphonie patriotique, No. 6 (Tchankovsky). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Song Recital by Mme. Solveig Bagn. 10.35, Dance Music.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Talk, Report of the Royal Geographical Society and Giornale Radio. 8.20 to 8.45, Gramophone Music. In the interval at 8.30, Time Signal and Announcements. 8.45, Concert of Chamber Music; Soloists: G. Sposito Bonitta (Pianoforte), A. Ruggieri (Cello), M. Castagna (Bassoon); Pianoforte Solos (Chopin): (a) Berceuse, (b) Barcarole; Sonata for Cello (Bocherini); Suite for Bassoon (Longo); Cello Solos: (a) Schianto (Caminetti), (b) Concert Study (Goltermann); Two Pieces for Bassoon; Pianoforte Solos: (a) La leggerezza (Liszt), (b) Rondo (Liapunov). After the Concert, Light Music on Gramophone Records. 10.55, News.

PARIS

EIFFEL TOWER. Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Theatre Notes. 7.0, Le Journal Parlé. 8.20, The Barber of Seville—Opera in Four Acts (Rossini), relayed from the Opéra.

PARIS

POSTE PARISIEN. 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Hot Jazz on Gramophone Records. 7.30, Gramophone Records. 8.0, Scientific Talk. 8.5, Talk on Motor Cars. 8.15, Interval. 8.30, Song Recital by Max Régner. 9.0, Interval. 9.15, Sponsored Concert. 10.15, News.

PARIS

RADIO PARIS. Call CFR; 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd). 7.45, Gramophone Music. 8.0, Press Review and Weather. 12 Noon, Concert of Opera and Ballet Music by the Radio Paris Orchestra: Overture, The Siege of Corinth (Rossini); Selection from La Juive (Halévy); Cavatina from The Prophet (Meyerbeer) on a Gramophone Record; Selection from The Huguenots (Meyerbeer) on Gramophone Records; Selection from Hamlet (Thomas); Four Melodies from Samson and Delilah (Saint-Saëns) on Gramophone Records; Ballet Music from Le Cid (Massenet); Melody from La Légende de Saint Christophe (d'Indy); Selection from Gwendoline (Chabrier); Naimouna (Grovez). In the intervals at 1.0, Exchange and News; and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange. 6.10, Agricultural Talk. 6.30, Light Music on Gramophone Records. 6.50, Talk: The Films of the Week. 7.0, Review of Books. 7.20, Music by the Kretzky Orchestra: Selection from Edipe a Colone (Sacchini); Ballet Music from Javotte (Saint-Saëns). 7.45, Commercial Prices and News. 8.0, The Millennium of Normandy—Musical and Literary Programme arranged by M. Fernand Fleuret. In the intervals at 8.30, News and Weather; and at 8.40, Review by Paul Reboux. 9.15, Press Review. 9.30, Gramophone Concert of Light Music: Petite Suite de Concert (Coleridge-Taylor); Henri Saint-Grieg; Mécanique (Paul Delmet); Lucien Fugère; Ronde d'amour (Hamadine); Selection from The Mikado (Sullivan); Monologue: Le Monsieur qui a avalé un canif (Verneuil); Mousmette (Piccolini); Rosette Guy Talmier (Jean Daris); Two Sketches (Bach and Laverne); The Little Goblins (Eilenberg); Mistinguett. Qu'est-ce que j'ai donc? (Forester); Robert Marino; Carmela (de Curtis); Fred Gouon; Au Pays des Mimosas (Daniderf); Pierre Fal and his Orchestra: Songs my Mother taught me (Dvorak).

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relay by W2XK on 48.85 metres and 25.27 metres.—7.30 p.m., KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Monday Matinee, from New York. 8.45, Human Values. 8.58, Baseball Scores. 9.0, Radio Guild—Drama, from New York. 10.0, Business News and Market Reports. 10.15, Programme to be announced. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal and Hotel McAlpin Orchestra, from New York. 11.15, Weather Report. 11.16, Sport Review. 11.22, Press News-Reeler. 11.29, Temperature Report. 11.30, Programme to be announced. 11.45 to 12.30 a.m. (Tuesday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, Al Mitchell's Orchestra, with Baritone Solos by Everett Marshall. 12.30, Programme to be announced. 1.0 to 4.0, New York Relay. 1.0, Variety Programme. 1.30, Hill Billy Heart Throbs. 1.45, Phil Cook and the Ingram Shavers. 2.0, Siuclair Minstrels. 2.30, Jack Frost Melody Moments. 3.0, Time Signal and the Hour Glass.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—7.5 p.m., Miscellaneous Items and News. 7.25, See Warsaw. 7.58, Time Signal. 8.0, Orchestral Concert of Light Music with the Foxton Quartet and Mlle. Wanda Kedziorowna (Soprano). 9.25, Violin Solos by Marija Szrajberowna. In the intervals, Sports Notes. 10.0, Time Signal, Sports and Police Notes. 10.15 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—3.30 p.m., Concert by Massed Military Bands relayed from Pocerbrady. 5.0, See Brno. 5.45, Talk: Czechoslovak Castles and Parks. 6.0, German Transmission: Musical and Dramatic Programme, followed by News. 7.0, Songs of the Highroad. 7.25, Introductory Talk to the following Transmission. 7.30, Halka—Opera in Four Acts (Moniuszko), relayed from the Opera House. 10.15, News and Sports Notes. 10.30, See Bratislava. 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 750 metres.—7.0 p.m. (from Geneva), Talk on Stamp Collecting. 7.30 (from Geneva), Weather, Talk, and Announcements. 8.0 (from Geneva), Cello Solos by H. Bruzard. 8.20 (from Geneva), Après nous—Comedy in One Act (Michaud). 9.0, Concert of Light Music by the Station Orchestra; Conductor: Robert Echenard. 9.50, News and Weather. 10.0, Concert (cont'd). 10.30 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.30 p.m., Weather Report. 9.40, Musical Programme. 10.0, Chimes and News Bulletin. 10.30, Reading. 11.0, Concert of Popular Music by the Station Quartet, and Songs.

RIGA

572 kc/s, 525 metres; 15 kW.—2.30 p.m., In the Woods and Meadows—Concert on Gramophone Records. 3.30, A Whitsuntide Tale. 4.0, Dance Music. 5.0, Talk on Palestine. 6.30, Concert of Operatic Music by the Women's Choir of the National Opera: Selection from Carmen (Bizet), Il Trovatore (Verdi), and André Chénier (Giordano); Extracts from The Rousaska (Dargomizhsky); Selection from an Opera (Medins); Extracts from Iolanthe (Tchakovsky) and May Night (Rimsky-Korsakov). 6.0, Talk on Horticulture. 6.30, Literary Talk. 7.0, Weather. 7.5, Concert of Caprices by the Radio Orchestra, conducted by A. Parups: Romance, A deux (Durand); Salut d'amour (Elgar); In the Temple of Love (Siedlo); Chant d'amour (Sammartini); It was a Dream (Eilenberg); Good-bye (Tosti); Liebesleid (Kreiser); Plainte (Turina); Tears (Sadun); Souvenirs (Rencé); Waltz; Tears Caprices d'amour (Calvette). 8.0, News. 8.15, Recital of Songs and Arias. 8.40, Concert of Popular Music by the Radio Orchestra, conducted by A. Parups: Overture, Berlin wie es weint und lacht (Conrad); Melody (Humphries); Melody (Sauré); Waltz Potpourri (Fetras); Intermezzo, Am Lagerfeuer (Siede); Selection from Gri-Gri (Lincke); March, Mit Standarten (Blon). 9.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1R0, 680 kc/s, 441 metres; 50 kW. Relay by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Orchestral Concert. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Programme for Children. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30, Concert by Luigi Chiarappa (Cello), Enrichetta Petacci (Pianoforte), and Anna Maria Martucci (Soprano): Sonata in C for Cello and Pianoforte (Caltabiano); Soprano Solos: (a) Serenade (Gounod), (b) Aria from Suor Angelica (Puccini), (c) Aria from Le Cid (Massenet); Cello Solos: (a) Gavotte (Gosse), (b) Etude Caprice (Goltermann); Aria from Ero e Leandro (Bottesini). 6.40, Shipping and Sports Notes. 6.50, Agricultural and Dopplavoro Notes. 7.10, Tourist Report. 7.20, Announcements in Various Languages. 7.40, Giornale Radio. 8.0, Time, Announcements, and Gramophone Records. 8.15, Song Recital by Maria Teresa Barbotti (Soprano). 8.30, Giornale Radio and Sports Notes. 8.30, Othello—Opera in Four Acts (Verdi). In the intervals, Talk and News. Giornale Radio after the Opera.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relay at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 p.m., Book News by Levere Fuller. 9.15, Radio School of the Theatre. 9.45, Lady Next Door, from New York. 10.0 (approx.), to 12.45 a.m. (Tuesday), Interval. 12.45 a.m., Stock Reports. 1.0, Sonamyland Sketch, from New York. 1.30, Dramatized Penny. 1.45, Band of Famous Brands, from New

York. 2.0, Variety Programme from New York. 2.30, WGY Players in One Man's Family. 3.0, Contented Programme, from New York.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER. 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory. 12 Noon (from Zurich), Concert of Operetta Music by the Radio Orchestra. 12.28 p.m., Time and Weather. 12.30, News. 12.40 (from Zurich), Concert (cont'd). 1.30, Time and Weather. 1.40 to 5.0, Interval. 5.0 (from Berne), Light Music on Gramophone Records. 6.15 (from Berne), Rumanian Folk Dance Music—Lecture Recital. 7.0 (from Berne), Time and Sports Notes. 7.5, Concert by the Radio Orchestra. 7.55 (from Berne), Grabbe—A Radio Sequence from the Life of the Dramatist (Düby). 8.15 (from Berne), Operetta Music. 9.0, News. 9.10 (from Berne), Popular Programme. 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relay by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,364.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—10.0 a.m., Talk. 10.15, Orchestral Concert. March, Alte Kameraden (Teike); Scandinavian Folk Music (Bernards); Concert Waltz (Fueik); Potpourri Servus Wien (Dostal); March, The Gladiator's Farewell (Blakenburg). 11.0, Divine Service, relayed from Uppsala, 662 kc/s, 453.2 metres. 12.45 p.m., Weather and Ice Report. 3.0, Racing Report. 4.0, Gramophone Records. 5.5, Programme for Children. 5.45, School Programme, relayed from Falun, 977 kc/s, 307 metres. 6.15, Reading. 6.45, Operetta Waltzes on Gramophone Records. 7.15, Weather and News. 7.35, Tourist Talk. 8.5, Chamber Music Concert. Concerto grosso in D Minor (Handel); Eine kleine Nachtmusik (Mozart); Two Melodies for String Orchestra (Haquinus); Rakastava Suite Op. 14, for String Orchestra (Sibelius); Andante espressivo (Wilkund); Herzwunden (Grieg); Rigaudon (Grieg). 9.15, Kapriol—One-Act Play (Gustaf Ullman). 9.45, Weather and News. 10.0, Dance Music. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Variety Music on Gramophone Records. 12.45 p.m., News. 1.0, Time. 1.1, Schubert Music on Gramophone Records. 2.0 to 4.0, Interval. 4.0, Concert by the Roubaix Wind Instrument Orchestra, relayed from Metz. Conductor, Bousquet. Overture, The Mastersingers (Wagner); Horn Solo; Pavane pour une Infante défunte (Ravel); Trumpet Solo (Chapuis); Ballet Music from Zorriga (Bousquet); Les Préludes (Liszt); Concertino for Clarinet (Weber); Flute Solo: Minuet from Orphée (Gluck); Overture, Taunhäuser (Wagner). In an interval, Talk. 6.0, Film Review. 6.15, Review of the Week in German. 6.30, Gramophone Concert: Songs from the Cycle: Frauenliebe und Leben (Schumann); Songs from the Cycle: Dichterliebe (Schumann); Der Nussbaum (Schumann); Die Forelle (Schubert); Songs from the Cycle: Frauenliebe und Leben (Schumann). 7.30, Time and News. 7.45, Gramophone Music. 8.20, Lottery Results and Announcements. 8.30, Le Jour et la Nuit—Operetta in Three Acts (Lecocq). 10.30 (approx.), Close Down.

STUTT GART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—11.30 a.m., Transmission for all German Stations relayed from Leipzig. 12 Noon, Concert from Frankfurt. 1.0 p.m., See Langenberg. 2.30, Talk: The Small-Holder and his Garden. 3.0, See Vienna. 3.45, See Frankfurt. 4.30, See Frankfurt. 5.30, See Munich. 6.40, Sports Notes. 7.0, See Frankfurt. 10.10, Time, Weather, and News. 11.0, Dance Music from Munich. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.30 p.m., Symphonic Poem, Les Préludes (Liszt) by the Symphony Orchestra. 6.45, Programme by an Argentine Orchestra. 7.0, Instrumental Solos. 7.15, Horse Racing Results, Market Prices and News. 7.25, Local News. 7.30, Operetta Music. 7.45, Concert of Light Music. 8.15, Military Music. 8.30, Sound Film Music. 8.45, Accordion Solos. 9.0, Extracts from Rigoletto—Opera (Verdi). 9.30, Dance Music and Vocal Tangos. 10.0, Operetta Music: Airs from (a) Miss Helyett (Andran), (b) Beau Brummel (Hahn), and (c) Le Pré aux Clercs (Hérold). 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Request Concert. 11.30 to 12 Midnight, Programme in English by the

I.B.C., W. Brown-Constable announcing. 11.30, Dance Music: I love a Parade: The Flies crawled up the Window; Goodnight Vienna; Can't we meet again?; I want to cling to Ivy; Sweethearts of Yesterday. 11.57, I.B.C. Goodnight Melody. 12 Midnight, News. 12.5 a.m. (Tuesday), Orchestral Music. 12.15, Military Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 to 6.0 p.m., See Turin. 6.0 to 6.35, Interval. 6.35 till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relay by Milan, 912 kc/s, 331.6 metres; Genoa, 959 kc/s, 315.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.0 to 6.0 p.m., Variety Concert. 6.35, Giornale Radio and Announcements. 7.0, Time, Tourist Report and Gramophone Music. 7.20, Announcements in Various Languages. 7.40, Gramophone Music. 8.0, Announcements and Gramophone Records of Orchestral Music. 8.30, Orchestral Concert, conducted by Andrea Marchesini. Overture, The Thieving Magpie (Rossini); Selection from Ero e Leandro (Mancinelli); Minuet (Mozart); Polonaise (Chopin, arr. Vessella); Intermezzo from William Ratcliff (Mascagni); The Second Hungarian Rhapsody (Liszt); Prelude to and Dance of the Hours from La Gioconda (Ponchielli). 9.45, Talk. 10.0, Programme of Light Music.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Italian. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relay by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 667 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—11.0 a.m., Procession and Costume Festival in connection with the meeting of the Association for Germans abroad, relayed from Klagenfurt. 12 Noon, Reading. 12.30 to 2.0 p.m., Concert by the Vienna Chamber Orchestra, conducted by Karl Anserih. Soloist: Eva Hadrahova (Soprano). 2.55, Time and News. 3.0, Radio Report on the Procession and Costume Festival, relayed from Klagenfurt. 3.15, Chamber Music by the Brandl Trio. 4.15, Talk on the Austrian Landscape. 4.40, Orchestral Concert. 6.10, Talk on Paracelsus, a Swiss Physician. 6.35, Talk: Vienna and the Viennese. 7.5, Pianoforte Recital by Walter Kerschbamer. 7.50, Time and News. 8.0, Der Orlov—Operetta in Three Acts (Granichstaedten). In the interval at 9.45 (approx.), News. 10.15, Dance Music.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—12.45 p.m., Gramophone Music. 2.0, Agricultural Talk. 2.20, Choral Music. 2.40, Agricultural Talk. 3.0, Gramophone Music. 4.0, Programme for Children. 4.25, Gramophone Music. 4.46, Talk. 5.0, Recital by A. Lenczewska-Slawinska (Mezzo-Soprano) and E. Melman-Diechawska (Pianoforte). Aria from Le Cid (Massenet); Song, La Captive (Berlioz); Prelude and Fugue in D (Bach-D'Albert); Aria from The Queen of Spades (Tchakovsky); Song (Tchakovsky); Song (Wielhorski); Berceuse (Niewiadomski); Tarantella, Venezia e Napoli (Liszt); Die Söhner (Moniuszko-Meleer); Waltz from Die Fledermaus (Strauss-Grünfeld). 5.25, Programme Announcements. 6.0, Concert by the Cathedral Choir, relayed from St. John's Church, Turin. 6.55, News. 7.0, Miscellaneous Items. 7.25, Dramatic Programme. 7.55, Interval. 8.0, Concert by the Station Orchestra, conducted by J. Oziminski. Soloist, A. Wronski (Tenor). Polonaise (Kurjinski); Selection from Verbun nobile (Moniuszko); Entr'acte from Livia Quintilla (Noskowski); Dances of the Tatra Mountains (Paderewski-Opienski); Sicilienne from Cavalleria rusticana (Mascagni); Aria from Cavalleria rusticana (Mascagni); Arioso from Zaza (Leoncavallo); French Comedy Overture (Keler-Bela); First and Second Suite from Carmen (Bizet); Neapolitan Song (Falvo); Spanish Song, Rosalinda (E. de Espente); Nina querida (Bucci-Peccia); Neapolitan Song (Barthelemy); Peasant Dance (Polinski); Selection from Le Tribut de Zamora (Gounod); Intermezzo from Nalla (Delibes); First Rhapsody (Liszt). In the interval, Sports Notes. 10.0, Answers to Correspondence, and Technical Hints. 10.15, Dance Music. 10.55, Weather and Police Notes. 11.0, Dance Music.

WILNO

533 kc/s, 563 metres; 10 kW.—5.15 p.m., Programme Announcements. 6.0, Programme relayed from Turin. 6.55, News. 7.0, Sports Notes. 7.15, Miscellaneous Announcements. 7.25, See Warsaw. 8.0, Pianoforte Recital of Classical Music. 8.35, See Warsaw. 12 Midnight (approx.), Close Down.

ZURICH.—See Schweizerischer Landesender.

TUESDAY

JUNE THE SIXTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Chamber Music.
LONDON REGIONAL	Songs from the Shows, feature programme by John Watt.
MIDLAND REGIONAL	Orchestral-ballad Concert.
NORTH REGIONAL	Orchestral Concert.
WEST REGIONAL	Vaughan Thomas Choral Concert.
BELFAST	"The Broadcast Bran-tub," feature programme.
ABROAD	
BERO-MUNSTER	8.0 p.m. Opera: "Rienzi" (Wagner), from Zürich.
BRUSSELS (No. 1)	8.0 p.m. Orchestral Concert of Modern Music.
BRUSSELS (No. 2)	8.0 p.m. The Station Symphony Orchestra.
COPENHAGEN	8.1 p.m. Concert of French Opera Music.
MUNICH	8.5 p.m. Opera: "The Queen of Spades" (Tchaikowsky), from the National Theatre.
POST	8.30 p.m. Orchestral Concert of old and modern Italian Music.
PARISIEN	8.45 p.m. Chamber Music.
RADIO-PARIS	8.45 p.m. Symphony Concert.
ROME	8.45 p.m. Symphony Concert.
WARSAW	8.10 p.m. Opera: "Chopin," by Orefice.

ATHLONE
725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 p.m., Time, Gramophone Music, Exchange and Weather. 6.0, Programme for Children. 6.45, News. 7.0, Talk. 7.15, Talk: Coursing in the Open. 7.30, Time. 7.31, Orchestral Music. 8.0, Soprano solos by K. McNully. 8.10, Violin Solos by J. Ballantine. 8.25, Soprano Solos by K. McNully. 8.35, Orchestral Music. 8.50, Tenor Solos by P. O'Toole. 9.5, A Revue by Eve Brennan and Company. 9.45, Sponsored Concert. 10.45, Time, News and Close Down.

BARCELONA
RADIO-BARCELONA (EAJ1), 860 kc/s, 349 metres; 8 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Concert. 8.30, Exchange and Talk on the History of Art. 9.0, Gramophone Concert. 9.15, Football Report, Gramophone Records, and News. 10.0, Chimes, Weather, Messages for Seamen, Exchange and Market Prices. 10.5, Variety Concert. 10.30, Guitar Recital. 11.0, Concert by the Station Orchestra; soloist: Enrique Queta Noguera. In the interval at 12.0, **Midnight, News**. After the Concert, Gramophone Records. 1.0 a.m. (Wednesday), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Report, Tourist Talk and Dopolavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35, Concert by the Molfetta Mandoline Quartet: Overture, The Italian Girl in Algiers (Rossini); Flora (Sartori); Il bel pupetto (Marchesani); Selection from Rigoleto (Verdi); Symphony in G (De Giovanni); The Madonna (Sweet); Minuetto (Badiali); Selection from A Masked Ball (Verdi); March from Tannhäuser (Wagner). In the intervals, Literary Notes and Announcements. 10.30, Gramophone Music. 10.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE
697 kc/s, 430.4 metres; 2.8 kW.—6.55 p.m., Time and Programme Announcements. 7.0, Gramophone Music. 7.20, Talk. 7.50, Yugoslav Songs by Zika Tomić. 8.30, Programme relayed from Zagreb, 977 kc/s, 307 metres. 10.30, Time Signal and News, followed by Light Music, relayed from a Restaurant.

BERLIN
DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 40 kW.—2.0 p.m., Gramophone Concert: Music of Many Lands. 3.0, Talk for Young People: Experiences of Hunting in Africa. 3.30, Weather and Exchange. 3.45, Reading: Matter ohne Tod (Hanns Johst). 4.0, See Leipzig. 5.0, Talks for Women. 5.25, Topical Talk. 5.35, Sonata quasi Fantasia, Op. 6 (Felix Dessecker), played by Johannes Strauss (Pianoforte). 6.0, A Poem. 6.5, Ballad: Recital by Fritz Düttendorf: Two Ballads (Hans Herrmann); (a) Alte Landsknechte. (b) Jung Diethelm; Three Songs (Karl Loewig); (c) Prinz Eugen; Der Dielcher spricht (Hans Herrmann). 6.30, Political Press Review. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, An Epigram. 8.5 (approx.), A Play (Dario Nicodemus). 9.0, Dance Music by the Eugen Jahn Band. 10.0, News, followed by Talk: Aviation in England. 10.45, Weather Report for Shippings. 11.0, Concert from Hamburg. 12.0, **Midnight** (approx.), Close Down.

BERLIN
WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.15, Book Review. 6.40, The Witzleben Station informs its Listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, See Hamburg. 8.55, Concert by the Station Choir. 9.10, Concert, relayed from the Traube Wein Restaurant. 9.40, Violin Concerto Gregoriano (Respighi), by Georg Kniesstädt (Violin), and the Station Orchestra, conducted by Dr. Rudolf von Schmidt-seck. 10.10, News. 10.30, Orchestral Concert from Hamburg. 12.0, **Midnight**, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER. — See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE
936 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.30, News. 7.40, Talk for Women. 7.55, Lottery Results. 8.0, Topical Talk. 8.15, News. 8.30, See Paris (Eiffel Tower).

BRATISLAVA
1,076 kc/s, 279 metres; 14 kW.—6.25 p.m., Violin Recital by Rudolf Ibl: Four Pieces

for Violin and Pianoforte, Op. 17 (Suk); (a) Quasi ballata, (b) Appassionato, (c) Un poco triste, (d) Burlesque; Spanish Dance No. 8, Op. 2 (Sarasate); Turkish March (Smetana); The Flight of the Bumble Bee (Rimsky-Korsakov). 6.55, Talk for Housewives. 7.0, See Prague. 7.10, See Brno. 8.25, See Prague. 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU
923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.15 p.m., Gramophone Concert: Overture, Abu Hassan (Weber); Flight of the Bumble Bee (Rimsky-Korsakov); Scherzo from Tsar Saltan (Rimsky-Korsakov); Potpourri (Morena); Selection from Mignon (Thomas); Eine Nacht, ein Lied und Du (Cezzy-Jäger); Overture: The Barber of Bagdad (Cornelius-Liszt); Blumengefüßter (Blon); Ballet Suite (Pope); Tango, Nostalgia del Deserto; Daisy Waltz (Darey); York March; (Beethoven). 2.15, Programme arranged by the Post Office, with Gramophone Records. 3.10, Agricultural Prices. 3.40, Programme for Children. 4.10, Paul Mittmann Recital, Erica Hoffmann (Soprano), Rainer Grund (Clarinet), Paul Mittmann (Flute), Kurt Hattwig (Pianoforte), and Hermann Gaupp (Recitations). 5.0, Review of Books on the National Revolution. 5.15, Agricultural Prices. 5.20, Concert by the Station Orchestra, conducted by Bruno Janz. Old Styrian Suite (Pacherwegg); Diavoletta (Lindemann); Im wogenden Aehrenfeld (Dransmann); Three Irish Sketches (Ansell); Serenade, Ein Frühlingsgruss (Schicke); Clog Dance (Petras). 6.0, Talk: Germans in Other Lands. 6.25, Topical Talk. 6.50, Weather, News, and Market Prices. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, See Berlin (Deutschlandsender). 9.0, Concert by the Station Orchestra, conducted by Franz Marszałek. 10.0, News. 10.20, Political Press Review. 10.40, Talk: The Reorganisation of the Provincial Theatre. 11.0, Talk: By Water from Breslau to Stettin. 11.15, Concert from Hamburg. 12.0, **Midnight** (approx.), Close Down.

BRNO
878 kc/s, 342 metres; 35 kW.—6.15 p.m., Talk for Workers. 6.25, German Transmission: News, Scientific Talk, and Agricultural Talk. 7.0, See Prague. 7.10, Modern Melodies and Songs. 8.10, Talk: American Negroes. 8.25, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)
590 kc/s, 509 metres; 15 kW.—12.00 Noon, Concert of Italian Music by the Small Station Orchestra, conducted by P. Leemans: Overture, Semiramis (Rossini); Ballet, The Seasons (Verdi); Sicilienne and Aria (Mas-

cagni); Serenade (Toselli); Ballet Music (Ponchielli); Overture, Norma (Bellini). 12.40 p.m., Music by Virtuoso Composers on Gramophone Records. 1.0, Journal Parlé. 1.10, Wind Instrument Concert on Gramophone Records. 1.35, Organ Recital on Gramophone Records. 5.0, Hungarian Concert by the Radio Orchestra, conducted by Franz André: Hungarian March (Berlioz); Hungarian Rhapsody No. 14 (Liszt); Hungarian Dances Nos. 2 and 3 (Brahms); Fantasia on Hungarian Themes (Manfred). 5.30, Programme for Children. 6.5, Literary Review. 6.15, Mussorgsky Concert on Gramophone Records. 7.15, Film Review. 7.30, Talk for Women and Notes on Art. 8.0, Concert of Modern Music by the Radio Orchestra, conducted by Franz André: Suite (Ibert); The Nursery (Inglebrecht); Chaconne de l'Impératrice (Honegger); Danse des enfants (Honegger); Le train bleu (Milhaud); Burlesque (Poot); Five o'clock from L'enfant et les sortilèges (Ravel). 8.45, Talk: The Need for Economy. 9.0, Concert by the Radio Orchestra, conducted by Franz André: Overture on Spanish Themes (Gevaert); Andalusian Serenade (Grieg); Spanish Serenade (Glazunov); Spanish Symphony (Lalo); Jota aragonese (Saint-Saëns); Habanera (Chabrier). 9.45, Tenor Solos by Anseau on Gramophone Records. 10.0, Journal Parlé. 10.10, Request Gramophone Records. 10.35, String Quartet (Honegger). 10.55, Christus vincit (Liszt).

BRUSSELS (No. 2)
N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish.—12.00 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans: Pablo (Rossi); Orientale (Armandola); Selection from Les Cloches de Corneville (Planquette); Gramophone Record: Song, Cara Piccini (Lama); Two Italian Songs (Volpatti); Pianoforte Solo: Castilla (Alhéniz); Gramophone Record: Song, Reginella (Lama); Selection from sunny (Kern). 5.0, Gramophone Concert. 5.45, Programme for Children. 6.30, Concert of Jewish Music. In the interval, Recitation. 7.15, Talk: Zionism. 7.30, Talk for Tourists. 8.0, Concert by the Station Symphony Orchestra, conducted by J. Kumps. Soloist: Mlle. Ida Lowy (Pianoforte). Symphonic Poem, Till Eulenspiegel's Merry Pranks (R. Strauss); Selection from Le Carnaval des Animaux (Saint-Saëns); Pianoforte Solos: (a) Sonata, Les Adieux (Beethoven), (b) Etincelles (Moszkowsky), (c) Perpetuum mobile (Weber); Selection from The Bartered Bride (Smetana); Reading: Marche joyeuse (Chabrier); Spanish Rhapsody (Chabrier); Gramophone Records: (a) Aria from The Pearl Fishers (Bizet), (b) Mon coeur soupire (Mozart), (c) Largo (Händel), (d) The Prize Song from The Mastersingers (Wagner); Selection from The Barber of Seville (Rossini). 10.0, Le Journal Parlé. 10.10, Gramophone Concert.

BUCHAREST
761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Motei Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Programme. In the interval at 7.20, Gramophone Records. 8.0, Song Recital by Spiridon Dumitrescu. Cavatina from Ernani (Verdi); Aria from Act III of The Girl of the Golden West (Puccini); Legend of the Grail, from Lohengrin (Wagner); La Fantasia ou Galeata (Montia). 8.20, Talk on the Composer Cyprien Porumbescu. 8.30, Porumbescu Concert by the Station Orchestra and the Zlatari Church Choir. 9.15, Light Music and Romanian Music by the Station Orchestra. 9.45, Radio Journal. 10.0, Talk in French on Romania.

BUDAPEST
545 kc/s, 550.5 metres; 18.5 kW.—Programme also relayed on 840 metres from 8.30 p.m. till Close Down.—5.0 p.m., Cello Recital. 5.30, Talk. 6.0, Recital of Sacred Music from Pécs Cathedral. 7.0, French Lesson. 7.20, Pianoforte Recital: Fantasia in C Minor (Mozart); Sonata in A Flat, Op. 10 (Beethoven); Etude de Concert (Pierné). 7.50, Market Prices. 8.0, Talk. 8.30, Recital of Hungarian Folk Songs, with Gypsy accompaniment, relayed from the Café Ostende. 9.30, News. 9.45, Concert by the Opera House Orchestra, conducted by Ferdinand Rekal. Soloists: Anna Bathy and Franz Szekelyhidy. Overture, A Midsummer Night's Dream (Mendelssohn); Stimmungsbilder (Rekai); Songs (Rekai); Moments musicaux (Schubert-Dohányi); Songs (Turry Pergrin); Scherzo (Rimsky-Korsakov); Turkish March (Mozart). In an interval at 10.30, Weather. 11.15, Dance Music from the Confiserie Floris.

CASSEL.—See Frankfurt.

COPENHAGEN
1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,163 metres.—12.00 Noon, Time and Chimes from the Town Hall. 12.1 p.m., Concert from the Hotel d'Angleterre. 2.0, Sacred Concert, relayed from the Cathedral, Aarhus. Toccata and Fugue in D Minor for Organ (Bach); Two Arias (Bach); Chaconne in F Minor for Organ (Pachelbel); Two Danish Folk Melodies; Two Choral Preludes (Emborg); Two Songs (C. E. F. Weyse); Whitsun Prelude (Jørgen Nielsen). 3.0, Concert by the Station Orchestra, conducted by Launy Gröndahl. Overture, Gustave III (Anber); Allegretto scherzando from the Symphony in F, No. 8 (Beethoven); Bourrée, Aria and Minuet, arranged for Strings (Gröndahl); Waltz, Amoretten-tänze (Gung'l); Selection from Scheherazade (Rimsky-Korsakov); First Movement from the Military Symphony (Haydn); March and Dance from Hydrinden og Skorstensfejeren (August Enna); Polka Mazurka on themes from Der Bettelstudent (Müllöcker); Serenade (Levermann); Fantasia (Piskucek); March, The King's Guard (Keith). In an interval at 3.45 (approx.), Reading. 5.0, Programme for Children. 5.35, Exchange and Market Prices. 5.50 (from the Aalborg Studio), Talk. 6.20, German Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.30, Talk: Population and Provisions. 8.0, Town Hall Chimes. 8.1, Concert of French Opera Music by the Radio Orchestra, conducted by Emil Reesen. Soloist: Ingeborg Steffensen (Songs). Overture, Le Cheval de Bronze (Anber); Prelude to the First Act and Intermezzo from Carmen (Bizet); Seguidilla from Carmen (Bizet); Smugglers' March from Carmen (Bizet); Habanera from Carmen (Bizet); Procession from Carmen (Bizet); Aria from Samson and Delilah (Saint-Saëns); Overture, Le Corsaire (Berlioz). 9.0, Jutland Programme—Talk, Songs and Reading. 10.0, News. 10.15, Sonata in G for Flute and Pianoforte, Op. 18 (P. Jensen). 10.35, Mandoline Music. Neapolitan Rhapsody (Calace); Two Spanish Dances (Sarasate); Schön Rosmarin (Kremler); Concert Mazurka (Calace). 11.0, Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP
1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C., T. St. A. Ronald announcing. 4.30, Concert for Torquay and Exeter Listeners: Wiener Mid'n (Zielner); The Sunshine of your Smile; Git along (Austin); Seven Veils (de Sylva); Sphärenklänge (Strauss); Diré dishin' Daisy (Klein); Trees (Rasbach); Dear Old-fashioned Thing (Larrington); Selection from Les Millions d'Arlequin (Drigo); Two Eyes of Grey (McGeogh); When it's sleepy Time down South; Old Spanish Song (Aubert). 5.15, Military Band, Concert for Plymouth and Devonport Listeners: Potpourri of Regimental Marches: Amoretten-tänze (Gung'l); Der Rosenhochzeitung (Jessel); Valse des Alouettes (Drigo); Cornet Solo: Carnival of Venice (Briccioli); Præledium (Jarnefeld); Ca c'est Paris (Padilla); Cornet

JUNE 6th

TUESDAY

continued

Solo: Il Bacio (Arditi); Loin du Bal (Gillet); 1812 Overture (Tchaikovsky); The Gladiators' March (Sousa); 6.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Heolians: Three Little Times (Sarony); If you were only mine (Newman); I don't know why (Turk-Ahler); My silent love (Suess); When Yuba plays the Rumba on the Tuba (Upfeld); Bahama Mama (Gilbert); In sunny Monterey (Nichols); Cabin in the Cotton (Parish); For you, just you, my baby (Connelly); Love me to-night (Rodgers); Night shall be filled with Music (Collins); Isn't it Romantic (Rodgers); This is my Love Song (Burke); Just another Dream of you (Burke); Give me a Tune. 11.0, Instrumental Solos: Some of these Days (Brooks); Now I'm in Love (Shapiro); St. Louis Blues (Hardy); Under the Double Eagle (Tapiero); March, Father Rhine (Porschman); Here comes the Band (Bowers); In the Moonlight (Mellugh); International Medley of Jigs and Reels. 11.30 Orchestral Music: Selection from Faust (Gounod); Princess Pat (Herbert); Suite from La Source (Debussy); In the Gloaming (Chaminade); Songs: (a) Wine, Woman and Song (Strauss); (b) The Bull's Song from The Tales of Hoffmann (Offenbach); Humoresque (Dvorak); Baccanale from The Seasons (Glazunov); Selection (Kallman). 12 Midnight, Club Concert for Leighton Buzzard Listeners: Marching Song (Benatzky); Little David play on yo Harp (White); Cocor brisé (Gillet); Bye and bye (White); When everyone has passed you by (Wheldon); If you are faithless (Benatzky); Little Grey Home in the West (Lohr); Sign no more Ladies (Stevens); Bella, the Bold Bad Bandit (Wheldon); Way out West in Kansas; Annie Laurie (Trad.); Minuet No. 1 (Paderewsky); The Lincolnshire Poacher (Trad.); Come to the Fair (Easthope-Martin); Waltz, La Sirene (Waldteufel). 1.0 a.m. (Wednesday). Vocal Duets: Sunshine Charlie (Whidden); Just a Little Tear (Steyn); Koppaka-banna (Carlton); Orchestral Selection from The Count of Luxembourg (Lehar); Yes, indeed (Seyler); When I catch you alone (Steyn); I've always wanted to call you my Sweet-heart (Ward). 1.30, Variety Concert: Here comes Annie Lee; seven Pounds of Heaven; The Jolly Sailor; A Good old Irish Stew; The Gladiator; My Bonnie Highland Maggie; Sergeant Jack McPhee; 2.0, Dance Music by the Heolians: Sharing (Lombardo); We just couldn't say good-bye (Woods); With Summer coming on (Ahler); I'll never be the same (Kahn); You rascal, you (Theard); Room 1411 (Goodman); Jungle Blues (Walton); Get Cannibal (Weems); Clarinet Marinalade (Shields); The Sheik of Araby (Wheeler); Sweet Sue, just you (Harris); Blue Kamble (Ellington); Cotton Club Stomp (Ellington); Is I in love, I is (Robinson); Wall Street Wall (Ellington); Hummin' to myself (Magidson). 2.57, I.B.C. Good-night Melody. 3.0 (approx.). Close down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.0 p.m., German Almanac. 6.15, Italian Lesson. 6.45, Topical Talk. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Mandoline Concert, by the 1925 Tonika Society; March, Auf Schwarzwalds Auen (Köhler); Waltz, Am Wörther See (Koschat); Dornröschens Brautfahrt (Rhode); Variations on the Song, Gretula (Stoye); Kärntner Liedermarsch (Seifert). 8.30, See Leipzig. 10.0, Variety Programme. 10.15, Time and News. 10.45, Programme from Stuttgart. 12 Midnight (approx.). Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call Ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.20 p.m., Review of New Books. 6.45, Exchange and Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0 (from Hanover), Hermann Löns Programme by Hermann Munk (Songs to the Lute) and Wilhelm Hochgreve (Recitations); Introductory Talk; Songs to the Lute: (a) Auf der Lüneburger Heide (Rahlfs); (b) Iohn und Spott (Meinberg); Recitation: Amalie; Songs to the Lute: (a) Auf der Gartenbank (Hannes Ruch); (b) Tanzlied (Karl Meinberg); Recitation: Die Brockenfahrt; Songs to the Lute: (a) Heckenkind (Hannes Ruch); (b) Der Spuk (Hannes Ruch). 8.45, Mozart Festival Concert by the

Station Orchestra, conducted by Adolf Secker; Soloists: Erna Kroll-Lange and Bernhard Jackschat (Songs), Trude Mein, Kurt Eggers-Kestner, and Carl Gerhard Schröder (Recitations); Overture: Der Schauspielersdirektor; Conversation between the Emperor Joseph II and Ditters von Dittersdorf; German Dances; Joseph Haydn's Mozart Letter; Minuet from the Symphony in E Flat; Goethe's Remarks on Don Giovanni; Champagne Aria from Don Giovanni; Weber on Il Seraglio; Overture, Il Seraglio; Grillparzer's Hymn for the Mozart Festival; Aria from Figaro; Brahms on Figaro; Overture, Figaro. 10.0, News. 10.20, Topical Talk. 10.30 (from Hanover), Orchestral Concert, conducted by Otto Ebel von Sosen; Overture, Mein Jugend (Lehar); Selection from La Bohème (Puccini); Swedish Rhapsody (Alfvén); Polka, Die Königin (Raff); Noch sind die Tage der Rosen (Baumgartner); Pesthler Walzer (Lanner); Selection from Light Cavalry (Suppé); Intermezzo, Wasserspiele (W. Rusch); Grazer Bummel-Marsch (Stilp).

HANOVER.—See Hamburg.

HEILSBURG

1,086 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert of Variety Music. In an interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Agricultural Prices and Exchange. 3.30, Programme for Children. 4.0, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetitzky: Frühlings-Ouverture (Goetz); Divertimento No. 15 in B Flat (Mozart); Selection from Manon Lescaut (Puccini); Overture, Peter Schmolli (Weber); Waltz from Eugene Onegin (Tchaikovsky); Overture, Die schöne Galathée (Suppé); Second Movement from the Military Symphony No. 11 (Haydn); Overture, The Gipsy Baron (Joh. Strauss); March (Schubert). 5.45, Book Review. 6.15, Agricultural Prices. 6.25, Talk on the Königsberg Fire Brigade. 6.50, Weather. 7.0, Transmission for all German Stations: The Seventh Centenary of the Town of Marienwerder. Description of Marienwerder and its Surroundings from the Castle Tower. Part Relay of a Service in the Cathedral: (a) Prelude for Organ, (b) Psalm III, by the Choir, (c) Talk: Marienwerder from a Historical Point of View; Report on the Historic Festival Procession; Youth Demonstration in front of the High School, with an Address by Fritz Albrecht. 8.0, See Hamburg. 8.45, Weather and News. 8.50 (from Danzig), Variety Programme. 10.15, Weather and News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Entire Programme by the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—11.40 a.m., Time Signal and Gramophone Music. 11.55, Concert by the Rentmeester Ensemble. In the interval, Gramophone Music. 1.55 to 2.10, Interval. 2.10, Gramophone Music. 2.40, Talk on Fashions. 3.40, Pianoforte Recital by Cor de Groot: Jeux d'eau (Ravel); Pieces (Debussy); (a) Children's Corner, (b) Reflets dans l'eau, (c) General Lavine—Eccentric. 4.10, Concert by a Children's Choir. 4.40, Programme for Children. 5.10, Popular Music by Kovacs Lajos and his Dance Orchestra. 6.10, Talk. 6.40, Kovacs Lajos and his Dance Orchestra (cont'd.). 7.10, Talk: Holiday Trips. 7.40, Time, Weather and News. 7.45, Concert by the Wireless Orchestra, conducted by Nico Treep. Soloist: Caroline Lankhout (Pianoforte). Overture, The Magic Flute (Mozart); Pianoforte Concerto No. 1 in C (Beethoven); Minuet in D (Mozart); Concert Waltz (Glazunov); Marche solennelle (Tchaikovsky). 8.40, Do you know why?—Detective Mysteries—III. 8.55, Orchestral Concert of Old Favourites: Spanish March, Granada; Sous les poutres de Paris; Shadow Waltz; Lincke Potpourri; Salem Aleikum. 9.20, Louis Noiret in his Repertoire. 9.40, Concert by the Wireless Orchestra: Overture, Le fils du Mandarin (Cui); Waltz, Verschmälzte Liebe (Lincke); Dornröschens Brautfahrt (Rhode); Die Spieluhr der Ponpadour (Noack); Kleinbahnfahrt (Ratlke); Serenata amorosa (Bece); Russian Fantasia (Kirchstein); Hungarian Dances Nos. 1 and 10 (Brahms); La voix des cloches (Luigini); Florentine March (Fucik). 10.40, News. 10.50, Gramophone Music. 11.40 (approx.). Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.55 a.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.). 11.55 a.m., Concert by the Con Brio Trio. 1.25 to 1.40 p.m., Interval. 1.40, Programme for Women. 2.40, Pianoforte Recital by C. Ponten: Three Preludes (Chopin); Waltz (Brahms). 3.0, Recitations. 3.20, Pianoforte Recital (cont'd.): Vieille diligence sur la route de

Muzellan (Baton); Pieces (Debussy): (a) La Cathédrale engloutie, (b) La fille aux cheveux de lin, (c) Minstrels, (d) Golliwog's Cheek-walk. 3.40, Report from the Ford Motor Factory at Amsterdam. 5.10, Concert by the K.R.O. Orchestra, conducted by J. Gerritsen: Overture, Alfonso and Estrella (Schubert); Zwischenaktsmusik (Schubert); Three Contredanse (Beethoven); Selection from Fidelio (Beethoven). 5.55, Gramophone Music. 6.10, Concert (cont'd.): Dance (Sinigaglia); Selection from Le Bourgeois Gentilhomme (R. Strauss); Fantasia (Beethoven). 6.40, Police Notes. 6.55, Talk: The French Revolution of 1789. 7.15, Concert (cont'd.): Selection from Philemon et Baucis (Gounod). 7.25, Talk. 7.40, Concert by the Blind of the St. Henri Institute for the Blind, Grave; Bravest of the Brave (Gay); Overture, Marie Henriette (Montagne); Selection from Carmen (Bizet); Melody (Montagne); Songs by the Male Voice Choir. Address by the Director, Mareh (Schoote-meyer); Selection from The Caliph of Bagdad (Boikdien); Dutch Peasant Dances (Sicp); March (Holzmann). In the interval at 8.10 (approx.), News. 9.10, Concert by the K.R.O. Boys with Songs by J. Mossel. 9.40, Sports Talk. 9.50, Concert by the K.R.O. Boys (cont'd.). In the interval at 10.10, News. 10.40, Gramophone Music. 11.40 (approx.). Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., News Bulletin. 8.10, Agricultural Talk. 8.20, Programme arranged by the Association des Amis de Radio Côte d'Azur. 8.35, Radio Concert. 9.0, Weather and News. 9.15, Gramophone Concert. 9.45, Tomas and his Merry Boys Orchestra, relayed from the Casino. 12 Midnight to 1.0 a.m. (Wednesday), Programme in English by the I.B.C., H. K. Hitechoek announcing. 12 Midnight, Concert of Light Music: Trees (Rasbach); Shall my Soul pass through Ireland? (Molloy); Farewell my native Irish Home (Biggs); Just once for all time, from Congress Dances (Heymann); Live, Laugh and Love, from Congress Dances (Heymann); Sleep on (Offenbach); My Man (Adams); Stardust (Carmichael). 12.30 a.m., Dance Music: Leave a little for me; How are you? How do you do, Mr. Brown? Let's all dance the Polka; I called to say Good-night; Till to-morrow; Street of Dreams; I may never pass your way again. 12.57, I.B.C. Good-night Melody. 1.0 (approx.). Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Concert of Popular Music by the Station Sextet. 6.45, Talk. 7.10, Concert by the Station Orchestra, conducted by Erkki Linko: Romantic Overture (Keler-Bela); The Wedding of the Winds (Hall); Melody from Les Cloches de Corneville (Planquette); Picador March (Oscheit). 7.50, Talk. 8.15, Cello Recital by Tauno Hannikainen: Etude in C Sharp Minor, Op. 25 (Chopin); Berceuse (Madoetaja); Chant triste (Arensky); Nocture (Goltermann); Spring Song (Mendelssohn). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Military Music relayed from the Kappeli Restaurant. 10.0 (approx.). Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert conducted by Wolf: Prelude to Die Lorelei (Bruch); Rhapsody No. 1 (Friedemann); Ich liebe dich (Grieg); An den Frühling (Grieg); Selection from Tosca (Puccini); Schleier-Intermezzo (Schillings); Indiana Suite (Lüling); Selection from Frederica (Lehar); Waltz, G'schichten aus dem Emmental (Pachernegg). In the interval at 2.0, News. 2.30, Meat Market Prices. 3.0, Programme for Children. 3.30, Economic Notes and Time. 4.0, Talk on the Teaching of Mathematics. 4.30, Concert by the Orchestra, conducted by Eysokit, the Station Choir conducted by Maier and Egbert Grape (Pianoforte); Polonaise (Svendsen); German Dance Suite (Gerster); Choir: Three Songs, Op. 20 (Picciler); (a) I'm Mitternacht, (b) Adagio, (c) Kehraus; Norwegian Dances (Grieg); Three Dances for Pianoforte (Hans); (a) Mazurka, (b) Gavotte, (c) Waltz; Ein heiteres Vorspiel (Kark). 5.50, Talk on Collecting. 6.0, Talk: Revolution and Bureaucracy. 6.25, Italian Lesson. 6.45, Weather, Time, Economic Notes and Sports Report. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, News. 8.5, Topical Talk. 8.15, Readings from Bismarck's Speeches, with Introductory Talk. 8.45, Concert by the Station String Quartet. Soloists: Hansen (Soprano), Guermanova

(Contralto), Woeke (Baritone), and Stenzen (Bass). 10.20, News and Sports Report.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 369.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—1.15 p.m., Rhenish Songs and Drinking Songs on Gramophone Records. 2.30, News. 3.15, German for Germans. 3.35, Economic Notes. 4.0, Concert by the Dresden Soloist Ensemble, Posthumous Quartet Movement in C Minor (Schubert); Divertimento for Violin, Viola and Cello (Vincenz); Gavotte and Minuet (Reger); Suite for Viola and Cello (Hull); Cavatina, Op. 85, No. 3 (Raff); Valse Caprice (Schubert-Liszt); Waltz, Die Kosetler (Lanner); In Zirkus (Mrazek); Gondolera (Bossi); Trümmerei (Burmester); Serenade, Op. 10, No. 3 (Münzendorf); Air from Ludwig (Dellinger). In the intervals, Reading and Talk. 5.50, News. 6.0, Talk: Insurance for Travellers. 6.20, Talk: The Idea of the Resurrection in Germanic Myths. 6.45, Programme to be announced. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Reading. 8.30, Siegfried Wagner Concert by the Symphony Orchestra: Soloists: Jerda Heuer (Soprano) and Martin Krammer (Tenor); Overture, Der Bärenhäuter; Prelude to Act III and Verena's Lament from Der Kobold; Song from Banadictrich; Song from Sonnenflammen; Waltz and Vision from Bruder Lustig; Night Song from Schwarzwaldenreich; Prelude to Sonnenflammen. 9.5, News. 10.15, Wagner concert, conducted by Siegfried Wagner (on Gramophone Records). 12 Midnight, Close Down.

LINZ.—See Vienna.

I. JUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.30 p.m., Concert by the Station Orchestra. 7.30, County Programme. 8.0, Programme relayed from Zagreb, 977 kc/s, 307 metres. 10.0, Weather, News and Light Music. 11.0 (approx.). Close Down.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 28 kW.—11.30 p.m., Concert of Popular Music. In the interval at 11.45, Radio Chronicle. 12.40 a.m. (Wednesday), Light Music. 1.0 (approx.). Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 434.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Announcements, Radio Journal, and Request Gramophone Records. In the interval, Scientific Talk. 8.30 (in the interval), Talk by Joaquin España Cantos. 9.15, News and Political Review. 9.30 to 10.30, Interval. 10.30, Linguophone English Lesson. 11.0, Chimes, Time and Political Review. 11.15 (approx.), Spanish Celebrities before the Microphone. 11.30, Relay from a Theatre. 12.45 a.m. (Wednesday), News. 1.30, Relay from a Theatre (cont'd.). After the Relay, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by J. Plichta. 3.55 to 4.0, See Prague. 5.30, Educational Talk. 5.40, Talk. 5.45, Recital of Russian Songs by Boris Arkipov. 6.15, See Brno. 7.0, See Prague. 7.10, See Brno. 8.25, See Prague. 11.0 (approx.). Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert conducted by Erich Kloss: Overture, The Ruins of Athens (Beethoven); Largo (Haydn); Selection from The Flying Dutchman (Wagner); Concert Waltz from Der Rosenkavalier (R. Strauss); Petite Suite No. 2 (de Michel); Romance in F Minor (Tchaikovsky); Norwegian Peasant Dances (Grieg); Serenade (Jensen). 5.45, Talk: The Dissolution of German Industry. 6.5, Reading: Der deutsche Arbeitdienst (Hellmuth Strehlert), with Introductory Talk. 6.25, Soprano Recital with Organ, Violin and Cello Accompaniment. 6.45, Time and Weather. 7.0, Transmission for all German Stations relayed from Heilsberg. 8.5, The Queen of Spades—Opera in Three Acts (Tchaikovsky), relayed from the National Theatre. News in an interval at 9.50. 10.50, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 815 kc/s, 368.1 metres; Hamar,

JUNE 6th

TUESDAY

continued

522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Orchestral Concert. 6.0, Programme for Women. 6.45, Accordion Solos by Einar Hansen. 7.0, Advertising Notes. 7.15, News. 7.30, Talk on Trout Fishing. 8.0, Time Signal. 8.2, Orchestral Concert, conducted by Hugo Kramm: March, King Cotton (Sousa); In the Kingdom of the Sun (Yoshitomo); Berceuse (Torjussen); Melody (Sibelius); Hungarian Dance (Berey); The Blue Pavilion (Armandola); Mignonette (Godard); Jours passés (Per Redarson); Spanish Dance (Marquina); Popular Danish Song (Hansen); Sonja (Partis); Waltz, Tales from the Vienna Woods (Joh. Strauss); In a Persian Market (Ketelhey); Grottesque March (Sinding). 9.10, Recitations. 9.38, Agricultural Report. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Concert by the España Mandoline Quartet.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Popolavoro Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time Signal and Announcements. 8.45, An Opera. In the intervals, Talk and Announcements. 10.55, News Bulletin.

PARIS

EIFFEL TOWER; Call FLE; 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals). 6.45 p.m., Theatre Talk. 7.0, Le Journal Parlé. 8.30, L'Abbesse de Jouarre—Play (Ernest Renan).

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Sponsored Concert with Gramophone Records. 8.0, Film Review. 8.5, Talk on the Circus. 8.15, Interval. 8.30, Concert of Old and Modern Italian Music, by the Station Symphony Orchestra, conducted by Théodore Mathieu. Overture, William Tell (Rossini); Concerto grosso on a Theme by Bonporti (Vincenzo Donato); Extracts from a Symphony (Cherubini); Five Popular Tuscan Songs (Davico); Le fontane di Roma (Respighi); Piedmontese Dance (Siniaglia). 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd). 7.45, Gramophone Music. 12 Noon, Concert by the Kretly Orchestra; Part I, Classical and Modern Music: Susetta (Händel); Symphony (Mozart); Serenade (Haydn); Abendlied (Schumann); Two Nocturnes (Chopin); Adagio and Scherzo from the Trio in B (Brahms); Minuet (Grieg); March from Sigurd Jorsalfar (Grieg); Part II, Opera Comique Music: Overture, Mirella (Gounod); Selection from Paul et Virginie (Masse); Nocturne from La Navarraise (Massenet); Selection from La Habanera (Laparra); Part III, Music of Nature: Introduction pastorale (Borcard); Cloches du soir (Ropartz); Melody (Turina); Brüyères (Debussy); Regrets from Tahiti (Marc Delmas). In the interval at 1.0, Exchange and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange. 6.10, Agricultural Talk. 6.30, Market Prices. 6.35, Gramophone Music: Fascination (Marchetti); Melody (Egen and Dostal); My little sunny boy (Marc Hely); Turkish Patrol (Michaelis). 6.50, Theatre Review. 7.5, Talk: The New Architecture. 7.20, Music by the Kretly Orchestra: Sérénade discrète (Bosc); O Sole mio (di Capua); Ravissement (Leduc); Melody in F (Messier); Serenade (Stadin); Water Lily (Monfred); Ungaria No. 3 (Leoni). 7.45, Review of the Anglo-Saxon Press. 8.0, Half an Hour of Fantasy, by Paul Weill. 8.30, News, Weather, and Sports Notes. 8.40, Review by Paul Seize. 8.45, Concert of Chamber Music: String Quartet (Chausson); Piano-forte Solos: (a) Four Pieces on Indian themes (Philipp). (b) El Vito (Infante); Suite for 'Cello and Piano-forte (Caix d'Hervelois); Quintet No. 1 (Faure). In an interval at 9.15, Press Review and News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Radio Troubadours, from New York. 8.45, Congress of Clubs Period. Soprano Solos by Mrs. Esther E. Mohr. 8.58, Baseball Scores. 9.0, Meredith Wilson's Orchestra, from New York. 9.15, Jack Walton and his Casanova Orchestra, from New York. 9.30, Business News, and Market Reports. 9.45, Programme to be announced. 10.0, Baseball Scores. 10.5 to 10.45, New York Relay. 10.5, Harold Stokes' Orchestra. 10.15, Dick Daring. 10.30, The Singing Lady. 10.45, Little Orphan Annie. 11.0, Time Signal and Fireflies. 11.15, Weather Report. 11.16, Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30 to 2.59 a.m. (Wednesday), New York Relay. 11.30, Three X Sisters. 11.45, Pickens Sisters. 12 Midnight, Amos 'n' Andy. 12.15 a.m., National

Advisory Council on Radio in Education. 12.45, Irene Bordoni and Emil Coleman. 1.0, Crimes Chines. 1.30, Adventures in Health. 1.45, From the Composer to you, with Herman Hupfield. 2.0, Willard Robison's Deep River Orchestra. 2.30, Tune Detective. 2.45, Pickens Sisters. 2.59, Time Signal. 3.0, Household Musical Memories, from New York.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Moravská-Ostrava. 3.55 to 4.0, Exchange. 5.45, Talk: Czechs in Vienna. 5.55, Talk on Industry. 6.5, Agricultural Report. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Talk on Ethics. 7.0, Chimes and News. 7.10, See Brno. 8.25, Piano-forte Sonatas by Spanish Composers with an Introductory Talk by J. Braunerger. Four Sonatas (Solér): (a) in C Sharp Minor, (b) in D, (c) in G Minor, (d) in E Flat; Sonata in C Minor (Cantales); Sonata in B (Serrane); Sonata in D (Alateo Albaniz). 9.0, Concert by the Station Orchestra, conducted by Otakar Parik. Soloist: Willy Schweyda (Viola). Overture (Rohd); Symphonic Poem, Op. 36 (Kricka); Violin Concerto in G Minor, Op. 26 (Bruch); Overture, A Midsummer Night's Dream (Mendelssohn). 10.0, News and Sports Notes. 10.15, Concert of Contemporary Music by the Oudrick Quartet. 11.0 (approx.). Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—6.0 p.m. (from Lausanne), Programme for Women. 5.30 to 7.0, Interval. 7.0 (from Lausanne), Talk. 7.30 (from Lausanne), Weather, Announcements and Peasants' Report. 7.35 (from Lausanne), Answers to Correspondence. 8.0 (from Lausanne), Concert of Chamber Music. 8.45 (from Lausanne), Cabaret Programme. 9.50, News, and Weather. 10.0 (from Lausanne), Gramophone Music. 10.30 (approx.). Close Down.

RUUKAN.—See Oslo.

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres, and 2RO, 11,910 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Concert of Variety Music. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30 to 6.15, Concert of Light Music. 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Popolavoro Notes. 7.0, Tourist Report. 7.10, Lesson in Morse. 7.20, Announcements in Various Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.2, Talk on Astronomy. 8.15, Song Recital by Elena Cheli (Soprano). 8.30, Sports Notes. 8.45, Symphony Concert, conducted by M. Riccardo Santaroli. Soloists: Tito Rosati (Cello) and Ornela Santoliquido (Piano-forte); Andante for String Orchestra and Organ (Geminiani-Marinuzzi); Nights in the Gardens of Spain—Suite for Piano-forte and Orchestra (Fallá); Tarantella (Martaucci); 'Cello Solos: (a) Sacred Aria (Stradella), (b) Chanson triste (Tchaikovsky), (c) Allegro appassionato (Saint-Saëns); Prelude to the Third Act, Dance of the Apprentices and Procession of the Masters, from The Master-singers (Wagner). In the interval, Talk on Literature and Art. Dance Music after the Concert. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF, on 31.48 metres and by W2XAD on 19.56 metres.—12.45 a.m. (Wednesday), Stock Reports. 1.0 to 4.0, New York Relay. 1.0, Blackstone Plantation. 1.30, Wayne King's Orchestra. 2.0, Ben Bernie's Blue Ribbon Orchestra. 2.30, Ed Wynn and the Fire Chief Band. 3.0, Lives at Stake.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory. 12 Noon (from Zürich), Concert of Light Music. 12.40 p.m. (from Zürich), Concert. 1.25 (from Zürich), Exchange, Time, and Weather. 1.35 to 5.0, Interval. 5.0 (from Zürich), Orchestral Concert. 5.30 (from Zürich), Gramophone Music. 6.0 (from Zürich), Talk: What can we do for our German-Swiss Language? 7.0 (from Zürich), Time, Weather, and Notes on the Broadcasts for Schools. 7.10 (from Zürich), Gramophone Music. 7.45 (from Zürich), Talk on the following Transmission. 8.0

(from Zürich), Ricci—Opera (Wagner), relayed from the Municipal Theatre. In the interval at 9.30, Weather and News. 10.40 (approx.). Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.0 p.m., Report from the Swedish Flag Day at the Stadium. 5.5, Accordion Music, relayed from Nörrköping, 1,292 kc/s, 232.2 metres. 5.30, The Practical Corner. 5.45, Gramophone Records. 6.45, Elementary French Lesson, relayed from Malmö, 1,301 kc/s, 231 metres. 7.15, Weather and News. 7.30, Variety Programme. 8.15, Parliamentary Report. 8.45, Song and Piano-forte Recital of Music by Emil Sjögren. Kerstin Lindberg-Torlund (Songs) and Vivan Wenberg (Piano-forte). 9.15, Literary Review. 9.45, Weather and News. 10.0, Concert of Light Music. 11.0 (approx.). Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Music. 12 Noon, Orchestral Concert, conducted by Maurice de Villers: Overture, Fingal's Cave (Mendelssohn); Orchestral Suite, Scènes Alsaciennes (Massenet); Norwegian Rhapsody (Lalo); Dance, In Hammersbach (Elgar); Miniature Suite (Carse); Selection from La Rotisserie de la Reine Pédauque (Lévy); Hungarian Rhapsody No. 2 (Liszt); Spanish Dances from La Vida breve (Fallá); Oriental March (Granados). In the intervals at 12.45 p.m., News; and at 1.0, Time and Exchange. 2.0 to 4.45, Interval. 4.45, Talk: Paris and its Surroundings. 5.0, Orchestral Concert, conducted by Roskam: March, Greetings to Alsace (Sali); Slow Waltz (Barbirolli); Overture, La Mascotte (Audran); Selection from Rip Van Winkle (Planquette); Petite suite de concert (Coldridge-Taylor); Cello Solo; Chant du ménestrel (Glazunov); Selection from The Love Parade (Schertzing); March (Schneider). 6.0, History Talk. 6.15, Topical Talk. 6.30, Orchestral Concert, conducted by Maurice de Villers: Overture; Paraphrase III (Suppé); Minuet (Bocherini); Selection from Carmen (Bizet); Serenade in A (Widor); Ballet russe (Luizini); Symphonic Poem, Leare (Trémisot); Oriental Parade (Sali). 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.15, Press Review in German, Lottery Results, and Announcements. 8.30, Gala Evening, relayed from Paris. After the Programme, Press Review. 10.30 (approx.). Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12 Noon, Concert by the Station Orchestra, conducted by Gustav Görlich. Soloist: Eberhard Schrempf (Baritone). Overture, Die Felsenmühle (Reissiger); Song: An des Rheine grünen Ufern (Gumbert); Romance, Dolce notte (Leoncavallo); Song with Orchestra: Die alten Strassen noch (Redl); Waltz, Roses from the South (Joh. Strauss); Potpourri, The Immortal Verdi (Rhode); Aria from La Traviata (Verdi); Florentine March (Fucik). 1.15 p.m., Time and News. 1.30, Old Folk Dances on Gramophone Records. 2.0, Concert arranged by the Post Office. 2.30, Advanced English Lesson. 3.30, Talk on Flowers. 4.0, Talk for Women. 4.30, See Munich. 5.45, Time and News. 6.0, Report on the Young Germans' Gymnastic Display at Stuttgart. 6.25, Talk: Writing and Reading in School and After-Life. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Reading of Anecdotes. 8.10, Programme from Hamburg. 8.45, Humorous Programme with Gramophone Records. 9.40, Discussion: The Germans in Afghanistan. 10.10, Time and News. 10.30, Talk on the Theatre. 11.0, Dance Music by the Station Dance Band. Vocal Refrains: Hans Hauns (Tenor). 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—5.0 p.m., Concert of Military Music. Le Clairon de la victoire (Defrance); Le quatrième de Logne en campagne (Gretner); Navarre (Barrat); Saint-Cyr (Alazard). 5.15, News Bulletin. 5.30, Airs from Operetta. Selection from: (a) Fredrika (Léhar). (b) Les cloches de Corneville (Planquette), and (c) Phi-Phi (Christiné). 5.45, Orchestral Music. Concentration (Razaf); Valse de souvenir (Mélé); Kasbek, Troika (Scheiblin). 6.0, News Bulletin. 6.15, Light Music. Les Etolles (Hahn); Desert Song (Romberg); Adoration (Cazes); Ce sont des mots (Gey). 6.30, Concert of Orchestral Music. 6.45, Vocal Tango. Chorra (Discepolo); Rose

d'amour (Champfleuri); Pourtant (Dumas); Como todas (Chériff). 7.0, Light Music. Conchita (Mateo); Fooling; Selection from The Gypsy Princess (Kálmán); Toro (Derio). 7.15, Horse Racing Results, Market Prices and News. 7.25, Local News. 7.30, Opera Music Airs from (a) La Juive (Halévy), (b) Siegfried (Wagner), and (c) Samson and Delilah (Saint-Saëns). 7.45, Programme by a Viennese Orchestra. 8.15, Sound Film Music. 8.30, Organ Recital. 8.45, Light Music. 9.0, Symphony Concert. In the interval, Light Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Military Music. 11.15, Instrumental Solos. 11.30 to 12 Midnight, Programme in English by the I.B.C., W. Brown-Constable announcing. 11.30, Songs from Operettas; Selection from Congress Dances (Heymann); Selection from Iolanthe (Sullivan); The Skaters' Waltz (Waldteufel); Selection from The Maid of the Mountains (Fraser-Simpson); Selection from A Wall's Dream (O. Straus); Ol' Man River, from Show Boat (Kern). 11.57, I.B.C. Goodnight Melody. 12 Midnight, News. 12.5 a.m. (Wednesday), Orchestral Music. 12.15, Accordion Music. 12.30 (approx.). Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.15 to 6.0 p.m., See Turin. 6.0, Interval. 6.35 to 7.45, See Turin. 7.45, Talk. 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.15 to 6.0 p.m., Dance Music from the Select Savoja Dancing. 6.35, Giornale Radio. 7.0, Time and Announcements. 7.5, Songs on Gramophone Records. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News and Songs and Dance Music on Gramophone Records. 8.15, Variety Concert. In the interval at 8.45, Reading from the Twenty-Ninth Canto of the Inferno. 9.30, Comedy in Three Acts. After the Comedy, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres; (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.45 a.m., Religious Information in English. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 282 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,272 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.9 metres.—1.0 p.m., Time and News. 2.0 to 3.0, Interval. 3.0, Time and News. 3.20, Talk. 3.30, Programme for Children. 3.55, Austrian Music on Gramophone Records. 4.35, Wireless Technical Talk. 5.5, Talk on the Fourth Centenary of the Death of Ludovico Ariosto. 6.25, Soprano and Piano-forte Recital by Sophie Munteau and Selma Götzl-Libowitz. 6.10, Agricultural Talk. 6.35, Talk: Motor Cars and Railways. 7.0, Concert by Emil Bauer's Orchestra. Overture, Heimkehr aus der Fremde (Mendelssohn); Waltz, Dorfschwalben aus Osterreich (Jos. Strauss); Selection from Schwanda the Piper (Weinberger). 7.30, Time and News. 7.35, Concert (cont'd.). Am. Isouza (Bauer); Selection from The Betrothal by Lanternlight (Offenbach); Suite Phrygienne (Brüsselmans); Schön ist so ein Ringelspiel (Leopoldi); Russian Potpourri, Wolgagerstern (Leuschner); March, Deutschösterreich (Bauer). 8.30, Topical Talk. 8.45, The Babenberg Dynasty—a Radio Sequence. 10.0, News. 10.15, Dance Music.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.40 a.m., Polish Press Review. 11.50, Aviation Weather Report. 11.57, Time and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Gramophone Music. 1.20, Weather Report. 1.25 to 3.10, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.25, Aviation Report and Anti-Gas Drill. 3.30, Announcements. 3.35, Review of New Books. 3.50, Gramophone Music. 4.25, Talk for Teachers. 4.40, Talk. 5.0, Concert of Swedish Music, with Introductory Talk; Soloist: Olga Olgina (Soprano); Wedding March (Söderman); Swedish Song (F. Rangström); Songs, Suite (Tor Aulin). 5.55, Programme Announcements. 6.0, Concert of Dance Music and Light Music. In the interval, Sports Notes. 7.0, Miscellaneous Items. 7.20, Agricultural Talk. 7.30, Talk on Music. 7.45, Radio Journal. 8.0, Talk on the following Transmission. 8.10, Chopin—Opera (Orfice), relayed from the Grand Theatre. In the intervals, Sports Notes, Radio Journal, and Reading. 10.50, Interval. 10.55, Aviation Weather Report and Police Notes. 11.0, Dance Music.

ZÜRICH.—See Schweizerischer Landessender.

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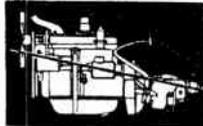
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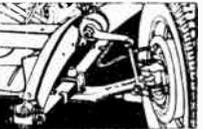
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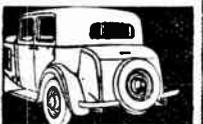
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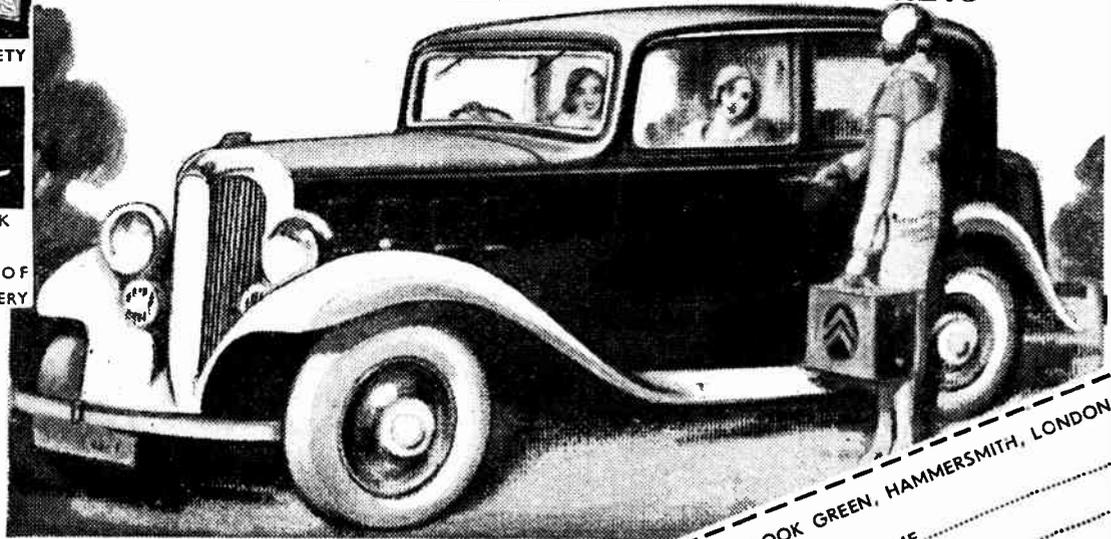


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*As many of the circuits and apparatus described in these
pages are covered by patents, readers are advised, before
making use of them, to satisfy themselves that they would
not be infringing patents.*

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EDITORIAL COMMENT

Interference Forms

Make Them Readily Available

THE Post Office is to be congratulated on the tactful and efficient manner in which they are endeavouring to bring about the suppression of electrical interference. Pending legislation on the lines proposed by *The Wireless World* to ensure that the suppression of interference is fairly administered, the Post Office continues its good work and is ready to investigate any complaints received from individuals, provided that the Post Office official interference form is filled up as a guide to the engineers in trying to locate the trouble. It is, perhaps, not sufficiently widely known that these forms are available for this purpose and can be obtained on application either to the General Post Office direct, or to the local resident Post Office engineer of the district. Unfortunately, the addresses of local engineers are not readily available to the public and we would, therefore, urge, as a part of the service which the Post Office is carrying out on behalf of listeners, that these forms should be made available to the public on application at any head Post Office. They would then be handed in to a Post Office after completion for transmission to the proper authority.

Forms relating to other services of the Post Office are available in this way, and there seems to us to be no reason why this procedure should not be adopted in the case of the interference forms. It would save bother and inconvenience to the public and to the Post Office alike.

It should be remembered that these forms should only be completed and forwarded to the Post Office after the listener has fully satisfied himself that the interference with wireless reception is due to some trouble apart from his set

or his own premises and is of such a nature as to be beyond his own control. Sufferers from interference should not take upon themselves the task of complaining direct at the source of the trouble, even if they succeed in identifying it, as such action often prejudices any effort which the Post Office may make subsequently.

Replacements

Reputation of the Industry

THE wireless industry has gained for itself a high reputation for readiness to replace faulty articles with the minimum of inconvenience to the purchaser. It is well known that valve manufacturers do not hesitate to replace a valve if the purchaser satisfies them that it is faulty and, similarly, throughout the industry we find the same kind of readiness to accept responsibility without question when any component or set is shown by the purchaser to be defective.

This is a very commendable attitude, but we sometimes wonder whether there are not two sides to this question, and whether the manufacturer would not create a still better feeling if the necessity for these replacements occurred less often. We believe that a large proportion of the replacements which are made would never have been necessary if the articles had received a little more care in testing before going out.

These remarks are prompted as a result of many instances of defective articles which have come to our notice, but it must not be thought that our criticism applies to all manufacturers, some of whom, to our knowledge, go to infinite pains to see that every article is as free from defects as skill and ingenuity in testing are able to ensure.

Corrected A.V.C.

ALTHOUGH highly satisfactory results can be obtained by ordinary A.V.C. systems in which the H.F. valves are controlled, theoretical perfection is impossible, for the controlling bias is dependent on the detector input. In the new double-diode pentode (D.D.Pen) embodying a variable-mu pentode as an L.F. stage the A.V.C. control is taken both forwards and backwards to the L.F. and H.F. stages respectively. As a result it is possible to obtain almost perfect A.V.C. since both pre- and post-detector volume control is obtained.

THE subject of automatic volume control has been discussed from a number of different angles in recent articles in these pages. A brief discussion of the circuit of Fig. 1, which shows a double-diode V1 used for delayed A.V.C., followed by a triode V2 used as pure L.F. amplifier, will serve as a kind of informal summary of previous articles from other pens, and will serve to remind the reader of the principles involved.



The new Cossor double-diode pentode with which practically perfect A.V.C. can be obtained.

The tuned circuit with which the story begins is meant to represent the last tuned circuit of a complete set. It is connected, by way of the grid-leak and condenser, R1, C1, to one of the anodes of the double-diode V1. The second anode is joined to the first by a condenser, so that both are effectively at the same signal potential, and this second anode is connected to cathode by the leak-resistance R4 of about 0.5 megohm. This second anode behaves exactly like the grid of a power grid detector; since some small "grid"-current is flowing through R4, even when no signal is supplied, rectification begins as soon as any signal reaches it. The rectified signal is passed on, by way of the coupling condenser, to the grid of the amplifying valve V2, the grid-leak R3 of which may or may not take the form of a potentiometer volume control as suggested in the diagram. The bias of V2 is derived from the voltage-drop caused by the passage of its anode current (and screen current, too, if a tetrode or pentode should be chosen) through the cathode bias resistor R2. If a suitable filter (not

How to Use the New Double-diode Pentode*

shown) is interposed between V1 and the grid of V2 the two valves together make up, in effect, a power grid detector in which, by separating the function of rectification and low-frequency amplification, the usual irritating tendency of the grid detector to overload has been avoided.

Delayed A.V.C.

It would be quite possible to derive automatic bias for the earlier valves in the set from the anode which carries out the function of signal rectification, but only at the cost of biasing back these valves, and so reducing amplification, before the signal had reached full loud speaker strength. To avoid this, the other anode is used for providing automatic bias, its "grid-leak" R1 being taken to a point which is negative with respect to its cathode. Such negative voltage is most simply obtained by connecting the cathode of V1 to that of V2, so that the bias of V2 is also available for V1. R1 may then be returned either to earth, as

shown, or to a tapping on R2 if the full voltage across this resistor is not required. amplification will remain at maximum until the set is delivering full volume to the loud speaker, after which the rising bias voltage will give an automatic control of volume. This scheme, in one form or another, is known as "delayed A.V.C."

No matter whether V2 is a triode, a tetrode, or a pentode, or even a composite valve including the two diode anodes within it, the results given by the circuit of Fig. 1 will be the same.

For controlling the onset of automatic control the circuit of Fig. 1 is, as we have seen, as perfect an arrangement as could be desired. Let us jump to the other end of the scale of signal voltages and consider the reception of the local station. We may assume, purely as an illustrative figure, that a bias of 20 volts is required on earlier valves to keep the amplification of the set low enough for the necessarily large signal received at the aerial. This bias can only be derived from the rectified voltage across R1; to provide this the peak signal voltage across the tuned circuit must be greater than 20 volts by at least the delay voltage. The whole of this large signal is applied to the second (signal-rectifying) anode of V1, with the result that V2, and with it the output valve, will be outrageously

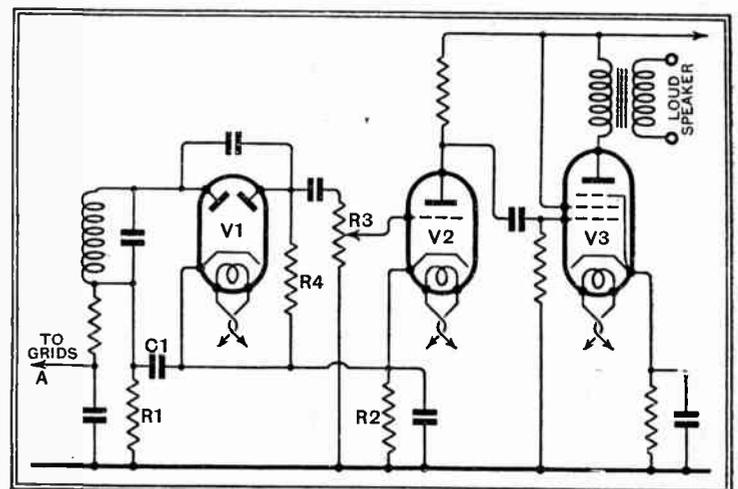


Fig. 1.—Circuit for a double-diode valve V1 used for delayed A.V.C. The valve V2 is a straightforward triode L.F. amplifier coupled in the usual way to an output pentode.

overloaded unless hasty use is made of the manual volume control R2. In effect, the automatic volume control serves to keep the signal comfortably

overloaded unless hasty use is made of the manual volume control R2.

In effect, the automatic volume control serves to keep the signal comfortably

*Communicated from the Research Laboratories of A. C. Cossor, Ltd.

Corrected A.V.C.—

within the range of control which R₃ can provide, and smoothes out to a very marked extent the effects of fading, but it does not prevent the output level of the set from rising and falling over a range of perhaps 10 to 1 if the carrier voltage at the aerial should vary over a range of several thousands to one.

* Since the A.V.C. bias can only be obtained by rectification, and since a large bias can only arise from a large signal, nothing can be done on the pre-detector side to prevent this residual variation of output volume with input signal. We therefore require an audio-frequency amplifier which can have its gain controlled by the automatic bias voltage, the relation of gain to bias voltage being such

characteristics is used for V₂. In addition the functions of the two diode anodes have been interchanged for convenience in drawing. With these hints the obscurities of Fig. 2 should be readily penetrated.

The diode portion of the valve need not be discussed in detail; like any other diode, it provides a close approximation to linear rectification, and damps the circuit to which it is connected to an extent equivalent to a resistance of about half the value of the grid-leak (R₁ + R₂ + R₃, all in parallel) actually used. Since several milliamperes are available at each anode, the signal would have to rise to several hundred volts before overloading could occur. The exact values of the "grid-leaks" R₂ and R₃ and of the filter-resistance R₁ will naturally be chosen by individual users of the valve; if each is made one megohm a very satisfactory compromise between

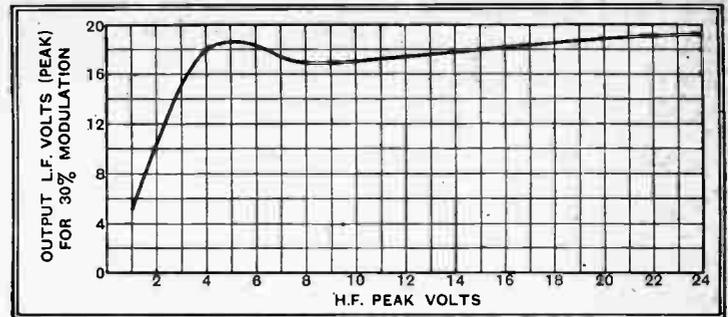


Fig. 4.—The output curve of a controlled D.D. Pen valve, showing H.F. input plotted against L.F. output. The anode voltage is 220 and the grid voltage 3.8 or peak H.F. voltage, whichever be the greater. This represents a delay voltage of 3.8.

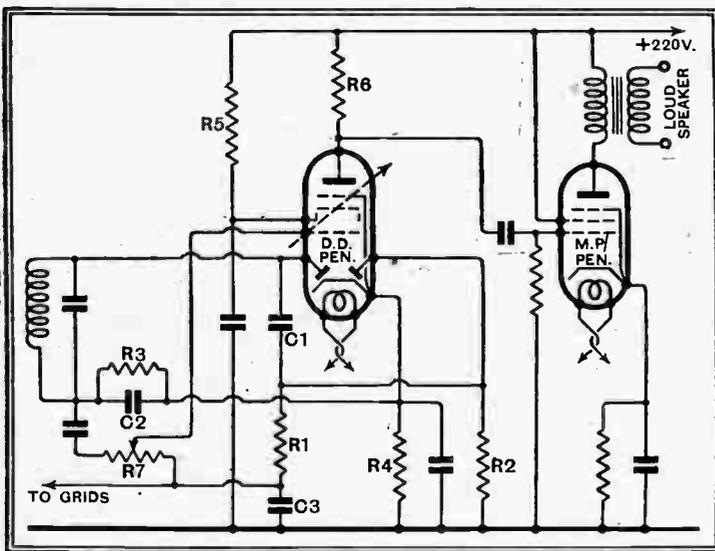


Fig. 2.—Suggested circuit for use with the new double-diode pentode. The variable-mu pentode contained within the same bulb as the double diode takes the place of the triode V₂ in Fig. 1.

that as the signal at the detector rises the L.F. magnification falls away in such a manner as to provide exact compensation. This will maintain the signal-strength at the grid of the output valve at a constant level for any given depth of modulation no matter whether the station tuned in is the local or the most distant within the receiver's range.

Variable-mu Pentode

The Cossor D.D. Pen, or double-diode pentode, is a valve specially designed to provide this corrected A.V.C. It consists of two tiny diode anodes facing one end of a cathode which serves also as the source of electrons for a variable-mu pentode of exponential characteristics. The circuit in which it is intended to be used is given in Fig. 2. So many electrodes have found their way into one bulb that this circuit is perhaps not too easy to grasp at a glance; in reality, it differs from Fig. 1 in only two respects. R₃ of Fig. 1 (R₇ in Fig. 2) is now returned to the A.V.C. line, so that V₂ partakes of the automatic bias, and in place of a simple triode a screened pentode of suitably calculated variable-mu char-

acteristics is obtained when C₁ and C₂ are each 0.0001 mfd.

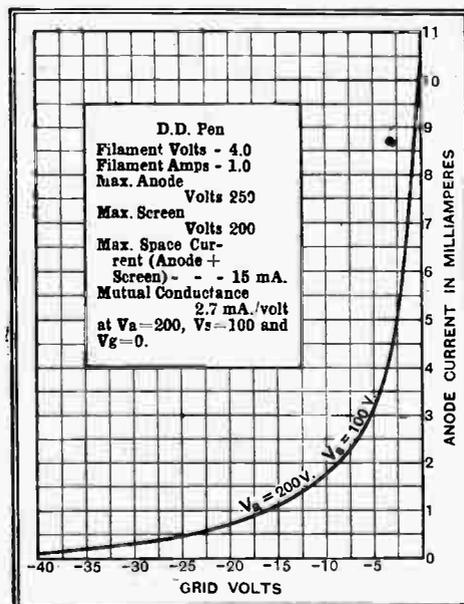


Fig. 3.—Grid volts-anode current curves of the Cossor D.D. Pen. The mutual conductance reaches the high figure of 2.7 mA.-volt.

A grid-volts/anode-current curve of the pentode portion of the valve is given in Fig. 3, in which the variable-mu characteristic is very evident. Since this static curve does not in the least convey its behaviour in practical use, where anode, screen, and grid voltages are all controlled by the carrier amplitude of the received signal, Fig. 4 will be found more informative. This was derived from a "dynamic-characteristic" taken with resistances (each 20,000 ohms) in both screen and anode leads, the external H.T. supply being 220 volts. The assumption made is that a slowly rising high-frequency signal, modulated to a depth of 30 per cent., is applied to the diodes, one of which, in common with the amplifying grid, is biased to -3.8 volts. Until the signal reaches a peak value of 3.8 volts, the bias of the valve, and therefore its gain, is held constant; the audio-voltage across the anode resistance (R₆ in Fig. 2) is, therefore, proportional to the signal input. At an amplitude of 3.8 volts, the delayed diode begins to rectify, and the resulting bias voltage is added to the steady bias of the amplifying grid as in the circuit of Fig. 2. The L.F. amplification consequently begins to drop, and as the signal output, and with it the bias, continues to increase, the signal passed on to the output valve that follows the D.D. Pen remains approximately constant at about 17½ volts peak.

Modulation Depth

It will be appreciated that as the signal applied to the amplifying grid rises, the bias will automatically rise, too, so that, even with 100 per cent. modulation, the peak L.F. signal can never exceed the bias voltage. With a signal large enough to operate the A.V.C. system, modulation of this depth would, however, swing the amplifying grid over so wide a range that distortion would be introduced owing to the curvature of the characteristic if no volume control were used.

In practice it is found that, even if some transmitters modulate deeply, many others do not, and the gain of the amplifying stage as a whole has therefore been made high enough to load fully the MP/Pen which follows it even when receiving transmitters modulating to a depth no greater than 25 per cent. at their moments of loudest transmission. In these

Corrected A.V.C.—

circumstances the distortion introduced is completely negligible at all points of the curve. When receiving a more deeply modulated carrier the volume control R7 interposed between diode and the grid of the pentode has to be adjusted to a suitably lower position to prevent serious overload of the output pentode, with the result that the relationship between L.F. and bias voltages at the grid of the D.D.Pen becomes exactly that which would arise from the reception of a station of lower modulation-depth with the volume control set at maximum. Total distortion does not rise to 5 per cent. until the effective depth of modulation, as determined by the setting of R7, which controls the rela-

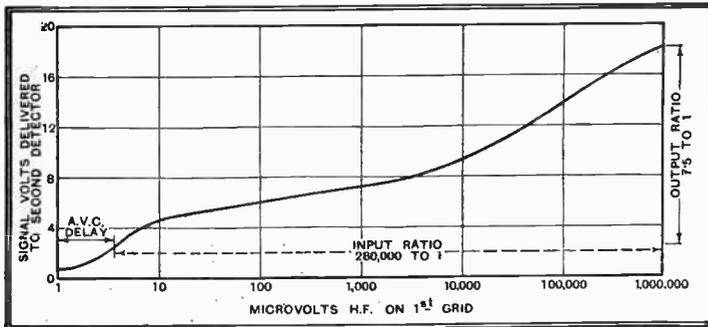
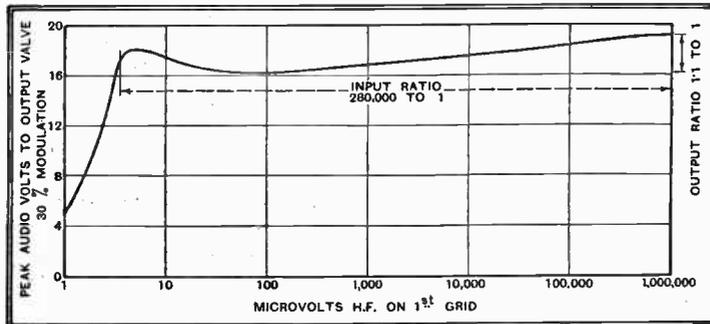


Fig. 5.—(Above) Response of a superheterodyne receiver with uncorrected delayed A.V.C. The A.V.C. is supplied in this case to the H.F. stage, the 1st detector and one I.F. stage.

Fig. 6.—(Right) The response of the superheterodyne receiver of Fig. 5 with corrected delayed A.V.C. using the D.D.Pen.



tive amplitude of bias and of L.F. signal, exceeds 40 per cent., but, since this value of effective modulation gives rise to a signal voltage about double that which the MP/Pen output pentode will accept, and so leads to an immediate readjustment of the volume control, distortion never can arise in practice.

By-passing H.F. Currents

This inter-relation of output, gain, and modulation-depth really means no more than that the D.D.Pen has been designed to yield an undistorted output of about 20v peak, which is more than sufficient to load up an MP/Pen. So long as no attempt is made to develop in its anode circuit a voltage greater than this, no audible distortion can arise, whatever may be the amplitude of the received signal or its depth of modulation. Further, the gain of the pentode stage is high enough to provide this output from any carrier whose maximum modulation is not less than about 25 per cent., providing that the carrier voltage applied to the diodes is about 3 to 4 volts peak. With deeper modulation lower carrier voltages will suffice.

If a larger peak output than 20 volts is required to drive a high-power output valve, a step-up transformer of suitable ratio should be interposed between it and the D.D.Pen. Since any serious change in the D.C. resistances in anode or screen circuits will entirely upset the audio-correction curve of Fig. 4, this transformer must necessarily be connected for shunt-feed, R6 being retained unaltered.

In the circuit of Fig. 2 no means of preventing H.F. currents from reaching the amplifying grid is shown. A choke with a small by-pass condenser in the grid-lead of the pentode is suggested, while a further filter in the anode circuit may be needed if feedback to earlier valves shows signs of being troublesome.

For an H.T. line voltage of 220, R5 and R6 should each be 20,000 ohms for the most perfect audio-correction; if higher voltages are used, R5 should be raised to keep the total current steady at about 8-9 mA. The anode resistance R6 may be

raised to 25,000 ohms if the line voltage is as high as 280 volts, but for lower voltages is best left unchanged. The bias resistor R4 should be 450 ohms, giving an A.V.C. delay of $3\frac{1}{2}$ to 4 volts.

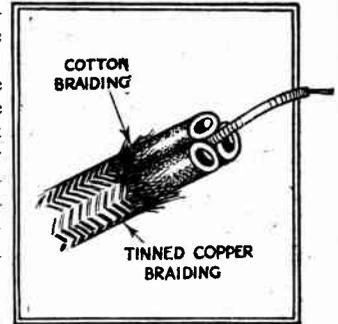
For the volume control R7 a potentiometer of quarter to half a megohm is suggested; since it is effectively in parallel with the "gridleak" R3, a resistance much lower than this will lead to some loss of signal strength.

The fact that this volume control need never be touched at all, even in passing from the local station to the most distant that the set can receive, is well thought out by the curve of Fig. 6, which shows the performance of an experimental receiver using the D.D.Pen for corrected A.V.C. A change in input covering a range of over a quarter of a million to one results in changes in output-voltage of only 10 per cent., as compared with the 75 per cent. change (Fig. 5) given by the same set when using the D.D.Pen for ordinary uncorrected A.V.C. by using fixed bias on the amplifying grid.

The use of the volume control is thus restricted to setting the output of the set, once and for all, at the level that the listener desires.

**"Receptru"
Screened Cable**

THE uses of screened aerial down-leads in reducing electrical interference are already known to most of our readers, who will appreciate the fact that, if these benefits are to be obtained without serious loss of signal strength, the shielded cable used as a connecting lead between the horizontal part of the aerial and the receiver must have low capacity between conductor and external metal covering. Ordinary metal-braided wire is quite unsuitable.



New Radiophone down-lead: the conductor is centred by rubber tubes.

Those who suffer from electrical interference will be interested to learn that a new type of shielded down-lead has just been introduced by British Radiophone, Ltd., Aldwych House, Aldwych, London, W.C.2.

A most convincing demonstration of the benefits conferred by this method of screening was staged at the Radiophone factory for the edification of a *Wireless World* representative. For purposes of the test, man-made interference, normally radiated from the electrical wiring, was supplemented by an "unsilenced" vacuum cleaner and other devices. With an unshielded aerial, reception of even the local station was almost unintelligible, but on switching in a screened down-lead, background noises disappeared almost entirely, with the result that the programme could be appreciated as well as under ideal "country" conditions. Judging aurally, signals seemed to suffer hardly any reduction in strength.

A specimen down-lead submitted by the makers for test was found to have a capacity (between conductor and screen) of 26.05 micromicrofarads per foot. The external diameter of the cable is a shade under $\frac{1}{8}$ in.

Cables of three different lengths are produced, the prices being (complete with fittings): 15ft. 10s., 20ft. 15s., 25ft. £1.

MORE SOLID-CORED COILS

AS was predicted when iron-powder-cored H.F. coils were first described in *The Wireless World* of September 16th last year, this type of tuning inductance now seems likely, for many purposes, to supplant all others.

Several British manufacturers have been working steadily on the problem of producing a satisfactory core material, and also of overcoming the various practical problems that arise in winding and in matching the finished products. It is now announced that Wright and Weaire are producing two distinct types, one with an open-core and the other with a closed magnetic circuit. The first is intended for the aerial tuner of single-circuit sets, while the other is matched for use in ganged multi-circuit receivers.

Under the well-known name of Nicofe, the Varley firm has introduced a series of matched coils, including a double-wound H.F. transformer, which should be suitable for most modern circuit arrangements.

MINIATURE TALKIES

A 16mm. Sound-on-Film Equipment

By B. R. DAVIES, B.Sc. and E. A. BUCKLAND, B.Sc.



Projector cabinet, loud speaker box and self-erecting screen can all be carried by one person.

wave at 5,000 cycles the wavelength of one cycle will be minute. Thus:—
90ft. per min. = 1½ft. per second,
so that there will be 5,000 peaks in 1½ft. of film, i.e., the wavelength will be:—

$$\frac{1.5 \times 12}{5,000} = .0036\text{in.}$$

Now, since the height of the picture on 16 mm. film is only two-fifths of the height of the picture on 35 mm. film and the number of frames per second must necessarily be the same, the wavelength of a 5,000-cycle note will be two-fifths of the wavelength of a note of the same frequency on standard film, i.e.,

$$\text{wavelength} = 2/5 \times .0036 = .00148\text{in.}$$

In order to reproduce this frequency satisfactorily, and 5,000 cycles is necessary for the faithful reproduction of all instruments, the slit of light which is focused on to the film must be small compared with one wavelength. It is easy to realise that this must be so by thinking of a slit the same width as one wavelength, then the amount of light falling on to the cell would be constant, and no change of current would occur through the cell.

Therefore, the width of the slit to reproduce 5,000 cycles on 16mm. film must be small compared with .00148in. In this 16 mm. sound reproducer the width of the slit is .0004in., and the very fact that the slit has finite width causes a loss which increases with rise of frequency, or which increases as the width of the slit becomes comparable with the wavelength. This, in fact, is the main cause of loss at high frequencies on 16 mm. film. It has been suggested that a 5,000-cycle note on this film is comparable with the grain size of the emulsion, but this is not the case; this limit is not approached until about 10,000 cycles is reached.

The equipment developed to reproduce sub-standard film is illustrated herewith.

The amplifier occupies the space at the bottom of the cabinet, the valves being situated behind the projector mechanism, and access can easily be obtained to them by opening a door at the back of the cabinet. The amplifier consists of three stages, an AC/SG followed by an AC/HL, with a PP.5/400 in the power stage. The overall characteristic is approximately flat from 100 cycles to 5,000 cycles, and the amplification is of the order of 2,000 times.

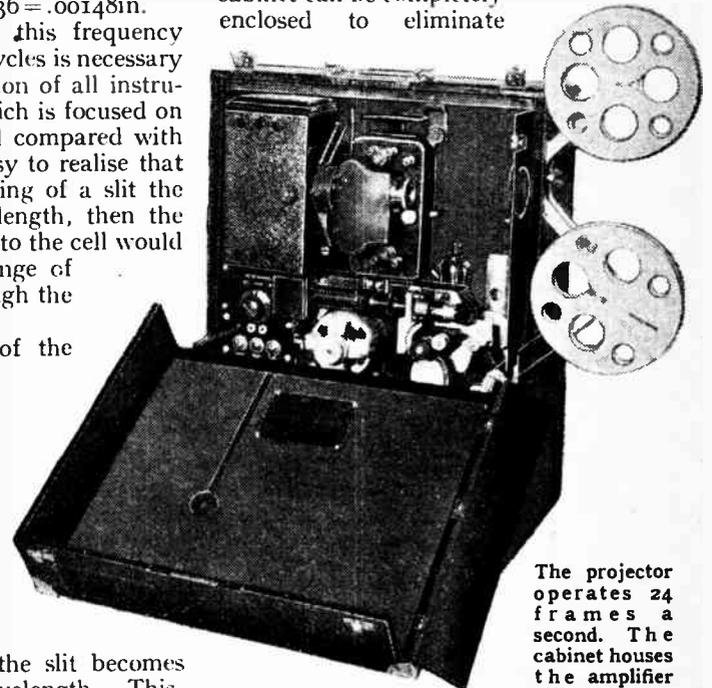
The whole mechanism is driven by a belt from a universal motor running on an A.C. supply and suitably governed. When operating, the projector cabinet can be completely enclosed to eliminate

THAT the moving picture could be used for instructional purposes was realised before the talking picture came into being, but now that it is possible to accompany the moving picture with sound the instructional value of this instrument has been immensely improved. Primarily for this reason a portable sound-on-film equipment has been developed. The film used is the 16 mm. film as used in home movies, with the difference that one row of sprocket holes has been omitted to allow room for the sound track. This means that the projector can be quite small, allowing the whole apparatus to be sufficiently portable for carrying from one lecture room to another.

It can be seen that this apparatus may well be the forerunner of a home sound-on-film equipment.

The range of frequencies to be covered should go up to about 10,000 cycles per second for really good reproduction, but for reasons shown later, it is only feasible to get about 5,000 cycles on 16 mm. film. This would give sound of the same quality as the average cinema of about a year ago.

Let us consider some dimensions of a sound track on 35 mm. film. The film travels at 24 frames per second or 90 feet per minute. If we have to reproduce a sine



The projector operates 24 frames a second. The cabinet houses the amplifier in the base.

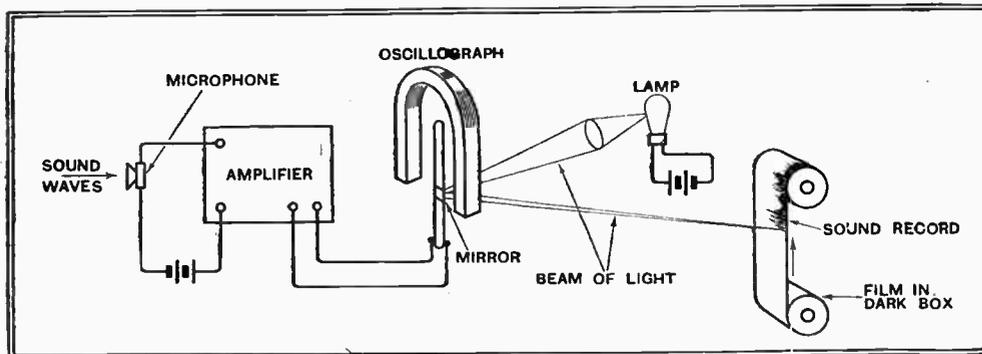
noise, the volume control being brought out. The bracket carrying the feed and take-up spools also forms a rewinder, and can be accommodated inside the cabinet for transport.

TRANSMITTERS' NOTES.

Mr. L. H. Shersby, G2GZ, 41, Reveryd Road, London, S.E.1, is carrying out low-power tests on 7,164 and 14,328 kc/s each Sunday between 10.00 and 12.00, and will welcome reports.

International DXers Alliance

The object of the I.D.A. is to encourage listeners who specialise in long-distant reception on the ordinary broadcast bands as apart from short waves, the necessary qualification for joining the club being two or more verifications from broadcasting stations at least 2,000 miles away. The headquarters of the Alliance are in America. Mr. F. Wiseman, 90, Brighton Grove, Newcastle-on-Tyne, has been recently appointed European representative, and will be pleased to give further information to those who contemplate joining.



The principle of the "variable area" system of sound recording explained in diagrammatic form.

How the Superhet Works. 2.

The H.F. Stage and the Oscillator

Importance of the Choice of Valves

By W. T. COCKING

THE importance of the H.F. valve being able to handle the maximum signal likely to be applied without distortion is stressed. The use of a dual purpose or a separate valve to function as the oscillator is discussed, with particular reference to precautions which have to be taken.

AT the conclusion of Part I¹, we left the discussion of the superheterodyne at the point where the signal voltages are applied between the grid and cathode of the H.F. valve. It should be understood, however, that not only the potentials due to the wanted signals are applied to this valve, but also potentials due to other stations, since the aerial tuning circuit is not very selective.

The H.F. valve acts as an amplifier, and it must be distortionless in the sense that it must operate upon the linear portion of its characteristic. This is often forgotten, for a much larger amount of distortion can be permitted in an H.F. stage than in an L.F. without the quality of reproduction being affected to an audible extent. Even when the best quality is desired a certain amount of distortion can be allowed at this point, for the distortion is chiefly to the H.F. waveform, and not to the modulation. If the valve be worked upon the non-linear portion of its characteristic, however, rectification will occur, and as a result the carrier may become modulated by interference. Should this occur, no amount of selectivity in succeeding stages will remove it, and audible interference will result. This effect is known as cross-modulation, and it must be avoided by the choice of a suitable type of H.F. valve and by operating it correctly.

The first requirement is a valve that will handle the largest input that is ever likely to be applied. This will be from the local station, and at some ten miles from a

50 kW. station, a potential of about 5 volts R.M.S. will be obtained across C₁ (see Fig. 1, p. 378, May 26th issue) with a good aerial and a normal type screened tuning coil. This is equivalent to 7 volts peak with an unmodulated carrier, and 14 volts peak when the carrier is modulated 100 per cent. The grid bias on the H.F. valve, therefore, should not be less than 15 volts for local reception.

In the ideal theoretical case, this value of bias should always be applied to the H.F. valve; there is, however, no valve which will handle such a large input and yet give more than a very moderate degree of amplification. An ordinary screen-grid valve is quite out of the question, since the linear portion of its characteristic is unlikely to extend over a range of more than 2 volts, and the anode current will be completely cut off if it is biased to more than some 10 volts. The variable-mu type appears to be the only practical solution, for in this the working range is greatly extended. At a low value of grid bias, the valve is similar to an ordinary screen-grid type, but the bias can be extended up to 30 volts or more before the current cut-off point is reached. In general, the characteristics are non-linear over the whole of the working range, but if the valve be properly used the departure from linearity is quite small, and no trouble is experienced in practice from audible distortion or cross-modulation.

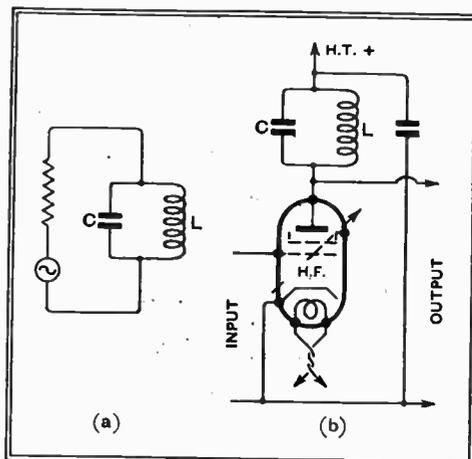


Fig. 1.—(a) The equivalent circuit of a tuned-anode H.F. amplifier. The generator represents the voltages appearing in the anode circuit, and the resistance the anode A.C. valve resistance. (b) The equivalent practical tuned anode circuit.

conditions, is directly proportional to the mutual conductance, and this latter is a function of the bias voltage. When the bias is made high for the reception of a local station, therefore, the amplification



The oscillator coil of "The Wireless World" Monodial A.C. Superhet with screening cover removed.

is at its lowest; this is just what we require, for it is obvious that less amplification is needed for a strong signal than for a weak. As a result, the bias potentiometer R₆ is actually the volume control, and the optimum bias for the signal is automatically obtained when adjusting the volume. In spite of this, it is sometimes advisable to limit the maximum input from a local station, and for this purpose a switch is sometimes fitted to connect a low value resistance R₁ in parallel with the aerial coupling coil. Such a resistance damps the tuned circuit greatly and lowers its efficiency, so that a much lower voltage is set up across C₁. The selectivity of this circuit is also lowered, but as high selectivity is rarely needed on a local station this is usually unimportant.

An Equivalent Circuit

We have now to consider the amplifying action of the valve. The simplest way of doing this is to regard the valve as an A.C. generator in series with a resistance; the generated voltage is equal to the input grid voltage multiplied by the valve amplification factor, and the resistance is equal to the valve anode A.C. resistance. This arrangement is sketched in Fig. 1(a) with a tuned anode circuit, and

¹ "How the Superhet Works," pp. 378-380, May 26th, 1933.

How the Superhet Works—

the more familiar equivalent in Fig. 1(b). The impedance of the tuned anode circuit LC varies with frequency, and is highest at the resonance frequency. The circuit, therefore, is selective. The output voltage from the amplifier is tapped off across the coil, and it is easy to see that it must always be less than the grid voltage multiplied by the amplification factor of the valve.

The impedance of the tuned circuit at the resonance frequency is usually known as the dynamic resistance, and it can rarely exceed a value of some 200,000 ohms; more usually it is about 50,000 ohms to 100,000 ohms. If the maximum amplification is to be secured, it must be high compared with the valve resistance, for then the amplification will closely approach the valve amplification factor.

With a triode valve this is easily secured, for the valve resistance may be only 10,000 ohms or so; moreover, a high load impedance is the optimum condition for linearity of characteristic with a triode.

We are not using a triode, however, but a variable- μ valve, and the conditions are then quite different. Maximum amplification is still obtained with a high load impedance, but the most linear valve dynamic characteristics are obtained when the load impedance is very small. The two conditions are thus mutually opposing. The A.C. resistance of a variable- μ valve, however, is rarely less than 200,000 ohms, and is usually over 500,000 ohms; we cannot, therefore, hope to make the dynamic resistance of the tuned circuit large compared with the valve resistance, and we must be content with a degree of amplification much lower than the theoretical maximum.

A Simple Formula

When the load impedance is low compared with the valve resistance the amplification becomes equal to the mutual conductance of the valve multiplied by the dynamic resistance expressed in thousands of ohms, and the valve dynamic characteristics are almost identical with the static curves, so that the maximum degree of linearity is found. The mutual conductance of most variable- μ valves is about 2 mA/v., so that with a dynamic resistance of 100,000 ohms for the tuned circuit we should obtain a stage gain of 200 times at resonance for the circuit of Fig. 1.

A load impedance of 100,000 ohms on the valve, however, although small, is not entirely negligible, and for the maximum

linearity of valve characteristic we should like it to be lower. If we lower the dynamic resistance, however, by increasing the coil resistance, we shall not only lower the amplification proportionately, but we shall also lower the selectivity. Suppose, therefore, that we connect the valve anode to a tapping on the tuned circuit, as in Fig. 2. Only that portion of the coil between A and B is now in the anode circuit of the valve, and the impedance is equal to the impedance of the whole circuit divided by the square of the ratio of the total turns in the coil to the turns between A and B. Thus, if the total resistance is 100,000 ohms, as before, and the anode connection A is at the centre of the coil, the impedance between points A and B is only 25,000 ohms. The amplification to these points is now 50 times. We take our output voltage

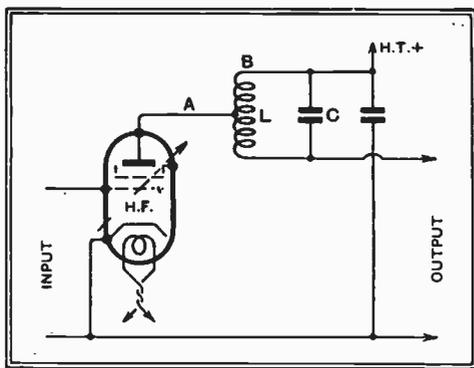


Fig. 2.—The tapped tuned-anode circuit is derived from the simpler arrangement. It has the merit of reducing the load impedance on the valve and of increasing the selectivity.

still from the whole coil, however, so that it is stepped up by the turns ratio; as this is 2-1, the total stage gain is 100 times.

It will be seen, therefore, that by tapping down the coil we lose amplification, but we reduce the load impedance on the valve more rapidly than we reduce the amplification. It is very important in this stage that the valve characteristics be as linear as possible, so that it will pay us to lose some amplification in order to ensure this. There is a further point, however, for although the valve resistance is high it is in parallel with the tuned circuit, and reduces its selectivity. With the tuned anode connection of Fig. 1 the valve resistance is in parallel with the whole tuned circuit, but with the tapped circuit of Fig. 2 the effective resistance in parallel with the tuned circuit is equal to the valve resistance multiplied by the square of the step-up ratio. When this is 2-1 the effective shunt resistance is four times the valve resistance; there is, therefore, a gain in selectivity when the valve anode is connected to a tapping on the coil.

In a practical circuit, an actual tapping on the coil may prove inconvenient, since it will necessitate additional components

to isolate the grid of the succeeding valve from the H.T. supply, and these components may themselves introduce losses. It is often better, therefore, to use a transformer, as shown in the complete circuit diagram in last week's instalment.* Here the primary is a completely separate winding coupled very tightly to the tuned secondary, and if the coupling be 100 per cent. it is in all respects identical with the circuit of Fig. 2. Actually, complete identity cannot be obtained, but the difference is quite small in a properly designed transformer.

The First Detector

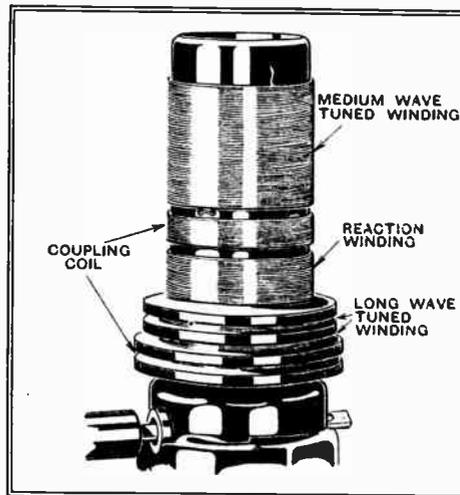
It will thus be seen that we obtain amplified potentials across C₂, and these are applied to the grid of the first detector. This intervalve circuit also provides additional selectivity, so that the ratio of wanted to unwanted signals at the first detector grid is greater than that at the H.F. valve grid; so far as stations immediately adjacent in wavelength are concerned, however, it is still far from sufficient.

The first detector grid is biased negatively by the usual expedient of biasing its cathode positively, this being arranged by the insertion of the resistance R₂ in its cathode lead. In order that the impedance of this circuit may be low- to high-frequency currents the resistance is shunted by a large capacity condenser C₇. It will be observed that the cathode lead of this valve is returned to earth through a coil coupled to the oscillator circuit, and it is now necessary to consider this valve.

The oscillator and first detector together form the frequency changer, and their functions are sometimes combined in a single valve. In general, however, better results are to be secured through the use of separate valves.

The oscillator is required only to generate oscillations of the required frequency, and there are many entirely satisfactory circuits which could be used. The particular arrangement shown in the full circuit,* however, has the merit of combining simplicity with reliability. The tuned circuit is connected between the valve grid and the earth

line, and the cathode connection is completed to H.F. currents through the condenser C₉, the valve being biased by the voltage drop along R₄. The reaction coil is between the points 1 and 2 of the coil assembly, and it is shunt-fed from the



The disposition of the different windings for the oscillator coil are shown in this illustration. A switching arrangement is included for wave-range changing.

*See circuit diagram on page 378 of last week's issue.

How the Superhet Works—

anode circuit through a condenser C10, the H.T. supply to the valve being taken through a resistance R3.

If the correct values are assigned to the circuit constants, the valve will oscillate if the coupling between the reaction coil and the tuned coil be tight enough. For the best operation, however, the coupling should, in general, be only just sufficient for the maintenance of oscillations. The output of the valve will be chiefly at a single frequency, determined principally by the constants of the tuned circuit, but since it is almost impossible to work the valve solely upon the linear portion of its characteristic, the output will usually contain harmonics.

Due to this, the anode current will change when the valve is oscillating, and with the particular circuit under discussion it will be greater in the oscillating condition than in the non-oscillating. The amount of the increase is determined very

largely by the D.C. resistance of the anode circuit, and by whether the grid bias is fixed or automatic. With fixed grid bias and a low D.C. resistance anode circuit the current in the non-oscillating condition may be 3 mA., but it may easily rise to 40 mA. or more when the valve is generating oscillations. With automatic bias and a high resistance anode circuit, however, the rise in current may be to no more than 5 mA.

The choice of a suitable oscillator valve is by no means difficult, for almost any valve will oscillate in a suitable circuit. It is necessary, however, that the output should exceed a certain figure, and it is usually found that a valve of moderate A.C. resistance and moderate mutual conductance is the best. In general, the resistance should lie between 5,000 ohms and 10,000 ohms, and the mutual conductance be between 1.5 mA/v. and 2 mA/v. for the most stable and consistent operation.

DISTANT RECEPTION NOTES

Summer Conditions : A.V.C. to the Rescue

IT is interesting to notice that the vertical radiator type of aerial used by the Bisamberg station is also being employed by the 500-kilowatt WLW in America. Under this system there are no suspended wires; the lattice metal mast itself is the aerial. American wireless engineers are most enthusiastic about this kind of radiator, which, they maintain, adds at least twenty-five per cent. to the service area radius of a station. WLW is calculating on a regular range of at least 1,000 miles in each direction, and 5,000 miles are spoken of under favourable conditions.

Toulouse Midi remains silent. I hear that

More and more use is being made of the intermediate wavelengths between the medium- and the long-wave bands. Unfortunately, there are not nowadays many sets that will tune up to (or down to) the waveband between 550 and 1,000 metres. Already the second Budapest station (18.5 kilowatts) is at work on 840 metres, and Monte Ceneri, the 15-kilowatt Italian-Swiss station on 678.7 metres. Grenoble (568.1 m.) is at present rated at 2 kilowatts, and, even so, is quite well heard. Within a short time the power is to be increased to about 20 kilowatts.

I was amazed to read the official estimate of 350,000 receiving sets for the whole of France which has been made in connection with the new licensing scheme. Since France imported from us no less than 23,789 valves in the month of April

occasions. This is rather a crowded part of the medium waveband, but such is the strength of the Italian station that it successfully drowns interference. By the time that these notes appear in print Bisamberg should be in full swing. A good many long-distance enthusiasts will have had a previous sample of its strength and quality, for the new transmitter has been in use on the last few Saturday nights.

A certain amount of fading is manifesting itself at present on the medium-wave band. It is not of the violent kind accompanied by periods of complete silence or horrible distortion; stations simply swing quite slowly from full strength to moderate strength and back again. Such conditions bring out to the full the advantages of automatic volume control. It is an eye-opener to use on a typical evening at the present time first of all a "plain" receiving set and then one with A.V.C., or A.G.C., as the sticklers for strict technical accuracy prefer to call it.

It is the stations above 500 metres that are chiefly affected just now by fading, and some of these, I fear, will be out of season until there is an "R" in the month once more! Budapest is now barely receivable, and Munich is seldom a good signal.

Outstanding stations on the medium waves are Prague, Langenberg, Lyons Doua, Rome, Katowice, Leipzig, Hanburg (unless heterodyned), Strasbourg, Brussels No. 2, the Poste Parisien, Breslau, Hilversum, Heilsberg, Turin, Trieste, Nürnberg, and Hörby. On the long waves reception is particularly good, except in the case of Kalundborg and Oslo, both of which are unreliable at the moment.

D. EXER.

CATHODE RAY TELEVISION

Special Tubes Introduced

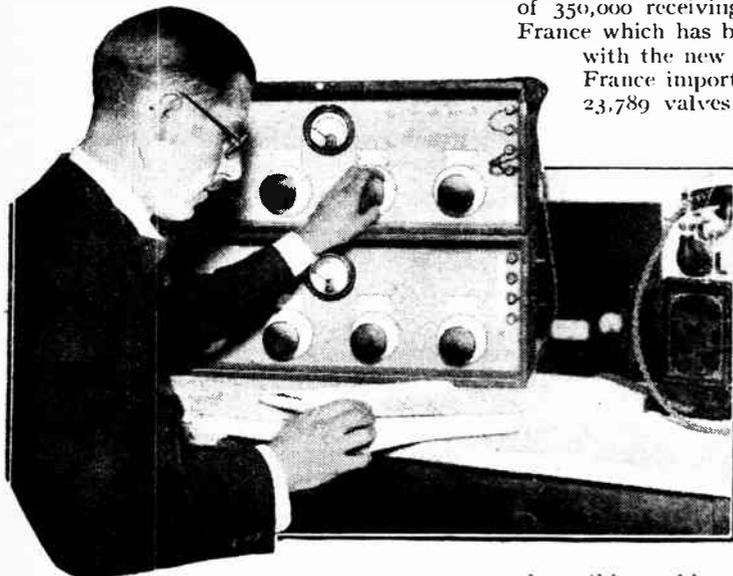
UP to the present time most amateur constructors have been deterred from embarking on the reception of television by purely mechanical difficulties. Rotating mirror drums and similar devices, which must be run accurately in step, can hardly be set up in the home workshop.

The cathode ray system of reception has the advantage that there are absolutely no mechanical moving parts; the images are formed by controlling electrically the movements of a ray directed from the cathode on to the flattened end of the tube which forms a fluorescent screen. Synchronism is similarly ensured by electrical means.

Many technical workers consider that the perfected television apparatus of the future will employ a cathode ray tube; indeed, this opinion was expressed by the late Campbell Swinton as long ago as 1908.

A practical system was described in *The Wireless World* for March 18th, 1931, and interesting developments introduced in Germany by von Ardenne were discussed in the issue of May 25th, 1932.

It will be good news for British amateurs who are interested in this most promising method of reception to hear that the Ediswan Company have now introduced a special tube for television purposes. Apart from this tube, practically no components other than those used in ordinary radio practice are needed for setting up a practical television receiver, which, as it requires a very small input, may be fed from any ordinary set.



CONTROLLING GRAND OPERA. Mr. Stanton Jefferies, who directs the musical side of the B.B.C.'s Balance and Control Section, photographed at Covent Garden during the broadcasting of an opera. The entire work has to be followed from the full score in order that the graduations in volume can be proportioned to the decibel range of the transmitter.

permission to use the St. Agnan station has been definitely refused by the Government on the ground that it was erected without authority. The old station is being rebuilt as quickly as possible. I should not be surprised if the St. Agnan plant were eventually acquired by the Government, for under the Ferrié Scheme Toulouse is booked for a high-power PTT transmitter.

alone, this would seem to be, to say the least of it, a slight underestimate, particularly as France has herself a considerable valve-manufacturing industry. Either the official figures are wrong, or every Frenchman must have the habit of renewing his entire outfit of valves two or three times a year!

Bari, the Italian station which works nominally on a wavelength of 269.8 metres, has been very well heard on many recent

News of the Week

Events of the Week in Brief Review

Bisamberg Begins

BISAMBERG, the new high-power station near Vienna which opened on Sunday last, May 28th, has as its interval signal the first bar of the Blue Danube waltz.

Cutting Out the Crackle

DERBY trolley buses have been causing interference with wireless reception, and in consequence of complaints the Corporation has fitted choke gear to each omnibus at a cost of about £20 per omnibus.

Voices from the Past

THE Eiffel Tower station has just celebrated the anniversary of "radio reportage" or running commentaries. Among the interesting items was the broadcasting of an old gramophone record giving a speech by Ernest Renan and by the great French chemist Berthelot.

How Holland Listens

MORE listeners in Holland now subscribe to the broadcast relay systems than to direct wireless broadcasting. According to latest statistics Holland has 280,610 wireless licence holders, and no fewer than 291,628 subscribers to the radio distribution service.

Norway's "Three-Year Plan"

A TOTAL of forty-three broadcasting stations is provided for in Norway's new three-year plan which has been started with the construction of the 20 kW station at Bergen and ½ kW relays by Kirkenes, Kristiansund, Stavanger and Tromsø. The existing Trondheim station is to be increased in power from 1.2 to 25 kW. The entire scheme should be completed before the end of 1935, by which time, presumably, the Lucerne Plan will require an extensive overhaul.

A 2,000-foot Aerial Mast

ONE of the hitherto unrevealed projects for the "Century of Progress Exposition" which opened in Chicago on Saturday last was a 2,000-foot steel tower, double the height of the Eiffel Tower. This great landmark (writes our Washington correspondent) was to have been an ideal transmission point for television and accompanying sound on the ultra-short waves. Unhappily, financial support was not forthcoming.

The Exposition will have no broadcasting station of its own though arrangements are being made to link up a studio with the major networks. In addition a group of amateurs have erected a short-wave station in the Travel and Transport Building, visitors being invited to send messages far and wide via the "ham" wavelengths at no cost to themselves. The call letters of the amateur stations are W9USA and W9USB.

"Pirates" in Spain

SPAIN is suffering from an epidemic of secret transmitters, the principal plague spot being Saragossa, where the police claim to have captured five of the culprits, all of whom were transmitting seditious propaganda.

Australian Station for New Zealand

THE New Zealand State Broadcasting has accepted a tender of Amalgamated Wireless (Australia), Ltd., for a 2½ kW broadcast transmitter for 3YA, Christchurch, to be erected at Banks Peninsular, near the city. The station, which will be capable of increasing its power to 10 kW, will work on a wavelength of 570 kc/s.

The Big Show

THIS year's National Radio Exhibition, which will be held at Olympia from August 15th to 24th, promises to offer more novelties than any of its predecessors. Not only will the new receivers bristle with multiple valves; the

Medium Waves Cross Atlantic

"RADIO EXCELSIOR" at Buenos Aires has just been completed by the Marconi Company, and reception has been reported at the Marconi Works at Chelmsford, Essex. The wavelength of the station is 361 metres, and the power 200 kW. "Radio Excelsior" has one of the highest broadcasting aeriols in the world, the horizontal aerial being suspended between two towers 700ft. high.

I.F.S. Committee in Distress

A COMMITTEE which decides upon the composition of broadcasting programmes is bound to be the target of public criticism. The Broadcasting Advisory Committee of the Irish Free State is no exception to this rule, and Mr. Gerald Boland, the Minister for Posts and Telegraphs, is considering its abolition or reconstitution. This statutory body is appointed under the Wireless Telegraphy Act, 1926, to "advise and assist" the Minister controlling broadcast-

Problems at Lucerne

TWO major problems appear to be holding up the great Wavelength Conference at Lucerne. The main difficulty is the question of the Russian wavelengths. Russia was not invited to the Washington Conference in 1927, and in consequence has utilised wavelengths very freely without reference to other European States; many Russian transmitters are between 600 and 1,000 metres. The Russians have, however, expressed their willingness to make certain alterations, but have no intention of discarding all their wavelengths outside the ordinary broadcasting band.

Another problem (writes our Lucerne representative) is concerned with the *λ.s.d.* of wavelength alterations. For instance, a station like Luxembourg, designed for long wave working, would have to be almost completely scrapped and rebuilt if required to work on the medium waveband. A change of a score or two of kilocycles requires much expenditure; for instance, new crystals will have to be bought for every German station, and these alone cost £50 at par! This serves to explain why the proposed wavelength changes are planned to be the smallest possible.

It is expected that the Conference will continue until after Whitsun.

General interest has been aroused by the proposed "Plan de Lucerne," which was exclusively revealed in last week's *Wireless World*.

A Canadian Reshuffle

THE elimination of "phantom" stations, i.e., those which have used more than one set of call letters for the same transmitter, has led to an apparent reduction in the number of Canadian broadcasting stations, the official list now standing at fifty-six. Most of the stations have been given new wavelengths based on the U.S. Canadian Agreement of May, 1932, which aims at preventing interference between transmitters in the two countries.

Toulouse Mystery : New Theory

IN his 70-page report on the disastrous fire at the Toulouse broadcasting station six weeks ago, M. Gleises, a local magistrate who presided over the enquiry, establishes that the cause was a short circuit in the wire lighting the indicator signals between the control room and the big studio.

Meanwhile the officials wait in vain for Post Office sanction to open the 60 kW transmitter at St. Agnan, and listeners, both in France and abroad, are wondering whether the French Post Office intends to suppress this energetic organisation until the completion of the projected Regional Scheme. If so, Toulouse might remain virtually silent for several years.



YOUNG ITALY LISTENS. Children in elementary schools all over Italy recently heard a simultaneous broadcast specially organised for their benefit by the Board of Education. The photograph shows a typical assembly listening to an address on the history of Rome.

indications show that iron cored coils will be the general rule in receivers intended for long distance reception. In addition to Ferrocort use will be made of British coil inventions which hold great possibilities as regards selectivity and sensitivity.

Amateur Signals from Stratosphere

M. MAX COSYNS, the well-known Belgian amateur, will transmit on wavelengths of 41.1 and 21.4 metres, from the balloon which is making the third ascent into the stratosphere from Belgium during July.

Preliminary tests are being carried out with the apparatus on a Puss-Moth Gypsy plane piloted by M. Jacques Mahieu, with the call letters XXON4AU. Transmissions are being made every Thursday and Sunday between 3 and 6 p.m. (B.S.T.).

ing. It consists of about ten members representative of educational and general interests.

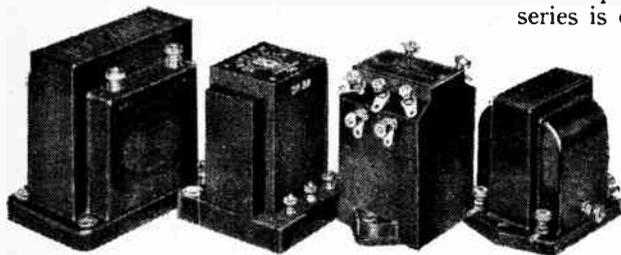
In defence of their efforts the Committee have protested that their powers have been too loosely defined and that their advice has not been acted upon.

Listeners as Censors

THE first law of its kind has been formulated by the Czechoslovakian postal authorities in forbidding listeners to "disseminate" broadcast programmes from abroad which might be contrary to public order or damaging to the Czechoslovak Republic. If such a programme be received, the listener must not make it audible to any persons outside the family circle. Problems which occur are: What constitutes a damaging programme and how is the listener to discriminate in advance?

Components for CLASS "B" AMPLIFICATION

JUST as the variable-mu valve has superseded the screen-grid valve in high-frequency amplification, so it would appear that the class "B" valve is about to replace the single battery output valve in all but the simplest receivers. The reason is not far to seek; a class "B" receiver will give as much volume and as pleasing quality of reproduction as the type of mains set which is so popular to-day, and thus the favourite grouse of the battery set user—that he must content himself with only mediocre



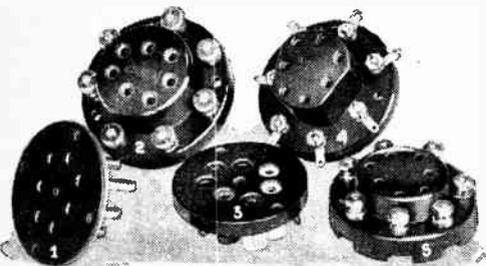
Driver transformers. From left to right: Ferranti AF17C, R.I. Driver-mu DY39, Varley DP40 and British Radiophone.

power output—is disposed of once and for all.

In economy of H.T. consumption the new valve can claim considerable advantage over earlier types, as practically the whole of the power consumed is available for operating the speaker, and precious milliamperes are only consumed in proportion to the loudness of signals.

Sceptics have pointed out that although the average working anode consumption has been proved to be within certain limits, the H.T. battery of medium capacity could hardly be expected to withstand the momentary peaks of, say, 40 mA. which occur during full modulation. In this connection it is pleasing to note that, from reports on the behaviour of *The Wireless World* "Class 'B' Ferrocart" receiver, the life of the H.T. battery, rated for 12 mA. discharge, is quite normal.

Class "B" amplification has undoubtedly established itself, and we find the leading valve manufacturers entering the market with various types. In

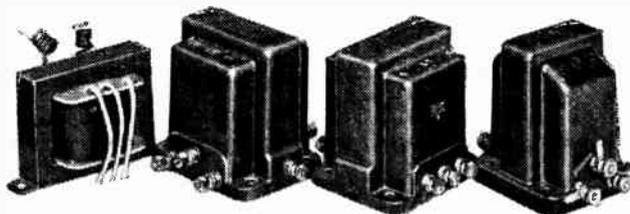


Five 7-pin valve holders suitable for Class "B" valves. (1) Clix, (2) Ferranti, (3) Dowbro, (4) Wearite, and (5) W.B.

Designing the Driver Stage

In addition to the 240B valve made by Cossor, who are pioneers in this field, there is now the Ferranti HP2, of similar characteristics to the 240B, and a Mazda class "B" valve styled the PD.220. This newcomer is not only valuable in the output stage of ordinary battery sets, but is also admirably suited to the needs of portable sets, as the filament consumption is but 0.2 amp. The Mullard member of this series is called the PM2B and also has a filament rated at 0.2 amp., whilst the Marconi and Osram valve, although not released at the time of writing these notes, is understood to have a similar filament consumption.

With so many types available, it has been thought that tables giving valve constants and driver transformer ratios would be helpful in arriving at a choice of the best combination of components for any given conditions. Readers probably have neither the time nor the inclination to exercise their mathematical faculties in working out the rather complicated relationship between driver valve, driver transformer, and class "B" valve, so



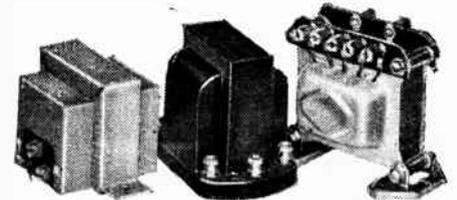
From left to right: Trix TB1, Sound Sales Type UB, Trix, and Lissen Hypernik.

that the classified list, which is not complete, but representative of the many arrangements possible, should form a short cut.

In broad principle every class "B" valve (which consists of two triodes in one bulb) has a minimum input impedance—that is, when a large signal is received, each separate triode in turn runs into grid current, and the valve's grid circuit presents quite a low resistance—say, 2,500 ohms—across half the driver transformer secondary to which it is connected. Now if the driver transformer has an overall ratio of 1 to 1, its step-down ratio per half secondary will be 2 to 1, and the load transferred to the primary in the case just mentioned will be $2,500 \times 2^2$, or 10,000 ohms. Should the driver valve, which must be looked upon as a small power output valve delivering undistorted

energy, require 10,000 ohms as its optimum load, all is well, and we can say that, for the class "B" valve concerned, the driver transformer and driver valve have been well chosen.

Unfortunately, this is not the whole story. Valve makers are finding that although it is accepted practice in ordinary small power output valve technique



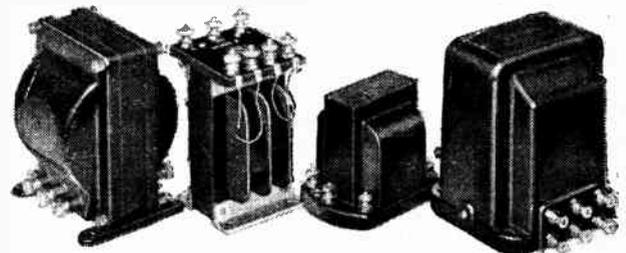
Three driver transformers. From left to right: Benjamin, Multitone BEPU, and multi-ratio Wearite model.

to choose a load impedance from 1.6 to 2 times that of the valve in order to give the greatest output free from harmonic distortion, in class "B" work the driver load must be perhaps three times or even five times the A.C. resistance of the driver valve. This being so, it will quickly be appreciated why there appear in Table B driver transformers having ratios per half secondary of 3 and 4 to 1.

Small Leakage Inductance

Let us assume that in the interests of H.T. economy it has been decided to be content with rather less than one watt speech output, for which purpose quite a small driver valve will suffice—the type of L.F. valve which will pass very little anode current and thus will be of moderately high impedance, say, 13,000 ohms. Accordingly, a load of three times this value will be chosen—say, 40,000 ohms—and to transfer 2,500 ohms valve input impedance to this value, which is a ratio of sixteen times, the primary to half secondary ratio will have to be $\sqrt{16} = 4$ to 1.

It is not enough just to wind the correct number of turns on a "generous" core.



Output transformers and chokes. From left to right: Ferranti OPM.16C, multi-ratio R.I. output choke, Multitone Puchoke and Varley output choke.

The inductance of the primary must be high under working conditions, the D.C. resistance of the secondary really low, and, above all, there must be the very minimum leakage inductance and core

Components for Class "B" Amplification— loss. Many of the transformers given in the table have been tested and found to conform to the required standard.

An example of how to use Table B may not be out of place. Suppose that a power output of one watt only is desired from a loud speaker working in a comparatively small room and that it is proposed to use an inexpensive 120-volt H.T. battery; a sound choice would be an R.I. DY38 driver transformer with a step-down ratio of 4 to 1 fed from a Mazda L2 driver valve and feeding into a PD.220 class "B" valve of the same make.

Of the matching of the output transformer to the speaker little need be said, as all the manufacturers who supply driver transformers also have tapped output chokes or multi-ratio transformers available. The correct ratio is obtained from the usual formula:

$\sqrt{\text{Anode-to-anode load} \div \text{speech coil impedance}}$. If, as is usually the case, the speaker has a built-in matching transformer, we must substitute in the above formula for "speech coil impedance" the speech coil impedance as referred to the primary of

the transformer—a figure which the makers will be able to supply.

Since the original articles on class "B" amplification appeared in *The Wireless World* considerable research has been carried out on causes of distortion, and

in many cases it has been found to be due simply to battery coupling. If, therefore, suspicion arises as to the condition of the H.T. battery, borrow a new one to feed the class "B" valve only, and, should distortion disappear, it indicates that more extensive decoupling is required in all the other stages. A good example of comprehensive decoupling is to be found in the Ferranti class "B" Constructors' Set recently reviewed in these pages.¹

¹ See issue dated May 19th, 1933, page 361.

Another cause of distortion is parasitic oscillation, which can be prevented by the use of 0.002 to 0.005 mfd. condensers between one or both anodes of the class "B" valve and the output transformer centre-point.

TABLE A.
CLASS "B" VALVES.

Type.	Filament.		Total Quiescent Anode Current (mA.).	Min. Input Impedance (ohms).	Anode-to-anode Load (ohms).	Un-distorted Output at 120v. H.T. (Milli-watts).
	Volts.	Amps.				
Cossor 240B.....	2.0	0.4	4.0	2,500	8,000	2,000
Ferranti HP2	2.0	0.4	3.0	2,500	8,000	2,000
Mazda PD220.....	2.0	0.2	2.0	4,000	17,000	1,000 (A)
" PD220.....	2.0	0.2	2.0	3,800	11,500	1,400 (B)
Mullard PM2B ...	2.0	0.2	3.0	4,000	14,000	1,250

(A) Using an L2 valve as driver. (B) P220 valve as driver.

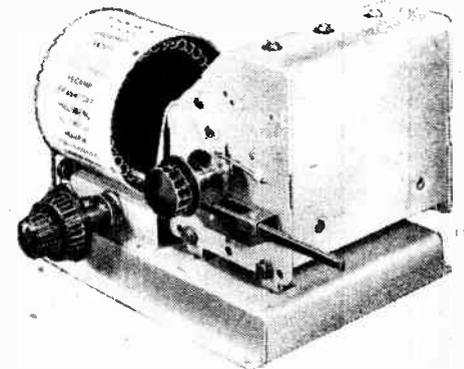
NEW TUNING DEVELOPMENT

A NOVEL device which is sponsored by the Invincible Trust, Ltd., 24, Throgmorton Street, London, E.C.2, will shortly make its appearance on the market. Unlike the majority of tuning dials now in use it does not take the form of a drive mechanism but is rather in the nature of a station selector. It consists of a drum mounted by the side of the gang condenser and engraved with the names, in alphabetical order, of the principal broadcast stations working on the medium and the long wavebands. On the condenser spindle is a small pinion, and immediately below and engaged with it is a rack sliding in a specially constructed cradle.

Round the periphery of the drum, and on the side adjacent to the condenser, is a series of holes corresponding in number to the stations engraved on the dial. Each is provided with an adjustable stop carrying a small electrical contact, and these can be set to permit the rack to travel to any desired depth into the drum.

TABLE B. DRIVER TRANSFORMERS.

Type.	Maker.	Ratio per Half Sec.	Suitable Class "B" Valve.	Suitable Driver Valve.	Output.		Price.
					120v. H.T.	150v. H.T.	
Class "B" ...	Amplion	2 to 1	240B	215P	2 watts	—	s. d.
		3 to 1	PD220	P.220	1.4 "	2.4 watts	9 6
		3 to 1	PM2B	PM2DX	1.25 "	—	9 6
		4 to 1	PD220	L2	1.0 watt	2.1 "	9 6
" B "	Benjamin	2 to 1	240B	215P	2 watts	—	10 6
		3 to 1	PD.220	P.220	1.4 "	2.4 watts	
		3 to 1	PM2B	PM2DX	1.25 "	—	
Class "B" ...	British Radiophone	2 to 1	240B	215P	2 watts	—	15 0
AF15C	Ferranti	2 to 1	240B	215P	2 watts	—	26 6
AF17C	"	2 to 1	HP2	215P	2 watts	2.7 watts	
		2 to 1	240B	215P	2 watts	2.7 watts	
		2 to 1	HP2	215P	2 watts	2.7 watts	
Hypernik	Lissen	2 to 1	240B	215P	2 watts	—	12 6
BEPU 1:1 ...	Multitone	2 to 1	240B	215P	2 watts	—	9 6
		3 to 1	PD.220	P.220	1.4 watts	2.4 watts	
		3 to 1	PM2B	PM2DX	1.25 "	—	
		3 to 1	PM2B	PM2DX	1.0 watt	—	
BEPU 2:1....	"	4 to 1	PD.220	L2	1.0 "	2.1 watts	9 6
DY37.....	R.I.....	2 to 1	240B	215P	2 watts	—	15 0
		3 to 1	240B	6,000 ohms	2 watts	—	
		3 to 1	PM2B	PM2DX	1.25 "	—	
		3 to 1	PD.220	P.220	1.3 "	2.1 watts	
DY38.....	"	4 to 1	240B	10,000 ohms	1.0 watt	—	15 0
		4 to 1	PM2B	20,000 "	0.7 "	—	
		4 to 1	PD.220	L2	1.0 "	2.1 watts	
		2 to 1	240B	215P	2 watts	—	
DY39.....	"	4 to 1	240B	10,000 ohms	0.75 watt	—	11 0
		4 to 1	PM2B	20,000 "	0.7 "	—	
		4 to 1	PD.220	L2	0.75 "	1.5 watts	
		3 to 1	PM2B	PM2DX	1.25 watts	—	
DY42.....	"	3 to 1	PM2B	PM2DX	1.25 watts	—	11 0
		3 to 1	PD.220	P.220	1.4 "	2.4 watts	
		3 to 1	240B	215P	2 watts	—	
		4 to 1	PD.220	P.220	1.4 "	2.4 watts	
" UB "	Sound Sales	2 to 1	240B	215P	2 watts	—	10 0
		3 to 1	PD.220	P.220	1.4 "	2.4 watts	
		3 to 1	PM2B	PM2DX	1.25 "	—	
		4 to 1	PD.220	L2	1.0 watt	2.1 watts	
TB1	Trix	2 to 1	240B	215P	2 watts	—	9 0
		4 to 1	PD.220	L2	1.0 watt	2.1 watts	
		3 to 1	PD.220	P.220	1.4 watts	2.4 "	
		3 to 1	PM2B	PM2DX	1.25 "	—	
DP40	Varley	2 to 1	240B	215P	2 watts	—	15 0
		3 to 1	PD.220	P.220	1.4 "	2.4 watts	
		3 to 1	PM2B	PM2DX	1.25 "	—	
		3 to 1	PD.220	P.220	1.4 "	2.4 watts	
DP41	"	3 to 1	PM2B	PM2DX	1.25 "	—	15 0
		3 to 1	PD.220	L2	1.0 watt	2.1 watts	
		3 to 1	240B	215P	2 watts	—	
		4 to 1	PD.220	P.220	1.4 "	2.4 watts	
" B "	Wearite	2 to 1	240B	215P	2 watts	—	8 6
		3 to 1	PD.220	P.220	1.4 "	2.4 watts	
		3 to 1	PM2B	PM2DX	1.25 "	—	
		4 to 1	PD.220	L2	1.0 watt	2.1 watts	



New station selector dial attached to a three-gang condenser.

It thus follows that each stop can be fixed to arrest the travel of the rack when the condenser is adjusted to any desired station, and in practice this adjustment is made to coincide with that position of the drum which brings the name of the station in question opposite the escutcheon window. The function of the electrical contact is to interrupt either the loud speaker circuit or break any other suitable lead in the set, while making these adjustments, and the circuit is completed by the final movement of the rack.

The model illustrated here is fitted with a 3 1/2 in. drum engraved with the names of twenty-six medium-wave and long-wave stations. To avoid confusion black lettering is adopted for the former and red lettering for the latter. In addition, there is one position marked "Common" which enables the receiver to be tuned in the normal way. Drums of larger size could be employed, if necessary, thereby allowing many more station names to be accommodated. Provision is made for a limited movement of the drum should a final adjustment be necessary at any time.

Practical HINTS AND TIPS

AIDS TO BETTER RECEPTION

THERE seems to have been an epidemic lately of defective condensers of the solid dielectric type. At any rate, several failures have been traced to a lack of continuity between the terminals and the moving or fixed sets of vanes.

This trouble seems to be confined to the cheaper type of condenser, in which the vanes are almost entirely concealed between plates of paxolin or similar material. Sometimes the fault does not manifest itself until the condenser is subjected to torsional stresses by being mounted rigidly on the panel. Tests for continuity should, of course, be made directly between the appropriate sets of vanes and the terminals.

IT is sometimes thought that none but specially designed L.F. transformers can be used as parallel-fed intervalve couplings. This is a mistake; any transformer, even if manufactured before resistance-feeding was thought of, may be employed in this manner, often with advantage. With the accompanying diagram as a guide, there should be no difficulty in making the connections correctly.

In Fig. 1 (a) is shown the normal system of connection, in which the primary winding is inserted directly in the

of parallel-fed circuit (diagram b), the secondary connections remain unchanged, but the primary is joined up in the manner indicated. Although the "P." and "H.T." terminals are no longer joined to the points indicated by their lettering, the input from the preceding valve is still applied to the original high-potential point.

In order to obtain a higher step-up ratio, and consequently greater amplification, primary and secondary are often connected together and thus converted into an auto-transformer, as in diagram c. Here the connections are not quite so straightforward, and, although the methods indicated will generally be correct, it cannot be guaranteed that the "sense" of the windings will be right in every case. Instead of joining "G.B." to "P" and "H.T." to the grid bias battery, as shown, it may be necessary to reverse the primary connections. This is done by joining "H.T." to "G.B." and "P" to the bias battery. In every case the lead from the feed condenser may be connected to the "G.B." terminal.

Although the subject is rather too involved for superficial treatment, the question of the values of the feed resistance and coupling condenser may be briefly touched upon. The first component may have a resistance of anything between 10,000 and 50,000 ohms; the latter value would generally be applicable only where a detector valve of high A.C. resistance is employed in conjunction with a relatively

Before closing this note attention might be drawn to the fact that the "extra step-up" circuit of diagram (c) is at present rather under a cloud, as decoupling of the grid circuit of the succeeding valve becomes more difficult when it is employed. This disadvantage applies only to mains-operated sets, and not to a circuit where bias voltage is derived from a battery.

IT is as well to cultivate the habit of making periodical tests of the insulation resistance of coupling condensers used in a resistance capacity amplifier. Quite a small leakage will seriously impair the working of the valves; when high-resistance grid leaks are employed so much positive voltage from the source of H.T. supply may reach the grids that the negative bias voltage normally applied may be entirely cancelled out.

Although a direct measurement of the insulation resistance of the coupling condenser can seldom be made with the apparatus available, it may be remembered that we have a fairly certain indication that the condenser is leaking when the anode current of the associated valve is found to be unduly high.

More or less serious distortion will suggest that one or more of the condensers may be leaking. The symptoms are those of overloading, but if the grid condenser of the valve preceding the output stage is not at fault, the working of the output valve would not be affected. For instance, a meter connected in its anode circuit would show a steady reading.

PROSPECTIVE constructors of the short-wave converter described in *The Wireless World* of April 28th may be tempted to obtain anode current for the H.F. and detector-oscillator valves of the unit from the receiver with which it is to be used, instead of providing separate mains equipment in the manner described in the constructional article.

This is an alteration that can hardly be recommended, especially when the existing set is of the superheterodyne type. In the first place, there is very little surplus power in the average set, and so its operation may be impaired by imposing an extra drain on the rectifying equipment. Even if the difficulty of current supply can be overcome, a separate source of supply for the converter is desirable, as it reduces the possibility of stray couplings between unit and set.

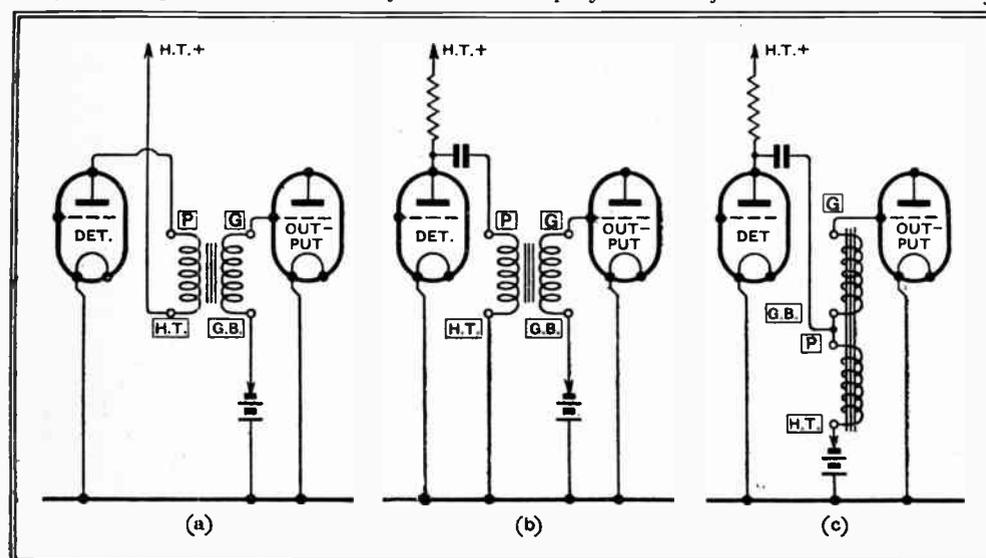


Fig. 1.—Normal transformer connections compared with those applicable in parallel-fed circuits.

anode circuit of the preceding valve; the four terminal points of the transformer are lettered in accordance with the prevailing practice, although the beginner may bear in mind the fact that A (anode) is often substituted for P (plate).

When changing over to the simplest form

high H.T. voltage; 20,000 to 30,000 ohms is the average value.

A feed condenser of 1 mfd. is a fairly safe choice, although a lower value may help to introduce a desirable bass resonance, and thus improve the characteristics of the L.F. amplifier.



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Mullard PM2B	" " "	" 1.5/1
Mazda PD220	Mazda L2 or similar valve	" 2/1
" "	" P220 or similar valve	" 1.5/1

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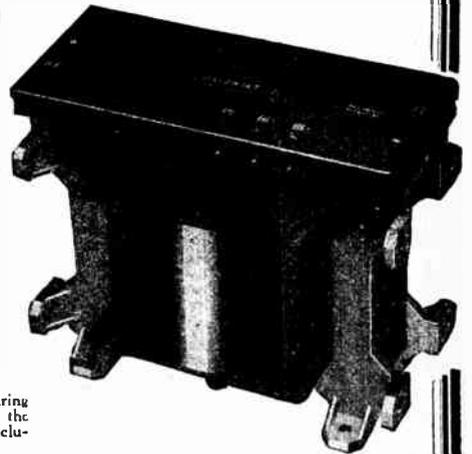
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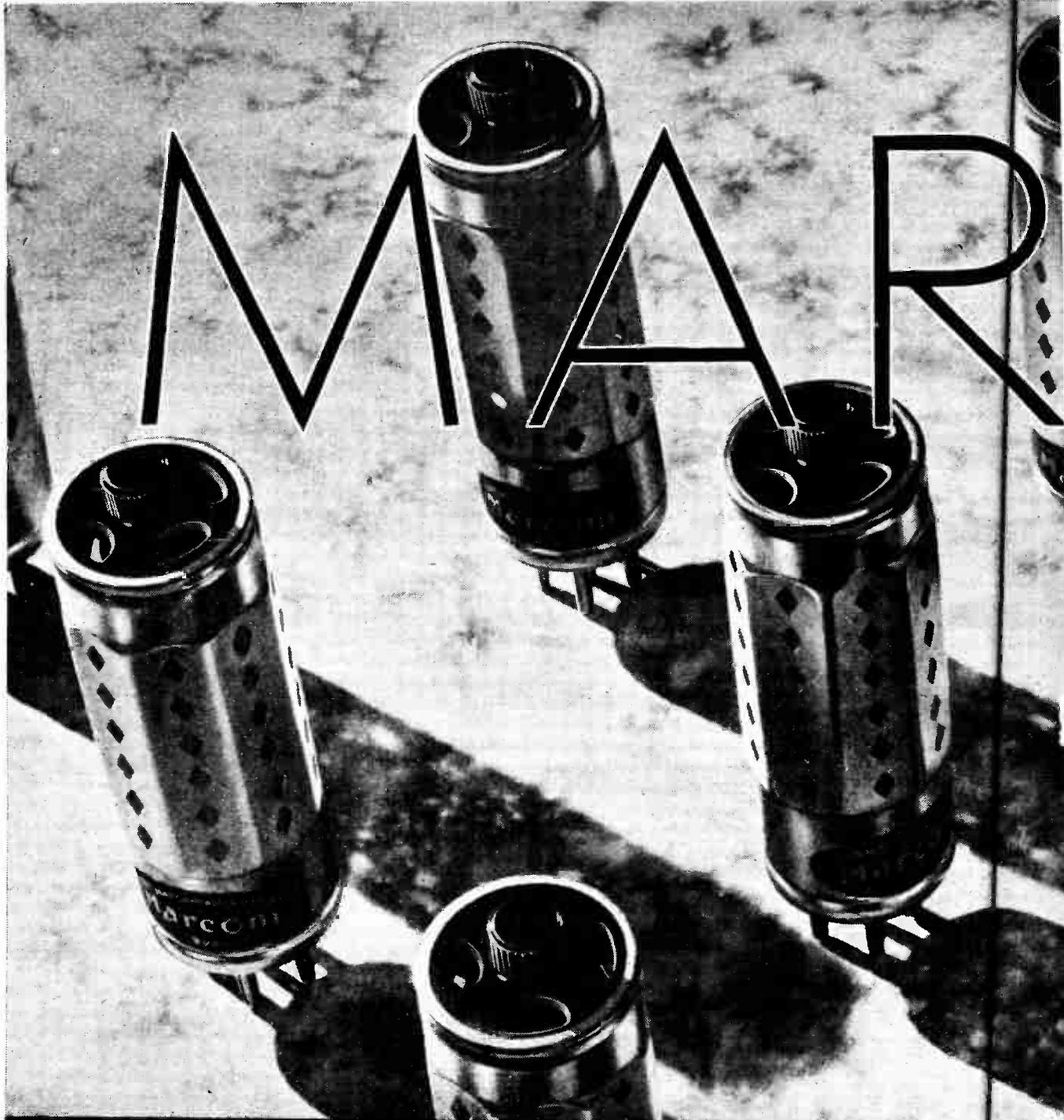
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Broadcast Brevities

By Our Special Correspondent

Discords on a B.B.C. Music Committee

IT is a sad fact that the profession of music seems to involve its votaries in acrimonious disputes. Broadcast music, alas, is no exception, hence it is not surprising that differences of opinion should reach a critical stage even on the B.B.C.'s Musical Advisory Committee.

Two members of this very important body have recently tendered their resignations, which have, however, been declined in the hope that better counsels may prevail.

Should Artistes Hold Diplomas?

A great bone of contention, I understand, has been the proposal that no musical artiste should be permitted to broadcast unless he or she possesses a diploma or other suitable credentials from one of the established schools of music in this country.

Impossible Rule

It seems difficult in this year of Grace to conceive of such a regulation, and I believe that many musicians with diplomas would be among the first to protest against such an arbitrary ruling. It has been said that Johann Sebastian Bach would have been quite unable to secure a modern Mus. Bac. degree, and, of course, it is common knowledge that the great Verdi was turned down by one of the big academies of music, as "showing insufficient promise."

Banning the Great Masters

Surely it will be a bad day for broadcasting when the Bachs and the Verdis are denied access to the microphone.

The Men in Charge

At the Junior Carlton Club on Empire Day I saw just how a broadcast of this kind is done. Two B.B.C. engineers handled the entire job, although the speeches of Lord Derby, the Archbishop of Canterbury, and the Rt. Hon. J. H. Thomas were broadcast to all parts of the Empire and a failure would have started a buzz of enquiry all over the globe.

But there was no failure. One engineer took charge of the microphone, while his *confrère* hastily rigged up "control" on a dumb waiter concealed behind masses of foliage, plates, camouflaged Canadian salmon, and hors d'œuvres.

Nothing Missed

So slick are these "O.B." men that the whole affair was contrived within an hour. Speech was tested and found wholesome, the cables from the microphones were made fool-proof to ensure that not even the most myopic of visitors could possibly trip over them, and, finally, before all was pro-

"WE ARE NOW TAKING YOU OVER. . . ." Engineers fitting microphones at the Junior Carlton Club for speeches by Lord Derby, Mr. J. H. Thomas, and the Archbishop of Canterbury on Empire Day. (Below) The B.B.C. "control," showing the "A" amplifier and emergency gear.

The R.A.F. Display

THAT splendid commentator, Squadron Leader Helmore, will once more be in charge of the microphone at the Royal Air Force Display at Hendon on June 24th, when two running commentaries will be broadcast, the first from 3 to 3.30 p.m. and the second from 4.25 to 4.45 p.m.

Tied-together Flying

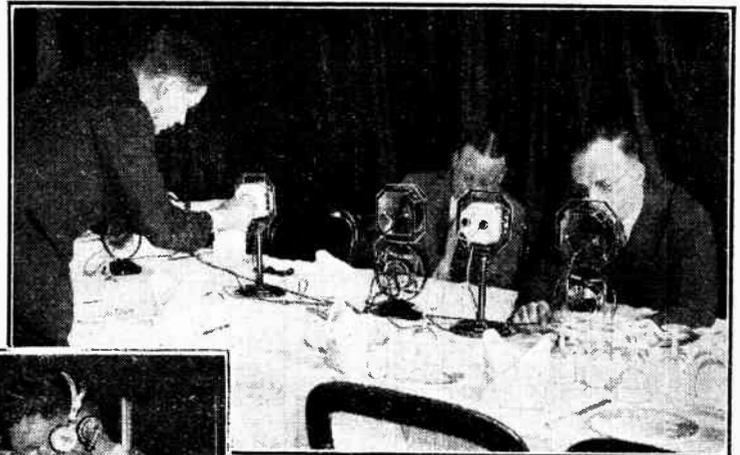
Perhaps the most thrilling of all the events to be described will be the demonstration by No. 25 Fighter Squadron of "tied-together" flying, in which the 'planes engaged will be linked by light cables to which streamers will be attached. Listeners will also hear a description of the take-off of a Day Bomber Wing, an aerial combat and inverted flying.

Mystery

WHAT is the mystery about the broadcasting of the World Economic Conference on June 12th? At the time of writing I am unable to obtain an official statement from the B.B.C., albeit the story of His Majesty's broadcast at the opening of the Conference at the Geological Museum, South Kensington, on June 12th has been heralded in several journals of importance.

Organised by the Post Office

This world-wide broadcast is being considered by the Post Office in conjunction



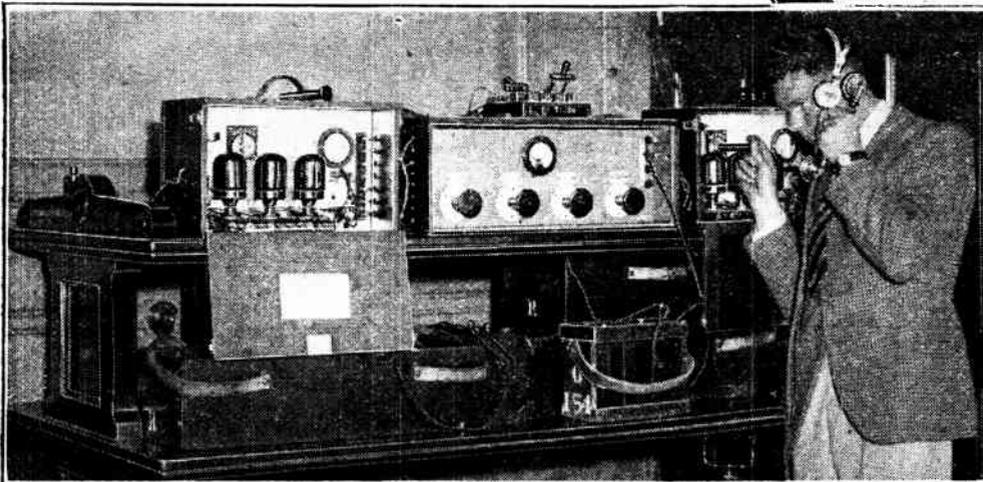
with the foreign administrations concerned. His Majesty's speech will be relayed through the International Telephone Exchange at Faraday Building and thence to all the capitals of Europe, and by transatlantic 'phone to the United States.

Duke Ellington in the B.B.C. Studio

DUKE ELLINGTON and his orchestra, most renowned of "hot" musicians, are on their way to this country and will broadcast on the National wavelength, June 14th, from 8.0 to 9.0 p.m. Some who have no ear or stomach for "hot" music—an increasing host since Henry Hall soothed our jangled nerves with his soft rhythmic melodies—may not like "The Duke's" playing.

No Hot Cha-Cha or Base Emotions

Others will anticipate the coming visit with as much zest as the classical moderns view the arrival of Stravinsky or Schönberg at the Queen's Hall. To each and all, however, the visit will be an important event in the annals of broadcasting; for, to quote his publicity agent, "In Ellington we have not just another negro jazz-band leader full of hot-cha-cha and the baser emotions."



How to Broadcast an Empire Luncheon

HOW our great grandfathers would have blinked at the preparations for a ceremonial luncheon of to-day! They would have comprehended the gastronomic side of the business and would probably have deplored the asceticism of the present generation, which can begin a luncheon at 1 p.m. and be in a fit state for speech-making forty-five minutes later. But the mikes and the amplifiers, and the loud speakers . . . !

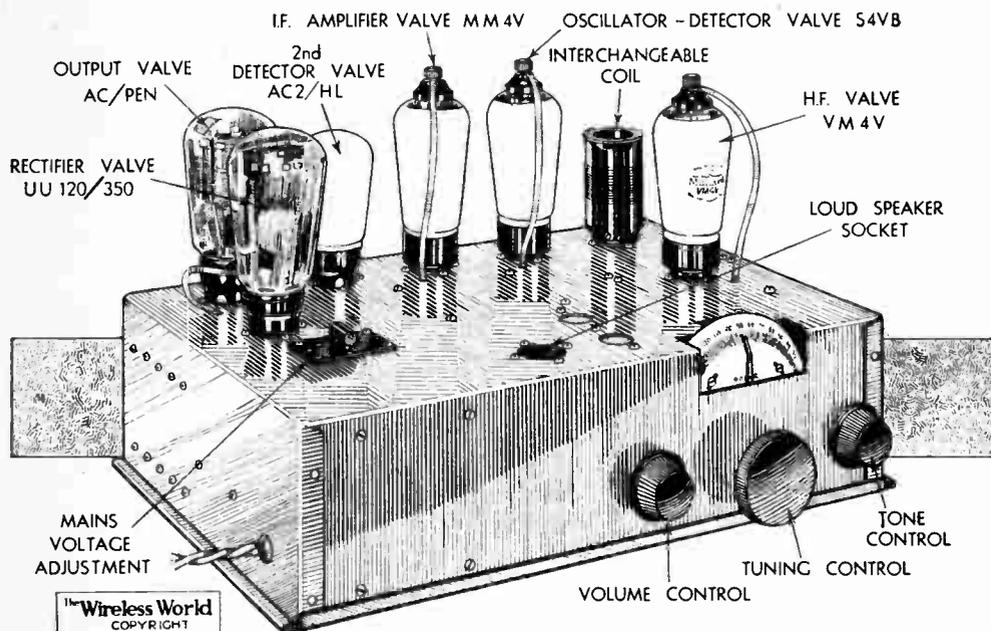
nounced perfect, the engineers even tested the lighting system for interference clicks.

Sang Froid

Like all other items of B.B.C. routine, outside broadcasts are now a cut-and-dried procedure, and I have little doubt that the engineers would preserve the same *sang froid* whether they were relaying an egg-laying contest at Little Mugwump or a Delhi Durbar. Which is just as well, for few jobs call for more self-possession and a cooler head if anything goes wrong.

TRIX "Explora"

Short-wave Superheterodyne



FEATURES

Type: Short-wave superheterodyne; six valves with rectifier; interchangeable coils (including medium waveband); provision for gramophone pick-up; moving-coil loud speaker. **Circuit:** Variable-mu H.F. amplifier—detector-oscillator—variable-mu I.F.—second detector—pentode output valve. **Controls:** (1) Tuning; (2) Volume and on-off switch; (3) Tone control. **Price:** (chassis only, including valves, coils and loud speaker) 21 gns. **Makers:** Eric J. Lever (Trix) Ltd., 8/9, Clerkenwell Green, London, E.C.1.

For Reception Overseas

THIS receiver has been designed with special regard for the requirements of short-wave listeners overseas. It is sold in chassis form so that the purchaser may choose a material for his cabinet which he knows from experience will be best suited to local climatic conditions. Metal or special wood cabinets can be supplied to order. With the valves and plug-in coil removed the chassis is clear of excrescences which would add to the shipping space required. The moving-coil loud speaker is connected through a valve socket and four-pin plug, and is easily removed.

The short-wave range of 12 to 86 metres is divided into four overlapping sections covered by interchangeable coils. As a result, stations are well spread out, and with the well-chosen reduction in the slow-motion dial, tuning is far less critical than in the majority of short-wave receivers. The dial is illuminated and is calibrated in degrees. We understand that the approximate settings of the more important stations are given with each receiver, and that a full calibration can be supplied if required. The station settings are independent of the aerial

capacity as a screen-grid valve has been interposed between the aperiodic aerial circuit and the detector-oscillator.

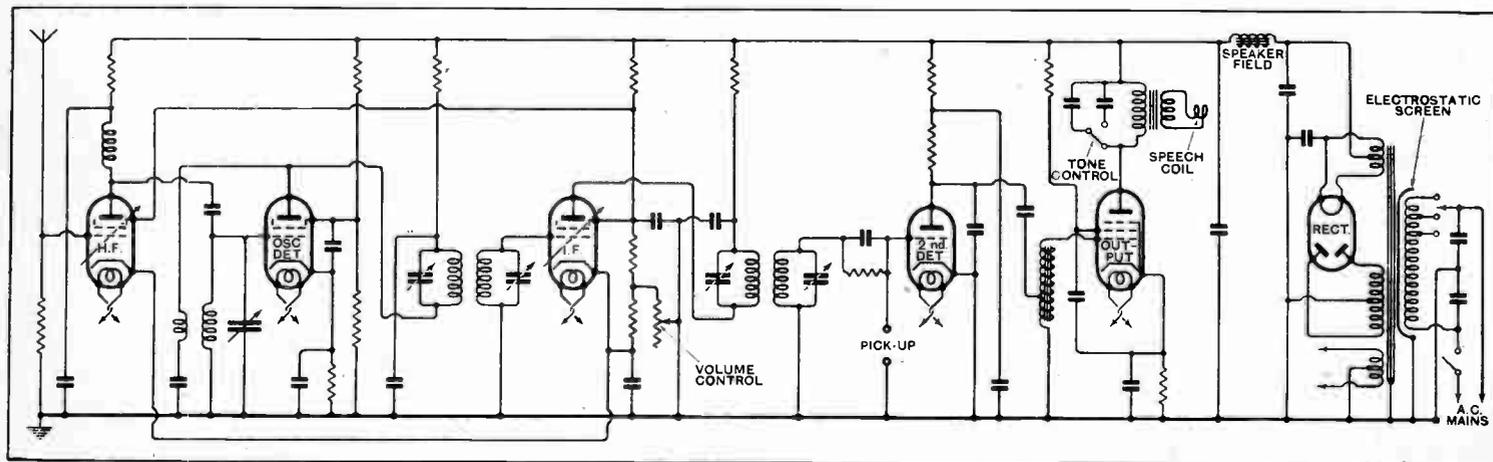
Silent Background

The overall magnification is most impressive, and in our opinion is sufficient to give loud speaker reception of any station whose signal strength is above the prevailing atmospheric noise level. In particular, the lowest range (12-24 metres) was much more lively than in the majority of short-wave sets. Three American stations (Schenectady, 31.48 metres; East Pittsburgh, 25.27 metres; and Bound Brook, 16.87 metres) were picked up in a random search between 11 p.m. and 1 a.m. In each case the loud speaker was well and truly overloaded with the volume control at maximum. Incidentally, the control is rather crowded at this end of its range, and the last fraction of a turn brings up the background noise considerably. Fortunately, the full magnification is seldom, if ever, required, but it is useful to know that a reserve exists if conditions are favourable. With the aerial re-

moved the set is quite silent at maximum sensitivity, and mains hum is inaudible outside a six-inch radius from the loud speaker. Full brilliance of tone can be maintained on strong signals, but where the strength of the station is comparable with the background noise a tone control is provided which gives more mellow quality and considerably reduces background noise.

The intermediate stage operates at a frequency of 150 kilocycles, and an additional coil for the medium broadcast waveband is available. When changing coils it is advisable to turn the volume control to minimum or to switch off the set altogether, otherwise the loud speaker is apt to make distressing noises. The valves take two or three minutes to warm thoroughly to their work, so the coil change-over should be made quickly if the precaution is taken of switching off completely.

The set has obviously been designed with a thorough understanding of the special requirements of short-wave reception, and the use of tropical-type condensers and a cadmium-plated chassis should ensure reliability in warm and humid climates.



Circuit diagram of the Trix "Explora" chassis. The volume control resistance governs both the grid bias and screen potential of the I.F. amplifier valve.

UNBIASED

BY FREE GRID

Does Moral Rectitude Pay?

THE wave of dishonesty which seems to sweep over certain members of the female sex whenever they pay a visit to a large emporium is, as one of our stipendiaries recently remarked, a menace to all law-abiding citizens.

At no time has the truth of this statement been brought home to me more forcibly than on the occasion of a visit the other day to the wireless section of a well-known departmental stores.

Trouble arose from the fact that I am accustomed to carry valves and other odd bits of wireless gear about my person. In order to examine the innards of a set more closely I had removed the valves and had quite naturally dropped them into my coat pocket. At the conclusion of my examination I returned the valves and quitted the building, only to be accosted by what the Yanks call a "coupla house dicks," who informed me that I had been observed to take four valves from a receiver and that my presence was requested in the manager's room.

Being conscious of my own moral rectitude, I was at first inclined to beat them over the head with my umbrella, but realising that such an action would put me on the wrong side of the law, I controlled my indignation with difficulty and curtly refused their request. They seemed non-plussed for the moment, but, quickly recovering, summoned a "pavement

HARRIDGE'S
STORES



Conscious of moral rectitude.

pounder" who happened to be in the offing and poured out their tale of woe to him.

Not being unmindful of my legal position, I at once demanded that I be arrested and charged with some crime, and formally refused all requests to "make statements" or fall into any of those pitfalls whereby suspected persons, ignorant of their legal rights, may quite easily compromise themselves. After a hasty conference the two "sleuths" decided not to prefer any charge, and, after suitably rebuking them for wasting his time, the bobby put away his notebook in a dis-

appointed manner and I was allowed to pass along my way in peace.

It was only when I was turning out my pockets, prior to retiring at night, that I came across four strange-looking valves marked "Dummy" among the miscellaneous collection which I had removed from my person. Hastily sorting over the other valves, I found that four brand-new valves, formerly numbered among my pocket possessions, were no longer there.

A New One

"ANOTHER important development," says one of the leading Midland journals, discussing the latest radio innovations, "is the introduction of the double-diode pentode valve Two types are available, one variable- μ and one non-variable- μ . The former is particularly suitable for the later amplifying stages of superheterodyne sets."

I am always interested to hear of the latest inventions, but this is a new one on me. I cannot help thinking that this is a case of Homer nodding, since the writer is obviously confusing the double-diode pentode with the H.F. or screened pentode.

Noises Off?

FROM a confidential source I hear that the B.B.C. are perturbed over a new menace which threatens them. My informant tells me that disturbing rumours are current of plots by certain people to cause deliberate interference with the performances which they attend. It is not merely the ejaculation of words of abuse by members of the audience, wearied with the fare provided, which the Corporation fear, but, what is far more serious, that bands of organised propagandists are plotting to chant their slogan in the middle of a programme, like the suffragettes in the House of Commons in pre-war days.

It has even been rumoured that certain big manufacturers are suspected of preparing a secret advertising campaign, and almost any day now the "packed" audience may suddenly burst out with "Buy Bloggs' Blankets."

Various suggestions have been made, such as putting the audience in a sound-proof room behind a plate-glass panel and feeding the "sound" part of the programme to them *via* loud speakers. Temperamental artists have objected, however, on the grounds that to get their "stuff" over properly they must have the "atmosphere" provided by an audience. A silent audience behind plate glass, they say, would be reminiscent of the Chamber of Horrors. If you were the B.B.C. what would you do about it?

Listening and Looking

EVER since broadcasting began, certain sections of listeners have railed against the B.B.C. talks, and even their most hardened advocates have sometimes found certain of these a little difficult to follow without diagrams or illustrations.

I have often felt that the talks would be vastly more popular if they could be



Still pictures on the "telereceptor," "teleceptor" or "visaceptor."

livened up, but I cannot for the life of me make any sense out of a suggestion sent me by a man who, very appropriately in my opinion, signs himself "Dum Spiro-Spero."

His suggestion is that still-pictures and diagrams should be televised by the B.B.C. simultaneously with the talks, etc., which they are intended to illustrate. Actual lantern slides, he says, could be used at the transmitting end, and we should have something in the nature of an ordinary lantern projector coupled to a television receiver in our homes.

The whole affair would then be quite simple, he alleges, as one picture or diagram could be scanned continuously instead of there being the necessity to deal with unpteen pictures a second, as in the case of movies, and so the disadvantages of television would disappear. The arrangement would, he tells me, have all the simplicity of the ordinary projecting lantern as compared with the complexity of the modern cinema projector.

I quite realise, of course, that his plan is perfectly well-intentioned, but how on earth it could be any improvement on the ordinary "movie television" I fail to see, as the picture has got to be scanned no less rapidly, and so there can be no question of more detail being got in.

He is so confident, however, that he has even gone as far as discussing among his friends which of the three words, "telereceptor," "teleceptor," or "visaceptor," he should register for his proposed instrument. The last thing I wish to do is to throw cold water on inventive genius, but I must state that, in my opinion, my correspondent appears to be a likely candidate for the perpetual motion stakes.

Letters to the Editor

The Editor does not hold himself responsible for the opinions of his correspondents.

Correspondence should be addressed to the Editor, "The Wireless World," Dorset House, Stamford Street, S.E.1, and must be accompanied by the writer's name and address.

Automatic Volume Control

WHETHER or not the "experimenting constructor's" interest is limited to fields involving little more theory than a knowledge of Ohm's law, most listeners find fading extremely irritating. Admittedly A.V.C. does not correct the distortion which sometimes accompanies fading; but presumably one will only listen to such a programme if one has a special interest in its subject matter, so that it is preferable to hear the programme distorted at times rather than both distorted and inaudible.

The A.V.C. receiver has the desired characteristic of working at the maximum useful sensitiveness when receiving weak stations, and, in fact, the charge of insensitivity is based on a complete misrepresentation of the action of A.V.C. Sensitivity is reduced when necessary to prevent the input to the detector from exceeding a predetermined maximum value, but it does not reduce the amplified signal below this value, and it has no effect on signals which are so weak initially that they do not reach the desired value. If Mr. Haynes is thinking of the reduced sensitivity of the Q.A.V.C. system during searching, he should not have any reason to complain of excessive background noise. Personally, I favour the "noise suppressor" principle employed in the A.V.C. Monodial Super whereby the maximum sensitivity of the receiver may be adjusted to suit prevailing conditions; for a given sensitivity an A.V.C. set need not be any worse than an uncontrolled set.

I should feel more satisfied if Mr. Haynes would give some theoretical explanation of his statement that "in a superheterodyne the weak signal is represented at the second detector as one of very low modulation."

There is, however, one disadvantage of A.V.C. in connection with that valuable aid to selectivity—the "apparent demodulation" or "rectifier discrimination" effect. When the wanted signal fades the effective selectivity is reduced, owing to the change of the ratio of wanted to unwanted carrier strengths, so that adjacent channel interference is increased. This difficulty is avoided if the adjacent channel selectivity ratio of the receiver can be made large compared with the ratio in which signals are liable to vary through fading.

D. A. BELL.

Magdalen College, Oxford.

RE the correspondence appearing in *The Wireless World* of May 5th under the heading of "A Dissenting Voice," after reading the article to which the letter makes reference it appears that the remarks included were probably based principally on tests and data obtained from normally standard receivers, but where automatic volume control has been included as an extra.

I would like to emphasise that, in order to obtain the full benefits which A.V.C. undoubtedly offers to well-designed radio receivers, it is essential to have this in mind throughout when receivers are being designed, starting from the aerial terminal to the current flowing through the loud-speaker

windings. It is really useless to expect to obtain full benefits unless the whole set is being designed with A.V.C. in mind from start to finish.

It is well known that A.V.C. of some sort can be added to standard receivers employing diode detection, or by the simple method of placing certain cold rectifiers capable of operating on R.F. across the I.F. transformer, or elsewhere in a superheterodyne receiver, but it is impossible, in my opinion, to obtain even reasonable A.V.C. in this manner.

In the first paragraph of the article referred to, where it mentions that A.V.C. employing diode detector functions only when using a set having more H.F. valves than desirable, I would like to know whether any limit or standard has been placed on receivers as to the number of H.F. valves which are desirable.



NOT A GRAMOPHONE RECORD. B.B.C. engineers in quest of the "amorous descant" at Pangbourne. The nightingales have proved excellent broadcasters this year.

Actually, in my opinion, it is rather desirable to include at least one or two H.F. valves in order to cut down valve noise which is present if great gain is attempted after the oscillator. Also one or two H.F. valves in a superheterodyne greatly assist in removing second channel interference, etc. It is, therefore, desirable to employ H.F. valves without wasting this desirable feature by omitting A.V.C.

In the article it is also implied that A.V.C. gives considerable mush between station settings. This is hardly correct, since the same amount of mush will always be constant in two receivers of equal sensitivity between stations if one receiver employs A.V.C. and the other is of the same type without A.V.C. A.V.C. cannot, in my opinion, introduce background noises.

Where, farther on, it is mentioned that A.V.C. in no way corrects the distortion which accompanies fading, this, of course, is true, but it only requires a few minutes' test with the receiver with A.V.C. included to prove to the ordinary listener that when a set fades, but is held at a constant volume with A.V.C., a lecture or other talk will invariably be followed without any words missed, whereas otherwise certain paragraphs would be entirely lost. Even if distortion is present to some extent it is better to put up with that rather than lose part of the programme.

In reference to the concluding paragraph of the article I would like to ask, is it not the case, even where A.V.C. is not applied to the receiver, that the set should work at its maximum sensitiveness, apart from the position of the audio volume control, when a set is tuned between stations? It would appear from the remarks printed that if a set tuned to a certain station, where input is such as to cut the apparent sensitivity, down to, say, 10,000 microvolts absolute, the receiver has only this sensitivity until adjustments have been made. This, of course, is not the case. The set, from the H.F. point, would be working on maximum sensitivity until another carrier is tuned in.

I have made considerable tests and experiments on receivers which were designed originally with A.V.C., and can state that it is possible entirely to prevent overloading of a set where conditions have been made such that A.V.C. action starts at the exact point or one or two microvolts earlier than the point where the output valves commence to be overloaded. This will be obtained, for instance, in a set which has normal sensitivity as obtained from measurements with a standard signal generator of 20 to 30 microvolts at 50 milliwatts output, with an even sensitivity between 1,500 kcs. and 150 kcs. and where A.V.C. action takes place at 200 to 300 microvolts, at which point the set becomes fully loaded. Increasing the signal input, then, from this point up to even as great as one volt or two volts should not produce overload distortion in any manner. This is a very important adjunct to have in a receiver which would be used by an ordinary listener, since distortion due to overloading would not be reached.

It has also been noticed that articles have already appeared in various radio and motor journals to the effect that wireless receivers for motor cars are shortly to be attempted in this country. If this be the case, and the correct care and attention are paid to the design from the start, it is my opinion that A.V.C. will essentially have to be included in order to keep the volume level when the car is travelling through various screened areas, such as under tunnels or bridges, or down in low-lying parts of the country, where the microvolts per meter input will vary considerably every few yards.

It must also be appreciated that with well-designed sets using A.V.C. it is possible, when listening to the more powerful stations, that atmospherics or man-made statics will not be any louder than the volume produced by the station itself, since

the action of A.V.C. will also hold down static discharge as well. This is not so with sets without A.V.C., and often a programme, even from a fairly powerful station, can be entirely upset during bad etheric conditions.

G. J. REDFERN.

Philco Laboratories, Hendon.

Pick-ups and Bass Response

I WAS interested to read the article in your issue of May 12th on "Increasing Bass Response," because of a point only referred to indirectly, namely, the practice of designing pick-ups to effect compensation for loss of bass in the record.

It is no uncommon thing for makers of pick-ups to publish response characteristics in which a considerable amount of bass appreciation is shown on the low frequencies, and it is gradually becoming an accepted principle that this is the right thing to do, and that, if the result of combining the loss of bass in recording with the bass gain of the pick-up is a flat response characteristic, all is well with reproduction. My opinion is, however, that this is a most dangerous practice and that no pick-up should be designed otherwise than for flat response, i.e., the translation of instantaneous velocities on the record into proportionate instan-

taneous e.m.fs in the electrical circuit.

If we refer to the case illustrated in Mr. Bloxam's first figure it will be observed that the pick-up illustrated has a gain of no less than 28 decibels at 100 c.p.s. in relation to its response at 250 c.p.s. There can only be two possible reasons for this gain, namely, mechanical resonance of the pick-up as a whole with the elasticity of the armature support and an increase in the electrical response at low frequencies due to curtailment of the air gap. The former effect will inevitably lead to the latter, owing to the increased swings of the armature relative to the pole pieces, and the latter definitely means acceptance of the principle that non-linear distortion is to be introduced to compensate for loss of bass.

It is seldom that we see this aspect of the matter mentioned in technical discussions, and I have a strong feeling that the time has come for efforts in the direction of improvement which take advantage of the greatly increased magnification of modern valves and the consequent possibility of simple but effective equalising circuits. The starting point should be the axiom that no pick-up is properly designed which gives anything but a constant output e.m.f. for a constant stylus velocity over the whole of the lower range of frequencies.

London, W.C.2. P. W. WILLANS.

REMOTE CONTROL

An Efficient and Reliable System Now in Use

A WIRELESS receiving set is now regarded as one of the essential services of any modern dwelling, and the time is not far distant when the architect will legislate in his plans for the wireless installation at the same time as he lays down the lighting and heating.

The recently introduced Amman-McKinlay



With the Telecontrol unit all the normal adjustments of the receiver can be made in comfort at the fireside.

"Telecontrol" brings this ideal a step nearer to practical realisation. Instead of taking up valuable space in the living room, the receiver—in chassis form—is installed out of sight in the loft or basement. The house is

wired with multiple cable, and plugs are installed in all rooms where wireless is required. Through a system of relays a neat control panel performs all the normal adjustments of the set, including tuning, volume and waverange.

The tuning condenser on the receiver chassis is driven by a small electric motor, which stops automatically when the condenser setting corresponds with the position of the pointer on the control panel. While the motor is in action the volume control is automatically reduced to zero, and the irritating noise usually produced in passing through intervening stations is eliminated.

The vertical scales on the control panel corresponding to long and short waves are illuminated internally by the push-buttons controlling the waverange. A push-button in the centre of the tuning knob switches the set on or off, and another control is provided for volume. For all intents and purposes the tuning control is continuously variable, for it is possible to ease the control forward in steps equivalent to one-fifth of a degree on the condenser dial.

The apparatus is made by Halford Radio, Ltd., 39, Sackville Street, London, W.1, and the price of the chassis control box and operating unit is twenty guineas. A complete installation, including the Gambrell and Halford 7/8-valve superheterodyne chassis and moving-coil loud speaker is available for 48 guineas.

VALVE VOLTMETER FOR AUDIO FREQUENCIES

IN the June number of *The Wireless Engineer* appears an article describing the design of a valve voltmeter for audio frequencies calibrated by direct current. This is a companion article to one which appeared in *The Wireless World*, October 14th, 1931, when a valve voltmeter for radio frequencies, also calibrated by direct current, was described constructionally.

Copies of this issue can be ordered through newsagents or direct from the publishers of *The Wireless World*.

A YEAR AT THE N.P.L.

Research in Radio and Acoustics

WAVELENGTHS of less than one metre are being actively studied by the National Physical Laboratory, and it has been found that several of the older types of three-electrode valve are suitable for the production of wavelengths of the order of 60 centimetres. Indeed, some of these valves have given wavelengths as short as 15 centimetres when the electrode voltages were suitably adjusted. These facts are recorded in the Annual Report of the National Physical Laboratory.*

One of the most interesting phases of research has been concerned with the electrical properties of soil. Samples of soil taken from a number of sites in different parts of the country have been examined in the Laboratories and the results obtained show that considerable variation in the earth's conductivity prevails in different places. While dry soil is a comparatively poor conductor, the conductivity increases more than 1,000 times when the soil contains the normal amount of moisture.

The excellent work of the Laboratory in connection with radio frequency standards is well known. Two standard vibrators of different types were continuously maintained day and night during 1932. The vibrators were a tuning fork producing a note of 1,000 vibrations per second and a ring cut from quartz crystal and vibrating somewhat like a bell at 20,000 vibrations per second. Comparisons of the two standards showed that the average rate of vibration of one with respect to the other over successive periods of twenty minutes remained constant to an accuracy of one part in a hundred million.

International comparisons of standards of radio frequency are carried out by broadcasting transmissions accurately controlled by these standards, a number of such transmissions having been made by the Laboratory during 1932.

A New Transmitter

The experimental station of the Laboratory has been fitted with a new transmitter tested and calibrated for use in researches on the ionisation of the upper atmosphere and also for the emission of waves of standard frequency. A cathode ray oscillograph is incorporated for visually observing the type of wave emitted. The whole station is provided with four aerials for wavelengths varying from 50 to 1,000 metres.

The new acoustical laboratories, begun in 1931, are nearing completion. The main experimental rooms are all isolated structures standing on cork pads inside the shell of the main building, and it is interesting to note that the plan of the rooms is irregular, the ceiling slanting at an angle to the floor so that sound impinging on one wall cannot be continually reflected between that wall and the opposite one.

The Report gives the impression that the National Physical Laboratory is pursuing its work with a zeal and energy which might well be emulated by many organisations which exist simply to make large and speedy profits.

*National Physical Laboratory, Report for the year 1932 (H.M. Stationery Office, price 14s. net, 277 pages and 52 illustrations).

READERS' PROBLEMS

Superheterodyne Oscillators

FROM remarks made in several recent letters, it would seem that the padding condenser of a superheterodyne oscillator circuit is often confused with the trimming condenser, with the result that adjustments of these two components are incorrectly made.

As shown in Fig. 1, the padding condenser (usually a semi-variable with a maximum capacity of about 0.002 mfd.) is connected in series with the main tuning condenser, and is totally inoperative when the switch across it is automatically closed for medium-wave reception. It comes into action only on the

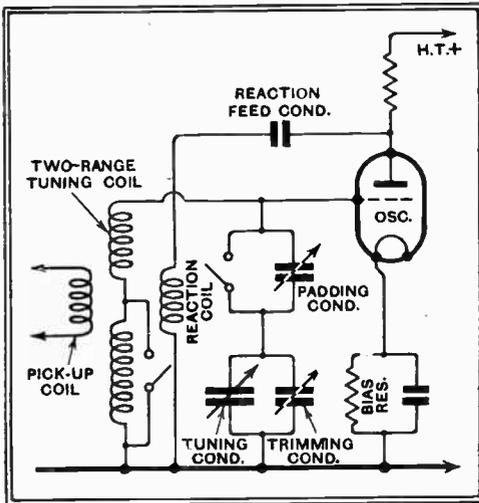


Fig. 1.—The oscillator of a typical modern superheterodyne. Energy is induced into the first detector circuit through the pick-up coil.

long-wave side, and accordingly should only be adjusted when reception is being carried out on that band. A semi-variable padding condenser will compensate to some extent for minor discrepancies in the coil or main tuning condenser.

The trimming condenser, usually built in as part of the tuning condenser, must only be adjusted on the medium wave-band.

Multi-knob Tuning

ALTHOUGH the practice of tuning a receiver by means of ganged condensers has now become almost universal, requests are periodically received for information as to whether various receivers described in this journal could be modified by fitting individual tuning for each circuit.

Theoretically, it should always be possible to modify "single knob" receivers in this way, but in practice the plan is not likely to prove very satisfactory nowadays. In the first place, the operation of the receiver will become much more difficult. Further, it requires a great amount of skill to control the component circuits of band-pass filters by means of independent condensers.

Finally Adjusted

WHEN the intermediate-frequency circuits of a superheterodyne have once been set up properly there should be no need for subsequent adjustment; most certainly it should be unnecessary to "re-trim" when receiving a station on a wavelength other than that at which the original

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers. Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which brief particulars, with the fee charged, are to be found at the foot of this page.

adjustment was carried out. The fact that our correspondent finds that a definite improvement in sensitivity and selectivity results from making adjustments to the I.F. amplifier at each wavelength would indicate that the behaviour of the set is distinctly abnormal. From his description we are inclined to suspect that the ganging of the signal-frequency and oscillator circuits is incorrect, particularly on the long-wave side.

An Improvised Microphone

ALTHOUGH a moving-coil loud speaker may be used quite satisfactorily as a microphone, the energised type is not recommended for this purpose, unless its field winding can be fed from a source of perfectly smooth D.C., such as an accumulator battery.

Even though the smoothing arrangements included are so generous that no hum would be produced when the speaker is used for the purpose for which it is intended, the slightest trace of ripple would give trouble if it were introduced into the input end of the set and magnified by the succeeding L.F. stages.

Electrolytic Condenser Polarity

A READER who is planning a "universal" set for use on both A.C. and D.C. supplies interchangeably seems to doubt whether it would be safe to use electrolytic condensers for smoothing purposes. He thinks that the condensers might be damaged by accidentally connecting the set to a D.C. supply without first making sure that the polarity is correct.

In all conventional arrangements for alternative A.C.-D.C. feed a rectifier is interposed in such a position that it protects the smoothing condensers in the event of polarity reversal. With incorrect polarity no current can flow through the rectifier, and so no voltage will be applied to the smoothing condensers; those of the electrolytic type may therefore be used with safety.

The Wireless World INFORMATION BUREAU

THE service is intended primarily for readers meeting with difficulties in the construction, adjustment, operation, or maintenance of wireless receivers described in *The Wireless World*, or those of commercial design which from time to time are reviewed in the pages of *The Wireless World*. Every endeavour will be made to deal with queries on all wireless matters, provided that they are of such a nature that they can be dealt with satisfactorily in a letter.

Communications should be addressed to *The Wireless World* Information Bureau, Dorset House, Stamford Street, London, S.E.1, and must be accompanied by a remittance of 5s. to cover the cost of the service. The enquirer's name and address should be written in block letters at the top of all communications.

Well-matched Condensers Needed

PROSPECTIVE constructors of the Ferrocart III.—and, for that matter, of the Class "B" Ferrocart receiver—should realise that the best and most accurately matched ganged condensers are none too good for tuning any set in which the new high-efficiency iron-cored tuning coils are employed. Minor discrepancies in alignment, which would probably pass unnoticed with coils of ordinary efficiency, are likely to become all too evident.

These remarks are prompted by letters from several querists, who propose to use tuning condensers which are not of the latest and most accurately matched design for tuning "iron-powder cored" coils. We would strongly dissuade them from doing so.

D.C. Class "B" Eliminator

IT is asked whether the Class "B" eliminator might be modified to work on 240-volt D.C. mains. It is intended to use it for feeding the Class "B" Ferrocart Receiver.

By omitting purely "A.C." components (mains transformer and rectifier), this eliminator would be suitable for D.C. supplies, and no special difficulties should arise in its operation.

Input-Output Reaction

WHEN a self-contained set (with built-in loud speaker) works satisfactorily so long as the chassis and loud speaker are separated, it may generally be assumed that

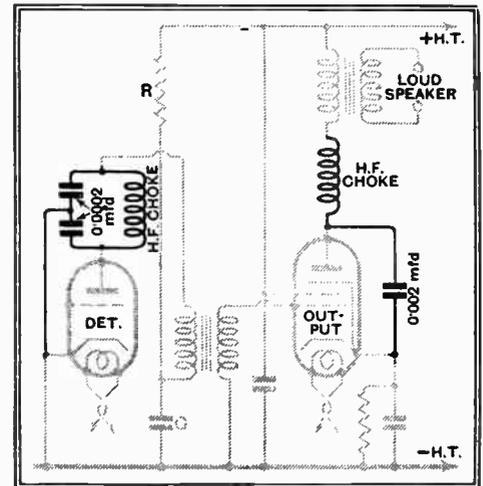


Fig. 2.—High-frequency filters which help to prevent instability due to interaction between the loud speaker leads and the input end of a receiver.

H.F. energy is getting through to the output valve circuits if uncontrollable self-oscillation takes place when the set is inserted in the cabinet. We are confident that a reader who describes this effect will be able to put matters right by attending to H.F. filtering.

The usual steps to be taken are illustrated diagrammatically in Fig. 2. If not already fitted, a conventional filter circuit, as illustrated, should be inserted in the detector anode circuit; if necessary, the capacities of the by-pass condensers may often be increased without appreciable high-note loss.

A somewhat similar type of filter may also be interposed in the output anode circuit, in order to deflect H.F. impulses from the loud speaker and its leads to earth.

Orders on rail within two hours

In view of the phenomenal interest which is being taken in this wonderful circuit.

"THE WIRELESS WORLD" CLASS "B" FERROCART RECEIVER

we have reprinted 10,000 copies of the original constructional article which appeared in "The Wireless World" of April 7th last, and these are being offered free to all readers of "The



Wireless World" on receipt of application. Wireless dealers will be supplied gratis with as many copies as can conveniently be disposed of amongst their customers.

TRADE ENQUIRIES SOLICITED.

FREE DEMONSTRATION.

You are cordially invited to see and hear this receiver at our Surrey Street Showrooms.

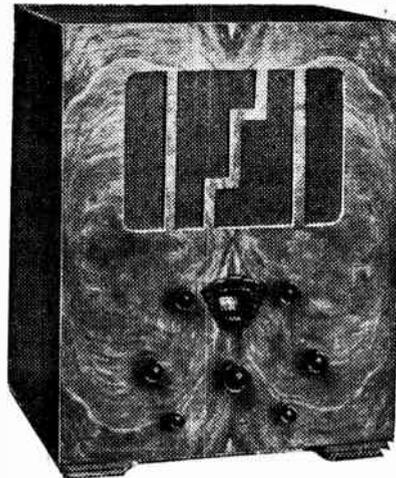
Hours of business: 9 a.m. to 6 p.m.

Two doors from the Strand, facing Aldwych tube station.

A large number of "WIRELESS WORLD" readers have expressed their appreciation of this excellent cabinet, which was chosen by the designer, of the Class "B" Ferrocart Receiver. It is fashioned on modern lines, finished in beautifully figured walnut, and special care has been taken to ensure that cabinet resonances are eliminated.

Height, 19 1/2 in. Width, 15 in. Depth, 12 1/2 in. Complete with Loud-speaker Baffle-board, "Konductite" metal-lined base-board and removable back. Front drilled ready to take the "Ferrocart" Receiver, if desired, without extra charge.

Cabinet with metal-lined baseboard - **32/6**



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As the manufacturers of Ferrocart Coils have reduced their prices from 50/- to 37/6 as from June 1st, we have correspondingly reduced our KITS as under:

KITS AS SPECIFIED

(Designer's first Choice).

KIT 'A' Complete (less Valves Batteries, Cabinet and Loud Speaker) **£7-11-0**

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ALL MECHANICS WILL HAVE
FLUXITE
IT SIMPLIFIES ALL SOLDERING

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KIT "A" Author's Kit of FIRST SPECIFIED Components including Peto-Scott PLYMAX Baseboard, Ready Assembled, but less Valves, Cabinet and Speaker. **£7-17-6**
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BUILD YOUR CLASS "B" FERROCART into the beautiful PETO-SCOTT WALNUT CABINET described and illustrated in "Wireless World" April 21. Cash or C.O.D. **25/-** Complete with Shelf and Speaker Baffle.

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KIT "A" Author's Kit of FIRST specified Parts complete down to the last screw, including READY DRILLED Polished Oak Panel, Ready Assembled and Drilled PLYMAX Set Chassis, screws, wire and sleeving but excluding Eliminator Components, Valves and Cabinet. **£11.19.6**
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KIT "A" Author's Kit of FIRST SPECIFIED Components for Set only including Ready Drilled Polished Oak Panel, Ready Assembled and Drilled PLYMAX Set Chassis, screws, wire and sleeving but excluding Eliminator Components, Valves and Cabinet. **£11. 10. 6**
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SUMMER SALE
BARGAIN LIST**
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you Pounds.

Superseders for H.T. without Batteries 37/6.

Dix-Onemeters, 50/-. A.C. Mipantas, 19/6.

200 Tru-View Camerascopes, Brown's double lens, 2/-.

For Set Builders: All-metal Base Chassis, fitted 2 valve holders, all drilled for Brownie components, 3/6.

Loud Speaker Fret Silk, 12" x 12" 1/-, 24" x 24" 3/-.

35 gau. enamelled Bobbin Wire, 2/6 lb.

Switches, panel push-pull for radio to gram, long to short or on and off, one hole, 9d.

Microphone Buttons for all purposes, 1/-. Booklet free.

Announcers' No. 11 Mikes, 5/6; diaphragm type, 5/6.

See June Sale List for Aerials, Buzzers, Bells, Batteries, Edison; Condensers, Cable, Chokes, Chargers, Dynamos, Motors, Engines, Meters, Flashers, Neons, Mikes, Mipantas, Receivers, Transformers, Transmitters, Spark Sets, Testers, Valves, Wavemeters, Wire and Stampings all in stock here.

PARCELS of experimental odd Coils, Magnets, Wire Chokes, Condensers, Switches, Terminals, etc., post free, 10 lb., 7/-; 7 lb., 5/-.

ELECTRADIX RADIOS,
218, Upper Thames Street, London, E.C.4

MISCELLANEOUS ADVERTISEMENTS

NOTICES.

THE CHARGE FOR ADVERTISEMENTS in these columns is

12 words or less, 3/- and 3d. for every additional word.

Each paragraph is charged separately and name and address must be counted.

SERIES DISCOUNTS are allowed to Trade Advertisers as follows on orders for consecutive insertions, provided a contract is placed in advance, and in the absence of fresh instructions the entire "copy" is repeated from the previous issue: 13 consecutive insertions 5%; 26 consecutive, 10%; 52 consecutive, 15%.

ADVERTISEMENTS for these columns are accepted up to **FIRST POST** on **MONDAY MORNING** (previous to date of issue) at the Head Offices of "The Wireless World," Dorset House, Stamford Street, London, S.E.1, or on **SATURDAY MORNING** at the Branch Offices, 19, Hertford Street, Coventry; Guildhall Buildings, Navigation Street, Birmingham, 2; 260, Deansgate, Manchester, 3; 26n, Renfield Street, Glasgow, C.2.

Advertisements that arrive too late for a particular issue will automatically be inserted in the following issue unless accompanied by instructions to the contrary. All advertisements in this section must be strictly prepaid.

The proprietors retain the right to refuse or withdraw advertisements at their discretion.

Postal Orders and Cheques sent in payment for advertisements should be made payable to **LIFFE & SONS Ltd.**, and crossed **& Co.** Notes being untraceable if lost in transit should not be sent as remittances.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

IMPORTANT NOTICE.

Owing to the Whitsun Holidays, the next issue of "THE WIRELESS WORLD" (June 9th) is closing for press earlier than usual.

In accordance with the Notice that appeared last week, the latest date upon which Miscellaneous Advertisements could be accepted for the above issue was **FIRST POST FRIDAY, June 2nd.**

RECEIVERS FOR SALE.

- SEE** Thompson's Bargains, half page advertisement, on page 4. [2773]
- BETTER** Part Exchange at Appleby's, 109, Edgware Rd., Hyde Park, London, W. [2650]
- K** B. A.C. Two, 1932, good condition; 70/-—5, Meadwood Green, Welwyn Garden City. [2781]
- 7-VALVE** Geophone Transportable, new condition; cost £35, accept £10—32, Wordsworth Rd., Harpenden. [2802]
- EMERSON** 4-valve Midget, works off A.C., D.C., or batteries, new; £7.—32, Wordsworth Rd., Harpenden. [2803]
- "W.W."** A.C.4 Chassis, with valves, specified components; nearest £14.—"Delta," Lester Av., Bosthampton, Hants. [2756]
- MICHAEL** Colonial Superionic Short Wave Receiver, perfect condition; £8.—Winter, 14n, Vicarage Rd., Kingston, Surrey. [2759]
- 6-VALVE** Superhet Chassis, complete with R.V.A. valves, home aerial, speaker; cost £18, what offers? Benfield, Fore St., Newquay. [2766]
- MORE** Part Exchange Receiver Bargains for Disposal; state approximate requirements for quotation.—Cutts, Wireless Engineers, Horley. [2613]
- UNUSED** Gambrell-Halford 8-valve Superhet., with short wave converter; listed at £44, price £20, or near.—Ward, 12, Trodegard Rd., Bow, E.3. [2792]
- RADIOGRAMS** and Receivers, 1933 models, new; a few only for disposal at bargain prices; write for full particulars.—Sanders, 12, Eastbourne Rd., Chiswick, W.4. [2807]
- A.C.** Monodial Radiogram, Magna speaker, Marconi pick-up, good components throughout, mahogany cabinet, stamp full particulars; £30.—Hosell, Dentist, Uckfield. [2759]
- FERRANTI** A.C.12A Receiver, 12½ watts output, R.K. speaker, oak console, used four demonstrations only; cost £48, gift, £32, or nearest.—Box 7104, c/o The Wireless World. [2795]
- PYE** M.M. Receivers, list 17 guineas, as new, £12; Pye K, list 12 guineas, as new, £9; Marconi 6-valve superhet, battery portable, list 17 guineas, as new, £12.—Mitchell's Radio Services, Hurst Hill, Bilston, Staffs. [2755]



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RECEPTION

INSULATED AERIAL CABLE

in the **ORANGE & BLUE CARTON**

"Reception" can be used either as an indoor or outdoor aerial or as an earth. It is a seven-strand insulated aerial cable drawn from pure electrolytic copper and protected with a weatherproof covering, and is definitely non-corrosive. The conductivity of the aerial is, of course, extremely high, so that when "Reception" is fitted perfect satisfaction is assured. Obtainable from all Wireless dealers, or if in difficulty apply direct to the manufacturers.

THE CONCORDIA ELECTRIC WIRE CO. LTD.
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MOVING COIL SPEAKERS

The Finest in The World in Each of Their Price-classes.

Ask your dealer or call for a demonstration at Exmouth House.

Send for New Booklet W.S.5a. It is free.

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FOR TROPICAL USE

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NUMBERED ADDRESSES.

For the convenience of private advertisers, letters may be addressed to numbers at "The Wireless World" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box 000, c/o "The Wireless World." All replies should be addressed to the Box number shown in the advertisement, c/o "The Wireless World," Dorset House, Stamford Street, London, S.E.1. Readers who reply to Box No. advertisements are warned against sending remittance through the post except in registered envelopes; in all such cases the use of the Deposit System is recommended, and the envelope should be clearly marked "Deposit Department."

DEPOSIT SYSTEM.

Readers who hesitate to send money to advertisers in these columns may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Wireless World," both parties are advised of its receipt.

The time allowed for decision is three days, counting from receipt of goods, after which period, if buyer decides not to retain goods, they must be returned to sender. If a sale is effected, buyer instructs us to remit amount to seller, but if not, seller instructs us to return amount to depositor. Carriage is paid by the buyer, but in the event of no sale, and subject to there being no different arrangement between buyer and seller, each pays carriage one way. The seller takes the risk of loss or damage in transit, for which we take no responsibility. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50, 5/-. All deposit matters are dealt with at Dorset House, Stamford Street, London, S.E.1, and cheques and money orders should be made payable to Liffe & Sons Limited.

SPECIAL NOTE.—Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post. When sending remittances direct to an advertiser, stamp for return should also be included for use in the event of the application proving unsuccessful.

Receivers for Sale.—Contd.

COLUMBIA Model 302, 8-valve (3 screen grid), super power output, radiogram, D.C. 200-250, cost £99/15, as new, accept £25; 4-valve portable, as new, 1933 model, cost £17/17, accept £4, 17 6.—"Wireless," 40, Wood Vale London, N.10. [2763]

"WIRELESS WORLD" Quality Amplifier, 1931, complete set first quality parts, including specified Rich and Bundy transformer and chokes, 1,500 volt condensers, resistances, thermal switch, I.F. components, etc.; £4.—Adams, 1, Penhurst Av., Southend. [2786]

CHARGERS AND ELIMINATORS.

- N.P.** Have a Few Soiled Battery Chargers at Bargain prices. stamp
- N.P.**—75 volts 6 amps. 3-circuit valve charger, unused, 10 amperes 0.1, 0.2, 0.4, will charge over 100 cells in series at once, 250 cells in parallel; bargain, £12; c.o.d.; guaranteed 12 months; photograph.
- N.P.**—Super model chargers now available; 75/- to £40; trade list; stamp.
- N.P.**—Battery station chargers, using Westinghouse or valve rectification; trade list lowest on market; cash or terms.
- N.P.** Specialise Only Chargers and Eliminators.—Senior "Two, 1 to 36 2v. cells at once, variable resistance, ammeter, etc.; 105/-.—Nash Products, Ltd., Stechford, Birmingham, 9. [2796]

A.P.C. Battery Charger, 100-110 A.C., simply plug in lamp socket; 35/-—32, Wordsworth Rd., Harpenden. [2804]

TANTALUM for A.C. Chargers, I.T. and L.T.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [2139]

TRANSFORMERS.—Special clearance, 250-0-250 60 m.a., 4v. 1-2a. C.T., 4v. 2-4a. C.T., 7/6; clamped and with terminals, 8/9; postage 9d.

350 0-350 60-80 m.a., 4v. 2-3a. C.T., 4v. 2-4a. C.T., 11/-; clamped and with terminals, 12/3; postage 1/-.

400 0-400 90 m.a., 4v. 2-3a. C.T., 4v. 3-8a. C.T., 12/3; clamped and with terminals, 13/6; postage 1/-.

AUTO Line Transformers, any type, 100 watts, 8/-, postage 1/-; chokes, 30 henrys at 60 m.a., 7/6, postage 9d.

A.L. Guaranteed; prompt delivery; send for lists.—Coles, Cardigan Rd., Southampton. [2806]

EKCO Eliminators, as new, K12 £2, A.C.12 £1/10, D.C. £1; Phillips D.C. type 3005, £1.—Mitchell's Radio Services, Hurst Hill, Bilston, Staffs. [2754]

180 Accumulator Chargers, ½ amp., 2-6v., in ventilated metal case with mains flex (Westinghouse rectifiers); 7 days' trial; 10/8.—Arden Agency, Wollaton, Wellingborough. [2757]

A.C. or D.C. Chargers for 2 to 200 cells at Low Prices; state requirements; dynamos and rollers in stock, all sizes, Brown's Genometer, battery supersenders for I.T. for 2v. or 6v. input, 37/6 and 52/6; television and sewing machine universal motors, 25/-; lists.—Electradix Radios, 218, Upper Thames St., E.C.4. [0398]

Chargers and Eliminators.—Contd.

HOYNE'S Transformers and Chokes the Best Obtainable, perfect insulation, regulation and reliability, used exclusively by discriminating set manufacturers, all fitted with tapped and screened primaries, filaments all centre tapped, stout cast aluminium clamps fitted to all models, also clearly marked terminal strips.

HOYNE'S Components are Guaranteed for One Year.

HOYNE'S Transformers Built to Your Specifications, at very competitive prices.

HOYNE'S Supply the Trade.

HOYNE'S.—250-0-250v. 60 m.a., 4v. 1-2a., 4v. 2-4a.; 10/6, post 9d.

HOYNE'S.—250-0-250v. 60 m.a., 4v. 1-2a., 4v. 2-4a., 4v. 1a.; 12/6, post 1/6.

HOYNE'S.—350-0-350v. 60-70 m.a., 4v. 2-3a., 4v. 3-4a.; 12/6, post 1/6.

HOYNE'S.—350-0-350v. 70-80 m.a., 4v. 2-3a., 4v. 3-4a., 4v. 1-2a.; 13/6, post 1/6.

HOYNE'S.—350-0-350v. 120 m.a., 4v. 2-3a., 4v. 4-6a., 4v. 1-2a.; 16/6, post 1/3.

HOYNE'S.—500-0-500v. 140 m.a., 4v. 2-4a., 4v. 4-6a., 4v. 2a., 4v. 2a.; 27/6, carriage 1/6, weight 12lb.

HOYNE'S.—0-110-135v. 90 m.a., 4v. 2-4a., suitable for H.T. 6 or 7; 10/6, post 9d.

HOYNE'S.—200v. 200 m.a., 4v. 2-4a., 4v. 1-2a., suitable for H.T. 8; 15/6, post 1/6.

HOYNE'S.—0-200-240v. 200 m.a., 4v. 2-4a., 4v. 1-2a., suitable for H.T. 8 or 9; 14/6, post 1/3.

HOYNE'S.—Line transformers and chokes always in stock; we can also supply all components.

M. J. HOYNE, Offices and Works, 8a, Gladstone Rd., Wimbledon, S.W.9. Tel.: Liberty 3303. Open every day, including Wednesday and Saturday, till 7 p.m. [2771]

MAINS Transformers, tapped and screened primary L.T. windings, C.T., 12 months guarantee, 450-0-450 at 12 m.a., 4v. 2.5 a., 4v. 2a., 4v. 5a., at 19/6; 400-0-400 at 120 m.a., 4v. 3.5a., 4v. 2a., 4v. 6a., at 24/6; 450-0-450 at 80 m.a., 4v. 2a., 4v. 4a., at 18/6; 350-0-350 at 120 m.a., 4v. 2.5a., 4v. 2a., 4v. 5a., at 12/6; 250-0-250 at 60 m.a., 4v. 1a., 4v. 1a., 4v. 3a., at 12/6.

SMOOTHING Chokes, 20 henry 120 m.a. (325 ohms), 9/6; 50 henry 60 m.a. (850 ohms), 8/6; 30 henry 60 m.a. (1800 ohms), at 7/6; send your enquiry for any specification, transformer or choke.

SMOOTHING Condensers, 1,500 test, 500 A.C. working, 3 Blocks 20 mfd., 4+4, 2+2+2+2+1+1 mfd. at 11/6; 11 mfd., 4+2+2+2+1, at 6/9; 14 mfd., 4+4+4+1+1, at 7/3; 9 mfd., 4+4+1+1, at 5/6; 2+2 mfd., 3/6; 2+2+1 mfd., 3/9; T.C.C. 8 mfd. electrolytic (dry) working, list 9/6, at 5/6.

LET Me Quote for any Required Component, all carriage paid, cash with order or c.o.d.—Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [2798]

VORTEXION, Wimbledon, for the latest type transformers, all with screened primaries and 12 months' guarantee, absolute reliability (we supply talkie equipment); regulation guaranteed within 5% all models except supers, which are 2 1/2%, you cannot buy more reliable or better looking transformers, not a pressed shrouding, but a substantial casting free from hum.

VORTEXION.—Specified for A.C. quality amplifier, 400 volts 110 m.a., 4v. 3, C.T., 4v. 2, 4v. 1, C.T., terminals, 24/6; tagged leads, 20/6; shrouded, 24/6.

VORTEXION.—Ferrocart III, 350-0-350, 60 m.a., 4v. 2.5, C.T., 4v. 3.5, C.T.; open type 13/6, shrouded 16/6; post 9d.

VORTEXION.—250-0-250, 4v. 1 to 2a., 4v. 2 to 4a.; open type 10/6, shrouded 12/6; post 9d.

VORTEXION.—Open type H.T.8 model, 4v. 4a.; 12/6; post 1/6.

VORTEXION.—Super model for H.T.8 or 9 or 10, 4v. 1 to 2, 4v. 2 to 4; open type 14/6, shrouded 16/6; post 1/6.

VORTEXION.—Parallel fed intervalve transformer for increasing bass response, large mu-metal core, 3 and 5 to 1, 180 henries, 7 and 9 to 1, 120 henries or to specification, in neat bakelite case terminals; 10/6.

VORTEXION.—2 1/2-watt Monodial A.V.C. model; open type 14/6, shrouded 16/6; post 1/6.

VORTEXION.—5-watt Monodial A.V.C. model, 400-0-400, 120 m.a., 4v. 6a., 4v. 3 1/2a., 4v. 2, 4v. 1a., super screened; 20/6, shrouded 24/6.

VORTEXION.—350-0-350, 120 m.a., 4v. 2 to 5a., 4v. 2 to 4a., 4v. 2.5a.; open type 14/6, shrouded 16/6.

VORTEXION.—400 or 450 or 500v., 120 m.a., 4v. 2 to 5, 4v. 2 to 5, 4v. 2 to 5; open type, 19/6, shrouded 23/6.

VORTEXION.—400 or 450 or 500, 150 m.a., 4v. 4a., 4v. 2.5, 4v. 2, 4v. 2, 4v. 2, core size 2 1/4 in. x 1 1/4 in., a super job, 2% regulation; 35/6 shrouded, with terminals, less terminals, 30/6, open type 26/6; post 1/3.

VORTEXION.—Autos to B.E.S.A. specification, 100 or 110 volts to 200 or 220 or 240 volt, 60 watts, 7/3, post 9d.; 120 watts, shrouded 12/6, open type 10/6, post 1/6; 200 watts, open 14/6, shrouded 16/6, post 1/3; 2,000 watt autos, £4/10.

VORTEXION.—Chokes, 20 h. at 120 m.a., 8/6; 30 h. at 60 m.a., 5/6; 30 h. at 150 m.a., open type 10/6, shrouded 12/6; post 1/6.

VORTEXION.—1,000 volt 600 m.a. transformers, weight 34 lb., £4/10, or similar wattage; carriage free.

VORTEXION.—4+4 mf. 500 peak electrolytics; 4/6.

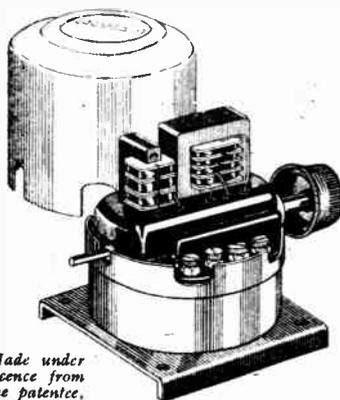
VORTEXION.—Transformers made to your specification.

VORTEXION (S. A. Brown), 182, The Broadway, Wimbledon. Tel.: Liberty 2814. [2679]

COLVERN FERROCART COILS

INCREASED sales... increased production facilities mean reduced costs.

Prices of Ferrocart Coils reduced from 1st June, 1933.



Made under licence from the patentee, Hans Vogt.

Type F1, F2. Input Band-pass filter. Constant selectivity, ganging unaffected by variation in aerial reactance, symmetrical resonance curve.

Type F3. Auto transformer inter-valve coupling with reaction, ganging perfectly maintained on both wave ranges by transfer of tapping point in correct turns ratio, practically constant reaction.

Now 37/6 per set

COLVERN

MAWNEYS ROAD, ROMFORD, ESSEX.

London Wholesale Depot, 150, King's Cross Rd., W.C.1

CABINETS.

RADIO-GRAM Cabinets: fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon, [1686]

DYNAMOS, ETC.

E.D.D.C. Rotary Converter, input 220 volts D.C., output 220 volts A.C., 80 watts; £5/5.—Craven, 473, Norwood Rd., S.E.27. Streatham 5712. [2779]

SEVERAL D.C. to A.C. Converters for Sale, 12-volt and 200 to 230 volts input, all 230 volts A.C. output, complete with smoothing gear.—Acme Manufacturing Co., Tresham St., Kettering. [2768]

LOUD-SPEAKERS.

COLUMBIA A.C. and D.C. Moving Coil Speakers, fitted variable ratio transformers in attractive figured oak cabinets; from 37/6 complete.

ALL Types of Moving Coil Speakers, pots and windings, etc.; going cheap.—R. Newman, 309, Roman Rd., Bow, E.3. [2418]

LAMPLUGH Silver Ghost Moving Coils, 90/130 volts (2,200 ohms), with power or Pentode transformer; list 34/6, at 14/9, sealed cartons; carriage paid. (This is the model commended at the Olympia Exhibition). Cash with order or c.o.d.—Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [2797]

30/-—!!—B.T.H. R.K. moving coil speakers, 6in. cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; suitable for public address work; weight 30 lb., and are vastly superior to cheap speakers now on the market, 100 volts, 150 volts, and 200 volts D.C.

27/6—!!—6v. D.C. speaker, as above; £2/7/6, speaker as above for 100-250 A.C.

SIMPSON'S Electric Turntables, 25/-; carriage paid; cash with order, or c.o.d.

B.T.H. Brand New Public Address Amplifiers, 4-stage, including microphone stage, 2 types, 12 watts and 6 watts outputs, 12-watt type has 2 P.P.5/400s in output, 6-watt type has 2 P.P.3/425s in output, 12 watt type price £15, 6-watt type £12/10; B.T.H. cinema type pickup, brand new, 17/6.—Ward, 12, Tredgar Rd., Bow, E.3. [2793]

B.T.H. R.K. Moving Coil Speakers, guaranteed new, unused, manufacturers' surplus, original price 6 guineas, highly sensitive and wonderful tone response, will handle up to 10 watts output, available for 6v., 100v., 200v., 30/-; also A.C. models, £2/10; carriage paid, c.o.d., or cash with order; the best value in speakers obtainable to-day.—Seekamp, 46, Farringdon St., London, E.C.4. [1425]

CHAL-ELECTRIC Offers Brand New Set Manufacturers' Surplus.—Rola speakers F6, 6 volts (8 1/2 ohms), 90-130 volts (2,500 ohms), 110-175 volts (2,000 ohms), 150-200 volts (4,700 ohms), 200-250 volts (6,500 ohms), listed 35/6, all at 18/6; F7, voltages as in F6, listed 46/6, at 25/6; all energised models fitted with hum-bucking coils; permanent magnets, F6, P.M., listed 49/6, at 28/6; F7 P.M., listed at £3, at 33/-, state if power or pentode transformer, Ultra 95 P.M. (really hefty job), with multi ratio transformer, list £4/15, at £2/7/6; all carriage paid; cash with order or c.o.d.—Chal-Electric, 6, Conduit St., London, W.1. [2787]

VALVES.

STARTLING Clearance of Set Manufacturer's Surplus Valves, as new; carriage paid or call.

SPECIAL.—A.C./S.G./V.M.s. 9/6; 84V.B.s. 41M.S.G.s. 8/3; M.S.4B.s. 6/8; D.S.B. D.S., M.S.4s. 5/8; M.V.S.G.s. 10/6; 8215s. 7/6; P.M.11.L., P.M.11.F., P.M.11.L.F., 1210, 2101.F., 3/4.—Mains Radio Development Co., 4-6, Muswell Hill Rd., London, N.6. [2800]

THE Following Valves are Guaranteed as New, and any valve differing from the makers' characteristics will be exchanged, all latest types.

A.C./Pens. P.T.4s. G.U.1s. A.C.S.G./V.M.s. Pen.4V.s. P.T.625s. V.M.S.4s. D.C.2/Pens. D.P.T.s. M.P.T.4s. V.M.4V.s. A.C.S1/V.M.s. P.M.24Bs. D.C.2S.G.4V.M.s. 11/-; M.S.4s. M.S.4Bs. A.C.S.G.s. 84V.A.s. 84V.B.s. M.S.G./L.A.s. D.S.B.s. A.C.S./2s. P.X.4s. D.C.2B.G.s. 9/6; U14s. 10/6.

M.L.4s. A.C./P.s. 41M.P.s. P.M.24s. 8/-; A.C./H.L.s. 164Vs. 354Vs. A.C.2/H.L.s. 41M.H.L.s. U10s. U.U.60/250s. M.H.4s. M.H.L.4s. 7/6; V.S.2s. 215S.G.s. 220S.G.s. P.M.12s. P.M.12As. 9/-; 442 H.U.s. D.W.3s. 8/6.

ALL Types of Brand New American Valves in Stock, first class makes: 247s. 235s. 224s. 236s. 237s. 233s. 244s. 12/-; 227s. 226s. 280s. 245s. 9/6; 242s. 232s. 11/-; U.X.210s. 15/6.

U.X.250s. 7 watts output, 16/-; 281s. 14/6; for quickest delivery send telegraph money order.

OVER 4,000 Valves Always in Stock for Immediate Delivery; carriage paid; cash with order or c.o.d.—Ward, 12, Tredgar Rd., Bow, E.3. [2794]

GUARANTEED as new.—164Vs. 354Vs. 5/6; M.S.4s. V.M.S.4s. M.M.4Vs. A.C./Pens. 7/6; also Magnavox duals, 144, 30/-—Miot, 24, Adamson Rd., N.W.3. [2789]

ANOTHER New Large Purchase of a Set Manufacturer's Stock of Valves, guaranteed as new, all latest types, and any valve differing from the makers' characteristic exchanged free.

210H.L.s. 210H.F.s. 210L.F.s. P.M.1H.F.s. P.M.1L.F.s. H.L.210s. H.210s. 1210s. 3/9; 215Ps. 220Ps. 1.P.2s. P.215s. D.E.P.215s. P.M.2s. P.220s. P.M.2A. 4/9; D.H.s. 41M.H.L.s. 41M.H.s. M.H.4s. A.C./H.L.s. A.C./H.L.s. 354Vs. 204Vs. D.C.3/H.L. 7/-; 41M.P.s. M.L.4s. A.C./P.s. 7/6; P.T.4. P.T.41. P.E.N.4V. M.P./P.E.N.s. A.C./P.E.N.s. 12/-; latest metallised 84V.B.s. M.S.4B.s. M.S.G./H.A.s. A.C./S.G.s. 9/-; Coso M.V.S.G., 12/-; 442 B.V. 1807s. 7/9; 1821s. 7/-; D.O.60s. 40/-.

4,000 Valves are Always in Stock for Immediate Despatch; prompt attention, for cash or c.o.d.

NEWMAN, 309, Roman Rd., E.3. [1659]

COMPONENTS, ETC., FOR SALE.

R. Selected Parts for Sale, as new, any c.o.d. or "Wireless World" deposit system, which we recommend it in doubt as to the splendid value offered; we take risk of damage in transit to customers; goods tested for callers and guaranteed.

PHILIPS D.C. Eliminator, 150v. 20 m.a., 21/-; Ekco ditto, 12 6; Philips 192A charger, input 210v., 18 6; Amphion O.P.P. P.M. speaker, 27 6; ditto ordinary, 22 6; Amphion M.C. 6, 17 6; Magnavox, type 143, 10in. cone, 2,500 ohm field, 25 6.

GERRARD Induction Motor, type 201, 35/- complete; ditto, type 202A, 27 6; Simpson's A.C. untunable, 21 6; B.T.H. Universal motor, complete without auto. stop, 40/-; pair Polar twin 8M. thumb drive, 0.0005, 12 6; pair Wearite Binowave coils, 12 6.

VARLEY Pentode Output Choke, 9/-; Varley Pentode output transformer, 9/-; Varley heavy duty intervalve transformer, 10 6; pair Varley P.P. transformers, separate G.B., 22 6; Varley Standard and Constant inductance chokes, 9/- each; Varley 3H. tapped chokes, 5/-.

UTILITY 2-gang, screened, 0.0005, 6 6; Polar tub 2-gang, screened, 6 6; J.B. Untunable, with drive, 7 6; Radiophone 2-gang, screened, 10/-, with drive 15/-; Cyclon 0.0005 log, 2 9.

T.C.C. 2,000 mfd., 9/-; T.C.C. 250 mfd. 100v., 8 6; Leycos frame, 12 6; H.T.B. with Heayberd transformer, 18 6; H.T.7, with Heayberd transformer and 4v. 4 amp., 18 6; Gambrell Novotone J., 30/-; Lissen 3-1 super transformer, 7 9; Irganic choke, L.F. coupling units, 3/-; Brown U.G.A. unit, 5 6; pair Sterling headphones, 6/-.

VALVES, as new, guaranteed O.K. A.C./H.L., 6 6; S.G.215, 7 6; S.21, 7 6; P.X.4, 10/-; 904V., 7 6; 244V., 6 6; S.4V.B., 9/-; M.S.4, 7 6; D.W.2, 6 6; U.12, 8 6; M.S.G. L.A., 9/-; 210D.G., 6 6; A.C./P., 8/-; A.C. S.2, 9/-.

POLAR Star 3-gang Condensers, 16 6; with drive, 18 6; Radiophone 3-gang condensers, fully screened, with trimmers, Radiomack type, 9/-, post 9d.; Polar Dialknob 2-gangs, with drive, 7 6; Radiophone 4-gangs, 12 6; with cover and drive 16 6.

RYALLS RADIO, 35, Chancery Lane, London, W.C.2 (nearest Tube, Chancery Lane; bus 67 passes door, or train to Savoy St., Holborn 3529, Open Saturday afternoon, Close 7 p.m., Thursday 1 o'clock, Saturday 6 p.m. [2776]

PREMIER.

PREMIER SUPPLY STORES Offer the following Set Manufacturers' Surplus Brand New Goods at a Fraction of the original cost; all goods guaranteed perfect carriage paid over 5/- under 5/- postage 6/- extra. (Ireland carriage forward.)

ELLIOTT First Grade Moving Coil Milliammeters, projecting type, 0.10 m.a., 0.30 m.a., 0.50 m.a., 0.100 m.a., 0.150 m.a., 2 1/2 in. diameter, 15/- each; flush type, 0.100 m.a., 0.150 m.a., 3 1/2 in. diameter, 17 6 each.

HARLIE Pick-up with Arm and Volume Control (27 6 model); 12 6 each.

T.C.C. Electrolytic Condensers, 10 mfd., 100 volts working, 1/-; 15 mfd., 1 5.

SPECIAL Offer of Mains Transformers, manufactured by Philips, input 100, 150, or 200-250v., output 190-0-180 volts, 40 m.a., 4v. 1a. and 4v. 3a., 4 6.

A.L.L. Premier Guaranteed Mains Transformers have engraved terminal strips with terminal connections, input 200-250 volts, 40-100 cycles, all windings paper interleaved.

PREMIER H.T.8 Transformer, 250v. 60 m.a. rectified, with 4v. 3.5a. c.t. L.T. and screened primary, 15/-; with Westinghouse rectifier, 25 6.

PREMIER H.T.9 Transformer, 300v. 60 m.a. rectified, with 4v. 3.5a. c.t. L.T. and screened primary, 15/-; with Westinghouse rectifier, 26 6.

PREMIER H.T.10 Transformer, 200v. 100 m.a. rectified, with 4v. 3.5a. c.t. L.T. and screened primary, 15/-; with Westinghouse rectifier, 26 6.

PREMIER Mains Transformers, output 135v. 80 m.a. for voltage doubling, 8 6; 4v. 3.4a. c.t. L.T., 2/- extra; Westinghouse rectifier for above, giving 180v. 30 m.a., 8 6.

PREMIER Mains Transformers, output 250 0 250 volts, 60 m.a., 4v. 1.2a., 4v. 2.3a., 4v. 3.4a. (all c.t.), with screened primary, 15 6.

PREMIER Mains Transformers, output 350-0-350 volts, 90 m.a., 4v. 3.5a., 4v. 2.3a. (both c.t.), with screened primary, 15 6.

PREMIER Mains Transformers, output 400-0-400 volts, 100 m.a., 4v. 4.5a., 4v. 2.3a. (both c.t.), with screened primary, 15 6.

PREMIER Mains Transformers, 4 volts 3 amps. (c.t.), 7 6; 4 volts 5 amps. (c.t.), 8 6; 6 volts 2 amps, 7 6; 9 volt-1 amp, 7 6; 12 volts 1 amp, 7 6; 14 volts 4 amps, 12 6; 22 volts 1 amp, 10 6.

PREMIER Auto Transformers, 100-110/200-250 volts or vice versa, 60-watt, 7 9; 100-watt, 10 6.

SPECIAL Offer of Manufacturers' type Transformers, any S input, output 250-0-250 volts, 60 m.a., 4v. 1a., 4v. 3a. (both c.t.), 8 6; 175v. 50 m.a., 4v. 4a., 4v. 1a., 5 6; H.T.8 transformer, with 4v. 3.4a. (c.t.), 8 6; with rectifier, 13 6.

AMPLION Mains Transformers, input 100-250 volts, output 350-0-350 volts, 120 m.a., 4v. 5a., 4v. 2a., 6v. 1a. (all c.t.), 17 6.

PREMIER Chokes, 40 m.a., 25hys., 4/-; 65 m.a., 30 hys., 6/-; 150 m.a., 30 hys., 10 6.

PYE Chokes, 20 or 32 hys., 4/-; Premier multi-ratio output transformers, 6 taps giving 15 different ratios, 7 6.

PREMIER Eliminators input 200-250 volts, 40-100 cycles, A.C. incorporating Westinghouse metal rectifiers, output 250, 60 m.a., N.G. and 120v. taps, 42 6; with 4v. 3a. c.t. L.T., 7 6 extra.

PREMIER Eliminators, output 150v. at 30 m.a., S.G. and 100v. taps, with 4v. 3.4a. c.t. L.T., 37 6; or with trickle charger, 42 6.

PREMIER Eliminators, output 120v. at 20 m.a., S.G. and 100v. taps, 27 6; with L.T. trickle charger incorporated, 35 6.

PREMIER D.C. Eliminators, output 120v. at 20 m.a., S.G. and 100v. taps, 15 6; larger model, output 200v. at 50 m.a., S.G. and 120v. taps, 25 6.

ACCUMULATOR Chargers, 200-250 volts, A.C., all incorporating Westinghouse metal rectifiers, 2, 4, and 6v. at 1/2 amp., 17 6; 2, 4, and 6v. at 1 amp., 22 6; 12v. 1a., 27 6; 6v. 2a., 35/-; 12v. 2a., 35/-; 12v. 1.5a., 30/-; 6v. 3a., 39 6; 12v. 3a., 52 6; 3 separate 12v. 1a. circuits, 75/-.

AMPLION High Inductance Chokes, resistance 2,500 ohms, 80 hys., 60 m.a.; 5 6.

(This advertisement continued in second column.)

Components, etc., for Sale.—Contd.

(This advertisement continued from first column.)

WESTINGHOUSE Metal Rectifiers: 120v. at 20 m.a., 6 6; 180v. at 30 m.a., 8 6; 250v. at 60 m.a., 10 6; 300v. at 60 m.a., 11/-; 200v. at 100 m.a., 11/-; 8v. at 1/2 amp., 6 6; 6v. at 1 amp., 9 6; 12v. at 1a., 12 6; 6v. at 2a., 20 6.

OLSTIGER BRANDES Electric Gramophone Motors, K complete with turntables and automatic stop, 100-250v. A.C. and D.C.; list price £5, to clear £2.

B.T.H. Induction Type (A.C. only) Electric Gramophone Motors, 100-250v.; 30/- complete.

REOLA Type 16 Moving Coil Speakers, 2,000 or 6,500 ohms, with power of pentode output transformers, 17 6; A.C. conversion kit for this speaker, 10/- extra.

AMPLION Moving Coil Speakers, type E.M.644, dual fields, 2,500 and 5,000 ohms (100 and 200v.), with output transformer, 12 6; A.C. conversion kit for this speaker, 10/- extra.

MSCO 3-gang 0.0005 Condenser, with trimmers (listed 30/-), our price 7 6; Polar 0.0005 and 0.00035 bakelite dielectric condensers with knob, 1 6.

POLAR 3-gang Variable Condensers, tub type, fully screened, split end vanes and disc drive, 0.0005, 10/-; Ormond all-brass 2-gang condensers, semi shielded, 0.0005, 3 6.

WESTERN ELECTRIC Condensers, 250v. working, 1 mfd., 6d., 2 mfd., 1/-; 500v. working, 1 mfd., 1/-; 400v. working, 3 separate 4 mfd. condensers, 8 6.

T.C.C. Condensers, 750v. working, 2 mfd., 4/-; 4 mfd., 6/-; 400v. D.C. working (300v. A.C. working), 4 mfd., 4 6.

T.C.C. Condensers, 250v. working, 4x4 1/2 mfd., 5/-; 300v. working, 4x4 2x2x2 mfd., 7/-; 375v. working, 6x4 2x2x2 mfd., 10/-; 300v. working, 4x4 2x1 mfd., 6 6.

SPECIAL Offer of Wire Wound Resistances—4 watts, each value up to 10,000 ohms, 1s.; 8 watts, any value up to 15,000 ohms, 1s. 6; 15 watts, any value up to 50,000 ohms, 2s.; 25 watts, any value up to 50,000 ohms, 2 6; 50 watts, any value up to 50,000 ohms, 3 6.

WIRE Wound Potentiometers, 15,000 ohms, 1 6; Centrad Potentiometer volume controls, 50,000 ohms, 2 6; wire wound Charostat Potentiometer, 50,000 ohms, 2 6; Colvarts, logarithmically wound Potentiometers, 6,000 ohms, 1 9.

HEAVY Duty Variable Resistances, slider type, wound on porcelain, 2,000 ohms quarter-amp. and 500 ohms half-amp.; 5/- each.

FOR Callers Only.—The following valves, guaranteed as new: P.T.625, M.P. P.E.N., D.C.S.G., V.D.S., V.M.S., S.4V.B., C.S.G., A.C.S.G., M.V.S.G., 41M.S.G., V.M.S.4, M.S.4B., U.5., 904V., M.S.G. L.A., M.S.G. H.A., M.H.L.4., M.H.L., M.H.4., U.14., S.4V.B., D.W.5., P.T.4., D.S., D.S.B., M.S.4., 41M.L.F., M.V.S.G., A.C.H.L.; at half list price.

THE Last Few Western Electric 4211-D. Valves, 10v. 3a. filament, 750-1000v. plate, 50-65 m.a., impedance 3,500 ohms, amplification factor 12; cost £5, to clear at 15 6.

500 VOLT 125-milliamper. Full Wave Rectifying Valves, 4v. 2a. filament; 7 6.

PHILIPS 328 Valves for I.T. Charging, 5 6; 329 Barometer lamp, 2 6.

A.L.L. the Following Lines—6d. each, or 5/- doz. assorted: screened 8G. or Pentode leads; 2B. lengths of screened wire; 5-pin valve holders; Crabtree 5-amp. sunk switches; T.C.C. 0.1 mfd. condensers; 0.5 condensers.

A.L.L. orders to the Premier Supply Stores, 20-22, High St., Clapham, S.W.4, Macaulay 2188. Closed 1 o'clock Wednesdays, open to 9 o'clock Saturdays. Nearest Station, Clapham North Underground.

PREMIER. [2810]

SEE Thompson's Bargains, half-page advertisement, on page 4. [2774]

CHAL-ELECTRIC Offers Brand New Set Manufacturers' Surplus:—

CONDENSERS, C.E.C., 800 test, 1 mfd., 1 1/2 mfd., 1 9, 4 mfd., 2 6; 1,500 test, 500 A.C. working, 1 mfd., 1 0, 2 mfd., 2 4, 4 mfd., 4/-; T.C.C. 8 mfd., dry electrolytic, 500 working, list 9 6, at 5 6.

COLLIS Colvern (few only), Ferrocart, 3-ganged, list 50/-, at 38 6.

VARIABLE Condensers (last 18)—Polar 3 Star, 3-gang, 1935, with disc drive, light, escenticon, knob, etc., list 30 6, at 17/- (scaled cartons); J.B. 3-gang N.Gang, complete as above, at 15 6.

VALVES (in all 15 only)—Mazda (boxed), A.C. (Pen.), Pen. 220a, A.C. S.G., S.G.215, all 9/- each; Marconi M.S.4, V.M.S.4, 9/- each; M.H.4 (Metl.), 8/-; gramophone motors, B.P.H. Pre-spool, with automatic stop (3 only), list £2 9 6, at 29 6.

B CLASS Multitone Transformers, driver, list 9 6, at 7 6; or with tone control, listed at 17 6, 12/-; output list 9 6, at 7 6; 30 assorted only; radio gramophone cabinets, walnut, Marconiphone, type 330, cost the manufacturers £8 10, approximately 41x19 1/2, real piece of furniture, limited supply only at £12 10.

A.L.L. Goods Carriage Paid; cash with order or c.o.d.,—Chal-Electric, 6, Conduit St., London, W.1. [2788]

MIDMAY RADIO EXCHANGE offers the Following, sound and perfect.

FERRANTI A.F.3, 10/-; A.F.5, 17/-; A.F.5C, 20/-; A.F.5CC, 22 6.

VARLEY Push-pull Input, 14/-; output, 10/-.

POLAR 3-gang Tubs, 11/-; 2-gang, with drum drives, 11 6.

EDISON Bell Pick-ups, with tone arms, 14/-.

PYE, tapped, output transformers; 7/- each; new.

WEARITE 4-gang Superhet. Coils on Base; 20/-.

B.T.H. Junior Pick ups; 14 6.

COSMOR A.C. Mains Kits, complete with A.C. valves, list 25s.; 45 6.

COSMOR 41M.H., M.H.L., 7 6 each; M.S.G., H.A., 10/-; 41M.D.G., 12/-; 41M.D., 9/-, as new.

MILLARD M.M.4V, 11/-; S.4V.B., 8/-; S.4V.A., 2/-; M.P.24M, 9/-; as new.

A.L.L. Post Paid, Open Thursday, Closed Saturday, 24, Midmay Grove, Islington. [2772]

MAINS RADIO'S Clearance of Set Manufacturer's Surplus, as new; carriage paid or call.

HELSBY Condenser Blocks, 2x1 mfd., 250v. working, 1,250v. test, 1 6; 1 mfd., 1,250v. test, 1 6; Benjamin 5-pin chassis chockers, 1 2 half dozen; 4-pin ditto, 1 6 half dozen; 0.25 meg. leaks, 4d. or 1 6 half dozen; T.C.C. 0.0001 green flat type, 1 6 half dozen; Utility 2-gang condensers, trimmers, shrouded, 6 6; 3-gang, trimmers, shrouded, 7 6;—Mains Radio Development Co., 4-6, Muswell Hill Rd., London, N.6. [2801]

Components, etc., for Sale.—Contd.

SERVICE RADIO and SUPPLY Co. Offer Hundreds of Wireless Bargains at Genuine Cut Prices:—

MAINS Transformers, fully tapped primary, 200-250 volts 50 cycles, centre tapped I.T.; 250-250 60 m.a. 4 volts 1 amp., 4 volts 3 amps., 10 6; 350-350 60 m.a. 4 volts 2 amps., 4 volts 4 amps., 12 6; 450-450 120 m.a. 4 volts 1 amp., 4 volts 2 amps., 4 volts 4 amps., 17 6; 450-450 120 m.a. 4 volts 2.5 amps., 4 volts 4 amps., 4 volts 2 amps., 18 6; 500-500 120 m.a., 4 volts 2.5 amps., 4 volts 5 amps., 19 6.

SMOOTHING Chokes,—40 henries 40 m.a., 700 ohms 4 6; 6; 20 henries 60 m.a., 480 ohms, 7 6; 15 henries 100 m.a., 330 ohms, 8 6; 20 henries 30 m.a., 7 6; 20 henries 120 m.a., 270 ohms, 9 6.

SPECIAL Transformers Quoted for and Delivery Given within 3 Days of Receipt of Order; transformers for all metal rotors and valves in stock; all transformers and chokes are unconditionally guaranteed for 12 months

SET Manufacturers' Guaranteed Surplus—Roll permanent magnet speakers, F.6, 28/- (listed 49 6); Roll D.C., all voltages, 17 6 (listed 35/-), please state voltage required when ordering; Clestion Soundex permanent magnet, 16/- (list 27 6); Lissen 2-valve Collosum battery sets, less valves, 13 6, with 2 specified valves 26/- (list £2 19 6); Utility 2-gang condensers, 0.0005, with trimmers, shrouded and complete with dial escenticon and knob, 10 6 (list 27 6); condensers, 4 mfd., 750-volt test, 2 6; 2 mfd., 750-volt, 1 9; 1 mfd., 750-volt, 1/- each; condenser blocks, 1,500-volt test, 10 mfd., 2+2+2+2+1+1 6 3 each; 12 mfd., 4+2+2+2+1+1 6 9 each; 20 mfd., 4+4+2+2+2+2+1+1+1+1, 11 6 each; Radio for the Million 3-valve A.C. kits, complete with 3 Mullard A.C. valves (Pen. 4V, S.4V, and 354V.), £3 10 (list £6 10); all goods guaranteed new, in original sealed cartons; carriage paid.—Service Radio, 46, Lisle St., London, N.W.1. Phone: Gerrard 6653. [2714]

PEPPER Offers the Following Under Money-back Guarantee; cash or c.o.d., postage extra under £2.

COLLIS Colvern R2r, T2r, Orgolas, etc., also few other makes, 2 11; Starturus, Despatch Selector units, 2 11; Colvern K.G.O., K.G.C., K.S.W., Lewcos, Ose 44, A.T.G., Varley B.P.22, B.P.9, B.P.10, 4 6 each; Telsen W76, 3 11 ditto, H.F., 2 11; Binowaves, type C, 3 6.

A.C. Power Packs, 500v. 120 m.a., 52 6; 350v. 120 m.a., metal rectified, £3 7 6; 250v. 50 m.a., £1 10.

ELIMINATORS, Ekco D.C. 15 25, 8 11; Regentone 150v. 40 m.a., with 3 lower tappings, also 4v. 4a. A.C., 35/-; G.E.C. 200v. 30-40 m.a., complete, 32 6; Ekco C2a, all-mains A.C. unit, complete, 42 6.

CHARGERS (A.C.)—Philips Symphony (metal rectified), L.T. types, 9 11; H.T. model 150v. 80 m.a., 13 6.

MAINS Transformers, with rectifiers, H.T.6, 12 6; H.T.7, 15 6; H.T.9, 21/-; H.T.10, 21/-; L.T.2, 15/-; L.T.4, 18 11; L.T.5, £1 1.

MAINS Transformers.—Ferranti E.M.3, 12 6; P.10, 15/-; Lafayette, with 4 4v. L.T.s, 7 6; 230-0-230v. 100 m.a., with L.T.s, 12 11; quantity of set makers transformers as advertised last week.

350 0-350v., 20m.a., 4v. 2ga., 4v. 2.5a.; 11 9, postage 1/-.

300V. 550 m.a., 4v. 2a., 4v. 3a., for Westinghouse H.T.11, 22 6, carriage 1 6.

240V. 200 m.a., tapped 200v., 4v. 4a., for H.T.8 and 9; 12 11, carriage 1 6.

SERADIX, type II, filter condensers, 750v. D.C. working, 1.0 mfd., 2 3; 2.0 mfd., 3 9; 4.0 mfd., 6 6; 8.0 mfd., 12 9.

SERADIX Star-Point, variable potentiometer, for heater circuits, 25 ohms, 1 9.

QUANTITY of Seradex, F.B.1 Voltmeters and Milliammeters, old type cases; usual price 7 11, clearance price 5 6.

SERADIX M150 Resistors, 1 1/2 watts, most values from 150 ohms to 2 megs., 8d. each.

SERADIX G300 8-watt Glasswound Resistors, accuracy 2 per cent., 25-1,500 ohms., 1 6; 5,000 ohms., 1 9; 50,000 ohms., 2 6.

SERADIX V.R. 1326a. Charger, charges up to 400 cells per week; price, complete, £4 3 6; a useful standby charger for the summer months.

SERADIX Super Transformers, for A.V.C. Monodial, 2.5-watt chassis is, £1 15; stripped type, £1 5, or from your dealer.

TREVOR PIPPER, 48, Wakegreen Rd., Birmingham, 13. [2770]

ORMOND Large P.M. Speaker, 30/-; Multitone 4/1, with pot, 10/-, 2, Victoria Rd., Winchester. [2805]

FERROCART Coils; 37 6 per set, post free.—Bilgoad, 7, Cranbourne Rd., Chorlton-cum-Hardy, Manchester. [2778]

C.H. RADIO, Chorley, Lanes.—Manufacturers' type parallel feed transformers; 4 6; approval against cash. [2765]

EVERYTHING for Movies and Talkies.—Phone, write, or, better still, call and inspect immense stock of bargains.

ILLUSTRATED ENTERPRISES, 159, Wardour St., London, W.1. Tel.: 6889 Gerrard. [1621]

ONE Each Ferranti O.P.1, O.P.2, O.P.M.C., O.P.M.4, A.F.6, A.C.5 and A.F.4r; at 10/- each.—Buckley, 7, Hereford St., Werneth, Oldham. [2777]

MODERN RADIO Offer a Large Selection of Philips Mains Transformers, chokes and resistances, all in perfect order and a genuine disposal stock.

A.L.L. Transformers for 200-210 volts input; 200-0-200 volts 30 m.a., 4 volts 3 amps., 4 volts 1 amp., 3 6; 200-0-200 volts 30 m.a., 4 volts 1 amp., 4 volts 3 amps. C.T., with screened primary, 4 6; 330-330 volts 60 m.a., 4 volts 4 amps., 4 volts 2 amps., 7 6.

ELIMINATOR Transformer, 4 volts 1 amp., 200-0-200 volts 30 m.a., 3/-; 10-watt wire wound resistances on glass, 15,000 ohms, 1/-; 187 ohms, tapped at 1 0, 9d. each.

IOGO ohm, 40 m.a., 20 henry chokes, 2 6; 1,200 ohms 30 m.a., 20 henry chokes, tapped at 800 ohms, 2 6.

SPECIAL Transformer, output 1.8 volts, 1.8 amps., 16 volts 200 m.a., 2 6 each.

FOR Large Selection of Other Bargains, see our advert. in the May 19th issue "Modern Radio"—25, York Terrace, Clapham, S.W.4. [2783]

METERS.—A small number of well-known makes, volts and amperometers, some A.C., for disposal at bargain prices; list.—Sanders, 12, Eastbourne Rd., Chiswick, W.4. [2808]

Components, etc., for Sale.—Contd.

EPTON First Again!—H.M.V. 3-gang 0.0005 condensers, trimmers, drum-drive, wavelength dial, with extra dial in degrees, 10/6; H.M.V. 2-gang, 0.0005, trimmers, 4/11.

T.C.C. or Dubilier Condenser Blocks, 4+4 mfd. 250v. D.C. working, 3/6; ditto, 10.5 mfd., 4-: H.M.V. ditto, 4+4, 3/4; ditto, 10.5, 3/9.

HESBY 6-mfd. Condensers, 350 A.C. working, 4/-; ditto, 450 working, 4/3; 3-mfd., 500 A.C. working, 3/-; T.C.C. 3-mfd., 800 D.C. working, 3/4.

RADIOPHONE Radiopak 4-gang, 0.0005 superhet condensers, screened, trimmers, 9/11.

FERRANTI O.F.M.3, 9/6; O.P.2, 7/6; J.B. 4-gang condensers, disc drive, trimmers, screened, escutcheon, etc., shop soiled (37/-), 10/6.

VALVES, as new, A.C.S.G./V.M., 10/11; 4M.P., 7/6; A.C.S.I./V.M., 9/6; 41M.H.C., 41M.H.F., 41M.L.F., 41M.S.G., 6/6; 84V.A., 8/6; 88, 118, H.L.8, P8, P625, P625A, 8610, 8410, K.H.1, K.L.1, P.T.425, 4/6; 41M.D.G., D.U.2, 5/6.

C.O.D. or Cash With Order.—Epton, 93, New Rd., South Chingford, E.4. [2799]

BRITISH Radiophone Radiopak Super Het 4-gang, 0.0005, fully screened with trimmers; list 37/6, our price 9/11; c.o.d., postage paid.—Kay, 167, City Rd., London, E.C.1. [2512]

SET Colvern Ferrocart Coils, with Radiophone Condenser, 55-; Amplion Class B, moving coil, 20-; all perfect, used demonstration only.—Aldridge, 29, Chatterton Rd., London, N.4. [2762]

VARNISHED Insulated Sleeving, all colours.—Send P.O. for 1/- for 24ft. in 3ft. lengths, of any colour; will take all standard wires; separate your circuits.—Small Tools, Ltd., 400b, Caledonian Rd., N.1. [2689]

MOVING Coil Milli-Ammeters, 0-50, 10/6 each; 2 milliamps and 120v. 17/6 each; other ranges in stock; alterations, repairs of every description.—The Victa Electrical Co., 47, High St., Battersea, S.W.11. [0355]

HEYBERD 500-500, 200 m.a., 4v. C.T. (5, 2, 1 amp.), list 72/6, 47/6; ditto, choke for above, 15/-; M.P.T.4s, U.14, 8.4V.A., 10/-; U.10, M.S.4B., 9/-; Baker P.M., 30/-; all above as new.—Dobbinson, 4, Elm Park Rd., Leyton. [2809]

CONDENSER Blocks 6d. per mfd., 650-volt test, in blocks of 6 mfd. upwards, wired in 2 mfd. units; 2 years' guarantee; send by return of post on 7 days' approval; cash with order.—Butlers Radio, Ltd., 191, Forest Rd., Walthamstow, E.17. Phone: 3134. [0396]

H.T.7 and Transformers, 20-; milliammeters, 15, 25, 100, 7/6 each; Bowyer-Lowe B.T.H. pick-ups, 15/- each; Multitone control, 10-; Pye 110-hertz chokes, 5/-; 6 mfd. condensers, 3/6; Primatistic, 25/-; Sonochorde dual speakers, 40- pair.—Rogers, 21, New Rd., Brentwood. [2786]

J.B. 3-gang 0.0005 Type R3W, 12/6; 2 Colverdynes, 7/- each; Colvern super-het coil set (K21, 22-23), 20/-; Ferranti A.F.5 transformer, 12/6; Garrard single spring motor, 7/6; Exide H.P. accumulators, 2 40v. units, 2,500 m.a. hours, 12/6 each; all as new.—Box 7105, c/o The Wireless World. [2796]

FERRANTI V.T.1 Valve Tester, complete, perfect, 44/-; Pico 3-range meter and valve tester, 15/-; Ferranti A.F.3, A.F.4, H.I., 11/-; O.P.M.I.C. O.P.3C, O.P.M.6, 12/6; A.P.S.G., 16/-; Hypernet 3, Nichoke 2, 6/-; Lewson No. 1 super heterodyne kit, 41/-; Colverdynes, 6/-; Colvern K21, K22, K23, ganged, 10/-; Amplion M.C.6 speaker, Ultra pick-up, new, 41/-; postage extra.—Cosmic Radio Service, 23, Water St., Liverpool. [2764]

GILBERT INDUSTRIES Offer a Further Batch of A Parts, containing one each of the following high grade components: 1 cadmium plated chassis, 1 heavy mains transformer, 350-0-350 at 60 m.a., 4 v. 4 a., C.T., 4 v. 2 n. rect., one H.M.V. 2-gang, with trimmers, and 2 coils, one electrolytic 8 mfd., 435 working, one H.M.V. screened H.P. choke, one volume control, one smoothing choke, 50 h., 50 m.a.; complete parcel, post paid, 41/-.

ALSO B Parcels, containing one each of the following high grade components, suitable for building Class B or straight 30 m.a. 150-180 v. A.C. eliminators: One Westinghouse rect., voltage doubler; one transformer; one condenser pack, 4+4+2+1+1; one choke, 50 h., 50 m.a., 4 resistances; complete parcel, post paid, 41/- by return.—Gilbert Industries, 519, London Rd., Westcliff-on-Sea, Essex. [2734]

CLEARANCE.—A large stock of Siemens Halske P.A. equipment and components, comprising the following: Two 200 watt undistorted amplifiers, complete with valves, motor generators, etc., 10, 15 and 2 1/2 watt power amplifiers, valves, Giant Blatthaller speakers, little speakers, 200 Proto supercone loud-speakers, ideal for relay work, moving coil loud-speakers, pick-ups, moving coil microphones, electric turntables, 5,000 condensers, sizes from 0.1 mfd. to 10 mfd., up to 3,500 A.C. test. PRICE lists on Application.—Callers are requested to phone before calling. Special quotations for large quantities.

H. FRANKS, 42a, St. George's St., Commercial Rd., London, E.1. Nearest Underground, Aldgate Station. Phone: Royal 8546. [2712]

1933, brand new, tested, guaranteed British radio at half price; P.M. moving coil speakers, 41/-; "Classic" super model, 25/-; oak and walnut speaker cabinets, 12/6; 20 m.a. A.C. eliminators, 30/-; trickle charger models, 42/-; D.C. eliminators 41, 15 m.a. models 15/-; 120v. H.T. batteries, 7/6; Amplion Guinea cone speakers, complete, 10/-; dual range coils, 2/11; transformers, 3/11; 20 A.H. accumulators, 2/11; 40 A.H., 5/11; D.C. all-mains units, 39/-; A.C. ditto, 55/-; all-electric and battery sets at very special prices; c.o.d.; cash refunded if not approved; trade enquiries invited.—Collins' Depot, 9-11, Riversley Rd., Nunceaton, Warwickshire. Phone: 76. [0403]

SOUTHERN RADIO Wireless Bargains; set manufacturers' guaranteed surplus. Ready Radio constructors' kits: Geophonic (G.E.C.), all-electric radio gramophone for A.C. or D.C. mains, "Carival" Model, catalogues Nos. B.C.3338 and B.C.3339, packed in manufacturers' original cases, 3 Osram valves (2 screen grid and power pentode), illuminated station index with names of stations, moving coil mains energised speaker, electric turntable, completely contained in matt inlaid walnut cabinet, brand new (original list price, 36 guineas), £14/10 each; Radio's greatest bargain, 303 3-valve battery kit, less valves, 18/6, with three Mullard valves (P.M.1.L.F., P.M.2.D.X., P.M.2), 36/- each (list 70/-); Meteor screen (This advertisement continued in column 3.)



AT A SAVING OF 50%

Why pay more than these prices for valves? 362 Valves are FULLY GUARANTEED, have as high characteristics as any valve and THEY ARE NON-MICROPHONIC

Every 362 Valve is the equal of any high-priced valve of any make (British or foreign), and is BRITISH ALL THROUGH—made of British materials, by British workers, with British capital.

PRICES FROM 3/6 POST FREE

SEND DIRECT TO THE MAKERS FOR



Table with columns for R.C., H.F., L.F. & DETEC., POWER, SUPER POWER, SCREENED-GRID or VAR-MU., PENTODE TYPE, and All in 2v., 4v., or 6v. Metalised 3d. extra. Post Free.

IMMEDIATE DELIVERY OF



The revolutionary valve which gives MAINS VOLUME FROM A BATTERY SET AT NEGLIGIBLE CURRENT DRAIN. 2v. filament only. 7-pin base.



★ IMPORTANT! The 362 UNBREAK-ABLE METAL VALVE (patent) will be released shortly. Wait for it —this also will save you 50%.

Post your order to-day, delivery of all types by return of post fully guaranteed. If valves of a certain make have been specified for your Set, send the name and type with your Order and we will send you 362 Valves of similar characteristics.

Check of P.O.s should be crossed and made payable to The 362 RADIO VALVE Co., Ltd. (Dept. Z.2), 415, MARE ST., HACKNEY, LONDON, E.8.

Mention our Monogram: BCM 362, London. This address is sufficient if you mislay our full postal address.

Components, etc., for Sale.—Contd.

(This advertisement continued from column 1.) grid 3-valve kit, less valves, 26/-, with three Mullard valves (P.M.12a, P.M.2D.X., P.M.2), 49/- each (list 45/7/6); Meteor screen grid 3-valve "A" kit, including cabinet, Celestion permanent magnet speaker, and kit of parts, less valves, 43/7/6, with three valves as above, 44 12/6 (list 48 17/6); please note all kits advertised by us are brand new, and contained in original sealed cartons; the valves advertised with these kits are the manufacturers' specified valves.

CELESTION Permanent Magnet Soundex Speakers, brand new and boxed, 16/- each (list 27/6); Cyclon three-gang condensers, 0.0005, shrouded and trimmers, 8/9 each (list 32/-); genuine Amplion loud speaker units, 2/9 each (list 12/6); screened chokes (H.M.V.), 1/- each; condensers: 4 mfd., 2/6 each; 2 mfd., 1/9; 1 mfd., 1/- each, all 750-volt test; blocks, 12 mfd. (2+2+2+2+2+1+1), 6/9 each; 10 mfd. (2+2+2+2+1+1), 6/3 each, all 1,500-volt test; mains transformers, all capacities, in stock, and specials quoted for; all goods guaranteed in every way and carriage paid; hundreds of bargains in mains and battery valves, ganged condensers, resistances, etc.—Southern Radio, 323, Euston Rd., London, N.W.1 (near Warren St. Tube). Phone: Museum 6324. [2713]

MISCELLANEOUS.

SEE Thompson's Bargains, half-page advertisement, on page 4. [2775]

EASY Payments.—We supply, by easy payments, components, accessories, and sets, any make; 10% down, balance spread over 11 months.—Send list of requirements to London Radio Supply Co., 11, Oat Lane, London, E.C.2. [0337]

ENGINEERS and Technical Workers of All Kinds.—A proper training by post in your spare time will take you through your right examination, then employment is waiting. Our advice on all careers free.—Dept. 92, The Bennett College, Ltd., Sheffield. [0395]

AMBITIOUS Engineers Wanted, to apply for our free A 250-page handbook; gives details of A.M.I.Mech.E., I.E.E., A.M.I.A.E., G.P.O., etc., exams., outlines latest courses in mech., elec., motor, radio and aero. engineering, and shows clearly where first class vacancies occur each year.—Send P.O. for free handbook immediately to British Institute of Engineering Technology, Shakespeare House, 29, Oxford St., W.1. [2785]

PATENT AGENTS.

KING'S PATENT AGENCY, Ltd., 146a, Queen Victoria St., London, E.C.4. Phone: Central 0682. 47 years' experience. Advice Handbook free. [0381]

PATENTS and Trade Marks, British and foreign.—Gee and Co. (H. T. P. Gee, Member R.S.G.B. and A.M.I.R.E.), 51-52, Chancery Lane, London, W.C.2. Phone: Holborn 1525 [0001]

PATENTS.

PATENT for Sale, radiogram combination, No. 336-39; seen by appointment.—Challin, 126, Ledbury Rd., Bayswater, W.11. [2761]

REPAIRS.

CONSULT Alexander Black about Set Repairs.—55, Ebury St., S.W.1. Sloane 1655. [0397]

EXPERIMENTERS.—Your twist drills reground; 1/3 dozen, sizes to 1/4in.—Kinguam, Engineer, Marshfield, Glos. [2791]

REPAIRS to L.F. Transformers, 'phones, loud-speakers (except Blue Spots), 4/-, post free; quotations for mains transformers and all coil-winding jobs; terms to trade.—Repair Depot, 70a, Exmouth Rd., Walthamstow, E.17. [2762]

ANY Make of Loud-speaker, cone unit or pick-up, repaired and magnetised, 3/9; R.S., 4-; special quotations for moving coil mains transformers and eliminator repairs; all work guaranteed.—F. H. Marshall, 9a, Burton St., Nottingham. Est. 1917. [2784]

REPAIRS to Loud-speakers, transformers and headphones, 4/- each; Blue Spots or Wufs's, 5/-; mains eliminators, etc., quoted for; prompt service; satisfaction guaranteed; terms to trade.—Loud-speaker Repair Works, 2, Shipka Rd., Balham, London, Streatham 6618. [0394]

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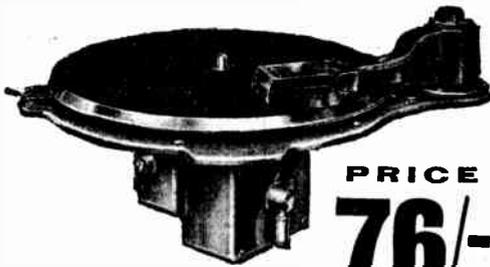
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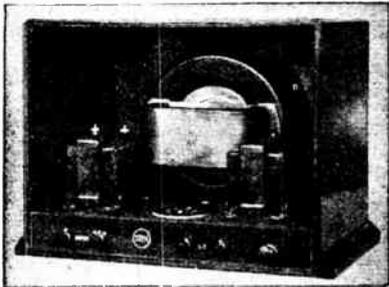
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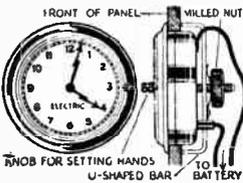
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WEDNESDAY

JUNE THE SEVENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL LONDON Act 3 of "Aida," from Covent Garden.
REGIONAL NORTH Canterbury Festival: Serenade Programme from the Cathedral Cloisters.
REGIONAL WEST Folk Songs of the North—Cumberland.
REGIONAL SCOTTISH Police Band Concert.
REGIONAL BELFAST Orchestral Concert.

ABROAD

BERLIN (Deutschland-sender) 8.5 p.m. Contemporary Music by the Bullerian Chamber Orchestra.
BRESLAU HAMBURG 8.0 p.m. Chamber Music from Gleiwitz.
HILVERSUM 8.0 p.m. Verdi Concert by the Philharmonic Orchestra.
POST PARISIEN ROME 8.0 p.m. Concert by the London Labour Choir, conducted by Alan Bush.
STRASBOURG STUTTGART 8.30 p.m. "Les femmes savantes," play by Molière.
TURIN 8.35 p.m. Opera: "I Cavalieri di Ekebu," by Zandonai, conducted by the composer.
 8.45 p.m. Concert by the Municipal Orchestra.
 8.0 p.m. Programme for the Ninetieth Anniversary of the death of Friedrich Holderlin.
 8.30 p.m. Operetta: "The Drum Major's Daughter," by Offenbach.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.30, News. 7.40, Tourist Talk. 7.55, Lottery Results. 8.0, Agricultural Notes. 8.15, News. 8.30, Gramophone Concert. 9.0, Concert by a Symphony Orchestra.

(Chopin); Waltz in C Sharp Minor (Chopin), arranged for Jazz. 8.30, Czech Poetry—Talk and Reading from the Works of V. Novak. 9.0, See Prague. 9.15, See Moravská-Ostrava. 10.0, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by Leemans. Soloist: Santalouna (Tenor). 1.0, Journal Parlé. 1.10, Concert, relayed from the Grand Hotel, Antwerp. Conductor: André Fellemans. 5.0, Chamber Music Concert: Rhapsody for Flute, Oboe, Clarinet, Bassoon, Horn and Piano (Jongen); Dance de la sorcière, for Flute, Oboe, Clarinet, Bassoon, Horn and Piano (Tansman); Quintet for Piano, Oboe, Clarinet, Horn and Bassoon (Gieseking). 6.0, Talk and Recitations: The Legend of Mons. 6.30, Light Music on Gramophone Records. 6.45, The Portrait—Sketch (Léon Donnay). 7.0, Popular Music on Gramophone Records. 7.15, Religious Talk. 7.30, Health Talk. 8.0, Concert by the Grand Station Orchestra, conducted by Scherchen: Symphonic Poem, Pelléas et Mélisande, Op. 5 (Schönberg); Symphony No. 4 (Brückner). In an interval at 8.45, Jean-Marie—One-Act Sketch (André Thouriet). 10.0, Journal Parlé. 10.10, Dance Music on Gramophone Records.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert, relayed from the Grand Hotel, Antwerp. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans. Soloist: Santalouna (Tenor). 5.0, Dance Music, relayed from the St. Sauveur Palais de Danse. 6.0, Gramophone Music. 6.15, Talk. 6.30, Piano-forte Recital by Mme. Lundgren: Sonata in F (Scazzati); Etude in F Minor (Chopin); Mazurka, Op. 68, No. 3 (Chopin); Het wiewaalt en Leeuwert (Mortelmans); Improvisation (De Boeck); Selection from Goyescas (Granados). 7.0, Gramophone Concert. 7.30, Le Journal Parlé. 8.0, Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, Die schöne Galathee (Suppé); Potpourri, Klänge aus Rumänien (Dauber); Humorous Songs; Violin Solo from Faust (Gounod-Sarasate); Humorous Songs; Selection from Sunny (Kern). 9.0, Concert by Georgy and his Hot Saxs. 10.0, Le Journal Parlé. 10.10, Dance Music, relayed from the St. Sauveur Palais de Danse.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: March (Lindemann); Waltz (Dvorák); Overture,

Gipsy Love (Lehár); Ballet Suite from Sylvia (Delibes); Potpourri, Helmesbergeriana (Ishpold). 6.0, Radio Journal. 6.15, Concert (contd.): Invocation (Gounod); Old Minuet (Sgambati); Melody (Catalani); Suite, Chants d'Espagne (Albéniz); Potpourri (Kochmann). 7.0, Educational Programme. In the interval at 7.20, Gramophone Records. 8.0, Piano-forte Recital. 8.30, Song Recital: Songs (Brahms): (a) Sonntag, (b) Von ewiger Liebe, (c) Vergeßliches Ständchen; Songs (R. Strauss): (a) Die Nacht, (b) Allerseelen, (c) Freundliche Vision; Liebesfeier (Weingartner); Jewel Song from Faust (Gounod); Autumn Leaves (Ottensou); La Fontana cu Galacta (Montia). 9.0, Talk. 9.15, Flute Recital: Air (Bach); Minuet (Mozart); Two Pieces (Lacombe): (a) Andaluza, (b) Scherzettino; Solo No. 6 (Demerssemann). 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Programme also relayed on 840 metres from 8.20 p.m. till Close Down.—5.0 p.m., Concert by the Budapest Concert Society's Orchestra. 6.0, Talk. 6.30, Gramophone Music. 6.50, Talk. 7.20, Market Prices. 7.30, Concert by the Karl Bura (Cigány) Band. 8.20, Concert of Music by Tihor Polgar and R. Kokal, with Hungarian Songs. 9.30, News. 9.45, Organ Recital from the Academy of Music: Prelude and Fugue in F (Bach); Scherzo (Mendelssohn); Basao ostinato (Reger); Moonlight on the Lagoon (Friml-Barnes); Echoes of Spring (Friml-Barnes); Spozalizio (Liszt); Suite gothique (Boëllmann). 10.30, Weather. 10.35 (approx.), Cigány, Music from the Café Baross. In the interval from 11.0 to 11.20, Talk in French: Franz Liszt and French Literature.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,163 metres.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, relayed from the Bellevue Strandhotel. 2.0 to 2.30, Interval. 2.30, Talk for Women. 3.0, Gramophone Records of Famous Artists. 3.30, Orchestral Concert, relayed from the Wivex Restaurant. 5.0 to 5.35, Interval. 5.35, Exchange and Fish Market Prices. 5.50, Talk: Albert Schweitzer. 6.20, French Lesson. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Agricultural Talk. 8.0, Time Signal from the Town Hall. 8.0, Der Jäger—Opera in Two Acts (Kurt Weill), after the Japanese Drama Taniko, by Bert Brecht. 8.40, Talk: The Savings Banks in Times of Crisis. 9.10, Piano-forte Recital of Music by J. S. Bach's Sons, by Hans Almdal: Capriccio (W. F. Bach); Sonata in G Minor (C. P. E. Bach); Sonata in C Minor (J. C. Bach); Rondo in C (J. C. F. Bach). 9.40, Radio Pictures from Daily Life: A Visit to a Garden City. 10.10, News. 10.25, Concert of Operetta Music by the Station Orchestra, conducted by Emil Reesen: Overture, Ten Maids and No Man (Suppé); Selection from Donna Juanita (Suppé); Overture, Les Cloches de Corneville (Planquette); Selection from The Mikado (Sullivan); Foxtrot from Madame Pompadour (Fall); Waltz from The Yellow Jacket (Lehár); March from The Merry Widow (Lehár). 11.10, Dance Music from the National Scala. In the interval at 12 Midnight, Time Signal and Chimes from the Town Hall. 12.30 a.m. (Thursday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. T. St. A. Ronald and B. McNabb announce. 4.30, Concert for Portsmouth and Southsea Listeners: The Clock is playing (Hewitt); Goin' Home (Dvorák); Waiting at the end of the Road (Berlin); The Bing Boys are here (Grey); The Toy Town Admiral (Godfrey); Lady Divine (Kounty); A fond Kiss (Traditional); Another little Drink; I stopped, I looked, I listened; My Coquette (Andrew); You along o' me (Sanderson); When the Kye comes Home (Traditional); Childhood Memories (Somers). 5.15, Concert for Isle of Wight Listeners: Love's Pleading; Sally in our Alley; Spanish Serenade (Herbert); Chinese Serenade (Herbert); Come back to Sorrento; Serenata; Barcarolle (Waldteufel); Gopak; Chant Hindu; Medley of Stephen Foster Melodies; La Mantilla; Elegie. 6.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Iboolians: You've got me in the Palm of your Hands (Friend); Moon (Caleo); Sing a new Song (Ager); Same old Moon (Baskette); Pagan Moon (Dubin); Trees (Kilmer); If you were only mine (Newman); Stardust (Carmichael); Crosby Columbus and Valle (Burke); Hot and anxious (Redman); Now's the time to fall in love (Sherman); I got Rhythm (Gershwin); How'm doin' (Fowler); Bugle Call Rag (Pettis); Try getting a good Night's sleep (Pinkard); Minnie the Mocher (Calloway). 11.0, Celebrity Concert of Gramophone Records: The Song of Songs (Moya), by Tom Burke; In a Monastery

ATHLONE
 725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Exchange, and Weather. 6.0, Programme for Children. 6.45, News. 7.0, Talk. 7.15, German Lesson. 7.30, Time Signal. 7.31, Concert by the Brass Band of the First Dublin Company of the Boys' Brigade. 8.0, Harp and Violin Music by Annie Fagan and Kelly Lang. 8.30, Strauss Songs by Eileen O'Driscoll. 8.45, Piano-forte Solos by Sydney Green. 9.5, Orchestral Music. 9.30, Irish and Anglo-Irish Songs by J. F. Rodgers (Tenor). 9.45, Sponsored Programme. 10.45, Time, News, and Close Down.

BARCELONA

860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. Selection from Samson and Delilah (Saint-Saëns); Selection from The Rheingold (Wagner); Piece (Mannfred); Air de Ballet (De Taaey); Romance (Rubinstein); Selection from Mirella (Gounod). 8.0, Request Gramophone Records. 8.30, Exchange Talk relayed from the Academy and Relay from the Ayuntamiento. 9.0, Gramophone Music and News. 10.0, Chimes, Weather and Exchange. 10.5, Concert by the Station Orchestra, March, The Spirit of Liberty (Souza); Selection from Los borrachos (Jiménez); Waltz, The Blue Danube (Joh. Strauss); Oriental Scene (Armandola); Danza de los Seises (Turina); Castilla (Albéniz). 11.0, Vincente Díez de Tejada reads his Story, El mismo demonio. 11.15, Sextet Concert from the Casino de San Sebastian. 12 Midnight (in an Interval), News. 1.0 (approx.), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Report, Tourist Talk and Popolavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35, Chamber Music Concert. Soloists: Nina Locoeno (Piano-forte) and M. de Santis Bruno (Soprano). Overture, Zampa (Hérold); Piano-forte Solo, Sonata clavicembalistica (Cantù); Soprano Solos: (a) Malinconia (Alfano), (b) Un madrigale di T. Tasso (Staffelli); Melody (Respighi); Piano-forte Solos (Ferrari): (a) Pierrot si diverte, (b) Nella tormenta; Soprano Solo, Nuit d'Espagne (Massenet); Gavotte (Hamud); Overture, Ruy Blas (Mendelssohn); Soprano Solo: La preghiera del lumicino (Casavola); Piano-forte Solos: (a) Capriccio (Martauci), (b) Rhapsody in B Minor (Brahms); Minuet, Galanteria (Solazzi); Soprano Solo: Vaticinio (Tirindelli); Sonata in B Flat Minor, Op. 35 (Chopin); Gavotte, Profumata (Bolognesi). Talk in the interval. 10.30, Music from the Gran Caffè del Levante. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.55 p.m., Time and Programme Announcements. 7.0, Talk. 7.30, Recital of National Songs. 8.0, Gramophone Music. 8.40, Talk. 9.10, Recital of Yugoslav Songs and Arias. 9.50, Time and News. 10.10, Concert by the Radio Orchestra.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert of Popular Music. 3.0, Talk for Young People. 3.30, Weather and Exchange. 3.45, Readings: Hölderlin's Letters to Diotima. 4.0, See Hamburg. 5.0, Topical Talks: (a) Bismarck and Hitler, (b) Under German Palms. 5.30, Talk: Observations on the Sagacity of Animals. 5.50, Review of Political Books. 6.0, A Poem. 6.5, Suite in E Minor, Op. 16, for Violin and Piano-forte (Heinrich Noren). 6.35, Wireless Technical Talk. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, An Epigram. 8.5 (approx.), Concert of Contemporary Music by the Bullerian Chamber Orchestra, conducted by Hans Bullerian: Concerto for Flute, Clarinet, Bassoon, Trumpet, Kettledrum and String Orchestra, Op. 106 (Julius Weissmann); Prelude and Improvisations for Violin and Piano-forte, Op. 16 (Siegfried Burgstaller); Chamber Symphony, Op. 49 (Hans Bullerian). 8.50, Programme to be announced. 10.15, Weather and News. 10.45, Weather Report for Shipping. 11.0, Concert from Heilsberg. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.10 p.m., Choral Concert, relayed from the Market Place, Stendal. 6.40, The Witzleben Station informs its Listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Munich. 8.10, Concert from Munich. 9.0, Talk by Hans Hinkel. 9.20, Symphonic Prologue to a Tragedy, Op. 108 (Reger), by the Station Orchestra, conducted by Eugen Jochum. 10.0, News. 10.15 (approx.), Dance Music. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BRNO

878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: News, Medical Talk and Gramophone Music. 7.0, See Prague. 8.10, Piano-forte Recital of Well-known Pieces, arranged for Jazz: Nocturne in E Flat (Chopin); Nocturne in E Flat (Chopin), arranged for Jazz; Spring Song (Mendelssohn); Spring Song (Mendelssohn), arranged for Jazz; Waltz in C Sharp Minor

JUNE 7th

WEDNESDAY

continued

Garden (Ketebeby), by Charles Hall; Vocal Quintet: Brightly as the Sun (Wagner); Rockin' Chair, by Paul Robeson; A Little Idea of my own (George Robey); Duets: (a) Where methought can she be (Wagner); (b) A Shoemaker's Life (Wagner); Just Humming along (Ewing), by Raie da Costa. 11.30, Light Orchestral Music: Ballet Egyptian (Luigini); Love sends a little Gift of Roses (Openshaw); Violin Solos: (a) Sielienne and Rigaudon (Francoeur); (b) La Capricieuse (Elgar); Aphrodite: The Wedding of the Birds; Violin Solo: Au mois d'Avril (Adlington); Song of their days (Brooks). 12 Midnight, Club Concert for Luten Listeners: Old Panama (Alford); Astore; Ort in the stilly Night; Rum Tum Rhythm (Aitch); Touch not the Nettle (arr. Geehl); Sheldan Lullaby (arr. Geehl); In my Bell Bottom Trousers (Hulbert); Up in the Clouds; At the Convent Gate (Sherwood); Do, do, do; Jericho (Myers); Mighty lak a Rose; The Sun has got his Hat on (Gay); Hand me down my walkin' cane (Hill Billy). 1.0 a.m., Music by a Tango Band: Will you dance through Life with me (Swabach); Il canto dell' u' Hesa (Bixio); There was a Poor Musician (Schwartz); Conchita (Matée); A une Rosa (Simons); Mariou (Hollander); Farewell (Buday); Te fuiste ja ja. 1.30, The Studio Chorus: Japanese Sunset; The Hills of Home; Come where my love lies dreaming; Selection from The Gipsy Princess (Kafman); The Old Refrain; Duna Until; Barefoot Trail. 2.0, Dance Music by the Browns: Farewell Blues (Schoebel); Now that you're gone (Kahn); Twelfth Street Rag (Sumner); Can't we talk it over? (Washington); You can make my Lie a Bed of Roses (Brown); Sing a New Song (Wever); Say (Brown); Holding my Honey's Hand (Goering); When the Band goes marching by (Sarony); Actions speak louder than Words (Vallee); Watch the Naxy (Howell); Home (van Steeden); Who's your little who'Zus (Hirsch); Happy Dorkies (Godfrey); You Rascal, you (Hearst); The Brooklyn Cake (Thurhan). 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres, 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.25 p.m., Topical Talk. 6.45, Topical Talk. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, See Munich. 9.0, The Rhön Gebirge—Radio Sequence. 9.45, Twelve Pieces for Pianoforte, Op. 133 (Regér). 10.15, Time and News. 10.45, See Stuttgart. 12 Midnight (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENÈVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—4.0 p.m., Concert by the Hamburg Philharmonic Orchestra, conducted by Josef Eibenschütz. Soloist: Gertrud Rother (Pianoforte); Overture, Jesu, sonda (Spohr); Pianoforte Concerto in E Flat (Liszt); Am Strande von Sorrent (R. Strauss); Ballet Music from Ueber allen Zaubern Liebes (Lassen). 5.0, Talk: Men, Machines and Profits. 5.15, Talk: Theories of Race. 5.30, Hamburg, Bremen and Lübeck—Report on Events in the Senate and House of Burgesses of the Hanseatic Free Cities. 6.0, Variety Programme. 6.45, Frankfurt Exchange and Market Prices. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Verdi Concert by the Hamburg Philharmonic Orchestra, conducted by Adolf Secker. In the Interval, Talk by Hans Tessmer. 9.0, News. 9.15 (from Hanover), Orchestral Concert Studentemusik (Rossemüller); Minuet (Handel), Romance (Marschner); Der Spielmann (Sommer); Pianoforte Duets: (a) Polonaise (Kücken), (b) Ländler (Frank); Wedding March (Spohr). 10.0, Time and News. 10.10, Topical Talk. 10.20, String Quartet in F Minor, Op. 95 (Beethoven) by the Rathje Quartet. 10.50, Concert from the Café Wallhof.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert of Variety Music. In an interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Agricultural Prices and Exchange. 3.20, Talk for Housewives. 3.30, Programme for Children. 4.0 (from Danzig), Talk: Schools and Education in the

New State. 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Oberon (Weber); Two Old Russian Dances (Clemis); Selection from Little Ida's Flowers (Kleian); Waltz, Ins Zentrum (Joh. Strauss); Im Zirkus (Mrazcek); Leichte Brüder (Rust); Selection from Der lustige Krieg (Joh. Strauss); Waltz, Roses et Marguerites (Waldteufel); Rakoczy Overture (Keler-Béla). In an interval at 5.15 (approx.), Book Review. 6.15, Agricultural Prices. 6.20, Six Variations on an Original Theme in F, Op. 34 (Beethoven), with an Introductory Talk on the Art of Playing the Pianoforte. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, News. 8.5, Dance Music by the Small Station Orchestra, conducted by Eugen Wilcken. 9.5, News. 9.10, Gallische Hörner—Radio Play (d'Haussonville and Ludwig von Wohl). 10.25, Weather and News. 10.30 (approx.), Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Beethoven Overture (Lassen); Selection from Don Giovanni (Mozart); Czardas No. 9 (Michiels); Nocturne No. 3 (Liszt); Selection from Tiefland (d'Albert); Waltz, Schwert und Leyer (Jos. Strauss); Overture, Yelva (Reissiger). 12 Midnight (approx.), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). 11.40, Concert by the Small V.A.R.A. Orchestra, conducted by H. de Groot. 1.25 to 1.40, Interval. 1.40, Programme for Women. 2.40, Programme for Children. 5.10, Concert by De Flierefluiters, conducted by J. van der Horst. 5.40, Gramophone Music. 6.10, Organ Recital by J. Jong; March from Rienzi (Wagner); Elise (Frintl); Ballet Egyptian (Luigini); Selection from The King of Jazz (Ager). 6.40, Topical Talk. 7.20, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot: The Red Flag (Broeck-Reues); Overture, Fidelio (Beethoven); Siegfried Idyll (Wagner); L'apprenti sorcier (Dukas). 7.39, S.O.S. Messages. 7.40, Talk. 8.0, Concert by the London Labour Choir, conducted by Alan Bush. Soloist, G. Dunn (Tenor). The Ideal State (Bainton); Song to Freedom (Bush); Song of War (Boughton); Evening Hymn (Purcell); Oh, Love's a Sweet Passion (Purcell); Ye Gentle Spirits of the Air (Purcell); Have you seen but a White Lily grow? (Purcell); Angler's Song (Laves); This Sweet and Merry Mouth (Byrd); On the Plains (Weelkes); Sweet Honeysucking Bees (Wilbye); Pan (Boughton). 8.40, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot: Selection from Semiramis (Rossini); Selection from Emil and the Detectives (Gray); Hungarian March (Berlioz). 9.10, Choral Concert (contd.): Just as the Tide was Flowing (Vaughan); Annie Laurie (arr. Bantock); Billy Boy; Sheandoah; The Drummer and the Cook; Three Songs from Songs of the Doomed (Bush); The Ballad of Semmerwater (Bainton); Song to Labour (Bush); The Red Flag (Bush). 9.40, Concert by the V.A.R.A. Orchestra (contd.): Symphony in B Minor (Schubert). 10.5, News. 10.15, Organ Recital by C. Steyn. 10.45, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW. Programme of the Christian Radio Society (N.C.R.V.).—12.10 p.m., Quietest Concert; Gramophone Music in the intervals. 1.40, Report on a Meeting of Girls; Sacred Music and Addresses. 4.40, Programme for Children. 5.40, Gramophone Music: Potpourri. Also sprach Meyerbeer (Urbach); Overture, Di Ballo (Sullivan); Verdi Potpourri (Morena); Unter dem Grillenbanner (Lindemann). 6.10, Programme arranged by the Department of Buildings and Roads. 6.40, Police Notes. 6.55, News. 7.10, Salvation Army Music. 7.40, South Limburg Evening Music. Recitations and Address. 9.40, News. 9.50, Gramophone Records. 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., News Bulletin. 8.15, Reading. 8.45, News. 9.0, Radio Concert. 12 Midnight to 1.0 a.m. (Thursday), Programme in English by the I.B.C. H. K. Hitchcock announcing. 12 Midnight, Military Band Concert: El Abancio (Javaloyes); Bullfighters' March (Kottow); Quand Madelon (Bonquet); Post Horn Gallop (Koenig); Medley of British Songs (arr. Dundas); National Emblem (Bagley); Le Réve Passe (Krier); King Cotton March (Souza). 12.30 a.m., Dance Music: What more can I ask? I may never pass your way again; Brighter than the Sun; A Boy and Girl were dancing; I'm playing with Fire; Do you recall? Willow, weep for me; Can't we meet again? 12.57, I.B.C. Good-night Melody. 1.0 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.0 p.m., Talk for Women. 7.15, Announcements and Gramophone Music. 7.25, Talk for Young People. 7.30, See Warsaw. 10.20, Dance Music. 11.0, The Letter Box in French.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—7.50 p.m., Cello Solos. 8.0, Time, Weather and News. 8.40, Concert. 9.10, Talk in Polish. 9.30, Variety Programme. 9.50, Talk for Housewives. 10.10, Concert. 11.0 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—7.5 p.m., Programme for Girls. 7.15, Programme of Music and Addresses by the Reserve Officers' School, relayed from Hamina. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Military Music, relayed from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Eysodt. Soloist: Lilo Hanmels (Soprano); Overture, Peter Schmitt (Weber); Songs: (a) Stilles Lied I and II (Trunk), (b) Melody (Trunk), (c) Verrat (Pfitzner); Suite for Violin and Small Orchestra (Spies); Dance of the Tumblers (Rimsky-Korsakov); Bacchanale (Dvorák); Selection from Martha (Plow); Serenade from the Ballet Les Millions d'Arlequin (Drigo); Marien-Walzer (Lanner). In an interval at 2.0 (approx.), News. 2.30, Sponsored Programme with Gramophone Records. 3.10, Talk: The Potsdam of German Education. 3.30, Exchange and Time Signal. 3.50, Programme for Young People. 4.30, Concert by the Station Quintet: Spring Suite (Nevin); Walzer-Märchen (Schütt); Slav Dances Nos. 1 and 6 (Dvorák); Kisses in the Dark (de Micheli); Ninna-Nanna (de Micheli); Serenade (Wilton); Gavotte from The Blue Mazurka (Lehar); Fliegender Pfeil (Holzmann); Serenade (Lehar); Waltz, Parla (Arditi); Czardas (Monti). 5.50, Programme for Women. 6.10, Poetry Reading. 6.25, Italian Conversation Lesson. 6.45, News Bulletin. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, News. 8.5, Topical Talk. 8.15, Military Band Concert, relayed from Lippspringe. The Band of the Paderborn Cavalry Regiment No. 15. Army Marches Nos. 1 and 9 (Krause); Transaktionen-Walzer (Jos. Strauss); Two Marches (Leopold); Selection from The Trumpeter of Säckingen (Nessler); Weddigen-Marsch (Vielhaus); March, Mein Deutschland (Seepel); Waltz, Grubenlichter (Zeller); Interlude: The Wanderer of the Towers of Lambert—Sketch (Rudolf Predeek); Bavarian March Past (Scherzer); Parade March (Lippe); Cavalry March (Molke); Churrasser March (Simon); Potpourri of Marching Songs, Jung-Deutschland (Weininger); March, Aufbruch der Nation (Stieberitz); Badonviller-Marsch (Fürst). 10.5, News Bulletin. 10.20, Concert of Chamber Music by Rheinisch and Westphalian Composers: Sonata in A for Violin and Piano, Op. 39 (Haass); Four Contralto Solos, Op. 5 (Paulus); Heitere Festmusik, Op. 39 (Böttingen). 11.0, Radio Report on the German Chess Tournament in Aachen (on Gramophone Records). 11.25, Serenade on Gramophone Records. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Concert by the Dresden Philharmonic Orchestra, conducted by Joseph Gustav Mrazcek. Overture, Tancred (Rossini); Waltz from the Serenade No. 2, Op. 63 (Volkmann); Selection from Die verschenkte Frau (d'Albert); Waltz from Der Opernball (Heuberger); Oriental Sketches (Mrazcek); Introduction to the Third Act of Asehnbrödel (Joh. Strauss); A.B.C. Potpourri (Konzak); Comedy Overture (Lincke); Flitsch-Marsch (Wagner). In the interval at 1.0 p.m., News. 2.0 to 2.10, News. 2.30, Talk: Ignition and Lighting for Automobiles. 3.0, Harpsichord Recital by Gisela Tiedke: Prelude in G (Bach); Suite in E (Bach); Gavotte in F (Martini); The Cuckoo (Daquin); La Poule (Rameau). 3.35, Exchange and Market Prices. 4.0, Programme for Children. 5.50, Economic Notes, Weather, and Time. 6.0, Book Review. 6.20, Schubert Song Recital, with Guitar Accompaniment. Namensfeier Cantata: Frühlingssong; Naturgenuss; Die Nachtigall; Geist der Liebe. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Military Band Concert and New Soldiers' Songs. 9.0, Talk: The

Italian Youth Movement. 9.30, Illustrated Talk: On Musical Instruments. 10.30, News. 10.50 (approx.), Serenade from Munich. 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—5.0 to 5.30 p.m., Programme in English by the I.B.C. Announcer: F. Miklavcic. International Broadcasting Club Concert: Two Comedy Foxtrots: (a) Let's all be Fairies, (b) Toasts; Waltzes: (a) You loving me, (b) Little Yvonne; Foxtrot, Ooh! that Kiss; Spanish One-step, My Donna Rita; Foxtrot, Listen to the German Band; Waltz, Same Old Moon. 6.30, Gramophone Music. 7.0, Talk: Modern Heroes. 7.30, Literary Talk. 8.0, Talk on Music. 8.30, Second Concert of Modern Slovene Music. 9.30, Weather and News. 9.45, Concert by the Station Orchestra. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert of Light Music. 7.30, Radio Gazette. 7.50, Talk on Astronomy. 8.0, Talk. 8.20, Book Review. 8.30, Variety Concert, followed by News.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres 20 kW.—11.30 p.m., Concert of Popula Music in the Interval at 11.45, Radio Chronicle. 12.40 a.m. (Thursday), Light Music. 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAUJ, 707 kc/s, 424.1 metres; 2 kW.—8.0 p.m., Chimes, Exchange Announcements, Radio Journal, Programme for Women and Dance Music. 9.25, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time, and Political Review. 11.15 (approx.), You are the Thief!—Radio Play in Three Acts (Mesa). 12.45 a.m. (Thursday), News and Dance Music. 1.30 Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—5.50 p.m., Gramophone Concert. 6.15, Talk for Workers. 6.25, Gramophone Music. 6.45, Talk on Birds. 7.0, See Prague. 7.10, Concert by the Station Orchestra, conducted by J. Plichta: Selection from Cavalleria Rusticana (Mascagni); Waltz from Eugène Onegin (Tchaikovsky); Slav Rhapsody in A Flat, Op. 45, No. 3 (Dvorák); Melody (Foerster); Two Dances (Zich). 8.10, See Brno. 8.25, Music by a Village Orchestra. 9.0, See Prague. 9.15, Concert of Light Music by the Station Orchestra, conducted by M. Musil. 10.0, See Prague. 10.15 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.55 p.m., Concert by the Augsburg Chamber Orchestra, conducted by Karl Dietz; Overture, Die Castibaner (Carafa); Selection from Der Evangelinann (Kienzl); March (Mozart); Modern Ballet Suite (Armstrong); Dorette (Kreuger); Waltz, Hofballtänze (Lanner); King Charles March (Uratl). 6.5, Talk: Revolutionary Tendencies in the Patent Laws. 6.25, Dialogue: Aviation for War Purposes or for Sport? 6.45, Time and Weather. 7.0, Transmission for all German Stations; Hölzerlin—a Radio Picture (Veit Roskopf). Music by Werner Ekg. 8.0 (from Nürnberg), Military Band Concert: Bayerischer Delliermarsch (Scherzer); Overture, Das Nachtlager in Granada (Kreutzer); Tone Piece, Unsere Marine, on the German Flag Song (R. Thiele); Potpourri of Old Bavarian Army Music (Sauter); Potpourri of Soldier Songs; O Deutschland hoch in Ehren (Lindemann); March, Erinnerung an Badonviller (Fürst). 9.0, Springtime in Old Munich—Three Radio Pictures of the Bavarian Biedermeier Period (Ernst Hohenstatter): (a) Serenade in the New Market Place, (b) Morning Dance in the English Garden, (c) May Dance in the Grünen Baum. 9.55, Songs to the Lute. 10.20, Time and News. 11.0, Programme from Stuttgart. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,093 metres; 60 kW. Relayed by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrunn, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres. 5.0 p.m., Concert relayed from the Grand Hotel. 6.0, Talk. 6.30, Programme for Boys. 7.0, Advertising Notes. 7.15, News. 7.30, Song Recital by Mmes. Solveig Borthen and Heavig Wulff: Spring Songs by Aines, Monrad Johansen, Grieg, Lie, Kjerulf, Gjerström

JUNE 7th

WEDNESDAY

continued

and Ulfrstad. 8.0, Time Signal. 8.2, Recitations. 8.30, Orchestral Concert conducted by Hugo Kramm; Programme in D (Svend-son); Lyric Suite (Grieg); Aftenlandskap (Halvorsen); Silvet (Lammers); Saga og Janitull (Olson); Romance (Neupert); Popular Song (Borch); Norwegian Dance (Borch); Serenade (Baeker-Gröndahl); Kjaerleik pa Lykkeland (Reitarsson). 9.30, Agricultural Report. 9.40, News. 10.0, Topical Talk. 10.15, Song Recital. 10.45, Dance Music on Gramophone Records.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopelavoro Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time Signal and Announcements. 8.45, Orchestral Concert. Soloists: M. Micozzi (Clarinet) and Adelfio (Soprano). March from Cendrillon (Massenet); Concerto for Clarinet; La Procession Nocturne (Rabaud); Soprano Solos: (a) Sull'alba (Tosti). (b) Amare, soffrire (Trindelli); Serenade for Strings (Westerhaut); Soprano Solos: (a) Song (Reel), (b) Das Veilchen (Mozart); Overture, Egmont (Beethoven). In the interval, Talk. 10.0 (approx.), Popular Song Recital. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,550 metres) at 10.25 a.m. and 11.25 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Illustrated Talk on Music. 7.0, Le Journal Parle. 8.30, Orchestral Concert conducted by Edouard Flament. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—5.45 p.m., Journal Parle. 7.0, Gramophone Concert. 7.45, Tyrolean Song Recital by Nina Reverely. 8.0, Talk on Parasites. 8.15, Interval. 8.30, Les Femmes savantes—Play (Molière). 10.30, Dance Music by the Lido Band. 11.0, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records of Light Music. 8.0, Press Review and Weather. 12 Noon, Educational Talk. 12.15 p.m., Concert by the Radio Paris Orchestra, Mugnette (Miss A). 12.30, Organ Recital from the Gaumont Palace. 1.0, Exchange, News and Weather. 1.5, Concert (contd.), Selection from The Count of Luxembourg (Lehar-Letorty). Overture, Une Education manquée (Chabrier); Selection from Troubadour (Moretti); Selection from La Dame au Domino (Hirschmann); Selection from Les Aventures du Roi Pausole (Honegger). In an interval at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.40, German Lesson. 7.0, Medical Talk. 7.20, Concert of Light Music. La Partie de Chasse (Anrel); Souvenir de Versailles (Angel); The Wren (Eilenberg); Autumn Leaves (Fahrbach); Neapolitan Serenade (Fievot); La Champenoise (Dalcroze); Meditation (Jehin); Fête madrilène (J. Rousseau). 7.45, Commercial Prices and News. 8.0, See Budapest. In an interval, Fashion Review by Mlle. José. 9.15, Press Review and News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Utility Hall Programme. 7.45, KDKA Home Forum. 8.0 to 8.58, New York Relay. 8.0, Betty and Bob. 8.15, Radio Troubadours. 8.45, Happy Jack. 8.58, Baseball Scores. 9.0, Mid-Week Musicale, from New York. 9.30, Business News and Market Reports. 9.45, Dance Masters, from New York. 10.0, Baseball Scores. 10.5, Bass Solos by Fred Webber. 10.15, Programme to be announced. 10.30, The Singing Lady. 10.45, Little Orphan Annie, from New York. 11.0, Time Signal and Essex House Ensemble, from New York. 11.15, Weather Report. 11.16, Sport Review. 11.22, Press News-Reel. 11.29, Temperature Report. 11.30, The Maid and the Minstrels. 11.45 to 1.30 a.m. (Thursday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15 a.m., Al Mitchell's Orchestra, with Baritone Solos by Everett Marshall. 12.30, String Symphony. 1.0, Enc. Crime Clues. 1.30, Programme to be announced. 1.45, Phil Cook and the Ingram Shavers, from New York. 2.0, Programme to be announced. 2.30, United States Marine Band, from New York. 3.0, Time Signal, and the Revelers' Quartet, from New York.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by Otakar Parik. 3.55, Exchange. 4.0 to 5.35, Interval. 5.35, Talk: The Housing Question in Prague. 5.55, Talk. 6.5, Agricultural Talk. 6.25, News in German. 6.30, German

Transmission: Programme for Children and Talk for Workers. 7.0, Chimes. 7.1, News. 7.10, Military Band Concert from the Kiege Park; Overture, Marinella (Fucik); Selection from Dalibor (Smetana); Dance Intermezzo (Pesta); Dance of the Dolls (Oberthur); Piece (Vesely); Czech Suite (Moor); March (Zita). 8.10, See Brno. 8.25, Violin Recital by Kitty Cervenkova; Sonata in A Minor, Op. 137 (Schubert); Andante and Allegro for Violin and Piano (Rebeck); Rondo Op. 8 (Vorisek). 9.15, See Moravska-Ostrava. 10.0, Time Signal. 10.1, News. 10.15, News in French for Foreigners. 10.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS; 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Lausanne), Talk: Travelling in Antiquity. 7.30 (from Lausanne), Talk: The Protection of Animals. 3.0 (from Geneva), Illustrated Talk: Old Musical Clocks and other Forerunners of Mechanical Musical Instruments. 8.50, Concert by the Station Orchestra, conducted by M. Echenard. 9.50, News and Weather. 10.0 (from Geneva), Talk: The Work of the League of Nations. 10.20 (from Lausanne), Dance Music. 11.0 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,220 metres; 21 kW.—9.30 p.m., Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News Bulletin. 10.35, Reading. 11.0, Pianoforte Concerto No. 5 (Beethoven), by Artur Schnabel, on Gramophone Records.

RIGA

672 kc/s, 525 metres; 15 kW.—6.0 p.m., English Lesson. 6.30, Agricultural Talk. 7.0, Weather Report. 7.5, Tchaikovsky Concert. In the intervals at 8.0, News, and at 9.0, Weather. 9.30, Dance Music. 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 26.4 metres.—1.10 to 2.15 p.m., Concert of Light Orchestral Music. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange, Report of the Royal Geographical Society and Giornale Radio. 5.30 to 6.15, Orchestral Concert. 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopelavoro Notes. 6.57, Report of the International Institute of Agriculture (in Italian and English). 7.10, Tourist Talk. 7.20, Announcements in Various Languages. 7.40, Giornale Radio. 8.0, Time, Announcements and Gramophone Music. 8.15, Medical Talk. 8.30, Giornale Radio and Sports Notes. 8.35 (approx.), I cavalieri di Ekeb—Opera in Three Acts (Zandonati), conducted by the Composer. In the intervals: Talk and News. After the Opera: Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 p.m., Business and Professional Women. 9.10 to 10.0 (approx.), New York Relay. 9.10, Pop Concert. 9.30, Texas Cowgirl. 9.45, Musical Review. 12.45 a.m. (Thursday), Stock Reports. 1.0 to 2.30, New York Relay. 1.0, George Olsen and his Music. 1.30, Variety Programme. 2.0, Band of Famous Brands. 2.15, Band from Cartoon Land. 2.30, Variety Programme. 3.0, Corn Cob Pipe Club of Virginia, from New York.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory. 12 Noon (from Berne), Chamber Music on Gramophone Records. 12.30, News. 12.40 (from Berne), German Opera Music on Gramophone Records. 1.25 (from Berne), Exchange, Time and Weather. 1.35 to 5.0, Interval. 5.0 (from Berne), Programme for Children. 5.30 (from Berne), Light Music on Gramophone Records. 6.30 (from Berne), Programme for Children. 7.0 (from Berne), Time and News. 7.10, Concert by the Radio Orchestra. 8.0 (from Berne), Concert of Styrian Music, Songs and Recitations. 9.0, News Bulletin. 9.10, Dramatic Programme. 10.10 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Variety Programme. 6.45, Gramophone Records. 6.45

(from Göteborg), Microphone Report. 7.15, Weather and News. 7.30 (from Sundsvall), Educational Talk. 8.0, Concert by the Station Orchestra. Soloist: Joel Berglund (Songs). Old English Suite (Ettinger); Arias from: (a) Prince Igor (Borodin), (b) The Tales of Hoffmann (Offenbach); Offenbach Ballet Music (Offenbach-Grevillius); Song (Iverson); Song, Vingar i natten (Rangström); Legend for Orchestra. The Swan of Tuonela (Sibelius); Symphonic Poem, Kigi (Schroder). 9.15, Literary Review. 9.45, Weather and News. 10.0, Dance Music. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Classical Music on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Light Music on Gramophone Records 2.0 to 4.45, Interval. 4.45, Talk on Electricity. 5.0, Jazz Music, conducted by Roskam. 6.0, Concert, relayed from Lille, 1,130 kc/s, 265.4 metres. 7.0, Talk: The Jews as a Nation. 7.15, Talk for Workers, in German. 7.30, Time and News. 7.45, See Paris (Eiffel Tower). 8.15, Press Review in German, Lottery Results and Announcements. 8.30, Gramophone Records. 8.45, Concert by the Municipal Orchestra, relayed from the Orangery Restaurant. Conductor, E. G. Munch. Caprice Italien, Op. 45 (Tchaikovsky); Valse de Concert, for Orchestra, No. 2, Op. 51 (Glazunov); Suite, Caucasian Sketches (Appolotov-Ivanov); Overture, Le roi d'Ys (Lalo); Scherzo (Lalo); Orchestral Suite from Namouna (Lalo). In an interval at 9.30, Press Review. 10.30, Concert, relayed from the Grand Kléber March, 'Wien bleibt Wien (Sehrammel); Waltz, Donausagen (Fucik); The Mill in the Black Forest (Eilenberg); Selection from La Bohème (Puccini); Vibraphone Solo: Hawaiian Nights (Klickmann); Fantasia, Russian Echoes (Leopold); Selection from Il est charmant (Morteti). 11.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12 Noon, Concert from Frankfurt. 1.15 p.m., Time and News. 1.30, Concert from Langenberg. 2.0, Music arranged by the Post Office. 2.15, Interval. 3.0, Gustav Lüttgers Song Recital by Bruno Müller (Baritone). 3.30 (from Karlsruhe), Programme for Children. 4.30, Concert by the Station Orchestra, conducted by Gustav Görlich. Soloist: Hilde Weiszäcker (Violin) Overture, Il giuramento (Mercadante); Pieces for Violin and Piano: (a) Minuet (P. E. Bach), (b) Contredanse (Beethoven). (c) Waltz (Brahms); Prelude and Berge (Järnfeldt); Prayer and Temple Dance from Olav Trygvason (Grieg); Romance, for Violin and Piano (Sinding); March of the Tin Soldiers from Andersen (Nedbal); Waltz, Gruss aus Wien (Joh. Strauss); Minna Polka (Lincke); March, Der Tausendkünstler (Blankenburg). 5.45, Time and News. 6.0, Talk: Germany—Her Leaders and Notabilities—Wilhelm Frick. 6.25, Talk: German Flags and Standards. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Programme for the Ninetieth Anniversary of the Death of Friedrich Hölderlin: The Württemberg Symphony Orchestra. Soloists: Emma Mayer (Songs), Emmy Remolt, Walter Schwarz, and Gert. Elwensyeock (Recitations). Recitation: Aus Freude must du... Concerto grosso (Handel); Recitations: (a) Der Jüngling an die klugen Ratgeber, (b) An die Parzen, (c) An den Frühling; Song: Sonnenuntergang (Cornelius); Recitations: (a) Gesang der Deutschen, (b) Stuttgart, (c) Noch ahnd' ich, ohne zu finden, from the Hyperion Fragment, (d) Noch eins ist aber zu sagen, (e) Hyperion's Schicksalslied; Funeral March (Beethoven). 8.45, Variety Concert by the Württemberg Symphony Orchestra, conducted by Gustav Görlich. Soloists: Erich Oekert (Xylophone) and Fritz Mühlfeulz (Accordion). 9.45, Ludwig Finckh reads from his own Works. 10.15, Time and News. 10.30, Recital of Hans Ziegler's Songs by Hermann Rieth (Baritone). 10.50, Serenade by the Station Dance Band. Soloist: Walter Maurer (Tenor). 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.15 p.m., Opera Music: Airs from (a) Lakmé (Delibes), (b) The Barber of Seville (Rossini), and (c) The Damnation of Faust (Berlioz). 6.50, Musical Programme with Talk in the interval. 7.15, Horse Racing Results, Market Prices and News. 7.25, Local News. 7.30, Operetta and Light Music. 8.0, Violin Solos. 8.15, Opera Music. 8.30, Programme by a Viennese Orchestra. 9.0, Concert. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Music by a Symphony Orchestra. 11.15, Opera Music. 11.30 to 12 Midnight, Programme in English by the I.B.C., W. Brown-Constable announcing. 11.30, Dance Tune

Memories: Miss Elizabeth Brown; You forgot your Gloves; Mautie; The King's Horses; Springtime in the Rockies; Elizabeth; Got a Date with an Angel; Good-night, and Pardon, Madame. 11.57, I.B.C. Goodnight Melody. 12 Midnight, News. 12.5 a.m. (Thursday), Pianoforte Solos. 12.15, Popular Songs. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 p.m., Chamber Music Concert. Violin Solo: Il trillo del diavolo (Tartini). Pianoforte Solos: (a) Intermezzo in E Flat (Brahms), (b) Dolce tormento from Foglio d'album (Zucchi), (c) Etude in C Minor (Chopin). Violin Solos: (a) The Rosary (Nevin-Kreisler), (b) La gitana (Kreisler). Pianoforte Solos: (a) Pavane pour une Infante défunte (Ravel), (b) La Sérénade interrompue (Debussy), (c) The Gate of Kiev (Mussorgsky), (f) Ballad in G Minor (Chopin). Violin Solos: (a) Adagio (Corelli-Gorti), (b) Capriccio (Veracini). 6.0 to 6.35, Interval. 6.35 till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.0 to 6.0 p.m., Song Recital by Magda Olivero (Soprano), and Igino Zangari (Baritone). 5.35, Giornale Radio. 7.0, Time, Tourist Talk and Gramophone Records of Songs and Dance Music. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News Bulletin. 8.15, Medical Talk. 8.30, The Drum Major's Daughter—Operetta in Three Acts (Offenbach). In the intervals, Talk and Announcements. After the Operetta, Giornale Radio and (Florence only) Dance Music from the Chez-moi Rajola. 11.30 (approx.), Close Down.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Spanish. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 652 kc/s, 453.2 metres; Linz, 1,200 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—1.0 p.m., Time and News. 1.10, Italian Opera Music on Gramophone Records. 2.0 to 3.0, Interval. 3.0, Time and News. 3.20, Talk: Evening Walks in the Mountain Districts. 3.40, Sound Film Music on Gramophone Records. 4.35, Talk for Teachers: Games, Rhymes, Riddles and their Importance. 5.0, Paul Amadeus Pisk Concert by the Mildner Quartet, Rita Kurzmann (Soprano) and Hanna Schwarz (Soprano); String Quartet, Op. 8; Dance Suite, Op. 24, for Pianoforte; Songs, Op. 9; (a) Der Morgen war von dir erfüllt, (b) Es ist Nacht, (c) Nimm an, es gäbe c'men Himmelshaus, so wollen wir dies von ihm erfahren. 5.55, Health Talk. 6.15, Talk: The Acting Profession and the Crisis. 6.25, History Talk: Austria as a Great Power. 7.0, Concert by the Taubenhan Quartet. 7.45, Time and News. 7.55, Talk on the Fourth Centenary of the Death of Ludovico Ariosto. 8.25, Symphony Concert by the Budapest Concert Orchestra, conducted by Otto Klemperer, relayed from the Music Society's Hall. Soloist: Bela Bartok (Pianoforte). Pianoforte Concerto No. 2 (Bela Bartok); Till Eulenspiegel's Merry Pranks (J. Strauss); Symphony No. 5 in C Minor (Beethoven). In an interval at 9.15, News. 10.15, Dance Music Relay.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.40 a.m., Press Review. 11.50, Aviation Weather Report. 11.57, Time Signal and Faufare from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Gramophone Music. 1.20, Weather Forecast. 1.25 to 3.10, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.25, Answers to Correspondents. 3.30, Boy Scouts' Report. 3.35, Programme for Children. 4.0, Gramophone Music. 4.40, Talk on the Forests of Java, relayed from Cracow, 959 kc/s, 312.8 metres. 5.0, Quartet in E Flat, Op. 127 (Beethoven), on Gramophone Records. 5.40, Talk. 5.55, Programme Announcements. 6.0, Dance Music and Light Music. In the interval, News. 7.0, Miscellaneous Items. 7.20, Agricultural Correspondence. 7.30, Literary Talk: Balzac, Pioneer of the Modern Social Novel. 7.45, Radio Journal. 8.0, Light Music. 9.0, Sports Notes. 9.5, Radio Journal. 9.10, Pianoforte Recital by Vera Brock: Andante in F (Beethoven); Wohlnig (Schubert-Liszt); Der Müller und der Bach (Schubert-Liszt); Russian Piece, Op. 42 (Medtner); Five Preludes, Op. 16 (Scriabin). 10.0, Topical Talk. 10.15, Dance Music. 10.40, Talk in English by Stanley Philipson: The Economic Situation in England. 10.55, Aviation Weather Report and Police Notes. 11.0, Horse Racing Results. 11.5, Dance Music.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Exchange and Weather. 6.0, Programme for Children. 6.45, News. 7.0, French Lesson. 7.15, Talk: A Theatrical Tour in Australia. 7.30, Time. 7.31, Musical Comedies—Concert by the Station Orchestra. 8.0, Musical Comedy Selection by P. J. Byrne and Company. 8.30, The Station Orchestra. 8.45, Tenor Solos by P. Scanlon. 9.0, May Cavanagh (Traditional Fiddle). 9.15, Soprano Solos by Eddie O'Dwyer. 9.30, Talk: Fruit Growing as an Irish Industry. 9.45, Sponsored Programme. 10.45, News and Close Down.

BARCELONA

860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert: Granada (Albeniz); Selection from La Meiga (Guridi); Nocturne (Granados); Concerto Bolero (Ross); Serenata, Tus lindos ojos (Costa); Selection from Maruxa (Bives). In an interval, Talk on Palestra and his Works. 8.0, Request Gramophone Music. 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes, Weather, and Exchange. 10.5, Concert by the Station Orchestra: March (Heliott); Ninna Nanna (de Micheli); Lament (Grieg); El la reja (Frigola); Song, Rosas de otoño (Mingota); Overture, Maritana (Wallace). 11.0, Relay of a Civic Festival. In the interval at 12 Midnight, News. 1.0 a.m. (Friday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Report, Tourist Talk and Dopolavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35, Military Band Concert, conducted by Salvatore Rubino: Fifth Symphony (Beethoven); Selection from Rigoletto (Verdi); Andante and Minuet from the Quartet in D for Strings (Mozart); Spanish Suite, La Feria (Lacôme); March (Schubert); Talk in the interval. 10.30, Gramophone Music. 10.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—7.0 p.m., Concert by the Radio Orchestra: Overture, Maximilian Robespierre (Litolff); Suite, Les beaux dimanches (Fauchey); Valse triste (Sibelius); Serenade from Les millions d'Arlequin (Drigo); Selection from Ta Bouche (Yvain). 8.0, Gramophone Music. 8.30, Part Relay from the Opera House, Ljubljana. 10.30, Time and News, followed by Cigány Music, relayed from a Restaurant.

BERLIN

DEUTSCHLANDSENDER, 18.35 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Gramophone Concert. 2.45, Programme for Children. 3.10, Hints for Young Photographers. 3.30, Weather and Exchange. 3.45, Reading. 4.0, Concert from Heilsberg. 5.0, Talks for Women. 5.25, Topical Talk. 5.35, Harp and Cello Recital by Johanna Haker and Peter Lehmann; Le Cygne (Saint-Saëns); La Cinquante (Gabriel Marie); Minuet, Op. 3 (Becker); Sarabande (Handel); German Dance (Dittersdorf); Old Dance (Dusseck); Arioso (Handel). 6.0, A Poem. 6.5, Emil Mattiesen Song Recital by Paul Lohmann; Schicksal; Über ein Grab; Tod in Ahren; Hoffnung; Heimgang in der Frühe; Der fröhliche Musikus; Singet leise; Jedem das Seine; Ständchen. 6.30, Agricultural Report. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, An Epigram, followed by Orchestral Concert, with Humorous Interludes, relayed from the Nationale Gaststätten. 10.0, News Bulletin. 10.15, See Stuttgart. 10.45, Weather Report for Shipping. 11.0, Programme from Langenberg. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—8.10 p.m., Martin Borchow reads from his own Works. 6.30, Talk on Magdeburg. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.10, Dance Music Relay. 9.0, Heiterethel—Comedy Heinrich Weicker. 10.0, News, followed by Dance Music from the Zoo. 12 Midnight (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.
BEROMÜNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.40, Talk on Bull-Fighting. 7.55, Lottery Results and Charades. 8.0, Talk on Wine. 8.15, News. 8.30, Gramophone Concert of Spanish Music and Songs for the Spanish Colony of Bordeaux and the South East.

THURSDAY
JUNE THE EIGHTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Canterbury Festival: Orchestral Concert in the Cathedral.
LONDON REGIONAL Variety Programme. Military Band Concert.
NORTH REGIONAL Music of French Composers, Orchestral programme.
SCOTTISH REGIONAL Band Concert
BELFAST Mozart Orchestral Concert.

ABROAD

- BUCHAREST** 8.0 p.m. Symphony Concert by the Station Orchestra.
COPENHAGEN 8.1 p.m. Concert of Danish Music; 10.15 p.m., German Romantic Music.
HEILSBURG 8.0 p.m. Brahms's Sonata No. 1, in G (Op. 78), for Violin and Pianoforte.
LANGENBERG 8.45 p.m. Symphony Concert.
OSLO 7.30 p.m. Grieg Pianoforte Recital.
PRAGUE 8.5 p.m. Symphony Concert by the Karlsbad Municipal Orchestra.
RADIO-PARIS 8.0 p.m. Opera: "Madame Butterfly," by Puccini.
RIGA 7.5 p.m. Rossini and Verdi Concert.
STRASBOURG 8.45 p.m. Gounod and Mendelssohn Concert by the Municipal Orchestra.
TURIN 8.30 p.m. Opera: "Othello," by Verdi.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—7.10 p.m., Anno Domini 1990—Sketch (Lörinz). 7.30, See Prague. 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.15 p.m., Concert by the small Silesian Philharmonic Orchestra, conducted by Hermann Behr. 2.15, Programme arranged by the Post Office, with Gramophone Records. 3.10, Agricultural Prices. 3.40, Talk: A Tour through the Bartsch District. 3.50, Review of Books on Animals. 4.10, Violin and Pianoforte Recital. 4.40, Programme for Children. 5.10, Agricultural Prices. 5.15, Concert by the Station Orchestra, conducted by Bruno Janz: Oriental Suite (Popy); Catalan Caprice (Albeniz); Dance of the Elves from Wayland the Smith (Henriques); Abendstimmung (Juel-Frederiksen); Polka, Tick-Tack (Strauss); Overture, Poet and Peasant (Suppe); Song from the Well-Beloved (Künneke); Tango from The Czardas (Lehár); Lindemarsch (Kollo). 6.0, Talk: Educational Work in Germany. 6.15, Topical Talk. 6.30, Sports Talk. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Concert by the Station Orchestra, conducted by Franz Marszalek: Selection from Das Dorf ohne Glocke (Künneke); Prelude to Eva (Lehár); Selection from Ihre Heiße die Tänzerin (Goetze). 8.30, Prince Frederick of Homburg—Drama (Heinrich von Kleist), with incidental Music by Johannes Rietz. 10.0, News and Announcements. 10.15, Choral Concert from Stuttgart. 10.45, News Bulletin. 11.0, Talk: The Transylvanian Alps. 11.15 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: News, Talk on Moravia and Reading for Young People. 7.0, See Prague. 7.10, A Tour of Brno, the Broadcasting Station. 7.30 till Close Down, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

590 kc/s, 509 metres; 15 kW.—12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans. March, The Picador (Sousa); Waltz, La gitana (Bucalossi); Selection from Le Jour et la nuit (Lecocq); Serenade (Braga); Tarentelle, A Piedigrotta (Bonincontro); Flute Solo: Italian Rhapsody (Rougnon); Selection from Paganini (Lehár). 5.0, Concert by the

Station Symphony Orchestra, conducted by Jean Kumps. Invitation to the Waltz (Weber); Waltzes from Der Rosenkavalier (Richard Strauss); Mephistowalzer (Liszt). 5.30, Literary Programme for Young People. 6.0, Talk. 6.15, Hungarian Rhapsodies, Nos. 6 and 12 (Liszt) on Gramophone Records. 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans. Overture, La Part du Diable (Auber); Suite, Harlequinade (Casanove); Slav Lullaby (Neruda); Selection from Manon Lescaut (Puccini); Violin Solo: Berceuse; and Kitty Waltz from Dolly (Fauré); Melody from Etienne Marcel (Saint-Saëns). 7.15, Talk for Workers. 7.30, Sports Report. 8.0, Concert by the Station Orchestra, conducted by Charles Walpot. Soloist: Mlle. Riez (Songs). Overture, Les Salmiquanes (Ganne); Waltz, Wine, Women and Song (Joh. Strauss); Selection from Tosca (Puccini); Songs: (a) Les feuilles sont mortes (Doret). (b) Chanson des noisettes (Dupont). (c) Tes yeux (Rabey). (d) Esquisses mélodiques (Noël). (e) Clair de lune (Noël); Le pas des fleurs (Delibes); Fête from Scenes napolitaines (Massenet). 8.45, Talk on Hygiene. 9.0, Concert by the Station Symphony Orchestra, conducted by Jean Kumps, and an Instrumental Trio: Overture, La Preciosa (Weber); Nocturne and Scherzo (Mendelssohn); Trio for Pianoforte, Violin, and Cello (Brahms); Dahnian Fantasy (de Boeck); Minuet and Forlane (Ravel); Slav Dance (Chabrier). 10.0, Le Journal Parlé. 10.10, Gramophone Concert.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans. Soloist: Jan Loyens (Tenor). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert. 5.0, Concert by the Radio Orchestra, conducted by Charles Walpot. Overture, The Bartered Bride (Smetana); Les oiseaux (Respighi); Selection from Philémon et Baucis (Gourod). 5.45, Programme for Children. 6.30, Organ, Violin and Cello Recital by Antoon Verlie, M. Périn and M. Jick; Organ Solos (Boëllmann): (a) Introduction, (b) Menuet gothique; Sonata in A for Violin and Organ (Handel); Prière à Notre Dame (Boëllmann); Toccata (Boëllmann); Adagio for Cello and Organ (Popper); The last Two Movements from the Trio in D (Haydn); Un matin en province (Bonnet). 7.10, Announcements. 7.15, Talk. 7.30, Talk for Women. 8.0, Concert by the Station Symphony Orchestra, conducted by J. Kumps. Overture, Charlotte Corday (Benoit); Fantasia on Two Flemish Airs (De Boeck); Russian Choral Music on Gramophone Records: Stadspark (Menemans). 8.45, Recitation. 9.0, Concert by the Radio Orchestra, conducted by Ch. Walpot: Egyptian March (Joh. Strauss); Overture, Orpheus in the Underworld (Offenbach); Selection from Il Trovatore (Verdi);

Oboe Solo: Gracieux habil (Petit); Invitation to the Waltz (Weber); Dance of the Hours from La Gioconda (Ponchielli); De Vlaamsche leeuw (Miry). 9.55, Evening Prayer. 10.0, Le Journal Parlé. 10.10, Vietnamese Operetta Music on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Dimeo Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Programme. In the interval at 7.20, Gramophone Records. 8.0, Symphony Concert by the Station Orchestra, conducted by Theodor Rogalsky; Suite for Strings (Scalero); Violin Concerto in B Minor (Handel); Symphony No. 4 in B Flat (Beethoven). 9.0 (in an interval), Talk. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Programme also relayed on 840 metres from 7.50 p.m. to 12 Midnight.—6.20 p.m., English Lesson. 6.50, Pianoforte Recital: Ballad in F (Chopin); Two Etudes (Chopin); Bolero; Tango (Albeniz); Navarra (Albeniz); Perpetuum mobile (Weber). 7.20, Market Prices. 7.30, Talk on the Meeting of the Journalists' Congress in Budapest. 7.50, Recital of Hungarian Folk Songs, with Cigány accompaniment. 8.45, Nibelungen-Comedy in Three Acts (H. and A. Paulsen). 10.20, News. 10.40 (approx.), Concert conducted by F. Fridl: Overture, Princess Goldschmied (Rust); Johann Strauss Potpourri (Morena); Variété (Fejer); Waltz (Max Millian); The Second Hungarian Rhapsody (Liszt); Potpourri (Buttykay).

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.1 p.m., Music by the A. Bendix String Ensemble, relayed from the Wivex Restaurant. 2.0 to 3.0, Interval. 3.0, Concert by the Radio Orchestra, conducted by Emil Reesen; Soloist: Hilmar Biehe (Songs); Overture, The Merry makers (Coates); Waltz, Gold and Silver (Lehár); Selection from La Vie Parisienne (Offenbach); Piece in the Form of a Sonata and Waltz from the Serenade for Strings (Tchaikovsky); Overture, The Italian Girl in Algiers (Rossini); Danish Songs; March of the Tin Soldiers (Bayes); Waltz, Telegramme (Joh. Strauss); Selection from The Bartered Bride (Smetana); Chanson Louis XIII et Pavane (Couperin); Orientale (Cui); Overture, The Nuremberg Doll (Adam). 5.0, Programme for Boys. 5.35, Exchange and Fish Market Prices. 6.0, Time and Chimes from the Town Hall. 6.1, Talk: The Polish Theatre. 6.20, English Lesson. 6.50, Weather Report. 7.0, News Bulletin. 7.15, Time Signal. 7.35, Parliamentary Review. 8.0, Time Signal. 8.1, Concert of Danish Music by the Zealand Provincial Orchestra, conducted by H. Jensen, relayed from Hall, Rindstedt; Soloist: Birgit Engel (Songs); Festival March (J. P. E. Hartmann); Aria from Fiskerne (Joh. Hartmann); Aria from Stærstikkeren (Henriques); Rocco Symphony (Henriques); Gallop (Jensen). 9.0, Reading (Kipling). 9.25, Extracts from Der Rosenkavalier—Opera (R. Strauss), on Gramophone Records. 9.45, Modern Pianoforte Music by Viktor Fischer: Concert Jazz Suite (Mittmann); Chopin Rag (Leskowitz). 10.0, News Bulletin. 10.15, Concert of German Romantic Music by the Radio Orchestra, conducted by Launy Gröndahl: Overture, A Midsummer Night's Dream (Mendelssohn); Adagio and Rondo from the Concerto in F Minor for Clarinet and Orchestra (Weber); Overture, Genoveva (Schumann); Entry of the Guests into the Wartburg from Tannhäuser (Wagner). 11.0, Dance Music from the Arena. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Friday), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.0 p.m., The Letter Box. 7.15, Miscellaneous Items and News. 7.30, See Warsaw. 11.0, Light Music and Dance Music from the Pavilion Restaurant. 12 Midnight, Fanfare from the Tower of St. Mary's Church.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. T. St. A. Ronald and B. McNabb announcing. 4.30, Concert of Light Music for Working and Littlehampton Listeners: Cinderella's Wedding Day; Brindisi; My Granny's Lullaby (Gilbert); Where is this Lady?; Ragamuffin Romeo; To-night; The Children's Home (Cowen); On the Banks of Allam Water; A Waltz of Long Ago; Ombra ma

JUNE 8th

THURSDAY

continued

fu; Caro Mio Ben; Alabama Song. 5.15, Concert for Brighton and Hove Listeners; Octets: (a) Ave Mariu (Schubert), (b) Valse Bluetto (Drigo), (c) Spring Song (Mendelssohn); Song: Lolita; Octets: (a) Slav Dance (Dvorak), (b) Nereissus (Sevin), (c) Gollivog's Cake Walk (Debussy); Songs: (a) O Mistress Mine, (b) Absent; Sans Souci (Von Blon); Romance (Rubinstein); Hungarian Dance in A Minor (Brahms). 6.0, Programme in French. 10.0, Dance Music by the Ibcilians: Round the Marble Arch (R. Butler); It's that extra little something (Leckwater); How are you? (Pola); When they're on the Love Parade (Wallace); Three's a Crowd (Dubit); Sweethearts for ever (Friend); Ooh, that Kiss (Warren); My Donna Rita (Miguel); Silver Hair and Heart of Gold (Maurice); Oil Song (Carlton); Listen to the German Band (Gordon); Same Old Moon (Rose); Too Many Tears (Dubin); When Yuba plays the Rumba on the Tuba (Hupfeld); Spanish Moon (Bullen); Paradise (Brown); Why waste your Tears? (Val Holstius); Night shall be filled with Music (Collins); Dream Sweetheart (Green); Soft Lights and Sweet Music (Berlin). 11.0, Light Music: You're still in my Heart (Dougherty); Just an Echo in the Valley (Woods); Try a Little Tenderness (Woods); Paradise (Brown); Brother can you spare a Dime? (Harburg); Sleep on (Korngold); I'm Playing with Fire (Berlin); A Ghost of a Chance (Washington). 11.30, Piano-forte Solos: Keyboard Kapers; Jack of Clubs; A Shower of Notes; Slippery Joe; Songs: (a) Deep Water, (b) Street of Dreams; Why waste your Tears; Where are you? 12.0 Midnight, Club Concert for Henlow Listeners: The Poet's Song from La Bohème (Puccini); Charming; The Drums; Shepherd's Serenade; My Darling (Heymann); Goodbye (Tosti); West Wind; Round the Bend of the Road (Klemmer); O dry those Tears (del Riego); For good or for bad (Pearson); Horses carry Tails (Redmond); Mon Réve (Waldteufel); The Bells of St. Mary's; Morning, Noon and Night (Suppé). 1.0 a.m. (Friday), Orchestral Music: A Cottage for sale; The Sacred Hour (Kettelberg); Violin Solo: Fandango (Godowsky); It seems to me; Violin Solo: Rosamund (Schubert); In the Mystic Land of Egypt (Kettelberg); Until we meet again, Sweetheart; Out of Breath. 1.30, Variety Music: I've got a Girl; Mazurka, Lido Lady; Singin' in the Rain; Marine March; Up in Archie's Aeroplane; Not me; Sketch; The Tram Conductor. 2.0, Dance Music by the Ibcilians: Butterflies in the Rain; Three Wishes; Young and Healthy; Let me give my happiness to you; I'm sure of everything but you; Farewell to Arms; Just a little home for the Old Folks; Her Name is Mary; The World is so small; Bananas; Mediterranean Madness; Little Nell; Twentieth Century Blues; The Old Man in the Mountains; Lover of my Dream; In the dim, dim Dawning. 2.57, I.B.C. Goodnight Melody. 3.0 (approx.). Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—5.45 p.m., Topical Talk. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Dance Music. Relay. 9.0, Variety Programme. 9.15, Concert by the Station Orchestra, conducted by Hans Rosshard; Soloist, Florizel von Reuter (Violin); Overture, Des Teufels Lustschloss (Schubert); Violin Concerto in D (Paganini); Mephisto Walzer (Liszt). 10.15, Time and News. 10.30, See Stuttgart. 11.45 (approx.). Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romands.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

CRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Gall ha (in Morse), 806 kc/s, 372 metres; 15 kW. Relayed by Bremen, 1,112 kc/s, 259.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—5.30 p.m., Variety Programme. 6.15, Eduard Stucken reads from his own Works. 6.45, Frankfurt Exchange. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Recital of German Folk Songs by St. Michael's Church Choir, conducted by Prof. Sitard; Inusbruck, ich muss dich lassen (Isaac); Mein Gemüt ist verwirret (Hasler); Jungfrau dein schön Gestalt (Hasler); Heidenröslein (arr. Humperdinck); Die Lore vom Tore (arr. Wolfmüller); Ei, du feiner Reiter (Scheidt-G. Schumann); Wilhelmlied (arr. Röntgen); Grenadierlied (arr. Woysrsch); Soldaten im Tannenwald (arr. G. Schumann); Der Kuckuck und der Jägersmann (arr. Othegraven); Suse, lewe Suse (Grell); Die Leineweber (arr. Othegraven); Die bayrische Maidle (arr. Röntgen); Der glückliche Köh-

lauerhub (arr. Kienzl). 9.0 (from Kiel), Orchestral Concert, conducted by Hans Böring; Wanderlied (Kämpf); Frühlingstimmung und feierlicher Tempelreigen (Niemann); Mondnacht (Kaun); Minuet (Kaun); Eine Serenade (Görlich). 10.0, Time and News. 10.15, See Stuttgart. 10.45, Topical Talk. 10.55, Dance Music.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Music. In the Interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Market Prices. 3.30, Programme for Young People. 4.0, Concert by the Orchestra of the Königsberg Opera House, conducted by Erich Börschel: Jubel-Ouverture (Weber); Wedding Day on Troldhaugen (Grieg); Selection from La rondine (Puccini); Dramatic Overture, Pyrrhus (Tayle); Selection from Carmen (Bizet); Slav Dances (Dvorak); Ballet Music from Rosamunde (Schubert); Waltz, Glücksträume (Bellmann); Fantasia, Arabian Gold (Rust); Unter Donner und Blitz (Joh. Strauss). 5.45, Talk: National Socialism and Education. 6.15, Agricultural Prices. 6.25, Agricultural Talk. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Violin Sonata No. 1 in G, Op. 78 (Brahms), by Franz Schillman (Violin) and Ernst Rudolph (Pianoforte). 8.30, See Breslau. 10.0, Weather and News. 10.15, See Stuttgart. 10.45, Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—11.40 a.m., Time Signal. 11.41, Concert by the Wireless Orchestra, conducted by Nico Treep; March, Gipsy Life (Oscheit); Scandinavian Suite (Juel Frederiksen); French Serenade (Grieg); Hymn to St. Cecilia (Gounod); Mimosa Waltz from The Geisha (Jones); Concertina Duets; Overture, Im Reiche des Indra (Flotow); Selection from William Tell (Rossini); Serenade (Lacôme); Dance of the Marionettes (Gillet); La mousmé (Ganne); Concertina Duets; Einzug der Frühlingstänzer (Kockert); Moonlight on the Bosphorus (Köpping); Kálmán Potpourri (arr. Feigel). 1.55 to 2.10, Interval. 2.10, Concert (contd.); Festival Overture (Kalliwoda); Suppé Potpourri (Moreira); Hands across the Sea (Souza). 2.40, Gramophone Music. 3.40, Programme for Hospitalists. 4.10, Song Recital by Sophie Wyss. 4.40, Programme for Children. 5.10, Gramophone Music. 6.10, Sports Talk. 6.35, String Quartet in A Minor, Op. 51 (Brahms), by the Haydn Quartet. 7.10, Talk: Holidays in England and Scotland. 7.40, Time, Weather, and News. 7.45, Concert by the Wireless Orchestra, conducted by Nico Treep; Soloist: Piero Pierotick (Baritone); Overture, Le Roi d'Yvetot (Adam); Valentine's Prayer from Faust (Gounod); Overture, La Cenerentola (Rossini); Arias from: (a) A Masked Ball (Verdi), (b) La Traviata (Verdi); Ballet Scene (Luigini); Caro mio ben (Giordano); Turkish March (Mozart). 8.25, Choral Concert, conducted by J. Vranken. 8.45, Orchestral Concert (contd.): March from the Suite Masquerade (Lacôme); Toréador et Andalouse (Rubinstein); Waltz from The Sleeping Beauty (Tchaikovsky); Two Dances from the Nutcracker Suite (Tchaikovsky); March from the Suite Caucasian Sketches (Ippolitov-Ivanov). 9.10, Baritone Solos by Piero Pierotick. 9.25, Concert by Kovacs Lajos and his Dance Orchestra. In the Interval, Gramophone Music. 10.40, News. 10.50, Gramophone Music. 11.40 (approx.). Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—1.40 p.m. till Close Down, Programme of the Christian Radio Society (N.C.R.V.). 1.40 p.m., Handicrafts Lesson. 2.40, Programme for Women. 3.40, Religious Programme. 4.40, Song, Violin, and Pianoforte Recital: Aria for Voice, Violin, and Pianoforte (Telemann); Sonata No. 6 in G for Violin and Pianoforte (Mozart); Songs: (a) Nina (Pergolesi), (b) Ber la gloria (Buononcini); Violin Solos: (a) Larghetto (Handel), (b) Elegy (Erkki Melartin); Songs (van Vladeracken): (a) Plange Sion, (b) Ave Virgo. 5.25, Handwork Lesson for Young People. 5.55, Talk: Dutch Monuments. 6.25, Dressmaking Lesson. 6.40, Police Notes. 6.55, Melodious Memories (Finck) on Gramophone Records. 7.10, Talk: World Events of the Week. 7.40, Concert by the Dutch Chamber Orchestra, conducted by Heer de Haas: Three Songs (de Haas); Adagio from the First l'Arlesienne Suite (Bizet); Liebesfeier (Weingartner); Overture, Il Seraglio (Mozart); Hochzeitstanz in Lilliput (Translature); Selection from The Gipsy Princess (Kálmán); Selection from The Geisha (Jones); Overture, The Barber of Seville (Rossini). 8.40, Talk. 9.10, Organ Recital from St. Jacob's Church, The Hague. 10.10, News. 10.20, Gramophone Concert. 11.10 (approx.). Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., News Bulletin. 8.15, English Lesson. 8.30, Radio Concert. 9.0, News. 9.15, Radio Concert. 11.0, Dance Music by the Billy Arnold Jazz Band, relayed from the Hollywood Cabaret. 12 Midnight to 1.0 a.m. (Friday), Programme in English by the I.B.C. H. K. Hitchcock announcing. 12 Midnight, Orchestral Concert: None but the weary heart (Heykens); Le Balcon (St. Denis); Souvenir (Drda); Serenata (Toselli); Ständchen (Schubert); Estudiantina (Waldteufel); Dolores (Waldteufel); Ständchen (Heykens). 12.30 a.m., Modern Rhythm: Stevedore Stomp; Misty Morning; The Dirty Glide; Stratoga Swing; I'm so in Love with you; Kazoo; Shout 'em, Aunt Tillie; Get together. 12.57, I.B.C. Goodnight Melody. 1.0 (approx.). Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.15 p.m., Announcements and Gramophone Music. 7.25, Boy Scouts' Report. 7.30, See Warsaw.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—8.40 p.m., Variety Programme. 9.0, Hygiene Report. 9.20, Evening Concert. 9.50, Sports Notes. 10.0, Esperanto Talk. 10.20, Concert. 11.0 (approx.). Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Concert by the Station Orchestra, conducted by Erkki Linko: Overture (Doppler); Waltz, Transaktionen (Joh. Strauss); Melodies from The Gipsy Princess (Kálmán); Slav Dance No. 3 (Dvorak). 7.0, Talk. 7.25, Song Recital. 7.50, Recitations. 8.15, Music by the Station Orchestra: Potpourri (Fetras); Hinkantela soitto (Kauppi); Overture, Pique Dame (Sutti). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Military Music, relayed from the Kappeli Restaurant. 10.0 (approx.). Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Wolf. March, Die Fahne hoch (Bantian); Waltz, Geheime Anziehungskräfte (Strauss); Overture, Il Guarany (Gomez); Paraphrase on Three May Songs, Wie ist die Welt so schön heim Wandra (Lindemann); Selection from Scènes pittoresques (Massenet); Czardas No. 8 (Michiels); Two Peasant Dances (Merkling); Selection from Gri-Gri (Lüncke). In an interval at 2.0 (approx.), News. 2.30, Sponsored Programme with Gramophone Records. 2.45, Interval. 3.0, Programme for Young People. 4.0, Talk: Rhythmic Gymnastics and the Teaching of Music. 4.30, Concert by the Station Orchestra and the Station Choir. Soloist: Albert Steinmann (Cello). Mephisto-Walzer (Liszt); Choir: (a) Als ich auf Bergen stand (Folk Song), (b) Gestern bei Mondschein, (c) Die Henne (Seandellus, 1870). (d) An der Kirche (Hauptmann); Cello Solos: (a) Romance in F (Mausz), (b) Minuet (Werkmeister); Petite suite de concert (Coleridge-Taylor); Czardas from Der Geist des Woje woden (Grossmann). 5.50, Review of Books by Flemish and Dutch Authors. 6.10, Political Talk. 6.25, French Conversation. 6.45, News Bulletin. 7.0, Transmission for all German Stations, The Hermannschlacht—Play (Christian Dietrich Grabbe). Radio Arrangement by F. W. Ilges. 8.0, News. 8.5, Programme to be announced. 8.20, Reading: Die Pfeiler (Greise). 8.45, Symphony Concert by the Station Orchestra, conducted by Busch-Kötter. Soloist: Ludwig Hoelscher (Cello). Cello Concerto in D (Haydn); Symphony No. 111 in F (Brahms). 10.0, News Bulletin. 10.15, See Stuttgart. 10.50, Serenade and Dance Music. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romands.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—1.0 p.m., News. 1.15, Gramophone Music. 2.0, News. 2.10, Art and Film Reports. 2.30, Programme for Children. 3.0, Grieg Concert on Gramophone Records. 3.35, Exchange and Market Prices. 4.0, Concert by the Station Orchestra, conducted by Theodor Blumer. Soloist: Richard Jauch (Viola); Overture in D, Op. 43 (Bocherini); Viola Concerto (Stamitz-Jauch); Overture, King Stephen (Beethoven); Swedish Dances (Bruch); Humoresque (Humperdinck); March, In Wehr und Waffen (von Blou); Waltz, Badner Madln (Kozmak); March, Treue um Treue (Teike); Sternengucker-Walzer (Lehár); March, Die Regimentskinder (Fück); March,

Seneidige Truppe (Lehnhardt). In an interval, Book Review. 5.50, Economic Notes, Weather and Time. 6.0, Talk: German Colonies—Blumenau. 6.25, Talk in Connection with the Exhibition, Kirche und Kamera, in Halle. 6.45, Programme to be announced. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Concert on the occasion of the Millennium of Bautzen. A Nazi Band, conducted by Stiehlitz, a Choral Society and a Children's Choir. Overture, Hans Heiling (Marschner); Address by Dr. Förster; Children's Choir: (a) Folk Song, In der Heimat ist es schön, (b) Folk Song, Was soll ich in der Fremde tun, (c) Meine Lausitz (Rietzel); Address in Dialect; Variety Items in Dialect. 9.30, German Literature in 1900—Berlin—a Radio Sequence. 10.15, See Stuttgart. 10.45, News and Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.0 p.m., Concert by the Station Orchestra. 7.0, Programme for Women. 7.30, The Letter Box. 8.0, Relay from the Royal Opera House. 9.30, Weather and News. 11.0 (approx.). Close Down.

LWOW

788 kc/s, 381 metres; 16 kW.—7.0 p.m., News. 7.20, See Warsaw. 10.25, Dance Music from the Bristol Palais de Danse. 10.55, See Warsaw. 12 Midnight (approx.). Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette. 7.50, Talk: A Tour of Lyons. 8.0, Wireless Review. 8.10, Talk: Dentistry among the Greeks. 8.20, Charade. 8.25, Answers to Correspondence. 8.35, Leopold le Bien-aimé—Play (Jean Sarment), followed by News.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Programme from Madrid (EA47). After the Programme, Radio Chronicle. 1.0 a.m. (Friday), Close Down.

MADRID

UNION RADIO, Call EA47, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., (Chimes, Exchange Announcements, Radio Journal and Programme for Children. 9.15, News and Political Review. 9.30 to 10.30, Interval. 10.30, Linguaphone English Lesson. 11.0, Chimes, Time Signal and Political Review. 11.15 (approx.), Literary Programme, followed by Variety Items. 12.45 a.m. (Friday), News and Dance Music. 1.30, (Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.10 p.m., Chromatic Accordion Solos. 7.30, See Prague. 8.5, Concert by Jewish Choirs, conducted by A. Aich. 8.30, The Lady in the Lilac Hat—One-Act Comedy (Jymov). 9.0, Concert by the Station Orchestra, conducted by J. Plichta; Soloist: O. Cerny (Violin); Spanish Symphony, Op. 21 (Lalo); Suite, Impressions d'Italie (Charpentier). 10.0, See Prague. 11.0 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg, and Kaiserslautern, 563 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert from Langenberg. 5.45, Agricultural Talk. 6.5, Concert of Music by Désiré Thomassin (died March, 1933). Two Vocal Quartets: (a) Hochsommernacht, (b) Matt giesst der Mond; Sonata in E Minor, Op. 72 for Violin and Piano-forte; Three Vocal Trios: (a) Die Verrentete, (b) Stiefmutter, (c) Weitegesang. 6.45, Time and Weather. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Concert of Light Music by the Small Station Orchestra, conducted by Erich Kloss. German Songs by The Four Crescendos. 9.10, Hans Zöberlein reads from his new book; Der Glaube an Deutschland. 9.30, Chamber Music. Tone Poem in F major Op. 20, after Raabes Hungerpaster (Greener); Trio in E for Pianoforte, Violin and Cello (Mozart). 10.20, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.15 p.m., Concert. 6.0, German Lesson. 6.30, Studio Service. 7.0, Advertising Notes. 7.15, News. 7.30, Grieg Pianoforte Recital

JUNE 8th THURSDAY continued

by Fridtjof Baeker-Gründahl. 8.0, Time Signal. 8.2, Agricultural Talk. 8.30, Concert by the Boys' Choir of Trondheim Cathedral. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Wind Instrument Concert.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements, Agricultural Notes, and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time Signal and Announcements. 8.45, Operetta Music: Extracts from: (a) Le belle di notte (Cusina). (b) The Merry Widow (Lehár). 9.30, Il piccolo archivio—Play in One Act (Capuana). 10.0 (approx.), Operetta Music (cont'd.). Extracts from: (a) I pizzi di Venezia (Lombardo). (b) I Granatieri (Valente). 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m.—(Preliminary and 6-dot Signals).—6.45 p.m.—Theatre Talk. 7.0, Le Journal Parlé. 8.30, Gramophone Concert. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Programme for Children. 7.30, Gramophone Records. 8.0, Agricultural Talk. 8.15, Interval. 8.30, Variety Programme by Max Régner and his Company. 9.0, Interval. 9.15, Mandoline Concert. 10.30, News.

PARIS

RADIO PARIS, Call GFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd.). 7.45, Gramophone Music. 8.0, Press Review and Weather. 12 Noon, Protestant Address. 12.30 p.m., Orchestral Concert: Selection from Frederica (Lehár); Song from Tip-Toes (Gershwin); Gramophone Records: Two Melodies (Alix); Two Songs from Un soir de reveillon (Moretti). 1.0, Exchange, News and Weather. 1.5, Vocal Quartet Concert. 1.30, Exchange. 1.35, Orchestral Concert (cont'd.): Selection from Ta bouche (Yvain); Selection from Danses pour l'Amérique du sud (Yatove); Love me tonight (Rodgers). 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.30, Gramophone Records: L'heure exquise (Crémieux); Come with me (Lewis-Lombardo); Tesoro mio (Becucci). 6.45, Legal Talk: Desertion of one's Family. 7.0, Talk. 7.20, Orchestral Concert: Overture. To the Story of the Lovely Melusina (Mendelssohn); Chanson à la lune (Dalcroze); Pavane d'Angelo (Hahn); Mélancolie (Février); Grecian Dance (Ganne); Rustic Dance (Ganne). 7.45, Review of the German Press. 8.0, Madame Butterfly—Opera (Puccini). In the intervals at 8.30, News and Weather, at 8.40, Review by Bonnaud, and at 9.15, Press Review and News.

PITTSBURGH

KOKA, 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.57 metres.—7.30 p.m., KDKA Home Forum. 7.55, Care of the Garden, by Alfred C. Hottes. 8.0, Betty and Bob, from New York. 8.15, Radio Troubadours, from New York. 8.45, State Federation of Pennsylvania Women. 8.58, Baseball Scores. 9.0, Thursday Special, from New York. 9.30, Business News and Market Reports. 9.45, Programme to be announced. 10.0, Baseball Scores. 10.5, Programme to be announced. 10.15, Programme to be announced. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal and Hotel Park Central Orchestra, from New York. 11.15, Weather Report. 11.16, Sport Review. 11.22, Press News-Reeler. 11.29, Temperature Report. 11.30 to 1.45 a.m. (Friday), New York Relay. 11.30, Three X Sisters. 11.45, Today's News, by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15 a.m., Booth Tarkington's Maud and Cousin Bill. 12.30, Concert Footlights. 12.45, Merle Thorpe Talks. 1.0, Captain Diamond's Adventures. 1.30, Rin Tin Tin Thrillers. 1.45, Programme to be announced. 2.0 to 4.0, New York Relay. 2.0, Death Valley Days. 2.30, Wayne King's Orchestra, with Lady Esther. 3.0, Time Signal and Contralto Solos by Gladys Swarthout.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—7.10 p.m., Agricultural Letter Box. 7.28, Time Signal. 7.30, See Warsaw. 8.0, Vocal and Instrumental Concert: Trio in C flat minor for Pianoforte, Violin and Cello (Beethoven); Aria and Songs; Pieces for Pianoforte (Schumann). 9.40 (approx.). See Warsaw. 10.25 (approx.), Topical Talk. 10.30, Time Signal, Sports and Police Notes. 10.45 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—6.45 p.m., Talk on Turgeniev. 5.55, Talk on Economics. 6.5, Gardening Talk. 6.15, Talk for Workers: The Theatre. 6.25,

News. 6.30, German Transmission: Agricultural Talk. 7.0, Chimes. 7.1, News. 7.10, French and Italian Song Recital by Lisa Frank-Svobodova. 7.30, Talk on Economics. 7.45, Concert by the Prague Mandoline Quartet. 8.5, Symphony Concert by the Kurlshad Municipal Orchestra, conducted by Robert Manzer, relayed from the Grand Hall, Kurlshad. Soloist: Marie Hellerova (Pianoforte). Overture, The Magic Flute (Mozart); Symphonic Poem, Op. 26, Tatra (Novak); Pianoforte Concerto No. 4 in G (Beethoven); Symphony No. 4 in F Minor (Tchaikovsky). 10.0, News. 10.15, Concert of Light Music. 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW; and Geneva, 395 kc/s, 760 metres.—7.0 (from Geneva), Talk on the International Labour Conference. 7.30 (from Geneva), Weather, Talk and Announcements. 8.0, Concert by the Station Orchestra. 9.0 (from Lausanne), Operetta and Opéra-Comique Arias. 9.25 (from Lausanne), A Comedy (Courteline). 9.50, News and Weather. 10.0 (from Geneva), Light Music on Gramophone Records. 10.30 (from Geneva), Talk: The Work of the League of Nations. 10.50 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.30 p.m., Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News Bulletin. 10.30, Reading. 11.0, Concert of Light Music by the Radio Trio, followed by Peer Gynt, Suites No. 1 and 2 (Grieg), on Gramophone Records.

RIGA

572 kc/s, 525 metres; 15 kW.—7.5 p.m., Concert of Rossini and Verdi Opera Music. In the interval at 8.0, News. 8.40, Light Music. 9.0, Weather and News. 9.30, Relay of Foreign Stations. 10.20 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.5 to 2.15 p.m., Orchestral Concert. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. Concert: Lene Contadini (Pianoforte), Roberto Rotondo (Tenor), Beatrice Siberi (Mezzo-Soprano), and Vella Capuano (Soprano). Pianoforte Solos: (a) Arabesque (Debussy). (b) Le Rossignol (Liszt); Mezzo-Soprano Solos: (a) Nebbia (Respighi). (b) Traum durch die Dämmerung (R. Strauss). (c) Aria from Sappho (Gounod); Tenor Solos: (a) Arioso from Il Duca d'Alba (Donizetti). (b) Aria from Luisa Miller (Verdi). (c) Aria from Pipelet (de Ferrari); Pianoforte Solo: Aragona (Albeniz); Soprano Solos: (a) Aria from La vedova scaptra (Wolf-Ferrari). (b) Bravoura Variations (Proch). 5.40 (Naples), Shipping and Sports Notes. 5.50, Agricultural and Dopolavoro Notes. 7.10, Tourist Talk. 7.20, Announcements in Different Languages. 7.40, Giornale Radio. 8.0, Time, Announcements, and Talk. 8.15, Gramophone Music. 8.30, Giornale Radio and Sports Notes. 8.45, Gramophone Concert. 9.45, Violin Recital by Arrigo Serato. 10.15 (approx.), Musical Programme: Duet, Intermezzo and Finale from Terra santa (Paolo Salviucci); Overture, The Merry Wives of Windsor (Nicola). 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—12.45 a.m. (Friday), Stock Reports. 1.0, Fleischmann Hour, from New York. 2.0, Capt. Henry's Show Boat, from New York. 3.0, Lucky Strike Hour, from New York, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.: Basle, 1,229 kc/s, 244.1 metres; and Bern, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory. 12 Noon (from Basle), Gramophone Music. 12.30 p.m., News. 12.40 (from Basle), Concert. 1.25 (from Basle), Exchange, Time, and Weather. 1.45 to 5.0, Interval. 5.0 (from Bern), Cello Solos on Gramophone Records. 6.30 (from Basle), Robert Walter reads from his own Works. 7.0 (from Basle), Time and News. 7.10 (from Basle), Gramophone Music. 7.45 (from Basle), Italian Lesson. 8.30 (from Basle), Concert

by the Basle Orchestral Society. 9.15 (in an interval), News. 10.10 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 267 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres, and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Studio Service. 5.30, Programme for Children. 5.45, Gramophone Records. 6.45, Elementary English, relayed from Jönköping, 1,490 kc/s (201.3 metres). 7.15, Weather and News. 7.30 (from Göteborg), Talk. 8.0, Concert by the Oslo Choral Society and the Stockholm Students' Choral Society. 9.0, Microphone Report. 9.45, Weather and News. 10.0, Song and Organ Recital of Sacred Music by Set Svahnöf and Waldemar Ahlen. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Variety Music on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Orchestral Concert, conducted by Maurice de Villers: Pomp and Circumstance (Elgar); Waltz (d'Ambrosio); Overture, Light Cavalry (Suppé); Second Suite, The Nursery (Inghelbrecht); Selection from Hans the Flute Player (Ganne); Impressions (Gabriel-Marie); Czardas (Michiels). 2.0, Programme for Children. 2.15 to 4.15, Interval. 4.15, Elocution Lesson. 4.30, Programme for Children, relayed from Bordeaux-Lafayette. 6.0, Talk in German: The Chateaux on the Loire. 6.15, Talk for Women. 6.30, Jazz Music, conducted by Roskam. 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.15, Press Review in German, Lottery Results and Announcements. 8.30, Gramophone Records. 8.45, Concert by the Municipal Orchestra, relayed from the Orangery Restaurant. Conductor: E. G. Munch. Part I—Gounod, Overture, Mirella; Meditation on a Prelude by J. S. Bach; Ballet Music from Faust. Part II—Mendelssohn, Overture, Fingal's Cave; Overture, To the Story of the lovely Melusina; Overture, Ruy Blas. In the interval, Press Review. 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 827 kc/s, 570 metres.—1.30 p.m., Concert from Langenberg. 2.0, Concert arranged by the Post Office. 2.30, Spanish Lesson. 3.0, Elementary English Lesson. 3.30, Programme for Young People. 4.30, See Langenberg. 5.45, Time, Weather, and Agricultural Notes. 6.0, Talk on Richard Barthold. 6.25, Talk: German Flags and Standards. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Concert by the Volga Balalaika Orchestra, conducted by F. Kremsler. Gipsy Romance, Two Guitars (Kremsler); Intermezzo from Cavalleria rusticana (Mascagni); Petersburger Schiffsahrt (Eilenberg); Potpourri of Russian Airs, Wetscherinka (Kremsler); Gardemarsch (Andrejev). 8.30, See Breslau. 10.0, Time and News. 10.30, Concert by Manned Choirs, conducted by Stolz. An das Vaterland (Kreutzer); Segenswunsch (Weinzierl); Wohin mit der Freud (Slicher); Liebesleid der Wandernden (Langer); Im tiefsten Wald (Speidel); Ein Mann, ein Wort (Marschner). 11.45 (approx.), Close Down.

SUNOSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—5.0 p.m., Dance Music: Retour (Nielhols); Paradis (Brown); Pluie sur le toit (Kosel); La Valse du Faubourg (Pessenti). 5.15, Exchange and Racing Results. 5.30, Orchestral Music: Selection from Hänsel and Gretel (Humperdinck). 5.45, Arias from (a) Werther (Mascagni). (b) Cavalleria rusticana (Mascagni). (c) Sophie Arnould (Pierne). 6.0, News Bulletin. 6.15, Hawaiian Guitar Solos: Texas Moon (Perkins); Pagan Love Song (Brown); O Sole Mio (Di Capua); Non Amour Hawaiian (Bordin). 6.30, Programme for Children. 7.0, Opera Music: Airs from (a) Rigoletto (Verdi). (b) Louise (Charpentier). (c) Cavalleria rusticana (Mascagni). and (d) Mignon (Thomas). 7.15, News and Horse Racing Results. 7.25, Local News. 7.30, Military Music. 7.45, Operetta Music. 8.0, Accordion Recital. 8.15, Chansonnettes. 8.30, Orchestral Music. 9.0, Extracts from L'Éclaircie—Opera (Meyerbeer). 9.30, Programme by a Viennese Orchestra. 9.45, Concert. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Tangos. 11.15, Balalaikas and Russian Songs. 11.30 to 12 Midnight, Programme in English by the I.B.C.—W. Brown—Constable announcing. 11.30, Orchestral Music and Songs: Old Vienna Moon; The Gay Highway; Stonecracker John; Black Eyes; Love's Dream after the Ball; The Drum Major; The Wheeltapper's Song; Selection from

Congress Dances. 11.57, I.B.C. Goodnight Melody. 12 Midnight, News. 12.5 a.m. (Friday), Popular Songs. 12.15, Orchestral Music. 12.30, Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 to 6.0 p.m., See Turin. 6.0 to 6.35, Interval. 6.35 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,095 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 905 kc/s, 312.8 metres; and Florence, 699 kc/s, 500.8 metres.—5.0 to 6.0 p.m., Variety Music. 6.35, Giornale Radio. 7.0, Time and Topical Talk. 7.20, News in Foreign Languages. 7.40, Gramophone Music and Sports Notes. 8.0, Giornale Radio. 8.5, Gramophone Music. 8.20, Talk on the following Transmission. 8.30, Othello—Opera in Four Acts (Verdi). In the intervals, Talk, Literary Notes and Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.25 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in French. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 62 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 220.5 metres.—1.0 p.m., Time and News. 1.10 to 2.0, Gramophone Concert of Popular Music. 3.0, Time and Market Prices. 3.20, Talk: Interesting Plants in Schönbrunn. 3.30, Fairy Tales for Children. 3.55, Gramophone Concert of Operetta Music. 4.45, Report on Austria in Esperanto. 4.45, Talk for Women: Women Mountaineers. 4.5, Talk: Austrian Dancers at the Greek Theatre in Syracuse. 5.25, Song Recital by Albert Feller (Tenor) and Edith van Aust (Soprano). Part I: Neapolitan Songs: Maria Mari (di Capua); Barearolle, Canza il Marinar (Marrone); Marechire (Tosti); Rondine al nido (de Crescenzo); Amore canta (Tagliaberti); Serenade, Ritorna (Cariosio); Tu ca nun chia ne (de Curtia); Sole mio (di Capua); Nun e Carmela mia (Vincenzo Valentini); Pesca d'amore (Bartolomey). Part II: Russian Songs by Griegmannov and Rachmannov. 6.5, Talk on Industry. 6.30, Talk: Krems in the Valley of the Kamp. 6.55, Theatre Talk. 7.5, Talk: Sounds of the Steppes, with Gramophone Record Illustrations. 7.30, Time and News. 7.40, Songs and Arias by Maria Olszewska. 8.20, Topical Talk. 8.35, A Radio Potpourri of Sound Films, Dance and Operetta Music. 10.5, News. 10.20, Dance Music.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—12.10 p.m., Concert by the Station Orchestra. 1.20, Weather Forecast. 1.25 to 3.10, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.25, Gramophone Music. 3.35, Talk. 3.40, Gramophone Music. 4.25, Elementary French Lesson. 4.40, Talk: Why we give so much time to Sport. 5.0, Gramophone Music. 5.4, Topical Talk. 5.55, Programme Announcements. 6.0, Concert by a School Choir. 6.30, News. 6.35, Light Music. 7.0, Miscellaneous Items. 7.20, Agricultural Talk. 7.30, Reading. 7.45, Radio Journal. 8.0, Concert of Light Music by the Station Orchestra, conducted by S. Nawrot. Soloist: E. Radwin (Songs). Mazurka from The Haunted Castle (Moniuszko); Musical Picture, The Wedding (Powiedawsky); Boston from Schön ist die Welt (Lehar); Songs with Orchestral Accompaniment: (a) Song from Ein Herbstabend (Kälmin). (b) Tango from The Czarevitch (Lehar). (c) Song from Die Terzina (O. Strauss). (d) Boston from Frasquita (Lehar); Overture (Janota); Waltz from The Sleeping Beauty (Tchaikovsky); Melody (Makosza); Gladiator March (Fück). 9.4, Sports Notes. 9.5, Radio Journal. 9.10, Song Recital by Umberto Macnez: Arias from: (a) L'Esir d'amore (Donizetti). (b) La Favorita (Donizetti). (c) La Bohème (Puccini); Serenade (Tosti); Il grillo (Billi); Torna amore (Bucci-Percia); Air from Salvatore Rosa (Gomez). 9.40, A Play. 10.25, Dance Music. 10.55, Aviation Weather Report and Police Notes. 11.0 (approx.), Close Down.

WILNO

533 kc/s, 563 metres; 16 kW.—5.55 p.m., Programme Announcements. 6.0, Popular Songs on Gramophone Records. 6.40, News. 7.0, Miscellaneous Announcements. 7.10, The Letter Box. 7.30, Recitations. 7.45, See Warsaw. 8.0, Request Gramophone Music. 9.0, See Warsaw. 12 Midnight (approx.), Close Down.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—8.10 p.m., Announcements. 8.30, Programme from Ljubljana, 522 kc/s, 574.7 metres. 10.30, News and Weather. 10.40, Dance Music. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Gork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0, Time, Gramophone Music, Exchange, and Weather. 6.0, Programme for Children. 6.45, News. 7.0, Gardening Talk. 7.15, Literary and Dramatic Talk. 7.30, Time. 7.32, The Station Orchestra. 8.0, Pianoforte Solos by K. Pyne. 8.15, Baritone Solos by Myles Kelly. 8.30, Nil desperandum—Play by F. McDonnell and Company. 9.0, The Station Orchestra. 9.20, Soprano Solos by G. MacNevin. 9.30, Liam Andrews (Pipes). 9.45, Sponsored Programme. 10.45, Time, News, and Close Down.

BARCELONA

860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. Minuet in G No. 2 (Beethoven); A Wedding Day on Troidhaugas (Grieg); Selection from Herodiade (Massenet); Barcarolle, Venetian Gondolas (Leemans); Selection from Cavalleria rusticana (Mascagni); Duet from Boris Godunov (Mussorgsky). 8.0, Request Gramophone Music. 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes, Weather Messages to Seamen and Exchange. 10.10, Concert by the Station Orchestra. Liberty March (Kostal); Selection from Mephistopheles (Boito); Waltz, Anges d'amour (Waldteufel); Violin Solo, Wedding Procession (Filippucci); Les Angelus (Debussy); Overture, Fingal's Cave (Mendelssohn). 11.0, Un cor de dona—Comedy in Two Acts (Millás Ranrell). In the interval at 12 Midnight, News. 1.0 a.m. (Saturday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Report, Tourist Talk and Dopolavoro Announcements. 8.20, Giornale radio and Weather. 8.30, Time and Announcements. 8.35, Concert of Opera Music. Overture, Il flutto Stanislao (Verdi). Soprano Solo: Selva opaca from William Tell (Rossini). Tenor Solo: Una vergine, un angelo di Dio, from La favorita (Donizetti). Selection from Anima allegria (Vittadini). Soprano Solo: Vienne una vecchiaia, from Isabeau (Mascagni). Prelude to Lorley (Cantalan). Tenor Aria from Weather (Massenet); La tregenda from Le Villi (Puccini). Overture, Oberto, conte di S. Bonifacio (Verdi). Soprano Solo: Senza mamma from Suor Angelica (Puccini). Tenor Solo: Dai Campi, dai prati from Mefistofele (Boito). Serenata from I Medici (Leoncavallo). Soprano, Aria from Manon (Massenet). Tenor Solo: Brindisi from Cavalleria rusticana (Mascagni). In the interval, Theatre Review and Miscellaneous Announcements. 10.30, Music from the Gran Caffè del Levante. 10.55, News. **BASLE.**—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—5.55 p.m., Time and Programme Announcements. 7.0, Recital of National Songs. 7.30, Talk. 8.0, Gramophone Music. 8.30, Violin Recital by Karel Hlohob; Souvenir (Dvorák); Potpourri of Smetana Music (Hlohob); Sonata No. 11 (Paganini); Rondo Papageno, Op. 20 (Ernst). 9.10, A Radio Comedy. 9.45, Concert of Yugoslav Music by the Radio Orchestra. 10.30, Time and News, followed by Gigány Music relayed from a Restaurant.

BERLIN

DEUTSCHLANDSENDER; 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News Bulletin. 2.0, Opera Music on Gramophone Records. 3.0, Talk for girls; Books to Read. 3.30, Weather and Exchange. 3.45, Reading. 4.0, Concert from Leipzig. 5.0, Talk: The German Teachers' Meeting in Magdeburg. 5.25, Talk: A Westphalian Peasant Wedding. 5.50, Topical Talk. 6.0, A Poem. 6.5, String Quintet in E for Two Violins, Viola and Two Cellos (Bocherini). 6.30, Talk: The Activities of Spies in Germany. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, An Epigram, followed by Talk on Gramophone Records: What People are talking about in America. 8.15, Ach, bedrängtes Menschenleben, o du grüne Lebenszeit!—A Radio Sequence from the Baroque Period. 9.0, Orchestral Concert, conducted by Edwin Lindner; Overture in G Minor (Bruckner); Symphony in D Minor, Op. 44 (Volkmann); Till Eulenspiegels Merry Pranks (R. Strauss). 10.0, News Bulletin. 10.45, Weather Report for Shipping. 11.0, Concert from Frankfurt. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.20 p.m., Talk on Students. 6.40, The Witzleben Station informs its Listeners. . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Concert by the French Horn Association and the Berlin Wireless Chorus. 8.50, Prince Friedrich von Homburg—the Portrait of a German Prince on the Centenary of his Birth. 9.20, Trio in B Flat, Op. 97 (Beethoven), for Pianoforte, Violin, and Cello. 10.0, News. 10.30, Concert by the Berlin Wireless Orchestra, conducted by Dr. Rudolf von Schmidtseck. In the interval at 11.10, Radio Report (on Gramophone Records) of

FRIDAY

JUNE THE NINTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL LONDON REGIONAL

Acts 4 and 5 of "Don Carlos," from Covent Garden. Mr. Stanley Baldwin speaking at the Annual Dinner of the National Savings Assembly, the Winter Gardens, Malvern.

MIDLAND REGIONAL

Choral Programme: "What's in the Wind?" by R. Clements.

NORTH REGIONAL

The Super-Optimists in their revue, "Pleasure on Parade," from New Brighton.

WEST REGIONAL

Pastorale: Orchestral Concert.

SCOTTISH REGIONAL

"College Crimes," a musical comedy by T. R. MacDougall and A. Mackinnon.

BELFAST

Light Orchestral Concert of Ballet Music.

ABROAD

BARCELONA BRESLAU

7.0 p.m. Trio Concert.

HAMBURG

8.45 p.m. Kümneke Concert, conducted by the composer.

MUNICH

9.20 p.m. Richard Strauss Concert by the Philharmonic Orchestra.

MUNICH

8.15 p.m. Symphony Concert by the Station Orchestra.

POST PARISIAN RADIO-PARIS

8.30 p.m. Operetta: "Dédé," by Christiné.

ROME STUTTGART

9.0 p.m. Opera: "La Traviata" (Verdi), from the Théâtre de la Porte St. Martin.

ROME STUTTGART

8.45 p.m. Ariosto Centenary Concert.

VIENNA

7.0 p.m. The Württemberg Symphony Orchestra (relayed by other German Stations). 7.10 p.m. The Vienna Symphony Orchestra.

the Match for the Davis Cup, Germany v. Holland, from the Rot-Weiss Tennis Club Grounds. 12 Midnight (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.30, News. 7.40, Film Review. 7.55, Lottery Results. 8.0, Spanish Lesson. 8.15, News. 8.30, Chausson Festival Programme.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.25 p.m., Wagner Organ Recital by Prof. A. Ledvina, relayed from the Franciscan Church. 6.55, Talk for Housewives. 7.0, See Prague. 10.15 (approx), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.15 p.m., Gramophone Concert of Dances. Invitation to the Waltz (Weber); Hopak from the Fair at Sirochinsk (Mussorgsky); Salome's Dance from Salome (R. Strauss); La danza (Rossini); Aria from Carmen (Bizet); Shadow Dance from Dinorah (Meyerbeer); Waltz from Der Rosenkavalier (R. Strauss); Waltzes (Joh. Strauss); (a) The Blue Danube, (b) Tales from the Vienna Woods. 2.15, Programme arranged by the Post Office, with Gramophone Records. 3.10, Agricultural Prices. 3.35, Programme for Young People. 4.0, See Leipzig. 5.0, Talk on German Chamber Music. 5.25, Friedrich Döml reads from his own works. 5.50, Agricultural Prices. 5.55 (approx.), Programme to be announced. 6.20, Historical Talk: The Rise of Prussia. 6.50, Weather for Farmers, News and Market Prices. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Reminiscences of Silesian Airmen in the Great War. 8.30, Kümneke Concert conducted by the Composer. The Silesian Philharmonic Orchestra. Soloists: Charlotte Boerner (Soprano) and Ventur Singer (Tenor). Romantic Overture, Concert Ariu, Selene and Eudymion, Triple Fugue for Full Orchestra. Duet from Nadja. Hunting Overture. Dance Suite in Five Movements. In an interval at 9.25, News. 10.10, Time and News. 10.30, Reading: A Dog Story. 10.45, Concert from Frankfurt. 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—5.55 p.m., Theatre Notes. 6.0, Talk: Creative Art. 6.15, Talk for Workers. 6.25, German Trans-

mission: News, Sports Notes, Talk on Peace and Tourist Report. 7.0 till Close Down. See Prague. 10.15 (approx.), Close Down.

BRUSSELS (No. 1)

590 kc/s, 509 metres; 15 kW.—12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Paul Leemans. Soloist: Mme. Christiane Berlo (Soprano). Pasodoble (Borsatti); Dance Suite (Zimbalist); Consolation No. 3 (Liszt); Songs: (a) Indian Love Call, from Rose Marie (Primi). (b) Arlequin soupire (Demaret); Selection from Manon (Massenet); Waltz, A Boy and a Girl were dancing (Revel); One Step, Cheero Nero (Seely and Benson). 2.0, Programme for Schools. 5.0, Concert by the Station Orchestra, conducted by M. André. Tambourin (Rameau); Minuet (Bocherini); Gavotte (Bach); Waltzes (Brahms); Tango (Sautis); Dances from Tom Jones (German); Bacchanale from Samson and Delilah (Saint-Saëns); Farandola from L'Arlesienne (Bizet); España (Chabrier); Jazz Medley (Caudrix). 6.0, Talk. 6.15, Gramophone Concert. Cuadros (Raoul Laparra); Where my Caravan has rested (Lühr-Chapelier); First Movement from the Symphony No. 4 (Widor); Finale from the Second Symphony (Widor). 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans. Overture, La Preciosa (Weber); Melody (Albéniz); Spanish Dance, No. 5 (Granados); Selection from Tiefland (d'Albert); Flute Concerto (Chaminade); Algerian Song, Le Ramier (Guillemin); Saltarelle (Luigini). 7.15, Talk on Cancer. 7.30, Literary Talk and Legal Notes. 8.0, Belgian War Songs by M. Aimé Delstanches (Baritone) and Mr. Claret, followed by Post-War Military Marches by the Station Orchestra, conducted by F. André. 8.45, Programme for Ex-Servicemen. 9.0, Concert by the Station Orchestra, conducted by Franz André. Soloist: M. Coppens (Baritone); Extracts from: (a) Les Cent Vierges (Lecocq), (b) La Belle Héloïse (Offenbach), (c) Hip van Winkle (Planchette); Baritone Solos: Melodies from Gillette de Narbonne (Audran), (b) Le petit Faust (Hervé), (c) Blue Beard (Offenbach). 10.0, Le Journal Parlé. 10.25, Dance Music on Gramophone Records. 11.0, La Brabançonne.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans. 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert. 2.0, Educational Programme. 5.0, Trio Concert. Trio in E Flat, No. 9 (Beethoven); Phantasiestück, Op. 88, in A Minor (Schumann); Trio, Op. 8, in F Minor (Foster). 6.0, Request Gramophone Music: Scherzocadrice (Kreisler); Aria from The Hugue-

nots (Meyerbeer); Gitana (Kreisler); Ombra leggiera (Meyerbeer). 6.15, Talk. 6.30, Gramophone Music. 7.15, Talk: Wireless in Sweden. 7.30, Wireless Review. 8.0, Gramophone Concert. Overture, Fidelio (Beethoven); Symphonic Dances (Grieg); Jota (Laparra); La Féria (Lucôme); Air from Martha (Flotow); Norwegian Rhapsody (Lalo); Air from The Queen of Sheba (Gounod); Selection from Naimona (Lalo). 9.15, A Radio Play (Anne Tölle Honekamp). 10.0, Le Journal Parlé. 10.10, Dance Music, relayed from the St. Sauveur Palais de Danse.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: Overture, Die Fledermaus (Strauss); Suite No. 3 (Tchaikovsky); Entr'acte and Gavotte from Mignon (Thomas); Love Waltz (Mozzkowsky); Slav Rhapsody No. 1 (Dvorák); Humoresque (Vreuls). In the interval at 6.0, Radio Journal. 7.0, Educational Programme. In the interval at 7.20, Gramophone Records. 8.0, An Opera on Gramophone Records. In the intervals, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Programme also relayed on 840 metres from 7.0 p.m. till Close Down.—5.0 p.m., Concert by the Budapest Concert Orchestra, conducted by Tibar Polgar. 6.30, Talk for Workers. 7.0, Concert by the University Choral Society. 7.45, Talk. 8.15, Review of Foreign Politics. 8.30, Gramophone Concert. 9.30, News. 9.45, Concert by a Wind Instrument Quintet: Quintet with Pianoforte (Rimsky-Korsakov); Song (Kodaly); Minute Waltz (Chopin); The Mill (Joachim Andersen); Song (Zador); Erinnerung (Zador); Nocturne (Balusz); Song (Kelen); Melody (Kalman); Suite (Lefèvre). 11.0, Concert by the Fali Pertis Gigány Band, relayed from the Hotel Britannia.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. and Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time Signal and Chimes from the Town Hall. 12.1 p.m., Concert by the Max Skalka String Ensemble, relayed from the Hotel d'Angleterre. 1.15, Broadcast for Schools. 1.45 to 3.0, Interval. 3.0, Concert by Carl Rydahl's Instrumental Ensemble; Soloist: Karin Mark (Songs); Comedy Overture (Keler-Béla); Vision (Gounod); Waltz, Immortelle (Gung'l); Selection from Lucia di Lammermoor (Donizetti); Serenade (Mozzkowsky); Polonaise from Les Millions d'Arlequin (Drigo); Swedish Songs; Apollo March (Lincke); Viennese Music from The Duchess of Chicago (Kálmán); Intermezzo (Edelstein); La cinquantaine (Gabriel Marie); Tango (Andersen); Song from The Merry Widow (Lehár); Polonaise in A (Chopin). 5.0, Reading in Swedish. 5.35, Exchange and Fish Market Prices. 5.50, Talk: The Greatest Works of Danish Literature—Hans Andersen's Fairy Tales. 6.20, German Lesson. 6.50, Weather Report. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Talk on Social Reform. 8.0, Time Signal. 8.1, Item by Knud Heglund. 8.10, Serenade for Strings No. 1 (Volkmann), by the Radio String Orchestra, conducted by Launy Gröndahl. 8.40, The Sick Nurse—Dramatic Situation after a Short Story by S. Blicher. 9.0, Choral Concert, conducted by Anders Rachelew, relayed from the Tivoli Concert Hall; Soloist, Albert Hoeborg (Baritone): Prelude and Song for Male Voice Choir from Kalanis (Horneman); Landekennung for Baritone, Choir and Orchestra (Grieg); Die Ehre Gottes in der Natur (Beethoven); Heilig, heilig (Schubert); Song (Grieg); Jutland Folk Song; Færø, for Male Voice Choir and Orchestra (Lange-Müller); Aria from the University Cantata in Memory of King Christian IX (Horneman). 10.0, News Bulletin. 10.15, Symphony Concert of Danish Music, conducted by Launy Gröndahl; Symphony No. 4 (Simonsen); Variations on a Theme by Weyse (Gram); String Quintet (Hammerik). 11.15, Dance Music from the Lodger Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Saturday), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.0 p.m., Topical Talk. 7.15, Miscellaneous Items and News. 7.30, See Warsaw. 11.0, Popular Gramophone Music. 12 Midnight, Fanfare from the Tower of St. Mary's Church.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. T. St. A. Ronald and B. McNabb announcing. 4.30, Concert of Light Music for Southampton and Winchester Listeners. The Nightingale in the Lilac Bush (Krome); To Mary (White); Russian Potpourri; Beauty's Eyes; The Cockshafers Tea Party (Noack); Heather Moon (Damerell); Little Brown Owl; Come o'er the Stream, Charlie (Traditional); On a Dreamy Summer Night (Rotter); When the House is Asleep; Selection from Lilac Time (Schubert). 5.15, Con-

JUNE 9th

FRIDAY

continued

cert of Light Music for Bournemouth and Weymouth Listeners. Moon over Dixie; A Jovial Monk am I (Audran); Waltz, Tales from the Vienna Woods (Strauss); Swanee Stomp; Selection from La Poupée; A Border Ballad; Fooling Me (McKnight); In Sheltered Vale (Clarke); Lionel Moncton Potpourri; Swanee Lullaby (Koehler). 6.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Icolians. Who's your Little who zis? (Bernie); One of us was wrong (Goering); With love in my heart (Prager); By the Fireside (Noble); When we're along (Jason); My Sunny Monterey (Nicholls); Somebody loves you (Tobias); Sabrosoma (Siroons); Ich liebe dich, my dear (Hart-Bligh); Love is the Sweetest Thing (Noble); Just an Echo in the Valley (Woods); I'll do my best to make you happy (Noble); I'll never have to dream again (Newman-Jones); Wild Man Blues (Armstrong); How deep is the Ocean? (Berlioz); Melancholy (Bloom-Melrose). 10.30, Symphony Concert. Overture, The Caliph of Bagdad (Boieldieu); Serenade (Moszkowsky); From the Cauebrake (Gardner); Selection from I Pagliacci (Leoncavallo); Waltz from The Sleeping Beauty (Tchaikovsky); Hungarian Dance No. 6 (Brahms); Blossoms from Mozart's Garden; Rakoczy March (Berlioz). 11.30, Negro Spirituals. I got a Robe; Oh wasn't dat a Wide Wide Ribber; Negro Love Song; Couldn't hear nobody pray; Nobody knows de trouble I've seen; Every Time I feel de Spirit; Deep River; Sometimes I feel like a Motherless Child; Go Down Moses; Swing Low, Sweet Chariot. 12 Midnight, Club Concert for Dunstable Listeners. Victoria March (von Blon); Nellie Grey; Song: Tu sais; Jolly Fellows (Vollstedt); The Stormflood; Song: Déjà; Music Hall Show in Grandpa's Day; Sea Songs (arr. Touchette); Selection from Waltzes from Vienna (Strauss); Gipsy Rondo (Haydn); There is a Tavern in the Town; In Absence; Selection from the Pines of Penance (Sullivan). 1.0, a.m. (Saturday). Light Orchestral Music. Pale Volga Moon (O'Hagen); Waltz from the Gipsy Princess (Kalman); Go home and tell your Mother; Cuban Serenade (Herbert); Oriental Serenade (Herbert); Moonlight at Sanssouci (Koster); Okay Baby; The Phantom Melody (Ketchey); Hawaiian Memories (Arimandola). 1.30, Instrumental Solos and Orchestral Music; The Cuckoo Waltz (Jonasson); Xylophone Solo: Fairy Tiptoe (Fredricks); My South Sea Home (Cumilio); Concertina Solo: War March of the Priests (Mendelssohn); Xylophone Solo: Fiddlesticks (Leslie Jones); Mami Girl (Lihoroni); Glockenspiel Solo: The Black Forest Chiming Clock (Doppier); Amoureuse (Berger). 2.0, Dance Music by the Icolians; The Clouds will soon roll by (Woods-Brown); Goopy Geer (Hupfeld); Underneath the Arches (Flanagan); Down the Old Back Road (Hupfeld); Oh, you sweet thing (Hines); I don't mean a thing (Billington); Blue Drag (Hines); Rose Room (Hickman); One little Quarrel (Hoffman); My Extraordinary Gal (Shand); Home (van Steeden); Was it wrong? (Arnhelm); Paradise and you; I wouldn't change you for the world (Newman-Jones); Fairy on the clock (Reaves); Manhatlan (Alhouche). 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Russian Rhapsody (Börschel); Scandinavian Caprice (Donich); Rhapsody No. 1 (Liszt); Valse Caprice (Rubinstein); Catalan Rhapsody (Albort); Italian Caprice (Tchaikovsky). In the interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Agricultural Prices and Exchange. 3.30, Programme for Children. 4.0, Talk for Women. 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Martha (Plotow); In the Tenhouse of the Hundred Steps (Yoshitomi); Max and Moritz (Zimmer); Potpourri (Leuschner); Selection from Madame Butterfly (Puccini); Waltz, Over the Waves (Rosas-Pachernegg); Overture, Der Gasconner (Suppe). In the interval at 4.50 (approx.), Dialogue: Suggestions for Excursions. 5.45 (from Danzig), Talk: Language and Nationality. 6.15, Market Prices. 6.25, Talk: Woman and the Nation. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Talk: What People are talking about in America, relayed from America. 8.15, Concert of Franz Bittner's Music by the Orchestra of the Königsberg Opera House: Prelude to Der Bergsee; Prayer from Das Hülische Gold; Prelude to Der liebe Augustin; Austrian Dances. 9.30, News. 9.40, English Lesson for Beginners. 10.10, News and Sports Notes.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time Signal. 11.41, Gramophone Music. 12.10 p.m., Concert of Light Music by Kovacs Lajos and his Orchestra; Soloist, Bob Scholte (Songs). 1.50, Talk for Women. 2.10, Gramophone Music. 2.40, Talk: Children's Characters. 3.10, Gramophone Music. 3.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 3.40, Concert by the Little V.A.R.A. Orchestra, conducted by Hugo de Groot. 4.40, Programme for Children. 5.10, Concert by the Little V.A.R.A. Orchestra, conducted by Hugo de Groot. 5.55, Organ Recital by Johan Jong: Love me and the World is mine (Ball); Selection from Der Geist des Wajewoden (Grossmann); Extravaganzen (Morena); Melody (Martin). 6.25, Recitations. 6.40, Concert by De Fliercruiters, conducted by J. v. d. Horst; Soloist, A. de Booy (Songs): Panic (Henderson); Butterflies in the Rain (Roovers-Myers); Same old Moon (Baskette); Selection from Schön ist die Welt (Lehar); Du schwarzer Zigeuner (Vacek); A Song from the Puszta (Margulies-Holms); Spanish Violets (Mégy); Gramophone Music: Lieue Suze (Weersma); Melody (Gilbert); I'll never have to dream again (Jones); Ist dein kleines Herzchen mir tren (Eisele); Potpourri, Servus Wien (Dostal). 7.40 to 10.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 7.40, Religious Instruction. 8.10, Sonata in A, Op. 100 (Brahms). 8.40, Talk. 9.10, Sonata, Op. 36 (Pierce). 9.40, News. 9.55, Reading. 10.25, Gramophone Music. 10.40 till Close Down, V.A.R.A. Programme. Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—Programme of the Christian Radio Society (N.C.R.V.).—11.55 a.m., Trio Concert. Gramophone Music in the interval. 1.40, Programme to be announced. 2.10, Reading. 2.40, Talk for the housewife. 3.10, Recital of Violin Duets: Sonata in G minor for two Violins and Pianoforte (Handel); Three Inventionen for Pianoforte (Bach); Organ Solo on Gramophone Records; Finale from the Sixth Sonata (Mendelssohn); Etude Caprice, Op. 18, No. 2, for two Violins (Wieniawsky); Duet, Op. 150, for two Violins (Spohr). 4.10, Talk for Young Amateur Photographers. 4.40, Talk on Natural History. 5.10, Gramophone Records. 5.40, Third Symphony in C Minor with Organ (Saint-Saëns). 6.10, Talk on Gardening. 6.40, Police Notes. 6.55, News. 7.10, Literary Talk. 7.40, Gramophone Music. 7.55, Concert in connection with the Eleventh Festival of the International Society for Contemporary Music. The Concertgebours Orchestra with Famous Conductors. 9.50, News. 10.0, Gramophone Music. 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., News Bulletin. 8.15, Esperanto Lesson. 8.30, Radio Concert. 9.0, News. 9.15, Radio Concert. 9.45, Tomas and his Merry Boys Orchestra, relayed from the Casino. 12 Midnight to 1.0 a.m. (Saturday), Programme in English by the I.B.C., H. K. Hitchcock announcing. 12 Midnight, Concert of Gracie Field's Songs: Life's Desire (Hargreaves); Now that you're gone (Kahn); They all make love but me (Evans); Melodious Memories (arr. Finck); Just one more chance (Coslow); When we all went to the Zoo (Kester); The Mocking Bird (Malvern); More Melodious Memories (arr. Finck). 12.30, Tango Band Concert: Play, fiddle play (Lawrence); Rosa Mia (Guizar); To-night (Kennedy); Zigeuner (Schwabach); Good-bye, Argentina (Rodriguez); Farolito de mi Barrio; La Camparsita (Rodriguez); Rose colour (Polito). 12.57, I.B.C. Good-night Melody. 1.0 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.15 p.m., Announcements and Gramophone Music. 7.25, Sports Notes. 7.30, See Warsaw. 10.20, Dance Music. 11.0, The Letter Box in French.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Programme for Children in Swedish. 6.40 (from Helsinki), Violin Recital. 7.5, Talk in Swedish. 7.30, Concert (from Helsinki). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Military Music, relayed from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert conducted by Eysoldt. Soloists: Rudi Eisenberg (Baritone) and Theo Homback (Trombone). Overture, Im Herbst (Grieg). Songs: (a) An der Rheines grünen ufern (Lortzing); (b) Frühling am Rhein (Hörner); (c) Mein Heimatland (Obermeyer). (d) Am Rhein (Attenthaler); Selection from Madame Butterfly (Puccini); Waltz Aria for Trombone (Alschanski); Mazurka, Franznerz (Jos. Strauss); Amnen-Polka (Joh. Strauss); Selection from Ihre Holheit die Tänzerin (Goetze). In the interval at 2.0, News. 2.30 to 3.15, Sponsored Programme with Gramophone Records. 3.30, Economic Notes and Time. 3.50, Programme for Children. 4.30, Concert by the Station Orchestra, conducted by Buschkötter. Soloists: Hermann Hartung (French Horn) and Maria Mattiuis (Contralto). Suite, Pêcheur d'Islande (Maurice); Concerto in E Flat for French Horn (Mozart). Four Songs from Traurige Tänze (Füssell). Scherzo Op. 28 (Spies). 5.50, Talk: New Methods in Motor Car Construction. 6.15, Anecdotes (Grimmelshausen). 6.25, English Lesson. 6.45, News Bulletin. 7.0, Transmission for all German Stations relayed from Stuttgart. 8.0, News. 8.5, Topical Talk. 8.20, König Spork—Radio Play (Friedrich Griese). 9.40, Norwegian Music on Gramophone Records. 10.5 News. 10.30, Wireless Notes. 10.45, Serenade, conducted by Wolf. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 769.9 kc/s; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Military Band Concert, conducted by Kurt Lange. 2.0, News. 2.10, Art Notes. 2.45, Zither and Guitar Recital by Adolf Arnold and Kurt Enltz; Guitar: (a) Minuet in B Flat and Andantino (Sor); (b) Widmung (Albert); (c) Am Springbrunnen (Albert); Concerto No. 2 in F (Hauastein); Guitar: (a) Andante (Coste); (b) Recuerdos de la Alhambra (Tarrega). 3.15, Talk for Country Women. 3.35, Economic Notes. 4.0, Concert by the Symphony Orchestra, conducted by Hilmar Weber; Soloist: Walter Gehl (Trombone); Overture, Dame Kobold (Reinecke); Music from Salome (R. Strauss); Ballet Scenes (Glazunov); Hungarian Rhapsody No. 12 (Liszt); Concertino for Trombone, with Orchestral Accompaniment; Selection from Aida (Verdi). In an interval at 5.0, Book Review. 5.50, Economic Notes, Weather, and Time. 6.0, Talk on Elocution. 6.40, Programme to be announced. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Talk by Kurt G. Sell: What People are talking about in America, relayed from America. 8.15, Der Heimkehrer—Radio Play (Friedrich Griese). 9.15, News. 9.25, Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen; Overture, Manfred (Schumann); Symphony in D (Nicolai); Aus baltischen

Landen (Kämpf). 10.25, News. 10.46 (approx.), Concert by the Emdé Orchestra. 12 Midnight (approx.), Close Down. LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.30 p.m., Relay from a Fair. 7.30, Talk on Geology. 8.0, Concert by the Station Orchestra. 9.0, Weather and News. 9.15, Instrumental Solos. 10.0, Dance Music. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette. 8.30, Quintet Concert. Soloists: Mlle. Fernande Courand (Soprano) and Gustave Follot (Cello). News after the Concert.

MADRID

ARANJUEZ (EAO), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Concert of Musical Novelties. In the interval at 11.45, Radio Chronicle. 12.35 a.m. (Saturday), Answers to Correspondence. 12.40, Light Music. 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 24.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Announcements, Radio Journal, Scientific Talk and Request Gramophone Records. 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal and Political Review. 11.15 (approx.), Symphony Concert on Gramophone Records: Overture, A Midsummer's Night's Dream (Mendelssohn); Symphonic Poem, Death and Transfiguration (R. Strauss); The Czech Symphony (Haydn); Suite from Petruska (Stravinsky). 12.45 a.m. (Saturday), News, Programme Announcements for Listeners Abroad and Dance Music. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., Vocal Concert. 7.0 till Close Down, See Prague. 10.15 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert, conducted by Erich Kloss: Overture, Flotte Bursche (Suppe); Two Pieces (Amadei): (a) La canzone della sorgente, (b) In the Tuilleries; Selection from La rondine (Puccini); Dance Suite (Zinbalist); Potpourri, Auf Wiederhören (Wanninger); Scherzo (van Goens); The Old Musical Clock (Humphries); March, Deutsche Hoffnung (Meindl). 5.45, Talk on the Reclamation of Land. 6.15, Talk: The Scandinavian Sylvan Theatre. 6.25, Radio Madriav—Literary and Musical Sequence (Peter Paul Althaus); Music by J. Turina. 6.45, Time and Weather. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Talk by Kurt G. Sell: What they are talking about in America, relayed from America. 8.15, Symphony Concert by the Station Orchestra, conducted by Hans Winter; Soloist, Elizabeth Bisehoff (Violin); Violin Concerto in A (Mozart); Symphonic Poem, Schelerazaade (Rimsky-Korsakov). 9.20, Topical Talk. 9.40, Song Recital by Wilhelm Rode (Baritone). 10.20, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,085 metres; 60 kW. Relayed by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Gramophone Concert. 6.0, French Lesson. 6.30, Trio in G Minor, Op. 15, for Pianoforte, Violin and Viola (Smetana). 7.0, Advertising Notes. 7.15, News. 7.30, English Lesson. 8.0, Time Signal. 8.2 Flight—Comedy (Stephen Zweig). 9.10, Advertising Notes. 9.30, Agricultural Report. 9.40, News. 10.0, Topical Talk. 10.15, Talk.

OSTERSUND.—See Stockholm.

PALERMO

588 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time Signal and Announcements. 8.45, Concert of Opera Music. Conductor: F. Russo. In the interval, Talk. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—5.45 p.m., Theatre Talk. 7.0, Le Journal Parlé. 8.30, Literary and Musical Programme. 9.15, Or-

JUNE 9th

FRIDAY

continued

chestral Concert, conducted by E. Flament. Soloists: René Bas (Violin), M. Marchesini (Cello), and M. Manonvriev (Flute). Over- ture, La Caravane (Grieg); Violin Solo; La Bohème (Puccini); Violin Solo; Ukrainian Pictures (Akinenko); Cello Solo; Flute Solo; Mimet from Orphée (Glück); Les bergers d'Arcadie (Flament); Waltz (Joh. Strauss). 10.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé, 7.0, Spon- sored Talk, 7.10, Gramophone Records, 7.25, Concert by the Dragofieldts Musikkorps de Bergen Orchestra, conducted by Haakon Oslund: Fest-popolmar (Svendsen); Selection from Sigurd Jorsalfar (Grieg); Norwegian Patriotic Song (Nordraak), 7.55, Review of the Week, 8.0, Talk on Music, 8.15, Inter- val, 8.30, Dédé—Opérette (Christiné), 10.30, News.

PARIS

RADIO PARIS, Call GFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture, 7.30, Weather and Physical Culture (contd.), 7.45, Gramophone Music, 8.0, Press Review and Weather, 12 NOON, Jewish Programme, 12.30 p.m., Gramophone Music, Norwegian Rhapsody (Lalo), Rondel (Hussongorel); Introduction to Fervaal (d'Indy); Song from Robert le Diable (Meyerbeer); Valse capricieuse (Rubinstein); Aria from Resurrec- tion (Alfano), 1.0, Exchange, News and Weather, 1.5, Chopin Pianoforte Recital by Niedzielski, Mazurka in B Minor, No. 25; Scherzo in B Minor; Nocturne in F Sharp; Prelude in A Flat; Valse brillante in A Flat, 1.30, Exchange, 1.35, Gramophone Concert, Iberia (Albeniz); Vergebliches Ständchen (Brahms); Scherzo (Borodin); Aria from Manon (Massenet); Escapes (Debty), 2.0, Exchange, 3.45, Exchange and Market Prices, 6.10, Agricultural Talk, 6.30, Gramophone Concert, Overture, Le Carnaval romain (Berlioz); Ballet Music from Sylvia (Delibes), 6.50, Talk: Insurance Societies' Reports, 7.0, Talk: Great Days of the French Revolution—The September Mas- sacres, 7.20, Gramophone Music, Cadet March (Souza); My Song of the Nile (Bryan); Gavotte (Hellmesberger); First Waltz (Durand); Christina (Gottler); Etude in G Flat (Zemlinsky); The Festival of the Gnomes (Smidt-Hager), 7.45, Commercial Prices and News, 8.0, Reading (Henri Duver- nois), 8.30, News and Weather, 8.40, Gas- tronomic Review, 8.45, Gramophone Records, Dance of the Hours and Aria from La Gioconda (Ponchielli); Hymn from Iris (Mascagni), 9.0, La Traviata—Opera (Verdi), relayed from the Théâtre de la Porte St. Martin.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Re- layed by W8XK on 48.86 metres and 25.27 metres.—4.0 to 5.0 p.m., United States Marine Band, from New York, 7.30, Utility Hall Programme, 7.45, KDKA Home Forum, 8.0, Betty and Bob, from New York, 8.15, International Sunday School Lesson by Rev. S. S. Lappin, 8.30, Tenor Solos by John Dunlap, 8.45, Happy Jack, from New York, 8.58, Baseball Scores, 9.0, Hotel Cosmo- politan Orchestra, from New York, 9.30, Business News and Market Reports, 9.45, Programme to be announced, 10.0, Baseball Scores, 10.5, Programme to be announced, 10.15, Programme to be announced, 10.30, The Singing Lady, from New York, 10.45, Little Orphan Annie, 11.0, Time Signal and Hotel Roosevelt Orchestra, from New York, 11.15, Weather Report, 11.16, Sport Review, 11.22, Press News-Reader, 11.29, Temperature Report, 11.30 to 3.15 a.m. (Saturday), New York Relay, 11.30, Major, Sharp and Minor, 11.45, To-day's News, by Lowell Thomas, 12 Midnight, Amos 'n' Andy, 12.15 a.m., Booth Tarkington's Maud and Cousin Bill, 12.30, Five Star Theatre—Charlie Chan, 11.0, Variety Programme, 1.30, Adventures in Health, 1.45, Howard Thurston, the Magician, 2.0, Echoes of the Palisades, 2.30, Variety Programme, 3.0, Time Signal and Music is my Hobby.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.55 p.m., Prochazka Concert by the Ondricek Quartet. Soloists: Prof. Prochazka (Pianoforte), B. Heran (Cello), and F. Hertl (Double Bass). Pianoforte Quintet, Op. 60; String Sextet, Op. 68. 5.55, Talk, 6.5, Market Prices, 6.15, Talk for Workers: Foreign Politics, 6.25, News, 6.30, German Transmission: Talk for Workers, 7.0, Chimes, 7.1, News, 7.10, Gramophone Music, 7.15, Talk on the following Transmission, 7.30, A Dream Betrothal—Opera in Two Acts (Krasa), re- layed from the German Theatre, 10.0, News, 10.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Lausanne), Talk on the Horse Racing at Morges, June 11th, 7.10 (from Lausanne), Tourist Talk, 7.25 (from Lausanne), An- nouncements and Weather, 7.30 (from Lau- sanne), Political Review, 8.0 (from Geneva), Violin and Pianoforte Sonata (Beethoven).

8.25 (from Geneva), The Peace Play (Aristo- phanes), by the Studio Players, 8.55 (from Geneva), Variety Programme by the Broad- casting Sereiners and Soloists, 9.50, News and Weather, 10.0 (from Geneva), Talk: The Work of the League of Nations, 10.30 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.30 p.m., Weather Report, 9.40, Musical Programme and Announcements, 10.0, Chimes and News Bulletin, 10.30, Reading, 11.0, Quartet in D Minor (Mozart) and Arias on Gramophone Records.

RJUKAN.—See Oslo.

ROME

Call 1R0, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Orchestral Concert. In the inter- val from 1.30 to 1.45, Giornale Radio and News, 4.45 Children's Radio Review, 5.10, Announcements, 5.15, Exchange and Giornale Radio, 5.30, Concert, Luigi Biondi (Violin), Angelo Parigi (Tenor) and Vera Nadia Poglioli (Soprano), Violin Solos: (a) Romance in F (Beethoven-Wilhelmi), (b) Allegretto (Beethoven), Tenor Solos: (a) Qual furfalletta amante (Scarlatti), (b) Star vicino (Salvatore), (c) Popular Tuscan Song (Sinigaglia), Soprano Solos: (a) Il grillo del natale (Zanella), (b) Le nubi folli (Zanella), (c) Caro, caro il mio bambin (de Guarnieri), Sonata No. 12 for Violin (Paganini-Alard); Spanish Songs for Tenor, 6.40 (Naples), Shipping and Sports Notes, 6.50, Agricultural and Dopolavoro Notes, 6.57, Report of the International Institute of Agriculture (in Spanish, German and French), 7.10, Tourist Report, 7.20, An- nouncements in Different Languages, 7.31, Sports Notes, 7.40, Giornale Radio, 8.0, Time, Announcements and Gramophone Music, 8.30, Talk on the occasion of the Arioso Centenary, 8.45, Concert in celebration of the Arioso Centenary, 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 790 kc/s, 379.5 metres; 50 kW. Re- layed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 p.m., Biblical Drama, 9.15, Popular Programme, from New York, 9.30, Echoes of Erin, from New York, 9.45, Stock Reports, 10.0 (ap- prox.), 10.45 a.m. (Saturday), New York Relay, 12.45 a.m. Stock Reports, 1.0, Con- cert, from New York, 1.30, Stuart Swart (Organist), 2.0, Musical Grocery Store, from New York, 2.30, Popular Programme, from New York, 3.0, Variety Programme, from New York.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW. Basle, 1,229 kc/s, 244.1 metres; and Bern, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory, 12 Noon (from Zürich), Concert of Light Music, 12.30 p.m., News, 12.40 (from Zürich), Concert (contd.), 1.25 (from Zürich), Exchange, Time, and Weather, 1.35 to 5.0, Interval, 5.0 (from Zürich), Programme for Children, 5.30 (from Zürich), Concert by the Small Radio Or- chestra, 6.30 (from Berne), Talk on the Use of Rockets, 7.0 (from Berne), Time and News, 7.20 (from Berne), Programme to be announced, 7.55 (from Berne), Talk: Contemporary Music II, 8.35 (from Berne), Pianoforte Recital, 9.0, News, 9.10 (from Berne), Schubert, Schumann, and Brahms Concert by the Berne Teachers' Choral Society, 10.20 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Songs to the Lute, by Erik Möllerstedt, 5.30, A Visit with the Microphone, 5.45, Reading, 6.15, Gramophone Concert, 7.15, Weather and News, 7.30, Talk, 8.0, Concert by the Station Orchestra, Soloist Astrid Berwald (Pianoforte), Suite for Chamber Orchestra (de Frumerie); Pianoforte Concerto in D Minor (Mozart); Selection from Rosamund (Schubert); Two Pieces for String Orchestra (Niemann); Allegretto scherzando from the Symphony, No. 8 (Beethoven); Divertimento, for Chamber Orchestra (Trapp), 9.25, Talk on Foreign Politics, 10.0, Concert of Light Music, relayed from Malmö, 1.301 kc/s, 231 metres, 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Classical Music, 12.45 p.m., News, 1.0, Time and Exchanges.

1.5, Light Music on Gramophone Records, 2.0 to 4.45, Interval, 4.45, Literary Talk: Alfred de Musset, 5.0, Orchestral Concert, conducted by Roskam: Prelude to Kunihild (Kistler); Waltz Potpourri No. 3 (Robrecht); Tes yeux (Boninontr); Selection from Frederica (Lehár); Intermezzo, Der Weg zuzur Herzen (Lübeck); Slav Rhapsody (Friede- mann); Selection from La dame en décolleté (Yvain); March, Sabre and Lance (Starke), 6.0, Trio Concert, relayed from Lille, 1.130 kc/s, 265.4 metres, 7.0, Topical Talk in Ger- man, 7.15, Gramophone Records, 7.30, Time and News, 7.45, Gramophone Concert: Grande valse brillante (Chopin); Waltz in A Minor (Chopin); Sonetto del Petrarca (Liszt); Liebestraum (Liszt); Berceuse in D Flat (Chopin); Etude in C Sharp Minor (Chopin); Consolation No. 3 (Liszt); Au soir (Paderevsky), 8.15, Press Re- view in German, Lottery Results and An- nouncements, 8.30, Concert by the Station Orchestra, conducted by Maurice de Villers. Soloist: Mine. Günth-Quenel (Soprano); L'apothéose de Lull, for Two Violins, Cello and Pianoforte (Coperin); Song (Lotti); Two Songs (Scarlatti); Arietta (Mazza- ferrata); Symphonic Poem in Two Parts for Cello and Orchestra, Masque de comédie (Pierné); Ballet, Pantomimo, L'ombre (Schirle); Images d'Epinal (Duprier); Chan- son d'amour et de souei (Lazzari); Chanson du menuier (Lazzari); Chanson de Blaisno (de Séverac); Ballet Music, Siang-Sin (Hüe). In an interval at 9.30 (approx.), Press Review, 10.30, Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12 Noon, Concert from Frankfurt, 1.15 p.m., Time and News, 1.30, Song Recital by Sigrid Ouegin on Gramophone Records, 2.0, Concert arranged by the Post Office, 2.30, Advanced English Lesson, 3.45, Talk: Suggestions for Sunday Excur- sions, 4.0, Opérette Songs by Elisabeth Jentsch (Soprano) and Karl Jantz (Tenor), Two Songs and Duet from The Czarevitch (Lehár); Songs from Schön ist die Welt (Lehár): (a) Liebste, glaub an mich, (b) Ich bin verliebt, (c) Duet, 4.30, See Munich, 5.45, Time and News, 6.0, Medical Talk: The Treatment of Chronic Neurast- henia, 6.25, Report on the German Army (on Gramophone Records), 6.50, Time and News, 7.0, Transmission for all German Stations: Lanner and Strauss Concert by the Württemberg Symphony Orchestra, conducted by Ferdinand Drost: Waltz, Hofballtänze (Lanner); Pizzicato Polka (Jos. Strauss); Waltz, Die Romantiker (Lanner); A Musical Joke, Perpetuum mobile (Joh. Strauss); Waltz, Spährenk- länge (Jos. Strauss); Overture, Die Fledermaus (Joh. Strauss); The Emperor Waltz (Joh. Strauss), 8.0, Talk by Kurt G. Sell: What People are talking about in America, relayed from America, 8.15, The Fate of Germany from 1914-1918, Part 1: July, 1914—Radio Sequence (Erich Lorenz), 9.0 (from Mannheim), Liebeslieder-Walzer, Op. 52 (Brahms), for Four Voices and Pianoforte, 9.30, June—a Radio Sequence with Songs and Recitations, 10.0, Time and News, 10.45, See Frankfurt, 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—5.30 p.m., Or- chestral Selections, Voilà la plus chouette (Hale); Je n'ai rien de tout ça (Carrara); Juhu Java (Costantelli); Amour java (Peyronnin), 5.45, Selections from Opérette: (a) Louis XIV (Parès-van Parys), (b) Kadu- heck (Yvain), 6.0, News Bulletin, 6.15, Accordion Selections, Souvenir de moisson (Vacher); Charlotte (Pégnur); Encore et toujours (Van Hère); Sereenade (Pierné), 6.30, Finghals Cave (Mendelssohn), 6.45, Chansonnettes, Le Conteau (Botiel); Madame, il ne tient qu'à vous (Balter); Pure comme les anges (Boyer); Les Guenues (Seotto), 7.0, Talk: The Causes and Treat- ment of Rheumatism, 7.15, News Bulletin, Racing Notes and Wheat Prices, 7.25, Local News, 7.30, Orchestral Selections, Melody in F (Rubinstein); Sereenade (Braga); I love you (Grieg), 7.45, Excerpts from Comic Opera, Jour de Juin, jour d'été, from Thérèse (Massenet); Si vous croyez avoir rêvé, from Si j'étais roi (Adam); Comme autrefois dans la nuit sombre, from Les Pêcheurs de Perles (Bizet), 8.0, Selections by a Viennese Orchestra, Vien- nese Waltz (Drda); Extase (Ganne); Opérette Potpourri (Fall); Tourbillon (Hall); Wiener Praterleben (Translatour), 8.30, Selections from Opera, Arias from: (a) Faust (Gounod), (b) Le Roi d'Ys (Lalo), (c) La Favorita (Donizetti), 8.45, Violin Solos, Spanish Sereenade (Chamin- ade); Les Cigognes (Saraste); Zephyr (Hubay), 9.0, News, 9.5, Music Hall Variety, 9.30, Orchestra Selections from Opera and Opérette: (a) March and Fan- tasia from Tannhäuser (Wagner), (b) Selec- tion from The Huguenots (Meyerbeer), (c) Entr'acte from Carmen (Bizet), (d) Prelude from Cavalleria rusticana (Mascagni), (e)

Excerpt from Lakmé (Delibes), 10.0, Chansonnettes, Toi, toi, toi (Marafioti); Étudiant pousse (Gontier); La fête à Bécessine (Leblond), 10.15, North African News, 10.30, Concert for Listeners in Morocco, 11.0, Songs from Films: (a) Del- phine (Moretti), (b) Coquecigrole (Pellet), (c) The Smiling Lieutenant (Strauss), (d) Jean de la lune (Angé), 11.15, Dance Music, Dream Lover (Scherzinger); Happy Days (Ager); Oh, Paris (Tay); Tesore mio (Yradier), 11.30 to 12 Midnight, Pro- gramme in English by the I.B.C., W. Brown- Constable announcing, 11.30, Dance Music, Always in my Heart; Just an echo in the valley; Here's hoping; Just a little Street where Old Friends meet; Wheezy Anna; Mimi; Night after Night; Isn't it romantic? 11.57, I.B.C. Goodnight Melody, 12 Mid- night, News, 12.5 a.m. (Saturday), Argen- tine Music, Cuentita aparto (Bachica); Brunas (Malerba); Zara (Lara), 12.15, Solos, Gros Son (Malach); Capota de oro (Babil); The Hunt (Liszt); Canzonetta (Pierné), 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 to 6.0 p.m., See Turin, 6.0 to 6.35, Interval, 6.35 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.0 to 6.0 p.m., Chamber Music, 6.35, Giornale Radio, 7.0, Time and Announcements, 7.5, Songs and Dance Music on Gramophone Records, 7.20, News in Foreign Languages, 7.40, Gramophone Music, 8.0, News Bulletin, 8.5, Gramophone Music, 8.30, Talk: The Centenary of Ariosto, 8.45, See Rome. In the interval, Talk, 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in German, 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—1.0 p.m., Time and News, 1.10 to 2.0, Gramophone Concert of Popular Music, 3.0, Time, Exchange, and Market Prices, 3.20, Talk: Present Day and Future Problems of the Research on Light Rays, 3.30, Sonata for Cello and Pianoforte in A Minor, Op 36 (Grieg), 4.0, Famous Singers on Gramophone Records, 4.35, Talk for Women: Frau Haydn and Frau Mozart, 5.0, Talk: What the Layman should know about House Building—What does a House cost? 5.20, Song and Pianoforte Recital by Dora Erwald (Soprano) and Margit Stumm (Pianoforte), Two Songs (R. Strauss): (a) Ach, Lieb ich muss nun scheiden, (b) Heimkehr: Two Songs (Joseph Rinaldini): (a) Wonderful Night, (b) Nocturne; Song: Geh nicht, Geliebter (Egon Pamer); Song, Ich atme einen linden Duft (Gustav Mahler); Pianoforte Solos: (a) Suite, Sevilla (Turina), (b) Toceata (Debussy), 5.55, Tourist and Traffic Report, 6.10, Talk on Sport, 6.25, Weekly Report on Physical Culture, 6.35, Talk: Bear Hunting in the Himalayas, 7.0, Time and News, 7.10, Spring—Concert by the Vienna Sym- phony Orchestra, conducted by Dr. Bern- hard Paumgartner, with Introductory Talk, Im Frühling, Op. 36 (Goldmark); Impres- sionen dal vero Part One (Malipiero); Frühlingsbilder, Op. 35 (Ewald Strässer), 8.20, Jeder ist seines Glückes Schmied—a Play for the Radio (Otto Zell), 10.0, News, 10.15, Dance Music Relay.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.40 p.m., Press Review, 11.50, Aviation Weather Re- port, 11.57, Time Signal and Fanfare from St. Mary's Church, Cracow, 12.5 p.m., Pro- gramme Announcements, 12.10, Gramophone Music, 1.20, Weather Forecast, 1.25 to 3.10, Interval, 3.10, Announcements, 3.15, Econo- mic Notes, 3.25, Aviation Report and Anti- Gas Drill, 3.30, Talk on Maritime and Colonial Affairs, 3.35, Gramophone Music, 4.25, Review of Periodicals, 4.40, Talk, 5.0, Wind Instrument Concert, conducted by A. Bromke: Overture, The Magic Flute (Mozart); Ballet Music (Bandonek); Waltz (Waldfenfel); Selection from Russian and Ludmila (Glinka); Le Ronet de la Grand- mère (Gillet); Popular Medley (Janiszew- sky); March from Aida (Verdi), 5.55, Pro- gramme Announcements, 6.0, Light Music and Dance Music on Gramophone Records, followed by Songs and Gramophone Music, In the interval, News, 7.0, Miscellaneous Items, 7.20, Talk: Linens and Woolen Fabrics, 7.30, Feuilleton, 7.45, Radio Journal, 8.0, Symphony Concert by the Station Orchestra, conducted by Grégoire Fitelberg, 10.0, Talk: Travelling Abroad, 10.15, Dance Music, 10.55, Aviation Weather Report and Police Notes, 11.0, Dance Music.

ZÜRICH.—See Schweizerischer Landessender.

SATURDAY

JUNE THE TENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Excerpts from the Aldershot Tattoo. The Ceremony of the Keys from the Tower of London.
- LONDON REGIONAL** Viennese instrumental programme.
- MIDLAND REGIONAL** The Society Six Concert Party, from the Pavilion, Leamington Spa.
- WEST REGIONAL** Orchestral Concert from the National Museum of Wales.
- BELFAST** Light Choral and Orchestral Concert.

ABROAD

- BERO-MUNSTER** 8.0 p.m. Opéra Comique: "Les Noces di Jeannette" (Massé), from Berne.
- EIFFEL TOWER** 8.30 p.m. Variety Concert from the Conservatoire.
- HAMBURG** 8.0 p.m. Brahms Pianoforte Recital from Kiel.
- HUIZEN** 8.15 p.m. Gala Concert in connection with the Festival of the International Society for Contemporary Music.
- ROME** 8.30 p.m. Opera: "Othello," by Verdi.
- TOULOUSE** 11.0 p.m. Request Concert.
- VIENNA** 7.25 p.m. Opera: "The Rhinegold" (Wagner), from the State Opera House.
- WARSAW** 10.5 p.m. Chopin Pianoforte Recital, by Mme. Rabczewicz.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—5.55 p.m., A Marionette Play. 6.55, Talk for Housewives. 7.0, See Prague. 9.0, See Moravská-Ostrava. 10.0, See Prague. 10.15, See Brno. 11.30 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.15 p.m., Gramophone Concert. 2.15, Programme arranged by the Post Office, with Gramophone Records. 3.10, Agricultural Prices. 3.35, Talk: The Reaction in German Culture. 4.0, Concert by the Fred Kuhnert Orchestra, relayed from the Hans Oberschlesien, Gleiwitz. In an interval at 4.45, Film Review. 5.30, Book Review. 5.50, Topical Talk. 6.10, Jubilee Concert by the Friedrichiana Choral Society, relayed from the University; Soloists; Dr. Mohr (Organ), Dr. Höhne (Violin), and Friedemann Schwaegler (Baritone); Address of Welome; Passacaglia for Three-Part Choir, with Pianoforte Accompaniment (Mullat); Songs (Mittmann): (a) Wach auf, deutsches Land, (b) Reiterlied, (c) Ostmarkenlied; Andante cantabile from the Violin Concerto in D (Mozart); Baritone Solos: (a) Den Gefallenen (Forek), (b) Bruder auf die Welt zu bereiten! (Knab). 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations; The Mercenary Soldier; Programme of Old Songs, Verse, and Farces by the Station Choir and Orchestra, conducted by Ernst Prade; Soloists: Hermann Gaupp (Recitations), Jerda Specht (Contralto), Gerlad Bertermann (Baritone), and Herbert Heidrich (Tenor). 8.0, See Berlin (Deutschlandsender). 9.0, See Munich. 10.20, Time and News. 10.45, Concert, relayed from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—2.50 p.m., Concert of Popular Music by the Station Orchestra, conducted by Jindrich Polasek. 5.0, Reading. 5.10, Gramophone Music. 5.35, Tourist Talk. 5.45, Gramophone Music. 6.0, Theatre and Film Review. 6.15, See Prague. 6.25, German Transmission; News and Song Recital by Gisa Kulke (Soprano) and G. Bystricky (Tenor). 7.0, See Prague. 7.10, Talk. 7.25, See Prague. 9.0, See Moravská-Ostrava. 10.0, See Prague. 10.15, Concert of Light Music by the Station Orchestra, conducted by J. Gottward, Soloist: F. Pospisil (Songs). 11.30 (approx.), Close Down.

BRUSSELS (No. 1)

590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by Mickey's Club Jazz Attraction. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P.

Leemans; Overture, The Barber of Seville (Rossini); Liebestraum (Liszt); Selection from La Traviata (Verdi); Humoresque (Dvorak); Kiss Waltz (Burke); Foxtrot (Genser); Selection from La-haut (Yvain). 4.45, Talk on the Belgian Touring Club. 5.0, Concert by the Station Orchestra, conducted by Charles Walpot; March (Lauweryns); Spring's Awakening (Scassola); Overture, William Tell (Rossini); Violin Solo, Meditation (Gounod); Selection from The Pearl Fishers (Bizet); Oboe Solo, Village Czardas (Danhier); Slav Rhapsody No. 2 (Friedemann). 6.0, A Travologue; Budapest. 6.15, Gramophone Concert: Air from La Bohème (Puccini); Basque Serenade (Dunhill); Melody (Buffin); Rhapsody No. 11 (Liszt). 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans; Melody (Letorey); Variations on a Hebrew Theme (Fanchney); Medley of English Melodies (Humphries); Cello Solo, Berceuse (Leemans); Habanera (Turina); Albanian Suite (Kostal). 7.15, Talk. 7.30, Le Journal Parlé. 8.0, Gramophone Concert: Overture, Ruy Blas (Mendelssohn); Selection from The Master-Singers (Wagner); Scheherazade (Rimsky-Korsakov). In the interval at 8.15, L'Écran brisé—Play in One Act (Bordeaux). 9.15, Reading of Poems about Water. 9.30, Gramophone Concert. 10.0, Le Journal Parlé. 10.10, Jazz Music, relayed from the Century Hotel, Antwerp.

BRUSSELS (No. 2)

N.I.R., 888.7 kc/s, 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans; Overture, Light Cavalry (Suppe); Waltz, Snow-balls (Ziehrer); Musical Box (Antiga); Selection from Rigoletto (Verdi); Violin Solo, Andalous (Sarasate); Egyptian Ballet (Luigini); Melody (Heymann). 1.0 p.m., Le Journal Parlé. 1.10, Concert by Mickey's Club Jazz Attraction. 4.45, Reading from a book on Wireless in Great Britain by Lord Allen of Hurtwood, translated by Gust de Mynck. 5.0, Violin and Pianoforte Sonata Recital: Sonata No. 4 (Bach), Sonata (Marsick). 5.45, Gramophone Concert: Overture, Zampa (Herold); Waltzes (Brahms); Ballet Music from Rosamund (Schubert-Kreiser); Spanish Rhapsody (Liszt); Symphony in D (Mozart); Der Erlkönig (Schubert); Les Préludes (Liszt). In the intervals at 6.15, Talk on Leo Simons, and at 7.15, Talk on the Crisis in Belgium. 7.30, Film Review. 8.0, Concert by the Station Orchestra, conducted by Charles Walpot; Soloist, M. van Roy (Songs), and M. Rosasco (Entertainer); March, Stars and Stripes (Songs); Overture, Light Cavalry (Suppe); Waltz, Wienerblut (Joh. Strauss); Songs; Polka for Two Cornets and Piccolo (Maquet); Items by M. Rosasco. 8.45, Recitation. 9.0, Concert (cont'd.): Medley of Flemish Songs (Walpot); Bells across the

ATHLONE
725 kc/s, 413 metres; 60 kW. Relayed by Jork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0, Time, Gramophone Music, Stock Exchange, and Weather. 6.0, Gramophone Music. 6.45, News. 7.0, Talk. 7.15, Reading. 7.30, Time Signal. 7.32, The Station Orchestra. 8.0, Baritone Solos by F. Gallaguer. 8.20, The Station Orchestra. 8.35, Mike Nono. 8.45, Programme by Some Fois Ceoil Prize Winners—Maire McCarthy, Sheila Brough, Mae Johnson, C. Bradshaw, Maire Mulcahy and Dorothy Griffith. 9.45, Sponsored Programme. 10.45, Time, News, and Close Down.

BARCELONA

860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Programme for Children. 8.0, Request Gramophone Music. 8.30, Catalan Grammar Lesson. 9.0, Gramophone Music and News. 10.0, Chimes, Weather, and Exchange. 10.5, Concert by the Station Orchestra: Overture, Light Cavalry (Suppe); Mimi en Marquis (de Sévère); Danse macabre (Saint-Saëns). 10.30, Dance Music. 11.15, An Opera on Gramophone Records. 1.0 a.m. (Sunday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Report, Tourist Talk, and Dopolavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35, Concert of Operetta Music and Songs. Soloists: Clara Demitri (Soprano), Michele Montanari (Tenor), and Zerboni (Tenor). Melody from Wonder Bar (Katscher); Soprano Solo (Schwarz); Tenor Solo, Mimosa (Abel); Are you? (Mollo); Soprano Solo, Lucilla (Rusconi); Tenor Solo, Tamero sempre (Carabella); Il re di chez Maxim (Costa); Soprano Solo, Ledy (Santos); Tenor Solo, Tabù (Kollo); Tenor Solo, Mascheronide (Mascheroni); Selection from The Flower of Hawaii (Abraham); Soprano Solos: (a) Piccola Edelweiss (Sassoli), (b) Le dome son così (Rusconi); Tenor Solos: (a) Song (Stransky), (b) Per me, per te (Rizza); Prelude to Act III of St. Mascagni; Soprano Solo (Jurmahn); Tenor Solo, Ugo (Mariotti); Torero (Translatour). 10.30, Gramophone Music. 10.55, News.

BASLE.—See Schweizerische Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.55 p.m., Time and Programme Announcements. 7.0, Tosca—Opera (Puccini), on Gramophone Records. 9.0, Talk. 9.30, Time and News, followed by Relay of Foreign Stations.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW. 1.45 p.m., News Bulletin. 2.0, Gramophone Concert: Three German Dances (Haydn); Serenade (Haydn); German Dance No. 12 (Beethoven); Adagio from the Violin Concerto in E (Bach); Eine kleine Nachtmusik (Mozart); Overture, Iphigenia in Aulis (Glück). 3.0, Handwork for Children. 3.30, Weather and Exchange. 3.45, Reading. 4.0, Concert from Hamburg. 5.0, Talk: The Maiden Flight of the First Glider built by Unemployed Nazis in Gadow. 5.30, Pianoforte Recital by Theresa Diehn-Slotkoo: Romance in F Sharp, Op. 28, No. 1 (Schumann); Papillons, Op. 2 (Schumann); Three Dream Pictures, Op. 8 (Ansorge); German Dances (Schubert). 6.0, A Poem. 6.5, Song Recital by Hans Leyendecker: Arias (Lortzing) from (a) Undine, (b) Czar and Carpenter; Aria from Hans Heiling (Marschner); Two Songs from Tannhäuser (Wagner). 6.30, Talk: Political Storm and Stress. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, An Epigram. 8.5 (approx.), A Political Cabaret. 8.45, Dance Music. 10.0, News Bulletin. 10.45, Weather Report for Shipping. 11.0, Serenade from Munich. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.0 p.m., Orchestral Concert from the Zoo. In the interval at 4.30, Radio Report of the Match for the Davis Cup, Germany v. Holland, from the Rot-Weiss Tennis Club Grounds. 5.0, Sports Report. 5.10, Concert from the Zoo (cont'd.). 6.0, Topical Talk. 6.20, A Report of Experiences in the German-American Himalaya Expedition. 1932. 6.40, The Witzleben Station informs its Listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Breslau. 8.10, Tales. 8.20, The Spree—A Variety Programme. 10.0, News. 10.30, Concert by the United Police Bands, relayed from the Zoo. After the Concert, Dance Music. 1.0 a.m. (Sunday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.30 p.m., Radio Journal. 7.40, Sports Notes. 7.45, Gramophone Records. 8.5, English Lesson. 8.20, News. 8.30, Ma cousine—Comedy in Three Acts (Meilhac).

Meadow (Ketelbey); Popular Songs; Violin Solo, The Canary (Poliak); Items by M. Rosasco; Waltz from Faust (Gounod). 10.0, Le Journal Parlé. 10.10, Dance Music, relayed from the St. Sauveur Palais de Danse. 11.30, Gramophone Concert.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Sibiccano Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Programme. In the interval at 7.20, Gramophone Records. 8.0, Concert by the Station Orchestra. Potpourri of Romanian Airs, Flowers (Paschill); Potpourri, Rendez-vous bei Behar (Hrubý); Scottish Suite for Oboe and Orchestra (Godard); Marche militaire (Saint-Saëns). 9.0, Variety Items. 9.15, Light Music and Romanian Music, relayed from a Restaurant. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—Programme also relayed on 840 metres from 6.0 p.m. till Close Down.—1.30 p.m., Concert by the Radio Quintet. 4.0, Fairy Tales. 4.45, News. 5.0, Talk: Napoleon's Son and Hungary. 5.30, Instrumental Music. 6.0, The Letter Box. 6.30, Talk, with Gramophone Illustrations. 7.30, Relay of an Examination at the Academy of Dramatic Art. 9.45, News. 10.0 (approx.), Concert by the Eugen Farkas (Gigány) Band, relayed from the Café Spolarich. 11.0, Dance Music from the Rajnapark.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time Signal and Chimes from the Town Hall. 12.1 p.m., Concert by the Harald Andersen String Ensemble. 2. to 2.30, Interval. 2.30, Gramophone Music. 3.0, Programme for Children. 3.30, Concert by the Radio Orchestra, conducted by Lanny Gröndahl. Reading by Alfred Wiken. Overture in B Flat (Schubert); Mazurka, Parfumiert (Suppe); Suite from Budskæbet, der bragtes Maria (Gröndahl); Village Dance (Burleigh); Waltz, Intermezzo, Flirtation (Steck); Spanish March, Juarez (Schettlör); Reading: Overture, William Shakespeare (Kullau); Herzvunden (Grieg); An den Frühling (Grieg); Selection from The Barber of Seville (Rossini); Andante from the Clock Symphony (Haydn); Suite, Bodegildet (Glass). 5.35, Exchange and Fish Market Prices. 5.50, Talk: Some Examples of Danish Military Terms. 6.20, French Lesson. 6.50, Weather Report. 7.10, News Bulletin. 7.15, Time Signal. 7.30, Talk. 8.0, Time Signal from the Town Hall. 8.1, Concert of Old Danish Dances by the Radio Orchestra, conducted by Emil Reesen. Torch Dance (Lumbye); Waltz, Cavellie (Lumbye); Mazurka, Susanne (Möller); Polka, Ball (Möller); Waltz, (Möller); Aarhus Tattoo (Möller); Quadrille, Round the World in Eighty Days (Lumbye); Polka, Amalie (Jensen); Waltz, Queen Louise (Lumbye); King Frederik the Eighth March (Dahl). 8.45, Literary and Musical Programme. A. C. Meyer reads from his own Works, with Songs by Lisa Rantzaau Meyer. 9.25, Trio in B Flat for Pianoforte, Violin and Cello (Mozart), by Folmer Jensen, Otto Fessel and Rudolf Dietzmann. 9.50, The Spring Revue (Damm, Locher and Sabroe). 10.35, News Bulletin. 10.50, Dance Music from the Wivex Restaurant. In the interval at 12 Midnight, Time Signal and Chimes from the Town Hall. 12.15 a.m. (Sunday), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.15 p.m., See Warsaw. 7.30, Programme from Vienna. 10.5, See Warsaw. 11.0, Light Music and Dance Music, relayed from the Pavilion Restaurant. In an interval at 11.30, News for Members of the Polish Polar Expedition. 12 Midnight, Fanfare from the Tower of St. Mary's Church.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 5.0 p.m., Programme in English by the I.B.C., T. St. A. Ronald and B. McNabb announcing. 4.30, Concert of Light Music for Tambourine Wells and Isle of Thunet Listeners; Loin du Bal (Gillet); Washboard Blues (Chalaban); Xylophone Solo, Snappy Sticks (arr. Robbins); Kitty, my Love, will you marry me; Comme un fait son lit, on se couche (Well); I wish I knew a bigger word than love (Pola); My Baby just cares for me (Donaldson); Alabama Song (Well); Have you ever been Lonely (Brown); Keeping out of mischief; La Czarine (Ganne). 5.15, Concert of Russian Music for Dover and Folkestone Listeners; Lonely Night (arr. Lecat); Troika and a Lady (Traditional); Shining Moon (Traditional); Waltz, Fata (Address); Chorus: (a) The Twelve Robbers, (b) The Cossacks' Prisoners; Mazurka (Wieniawsky); Song of the Volga Boatmen (Traditional); The Red Saraphan; In a Pine Forest (Traditional); Air de Ballet (Andraeff); Russian Potpourri, Moonlight. 6.0 to 11.0, Programme in French. 11.0, Rhythm Band Concert: Harlem Holiday (Loehler); Haun-

JUNE 10th

SATURDAY

continued

ing Blues (Hirsch); Swanee Rhapsody (Ellington); Hot Toddy (Carter); Blue Tune (Ellington); Hot and Anxious (Redman); The Knave of Diamonds; Jungle Nights in Harlem. 11.30, **Celebrity Concert on Gramophone Records**; Selection from The Desert Song (Rombert); Jim at the Bank, by the Late Will Evans; Play Fiddle—Play by Gracie Fields; The Sport of Kings, by Flanagan and Allen; Vale, by Essie Ackland; A Fine Old English Gentleman, by Harry Dearth; Levin's Jubilee, by Julian Rose; Song Medley, by Charlie Mayne. 12 **Midnight**, Club Concert for Bedford Listeners; Selection from The Merry Widow (Lehár); I love the Moon; Questa O Quella, from Rigoletto (Verdi); Sir Roger de Coverley (Traditional); I think of you, my sweet (Haydn Wood); Air on the G String (Bach); Down in the Forest (Landon Ronald); Fill every Glass, from The Beggar's Opera (Gay); Birthday Serenade; It's Winter again (Hogman); I'll stay with you (Woods); Violin Solo, Indian Love Call (Friml); Dark Red Roses; Selection from Iolanthe (Sullivan). 1.0 a.m. (Sunday), Variety Music; The Whistling Coster; It was bound to happen in the end; Waltz, My Beauty; Sketch, Boon the Clyde; Old King Cole; Down Stream; Carnalava Mazurka. 1.30, The Studio Chorus; Orchestra; Dance; Swing along; Who is Sylvia?; Long ago in Alaska; The Beggar's Song; Orchestra, Künstlerleben (Strauss); Believe me, if all those endearing Young Charms; Bendemeers Stream; The Dear Little Shamrock. 2.0, Dance Music by the Trochians; Oh, you sweet thing; What have I got to lose?; Sleep Forest; Hyde Park Corner; Moon Song; What did I get in return? Twenty Million People; Hold up your Hands; Sweetheart; Mad Moments; Can't we meet again? Hot and anxious; Rose Mia; It's no use. I'm in love; Let me explain; The Village Band. 2.57, I.B.C. Good-night Melody. 3.0 (approx.). Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1.157 kc/s, 259.3 metres; 17 kW.; Cassel, 1.220 kc/s, 245.9 metres; and Trier, 1.157 kc/s, 259.3 metres.—4.30 p.m., See Munich. 5.45 p.m., Economic Notes. 6.0, See Stuttgart. 6.25, Time, Programme Announcements, and Weather. 6.30, Weekly Review. 6.55, Report. 7.0, Transmission for all German Stations, relayed from Breslau. 8.5, Concert by a Nazi Orchestra. 9.15, Styrian Programme, relayed from an Inn at Graz; Zither Music, Songs, Radio Play, and Recitations. 10.15, Time and News. 10.45, Serenade from Munich. 12 **Midnight** (approx.). Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayd by Bremen, 1.112 kc/s, 269.8 metres; Flensburg, 1.319 kc/s, 227.4 metres; Hanover, 530 kc/s, 565 metres; and Kiel, 1.292 kc/s, 232.2 metres.—4.0 p.m., Concert by the Hamburg Philharmonic Orchestra, conducted by Adolf Secker; Overture, Am Rhein (Kamm); Symphonic Poem, Frühling (Reifner); Two Movements from the Serenade for Strings (Suk); Symphonic Poem, Night on the Bare Mountain (Musorgsky); Polonaise in E (Liszt). 5.0, Talk with Illustrations, by Karl Peter; My Animals. 5.20, Variety Programme. 6.0, Sacred Music, relayed from the Cathedral, Bremen; The Cathedral Choir and Richard Liesche (Organ); Te Deum in D Minor, Op. 59 (Bach); O Ewigkeit (Glad); Hymn for Choir, Three Trumpets, Kettledrum, and Organ (Hiller); Motet, Media vita in morte sumus (Hiller). 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0 (from Kiel), Brahms-Pianoforte Recital by Gertrud Trenkroz; Ballade, Op. 118, No. 3; Romance, No. 5; Capriccio, Op. 76, No. 2; Intermezzo, Op. 116, No. 4. 8.20, See Berlin (Witzleben). 10.0, Time and News. 10.20, Topical Talk. 10.30, Dance Music from Berlin (Witzleben).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayd by Danzig, 662 kc/s, 453.2 metres.—11.30 a.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Overture, Prince Methusalem (Joh. Strauss); O Wunder der Liebe from Cagliostro (Strauss); Herz, mach die Tür auf from Der lustige Krieg (Strauss); Kálmán Potpourri (Feigl); Dream Waltz from Der Feldprediger (Müllbeck); Overture, Lysistrata (Lincke); Komm mit nach Venedig from Countess Maritza (Kálmán); Viennese Music from The Duchess of Chicago (Kálmán); Lehár Potpourri (Hrubý); Waltz from Polenbut (Nedbal); Overture, Poet and Peasant (Suppé). 1.0 p.m., Time and Weather. 1.15, Music of the Rhine—on Gramophone Records. In the interval at 1.20, News. 2.30, Programme arranged by

the Post-Office, with Gramophone Records. 3.0, Agricultural Prices and Exchange. 3.30 (from Danzig), Handwork for Children. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Overture, King Stephen (Beethoven); Divertissement à la Hongroise (Schubert); Selection from Preciosa (Weber); Prelude and Siciliana from Cavalleria rusticana (Mascagni); Waltz (Granados); Selection from The Dubarry (Müllbeck-Mackeben); Two Pieces (Leoncavallo); (a) Mattinata, (b) Brise de mer; Overture, Figaro (Mozart). In an interval, Road Report. 5.45, Recitations from the Works of Gustav Pitow, an East Prussian Poet, with Introductory Talk. 6.5, Programme Announcements. 6.15, Agricultural Prices. 6.25, Talk: Women in the Voluntary Labour Service Scheme. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Humorous Programme in Dialect. 8.20, See Berlin (Witzleben). 10.0, Weather and News. 10.15, Dance Music from Berlin (Witzleben). 12.30 a.m. (Sunday), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). 11.40 a.m., Concert by the Little V.A.R.A. Orchestra, conducted by Hugo de Groot. Socialist March (Gramm); Overture, The Secret Marriage (Cimarosa); Extracts from the Fifth Symphony (Schubert); Woodland Sketches (MacDowell) Musique de matin (Luigini); Pan (Mascagni); Ländler (Pacherwegg). 12.25, Organ Recital by C. Steyn. 12.55, Orchestral Concert (contd.). 1.55, Gramophone Music. 2.40, Talk on Music, with Gramophone Illustrations. 3.25, Concert by De Fliefflueters, conducted by J. v. d. Horst. 4.20, Literary Talk by A. M. de Jong. 4.40, Orchestral Concert (contd.). 6.10, Concert by De Wielewaal Choir, conducted by P. Tiggers. 6.40, Violin Duets, by S. Frenkl and H. Wiggelaar. Duet, Op. 39, No. 1 (Spohr); Suite, Op. 3 (Frenkel). 7.10, Talk. 7.40, Matteotti Commemoration Programme; Funeral March from the Third Symphony (Beethoven); Address; Elegy for Strings (Busch); Two Minutes Silence. 8.10, Concert by the V.A.R.A. Orchestra, conducted by Hugo de Groot. Overture, Nachklänge aus Ossian (Gade); Slav Dances (Dvorák). 8.40, Gramophone Music. 9.5, Concert (contd.); March from The Prophet (Meyerbeer); Dutch Peasant Dances (Slep); Potpourri (Morena). 9.30, Gramophone Music. 9.55, Concert (contd.); Selection from Le Cheval de bronze (Auber); Ballet Music from Le Giocanda (Ponchielli); Tänzender Schmetterling (Golden); Piece (Brooke); Waltz Favourites (Cire); Ein Souper bei Suppé (Morena). 10.40, Gramophone Music. 11.40 (approx.). Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.55 a.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Orchestra, conducted by J. Gerritsen. 1.25 to 1.40, Interval. 1.40, Programme for Young People. 2.10, Programme for Children. 3.40, Concert by the K.R.O. Boys, conducted by P. Lustenhouwer. Soloist: J. Mossel (Songs). 4.10, Sports Talk. 4.40, Concert (contd.). 4.55, Sports Talk. 5.10, Concert (contd.). 6.0, Press Review. 6.20, Concert (contd.). 6.40, Police Notes. 6.55, Gardening Talk. 7.10, Concert in connection with the Festival of the International Society for Contemporary Music, relayed from a Square in Amsterdam. 7.55, Recitations. 8.10, News Bulletin. 8.15, Gala Concert in connection with the Festival of the International Society for Contemporary Music. Two Choirs and the Concertgebouw Orchestra, conducted by Constant Lambert, Robert Gerhard, and Theo van der Bijl. Soloists: Alice Raveau (Soprano), M. Marseillac (Contralto), F. Anspach (Tenor), and Roy Henderson (Baritone). Pater Noster (Caran); Passacaglia and Choral from a Cantata (Gerhard); Belshazzar's Feast (Waltton). In the interval, Talk and Gramophone Music. 10.10, News. 10.15, Gramophone Music. 11.40 (approx.). Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,295 kc/s, 249 metres; 0.8 kW.—8.0 p.m., News Bulletin. 8.10, North African Review. 8.20, Film Review. 9.0, News. 9.15, Radio Concert. 12 **Midnight to 1.0 a.m. (Sunday)**, Programme in English by the I.B.C. H. K. Hitchcock announcing. 12 **Midnight**, Variety Concert; Jerome Kern Medley (arr. Gibbons); Songs: (a) Bunkey-doodle-1-do (Sarony), (b) Riding on a Camel (Wright); Accordion Band: (a) Mona Lisa (Sullivan), (b) Whistling Waltz (Evans); Trios: (a) When the Bloom is on the Sage (Vincent), (b) Sleepy Rio Grande (Robison); Music Hall Favourites; Songs: (a) Smuggled on your Shoulder (Lombardo), (b) When we're alone (Ja-son); Xylophone Solo, The Skaters' Waltz (Waldteufel); Quartet, Way down yonder in the Cornfield (Traditional); Songs: Caller

Herrin' (Traditional); Spanish March (Franco). 12.57 a.m., I.B.C. Good-night Melody. 1.0 (approx.). Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.30 p.m., See Vienna. 10.5, See Warsaw. 11.35, Dance Music.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—8.40 p.m., Evening Concert. 9.10, Talk. 9.30, Variety Programme. 9.50, Sports Notes. 10.0, Concert. 11.0, (approx.). Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Sports Talk. 6.40, Duets. 7.0, Talk. 7.25, Popular Songs. 7.45, Music by the Hawaiian Quartet. 8.0, Dance Music by the Station Orchestra. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Military Music, relayed from the Kappeli Restaurant. 10.0 (approx.). Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Orchestral Concert, conducted by Werner Gösslin; Military March (Schubert); Extract Music from Rosamund (Schubert); Overture, Euryanthe (Weber); Ballet Music from Czar and Carpenter (Lortzing); Selection from Die Fledermaus (Joh. Strauss); Overture, The Merry Wives of Windsor (Nicolaï); Polka, Tritsch-Tratsch (Strauss); Waltz, Künstlerleben (Strauss); March, Heil Hitler (Angelskirchen). 12.50 p.m., Weather, Time, and News. 1.0, Baritone Song Recital by Heinrich Schlusnus, on Gramophone Records: Frühlingfahrt (Schumann); Am Rhein (Humperdinck); Ich hatte einst ein schönes Vaterland (Lassen). 1.15, Concert from Stuttgart. 2.30 to 3.0, Interval. 3.0, Programme for Children. 3.30, Economic Notes and Time. 3.50, Reading. 4.10, Talk: The Wittgenstein District. 4.30, Concert by a Mandoline Quartet, the Station Children's Choir, and Soloists: Strienz (Bass), Alfred Møgel (Clarinet), and Marga Baum (Guitar). Choir: Ich ging durch einen grasünen Wald; Military Scherzo for Mandoline Quartet (Marozelli); Bass Solo: Heinrich der Vogler (Loewe); Song: Wohlan die Zeit ist kommen; Clarinet and Guitar: Ländler; Bass Solo: Niemand hat's gesehen (Loewe); Reading of a Short Story; Song: Der Kuckuck auf dem Baume sass; Bass Solo: Prinz Eugen, der edle Ritter (Loewe); Serenade for Clarinet and Guitar (Küfner); Choir: Es reiten izt die ungarischen Husaren; Short Poems; Song: Steh auf hohem Berge; Mandoline Quartet: Andante cantabile (Munie); Bass Solo: Die Chr (Loewe); Tanzledchen for Choir, Clarinet, and Guitar; Polonaise for Clarinet and Guitar (Küfner); Song: Die Vögelin in dem Wald; Bass Solo: Fridericus Rex (Loewe); Mandoline Quartet: Concert Caprice (Arienzo); Short Poems; Melody for Choir, Bass, Mandoline Quartet, and Clarinet; Wohlaut in Gottes schöne Welt. 5.50, Talk: At the Court of a Rhenish Prince in the Eighteenth Century. 6.20, English Reading. 6.45, Weather, Time, Economic Notes, and Sports Report. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, News. 8.5, See Frankfurt. 10.15, News and Sports Notes. 10.30, Serenade and Dance Music, conducted by Eysoldt. 12 **Midnight**, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Military Band Concert, on Gramophone Records. 1.0 p.m., News. 1.15, German Folk Songs and Ramblers' Songs, on Gramophone Records. 2.0, News. 2.15, Variety Music, on Gramophone Records. 2.45, Programme for Children. 3.45, Economic Notes. 4.0, Talk: A Sponge Diver comes to Land (Armin Schönberg). 4.20, Concert from Berlin (Witzleben). 6.0, Talk on Correct German Speech. 6.20, Talk: The Development of the Industrial Town of Limbach. 6.45, A Modern Dictionary. 7.0, Transmission for all German Stations, relayed from Breslau. 8.5, See Berlin (Deutschlandsender). 9.0, Topical Talk. 9.15, Concert by the Jena Male Voice Choir. 10.5, News. 10.30, A Grand Tattoo in Honour of the Millenary of the Town of Bautzen. Conductor: Thiele. After the Concert, Dance Music, relayed from Berlin (Witzleben). 12 **Midnight** (approx.). Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.0 p.m., Concert by the Station Orchestra. 7.0, Political Review. 7.30, Educational Talk. 8.0, Concert by the Zaria Orchestra. 9.0, Weather and News. 9.15, Relay from a Fair. 10.15, Gramophone Music. 11.0 (approx.). Close Down.

LWOW

788 kc/s, 381 metres; 16 kW.—6.55 p.m., Talk. 7.15, See Warsaw. 7.25, See Vienna. 10.5, See Warsaw. 12 **Midnight** (approx.). Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW. 7.30 p.m., Radio Gazette. 8.30, Variety Concert, relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres, followed by News.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—7.0 to 9.0 p.m., Programme for Listeners in the Canary Islands, Guinea and America. 7.0, Concert of Popular Music. 8.15, Talk. 8.30, Light Music. 9.0 to 11.30, Interval. 11.30, Programme from Madrid (EAJ7). After the Programme, Radio Chronicle. 1.0 a.m. (Sunday), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Announcements, Radio Journal, Medical Talk and Request, Gramophone Records. 9.15, News. 9.30 to 10.30, Interval. 10.30, Linguaphone English Lesson. 11.0, Chimes and Time Signal. 11.5 (approx.). Aida—Opera (Verdi) on Gramophone Records. In the interval at 12.45 a.m. (Sunday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—5.55 p.m., Concert by a Zither Sextet. 6.15, See Prague. 6.25, Concert of Waltzes by The Station Orchestra, conducted by V. Musil; Lagunen-Walden (Joh. Strauss); The Skaters' Waltz (Waldteufel); Flora Waltz (Leopold); Waltz (Kratzel). 7.0, See Prague. 9.0, Variety Programme. 10.0, See Prague. 10.15, See Brno. 11.30 (approx.). Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayd by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert, conducted by Erich Kloss; Overture, Le lac des fées (Auber); Romance for Violin (Svendson); Selection from The Merry Wives of Windsor (Nicolaï); Waltz, Nachtfahrt (Joh. Strauss); Fantasia, Boccaccio's Galanterien (Weminger); Abendlied (Dietrich); Serenade, Un peu d'amour (Silesu); Sous ton Balcon (de Micheli). 5.45, Programme by Young Hitlerites. 6.15, Johann Adam Kreiger Concert by Elizabeth Voigt (Soprano) and Anna Barbara Speckner (Harpisichord); Three Love Songs for Soprano and Harpischord: (a) Der Augenschein sein Scherz und Pein, (b) Der Unbestand ist ihr verwandt, (c) Die Liebesglut verkehrt den Mut. Passacaglia for Harpischord; Four Love Songs for Soprano and Harpischord: (a) Pandorens Brust erstickt die Luft, (b) Ihr bleibet nicht Bestand verpficht, (c) Gedanken sein nur grosse Pein, (d) Der Liebsten Herz macht Scherz und Schmerz. 6.45, Wireless Notes. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Bunter Abend. 10.20, Time and News. 11.0, Serenade, conducted by Erich Kloss. 12 **Midnight** (approx.). Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayd by Fredriksstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.30 p.m., Gramophone Concert. 5.15, Programme for Children. 6.15, Concert of Norwegian Music. 6.45, Talk on Economics. 7.0, Advertising Notes. 7.15, Weather. 7.30, Talk. 8.0, Time Signal. 8.2, Concert by the Station Orchestra, conducted by Hugo Kramm. Die Geige spielt zum Tanz (Jessel); Selection from Schön ist die Welt (Lehár); Intermezzo, Asta (Leopold); Rocooco (Meyer-Helmund); Nocturne (Borodin); Persian Dance (Svendson); Längtan (Söderman); Minuet (Grieg); Cherry Ripe (C. Scott); Waltz, Les Sirènes (Waldteufel). 9.10, Recitations. 9.40, News. 10.0, Topical Talk. 10.15, Concert. 10.45, Dance Music on Gramophone Records.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements, Tourist Talk, Agricultural Notes, and Giornale Radio. 8.20, Sports Notes, followed by Gramophone Records. In the interval at 8.30, Time Signal and Announcements. 8.45, La duchessa del Bal Tabarin—Operetta in Three Acts (Lombardo). In the interval, Book Review and Announcements. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Talk on Music. 7.0, Le Journal Parlé. 8.30,

JUNE 10th

SATURDAY

continued

Variety Concert, relayed from the Conservatoire: Pierre Chabou's Orchestra and Soloists: Marie Dubas, Josephine Baker, Suzanne Feyron, Gabaroché, Jean Lumière, Georges Cheffer, and Noël-Noël.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Journal Paris. 7.5, Gramophone Records. 7.30, Answers to Correspondents. 7.35, Gramophone Records. 8.0, Talk: The Event of the Week. 8.15, Interval. 8.30, Debussy Chamber Music Concert. 9.0, Interval. 9.10, Dance Music by the Sonora Radio Band, conducted by Hoffmann. 11.0, News. 11.5, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

PARIS

RADIO PARIS, Call CFR, 174 kc s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather Forecast and Physical Culture (contd.). 7.45, Gramophone Concert. 8.0, Press Review and Weather Forecast. 12 Noon, Concert by the Station Orchestra: Melody (Lincke); Hungarian Rhapsody No. 12 (Liszt); Italian Song (Lohr); Alsatian Dances (Levadé); Hungarian Parade (Lacombe); Hungarian Poem (Hubay); Caucasian Impressions (Jossot); An Old Czech Polka (Hilmar); Japanese Suite (Holsd.); Norwegian Song (Huguenin); Karadec (d'Indy); Creole Dance (Chaminade); Arabian Idyll (Chaminade); Mazurka in D (Chopin); Danish Song (Cool). In the intervals at 1.0 p.m., Exchange and Weather; and at 1.30, Exchange. 2.0, Exchange. 3.0, Programme for Children. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk and Market Prices. 6.30, Concert of Light Music by the Station Orchestra. 7.0, Scientific Talk. 7.20, Concert by the Kretzky Orchestra. 7.45, Latin Press Review, Market Prices, and News. 8.0, Music-hall Programme. 8.30, News, Weather, and Sports Notes. 8.40, Review by Jean Réaux. 8.45, Concert by a Swiss Mixed Choir, conducted by M. Hornung; Soloist: Mlle. Bague (Songs); Soleil de Juin (Doret); Dans le Bois qui chante (Doret); Songs: (a) Catherine (Zimmermann); (b) Vignes en chantant (Dalcroze); Chanson à la lune (Dalcroze); Elles étaient trois donzelles (Doret); Popular Song, Colin (Broquet); Humorous Pastoral (Meyer). 9.15, Press Review and News. 9.30, Light Music on Gramophone Records.

PITTSBURGH

(KDKA); 980 kc s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Radio Debuts. 7.45, Riggs and Muke. 8.0, Radio Troubadours, from New York. 8.30, Wealth of Harmony, from New York. 8.58, Baseball Scores. 9.0, Mitchell Schuster Band Orchestra, from New York. 9.30, Concert Favourites, from New York. 9.55, Baseball Scores. 10.0, The United States Government in Pittsburgh, Activities and Life in the U.S. Army, by Major W. Buerkle. 10.15, Hotel Sherman Orchestra, from New York. 10.30, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie, from New York. 11.0, Time Signal and Hotel Lexington Orchestra, from New York. 11.15, Weather Report. 11.16, Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, A Recreer by Bill and Alex, of the Downtown Y.M.C.A. 11.45, Programme to be announced. 11.59, Time Signal. 12 Midnight, American Tax Payers' League, from New York. 12.15 a.m. (Sunday), Al Mitchell's Orchestra, with Baritone Solos by Everett Marshall, from New York. 12.30, Songs of Melody. 12.45 to 2.0, New York Relay. 12.45, Irene Bordoni and Emil Coleman. 1.0, Joint Commission on Emergency in Education. 1.15, The Leaders. 1.30, Kalameyers' Kindergarten. 2.0, Programme to be announced. 2.15, Programme to be announced. 3.0, Time Signal, and Gilbert and Sullivan Gems, from New York.

FORSGRUND.—See Oslo.

POZNAN

896 kc s, 335 metres; 1.9 kW.—7.30 p.m., Programme from Vienna. In the intervals, Sports Notes and News from Warsaw. 10.0, Time Signal, Sports and Police Notes. 10.5, See Warsaw. 10.40, Announcements. 10.50, Dance Music from the Café Polonia. 11.50 (approx.), Close Down.

PRAGUE

614 kc s, 488.6 metres; 120 kW.—2.50 to 4.0 p.m., See Brno. 5.45, Sports Dialogue. 5.55, Talk: Dangerous Chemical Tests. 6.5, Agricultural Report. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Songs and Recitations. 7.0, Chimes. 7.1, News. 7.10, Programme to be announced. 7.25, The Wondcock Comedy in Three Acts (Kryzowosazky), translated from the Polish by Jakub Rydvan. 9.0, See Moravská Strava. 10.0, News. 10.15, See Brno. 11.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and GENEVA, 335 kc/s, 760 metres.—7.0 p.m. (from Geneva), Talk on Mountaineering. 7.30 (from Geneva), Weather, News, and Announcements. 8.0 (from Geneva), Talk on India. 8.20, Smiles—Programme by Ruy Blag. 8.30, Concert by the Station Orchestra: Soloist: M. Meistrat (Bass). 9.50, News and Weather. 10.0 (from Geneva), Talk: The Work of the League of Nations. 10.20 (from Geneva), Dance Music. 11.20 (approx.), Close Down.

REYKJAVIK

250 kc s, 1,200 metres; 21 kW.—9.20 p.m., Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News Bulletin. 10.30, Reading. 11.0, Concert by the Radio Trio and Choral Music on Gramophone Records, followed by Dance Music. 2.0 a.m. (Sunday), Close Down.

RIGA

572 kc s, 525 metres; 15 kW.—7.0 p.m., Pianoforte Duets. 8.0, News. 8.20, Gramophone Records of Famous Singers: Mattia Battistini and Enrico Caruso. In the interval at 9.0, Weather and News. 9.30, Dance Music. 11.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO; 680 kc s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 210, 11,810 kc s, 25.4 metres.—1.0 to 2.15 p.m., Orchestral Concert of Light Music. In the interval from 1.30 to 1.45, Exchange. 4.30, Programme for Children. 4.45, Report of the Royal Geographical Society, and Giornale Radio. 5.5, Exchange and Announcements. 5.15, Reading. 5.30, Melody (Coward); La vita e l'amore (Franceschi); Meditation (Culotta); Trumpet Solo: Fantasticamente (d'Amato); Pianoforte Solos: (a) Le campane di Montoro (Serra); (b) Quel che dice la fonte (Napoli); (c) Tarantella (Martucci); Bixiana (Bixio). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 7.0, Tourist Report. 7.10, Lesson in Morse. 7.20, Announcements in Different Languages. 7.40, Giornale Radio. 8.0, Time, Announcements, and Gramophone Music. 8.15, Giornale Radio and Sports Notes. 8.30, Othello—Opera in Four Acts (Verdi). In the intervals, Talk and News. Giornale Radio after the Opera.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 790 kc s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—12.45 a.m. (Sunday), Stock Reports. 1.0 to 4.0, New York Relay. 1.0, Soloist. 1.30, The Economic World To-day. 2.0, Band of Famous Brands. 2.15, Zora Layman and her Debonairs. 2.30, K7—Secret Service Spy Story. 3.0, B. A. Rolfe and his Orchestra.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER; 653 kc s, 459 metres; 60 kW.; Basle, 1,229 kc s, 244.1 metres; and Berne, 1,220 kc s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory. 12 Noon (from Berne), Gramophone Music. 12.30 p.m., News. 12.40 (from Berne), Concert. 1.25 (from Berne), Exchange, Time and Weather. 1.30 (from Basle), Answers to Correspondence. 1.45 (from Basle), Review of Books on Music and Musicians. 2.15 (from Basle), Gramophone Music. 3.20 to 5.0, Interval. 5.0 (from Basle), Music by the Alpenrösli Accordion Club. 5.20 (from Basle), Gramophone Music. 6.0 (from Basle), Legal Talk. 7.0, Chimes from Zurich Churches. 7.10 (from Basle), Time and News. 7.15 (from Berne), Gramophone Music. 8.0 (from Berne), Les Noëes de Jeanette—Opéra-Comique (Masse). 9.0, News. 9.10 (from Berne), Der Tischgast—Comedy (Pagat), translated into German by Else Rema. 9.35, Concert by the Berne Municipal Orchestra, conducted by Stephan Jäger. 10.15 (from Berne), Dance Music. 11.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc s, 436 metres; 55 kW. Relayed by Boden, 244 kc s, 1,229.5 metres; Göteborg, 932 kc s, 322 metres; Härby, 1,166 kc s, 257 metres; Motala, 221.5 kc s, 1,354.4 metres; Östersund, 389 kc s, 770 metres; and Sundsvall, 554 kc s, 542 metres.—4.0 p.m., Military Band Concert, relayed from Jönköping. 1.40 kc s, 241.3 metres. 5.5, Programme for Children. 5.30, Gramophone Concert. 6.30, Talk. 7.0, Brahms Folk Song Recital by Vivian Hed-

borg; Dort in Weiden; Schwesterlein; Feinschieben, du sollst mir nicht barfuss gehen; In stiller Nacht; We kunn' ich doch; Oeh Moler, ich will en Ding ha'n. 7.15, Weather and News. 7.30, Skipper Johan's Boy—Play (Ernst Fastborg). 9.0 (from Östersund), Dance Music. 11.9 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Music. 12.45 p.m., News. 1.0, Time and Exchange Quotations. 1.5, Dance Music on Gramophone Records. 2.0, Legal Talk in German. 2.15, Gramophone Records. 3.15, Talk on Music: César Franck. 3.30 to 4.0, Interval. 4.0, Concert by the Station Orchestra. Part I—Chamber Music by Soloists of the Station Orchestra: String Quintet (Dvorák); Quartet for Pianoforte, Violin, Viola and Cello (Schumann). Part II—Ravel Music: Pavane; Suite, Mother Goose; Two Hebrew Melodies; (a) Kaddisch, (b) L'Énigme éternelle; Waltz. 6.0, Tourist Talk. 6.15, French Lesson. 6.30, Dance Music by the Station Orchestra, conducted by Roskam. 7.15, Agricultural Talk in German. 7.30, Time and News. 7.45, Gramophone Records. 8.20, Press Review in German. Lottery Results and Announcements. 8.50, Concert in connection with the Musical Competition, relayed from Verdun: Talk on Verdun; Hungarian Dances Nos. 5 and 6 (Brahms); Overture, Patrie (Bizet); Concertino for Clarinet (Weber); Address: 1812 Overture (Tchaikovsky); Talk: The Verdun Musical Competition; Hunting Horn Music: (a) Un Jour de Chass (Gautin), (b) Echoes des Montagnes (Gautin), (c) Noxes du Chasseur (Gautin), (d) Gloire à Bellort (Jusart). In the interval at 10.29 (approx.), Press Review. 10.50, Dance Music from the Savoy Dance Hall. 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER; 832 kc s, 360.5 metres; 50 kW. Relayed by Freiburg, 527 kc s, 570 metres.—12.20 p.m., Six German Songs, Op. 103 (Spohr); and Anne Weegmann-Schmidt (Soprano). 12.50, Zither and Accordion Music on Gramophone Records. 1.15, Concert by the Pforzheimer Symphony Orchestra, relayed from Pforzheim: Conductor, Julius Schröder; Overture, Poet and Peasant (Suppe); Second Peer Gynt Suite (Grieg); Paraphrase on the Song Aus der Jugendzeit (Friedemann); Selection from Das Nibelungen von Granada (Kreutzer); Waltz, Wiener Blut (Joh. Strauss); Selection from The Merry Widow (Lehár). 2.50, Time and News. 2.45, Recital of Rhenish Songs by Hermann Lingor (Tenor). 3.10, Folk Music on Gramophone Records. 3.30, Programme for Young People. 4.20, Dance Music on Gramophone Records. 5.20, Concert by the Freundschaft Male Voice Quartet. 5.50, Time and Sports Notes. 6.0, Talk: A Franconian Kaleidoscope. 6.15, Talk on the German Flags. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, See Berlin (Deutschlandsender). 10.0, Time and News. 10.30, Programme from Berlin (Witzleben). 12.20 a.m. (Sunday), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc s, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, Light Music. 6.30, Cello Recital. 6.45, Prelude and Death of Isolde, from Tristan and Isolde (Wagner). 7.0, Accordion Music. 7.15, News, Racing Results and Market Prices. 7.25, Local News. 7.30, Viennese Music. 8.0, Melodies from (a) Mirella (Gounod), (b) Le Chemineau (Loroux), (c) Manon Lescaut (Puccini). 8.15, Operetta Music: Selection from Les Vingt-huit Jours de Clairville (Roger); Du und du, from Die Fledermäus (Strauss); Komm, Zigeuner, from Countess Maritza (Kálmán). 8.30, Sound Film Music. 8.45, Hunting Horn Solos. 9.0, Extracts from Manon (Masse). 10.0, Orchestral Music. 10.15, North African News. 11.30, Concert for Listeners in Morocco. 11.0, Request Concert. 11.50 to 12 Midnight, Programme in English by the I.B.C. W. Brown-Constable announcing. 11.30, Pianoforte Recital: Memories of Maurice Chevalier; A Little Love Nest for Two; The Trumpeter's Paradise; Tameful Melodies; Miss Hooligan's Christmas Cake; She was only somebody's Daughter; Widdicombe Fair. 11.57, I.B.C. Goodnight Melody. 12 Midnight, News. 12.5 a.m. (Sunday), Popular Songs. 12.15, Dance Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 to 6.0 p.m., See Turin. 6.0 to 6.35, Interval. 6.35 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,095 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 to 6.0 p.m., Gramophone Music. 6.35, Giornale Radio. 7.0, Time and Tourist Report. 7.5, Dance Music on Gramophone Records. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News Bulletin and Gramophone Music. 8.30, Talk: Events and Problems. 8.45, Band Concert, conducted by Andrea Marchesini: March from Tannhäuser (Wagner); Selection from Manon Lescaut (Puccini); Serenata abruzzese (De Nardis); Tarantella e temporale (De Nardis); Moto perpetuo (Paganini); Variations for Trumpet on a Theme from Carnevale di Venezia (Holl); Rondò fantastico (Pich-Mangiagalli); Slav March (Tchaikovsky). 9.50, Review of New Books. 10.0, Light Music. 11.0, Giornale Radio. 11.5 (from Florence only), Dance Music from the Chez moi Rajola.

VATICAN CITY

15,120 kc s, 19.84 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Announcements in Different Languages. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 862 kc/s, 453.2 metres; Linz, 1,220 kc/s, 455.9 metres; and Salzburg, 1,373 kc/s, 388.5 metres.—11.20 a.m. Concert by the Field Sektel Orchestra. 11.55, Weather. 12 Noon, Concert (contd.). 1.0 p.m., Time and News. 1.10, Concert (contd.). 1.45, Gramophone Records of Giacomo Lauri Vipi. 3.0, Time, Weather, and Exchange. 3.15, English Lesson. 3.40, Franz Drlia Concert. Christa Richter-Steiner (Violin) and Santa Bensch (Cello). Two Pieces for Violin and Pianoforte: (a) Heimweh, Op. 140, (b) Gitarren, Op. 88; Three Pieces for Cello and Pianoforte: (a) Ivresse, Op. 52, (b) Wiegendorf, Op. 33, (c) Fei follet, Op. 37; Duo concertante, Op. 200, for Violin, Cello and Pianoforte. 4.10, Karl Maria Dorwin reads from his own Works. 4.35, Mandoline Concert. 5.10, Topical Talk. 5.35, Talk: Bad German. 6.0, Concert by the Fritz Recktenwald Orchestra, relayed from Bad Gastein. 7.0, An Axiom. 7.5, Topical Talk. 7.15, Time and News. 7.25, The Rhine-odd—Opera (Wagner), relayed from the State Opera House. 10.5, News. 10.20, Military Band Concert.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.40 a.m., Press Review. 11.50, Aviation Weather Report. 11.57, Time Signal and Fareure from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Gramophone Music. 1.20, Weather Forecast. 1.25 to 3.10, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.25, Answers to Military Correspondence. 3.35, Talk for Children: The Glow-worm. 4.0, Gramophone Music. 4.40, Talk on Raphael. 5.0, Programme for Invalids, relayed from Lodz. 5.30, Gramophone Music. 5.40, Topical Talk. 5.55, Programme Announcements. 6.0, Dance Music and Light Music. 6.25, News. 6.30, Topical Talk. 6.45, Miscellaneous Items. 7.5, Radio Journal. 7.15, Introductory Talk to the following Transmission. 7.30, See Vienna. In the interval, Sports Notes and Radio Journal. 10.5, Chopin Pianoforte Recital by Mine. Rabecewicz; Polonaise in F Major; Concerto allegro, Op. 46; Nocturne in F Sharp Minor, Op. 48; Three Mazurkas, Op. 50: (a) in G, (b) in A Flat, (c) in C Sharp Minor; Scherzo in B Flat Minor, Op. 31. 10.40, Talk on National Opera. 10.55, Aviation Weather Report and Police News. 11.0, Dance Music. In the interval at 11.30, News for Members of the Polish Polar Expedition.

WILNO

533 kc s, 563 metres; 16 kW.—5.55 p.m., Programme Announcements. 6.0, Dance Music on Gramophone Records. 6.40, News. 6.45, Weekly Review in Lithuanian. 7.0, Miscellaneous Announcements. 7.10, Talk on Music. 7.30 to 12 Midnight, See Warsaw. In the interval from 8.0 to 9.0, Request Gramophone Records. 12 Midnight (approx.), Close Down.

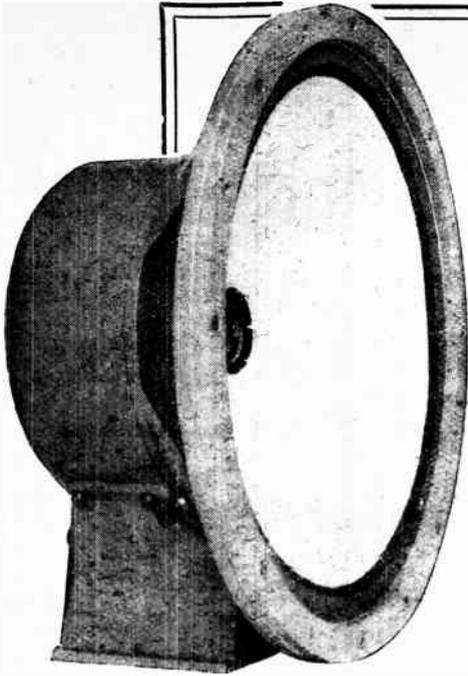
ZAGREB

977 kc s, 307 metres; 0.75 kW.—5.0 to 6.30 p.m., Trio Concert. 7.55, Concert of Bird Music, relayed from the Zoological Gardens, with Introductory Talk. 8.10, Announcements. 8.30, Orchestral Concert. In the interval, Recital of Yugo-Slavian Songs. 10.10, News and Weather. 10.40, Dance Music. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

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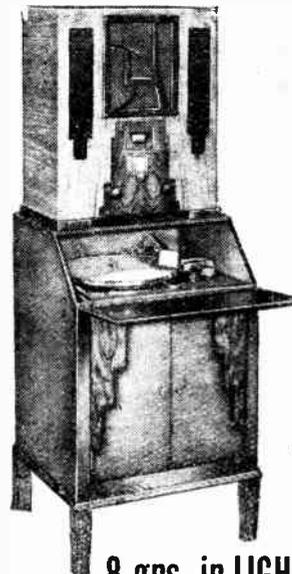
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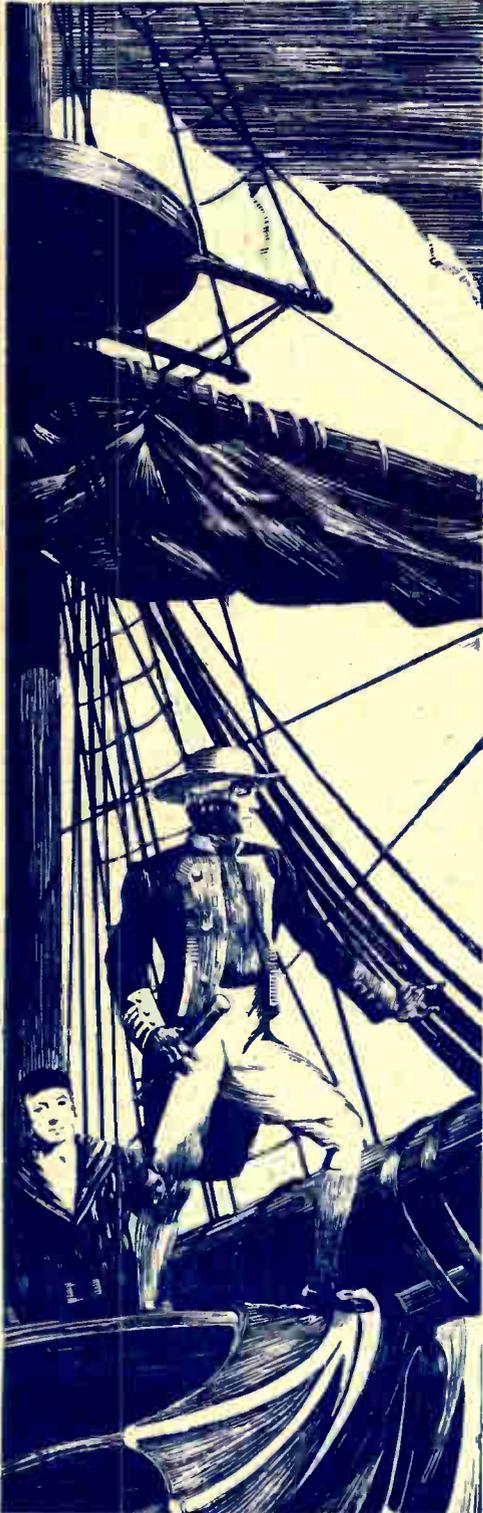
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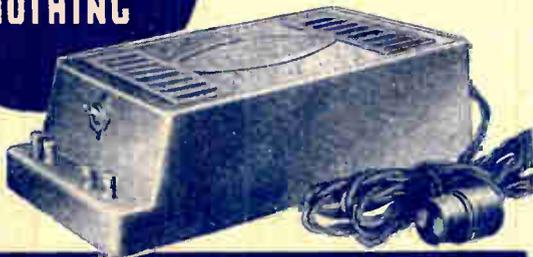
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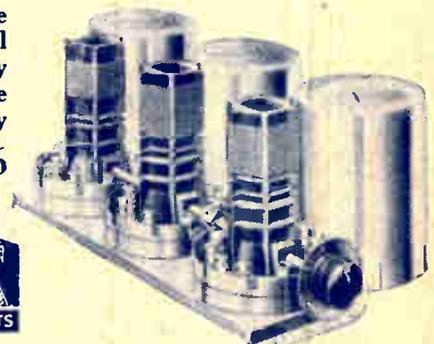
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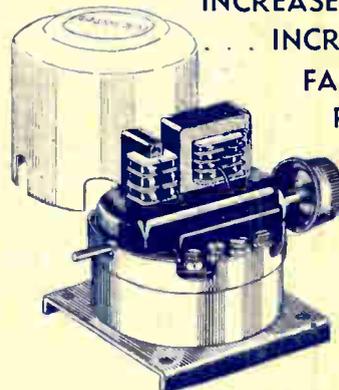
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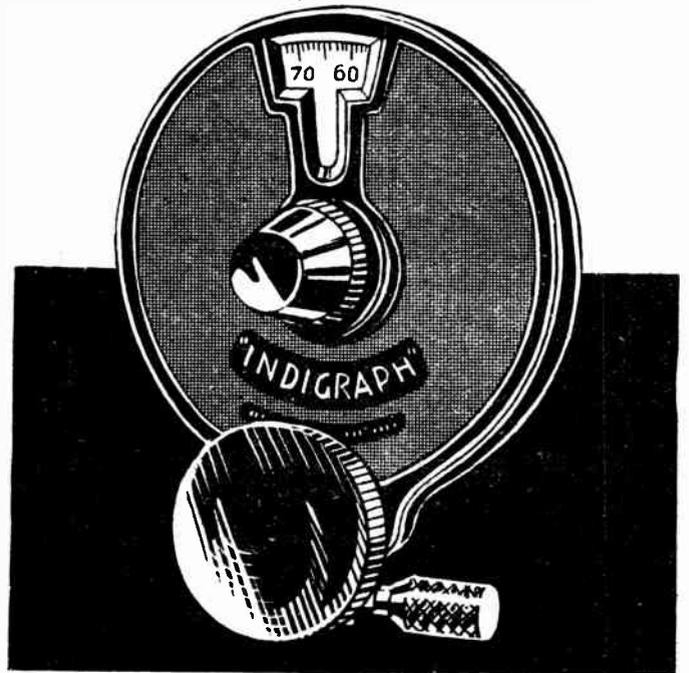
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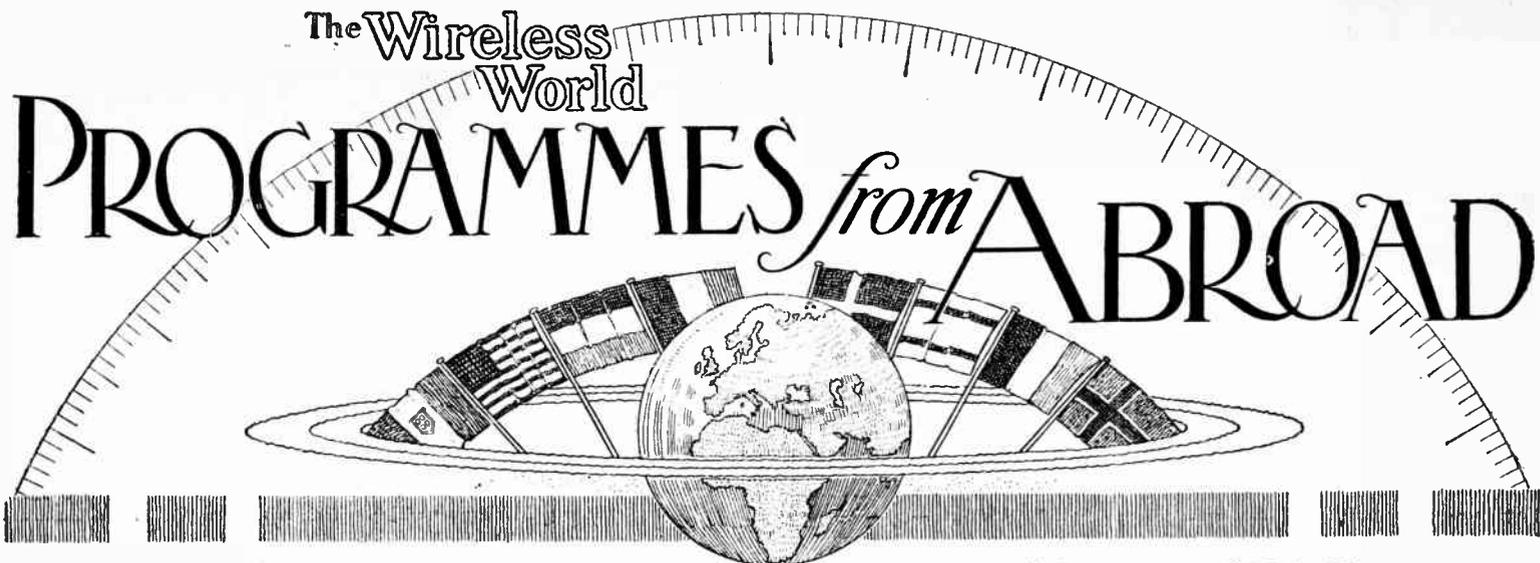
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**BROADCASTING STATIONS
ARRANGED IN ORDER
OF WAVELENGTH**

**TIMES AND DETAILS OF
FULL WEEK'S FOREIGN
TRANSMISSIONS**

Metres.	kc.s.	kW.	Station.	Tuning Positions.	Metres.	kc.s.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania) .. .. .	.....	453.2	662	7	Milan (<i>Experimental Relays Rome</i>) .. .. .	.....
1875	160	8.5	Huizen (Holland) .. .. .	.....	450.3	666	20	Madona (Latvia). (<i>Relays Riga</i>) .. .. .	.....
1796	167	40	Lahti (Finland) .. .. .	.....	447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Rjukan (0.15 kW.), Notodden (0.08 kW.); Aalesund (0.35 kW.) (Norway) (<i>relays Oslo</i>).	.....
1725	174	75	Radio Paris, C.F.R. .. .. .	.....				
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (S.-W. Stn. DJA on 31.38 m., DJB on 19.73 m., DJC on 49.83 m., DJD on 23.51 m., DJE on 16.89 m.)	.....	441.2	680	50	Rome, IRO. (S.-W. Station, 2 RO on 25.4 m.)	.....
1554.4	193	30	Daventry National .. .. .	.....	435.4	689	55	Stockholm, SANA (Sweden) .. .. .	.....
1538	195	7	Ankara (Angora) (Turkey) .. .. .	.....	430.4	697	2.5	Belgrade (Yugoslavia) .. .. .	.....
1481	202.5	100	Moscow, RVI (Old Konintern) (Russia) .. .. .	.....	424.3	707	2	Madrid, EAJ7 (Union Radio). (<i>After 7.0 p.m.</i>)	.....
1446	207.5	13	Eiffel Tower, FL, Paris .. .. .	.....	424.3	707	100	Moscow, Immi Stalina (Russia)	.....
1412	212.5	120	Warsaw I (Poland) .. .. .	.....	419.5	715	1.5	Berlin, No. 1, Witzleben (Germany) .. .. .	.....
1380	217.5	100	Novosibirsk, RV6 (Russia) .. .. .	.....	416.4	720.5	5	Rabat (Morocco) .. .. .	.....
1354.4	221.5	30	Motala (Sweden). (<i>Relays Stockholm</i>)	.....	413	725	60	Athlone (Irish Free State) .. .. .	.....
1304	230	500	Moscow, WZSPS (Trade Union) (Russia)	.....	408.7	734	16	Katowitz (Poland) .. .. .	.....
1275	235	0.5	Tunis-Kasbah (Tunisia) .. .. .	.....	403.8	743	25	Sottens (Radio Suisse Romande) (Switzerland)	.....
1230	244	0.6	Boden (Sweden). (<i>Relays Stockholm</i>)	.....	398.9	752	25	Midland Regional. (Daventry)	.....
1200	250	5	Stamboul (Turkey) .. .. .	.....	394.2	761	12	Bucharest (Roumania) .. .. .	.....
1200	250	21	Reykjavik (Iceland) .. .. .	.....	389.6	770	120	Leipzig (Germany) .. .. .	.....
1190	252	200	Luxembourg (<i>Testing</i>) .. .. .	.....	385.1	779	8	Toulouse (Radiophonie du Midi) (France)	.....
1170	256	25	Tashkent, RV11 (Russia) .. .. .	.....	385.1	779	10	Stalino, RV26 (Russia) .. .. .	.....
1154	260	7.5	Kalundborg (Denmark). (<i>Relays Copenhagen</i>)	.....	381	788	16	Lwow (Lemberg) (Poland) .. .. .	.....
1117	268.5	40	Moscow, Popoff RV58 (Russia) .. .. .	.....	376.4	797	50	Scottish Regional (Falkirk) .. .. .	.....
1083	277	60	Oslo (Norway) .. .. .	.....	372.2	806	1.5	Hamburg (Germany) .. .. .	.....
1071	280	35	Tiflis, RV7 (Russia) .. .. .	.....	370.1	810.5	0.8	Radio, L.L. Paris .. .. .	.....
1035	290	36	Kiev, RV9 (Russia) .. .. .	.....	368.1	815		Seville, EAJ5 (Union Radio) (1.0 kW.); Galicia EAJ4 (0.2 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Helsinki (10 kW.) (Fin- land) (<i>relays Lahti</i>); Kharkov, RV20 (10 kW.) (Russia).	.....
1000	300	100	Moscow (Russia) (S.-W. Stn. on 50 m.)	.....	367.2	817	0.7	Fredriksstad (Norway). (<i>Relays Oslo</i>)	.....
938	320	20	Kharkov, RV4 (Russia) .. .. .	.....	364.1	824	1	Bergen (Norway) .. .. .	.....
857	350	100	Leningrad (Russia) .. .. .	.....	363.6	825	13	Algiers (Algeria) .. .. .	.....
840	357	18.5	Budapest (Hungary) .. .. .	.....	360.6	832	60	Mühlacker (Stuttgart) (Germany)	.....
825	363.6	50	Sverdlovsk, RV5 (Russia) .. .. .	.....	355.9	843	50	London Regional (Brookmans Park) .. .. .	.....
760	395	1.3	Geneva (Switzerland). (<i>Relays Sottens</i>)	.....	352.1	852	7	Graz (Austria). (<i>Relays Vienna</i>)	.....
720	416.6	15	Monte Ceneri (Switzerland). (<i>Testing</i>)	.....	348.8	860	7.6	Barcelona, EAJ1 (Spain) .. .. .	.....
720	416.6	20	Moscow, RV2 (Experimental) (Russia)	.....	348.8	860	10	Leningrad, RV70 (Russia) .. .. .	.....
690	434.6	1.5	Oulu (Uleaborg) (Finland) .. .. .	.....	345.2	869	11.5	Strasbourg, PTT (France) .. .. .	.....
680	441.2	0.6	Lausanne (Switzerland). (<i>Relays Sottens</i>)	.....	341.7	878	35	Brno (Brunn) (Czechoslovakia) .. .. .	.....
574.7	522	7	Ljubljana (Yugoslavia) .. .. .	.....	338.2	887	15	Brussels II, Velthem (Belgium). (<i>In Flemish</i>)	.....
569	527	0.25	Freiburg-im-Breisgau (Germany). (<i>Relay Stn.</i>)	.....	335	896	5	Cadiz (Spain) .. .. .	.....
568.1	528	2	Grenoble (France) .. .. .	.....	334.4	897	1.9	Poznan (Poland) .. .. .	.....
566	530	0.25	Hanover (Germany). (<i>Relays Hamburg</i>)	.....	331.5	905	50	Milan (Italy). (<i>Relays Turin</i>)	.....
563	533	16	Wilno (Poland). (<i>Relay Station</i>) .. .. .	.....	328.2	914	60	Poste Parisien (France) .. .. .	.....
560	536	0.25	Augsburg (Germany). (<i>Relays Munich</i>)	.....	325	923	60	Breslau (Germany) .. .. .	.....
560	536	1.5	Kaiserslautern (Germany). (<i>Relays Munich</i>)	.....	321.9	932	10	Göteborg (Sweden). (<i>Relays Stockholm</i>)	.....
550	545	18.5	Budapest No. 1 Lakihegy (Hungary)	.....	318.8	941	0.25	Dresden (Germany). (<i>Relays Leipzig</i>)	.....
542	554	10	Sundsvall (Sweden). (<i>Relays Stockholm</i>)	.....	318.8	941	1.5	Naples, INA (Italy). (<i>Relays Rome</i>) .. .. .	.....
537.6	558	3	Palermo (Italy) .. .. .	.....	315.8	950	1.6	Marseilles, PTT (France) .. .. .	.....
533	563	60	Munich (Germany) .. .. .	.....	312.8	959	0.7	Radio Vitus (Paris). (S.-W. Stn. on 43.75 m.)	.....
525	571	15	Riga (Latvia) .. .. .	.....	312.8	959	1.7	Cracow (Poland) .. .. .	.....
518	579	100	Vienna (Bismberg) (Austria). .. .. .	.....	312.8	959	10	Genoa, IGE (Italy). (<i>Relays Turin</i>) .. .. .	.....
509	589	15	Brussels No. 1, Velthem (Belgium). (<i>In French</i>)	.....	309.9	968	1	Cardiff .. .. .	.....
500.8	599	20	Florence, IFI (Italy). (<i>Relays Turin</i>)	.....	309.9	968	50	West Regional (Washford Cross) .. .. .	.....
495.8	605	1.2	Trondheim (Norway) .. .. .	.....	307	977	0.75	Zagreb (Yugoslavia) .. .. .	.....
488.6	614	120	Prague, No. 1 (Czechoslovakia) .. .. .	.....	304	986	13	Bordeaux Lafayette, PTT (France) .. .. .	.....
480	625	50	North Regional (Manchester) .. .. .	.....	301.5	995	50	North National (Manchester) .. .. .	.....
472.4	635	60	Langenberg (Germany) .. .. .	.....	298.8	1004	11	Tallinn (Esthonia) .. .. .	.....
465.8	644	1.5	Lyons la Doua, PTT (France) .. .. .	.....	296.1	1013	20	Hilversum (Holland). (<i>7 kW. before 4.40 p.m.</i>)	.....
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland).	.....	293.5	1022	0.7	Limoges, PTT (France) .. .. .	.....
			San Sebastian, EAJ8 (0.6 kW.); Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (<i>relays Heilsberg</i>); Klagenfurt (0.5 kW.) (Austria) (<i>relays Vienna</i>); Porsgrund (0.7 kW.) (<i>relays Oslo</i>), Tromsø (0.1 kW.) Bodø (0.5 kW.) (Norway); Uppsala (0.15 kW.) (Sweden) (<i>relays Stockholm</i>).	.....	291	1031	13.2	Viipuri (Viborg) (Finland). (<i>Relays Helsinki</i>)	.....
				.....	288.3	1040	50	Scottish National (Falkirk) .. .. .	.....
				.....	288.3	1040	1	Burnmouth (<i>Relay Station</i>) .. .. .	.....
				.....	236	1049	0.8	Montpellier (France) .. .. .	.....
453.2	662	0.25	Agen (France) .. .. .	.....				

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Table with columns: Metres, kc/s, kW, Station, Tuning Positions, Metres, kc/s, kW, Station, Tuning Positions. Lists various international broadcasting stations and their technical specifications.

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent B.S.T.)

Table with columns: Metres, kc/s, Call Sign, Station, Tuning Positions, Metres, kc/s, Call Sign, Station, Tuning Positions. Lists principal short-wave stations with their call signs and transmission times.

FOREIGN SUNDAY PROGRAMMES

JUNE THE ELEVENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Service from St. Martin-in-the-Fields. Orchestral concert from Eastbourne.

LONDON REGIONAL Symphony concert.

MIDLAND REGIONAL Instrumental programme from Leamington Spa.

WEST REGIONAL Welsh service from St. Mary's Church, Llanfairis-gaer, Port Dinorwic.

BELFAST Service from the First Presbyterian Church, Rosemary Street, Belfast.

ABROAD

COPENHAGEN 8.2 p.m. Old Danish Music. 10.20 p.m. Delibes Concert by the Radio Orchestra.

HEILSBURG 8.0 p.m. Concert by the Königsberg Opera House Orchestra.

LEIPZIG 11.30 a.m. Bach Cantata: "O heil'ges Geiſtbad und Wasserbad" (replayed by other German Stations).

MUNICH 8.0 p.m. Concert by the Station Orchestra.

PALERMO 8.45 p.m. Symphony Concert, conducted by A. la R. Parodi.

PITTSBURGH 8.0 p.m. National Opera Concert, relayed from New York.

ROME 8.45 p.m. Operetta: "A Waltz Dream," by Oscar Strauss.

STRASBOURG 6.30 p.m. Brahms Song and Pianoforte Recital.

TURIN 8.30 p.m. Opera: "I Cavalieri di Ekebü," by Zandonai, conducted by the composer.

VIENNA 6.35 p.m. Opera: "The Valkyries" (Wagner), from the Opera House.

Three Songs; Czardas, No. 8 (Michiels); Cello Solo, Melody (Fischer); Selection from The Vagabond King (Friml). 12.0 Noon, Organ Recital by Louis Joos, relayed from a Church; Toccata and Fugue in D Minor (Bach); Fantasia (Saint-Saëns); Choral (Brahms). 12.30 p.m. Concert by the Station Orchestra, conducted by M. Walpot; Soloist, M. Rubenau (Songs); Torch March, No. 1 (Meyerbeer); Overture, The Merry Wives of Windsor (Nicolai); Songs; Valse des blondes (Ganne); Waltz, Memories of Joseph Strauss (Fahrbach); Rhapsody in B (Hartung); Songs; Selection from La Pêcheuse (Offenbach); Ballet Music from Le Cid (Massenet). In the interval at 1.0, Le Journal Parlé. 5.0, Concert by the Small Station Orchestra, conducted by P. Leemans; March, Alaska (Michiels); Waltz (Vollstedt); Millocen Potpourri (Morena); Petite Suite (Olson); Humoresque (de Taeye); Strauss Potpourri (Weber); Serenade (Meyer-Hellmund); Foxtrot Medley (Kochman). 5.30, Sports Notes. 6.0, Gramophone Concert. 7.0, Richard Strauss Song Recital by Théo Mercier: Traum durch die Dämmerung; Morgen; Allerseelen; Zuweisung. 7.15, Religious Address. 7.30, Talk on Music. 8.0, Concert by the Station Symphony Orchestra, conducted by J. Kumps: Italian Symphony (Mendelssohn); Madrigal and Dance (Absil); Claironerie (Ducasse); Suite (De Greef); Songs by Mme. Ghysels; Solveig's Song (Grieg); Anitra's Dance (Grieg); Songs; Ballet Music from Hérodiade (Massenet). In the interval at 8.45, Recitations. 10.0, Le Journal Parlé. 10.10, Concert of Jazz Music by Robert de Kers and his Cabaret Kings, relayed from the Century Hotel, Antwerp.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—4.0 p.m., Programme for Peasants. 5.0, Light Music and Romanian Music by the Jean Marco Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Talks. In an interval at 7.20, Gramophone Music. 8.0, An Operetta (to be announced). In the intervals, Reading and Radio Journal.

BUDAPEST

545 kc/s, 550 metres; 18.5 kW.—Also relayed on 840 metres from 3.0 to 3.45 a.m. and 6.0 to 12 Midnight.—9.15 a.m., News. 10.0, Divine Service from the University Church. 11.15, Evangelical Service, followed by Time, News and Orchestral Concert, conducted by Nandor Zsolt. 2.0 p.m., Gramophone Music. 3.0, Agricultural Report. 4.15, Talk on the Jamboree in Budapest. 4.45, News. 4.20 (approx.), Concert by a Cigany Band. 5.30, Talk: The Flight over Mount Everest. 6.0, Programme relayed from Count Esterhazy's Park, Tata-Tovaros. Prelude to Danaida (Esterhazy), by the Opera House Orchestra, conducted by Count Esterhazy. The Swineherd and the Princess—Comic Opera in One Act (Poldini). 7.5, Sports Report. 7.25, Talk. 7.55, Concert relayed from the Cathedral, Pees, Chimes. Extract from La Croisade des Enfants (Pierne); Overture (Bloch); Festival March, Op. 104 (Bossi); Extract from La Croisade des Enfants (Pierne). 10.30, News. 10.35 (approx.), Concert by a Cigany Band from the Ketter Restaurant. 11.10, Dance Music from the Luna Park. 12 Midnight, Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayd by Kallundborg, 260 kc/s, 1,153 metres.—11.50 a.m., Weather and News. 12 Noon, Town Hall Chimes. 1.21 p.m., Accordion Recital. 12.30, Talk in English: The Grand Tour of England. 12.50, Talk in German: Literature in the Austrian Alpine Districts. 1.10, Talk in French on Diderot. 1.30, Gramophone Records of Popular Music. 2.5 (also relayed by Skamlebaek on 31.51 metres), Divine Service from Christiansborg Castle Church. 3.30, Balalaika Concert. 4.0, Orchestral Concert from a Park. 5.50, Programme for Children. 6.20, Talk: Authors' Rights. 6.50, Weather and News. 7.15, Time Signal. 7.30, Talk: Thoughts on Germany. 8.0, Town Hall Chimes. 8.2, Concert of Old Danish Music by the Radio Orchestra, conducted by Emil Reesen: Overture. Sovedrikken (Weyse); Morgenstemning from Hakon Jarl (I. P. E. Hartmann); Selection from Sommerliv iaa Landet (Gade); Overture, Corregio (J. P. E. Hartmann); Selection from Der var engang (Lange-Müller). 9.0, Greenland in Literature and Music. 9.50, Arias and Trio from the First Act of Il Trovatore—Opera (Verdi) on Gramophone Records. 10.10, News. 10.20, Delibes Concert by the Radio Orchestra, conducted by Emil Reesen: Overture, Le Roi Fa dit; Selection from Sylvia; Suite from Nala. 11.0, Dance Music from the Wivex Restaurant. In an interval at 12 Midnight, Town Hall Chimes. 12.30 a.m. (Monday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsburg.

DRESDEN.—See Leipzig.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayd by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Sponsored Programme and Results of the Irish Hospitals' Sweep. 8.30, Time Signal. 8.32, Instrumental Trio Music. 8.50, The Veteran—a Sketch by Gabriel Fallon and Company. 9.20, Tenor Solos by Andy Dunne. 9.35, Instrumental Trio Music. 10.0, Baritone Solos by John Lynskey. 10.20, Sean Dempsey (Pipes). 10.30, Trio Music. 11.0, Time, News, Sports Talk and Close Down.

BARCELONA

(EAJI), 860 kc/s, 348.8 metres; 8 kW.—12 Noon, Chimes from the Cathedral and Weather Forecast. 2.0 p.m., Gramophone Music. In the interval at 2.30, Theatre Notes. 3.0, Film Review and Sextet Concert. 4.0, Programme for Hospitals and other Benevolent Institutions. 5.0 to 6.30, Interval. 6.30, Agricultural Talk in Catalan. 7.0, Trio Concert. 7.30, Baritone Song Recital by José Abella. 8.0, Concert by the Station Orchestra, soloist: Juan Borrados (Tenor). 9.0, Dance Music, relayed from the Hollywood Bar Dance Hall. 10.0, An Opera—on Gramophone Records. 11.45, Chess Lesson. 12 Midnight (approx.), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—10.45 a.m., Agricultural Report. 11.15, Bible Reading. 11.35, Sacred Music from the Church of San Domenico. 1.0 p.m., Giornale Radio. 1.10 to 2.15, Gramophone Music. In the intervals at 1.55, Weather; and at 2.0, Time and Announcements. 5.30 to 6.30, Gramophone Music. 8.0, Sports Notes and Giornale Radio. 8.30, Time and Announcements. 8.35, Variety Concert. Talk in the interval. 10.30, Gramophone Music. 10.55, News.

BASLE. See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.0 p.m., Time Signal and Programme Announcements. 7.0, Cello Recital by Alexandre Slavin, Sonata in G (Sammartini); Etude, Op. 25, No. 7 (Chopin); Serenade (Borodin); Meditation (Moussorgsky); Hymn to the Sun (Rimsky-Korsakov); Mystère, Op. 37, No. 2 (Tcheherpin). 7.40, Talk. 8.0, Yugoslavian Song Recital by Mme. Ninkovic-Gosano. 8.30, Sports Report. 9.0, Orchestral Concert. In the interval at 10.0, News. 10.30, Cigany Band Concert, relayed from the Pofrosacka Zadruga Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 30 kW.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Red Cross Day in Berlin; Address by Dr. Göring. 12.30 p.m., Concert from Hamburg. In the interval at 12.55, Time Signal. 2.0, Talk: Art Appreciation. 2.25, Programme for Children. 2.45, Reading from the Works of Ernst Leibl. 3.10, Talk: The German Dye Industry. 3.30, Recital of Songs of the Eighteenth Century. 4.0, Radio Report of the German Stunt Flying Championship from the Berlin Flying Grounds. 5.0, Gramophone Records of Variety Music. 5.30, Part Relay of the Grand Rally of the Young Hitlerites in the German Stadium, Berlin. Address by Baldur von Schirach. 6.30, Concert by a Mandoline Orchestra. Sinfonia Romantica (G. Quall); Hungarian Dances, Nos. 5 and 6 (Brahms); Minuet and Passacaglia on an Original Theme (B. Henze); Pizzicato-Polka from Sylvia (Delibes); Grotesque March (Schnelstedt); Symphonic Ballad, Nordland (Henze); Waltz, España (Waldteufel). 7.20, Talk: Friedrich Liehard, a Prophet of Our Day. 7.40, Der Fremde—a Play (Friedrich Liehard). 8.0, See Munich. 9.40, Radio Report of the German Football Championship. 10.0, News and Topical Talk. 10.45, Weather Report for Shipping. 11.0, Programme from Berlin (Witzleben). 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Concert from Leipzig. 2.0 to 3.0, Programme for Garden City Dwellers—Talks. 3.0, Concert by the Station Orchestra, conducted by Dr. Rudolf von Schmidt-seck and the Station Choir, conducted by Heinzkarl Weigel. 5.0, Programme from Langenberg. 5.50, Talk: Great Lives. 6.10, Talk on Old Books. 6.30, Organ Concerto in F, Op. 4, No. 4 (Händel), relayed from the Chapel in Charlottenburg Castle. 6.50, A Radio Picture from a Provincial Shooting Festival. 7.20, A Talk with a Hairdresser, a Newsagent, a Postman and an Employer. 7.50, Programme from Leipzig. 8.0, Concert from Hamburg. 10.0, News. 10.15 (approx.), Orchestral Concert of Dance Music and Light Music. In the interval at 11.0 (approx.), Report on World Politics. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BERGMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—8.0 p.m., Talk for Ex-Service Men. 8.15, Lottery Results. 8.30, Gramophone Recital. 9.0, Gramophone Music.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—11.0 a.m., Concert by the Municipal Orchestra, relayed from Trencanske Teplice. Conductor, A. Motal. Overture, Raymond (Thomas); Waltz, Donauwellen (Fueik); Selection from Coppelia (Delibes); Aria from The Jacobin (Dvorák); Melody (Cerny); Intermezzo (Motal). 12 Noon, See Prague. 12.5 p.m., See Moravska-Ostrava. 1.30, Agricultural Talk. 1.45 to 1.50, Hydrographic Report. 4.0, Concert by the Municipal Orchestra, relayed from Trencanske Teplice. 5.30, Talk: Women in Napoleon's Life—Maria Walewska. 5.45, Gramophone Music. 6.5, Songs and Pianoforte Pieces (Willner). 6.55, Talk for Housewives. 7.0, See Brno. 8.0, The Three Musketeers—Musical Comedy (Kubin). 10.0, See Prague. 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayd by Gleiwitz, 1,184 kc/s, 253 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Military Band Concert, relayed from the Bergelgarten in Brieg. 2.0, News. 2.10, Talk. 2.35, Agricultural Talk. 3.0, Programme for Children. 3.30, Talk: Politics in Hungary. 4.0, Military Band Concert from Neustadt. 6.0, Talk in Dialect. 6.30, German Folk Song Duets—Recital by Martha Mirus (Soprano) and Karl Mirus (Tenor). 7.0, Talk: Tales of the Baltic Provinces. 7.30, Weather and Sports Report. 8.0, Request Concert by the Station Orchestra, conducted by Franz Marszalek; Soloist, Hellmut Hallendorf (Tenor). In an interval at 9.0, News. 10.0, Second News. 10.30, Programme from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—10.40 a.m., Concert by the Station Schramm Quartet. 11.0, See Bratislava. 11.25, See Prague. 11.45, See Bratislava. 12 Noon, See Prague. 12.5 p.m., See Moravska-Ostrava. 1.30, Agricultural Talk. 1.46 to 4.0, Interval. 4.0, Military

Band Concert relayed from a Restaurant. 5.30, Seven Songs from the Cycle, Spring (Jindrich), by Anna Solojeova. 5.50, Gramophone Records. 6.0, German Transmission: Quartet Concert. 7.0, Concert by the Station Orchestra, conducted by Bakala. Soloists: Albert Pek (Bagpipes) and Slegr (Recitations). 8.0, See Bratislava. 10.0, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—10.0 a.m., Concert by the Small Station Orchestra, conducted by P. Leemans. Soloist: Mue. Lambertini (Songs). 10.30, Belgian Spa and Coast Resort Week—Programme by the Station Symphony Orchestra, conducted by J. Kumps, and Mixed Choirs conducted by Alfred Mahy. Soloist: M. De Groote (Songs). 12 Noon, Concert by the Station Orchestra, conducted by Charles Walpot: French Military March (Saint-Saëns); Overture, Zampa (Herold); Selection from La Pêcheuse (Offenbach); Ballet Music from Le Cid (Massenet). 12.15 p.m., Sports Relay from Mons. 1.0, Le Journal Parlé. 1.10, Organ Recital by Louis Joos, relayed from the Carmelite Church. 1.30, Monologues. 1.40, Recital of Syncretized Music on Two Pianofortes. 5.0, Dance Music, relayed from the St. Sauveur Dance Hall. 5.30, Football Results. 6.0, Sonata Recital by Mme. Laurence De Guichtenere (Pianoforte) and M. Henry Gadeyne (Violin): (a) Sonata in A (Fauré). (b) Sonata in D Minor (Brahms). 6.30, Programme for Children. 7.0, Symphony in G (Haydn) on Gramophone Records. 7.15, Religious Address. 7.30, Announcements and Talk on Music. 8.0, Concert by the Station Orchestra: March, King Cotton (Songs); Overture, Les Bicyclettes (Hirschmann); Songs: (a) Aria from Louise (Charpentier); (b) Melody (Danza); Slav Rhapsody (Friedemann); Accordion Solo; Polka, Wildfeuer (Joh. Strauss). 8.45, Literary Talk. 9.0, Concert (cont'd.): Waltz, Ange d'amour (Waldteufel); Selection from Dole (Christine); Songs: In a Persian Market (Kotzeb); 9.20, La Morale de le Hasard—Radio Sketch (Bernard). 9.45, Concert (cont'd.): Accordion Solos; Selection from White Horse Inn (Benatzky). 10.0, Le Journal Parlé. 10.10, Concert by the Minstrels Club Orchestra. In the interval at 11.0, Gramophone Music.

BRUSSELS (No. 2)

I.N.R., 887 kc/s, 335.2 metres; 15 kW. Programme in Flemish.—10.0 a.m., Gramophone Concert. 11.0, Concert by the Small Station Orchestra, conducted by P. Leemans: Hindu March (Dupuis); Prelude to Le Déluge (Saint-Saëns); Selection from La Traviata (Verdi); Violin Solo, Andalous (Sarasate);

JUNE 11th

SUNDAY

continued

phone Concert. Part I: Offenbach Music. Part II: Light Music. 10.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—9.15 a.m., Flourish of Trumpets and Roll of Drums. 9.35, Press Review. 9.45, Bible Reading. 10.0, News. 10.5, Concert. 11.5, Sponsored Concert. 11.40, Gramophone Music. 12 Noon, Interlude. 12.15 p.m., Songs from Sound Films. 12.45, Announcements. 12.50, Variety Programme arranged by Paul Weill. 1.20, Interlude. 1.30, Gramophone Music. 2.0 to 7.0, Interval. 7.0, Le Journal Parlé. 7.5, Sports Notes. 7.15, Gramophone Music. 7.30, Catholic Programme. 8.0, Nadand Song Recital by Mme. Vinker. 8.15, Interlude. 8.30, Gramophone Music. 9.0, Interlude. 9.15, A Glass of White Wine—Play (Wachtlausen). 9.45, Gramophone Music. 10.30, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—7.45 a.m., Gramophone Music. 8.0, Press Review and Weather. 8.30, Physical Culture. 10.0, Elementary Book-keeping Lesson. 10.20, Advanced Book-keeping Lesson. 10.40, Spanish Lesson. 11.0 to 12 Noon, Interval. 12 Noon, Religious Address. 12.20 p.m., Sacred Music: Caprice for Organ (Clérambault); Fantasia No. 3 (Tournemire). 12.30, Bilboquet. 12.45, Press Review, News and Weather. 1.0, Gramophone Music. 2.0 to 3.0, Programme in English by the I.B.C. arranged by the International Broadcasting Company of London. 2.0, Dance Music: Announcers: Miss Faith Shipway and T. St. A. Ronald; Signature Tune: You and the Moon and Me; What have you got to lose?; Rumba, Mulata Rumbera; A Broken Rosary; Suzanne; Hold me; Under my Umbrella; And so I married the Girl; Signature Tune. 2.30, Gramophone Concert. 3.30, Sports Report. 4.30 to 5.30, Interval. 6.0 to 7.0, I.B.C. Programme in English by I.B.C. Variety Hour. Announcer: Mr S. H. C. Williams. 7.0, Concert of Light Music. 8.0, Music Hall Programme: Orchestra conducted by Maurice André. In the intervals at 8.30, News, Sports Notes and Weather, and at 9.15, Press Review and News. 10.30 to 11.0, I.B.C. Programme in English by the I.B.C. Mr. T. St. A. Ronald announcing. Light Music; March, Liberty Bell (Sousa); Love's Old Sweet Song; Selection from The Maid of the Mountains (Fraser-Simson); Selection from Rose Marie (Friml); Selection from

H.M.S. Pinafore (Sullivan); Musical Comedy Switch (Hall). 11.0 (approx.). Close Down.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.0 p.m., Programme to be announced. 7.15, The Boys of Wyncecastle. 7.30, The Northwestern Chronicle, from New York. 8.0, National Opera Concert, from New York. 9.0, Programme to be announced. 9.15, Symphonette, from New York. 9.30, Vesper Services from Shady-side Presbyterian Church. 10.30, Pages of Romance, from New York. 11.0, Time Signal and Soprano Solos by Lois Miller. 11.15, Weather Report. 11.16, Sport Review. 11.22, Press News-Reeler. 11.29, Temperature Report. 11.30, L'Heure Exquise, from New York. 11.45, Programme to be announced. 12 Midnight, Time Signal and Jack Pettis and his Orchestra. 12.20 to 2.30 a.m. (Monday), New York Relay. 12.30 a.m., Great Moments in History. 1.0, Riesenfeld's Viennese Programme. 1.45, Floyd Gibbons. 2.0, Will Rogers with Orchestra. 2.30, Programme to be announced. 2.45, Pickens Sisters, from New York. 3.0, Time Signal and Popular Melodies by Will Rysanek.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—10.10 a.m., Orchestral and Choral Concert by Children of the Institute for the Blind. 10.40, See Brno. 11.0, See Bratislava. In the interval at 11.25, Report on a Boat Race. 12.0 Noon, Chimes from St. Ludmila Church. 12.5 p.m., See Moravská-Ostrava. 1.30, Agricultural Talk. 1.45 to 1.55, Talk. 4.0, See Brno. 5.30, Gramophone Music. 5.45, Talk: Sea Serpents. 6.0, German Transmission: Musical and Dramatic Programme and News. 7.0, See Brno. 8.0, See Bratislava. 10.0, News, Press Review and Sports Notes. 10.20, Gramophone Music.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—9.55 a.m. (from Geneva), Chimes. 10.0 (from Geneva), Protestant Service. 11.0, Radio Report of the Automobile Races from Caux-sur-Montreux. 12.30 p.m., News and Weather. 12.40 (from Geneva), Gramophone Concert. 2.0 to 3.30, Interval. 3.30 (from Geneva), Programme to be announced. 7.0 (from Geneva), Catholic Address. 7.30 (from

Geneva), A Radio Interview. 8.0 (from Geneva), Sponsored Concert. 8.15 (from Geneva), Old Sonatas for Violin and Harpsichord: Sonata in G Minor (Leclair); Sonata in G (Somis). 8.35 (from Geneva), Dramatic Programme: (a) La Phrasse (Jules Renard), (b) Poil de Carotte—Sketch. 9.20, Concert by the Radio Suisse Romande Orchestra. 9.50, News and Weather. 10.0, Concert (cont'd.). 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—10.10 a.m., News, Sports Notes and Amusement Guide. 10.30, Agricultural Notes. 10.45, Bible Reading. 11.0 to 12 Noon, See Turin. 12.30 p.m., Variety Concert. 1.30 to 2.30, See Turin. 3.45 (Naples), Programme for Children. Weather and Sports Notes. 4.0, Orchestral Concert. 4.45 to 5.0, Sports Notes. 5.30, Choral Concert by Students of the Christopher Columbus Vocational Training School, conducted by Prof. Giannina Nicoletti Pupilli: Giovinetta (Blanc); Hymn of the Schools of Rome (Padellaro); Canzone garibaldina (Falvo); Al bimbo che dorme—for two Voices (di Veroli); Selection from Sanson and Delilah (Saint-Saëns); Songs for two Voices (Padellaro); Ra-ta-plan from The Daughter of the Regiment (Donizetti); Invocazione alla Madonna for Soloist and Chorus (Mascagni); Serenata delle fate from Lodoletta (Mascagni); Chorus from Silvano (Mascagni); Chorus for Four Voices from Nebuchadnezzar (Verdi). Sports Notes in the interval. 6.15, Weather Forecast. 7.30, Sports Report and News. 7.45, Song Recital by Lina Fiumana (Soprano). 8.0, Time and Announcements. 8.30, Sports Notes. 8.45, A Waltz Dream—Operetta in Three Acts (Oscar Straus). In the intervals: Reading and Recital of Poems by Teresa Franchini. News after the Operetta.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—8.0 to 9.45 p.m. (approx.). New York Relay. 8.0, Wayne King's Orchestra. 8.30, Dr. Ralph Sockman in the Radio Pulpit. 9.0, Fiddlers Three. 9.15, Wildroot Institute. 9.30, Temple of Song. 12.45 a.m. (Monday), Horse Sense Philosophy. 1.0 to 3.45, New York Relay. 1.0, Chase and Sauthorn Hour. 2.0, Manhattan Merry-Go-Round. 2.30, American Album of Familiar Music. 3.0, R.C.A. Programme. 3.15, Highlights and Shadows. 3.45, Sunday at Seth Parker's, from New York, followed by Programme Résumé.

Sports Notes. 8.0, Concert by the Station Orchestra, conducted by Hans Winter. Soloist: Helge Roswaenge (Tenor). Comedy Overture (Sinigaglia); Two Arias from Rigoleto (Verdi); The Nutcracker Suite (Tchaikovsky); Tenor Solos: (a) Aria from Così fan tutte (Mozart); (b) Aria from Martha (Flotow); Ballet Suite (Grétry); Cavatina from Faust (Gounod); Overture, The Barber of Bagdad (Cornelius); Two Arias from The Mastersingers (Wagner); Huldigungsarsch (Wagner). 9.40, Graf Schorsch—A Play in Nine Dialogues (Boro Schwerla). 10.20, Time and News. 11.0, Programme from Langenberg. 12 Midnight (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Classical Music on Gramophone Records. 6.0, Reading. 6.30, Song Recital by Buchanan. 7.15, Weather and News. 7.30, Concert by the Station Orchestra, conducted by Hugo Kramm. 8.0, Time Signal. 8.30, Talk. 9.0, Organ Recital from Fagerberg Church. 9.38, Announcements, Weather and News. 10.0, Topical Talk. 10.15, Recitations. 10.45, Dance Music.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—10.25 a.m., Religious Address. 11.40, Sacred Music. 11.0, Agricultural Talk. 12.45 p.m., Giornale Radio. 1.0 to 2.0, Concert of Light Music. In the interval at 1.50, Time Signal, Announcements, and Weather. 5.30 to 6.30, Gramophone Music. 8.0, Dopplavoro Announcements, and Giornale Radio. 8.20, Sports Notes and Gramophone Music. In the interval at 8.30, Time Signal and Announcements. 8.45, Symphony Concert, conducted by Armando la Rosa Parodi: Symphony No. 5 in E Minor (Tchaikovsky); Pastoral (Bach-Gui); Good Friday Magic (Wagner); Symphonic Poem, Juvenis (de Sabata). In the interval, Talk. 10.0 (approx.). Light Music on Gramophone Records. 10.55, News.

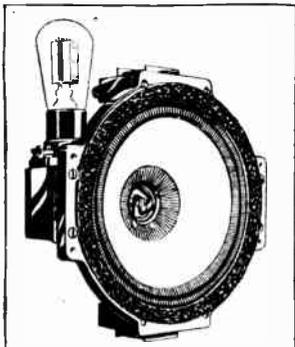
PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals). 1.0 p.m., News. 1.30, Concert by Jean Ibs and his Orchestra. 6.45, Le Journal Parlé. 8.15, Answers to Correspondents. 8.30, Gramo-

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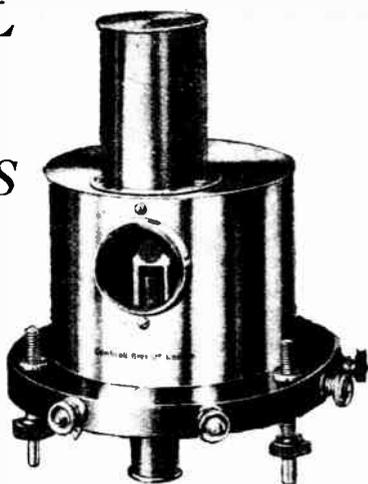
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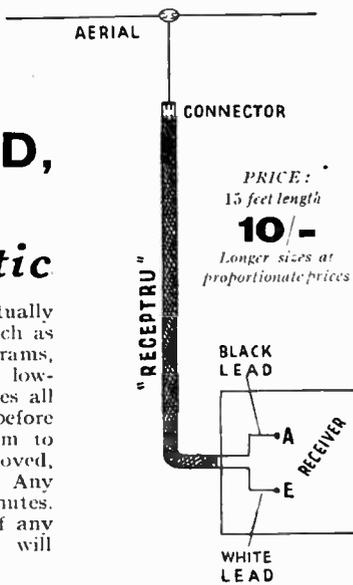
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RECEPTRU FOR TRUE RECEPTION

JUNE 11th

SUNDAY

continued

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; **Basle**, 1,229 kc/s, 244.1 metres; and **Berne**, 1,220 kc/s, 245.9 metres.—10.0 a.m. (from Zürich), Catholic Address, 10.45 (from Zürich), Chamber Music, 11.30 (from Zürich), Arthur Mannel reads from his own Works, 12 Noon (from Zürich), Concert by the Radio Orchestra. In the interval at 12.28 p.m., Time and News, 1.30 (from Zürich), Rural Programme, 2.30 to 5.0, No Transmission, 5.0 (from Zürich), Brahms Song Recital, 6.0 (from Zürich), Talk: Pingpong and other Games, 6.30 (from Zürich), Reading in Italian, 7.0 (from Zürich), Time and Sports Results, 7.5 (from Zürich), Concert of French and Italian Music, 8.0 (from Zürich), Talk on Bartolomé de Las Casas, 8.30, Concert by the Radio Orchestra, 9.0, News, 9.10 (from Zürich), Organ Recital by Ernst Isler with Commentary, 10.15 (from Zürich), Sports Report and Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by **Boden**, 244 kc/s, 1,229.5 metres; **Göteborg**, 932 kc/s, 322 metres; **Morby**, 1,166 kc/s, 257 metres; **Motala**, 221.5 kc/s, 1,354.4 metres; **Ostersund**, 389 kc/s, 770 metres; and **Sundsvall**, 554 kc/s, 542 metres.—11.0 a.m., Divine Service relayed from Visby, 12.45 p.m., Weather, 3.0 (from Sundsvall), Orchestra Concert, conducted by Hans Lampert; Soloists: Hans Lampert (Organ), Emma Lampert (Songs), and Göran Föllinger (Violin), 4.0, Temperance Talk, 4.30, Choral Concert, relayed from Visby; Conductor, F. Mehler; Soloist, Waldborg Beer, 5.5, Programme for Children, relayed from Örebro, 1,265 kc/s, 237.2 metres, 5.30, Reading, 6.0, Evensong, relayed from Jönköping, 1,490 kc/s, 201.3 metres, 7.35, Professor Beinharti-Comedy (Arthur Schmitzer), 9.10, Mandoline Concert of Light Music, relayed from Malmö, 1,301 kc/s, 231 metres, 10.0 (from Göteborg), Concert of Light Music, conducted by Bronislaw Mittmann, 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—9.15 a.m., Musical Festival Competition, relayed from Verdun, 10.45, Protestant Religious Service in French, 11.30, Catholic Religious Service in German, 12 Noon, Variety Music on Gramophone Records, 12.45 p.m., News, 1.0, Time, 1.1, Light Music on Gramophone Records, 2.0 to 3.0, Interval, 3.0, Speeches from the National Union of Ex-Servicemen's Banquet, relayed from Metz, 4.0, Results of the Musical Festival Competition, followed by Concert and Talk, relayed from Verdun, 6.0, Medical Talk: Protection of the Eyes, 6.15, Sports Notes, 6.30, Brahms Song and Pianoforte Recital by Louise Debonte and Ch. Müller, Songs: (a) O Tod, O Tod, (b) Wenn ich mit Menschen und Engelszungen redete, (c) Feldeinsamkeit, (d) Frühlingsstrost, (e) An die Tauben; Pianoforte Solos: (a) Intermezzi in A and E Flat, (b) Rhapsody in G Minor; Songs: (a) Liebestreu, (b) Schermut, (c) Wenn du mir zuweilen lächelst, (d) Vergebliches Ständchen, (e) Ein Wanderer, (f) Sehnsucht, (g) Wigengied, (h) Ach könnt ich diesen Abend, (i) Mein Mädel hat einen Rosenmund, 7.30, Time and News, 7.45, Light Music on Gramophone Records, 8.15, Press Review in German, Lottery Results and Announcements, 8.30, Alsatian Programme, Readings, followed by Two One-Act Comedies. After the Programme, Press Review in French, 10.30, Dance Music from the Savoy, 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.6 metres; 60 kW. Relayed by **Freiburg**, 527 kc/s, 570 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig, 12 Noon (from Freiburg), Concert by the Municipal Orchestra, conducted by Wilhelm Franzen; Overture, Silvana (Weber); Ballet Suite (Glück-Mottl); Entr'acte Music from Rosamunde (Schubert); Slav Dances (Dvorak); Elfenreigen (Friedrich Klöse); Polonaise in E (Liszt), 1.0 p.m., Report on the Stuttgart Foot Races, 1.5, Topical Talk, 1.20, Variety Concert on Gramophone Records, 2.5, Talk: The Future of the Skilled Trades, 2.30, Concert of Contemporary Choral Music, relayed from Balingen, 3.30, Programme for Young People, 4.30, Gramophone Music, 6.0, Reading from the Novel, Kaiser Joseph der Deutsche (Josephä Kriek von Poturzyn), 6.30, Sports Notes, 6.45, Our Homeland—a Sequence of Provincial Relays, No. 31; Constance, a Programme of Tales and Music, relayed from Constance, 8.0 to 10.20, See Munich, 10.20, Time and News, 10.45, Programme from Langenberg, 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.30 to 7.0 p.m., Programme in English by the I.B.C.

W. Brown-Constable announcing, Dance Music, A Waltz, a Night, a Tune, In Sant; Lucia; The Girl in the Little Green Hat; Try a Little Tenderness; I'll never have to Dream Again; A Letter to my Mother; Roll along, Kentucky Moon; My Darling; Jolly old Ma, Jolly old Pa, 7.0, Military Music, 7.15, News, 7.30, Songs from Sound Films, 7.45, Argentine Music, 8.0, Bal Muzette, 8.15, Operetta Music, 8.30, Songs from Operas-Comiques, 8.45, Hunting Horn Choruses, 9.0, Sound Film Music and Symphonic Music, 10.0, Popular Song and Sketches, 10.15, North African News, 10.30 to 11.30, I.B.C. Programme in English by the I.B.C., 10.30, Light Music, Happy Day are here Again; Kathleen Maybourne; Or with the Show; Girls of the Old Brigade; Killarney; The Old Contemptibles; Remon Time, Gentlemen Please, 11.0, Dance Music There's something about a Soldier; Can't we meet Again?; Have you ever been Lonely?; Love is the sweetest Thing; Paradise; Mad about the Boy; Round the Bend of the Road; The Younger Generation, 11.30 Opera-Comique Songs, 11.45, Venues Music, 12 Midnight, News, 12.5 a.m. (Monday), Accordion Solos, 12.15, Vocal Duos, 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—9.40 a.m., See Turin, 9.55, Mass from the Church of San Giusto, 11.0, Religious Address, 11.20 to 11.40, Agricultural Notes, 12.30 p.m. (approx.) till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by **Milan**, 905 kc/s, 331.5 metres; **Genoa**, 959 kc/s, 312.8 metres; and **Florence**, 596 kc/s, 500.8 metres.—9.40 to 9.55 a.m., Giornale Radio, 10.0 (Florence), Choral Concert by Students of the Scuola Cantorum, relayed from the Palazzo Vecchio, 10.40, Agricultural Talk, 11.0, Mass from the Church of the Annunciation, Florence, 12 Noon to 12.15 p.m., Bible Reading, 12.30, Concert of Variety Music. In the interval at 1.0, Time and Announcements, 1.30 to 2.30, Orchestra Concert, conducted by Ugo Tansini, 4.0, Concert of Variety Music, Sports Notes in the intervals, 6.15 to 6.30, Sports Review, 7.0, Time and Announcements, 7.10, Gramophone Music, 8.0, News and Sports Review, 8.20, Talk on the following transmission, 8.30, I cavalieri di Ekeldi—Opera in Four Acts (Zandonati), conducted by the Composer. In the intervals: Talk and Theatre Notes, Giornale Radio after the Programme.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by **Graz**, 852 kc/s, 352.1 metres; **Innsbruck**, 1,058 kc/s, 283 metres; **Klagenfurt**, 662 kc/s, 453.2 metres; **Linz**, 1,220 kc/s, 245.9 metres; and **Salzburg**, 1,373 kc/s, 218.5 metres.—11.30 a.m., Symphony Concert, conducted by Hugo Reichenberger. Soloist, Ludwig Czackes (Pianoforte), 12.45 to 2.0 p.m., Concert of Light Music, 3.0, Time and Announcements, 3.5, Review of Books, 3.30, Literary Talk: The Possibilities of Flying as treated by Satirists and Humorists, 4.0, Talk: The German Element in Szatmar, 4.25, Popular Concert, 4.45, Radio Report of the Trotting Derby, relayed from the Freudenau, 5.5, Concert (contd.), 5.55, Rudolf List reads from his own Works, 6.35, The Valkyries—Opera (Wagner), relayed from the Opera House. In the intervals at 7.40, Time, Sports Notes, and Programme Announcements; and at 9.30, News, 11.0, Musical Programme (to be announced).

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.07 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow, 12.5 p.m., Programme Announcements, 12.10, Weather Forecast, 12.15, Relay of Light Music, 2.0, Talk, relayed from Poznan, 896 kc/s, 335 metres, 2.15, Weather for Farmers, 2.20, The Start of the Grand Prix Automobile Race, relayed from Lwow, 788 kc/s, 381 metres, 2.45, Talk, 3.5, Light Music. In the interval, News, 4.0, Programme for Young People, 4.30, Gramophone Music, 4.40, Talk on the Polish Language, 4.55, Programme Announcements, 5.0, Talk on Holidays, 5.15, Concert by the Station Orchestra, conducted by Z. Gorzynski, Soloist, I. Downar Zapolska (Soprano), Overture, Die Grafen (Moniuszko); Waltz, Wo die Zitronen blühen (Strauss); Songs; Selection from Viktoria and her Hussar (Abrham); Songs; Rumba from Der Teufelsreiter (Kalmán); Mazurka (Lewandowski), 6.0, The Finish of the Grand Prix Automobile Races, relayed from Lwow, 6.40, Miscellaneous Items, 7.0, Dramatic Programme, 7.40, Answers to Technical Correspondence, 7.55, Interval, 8.0, Young People's Festival, relayed from the Lazienki Park, Programme of Music, Popular Songs, and Recitations, Introductory Talk by J. Polakiewicz, 10.0, Dance Music from the Europa Restaurant (Ciechocinek), 10.25, Sports Notes, 10.46, Aviation Weather Report and Police Notes, 10.45, Dance Music Relay (contd.).

ZURICH.—See Schweizerischer Landesender

ATHLONE

5 kc/s, 413 metres; 60 kW. Relayed by
ork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0
m., Time, Gramophone Music, Exchange
nd Weather. 6.0, Programme for Childr.
45, News. 7.0, Talk. 7.15, Val Vousden
ntertainer). 7.50, Time Signal. 7.32, The
ation Orchestra. 8.0, Songs and Stories by
ay Sargent. 8.15, And So I Married Alys
setch by G. Quinn and Company. 8.45,
erman Folk Songs by Mme. Erni Ritter.
5, The Station Orchestra. 9.25, T. Liddy
Pipes and Melodion). 9.45, Sponsored
rogramme. 10.45, Time, News and Close
own.

BARCELONA

Adj, 260 kc/s, 348.8 metres; 8 kW.—7.0
m., Trio Concert. 8.0, Request Gramophone
concert. 8.20, Sports Notes. 8.30, Exchange
nd Talk in Catalan. 9.0, Gramophone Music
nd News. 10.0, Chimes from the Cathedral
eather Exchange and Market Prices. 10.5,
umorous Review of the Week in Verse.
1.15, Concert of Sardanas. 11.0, Concert by
e Station Orchestra. 11.30, Concert by
e Philharmonic Mandoline Orchestra. In
the interval at 12 Midnight, News. After
the concert, Gramophone Music. 1.0 a.m.
Tuesday), Close Down.

BARI

112 kc/s, 269.8 metres; 20 kW.—8.0 p.m.,
announcements. 8.20, Giornale Radio. 8.30,
ime and Announcements. 8.35, Prince
gor—Opera in Four Acts (Borodin). In the
intervals, Talk and Literary Notes. After
he Opera, News.

TABLE.—See Schweizerischer Landessender.

BELGRADE

97 kc/s, 430.4 metres; 2.8 kW.—6.55 p.m.,
Time Signal and Programme Announcements.
7.0, European Concert, relayed from
Hilversum. 9.10, News and Relay of Foreign
stations.

BERLIN

DEUTSCHLANDSENDER; 183.5 kc/s, 1,635
metres; 60 kW.—2.0 p.m., Gramophone Con-
cert of Wanderers Songs. 3.0, Talk for
Women: Cushions for Garden and Balcony.
1.30, Weather and Exchange. 3.45, Review
of Books of Poetry. 4.0, Concert from
Breslau. 5.0, Educational Talk: The Early
History of the Germanic Races. 5.35, String
Quintet in A Minor, Op. 27 (Bolkó Count
von Hœlberg). 6.0, Poetry Reading. 6.5,
Recital of Felix Draesecke Songs by Claire
Winzler, Schiffergrüss; Am Weg sieht ein
Christusbild; Deines Odems reinen Hauch;
Abendrein; Trost der Nacht; Venetia;
Mitternacht. 6.25, Talk: Dictatorship and
Party Politics. 6.50, Weather and Announce-
ments. 7.0, Transmission for all German
Stations, relayed from Berlin (Witzleben).
8.0, Concert of Mozart Opera Music by
the Station Chamber Orchestra, conducted by
Edwin Lindner. Soloists: Kathi Rauch, Otto
Hüsel, and Eugen Fuchs. Overture, Figaro;
Aria from Figaro; Aria from Don Giovanni;
Aria from Il Seraglio; Duet from Il Seraglio;
Aria from Figaro; Duet from Don
Giovanni; Aria from Don Giovanni; Finale
from The Magic Flute. 9.0, Talk: The Fire
Brigade. 10.0, News. 10.10 (approx.), Talk:
Future Problems of the German State Rail-
ways. 10.45, Weather. 11.0, Concert from
Frankfurt. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.
—4.30 p.m., Music of the Eighteenth Century
—Orchestral Concert, conducted by Alfred
Hering: Symphony in D Minor for Strings
and Two Flutes (F. Bach); Aria from O
Mensch bleibe dein Sünder gross (Bach-
Reger); Concerto grosso No. 8 in B Flat
(Händel); Suite No. 2 in G Minor (Telemann-
Hering). 5.30, Talk: A Fallen Race—the
Influence of the Jewish Mind on Christian
History. 5.50, Hans Richter reads from his
own Works. 6.10, Folk Songs and Popular
Songs. 6.20, Soprano Song Recital by Rita
Weise; Songs (Pfitzner): (a) In der Früh,
wenn die Sonne kommen will, (b) Ist der
Himmel darum in Lenz so blau, (c) Sonst;
Songs (Klingner): (a) Nebel, (b) Jugend;
Der gelbe Reiter (von Weigert); Songs
(Trunk): (a) Regen, (b) Das Hemd, (c) Die
Allee. 6.40, The Witzleben Station informs
its Listeners. . . . 6.45, Topical Talk. 7.0,
Transmission for all German Stations. All
about Fish—Tales, Myths and Customs of
Fishes Folk (Jürgen Eggbrecht). 8.10,
Zither Recital by Georg Freundorfer with
Yodel Duets: March, Fidele Schützen-
Freundorfer-Derksen); Waltz (Labi);
Yodel Duet: Folk Song, Wann i von der
Aim weg geh; Alf geht's Baum (Freundorfer-
Derksen); Folk Song, Bayrische Zell
(Staudacher); Yodel Duet: Folk Song,
Hölliger Baum; Waltz, Am Wörtler See
(Koschat); March, Der Stiefelputzer
(Ehrlich). 9.0, Johannes Brahms—A Radio
Sequence on his Lyrics (Hans Tessler). 10.0,
News. 10.15, Dance Music, relayed from
the Roof Garden of the Eden Hotel. In
the interval at 11.0 (approx.), Talk: What People
are saying in Berlin. 12 Midnight, Close
Down.

BERNE.—See Schweizerischer Landessender.
BEROMÜNSTER.—See Schweizerischer
Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

MONDAY
JUNE THE TWELFTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Variety programme. Chamber music.
LONDON Eye-witness' account of the Junior T.T. Race from
Douglas, Isle of Man.
REGIONAL
MIDLAND Choral programme. Orchestral concert.
REGIONAL
NORTH Eye-witness' account of the Junior T.T. Race.
REGIONAL Orchestral concert.
WEST Orchestral concert from the National Museum of
REGIONAL Wales.
BELFAST Orchestral concert.

ABROAD

BARI 8.35 p.m. Opera: "Prince Igor," by Borodin.
BERLIN 9.15 p.m. Concert of Mozart Opera Music.
(Deutschland-
sender)
BERLIN 9.0 p.m. Johannes Brahms—a radio sequence on
(Witzleben) his lyrics.
HILVERSUM 7.0 p.m. European concert; orchestral, choral and
soloist music.
LANGENBERG 8.5 p.m. Opera: "Czar and Carpenter," by Lort-
zing.
PALERMO 8.45 p.m. Concert of chamber music.
SOTTENS 3.0 p.m. Opening of the World Economic Conference
by H.M. The King, relayed from London.
STUTTGART 9.0 p.m. Beethoven's Fifth Symphony, in C minor
(Op. 67), from the Municipal Theatre, Freiburg-im-
Breisgau.
WARSAW 8.15 p.m. The Philharmonic Orchestra, conducted by
Fitelberg.

BORDEAUX-LAFAYETTE

985 kc/s, 304 metres; 13 kW.—8.0 p.m.,
Programme for Children. 8.15, Charades.
8.20, News. 8.30, Part Relay of the
European Concert from Hilversum. 9.10,
Instrumental Concert.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—2.50 p.m.,
Concert of Czech Opera Music by the Station
Orchestra, conducted by F. Dyk. Overture,
The Secret (Smetana); Melody (Janacek);
Arias from: (a) Roussalka (Dvorák), (b)
The Jacobian (Dvorák); Melodies from The
Bartered Bride (Smetana); Waltz (Marsik);
Melody (Bernhard); Polka from Schwanda
the Piper (Weinberger). 3.55 to 4.0, See
Prague. 5.40, Talk: Touring in the Car-
pathians. 5.55, Concert by the Station Wind
Instrument Quintet. 6.55, Talk for House-
wives. 7.0, Part Relay of the European
Concert from Hilversum. 9.10, See Brno. 10.0,
See Prague. 10.15 (approx.), Close Down.
BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by
Gleiwitz, 1,184 kc/s, 253 metres.—1.15 p.m.,
Gramophone Concert of Pianoforte and
'Cello Music. 2.0, Time and News. 2.10,
Variety Concert on Gramophone Records.
2.45, Programme arranged by the Post
Office, with Gramophone Records. 3.10,
Agricultural Market Prices. 3.40, Review
of German Political Novels. 4.0, Concert by
the Station Orchestra, conducted by Brno
Janz: Overture, Der Waffenschmied (Lort-
zing); Introduction to the Third Act, and
Bridal Chorus, from Lohengrin (Wagner);
Two Tone Pictures (Dvorák); Romantic
suite (Armandola); Liebes-Romanze
(Schmalstieg); Dance Suite (Mracek);
Overture, Morning, Noon and Night (Suppé);
Hallen-Marsch (Kaempfert); Waltz from
Gri-gri (Lincke); Selection from Der arme
Jonathan (Müllbeker). 5.30, Market Prices.
5.35 (approx.), Talk: German Culture. 5.55,
Silesian Monthly Review. 6.10, Programme
to be announced. 6.30, Gramophone Music.
6.50, Weather and Announcements. 7.0,
Transmission for all German Stations, re-
layed from Berlin (Witzleben). 8.0, Johann
Strauss' Concert, by the Station Orchestra,
conducted by Franz Marszalek. Soloist,
Wally Mittelstaedt (Soprano). Overture,
The Gipsy Baron; Song from Die Fleder-
maus; Melodies from the Vienna Woods; In-
termezzo from The Arabian Nights; Polka,
Bitte schön; Waltz, Frühlingstimmen;
Overture, Cagliostro in Wien; Waltz, The
Blue Danube. 9.10, News. 9.20, Flute,
'Cello, and Pianoforte Recital: Allegretto
grazioso, Burlesque and Gigue (Reger); Ex-
tracts from Albumblätter (Schumann);
Trio in G Minor, Op. 63 (Weber); Adagio

and Allegretto grazioso (Schubert). 10.10,
Time and News. 10.30, Wireless Technical
Talk. 10.40, Talk: The Glaueche Municipal
Centenary Celebrations. 10.55 (approx.),
Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.25 p.m., Ger-
man Transmission: News, Elementary French
Lesson, and Book Review. 7.0, Part Relay of
the European Concert from Hilversum. 9.10,
The Ugly Clown—Play in Three Acts and an
Epilogue (Pospisil). 9.50, Circus Marches on
Gramophone Records. 10.0, See Prague.
10.15 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW. 12
Noon, Gramophone Concert. 12.30 p.m.,
Concert by Mlle. Jackie and her Brazilian
Tango Orchestra, relayed from the Amba-
sador. 1.0, Radio Journal. 1.10, Concert
by the Small Station Orchestra, conducted
by Leemans. 2.0, Broadcast for Schools.
5.0, Gramophone Records. Two Pieces from
Hyde Park (Jalowiez); Selection from The
Mikado (Sullivan). 5.30, Sonata No. 1
(Ropartz), by M. Pitsch and M. Selarrés.
6.0, Talk: The Curtius Museum at Liège.
6.15, Song Recital by Daniel Harris (Barito-
ne). Stella vicina (Salvator Rosa); Tre
Giorne son che Nina (Pergolesi); Stornello
(Cimara); Do not go, my Love (Hageman);
A Piper (Heard); The Time for making Songs
(Rogers). 6.30, Travel Talk: Ireland. 6.45,
Gramophone Concert. Intermezzo from
Cavalleria rusticana (Mascagni); Gipsy
Romance, Day and Night (Fomine); What
good am I without you (Ager); In a Chinese
Temple Garden (Kettelbey). 7.0, Film Re-
view. 7.25, Part Relay of the European
Concert, relayed from Hilversum. 9.20, Wire-
less Notes. 9.50, Extracts from The Merry
Widow (Lehar) on Gramophone Records.
10.0, Le Journal Parlé. 10.10, Gramophone
Music.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW. -
Programme in Flemish. 12 Noon, Concert
by the Small Station Orchestra, conducted
by P. Leemans. March (Doppler); Suite,
Joyous Youth (Coates); Aubade (Volpatti);
Selection from A Masked Ball (Verdi);
Violin Solo: La Gitana (Kreisler). Waltz,
Hofballtanz (Lanner); Berceuse (Gretchen-
Hayn); Selection from Pas sur la Bouche
(Yvain). 1.0 p.m., Le Journal Parlé. 1.10,
Gramophone Music. Overture, Die Fleder-
maus (Joh. Strauss); Selection from Act I
of Tosca (Puccini). 2.0, Programme for
schools. 5.0, Concert by the Station Sym-
phony Orchestra, conducted by J. Kumps.
Overture, Der Freischütz (Wcher); Suite,
Le Rite de Sans-Souci (Graener); Aspi-
ration (Dubois); Sérénade de Torcello
(Gilson); Ballet des fleurs (Delibes). 5.45,
Programme for Children. 6.30, Concert by

the Small Station Orchestra, conducted by
P. Leemans. March from Etienne Marcel
(Saint-Saëns); Ballet Suite (Infante); Ero-
tica (Grieg); Ich liebe dich (Grieg); Selec-
tion from the Jewels of the Madonna (Wolff-
Ferrari); Gavotte (Gossec); Czardas,
Rakocsy (Micheles); March (Vollstedt).
7.15, Talk for Ex-servicemen. 7.20, Talk:
Waves and Wavelengths. 7.30, Le Journal
Parlé. 8.0, Concert by the Station Symphony
Orchestra, conducted by Meulmans. Solo-
ist: M. Maelfeyt-Rovies (Songs). March,
Librado (Alpaerts); Flemish Suite (Moere-
mans); Songs: Popular Flemish Songs
(Schoenmacker); Kermesse flamande (Brus-
selmans). 8.45, Review for Stamp Col-
lectors. 9.0, Concert (contd.). Three Sym-
phonic Pieces (Soudant): (a) Jolie, (b)
Soir, (c) Scherzo. Songs: Aria from The
Damnation of Faust (Berlioz); Ballet Music
from Les deux Pigeons (Messager); Fan-
tasia on a German Theme (Orts); Waltz
(Joh. Strauss). 10.0, Le Journal Parlé.
10.10, Gramophone Dance Music.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m.,
Modern Music by the Jules Ghinda Jazz
Band. In the interval at 6.0, Radio Jour-
nal. 7.0, Educational Talks. In the in-
terval at 7.20, Gramophone Music. 8.0,
Chamber Music. 8.30, Talk. 8.45, Harp Re-
cital by Mme. Mercia Pessione. 9.15, Light
Music and Romanian Music by the Marco
Orchestra, relayed from the Continental
Restaurant. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550 metres; 18.5 kW. Also re-
layed on 840 metres from 7.0 p.m. till Close
Down.—5.0 p.m., Talk. 5.20, Orchestral
Concert. 6.20, German Lesson. 6.50, Mar-
ket Prices. 7.0, European Concert, relayed
from Hilversum. 9.10, News. 9.30, Gramo-
phone Music. 10.10, Weather. 10.12 (ap-
prox.), Concert by a Cigány Band from
the Café Emke. In the interval at 11.0,
Talk in German: The Platten-See.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed
by Kalundborg, 260 kc/s, 1,153 metres.—12
Noon, Time and Chimes from the Town Hall.
12.1 p.m., Concert, relayed from the Hotel
d'Angleterre. 2.0, Talk for Housewives.
2.10, Concert by the Radio Orchestra, con-
ducted by Emil Reesen: Overture, Tancred
(Rossini); Waltz, Abendsterne (Lanner);
Selection from Lucia di Lammermoor (Doni-
zetti); Javanese Rhapsody (Seelig); Pre-
lude and Minuet from Leonora Christina
(Salomon); Wiener Wachtparade (Müller-
Berghaus); Reading; Overture, Gri-Gri
(Lincke); Two Pieces (Herbert): (a) Punch-
inello, (b) Yesterthoughts; Adagio for String
Orchestra and Harp, Les Soupir (Elgar);
Selection from Hansel and Gretel (Humper-
dinck); Dance of the Hours, from La
Gioconda (Ponchielli). 4.15, Concert by
the Danish Choral Society and the
Aarhus Philharmonic Orchestra, relayed
from Aarhus Cathedral: Air for Strings
(Bach); The Copenhagen Choir: (a)
Die Ehre Gottes (Beethoven), (b) Holy,
Holy (Schubert), (c) Ave Verum for
Male Voice Choir and String Orchestra
(Mozart); Four Songs by the Finnish Choir;
Organ Solo: Fantasia in F Minor, Op. 20
(J. P. E. Hartmann); Three Songs by the
Jutland Choir; Male Choir and Orchestra:
Lander Kenning (Grieg). 5.35, Exchange
and Fish Market Prices. 5.50, Talk. 6.20,
English Lesson. 6.50, Weather Report.
7.0, News. 7.15, Time. 7.20, European
Concert, relayed from Hilversum. 8.30,
Talk: The Methods of the Labour Party.
9.0, Saint-Saëns Recital by Carl Rydahl
(Violin) and Henrik Boye (Harp); Fantasia
for Harp in A Minor; Fantasia for Violin
and Harp in A. 9.20, Talk. 9.40, News.
9.55, Symphony No. 4 in E Minor, Op. 43
(Louis Glass) by the Station Orchestra,
conducted by Launy Gondahl. 10.55,
Dance Music from the National Seala Dance
Hall. 12 Midnight, Chimes from the Town
Hall.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW. 6.35 p.m.,
Dance Music on Gramophone Records. 7.10,
Theatre Talk. 7.25, Miscellaneous Items and
News. 7.35, Programme Announcements.
7.40, See Warsaw. 11.0 (approx.), Close
Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0
p.m., Programme in English by the I.B.C..
T. St. A. Ronald and B. McNabb announce-
ing. 4.30, Concert for Children and Bog-
ner Listeners: Erstes Walzer (Robrecht);
The Jolly Sailor (Carter); Have you ever
been lonely?; Love me to-night (Crosby);
Tommy had (Margerton); A Boy and Girl
were dancing (Davis); We just couldn't say
Good-bye (Woods); Cloze Props (Charles);
How can you say No? (Dubin); Here comes
a nice llee (Reisfeld); Reconciliation
(Drigo). 5.15, Concert for Hastings and
Eastbourne Listeners: Around the Volga
(Borchert); Song, The Mighty Deep (Jude);
There's an Organ Playing in my Dreams (Con-

JUNE 12th

MONDAY

continued

dor); For you alone (O'Reilly); Fiesta; The Peanut Vendor; The Storm Fiend (Weatherly); Wandering by an Old Cathedral Garden (Gilbert); Good-night, Vienna; My sweet Virginia; I heard a Thrush at Eve (Cadhuan); Les Sirenes (Waldteufel); 6.0, Programme in French. 10.0 (approx.) via Close Down, Programme in English by the I.B.C. 10.0 (approx.). Dance Music by the Beolians: The Knave of Diamonds; Old Father Thames; The Juggler; Butterflies in the Rain; Cinderella's Wedding Day; Drifting and Dreaming; Business in Q; A Waltz of Long Ago; Do you recall? Horses carry the Tails; Can't we meet again? This is the Rhythm for me; What more can I ask? To-night; Brighter than the Sun; Play, Fiddle. Play. 11.0, Concert of Request Music. Selection from the Country Girl (Monckton); The March of the Grenadiers (Frim); Wee Cooper of Eife (Traditional); Rose of Tralee; Selection from The Vagabond King (Frim); Selection from The Desert Song (Rombert); 11.30, Light Orchestral Music: Old Medley; Let's go Native; Round the Bend of the Road (Klemmer); Thompson's Old Gray Mile (Pickard); Looking for the Lovelight in the Dark; For Good or for Bad; Horses carry Tails; Ladlin' at Life. 12 Midnight, Club Concert for Barry and Bridging Listeners. Selection from Maritima, Parts 1 and 2 (Wallace); Hen wad iy bhadun; Drink to me only (Caldell); Eleanor (Coleridge-Taylor); Riders of the Flag (Sons); The Captain of the Team (Longstaffe); Cello Solos, The Broken Melody (Van Biene); Song of the Highway (May); Song of the Clock (Burrell); The Journey's End (arr. Hewitt); Susan Ficht; Selection from Floradora, Parts 1 and 2 (Stuart). 1.0 a.m. (Tuesday), Instrumental Concert: The Moon is Low; Nymphonic Solo, Dance of the Marionettes; Banjo Solos; (a) In the Moonlight, (b) Medley of Popular Airs; What's the use? Nymphonic Solo, Danse d'Hesoin; Banjo Solo St. Louis Blues; The Japanese Sandman. 1.30, Vocal and Orchestral Concert: Song; (a) My Dream (Waldteufel), (b) Just once for all time (Leigh), (c) Live, Laugh and Love (Heymann), (d) Ke-sa-co, (e) Bohemia (Ross); Love will find a way (Fraser); Selection from The White Horse Inn (Charrel); Spanish Gipsy Dance. 2.0, Dance Music by the Beolians: Love me to-night (Hart); Masquerade (Webster); The Night when Love was born (Young); Business in E (Meyer); Sing a New Song (Weber); Nightfall (Lewis); The Clouds will soon roll by (Woods); A Bedtime Story (Nicholls); I can't believe it's true (Newman); Big Ben's saying Good-night (Murray); Moon (Miles); Ain't cha coming out to-night? (Robison); Mr. and Mrs. Sipi (Caldwell); Way up West in Kansas (Robinson); Dixiana (Caldwell); The old Man of the Mountains (Young). 2.57, I.B.C. Goodnight Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; and Cassel, 1,223 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., See Munich. 5.45, Exchange. 6.0, Talk on Georg Heym and Extracts from his own Works. 6.15, Italian Lesson. 6.45, Review of the Day. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Duets by the Pajwau Duetists. 8.30, Germany's Banners.—A Radio Sequence (Heinz Niethl). 9.5, Talk: Reminiscences of German East Africa. 9.30, Sonata in F Minor, Op. 120, No. 1 (Brahms) for Clarinet and Piano-forte. 10.0, German Almanac. 10.15, Time and News. 10.45, Concert by the Station Orchestra, conducted by Hans Rosland; Soloist, Dr. Reinhold Merten (Harpischord); Part I: Concerto in D Minor for Harpischord and String Orchestra (Bach); Part II: Programme of Old Dance Music. 12 Midnight (approx.). Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanoer, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Variety Programme. 6.45, Frankfurt Exchange and Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Concert of Old Viennese Humorous Songs by the Station Orchestra and Soloists; Conductor, Erwin von Clarmann. 9.0, Announcements. 9.10, Germany and the Fateful Battle of the Marne—Radio Sequence (Herbert Wilk). 10.10, Time and News. 10.20 (from Bremen), Quintet in E Flat, Op. 16 (Beethoven), for Piano-forte, Oboe, Clarinet, Horn and Bassoon. 10.50, Topical Talk. 11.0 (from Kiel), In the Country—Orchestral Concert, conducted by Hans Döring; Im wogenden

Aehrenfeld (Dransmann); Ländliches Hochzeitsfest (Zizlika); Tanz unter der Dorfbinde (Reinecke); Märgen (Fosse); Harvest Home (Dupuis); Festzug der Bauern durch das Dorf (Schytte); A Country Fair (Pillpueg); Goose-step (Helmburg-Holmes); Abendblätter (Ellenberg); Kirmesländer (Niederlitz); Im Dorfkrügel (Sieder).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Sturmlocken-Marsch (Freytag); Overture, Romeo and Juliet (Bellini); Waltz, Nuit d'été (Waldteufel); Selection from The Land of Smiles (Lehar); Pierrots and Pierettes Liebestod (Lindemann); Eastern Romance (Haynes); Selection from The Queen of Spades (Tchaikovsky); Mein Lebenslauf ist Lieb und Lust (Jos. Strauss). In an interval at 1.20, News. 2.30 (from Danzig), Danzig Exchange and Market Prices. 3.0, Agricultural Prices and Exchange. 3.30, Programme for Children. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Overture, Boccaccio (Suppé); Ballet Fantasia, Rosenluft (Popy); Waltz, Lob der Frauen (Joh. Strauss); Czardas (Monti); Es war einmal ein Zigeuner (Eimeg); Selection from Das Nachtlager von Granada (Kreutzer); Suite, On the Banks of the Nile (Platen); Waltz, Vive la danse (Waldteufel); Overture, Flotte Burleske (Suppé). In an interval at 5.0, (approx.), Reading. 5.45, Book Review. 5.55, Talk on Taxation. 6.15, Agricultural Prices. 6.25 (from Danzig), Talk on Danzig. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, European Concert, relayed from Hilversum. 9.10, News. 9.15 (from Danzig), Reading. 9.45, Elementary English Lesson. 10.15, Weather and News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Workers' Radio Society (V.A.R.A.).—11.40 a.m., Organ Recital. 12.25 p.m., Concert by De Notenkrakers. 1.40, Interval. 1.55, Gramophone Music. 3.55, Concert by De Fluiters. 4.40, Recitation. 5.10, Concert by the Amsterdam Salon Orchestra, conducted by Kiekens. Overture, Si j'étais Roi (Adam); Anatolian Dance (Weniger); Tanz der Geister (Glück-Berge); Gliska Potpourri (Urbach); Auf wogenden Wellen (Esslinger); Gramophone Music; Selection from Coppelia (Delibes); Melody (Beccer); Schatz-Walzer (Strauss); Impressions pastorales (Radzigue); Plaisir d'amour (Martini); Der Sieg der Sonne (Blankenbühl). 6.40, Talk: A Voyage to the Moon. 7.0, European Concert. The V.A.R.A. Philharmonic Orchestra, conducted by H. de Groot and P. Tiggers, the Haarlem Madrigal Society, the Apollo Male Voice Choir, and M. G. Robert (Organ). Overture, Viva Carolina (Voormolen); Suite No. 3 (Otteloo); Motets; (a) O bone Jesu (Monte); (b) Della vedova sora (Tollins); (c) Jan Jan (Sweelinck); (d) Grand mon mari (Lassus); (e) Fuyons tout d'amour (Lassus); Fantasia in D Minor for Organ (Sweelinck); Passacaglia in A Minor for Organ (Andriessen); Songs; (a) Boerenfeest (Dresden); (b) Gehet voor den tempel (Roeseke); Motets; (a) Canticum fratris sodis (Meyer); (b) Wanderers Nachtlied (Diepenbrock); (c) Heer Halwijn (Pijper); Suite from Electra (Diepenbrock); Wiener Dreiviertelakt (Wagner); Symphony, Op. 95 (Dvorak). In the interval at 9.10, News. 10.0, Recitation. 10.20, Organ Recital. 10.40, Gramophone Music. 11.45 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—Programme of the Christian Radio Society (N.C.R.V.). 11.10 a.m., Band Concert of Popular Marches; Post Horn Gallop (Koenig-Balfour); March, The Bullfighters (Kottam); Festival March (van de Glas); Adolf van Nassau (van de Glas); Military March (Alford); Republican Guard (Emmeren); Favoriten-Marsch (Scholz); March, The Contemplatives (Stanley); March (Teike). 11.40, Police Messages. 11.55, Overture, Rienz (Wagner) on Gramophone Records. 12.10 p.m., Time. 12.11, Organ Recital by Jan Zwart, relayed from the Lutheran Church, Amsterdam; Introduction and Three Psalms (Zwart); Sonata No. 5 (Guilmant); Introduction and Three Sacred Songs (Zwart); Sonata No. 1 (Borovskiy); Introduction and Andantino (César-Frank); Toccata (Bach). 1.40, Time. 1.41, Cooking Lesson. 2.10, Pastoral Variations (Mozart) on Gramophone Records. 2.15, Talk: Indoor Plants. 2.55, Time. 2.56, Dress-making and Millinery Lessons. 3.25, Programme to be announced. 3.40, Time. 3.41, Bible Reading and Sacred Music. 4.40, Time. 4.41, Gramophone Records: Prelude and Fugue in E Flat (Bach). 4.55, Song and Violin Recital. 5.55, Gramophone Music. 6.10, Answers to Correspondence. 6.40, Time. 6.41, Police Notes. 6.55, Time and News. 7.40, Choral Concert, conducted by J. van Beck. In the interval, Gramophone Music. 8.40, Talk: Accidents at Work. 9.10, Concert by the Haarlem Orchestral Society, conducted by Fritz Schuurman; Soloist, Piet Lentz (Viola da Gamba); Overture to an Oratorio (Leonardo Leo); Three Tone Pieces (Grétry); Concerto for Viola da Gamba (Tartini); Eine Kleine Nachtmusik (Mozart); Entr'acte from Rosamunde (Schubert). In the interval at 10.0, News. 10.40, Gramophone Concert. 11.10 (approx.), Close Down.

phone Music. 6.10, Answers to Correspondence. 6.40, Time. 6.41, Police Notes. 6.55, Time and News. 7.40, Choral Concert, conducted by J. van Beck. In the interval, Gramophone Music. 8.40, Talk: Accidents at Work. 9.10, Concert by the Haarlem Orchestral Society, conducted by Fritz Schuurman; Soloist, Piet Lentz (Viola da Gamba); Overture to an Oratorio (Leonardo Leo); Three Tone Pieces (Grétry); Concerto for Viola da Gamba (Tartini); Eine Kleine Nachtmusik (Mozart); Entr'acte from Rosamunde (Schubert). In the interval at 10.0, News. 10.40, Gramophone Concert. 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.25 p.m., Announcements and Gramophone Music. 8.0, Gramophone Music. 8.15, See Warsaw. 10.45, Dance Music. 11.0, Talk in Modern Greek.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Agricultural Report. 6.25, Concert by the Station Orchestra, conducted by Erkki Linko: Finnish Rhapsody (Lintala); España (Chabrier); Slav Rhapsody (Friedemann). 7.0, Talk. 7.25, Finnish Songs by the Station Quartet. 7.45, A Play. 8.5, The Station Orchestra; Melody from The Countess Maritza (Kálmán); Tales from the Vienna Woods (Joh. Strauss); 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music, relayed from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

653 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Wolf; Soloist, Toni Menzen (Mezzo-soprano); Overture, Ilka (Doppeler); Humoresque (Dvorak); In the Spring Room (Dvorak); Four Songs; (a) Frühlingstraum (Schubert); (b) In der Frühe (Wolf); (c) Im Frühling (Wolf); (d) Über die Heide (Brahms); Ballet Music from Ondine (Lortzing); Selection from Paganini (Lehar); Czardas from Ritter Pasmann (Strauss). In the interval at 2.0, News. 2.30, Meat Market Prices. 3.30, Economic Notes and Time Signal. 3.50, Programme for Young People. 4.30, Concert: Trude Fischer (Contralto); Ebert Grape and Hilde Mark Zimmerrmann (Pianoforte); Peter Graef (Viola); and Walter Wielsch (Pianoforte); Six Tone Pieces for Viola and Pianoforte; Op. 31 (Joh. Klau); Four Songs (Reger); (a) Friede, (b) Abgezurkt, (c) Glück, (d) Vorheimarsch; Three Intermezzi for Piano-forte (Brahms); Songs with Viola accompaniment; (a) Gestillte Sehnsucht, (b) Geistliches Wiegenlied (Brahms). In the interval, Topical Talk. 5.50, Talk for Smallholders. 6.10, Reading. 6.20, Talk for Parents: Physical Culture. 6.45, Weather, Time, Exchange and Sports Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, News. 8.5, Czar and Carpenter—Comic Opera in Three Acts (Lortzing). In the interval at 9.15, Talk in connection with the Nordic Week of German Culture—Scandinavian and Gothic Art. 10.45, News. 11.0, Serenade, conducted by Wolf. 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—1.15 p.m., German Opera Music on Gramophone Records, followed by News. 2.10, Art and Film Reports. 2.30, Reading. 3.0 to 3.25, Relay of King George's Speech at the Opening of the Monetary and Economic Conference in London. 3.35, Exchange and Market Prices. 4.0, Concert by the Leipzig Station Orchestra, conducted by Hilmar Weber. Ballet Overture (Kremsner); The Nutcracker Suite (Tchaikovsky); Selection from Tiedland (Alpert); Two Gipsy Dances (Heidingsfeld); Recitation; Waltz, Am Wäpferl (Koschut); Potpourri, Pikante Blätter (Koschak). 5.50, Economic Notes, Weather, and Time. 6.0, Talk: The Place of Mathematics in Secondary Education. 6.25, Talk on Former German Colonies—Pioneers in South-West Africa. 6.45, Programme to be announced. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Mandoline Concert. 8.30, Literary Programme. 9.0, News. 9.10, Variety Concert. 10.10, News. 10.15 (approx.), Concert by the Leipzig Symphony Orchestra, conducted by Dr. Julius Kopsch. Soloist: Johannes Straus (Pianoforte). Overture, Rodelinde (Handel); Serenade, No. 6 (Mozart); Piano-forte Concert in C (Kopsch); Dance Suite on Piano-forte Pieces by Couperin (R. Strauss). 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.30 p.m., Light Music, relayed from a Fair. 7.30, Music for Physical Exercises. 8.0, Programme from Zagreb, 977 kc/s, 307 metres. 10.0, Weather, News and Dance Music. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—7.0 p.m., Gramophone Music. 7.40, Weather. 7.45, Italian Symphony (Mendelssohn) on Gramophone Records. 8.20, Song Recital. 8.30, Topical Talk. 8.40, Gramophone Music. In the interval at 8.50, News in French. 9.45, News in German. 10.15, Gramophone Music. In the interval, Announcements.

LWOW

786 kc/s, 381 metres; 10 kW. 6.35 p.m., Gramophone Music. 7.20, Miscellaneous Items. 7.40, See Warsaw. 7.55, Talk. 8.15 till Close Down, See Warsaw.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.0 p.m., European Concert, relayed from Hilversum. 10.0 (approx.), Programme relayed from Paris (Ecole Supérieure), 671 kc/s, (447.1 metres). 11.0 (approx.), Close Down.

MADRID

ARANJUEZ (EAQ), 30 metres; 20 kW.—11.30 p.m., Light Music. 11.45, Radio Chronicle. 12 Midnight, Light Music. 12.35 a.m. (Tuesday), Sports Review. 12.40, Light Music. 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, Sports Talk, and Request Gramophone Records. 9.15, News. 9.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.5 p.m., Gramophone Music. 6.15, Talk for Workers. 6.25, See Prague. 6.30, Talk in German: Workers' Rights in Czechoslovakia. 7.0, Part-Relay of a European Concert from Hilversum. 9.10, See Brno. 10.0, See Prague. 10.15 (approx.), Close Down.

MOTALA.—See Stockholm.

MÜHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres, and Nürnberg, 1,256 kc/s, 239 metres. 4.30 p.m., Concert, conducted by Erich Kloss; Overture, Lisola disalata (Haydn); Melody and Gavotte-Minette (Glück); Music from Fidelio (Beethoven); Bacchanale from Tannhäuser (Wagner); Air from Guglielmo (Mozart); Schubert Mosaik (Raff); Three Pieces (Grig); (a) Ich liebe dich, (b) Erotik, (c) An den Frühling; Florentine March (Fueck). 5.45, Talk: Political Propaganda in the Past Centuries. 6.5, Reading from Josef Goebbels' Book, Michael, with Commentary. 6.25, Mandoline and Piano-forte Recital by Prof. Ingo Hartmann and Richard Staab; Adagio in E Flat for Mandoline (Beethoven); Minuet (Mozart); Intermezzi (Brahms); Mandolinata (Caldelle); Scherzo (Mozart). 6.45, Time, Weather and Agricultural Report. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.5, Concert of the Tacalia Society (founded 1719); Introduction and Kyrie, Gloria, Ave Maria and Credo from the Mass in D Minor (Klose), relayed from the Odeon. The Municipal Orchestra, conducted by Alons Singer, St. Michael's Choir and Soloists. 8.50, Talk: The New German Conception of World Politics. 9.10, Concert of Songs and Marches with Introductory Talk. 10.20, Time and News. 11.0 (from Nürnberg), Serenade, conducted by M. Bayer. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 553.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Concert by the Radio Ensemble, conducted by Oscar Gustavson. 6.0, German Lesson. 6.30, Talk. 7.0, Announcements. 7.15, Weather and News. 7.30, List Piano-forte Recital by Halfan Clave; Bénédiction de Dieu dans la solitude; Amphitruo-Walzer. 8.0, Time Signal. 8.1, Relay of a Meeting. 9.10, Political Talk. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Variety Programme; Soloist: Mimi, Bottom Soot and M. Kronstad (Songs).

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30 Time Signal and Announcements.

JUNE 12th

MONDAY

continued

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m. till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 905 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 to 6.0 p.m., Variety Music, 6.35, Giornale Radio and Agricultural and Dopulavoro Notes, 7.0, Time and Tourist Report, 7.5 (approx.), Gramophone Music, Harlequin (Erwin); Kitten on the Keys (Tommy); Ragazze d'oggi (Mascheroni-Borella); Cuori lontani (Ferruzzi-Tortora), 7.20, Announcements in Different Languages, 7.40, Gramophone Music, 8.0, News, Weather and Gramophone Music, 8.30, Chamber Music, Quartet in G, Op. 353 (Carlo Caligari); Cello Solos by Antonio Valsi, 9.30, Comedy in One Act, followed by Orchestral Concert, 11.0 (approx.), Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Italian, 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 882 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—1.0 p.m., Time and News, 1.10, Gramophone Music, 2.0 to 3.0, Interval, 3.0, Time and News, 3.20, Hints for the Holidays, 3.45, Gramophone Records of Famous Artists, 4.25, Talk for Young People, 4.50, Talk: Modern Music, 5.15, Concert. Part I: Opera and Operetta Music Part II: Modern Music 5.55, Talk: Streets in Vienna—the Herren-gasse, 6.15, Books of Reference in connection with the Week's Talks, 6.20, Talk: Fifty Years of Austrian Trade, 6.40, English Conversation, 7.0, Military Band Concert, 7.35, Time and News, 7.40, Concert (contd.), 8.5, Topical Talk, 8.20, Talk: Schuberl and the Spring, 8.45, Belvedere Castle, the Summer Residence of Prince Eugen of Savoy—a Radio Report with Concert of Historical Music, The Vienna Choir and Chamber Orchestra, conducted by Hans Heinz Scholtys, and Soloists: Cilly Fuchs (Soprano), Isolde Riehl (Contralto), Erika Rokyta (Soprano), Elemer v. John (Bass), Ernst Fritz Schmid (Viola d'amore), and Leopold Novak (Continuo). Extracts from Dido and Aeneas (Purcell); Viola d'amore Concerto in A Minor (Vivaldi); Overture and Air from Alceste (Lully); Sinfonia (Caldara); Extracts from Costanza e Fortezza (Fux); Extracts from Costanza e Fortezza (Matthes). 10.30, News, 10.45, Gramophone Music.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow, 12.5 p.m., Gramophone Records, 12.25, Polish Press Review, 12.35, Gramophone Records, 12.55, Radio Journal, 1.0 to 2.55, Interval, 2.55, Gramophone Music, 3.5, News, 3.10, Announcements, 3.15, Gramophone Music, 3.25, Economic Notes, 3.35, Gramophone Music, 3.45, Traffic Report, 3.50, Gramophone Records, 5.0, Talk in French, 5.15, Song Recital by Eugenie Hoffman: Spanish Songs, Les filles de Cadix (Delibes), Serenade (Grétry), Freudliche Vision (R. Strauss); Arias from (a) Samson and Delilah (Saint-Saëns), (b) La Gioconda (Ponchielli), (c) The Queen of Sheba (Gounod), 5.45, Harpsichord Recital by Mme. Trombini-Kazuro; Passacaglia from the Suite in G Minor (Händel); La Forqueray (Couperin); Les petits Moulin à vent (Couperin); Fantasia in C Minor (Bach); Sonatas in C and A (Searlatti), 6.15, Talk: Poland, An Industrial or an Agricultural Country, 6.35, Light Music from Gramophone Records, 7.20, Miscellaneous Items, 7.35, Programme Announcements, 7.40, Literary Talk, 8.0, Answers to Agricultural Correspondence, 8.15, Concert by the Warsaw Philharmonic Orchestra for the Congress of Polish and Czechoslovak Electricians, relayed from the Philharmonic; Conductor, Fiteberg; Soloists, Mme. Uminska (Violin) and M. Zaplicki (Baritone); Introductory Talk; Polonaise in A (Chopin); Symphonic Poem (Karłowicz); Violin Concerto (Szymanowski); Suite (Kondracki); Symphonic Poem, Anhelii (Rozycki); Les Echees (Niekraszowa); Songs (Moniuszko): (a) Aria from Verbum Nobile, (b) Aria from Halka; Mazurka from The Haunted Castle (Moniuszko). In the interval, News, 10.30, Sports Notes, 10.40, Aviation Weather Report and Police Notes, 10.45, Dance Music on Gramophone Records.

WILNO

533 kc/s, 563 metres; 16 kW.—7.10 p.m., Miscellaneous Announcements, 7.25, Sports Talk, 7.40, Talk: The Russian Revolution, 8.0, See Warsaw, 11.0 (approx.), Close Down, ZURICH.—See Schweizerischer Landessender.

Observatory, 12.20, News and Weather, 12.40 (from Geneva), Gramophone Music, 1.0 (from Geneva), Financial Report, 1.10 to 2.0 (from Geneva), Gramophone Music, 3.0, Opening of the World Economic Conference by H.M. King George of England, relayed from London, 3.28, Time Signal from Neuchâtel Observatory, 3.30 to 5.30, Programme from Lausanne, 3.30, Concert by the Radio Lausanne Orchestra, conducted by M. Moser, 4.0, Talk, 4.15, Concert (contd.), 5.0, Programme for Children, 5.30 to 7.0, Interval, 7.0 (from Lausanne), Talk on Engineering, 7.30 (from Lausanne), Weather and News, 7.35 (from Lausanne), Answers to Correspondence, 8.0 (from Lausanne), Violin and Pianoforte Recital, 8.30 (from Lausanne), Song Recital, 9.0 (from Lausanne), Concert by the Radio Lausanne Orchestra with Yodelling Music, 9.50, News and Weather, 10.0 (from Geneva), Gramophone Music, 10.30 (from Geneva), Talk: The Work of the League of Nations, 10.50 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.30 p.m., English Lesson, 7.5, Concert of Opera Music: Rhapsody on Carmen (Bizet); Selection from Romeo and Juliet (Gounod); Selection from The Fair Maid of Perth (Bizet), 8.0, News, 8.20, Concert of Opera Music (contd.): Songs by Thomas and Bizet; Selection from The Pearl Fishers (Bizet), 9.0, News, 9.15, Talk in German and French: The Latvian Choral Festival, June 17th-19th. After the Programme, Dance Music, 11.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 190, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 290, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Gramophone Concert, In the interval from 1.30 to 1.45, Giornale Radio and Exchange, 4.45, Children's Radio Review, 5.10, Aviation Weather Forecast, 5.15, Exchange and Giornale Radio, 5.30, Vocal and Instrumental Concert, Niki Pignatelli (Violin), Dina Fiumana (Soprano), and Mario Cavagnis (Tenor). Andante and Finale from the Concerto in E Minor for Violin (Nardini); Tenor Solo from Mignon (Thomas); Duet from La Traviata (Mozart); Violin Solos: (a) Minuet in E flat (Mozart-Burmeister), (b) La fille aux cheveux de lin (Debussy-Bartmann), (c) Polichinelle (Kreisler); Duet from the First Act of Manon (Massenet), 6.40 (Naples), Shipping and Sports Notes, 6.50, Agricultural and Dopulavoro Notes, 7.10, Tourist Report, 7.20, Announcements in Different Languages, 7.40, Giornale Radio, 8.0, Time and Announcements, 8.5, Gramophone Music, 8.30, Giornale Radio and Sports Notes, 8.45, Variety Programme, 9.45, Talk: Through Rome, 10.0, Concert of Light Music, 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WG Y, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 p.m., Book News, Levere Fuller, 9.15, U.S. Marine Band, from New York, 9.45, Lady Next Door, from New York, 10.0 (approx.), Interval, 12.45 a.m. (Tuesday), Stock Reports, 1.0, Socoyland Sketch, from New York, 1.30, Musical Programme, 1.45, Band of Famous Brands, from New York, 2.0, A. & P. Gipsies, from New York, 2.30, WG Y Players, One Man's Family, 3.0, Contented Programme, from New York, 3.30, Jes' Neighbors—Sketch, from New York, followed by Programme Resumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory and Weather, 12 Noon (from Basle), Choral songs on Gramophone Records, 12.30 p.m., News, 12.40 (from Basle), Gramophone Records, 1.25 (from Basle), Exchange, Time and Weather, 1.30 (approx.) to 5.0, No Transmission, 5.0 (from Zürich), Talk for Women, 5.30 (from Berne), Gramophone Music, 6.30 (from Zürich), Architectural Talk: Greek Temples, 7.0, Time and Weather, 7.5, European Concert relayed from Hilversum, 8.15 (from Zürich), English Lesson, 8.45 (from Zürich), Concert by the Radio Orchestra, conducted by H. Hoffman, 9.0, News, 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., (from

Göteborg), Song Recital by Elof Benktander and Claes Göran Stenhammer, 5.35, Talk, 6.0, Gramophone Music, 6.55, Parliamentary Report, 7.15, Weather and News, 7.50, Reading, 7.45, Part Relay of the European Concert from Hilversum, 9.10, Talk, relayed from Wisby, 9.30, Pianoforte Recital by Fritiof Ebersson, relayed from Malmö, 1,301 kc/s, 231 metres. Humoresque in D, Op. 10, No. 5 (Rachmaninov); Two Airs (Palmgren): (a) Old Finnish Lullaby, (b) Concert Etude; Rhapsody No. 3 in C (Dohnányi), 9.45, Weather and News, 10.0, Concert by Eric Ernst's String Ensemble, Overture, Marco Spada (Auber); Waltz, Lune de miel (Waldteufel); Serenata d'Amalfi (Bece); Concert Tango, Expressionen (Brase); Selection from The Merry Widow (Lehár); Frühlingsreigen (Fleischmann); Bolero (Bili), 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., French Operetta Music on Gramophone Records, 12.45 p.m., News, 1.0, Time and Exchange, 1.5, Light Music on Gramophone Records, 2.0 to 5.0, Interval, 5.0, Orchestral Concert, conducted by Roskan: Overture, Fantasia (Benoit); Waltz, Twilight on the Waters (Squire); Selection from La Vivandière (Godard); La Tristesse de Jeannette (Boucoiran); Orchestral Suite, Fête Nippone (Mouton); Mattinata (Leoncavallo); Selection from François les bas bleus (Messager), 6.0, Literary Review in French, 6.15, Talk in French: A Journey through Lorraine, 6.30, Gramophone Records, 6.45, News, 7.0, European Concert, relayed from Hilversum, 9.10, Press Review in French and German, Lottery Results, and Announcements, 9.30, Concert of Jazz Music, conducted by Roskan: One-Step, Don't be late in the Morning (Le Clercq and Mendoza); Foxtrot, Me and mine are doing fine (Woods and Connelly); Foxtrot, You're telling me (Kahn and Donaldson); Slow Waltz, Un seul jour (Rotter and Grothe); Foxtrot, Roses at Dawning (Boy-Kahn); Foxtrot, Wherever you are; Tango, Sag' mir nicht Nein, sag' mir vielleicht (Michailow); Foxtrot, Madeleine; That Babe is struck on me; Waltz, Roses from the South (Joh. Strauss); Foxtrot, Never swat a Fly; Foxtrot, How Deep is the Ocean; Tango, Le destin; Foxtrot, Look up; Azor Runba; One-Step, Marching along together, 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12 Noon, Concert of Danes by the Wireless Orchestra, conducted by Gustav Görlich, Sixteenth Century Intrada; Old French Gavotte; Minuet (Boccherini); Pantomime (Mozart); Gavotte and Ländler (Mannfred); Czardas from Der Geist des Wojewoden (Grossman); Polka (Joh. Strauss); Serbian Dances (Gál); Argentine Tango and Spanish Bolero (Mannfred), 1.15, Time and News, 1.30, Gramophone Records of Flower Music, 2.0, Programme arranged by the Post Office, with Gramophone Records, 2.15 (from Karlsruhe), A Call to Youth, 2.30, Spanish Lesson, 3.0 to 3.30, Elementary English Lesson, 4.30, See Munich, 5.45, Time and Announcements, 6.0, Talk: Modern Germany—her Leaders and her Makers.—Hermann Göring, 6.25, Programme from Frankfurt, 6.50, Time and News, 7.0, Transmission of all German Stations, relayed from Berlin (Witzleben), 8.0, See Hamburg, 9.0, The Fifth Symphony in C Minor, Op. 67 (Beethoven), relayed from the Municipal Theatre, Freiburg im Breisgau, 10.0, Time and News, 10.45, See Frankfurt, 12 Midnight, Close Down.

SONDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—Transmissions irregular owing to fire.—6.0 p.m., News, 6.15, Cello Solos, 6.30, Songs, 6.45, Three Tone Pictures from Psyché (Franck), 7.0, Opera Music, Aria from The Mastersingers (Wagner); Aria, Oh, vast Nature, from The Damnation of Faust (Berlioz), 7.15, News, 7.25, Commercial Notes, 7.30, Orchestral Music, 7.45, Light Music, 8.0, Military and Operetta Music, 8.45, Symphony Music, 9.0, Concert of Spanish Music, 9.30, Concert by a Viennese Orchestra, 10.0, Hawaiian Guitar Music, 10.15, North-African News, 10.30, Concert for Listeners in Morocco, Selection from The Flying Dutchman (Wagner); Berceuse from Jocelyn (Godard); Over the Waves (Rosas); La rose effluée (Bernardo); Melody (Van Hore); Selection from La vida breve (Fallá), 11.0, Variety Concert, 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown-Constable announcing, 11.40, Light Music, When anybody plays or sings; I certainly don't need you; She was only somebody's Daughter; Britolodia; Mother's Smile; Ain't it great to be home again; The Night was made for Love, 11.57, I.B.C. Goodnight Melody, 12 Midnight, News, 12.5 a.m. (Tuesday), Songs from Sound Films, 12.15, Argentine Music, 12.30 (approx.), Close Down.

8.45, Concert of Chamber Music. Soloists: Lea Mulé (Pianoforte), Germana Barbagallo Santoro (Violin) and Ettore Paladino (Cello); Pianoforte Sonata, No. 3, Op. 10 (Beethoven); Violin Solos: (a) Aria (Pizzetti), (b) Caprice viennois (Kriesler); Cello and Pianoforte: Concerto in A (Schumann); Violin Solos: (a) Ciaccona (Vivaldi), (b) Prelude and Allegro (Pugnani); Cello Sonata in E, No. 10 (Valentini); Pianoforte Solos: (a) Caprice (Guarini), (b) Two Preludes (Kiadlow), (c) Toccata (Martucci). After the concert, Light Music on Gramophone Records, 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals)—6.45 p.m., Theatre Talk, 7.0, Le Journal Parlé, 8.30, Concert of Instrumental Music and Songs, 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music, 7.15, Le Journal Parlé, 7.30, Hot Jazz on Gramophone Records, 8.0, Medical Talk, 8.5, Talk on Aviation, 8.15, Interlude, 8.30, Programme of Popular Songs, arranged by Max Régner, 9.0, Interlude, 9.15, Gramophone Music, 10.15, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture, 7.30, Weather and Physical Culture (contd.), 7.45, Gramophone Music, 8.0, Press Review and Weather, 12 Noon, Concert by the Radio Paris Orchestra: Overture, Waverley (Berlioz); Selection from Così fan Tutte (Mozart); Gramophone Records: Aria and Duet from Aida (Verdi); Selection from Le Roi de Lahore (Massenet); Gramophone Records: Three Airs from Thais (Massenet); Ballet Suite from The Battered Bride (Smetana); Selection from Henry VIII (Saint-Saëns); Gramophone Records: Three Airs from Marouf (Rabaud); The Nutcracker Suite (Tchaikovsky). In the intervals at 1.0 p.m., Exchange, News, and Weather; and at 1.30, Exchange, 2.0, Exchange, 3.45, Exchange and Market Prices, 6.10, Agricultural Talk, Market Prices, Weather, and Exchange, 6.30, Elementary English Lesson, 6.50, Film Review, 7.0, Book Review, 7.20, Concert by the Radio Paris Orchestra: Spanish Dances, No. 1 (Fallá); Esquisses venitiennes (Marechal); Air (Salva); Military March (Schubert), 7.45, Commercial Notes and News, 8.0, Variety Concert, 8.45, I Pagliacci—Opera (Leoncavallo), on Gramophone Records, In the intervals at 8.30, News, Weather, Sports Notes; at 8.40, Review by Paul Reboux; and at 9.15, Press Review and News.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayed by W3XK on 48.86 metres and 25.27 metres.—7.30 p.m., KDKA Home Forum, 8.0, Betty and Bob, from New York, 8.15, Monday Matinee, from New York, 8.45, Human Values, 8.58, Baseball Scores, 9.0, Radio Guild-Drama, from New York, 10.0, Business News and Market Reports, 10.15, Organ Solos by Larry Larson, 10.30, The Singing Lady, from New York, 10.45, Little Orphan Annie, 11.0, Time Signal and Pittsburgh Spotlights, 11.15, Weather Report, 11.16, Sport Review, 11.22, Press News-reeler, 11.29, Temperature Report, 11.30 to 4.0 a.m. (Tuesday), New York Relay, 11.30, Three X Sisters, 11.45, Today's News, by Lowell Thomas, 12 Midnight, News 'n' Andy, 12.15 a.m., Al Mitchell's Orchestra, with Baritone Solos by Everett Marshall, 12.30, Hotel Pennsylvania Orchestra, 1.0, Cluquot Club Eskimos, 1.30, Hill Billy Heart Thrills, 1.45, Phil Cook and the Ingram Shavers, 2.0, Sinclair Minstrels, 2.30, Jack Frost Melody Moments, 3.0, Time Signal and the Hour Glass.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—6.35 p.m., Programme for Soldiers, 7.15, Topical Talk, 7.20, Miscellaneous Items and News, 7.35, Theatre Notes and Programme Announcements, 7.40, See Warsaw, 7.58, Time Signal, 8.0, Announcements, 8.15, See Warsaw, 10.30, Time Signal, Sports and Police Notes, 10.45 (approx.), Close Down.

PRAGUE

314 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Bratislava, 3.55 to 4.0, Exchange, 5.35, Talk for Housewives, 5.45, Talk: Culture and its Significance for the State, 5.55, Talk on Camping, 6.5, Agricultural Talk, 6.15, Talk for Workers, 6.25, News in German, 6.30, German Transmission: Reading of Love Letters of Famous Men, and Gramophone Music, 7.0, Part Relay of the European Concert from Hilversum, 9.10, See Brno, 10.0, Time, News, Press Review and Sports Notes, 10.15, News in German, 10.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—12.28 p.m., Time Signal from the Neuchâtel

TUESDAY

JUNE THE THIRTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

"With Music by . . ." feature programme. Modern idiom in light music; orchestral programme.

"Vignettes of Variety," arranged by Charles Brewer.

"Gipsy Music"; orchestral concert.

Two plays: "Everybody's Husband," by G. Cannan, and "Smoke Screens," by H. Brighouse. Band concert.

ABROAD

NATIONAL LONDON
REGIONAL MIDLAND
REGIONAL NORTH
REGIONAL WEST
REGIONAL SCOTTISH
REGIONAL BELFAST

COPENHAGEN
EIFFEL TOWER
HEILSBURG
HUIZEN
MUNICH
PRAGUE
ROME
STUTTGART
VIENNA

8.5 p.m. Offenbach Concert.
 8.30 p.m. "Tam Tam," a musical play by Henri Tomasi.
 8.35 p.m. Oratorio: "Hercules" (Handel), by the Choir and Orchestra of the University College of Music.
 7.40 p.m. Festival of the International Society for Contemporary Music.
 7.0 p.m. Concert of Bavarian Folk Music and Dances (relayed by other German Stations).
 8.40 p.m. Russian Music, by the Station Orchestra.
 8.45 p.m. Opera: "I Cavalieri di Ekebu," by Zandonai.
 8.25 p.m. Opera Music, by the Württemberg Symphony Orchestra.
 6.25 p.m. Opera: "Siegfried," by Wagner.

See Prague. 8.20, Broadcasting Scene. 8.40, See Prague. 11.0 (approx.), Close Down.
BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gie-witz, 1,184 kc/s, 253 metres.—1.15 p.m., Gramophone Records of Sound Film Music. 2.0, Time and News. 2.10, Gramophone Concert of Military Music. 2.45, Programme arranged by the Post Office, with Gramophone Music. 3.10, Market Prices. 3.30, Programme for Children. 4.0, Talk on Credit Trading. 4.30, Schumann Song and Piano-forte Recital by Aga Goretzk Svoboda (Soprano) and Käte Remann-Förster (Piano-forte); Sonata in G Minor, Op. 22; Songs: (a) In der Fremde, (b) Intermezzo, (c) Waldesgespräch, (d) Die Stille, (e) Mondnacht, (f) Schöne Fremde; Piano-forte Piece in G Minor (Zielowsky). 5.15, Market Prices and Review of Books. 5.40, Programme to be announced. 6.5, Talk: With the German Colonists in Transcaucasia. 6.25, Recital on a Spanish Guitar; La Folia—Theme with Variations (Sor-Walker); Etude (Tarrega); Fantasia (Regondi); Spanish Serenade (Matsis); Trümperei (Schumann); Malaguenas (Sor). 6.50, Market Prices, Weather, and News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Transmission for all German Stations relayed from Munich. 8.25, A Gramophone Cabaret. 9.0, News. 9.10, Werner Siemens—Radio Play on the Life of the Discoverer (Georg Pfaff). 10.10, Time and News. 10.30, Political Press Review. 10.50, Talk: The Elimination of Wireless Interference. 11.0, Programme from Hamburg. 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.15 p.m., Topical Talk for Workmen. 6.25, German Transmission: News, Talk: Physical Training in the Middle Ages and Agricultural Talk. 7.0, See Prague. 8.20, Humorous Programme. 8.40, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Gramophone Records. 12.30 p.m., Rimsky-Korsakov Concert: Easter Overture; Hindu Song from Sadko; Procession of the Nobles; Dance of the Tumblers. 1.0 p.m., Le Journal Parlé. 1.10, Kettelbey Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, Chal Romano; In a Monastery Garden; Water Symphonies; Gipsy Waltz; The Clock and the Dresden Figures. 1.40, Concert of Widor Music: March from Conte d'Avril; Humoresque; Cantabile; Nocturne; Serenade. 5.0, Mozart Concert by the Symphony Orchestra, conducted by Meulmans: Overture, Il re pastore; Symphony No. 36. 5.30, Programme for Children. 6.5, Talk: Holiday Camps. 6.15, Quartet in F, Op. 3, No. 5 (Haydn) on Gramophone

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish.—12 Noon, Concert by the Small Station Orchestra, conducted by Leemans: Overture, Gli Irazzi e Curiazii (Cimarosa); Small Suite in Old Style (Moorcks); Variations for Violin (Tartini-Kreisler); Aria from Madame Butterfly (Puccini) on a Gramophone Record; Suite from L'Arlesienne (Bizet); Gramophone Record: Pearl of Hawaii (Herbert); Serenata (Moszkowski); Selection from Hans the Flute Player (Ganne). 1.0 p.m., Journal Parlé. 1.10, Gramophone Music. 5.0, Concert by the Radio Orchestra, conducted by Franz André: March, Entry of the Gladiators (Fucik); Viennese Operetta Revue (Romberg); Waltz, An der schönen grünen Arenta (Komzak); Gramophone Records: (a) Air from Martha (Flotow), (b) Hymn (Kromolitzky); Selection from Le postillon de Longjumeau (Adam); Spanish Dances (Granados). 6.45, Programme for Children. 6.30, Gramophone Concert. Overture, Don Pasquale (Donizetti); Selection from La Favorita (Donizetti); Overture, The Secret Marriage (Cimarosa); Selection from The Girl of the Golden West (Puccini); Overture, Sicilian Vespers (Verdi); Prologue to I Pagliacci (Leoncavallo); Tarantella and Final Dance from La Gira (Casella). 7.15, Talk: Temperance. 7.30, Talk on the Belgian Spa Week. 8.0, Concert by the Station Symphony Orchestra, conducted by Meulmans. Invitation to the Waltz (Weber); Symphonic Poem, Hamlet (Van Durme). After the Concert, Dramatic Programme. 9.15, Concert by the Radio Orchestra, conducted by Franz André. 10.0, Journal Parlé. 10.10, Popular Music on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Motoi Orchestra. In an interval at 5.0, Radio Journal. 7.0, Educational Talks. In an interval at 7.20, Gramophone Music. 8.0, Song Recital by Mme. Aida Helta. 8.20, Concert by the Station Orchestra. Overture, Hamlet (Bach); Ballet Music (Thomas); Suite, Mediterranean Voyage (Jalowiez); Olaf Trygvason (Grieg); Orientale (Cui); March of the Tin Soldiers (Jessel). In an interval at 9.0, Talk. 9.45, Radio Journal. 10.0, Talk in French on Romania.

BUDAPEST

545 kc/s, 550 metres; 18.5 kW. Also relayed on 840 metres from 7.40 p.m. till Close Down.—5.0 p.m., String Quartet Concert. 5.0, Talk. 6.30, Song Recital. 7.0, French Lesson. 7.30, Market Prices. 7.40, Hungarian Programme. 10.0, News. 10.10 (approx.), Concert by a Gypsy Band from the Hotel Ritz. 11.15, Dance Music from the Hotel Royal, with Karl Vajda in his Repertoire.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 250 kc/s, 1,153 metres.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, relayed from the Bellevue Strand-Hotel. 2.0 to 3.0, Interval. 3.0, Concert by Mogens Hansen's Instrumental Ensemble. Soloist: Esther Hoegberg (Danish Songs). 5.0, Programme for Children. 5.35, Exchange and Fish Market Prices. 5.50, Agricultural Talk. 6.20, German Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.20, Talk. 7.30, Talk: Agriculture during the Crisis. 8.0, Chimes from the Town Hall. 8.5, Offenbach Concert. The Radio Orchestra, conducted by Emil Reesen, Soloists: Vilho Hagbo Petersen and Marius Jacobsen (Song). Overture, Les Brigands; Eurycles's Aria and Duet from La belle Helene; Selection from La Vie parisienne; Hoffmann's Aria from The Tales of Hoffman; The Doll's Song from The Tales of Hoffman; Overture, La belle Helene. 9.0, (a) Allemande, (b) Contrate, (c) Sarabande and (d) Gavotte with Variations from the Suite in A Minor for Harpsichord (Rameau). 9.15, Guestbook—Radio Play after Plato's Symposium (Aage Hertel). 10.15, News. 10.35, Orchestral Concert, conducted by Emil Reesen, Overture, Lysistrata (Lincke); Waltz, The Skaters (Waldteufel); In the Shadows (Fincke); Tango (Albeniz); Perpetuum mobile (Joh. Strauss); March from the Gipsy Baron (Joh. Strauss). 11.5 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 5.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Ronald and B. McNabb. 4.30, Concert for Torquay and Exeter Listeners. Orchestra; Serenade (Toselli); Songs: (a) Over the dark hill Silence (Rizza), (b) My ain Folk (Lemo), (c) The Blackbird (Lemo), (d) The Blackbird in the Apple Tree (Lubbock); Violin Solo: Salut d'amour (Elgar); Song, Fairy Tales of Ireland (Coates); Orchestra; Selection from The Count of Luxembourg (Lehar); Song, Poor Man's Garden (Russell); Violin Solo: Hymn to the Sun (Rimsky-Korsakov); Song, Love's Old Sweet Song (Mollo); Orchestra; Hungarian Dance No. 2 (Brahms). 5.15, Concert for Plymouth and Devonport Listeners: On the Beach at Walkiki; Songs: (a) Was that the Human Thing to do? (Vallé), (b) O Sole Mio (di Capua); Duet: Where Rainbows rest (Wade); Tomi, Tomi; Song: Cuban Love Song; Accordion Solo: Lucassi March (Lucassi); Duet: When Everyone has passed you by (Wheldon); Somewhere in Hawaii; Songs: (a) Go Home again (Leon), (b) Who cares (Hackworth); Sweet-heart Lane. 6.0 to 10.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 1.0, Dance Music by the Beolians; Spanish Moon (Bullio); Why waste your Tears (Holstius); Paradise (Brown); Night shall be filled with Music (Collins); Everyone's going but me (Robison); Baby, when you ain't there (Ellington); Get away old Man (Crumli); Moon over Dixie (Koehler); One more Kiss, then Goodnight (Tobias); Who's your little who Zis? (Bernie); Just Friends (Klenne); With Love in my Heart (Praeger); One of us was wrong (Goering); Ich liebe Dich, my dear (Bligh); By the Fireside (Noble); Wild Man Blues (Norton). 11.0, Listeners' Request Half Hour; Regimental Marches; Land of my Fathers; Serenade; Selection from Congress Dances (Heymann); Where is this Lady?; Waltz, Gold and Silver (Lehar); Just an Echo in the Valley (Woods); More Regimental Marches. 11.20, Military Band; Selection from Shamrockland (arr. Stodden); Victoria March (von Blo); Song, A good old fashioned Chorus (Amo); 'Varsity March; Songs: (a) Beware of the Maidens (Craske), (b) The Arrow and the Song (Balfe); Fighting Mac (Traditional); Selection of Irish Melodies (arr. Stodden). 12 Midnight, Club Concert for Pennaith

ATHLONE
 725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.20 to 2.0 p.m., Time, Gramophone Music, Exchange, and Weather. 6.0, Programme for Children. 6.45, News. 7.0, Reading in Gaelic. 7.15, Talk. 7.30, Time Signal. 7.32, Orchestral Music. 7.50, Tenor Solos by P. Kirwan. 8.10 Orchestral Music. 8.20, Soprano Solos by Hilda Dobbs. 8.40, Piccolo Solos by Mollie Flynn. 8.50, Orchestral Music. 9.25, Baritone Solos by H. T. Ching. 9.45, Sponsored Programme. 10.45, Time, News, and Close Down.

BARCELONA

EAJ1; 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 7.45, Talk in Catalan. 8.0, Request Gramophone Concert. 8.30, Exchange and Art Notes. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral, Weather, Messages to Seamen, Exchange Quotations, and Market Prices. 10.5, Sponsored Programme. 11.0, Le Cara de Dios—Musical Play (Chapi). In the interval at 12 Midnight, News. 1.0 a.m. (Wednesday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Announcements. 8.20, Giornale Radio. 8.30, Time and Announcements. 8.35, Concert by the Molfetta Mandoline Quartet: Overture, Le tramie deluse (Cimarosa); Elegy (Colli); Selection from La figlia di Jorio (Franchetti); Anima d'Oriente (Guarino). 9.0 (approx.), The Poet—One Act Comedy (Niccodem). 9.30, Concert (contd.): Overture, Così fan tutte (Mozart); Hungarian Rondo (Haydn); Scherzo militaire (Marsiccini); Canti popolari assolati (Pavio). 10.30, Gramophone Music. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—7.0 p.m., Gramophone Music. 7.20, A Discussion. 7.50, National Song Recital by Mile Milutinovic. 8.30, Programme relayed from Zagreb, 977 kc/s, 307 metres. 10.30, News, followed by Gypsy Band Concert from the Rudnicani Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert of Favourite Overtures. 3.0, Programme for Young People. 3.30, Weather and Exchange. 3.45, Reading of Peasant Stories (Friedrich Gebhardt). 4.0, See Leipzig. 5.0, Three Talks for Women. 5.25, Topical Talk. 5.35, Sonata in D for two Pianos (Mozart). 6.0, Poetry Reading. 6.5, Song of Rudolf Bode and Robert Ziegler, sung by Inge Brodersen, accompanied by the Composers; Six Songs (Rudolf Bode): (a) Der Gärtner, (b) Der wandernde Musikant, (c) Die Kleine, (d) Der Junge Ehemann, (e) Der Winzer, (f) Sterbegelücke; Five Songs (Robert Ziegler): (a) Frühlingsabend, (b) Geliebte mein, (c) Gardenia, (d) Gebet der Jugend, (e) Todesangst. 6.30, Topical Press Review. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations relayed from Munich. 8.0, An Epigram. 8.2 (approx.), Transmission for all German Stations relayed from Munich. 8.25, Concert by the Adolf Becker Wind Instrument Orchestra: Overture, Friederiziana (Carl Zimmer); Tanz in Lager from Ziehensche Husaren (Bernhard Scholz); March, Es wollt ein Mädelein früh aufstehn (Adolf Becker); Pfälzerlandtanz (Adolf Becker); Traumbilder-Fantasia (Lumbye); The Mill in the Black Forest (Eilenberg); Two Alsatian Peasant Dances (Merkling); Army March, No. 168 (Faust); Army March No. 173 (Lübbert). 9.30, Dance Music from Berlin (Witzleben). 10.0, News. 10.20, Topical Talk. 10.45, Weather. 11.0, Concert from Hamburg. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.0 p.m., Technical Talk. 6.15, Book Review. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Munich. 8.10, Dance Music by Felix Lehmann's Band. In the interval at 9.0 (approx.), Topical Talk. 10.0, News. 10.15 (approx.), Concert of Old Music, relayed from Charlottenburg Castle. Trio for Viola, Viola da Gamba and Cello (Haydn); Pieces for Viola da Gamba and Harpsichord (d'Hervey); Sonata for Viola d'amore, Viola da Gamba, and Harpsichord (Loelliet). 10.50 (approx.), Talk: What People are Saying in Berlin. 10.55 (approx.), Concert from Hamburg. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODD.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—8.0 p.m., Talk on Pines. 8.15, News. 8.30, Dramatic Programme.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.25 p.m., Piano-forte Recital by Sylvia Macudzinskajalmosova. 6.55, Talk for Housewives. 7.0,

JUNE 13th

TUESDAY

continued

Listeners: Overture, Caliph of Bagdad (Boieldieu); I bring a Love Song; You will remember Vienna; Meditation from Thaïs (Massenet); All through the Night; Silver Threads among the Gold (Danks); Softly awakes my Heart, from Samson and Delilah (Saint-Saëns); Cwm Rhonda; Cello Solo: The Garden of Sleep (de Lara); Down the Railroad Track; Butthen Twysoog Cywru; Shepherd's Dance (German). 1.0 a.m. (Wednesday), Orchestral and Vocal Music: Confession; What's the Use?; Songs: (a) A Farewell; (b) My Dreams; Liza Lee; Let's all go Native; Songs: (a) Dance away the Night; (b) Let me dream in your Arms again; My Bluebird was caught in the Rain; It seems to be Spring. 1.30, Vocal Concert: A Selection of Wilfred Sanderson's Songs; Song of the Jolly Roger; The Sun is at my Window; Orchestral: Selection of Stephen Foster Melodies; In Absence; Ready for the River; Comrades in Arms. 2.0, Dance Music by the Heolians; Sheltered by the Stars; Just a Little Home for the Old Folks; You've got me in the Palm of your Hand; Fit as a Fiddle; I can't believe it's true; Pal of my Dreams; Marching along together; My Romance; Let's all dance the Polka; Puleeze Mr. Hemingway; There's a Crowd; I wonder how the Old Folks are To-Night; Ooh, that Kiss; Sweethearts Forever; You're My Everything; A Waltz of Long Ago. 2.57, I.B.C. Goodnight Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; and Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., Concert by the Station Orchestra, conducted by Wolfgang Brückner. 5.45, Economic Notes. 6.0, Talk: Reclam's Universal Library. 6.25, Hans Friedrich Blunck reads from his own works. 6.45, Review of the Day. 6.50, Time and Announcements. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Transmission for all German Stations, relayed from Munich. 8.25, See Munich. 9.0, Programme to be announced. 9.20, See Munich. 10.20, Time and News. 10.45, See Stuttgart. 12 Midnight (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.15 p.m., Variety Programme. 6.45, Frankfurt Exchange and Hamburg Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Transmission for all German Stations, relayed from Munich. 8.25, Holiday Time—Musical Farewell Programme by the Artists of the Hamburg Municipal Theatre. 9.0 (from Hanover), Concert of Music by Hanoverian Composers. The Station Orchestra and Soloists. Conductor: Otto Ebel von Sosen. 10.0, Time and News. 10.20, Topical Talk. 10.30, Concert by the Station Orchestra, conducted by Gerhard Maas; Ballet Suite from Die Liebesprobe (Mozart); Military March No. 3 (Schubert); Hungarian Dances Nos. 3 and 10 (Brahms); Heiteres Spiel, for Orchestra (Blümler); Idyll (Kant); Dance Fantasia (Weissmann); Wedding March from The Piper of Hamelin (Nessler); Scandinavian Folk Music (Hartmann); Overture, Indigo und die vierzig Räuber (Joh. Strauss); Delirica-Walzer (Joh. Strauss); Selection from Liselott (Künnecke). **HANOVER.**—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—11.30 a.m., Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky. Overture, Lodoiska (Cherubini); Symphony, No. 1 (Mozart); Orchestral Suite, Pelléas et Mélisande, Op. 16 (Debussy); Selection from Old Operas (Hasse); Extracts from the Suite, Op. 43 (Tchaikovsky); Overture, Der Berggeist (Spohrer); Chaconne and Rigaudon (Moussy); Contredanse (Beethoven). 1.5 p.m., Variety Music on Gramophone Records. In an interval at 1.20, News. 2.30, Programme arranged by the Post Office with Gramophone Records. 3.0, Agricultural Prices and Exchange. 3.30, Programme for Children. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilken. Overture, I Puritani (Bellini); Waltz, Ballschwärmer (Strecker); Gavotte (Sgambati); Selection from Le Villi (Puccini); Flute Solos: (a) Nocturne (Doppler), (b) Mazurka (Doppler); Marien-Walzer (Lanner); Selection from Ihre Hoheit die Tänzerin (Goetze); Overture, A Life for the Czar (Glinka). 5.35, Book Review. 5.55, Variety Programme by Young Germans. 6.15, Agricultural Prices. 6.25, Talk for Workers. 6.50, Weather. 7.0,

Transmission for all German Stations, relayed from Munich. 8.0, Transmission for all German Stations, relayed from Munich. 8.25, News. 8.35, Hercules—Oratorio (Handel) from the new arrangement by Friedrich Chrysander. The Choir and Orchestra of the University College of Music, conducted by Prof. Müller-Blattau. 10.5, Weather and News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—10.10 a.m. till Close Down, Programme of the Algemeine Vereeniging Radio Omroep (A.V.R.O.). 10.10, Organ Recital by Frans Hasselaar, with Songs by Jo Hendriks-Zalsman. In the interval at 10.40, Talk on Cookery. 11.40, Time and Gramophone Music. 12.10 p.m., Concert of Light Music by Kovacs Lajos and his Orchestra. Soloist: Bob Schulte (Songs). In the interval, Gramophone Music. 2.10, Kaiser Quartet (Haydn). 2.40, Dressmaking Lesson. 3.40, Gramophone Music. 4.10, Concert by a Children's Choir, conducted by Jacob Hamel. 4.40, Programme for Children. 5.10, Gramophone Music. 6.10, Talk arranged by Dr. Pisk. 7.10, Talk on Summer Excursions—Italy. 7.40, Time and News. 7.45, Concert by the Wireless Orchestra, conducted by Nico Treep. Soloists: Margret Pitz (Soprano) and Walter Ludwig (Tenor). Overture, Queen for a Day (Adam); Soprano Song from The Merry Wives of Windsor (Nicholi); Selection from Lohengrin (Wagner); Tenor Solos: (a) Aria from The Magic Flute (Mozart), (b) Aria from Martha (Flotow); Selection from Undine (Lortzing); March from Aida (Verdi). 8.40, A Radio Play. 8.55, Concert (contd.). Overture and Duet from La Belle Hélène (Offenbach); March from The Merry Widow (Lehár); Tenor Solos (Joh. Strauss); (a) Song from The Gipsy Baron, (b) Song from A Night in Venice; Two Soprano Songs (Abraham); Melody from A Kiss in Spring (Kálmán). 9.40, Talk. 10.0, Concert by the Wireless Orchestra, conducted by Nico Treep. March from The Love Parade (Schertzinger); Selection from Paganini (Lehár); Serenade (Rivelli); Jungle Drums (Kotzebey); La gitana (Buclossi); Time is Money (Lincke). 10.40, News. 10.50, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.55 a.m. to Close Down, Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Sextet. Rusticandola (Cortopassi); Sérénade andalouse (Boimnet); Waltz from Der Rosenkavalier (Strauss); Melody (Rayners); Selection from La Traviata (Verdi); Was Blumen träumen (Fraslauer); Gramophone Records: Military March (Schubert); Chopin Potpourri (Feras); Pas des Fleurs (Delibes); K.R.O. March (Lustenhouwer). 1.25 to 1.40, Interval. 1.40, Programme for Women. 2.40, Gramophone Music. 2.55, Song and Violin Recital by Mlle. Maria Smits and M. le Ritte. Violin Solos: (a) Sonata (Vivaldi), (b) Larghetto (Handel-Hubay); Songs: (a) Se forindo e fedele (Searlati), (b) Nel cor pin non mi sento (Paisiello), (c) Es träumte mir (Brahms), (d) Die Mainacht (Brahms), (e) Wir wandelten (Brahms), (f) Während des Regens (Brahms), (g) O komme holde Sommernacht (Brahms); Gramophone Records: Violin Solos: (a) Bayanaise (Saint-Saëns), (b) Melody (Bloch), (c) Hungarian Dance (Jochims); Songs: (a) End nun ade (Mahler), (b) Liebst du am Sonntag (Mahler), (c) Hans und Gretel (Mahler), (d) Marie, riez des roses (Frank), (e) Chanson d'avril (Bizet). 4.10, Concert by the K.R.O. Orchestra, conducted by J. Gerritsen; Huldigungs-marsch (Grieg); Selection from Eugene Onegin (Tchaikovsky); In the Steppes of Central Asia (Borodin); Finlandia (Sibelius); Festjubelmarsch (Blankeburg); Overture, Gri. Gri (Lincke); Selection from The Arabian Nights (Strauss); Waltz, Estudiantina (Waldteufel); Algerian Song (Kotzebey); Marche des petits Pierrots (Bose); Overture, Marinella (Fucik); Potpourri (Armandola); Selection from The Little Dutch Girl (Kálmán). In the intervals at 4.40, Talk and at 5.40, Gramophone Music. 6.40, Police Notes. 6.55, Talk on the 1789 French Revolution. 7.15, Gramophone Music. 7.25, Talk. 7.40, Programme from the Festival of the International Society for Contemporary Music, Heer Halawijn—Symphonic Drama in Nine Scenes (Pijper), by the Utrecht Municipal Orchestra and Soloists. Conductor: J. de Meester. In the interval at 8.55, News and Gramophone Music. 10.15, News. 10.20, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.25 p.m., Announcements and Gramophone Music. 7.40, See Warsaw.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Recital of Finnish Songs. 6.40, Talk. 7.5, Recitation. 7.30, Concert by the Station Orchestra, conducted by Toivo Haapanen. Soloist: Erik Cronvall (Violin). Eine kleine Nachtmusik (Mozart); Legend (Wiennawsky); Violin Solo, Zigeunerweisen (Sarasate); Two Cradle Songs (Poljannies); Valse triste (Sibelius); Hungarian Melody (Leopold). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music relayed from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Eysoldt. Soloist: Annelies Schäfer (Soprano); Overture, La flûte gardinière (Mozart); Songs: (a) Cherubino's Aria from Figaro (Mozart), (b) Widmung (Schumann), (c) Die Rose, die Lilie, die Taube (Schumann); Ballad (Spies); Ballet Music from Undine (Lortzing); Hungarian Dances Nos. 1 and 7 (Brahms); Overture, Il Guarany (Gomez); Scherzo in B Flat (Schubert); Egyptian March (Joh. Strauss). In an interval at 2.0 (approx.), Announcements. 2.30, Sponsored Programme with Gramophone Records. 2.45, Interval. 3.0, Programme for Children. 3.30, Economic Notes and Time Signal. 4.0, Talk on Mechanics. 4.30, Choral and Orchestral Concert. 5.45, Talk for Women. 6.5, Education Talk. 6.10, Poetry Readings (Paul Schaaf). 6.25, Italian Lesson. 6.45, Weather, Time and News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Transmission for all German Stations, relayed from Munich. 8.25, Announcements. 8.30, Concert by the Small Station Orchestra, conducted by Eysoldt. Soloist: Kurt Wessel (Harp). Wedding Music (Jensen); Harp Solos: (a) Concert Waltz (Gillmann), (b) Spieldose (Poentzi); Ice, Hail and Snow, from The Seasons (Glazunov); Waltz (Kreuzberger); Simple Aven (Thomé); Overture, Das Modell (Suppé). 9.20, Folk Song Recital by the Station String Quartet, Male Voice Choir, Children's Choir, Orchestra, and Soloists. 10.5, Talk in Connection with Nordic Week: German Education. 10.15, News. **LAUSANNE.**—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Variety Music on Gramophone Records. 1.0 p.m., News. 1.15, Popular Music on Gramophone Records, followed by News. 2.10, Agricultural Notes. 2.20, Soprano Song Recital by Käthe Schiffer. 3.0, Book Review for Young People. 3.35, Economic Notes. 4.0, Concert by the Station Orchestra, conducted by Theodor Blumer. Overture in D (Haydn); German Dances, No. 509 (Mozart); Selection from Der Kuhreigen (Kriegel); Waltz, Die Werber (Lanner); Romantic Suite (Bullerian); Holbergiana (Gade); March from Bocaccio (Suppé). In the interval, Talk. 5.50, Economic News, Weather, and Time. 6.0, Technical Talk. 6.45, Programme to be announced. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Transmission for all German Stations, relayed from Munich. 8.25, Concert by the Station Orchestra, conducted by Hilmar Weber. Overture, Czar and Carpenter (Lortzing); Serenade for String Orchestra in E Minor (Hoffmann); Selection from The Merry Wives of Windsor (Nicholi); Ein Fest in Aranjuez (Demersmann); Waltz, A toi (Waldteufel). 9.15, News. 9.30, The Eiffel—Radio Sequence. 10.30, News. 10.35 (approx.), Seventeenth Century Music—Radio Sequence (Walther Bergmann). 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.30 p.m., Concert by the Station Orchestra. 7.30, Country Programme. 8.0, Music for Physical Exercises. 8.30, Concert of Slovene Music and Songs. 9.30 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—7.0 p.m., Gramophone Music. 7.40, Weather. 7.45, Sonata in A for Pianoforte and Violin (C. Franck) on Gramophone Records. 8.30, Topical Talk. 8.40, Gramophone Music. In the interval at 8.50, News in French. 9.45, News in German. 10.15, Gramophone Music. In the interval, Announcements.

LWOW

788 kc/s, 381 metres; 16 kW.—6.35 p.m., Gramophone Music. 7.20, Miscellaneous Items. 7.40 till Close Down, See Warsaw. In the interval at 7.55, News.

LYONS

LA DOUA; 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., News. 8.30, Tam-Tam—Lyrical Sketch in Two Acts (Maigré). Music by Tomasi. After the Programme, News.

MADRID

ARANJUEZ, EAQ, 10,000 kc/s, 30 metres; 20

kW.—11.30 p.m., Light Music. 11.45, Radio Chronicle. 12 Midnight, Programme of Spanish Music. 12.35 a.m. (Wednesday), Talk. 12.40, Light Music. 1.0, Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, Talk on Natural History, and Request Gramophone Records. 8.30, Talk by Joaquin España Cantos and Request Gramophone Records (contd.). 9.15, News and Political Review. 9.30 to 10.30, Interval. 10.30, Linguaphone English Lesson. 11.0, Chimes, Time Signal and Political Review. 11.30, Relay from a Theatre. 1.30 a.m. (Wednesday), Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.0 p.m., See Prague. 8.20, Song Recital. 8.40, See Prague. 11.0 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 66 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—6.5 p.m., Talk: German Patriotism in Daily Life. 6.25, Recital of Folk Songs from Transylvania by Elisabeth von Pander. 6.45, Time, Weather, and Agricultural Report. 7.0, Transmission for all German Stations: Concert of Bavarian Folk Melodies and Dances. 8.0, Transmission for all German Stations: Monthly Report on World Poetics. 8.25, Concert by the Small Station Orchestra and the Station Choir, conducted by Erich Kloss. Soloists: Martha Martensen (Soprano), Lotte Theile (Soprano), Gert Nicmar (Tenor), and Karl König (Tenor); Prelude to The Land of Smiles (Johur); Tenor Solo (Puccini): (a) Air from La Bohème, (b) Air from Madame Butterfly; Selection from The Bird Fancier (Zeller); March from The Gipsy Baron (Joh. Strauss). 9.0, A Conversation with Fritz Stöckler, a Naval Aviator. 9.20, Orchestral Concert, conducted by Hans Winter; Soloist, Walther Bohberg (Pianoforte); Romantische Ouverture (Thuille); Pianoforte Concerto in E Minor (Chopin); Till Eulenspiegel's Merry Pranks (E. Strauss). 10.20, Time and News.

NAPLES.—See Roma.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Gramophone Music. 6.0, Programme for Women. 7.0, Advertising Notes. 7.15, Weather and News. 7.30, English Lesson. 8.0, Time Signal. 8.1, Talk. 8.30, Concert by the Station Orchestra, conducted by Hugo Kramm; Overture, La vilanella rapita (Mozart); Chamber Music in Old Style (Hermann); Petite suite (Debussy); Ballet Music from Faust (Gounod); Children's Suite (Engelbrecht); Berceuse (Länge); Valse moqueuse (Länge); Popular Norwegian Songs (Haaubnd). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Readings (Sivle), by Martin Linge.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Announcements. Tourist Talk, Agricultural Report and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time Signal and Announcements. 8.45, La Traviata—Opera in Four Acts (Verdi) on Gramophone Records. In the intervals, Talk and Announcements. 10.55, News.

PARIS

EIFFEL TOWER; Call FLE; 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals). 6.45 p.m., Theatre Talk. 7.0, Le Journal Parlé. 8.30, Tam Tam—Musical Play in Two Acts (Henri Tomasi). The Orchestra, conducted by Henri Tomasi.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music. 7.15, Le Journal Parlé. 7.30, Gramophone Music. 8.0, Film Review. 8.5, Legal Talk. 8.15, Interlude. 8.30, Concert by the Station Symphony Orchestra, conducted by Théodore Mathieu. Overture, Patrie (Bizet); Songs (Larmanjat): (a) Au pays, (b) Erit dans une cuisine, (c) Serenade; Prelude, Les Girondins (Le Borne); Three Symphonic Pictures (Audrieu); Provençale Rhapsody (Passani), the Composer at the Pianoforte; Song, Chansons d'un son (Soudry); Caucasian Suite (Ippolitov-Ivanov). In the interval at 9.40, Talk: Brittany. 10.40, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Music. 12 Noon, Concert by the Kretly Orchestra; Part 1: Old Music;

JUNE 13th

TUESDAY

continued

Cello Solos: Concert Pieces (Couperin, arr. Bazelaire); Allegro Spiritoso and Sicilienne (Dalyrac); Célèbre Gavotte and Passepied du Jardinier (Lully); Overture, L'éprouve villageoise (Grétry); Part II: Contemporary French Music: Short Pieces (Ropartz); Le lieu que chante mon cœur (Tomasi); Minuet (Tomasi); Cloches dans la brume (Stalin); Four Sketches (Gaubert); Violin Solo, Berceuse (Durosoir); Zorriga (Bousquet); Pavane pour une Infante défunte (Ravel); Divertissement on Russian Songs (Kaband); Part III: Contemporary Music from Abroad: Arabesque (Philips); Miramar (Turino); Three Dances (German); Suite for Strings (Kongoull). In the intervals at 1.0 p.m., Exchange and News, and at 1.30, Exchange, 2.0, Exchange and News, 3.45, Exchange, 6.10, Agricultural Talk, 6.30, English Lesson, 6.50, Theatre Notes, 7.5, Talk: New Arrangements at the Louvre, 7.20, Concert by the Krotky Orchestra: Etiole de ma vie (Silvestri-Chapelier); Sortilège de printemps (Berliandier); Valse lumineuse (Ganne); Sérénade dans le soir (Grevout); Rose-Mousse (Bosc), 7.45, Review of the Anglo-Saxon Press, 8.0, Half an Hour of Fantasy by Paul Weill, 8.30, News, 8.40, Review by Pierre Seize, 8.50, Two Plays by Jules Romains: (a) La Scintillante, (b) Demetrios, 9.30 (approx.), Close Down.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 46.86 metres and 25.27 metres.—7.30 p.m., Programme to be announced, 8.0, Betty and Bob, from New York, 8.15, Radio Troubadours, from New York, 8.45, Congress of Clubs Period; Piano-Torte Recital by Marion Duell McLeod, 8.58, Baseball Scores, 9.0, Meredith Wilson's Orchestra, from New York, 9.15, Jack Walton and his Casanova Orchestra, from New York, 9.30, Business News and Market Reports, 9.45, Riggs and Moke, 10.0, Baseball Scores, 10.5 to 10.45, New York Relay, 10.5, Harold Stokes Orchestra, 10.15, Concert Favorites, 10.30, The Singing Lady, 10.45, Little Orphan Annie, 11.0, Time Signal and Pittsburgh Spotlights, 11.15, Weather Report, 11.16, Sport Review, 11.22, Press News-Reeler, 11.29, Temperature Report, 11.30 to 2.59 a.m. (Wednesday), New York Relay, 11.30, Soloist—Monty White featured, 11.45, Pickens Sisters, 12 Midnight, Amos 'n' Andy, 12.15 a.m., National Advisory Council on Radio in Education, 12.45, Irene Bordoni and Emil Coleman, 1.0, Crime Clues, 1.30, Adventures in Health, 1.45, Floyd Gibbons, 2.0, Willard Robinson's Deep River Orchestra, 2.30, Tune Detective, 2.45, Pickens Sisters, 2.59, Time Signal, 3.0, Household Musical Memories, from New York.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—6.50 p.m., Book Review, 7.5, Talk on Modern French Poetry, 7.20, Miscellaneous Items and News, 7.35, Theatre Notes and Programme Announcements, 7.40, See Warsaw, 7.58, Time Signal, 8.0, See Warsaw, 10.0, Time Signal Sports and Police Notes, 10.15, Dance Music from the Café Esplanade, 11.50 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—5.15 p.m., Concert relayed from a School in Karlin, 5.45, Talk: Bread and its History, 5.55, Talk on Commerce, 6.5, Agricultural Talk, 6.15, Talk for Workers, 6.25, News in German, 6.30, German Transmission: Song Recital by Louise Edstein, 7.0, Chimes from St. Ludmila Church, 7.1, News, 7.10, Talk on Nature Study, 7.25, Military Band Concert conducted by J. Pesta, relayed from the Kralovska Obora Park, Overture, The Secret (Smetana); Selection from The Jacobin (Dvorak); Poem (Fibich); Czech Military March; National Songs (I. Handel); Slav Dance (Smatek); Fanfare March (Zita), 8.20, See Bratislava, 8.40, Concert of Russian Music by the Station Orchestra, conducted by B. Jirak, Soloist: L. Milenko-Belocvetova (Pianoforte). Suite on a Czech Theme, Op. 44 (Traill); Pianoforte Concerto in C Minor, Op. 18, No. 2 (Rachmaninov); Symphonic Poem, Antar, Op. 9 (Rimsky-Korsakov), 10.0, News, Press Review, and Sports Notes, 10.15, Czech Dance Music on Two Pianofortes, 11.0 (approx.), Close Down.

RABAT

721.1 kc/s, 416 metres; 6 kW.—1.30 to 3.0 p.m., Symphonic Concert, conducted by Jean Gardino, 5.0 to 6.0, Gramophone Music, 8.0, Aub Programme, News, and Gramophone Music, 8.45, Le Journal Parlé, Weather, and News, 9.0, Concert: Waltz, Les nuits ziganes (Gauvini); L'heure ensoleillée (Mignan); Overture, Zampa (Hérold-Weininger); Air from I Pagliacci (Leoncavallo); Le chemin du ciel (Holmes-Mouton); Selection from La Favorita (Donizetti-Tavan); Air from The Damnation of Faust (Berlioz); Talk: A Visit to Morocco; Pianoforte Solo; Liebestraum (Liszt); Song, Evening Bells (Yaroff); Ballet égyptien (Luigiini); Song, Ma belle amie est morte (Gounod); Sous les oranges (Turina-Chapelier); Symphonic Poem, Le Ronet d'Omphale (Saint-Saëns-Mouton), 11.0, Gramophone Music.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres, 25 kW.; and Geneva, 395 kc/s, 760 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory, 12.30, News and Weather, 12.40 (from Geneva), Gramophone Music, 1.0 (from Geneva), Financial News, 1.10 to 2.0 (from Geneva), Gramophone Music, 2.0 to 3.28, Interval, 3.28, Time Signal from the Neuchâtel Observatory, 3.30 (from Lausanne), Concert, by the Radio Lausanne Orchestra, conducted by M. Moser, 5.0 (from Lausanne), Talk for Women, 5.30 to 7.0, Interval, 7.0 to 9.50, Programme from Geneva, 7.0, Talk: Why Switzerland has no Colonies, 7.30, A Radio Interview, 8.0, concert of Mandoline Music, In the interval, Xylophone Solos, 8.40, Smiles, 8.50, Variety Programme by the Broadcasting Serenaders, 9.50, News, and Weather, 10.0 (from Geneva), Talk: The Work of the League of Nations, 10.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.10 p.m., French Lesson, 6.40, Talk: Legislation in France, 7.0, Weather, 7.15, Symphony Concert, relayed from the Grand Park, Wernanis: Overture and Chorus from Prince Igor (Borodin); Réverie (Scriabin); Latvian Dance Suite (Darzins); Overture, Oberon (Weber); Cello Concerto in A Minor (Saint-Saëns); Overture, Tannhäuser (Wagner). In the interval at 8.0, News, 9.10, News, 9.20, Dance Music, 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 190, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 290, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Concert of Variety Music, In the interval from 1.30 to 1.45, Giornale Radio and Exchange, 4.45, Children's Radio Review, 5.10, Weather Forecast, 5.15, Exchange and Giornale Radio, 5.30 to 6.15, Orchestral Concert: L'ora della miscela (Bece); Si tu le vuoi (Fronde); Melody (Dvorak); Rosita (Dupont); Selection from Katja the Dancer (Gilbert); Melody (Meyers); Sérénade amoureuse (Frontini); O Cielo, O Celestina (Maresca), 6.40 (Naples), Shipping and Sports Notes, 6.50, Agricultural and Dopplavoro Notes, 7.0, Tourist Report, 7.10, Lesson in Morse, 7.20, Announcements in Different Languages, 7.40, Giornale Radio, 8.0, Time and Announcements, 8.2, Talk on Astronomy, 8.15, Sponsored Music, 8.30, Sports Notes, 8.45, I cavalieri di Ekebb—Opera in Four Acts (Zandoma). In the intervals, Talk, News, and Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—12.45 a.m. (Wednesday), Stock Reports, 1.0 to 3.30, New York Relay, 1.0, Blackstone Plantation, 1.30, Wayne King's Orchestra, 2.0, Ben Bernie's Orchestra, 2.30, Ed Wynn and the Fire Chief Band, 3.0, Lives at Stake, 3.30, National Radio Forum, from New York, followed by Programme Résumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 653 kc/s, 459 metres, 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory and Weather, 12 Noon (from Zürich), Orchestral Concert, 12.30 p.m., News, 12.40 (from Zürich), Concert (cont'd.), 1.25 (from Zürich), Exchange, Time and Weather, 1.30 to 5.0, No Transmission, 5.0 (from Zürich), Orchestral Concert, 5.30 (from Basle), Gramophone Music, 6.30 (from Berne), Talk, An Alpine Trip by Car, 7.0, Time, Weather and Broadcast for Schools, 7.10, Gramophone Music, 7.30, Two Musical Comedies, 8.0 (from Berne), Talk, 8.40, Talk: Poison Gas, 9.0, Weather and News, 9.10 (from Berne), Concert of Ländler by the Immergrün Orchestra, 9.25, Concert by the Station Orchestra, 9.55 (from Berne), Jazz Music by the Maxim Band, 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Programme for Children, 5.30, Talk, 5.55, Gramophone Music, 6.55, Dialogue, relayed from Visby, 7.15, Weather and News, 7.30, Talk: Agriculture in Gotland, relayed from Visby, 8.0, Military Band Concert, relayed from Visby; Conductor: Baltzar Bäckström, 9.0, Talk: The Monetary and Economic Conference in London, 9.20, Recital of Finnish and Swedish Songs by Elsa Ekendall, relayed from Malmö, 1,301 kc/s, 231 metres, 9.45, Weather and News, 10.0, Chamber Music: String Quartet in B Flat, Op. 46, No. 4 (Haydn); String Quartet in

D Minor (Mozart), 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Light Music on Gramophone Records, 12 Noon, Orchestral Concert, conducted by Maurice de Villers: Overture, Le roi Pa dit (Delibes); Selection from Tiefland (d'Albert); Four Sketches (Gaubert); Spanish Dances (Granados); Suite Funambulesque (Messager); Waltz, Scherzo (Chabrier); Violin Solo: Canzonetta (d'Ambrosio); Offenbach Operetta Potpourri (Comrad); Chanson des abelles (Filippucci); Overture, Il Guarany (Gomez). In the interval at 12.45 p.m., News; and at 1.0, Time and Exchange, 2.0, to 4.45, Interval, 4.45, Talk in French: Native Industries in Algiers, 5.0, Orchestral Concert, conducted by Roskam: March (J. F. Wagner); Aquarellen-Walzer (Jos. Strauss); Dance, La noce Bretonne (Williamme); Overture, Si j'étais roi (Adam); Selection from Le voyage en Chine (Bazin); Musical Scene (Kahnán); Spanish Rhapsody (Richardy); Suite, Sur le mode mineur (Marie); March from Gasparone (Millöcker), 6.0, Talk in French: Bourdelle, the French Sculptor, 6.15, Topical Talk in French, 6.30, Concert of Jazz Music, conducted by Roskam, 7.30, Time and News, 7.45, Gramophone Concert: Selection from The Tales of Hoffman (Offenbach); Lohu du hai (Gillet); Waltz Intenaccio (Gillet); Air from Les Saltimbanques (Ganne); Air from Véronique (Messager); Air from Les dragons de Villars (Maillart); Marche de Perisa (Boyer-Kalmán), 8.15, Press Review in German, Lottery Results, and Announcements, 8.30, Gala Programme, relayed from Paris (Radio Coloniale), 11,705 kc/s, 25.63 metres), Part I: Tam Tam—Lyrical Sketch in Two Acts (Alaïet), with Incidental Music by Henri Tomasi, Part II: Vocal Concert by the Baïans Singers Sextet, a Choir, and Soloists; Airs from Boris Godounov (Mussorgsky); Popular Songs; Negro Spirituals; Melodies (Fauré); Rhapsody for Saxophone and Orchestra (Debussy). After the Programme, Press Review in French, 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—1.30 p.m., Organ Recital of German Folk Melodies, relayed from the Lichtspiel-Palast, 2.0, Programme arranged by the Post Office, with Gramophone Records, 2.30, Advanced English Lesson, 3.30, Talk: Flowers, 4.0, Talk for Women by an Unemployed Girl, 4.30, See Frankfurt, 5.50, Time and Announcements, 6.0, Talk: A German Greenhorn in America, 6.25, Talk by Erika Winkler-Steppe: My Father, Edmund Steppes, 6.50, Time and News, 7.0, Transmission for all German Stations, relayed from Munich, 8.0, Transmission for all German Stations, relayed from Munich, 8.25, Concert of Opera Music by the Württemberg Symphony Orchestra, conducted by Otto Seyfert; Soloist: Karl Jantz (Tenor): Overture, Die beiden Schützen (Lortzing); Tenor Solos: (a) Aria from Czar and Carpenter (Lortzing), (b) Song from The Merry Wives of Windsor (Nicolai); Bohemian Dance (Smetana); Aria from The Bartered Bride (Smetana); Selection from Tosca (Puccini); Aria from L'elisir d'amore (Donizetti); Egyptian Dance from Djamilch (Bizet), 9.20, Stories of the Great War, 9.40 (from Mannheim), Chamber Music by the Wind Instrument Chamber Music Society: Quartet for Flute, Oboe, Clarinet, Horn, and Bassoon (Max Füllner); Sextet for Pianoforte, Flute, Oboe, Clarinet, Horn, and Bassoon Op. 45 (Theodor Blumer), 10.25, Time and News, 10.40, Talk: The Fiftenth German Gymnastics Festival, 10.45, Serenade by the Station Orchestra, conducted by Gustav Görllich; Soloist: Gerda Haasi (Soprano), 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire, 6.0 p.m., News, 6.15, Opera Music: Harlequin's Serenade from I Pagliacci (Leoncavallo); Airs from (a) Romeo and Juliet (Gounod), (b) Benvenuto Cellini (Diaz), 6.30, Overture, Patrie (Bizet), 6.45, Tango Music, 7.0, Extracts from Sound Films, 7.15, News, 7.25, Commercial Notes, 7.30, Military Music, 7.45, Opera Music: Aria from Sigurd (Reyer); Airs from (a) La Favorita (Donizetti), (b) La Juive (Halévy), 8.0, Concert by a Viennese Orchestra, 8.30, Light Music, 8.45, Cello Recital, 9.0, Concert by the Station Symphony Orchestra, In the intervals, Light Music, 10.15, North-African News, 10.30, Concert for Listeners in Morocco: Overture, Mignon (Thomas); Rosina's Aria from The Barber of Seville (Rossini); Waltz, Amour et printemps (Waldteufel); El relicario (Padilla); Cuba in Paris (Castellanos), 11.0, Light Music, 11.15, Songs, 11.30 to 12 Midnight, Programme in English by the I.B.C., W. Brown Constable announcing, 11.30, Military Band Music: March, The Empire (Tulip); Overture, Raymond (Thomas); Selection, Gaiety Echo (arr. Godfrey); Re-

view of the Troops; March, The Mad Hajo (Alford), 11.57, I.B.C. Good-night Medley 12 Midnight, News, 12.5 a.m. (Wednesday) Orchestral Music, 12.15, Instrumental Music 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.15 p.m. till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.15 to 6.0 p.m., Dance Music from the Savoia, Milan, 6.35, Giornale Radio and Agricultural and Dopplavoro Notes, 7.0, Time and Report of the Royal Geographical Society, 7.5 (approx.), Gramophone Music: Fantasia on Russian Melodies; Turkish Patrol (Michaelis); The Forge in the Forest (Michaelis), 7.20, Announcements in Different Languages, 7.40, Gramophone Music, 8.0, Announcements, Giornale Radio, and Weather, 8.15, Sponsored Musical Programme, 8.30, The Duchess of Chicago—Opera in Three Acts (Kahnán). In the intervals, Talk: An Old Country Residence of the Popes, and Announcements, Giornale Radio after the Operetta.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 1,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 p.m., Religious Information in English, 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,658 kc/s, 293 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—1.0 p.m., Time and News, 1.10, Gramophone Music, 2.0 to 3.0, Interval, 3.0, Time and News, 3.30, String Instrument Concert: Friedrich Schüpfel (Flute), Ernst Nesch (Oboe), Franz Hunger (Clarinet), Hugo Rottensteiner (Bassoon), Hugo Heinrich (Horn), and Josef Klein (Pianoforte); Three Little Waltzes (Beethoven); Scherzo (Schubert); Schuberliade (Klein), 3.55, Gramophone Music: Hungarian Comedy Overture (Kler-Béla); Potpourri, Vindobona (Leopold); Deirien-Walzer (Jos. Strauss); Wiener Weisen auf Reisen (Pollak); Le lettre de Manon (Gillet); Potpourri, Horrido (Kollmann), 4.40, Technical Wireless Talk, 5.15, Variety Items, 5.30, Agricultural Talk, 5.55, French Conversation, 6.25, Siegfried Opera (Wagner). In the intervals at 8.0 (approx.) and 9.40 (approx.), News.

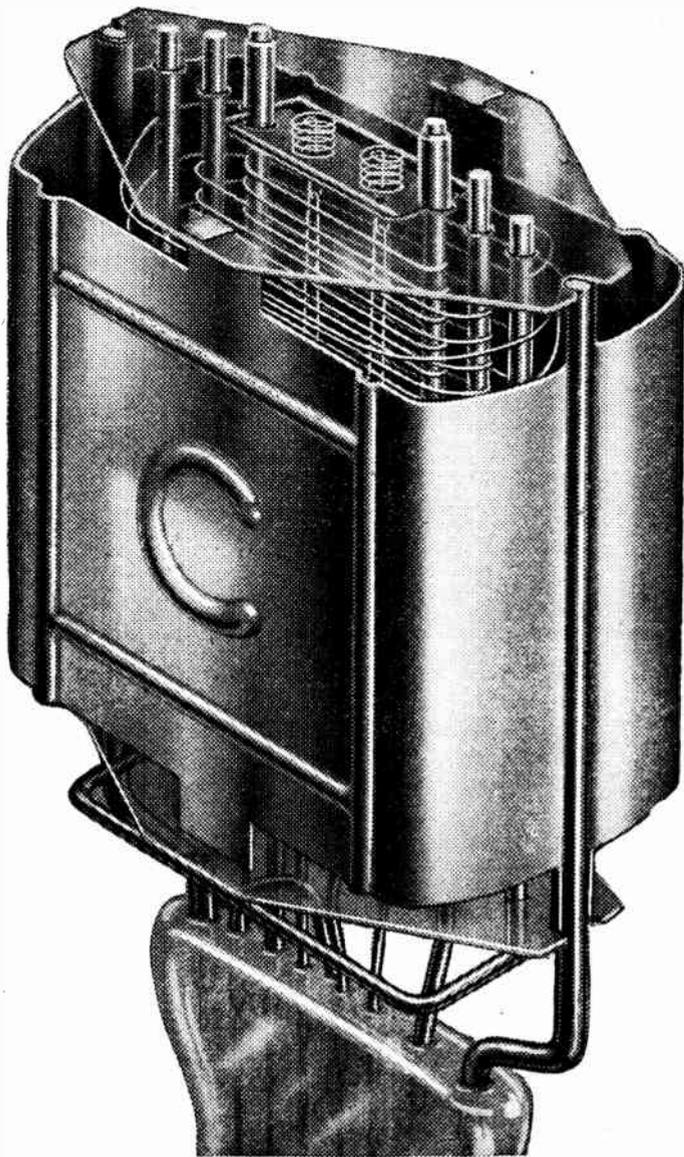
WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—1.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow, 2.5, p.m., Gramophone Music, 12.25, Polish Press Review, 12.35, Gramophone Music, 12.55, Radio Journal, 1.0 to 2.55, Interval, 2.55, Gramophone Music, 3.5, News, 4.10, Announcements, 3.15, Gramophone Music, 3.25, Economic Notes, 3.35, Gramophone Music, 3.45, Aviation Report and Anti-Gas Drill, 3.50, Gramophone Music, 3.55, Announcements, 4.0, Song and Violin Recital by Iza Rola (Songs) and W. Lewinger (Violin); Violin Solos: (a) La Jarne (Musorgsky), (b) Romance (Sarasate), (c) Habanera (Sarasate); Songs: (a) Regret (Chopin-Tundiejew), (b) Spring Song (Niewiadomski), (c) Melody (Meyerhold), (d) Dawn (Moniuszko), (e) Song (Kratzer); Violin Solos: (a) Canzonetta (d'Ambrosio), (b) Polonaise in A (Wieniawski); Songs: (a) Aria from Amico Fritz (Mascagni), (b) Nel cor più non mi sento (Paisiello), (c) Aria from La Juive (Halévy), 5.0, Answer to Correspondence, 5.15, Concert by the Station Symphony Orchestra, conducted by A. Dolzycki; Soloist: Mme. Bronstein (Pianoforte); Symphony in E Flat (Mozart); Fantasia on Themes from Beethoven's Ruins of Athens, for Pianoforte and Orchestra (Liszt); Symphonic Tango (Maklakiewicz), 6.15, Talk: Choreography and Tourism—Mount Gostynin, 6.35, Gramophone Records, 7.20, Miscellaneous Items, 7.35, Programme Announcements, 7.40, Topical Talk, 8.0, Concert of Polish Ballet Music on the Occasion of the International Competition of Classical Solo Dancing; The Station Symphony Orchestra, conducted by Gregoire Fitelberg. In the interval, Radio Journal and Agricultural Notes, 9.30, Song Recital by Mme. Dudicz; Fly, my Thoughts (Roguski); Song (Dargomyzsky); The Lark (Glinka); Invito alla Danza (Respighi); Aria from Louise (Charpentier); Two Arias (Donizetti); (a) Luda di Chamony, (b) La Zingara, 10.10, Dance Music, 10.25, Sports Notes, 10.35, Aviation Weather Report, 10.40, Dance Music.

WILNO

533 kc/s, 563 metres; 16 kW.—6.55 p.m., Miscellaneous Announcements, 7.5, Talk on Wireless, 7.20, Songs from Sound Films on Gramophone Records, 7.40, See Warsaw, 8.0, Concert of Request Gramophone Music, 9.0, Programme from Warsaw, 9.30, Soprano Solos by Mme. Helena Dal, 10.10, Literary Programme, 10.25, See Warsaw, 11.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.



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215 P.	-15	75-150	4,000	9	2-25	8/9
220 P.	-2	75-150	4,000	9	2-25	8/9
220 P.-A.	-2	100-150	4,000	16	4-00	8/9
230 X.P.	-3	100-150	1,500	4-5	3-00	12/-
230 P.T.	-3	100-150	—	—	2-0	17/6
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41 MRC	R.C.C. or Det.	19,500	50	2-6	15/-
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*41 MHL	Det. or H.F.	11,500	52	4-5	13/6
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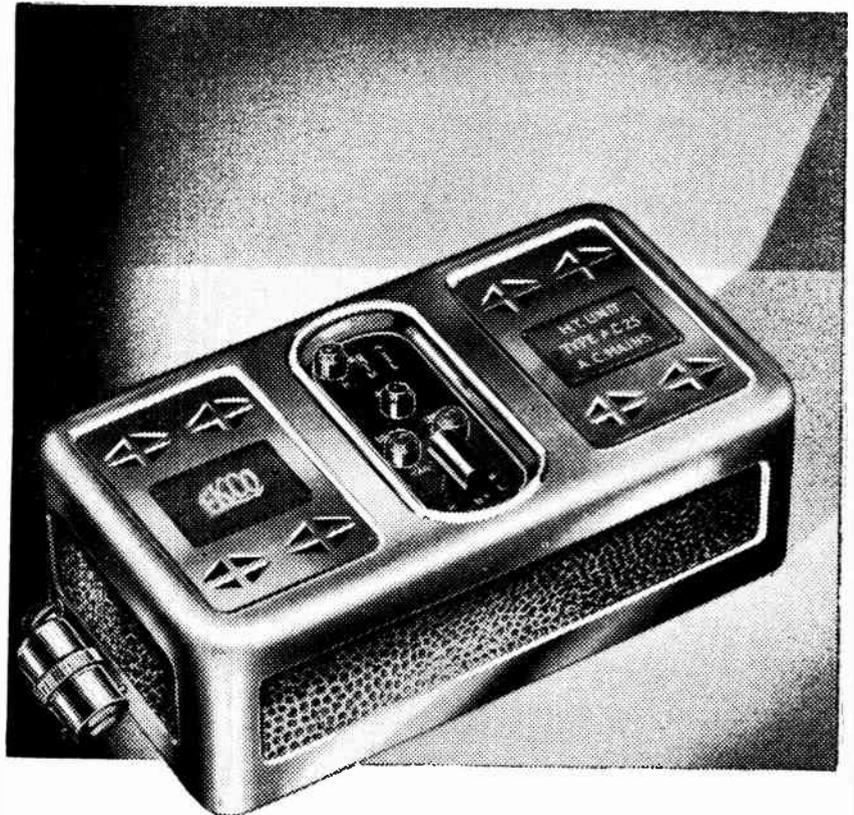
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The Wireless World

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As many of the circuits and apparatus described in these pages are covered by patents, readers are advised, before making use of them, to satisfy themselves that they would not be infringing patents.

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EDITORIAL COMMENT

Lucerne Wavelengths

Effect on Receiver Design

THE important Conference now being held at Lucerne is expected to announce the result of its deliberations in the course of a week or so, and already *The Wireless World* has been able to publish exclusively, in our issue of May 26th, a list of the proposed allocations of wavelengths for stations in Europe which, though not final, is likely to go through with comparatively little alteration, as it has already, we understand, had the tentative approval of the broadcasting organisations concerned.

This re-allocation of wavelengths, associated as it will be with adjustments of power, is of extreme interest to listeners for several reasons; in particular it will be noticed that the bounds of what has come to be regarded as the medium broadcast band have been extended and a number of stations of first-class importance have been moved up to higher wavelengths, at present occupied only by a few scattered stations of Eastern Europe.

No date is yet fixed for the new plan, when finally approved, to come into operation but it seems almost certain that it cannot be a gradual process but that at a given time all these changes will have to take place more or less simultaneously, as otherwise a chaotic state of affairs would result and the changes, instead of reducing mutual interference, would increase it. It would seem likely that the change over will be timed to take place about the end of the present year or very early in 1934.

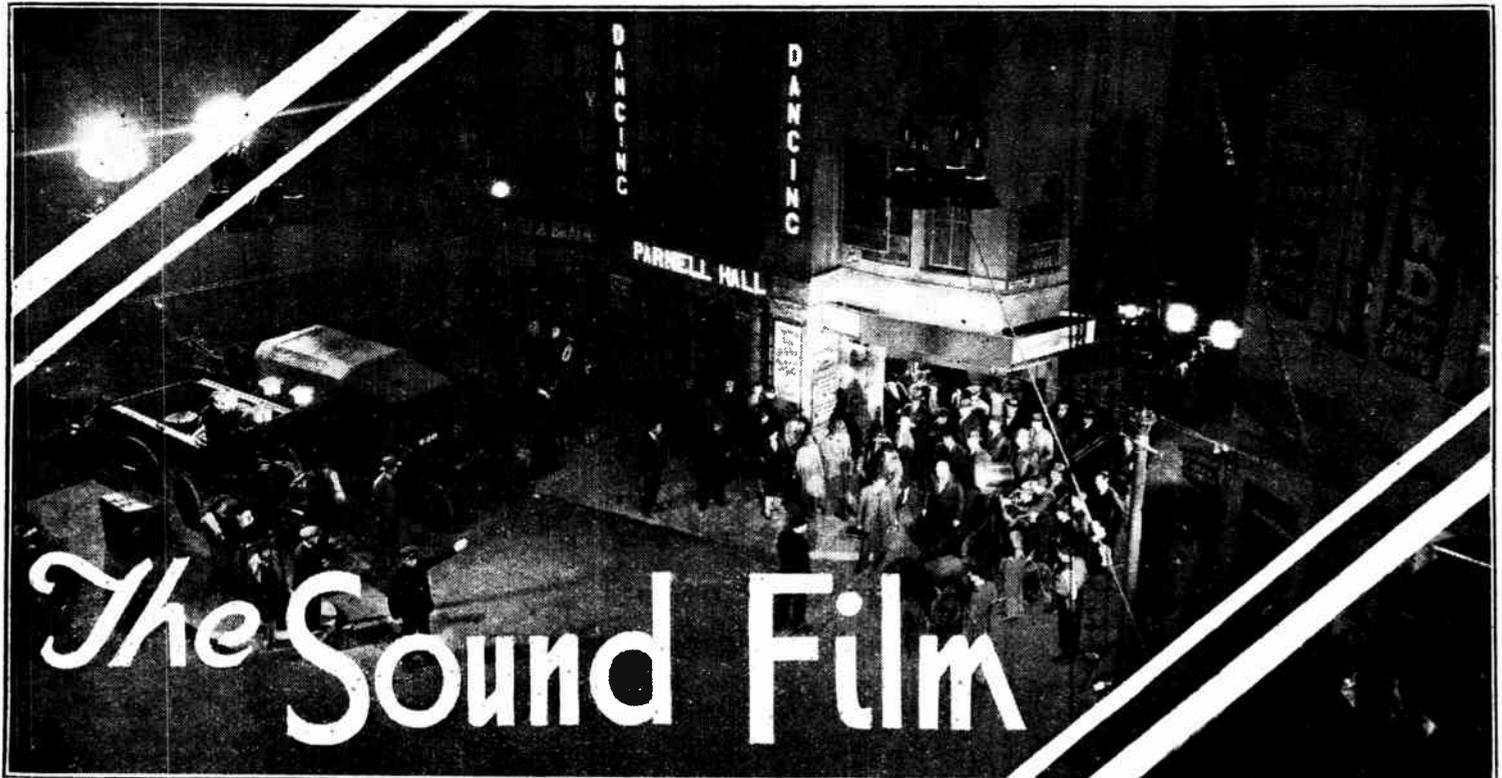
The change in distribution of wavelengths is likely to have a somewhat disturbing effect upon the design of receivers, for the tendency to-day, especially with commercial sets, is to include station names in order of wavelength on the tuning scale.

Again, sets which at present ignore the range of frequencies between the long waveband and the medium band, will be incapable of receiving quite a number of important stations in Europe. For this reason modifications in the design of sets, in some cases of a very radical character, will eventually be necessary. However, the compilers of the plan appear to have borne carefully in mind the desirability of keeping stations as far as possible within the wavebands covered by present standard sets in use in Europe, but the fact that the intermediate band has been encroached upon to a greater extent does suggest that *new* stations which may start up in Europe are likely to be given accommodation in this intermediate band rather than in the congested medium range.

A Technical Experiment

The decisions of the Conference will be awaited with the utmost interest, and if the plan goes through with no drastic changes from the provisional proposals, one of the most interesting technical developments to look forward to will be the allocation of a common wavelength to many pairs of high-powered stations of Europe which are widely separated geographically.

One of the first experiments of this kind which will most intimately concern listeners in this country will be the linking of the National transmitters of West Regional and Brookman's Park, which is about to be tried out. Here, however, the problem is not quite so complicated as in the case of some of the common wavelength allocations in Europe, since the same programme will emanate from West Regional and Brookman's Park National transmitters, whereas many of the common wavelength allocations proposed in the Lucerne plan will concern transmitters putting out independent programmes.



A typical street scene built up in an Elstree studio.

The Sound Film

1. How the First Talkies Were Made

By DALLAS BOWER

THE sound-film and broadcasting being so intimately allied technically, it is interesting to observe that in sound-film the *deus ex machina* is far ahead of its development as an art, whereas in broadcasting the art of programme presentation has progressed more or less in parallel with technical achievement in transmission and reception. The rapidity with which production equipment has advanced is also largely accounted for by the extraordinary retrogression caused in mute-film production by the advent of sound. The screen had finally emerged from its penny arcade state, already a considerable literature had arisen discussing its æsthetic aspects, and its possibilities as a medium for the serious artists were becoming quite widely accepted. Sound seemingly destroyed those very qualities which enabled the mute-film to lay claim to being unlike any art that had previously been known.

Sound versus Movement

Movement over vast stretches of countryside as the "cowboy westerns" used to show, film movement, achieved by the juxtaposition of shots and physical freedom or the will to roam where it pleased, are two basic constituents of the cinema art. Dialogue (the only terms in which film directors could think when sound was first given them), restricted movement, decreased *tempo* of action—all these cramped physical freedom. It seemed that the talking film could never be more than a bad imitation of a stage play. Sound had put the cinema back so

far that it would surely have to start all over again. More and more, however, during the last seven years, has it become realised that sound is not antipathetic to the technique of the mute-film, that really it is highly augmentative to it if used with imagination, that the matter explains itself by the early sound apparatus being technically inadequate to fulfil the wide requirements demanded by what is probably the most popular art the world has ever known.

HERE is the first of a series of short articles which will describe the development of sound-film production since its inauguration as a commercial undertaking some seven years ago. Possibly in no other branch of technology has progress been so rapid. The process has undoubtedly been accelerated by the almost complete extinction of the silent film.

In 1876 Edison invented the phonograph, and in 1894 he invented the cinematograph. At an establishment called a Kinetoscope Parlour he exhibited in 1895 the "Kinetophone"—a system for synchronising a cinematograph with phonograph records. A United States patent was granted in 1897 for the synchronisation of motion pictures with phonograph records, while in 1907 the first Gaumont patent was granted for the same purpose.

No system with features fully in com-

mon with the modern sound-film is found until 1906, when British Patent 18057, granted to Haines, Pletts and Lauste, specified the "Photocinematophone." Eugene Augustin Lauste is unquestionably the father of the sound-on-film processes used exclusively to-day. His system was amazingly advanced for its time, using variable density recording by means of a magnetically controlled mechanical light shutter, reproduction being achieved by a selenium cell. The aural record was on the same film as the visual record both in the negative and positive condition, as it is to-day in the Movietone system. Lauste used no valves, of course, and it was not until 1923 that Lee de Forest demonstrated a sound-film for which valves were employed in recording and reproduction.

An "All-talking" Film

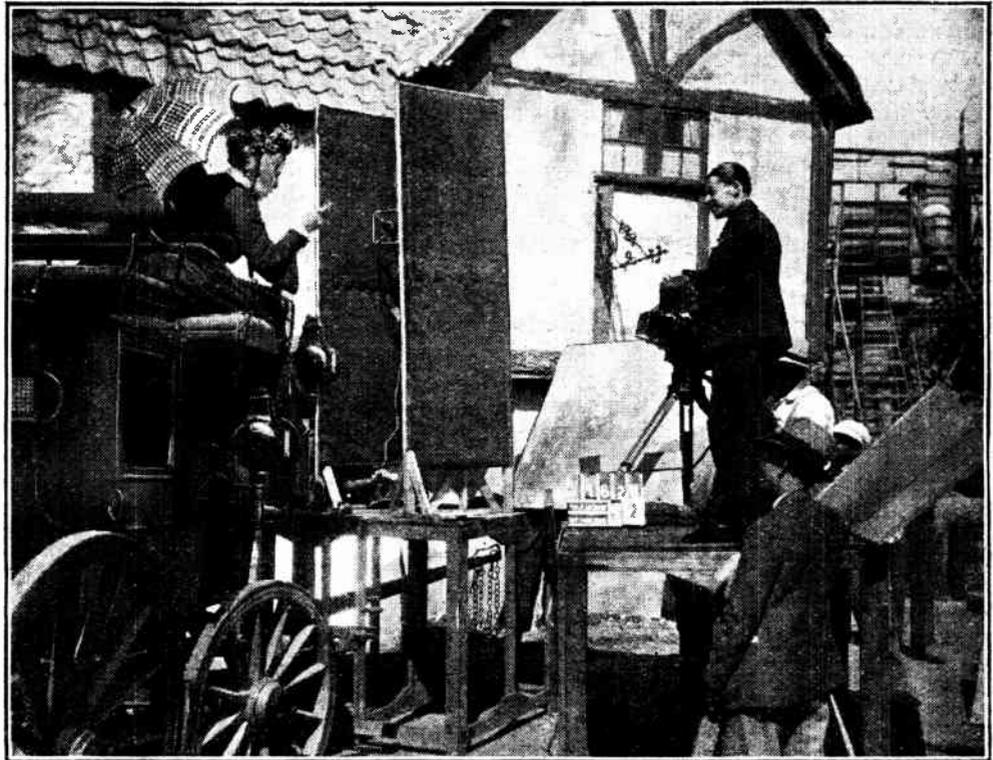
Simultaneously with de Forest's demonstration Theodore Case was developing the Movietone system for William Fox, and disc recording—now obsolete—was being developed under the trade name of Vitaphone. In 1926 Warner Brothers produced some short films using the Vitaphone system, and the de Forest Phonofilm Company produced a melodrama called *Retribution* which ran for approximately thirty minutes, using sound-on-film recording. There seems little doubt this must have been the first "all talking" entertainment film ever made. The turning point in the history of the sound-film as a commercial speculation came with *The Singing Fool*. Mr. Al Jolson, who played the leading part, caused a sensa-

The Sound Film—

tion wherever the film was shown. The film was produced by Warner Brothers, and for some months that company had been making shorts using sound-on-disc recording, but not until *The Singing Fool* could the sound-film be said to have arrived.

Early Production Difficulties

The greatest problem experienced by directors of the first sound-films was camera and microphone immobility. Previously the director had been subject to regard the ciné-camera like a human eye—it could observe what it pleased, in minute detail or panoramic view. The ciné-camera could show just what a man sees when he walks down a street, by its unique capacity for photographing movement while moving itself. After the public had tired of the scientific wonder of seeing a man on the screen and hearing him speak at the same time, there arose the problem of using the camera as it had been used in the days of the mute-film, but retaining the enormous attraction of sound in so doing. The primary cause of camera immobility was due to the noise produced when a camera is in action. Microphones being sensitive to sound other than those it is specifically desired they should pick up, record camera noise quite as effectively as dialogue. A dialogue record with camera noise sounds much like a broadcast transmission with a bad hum from the H.T. supply at the transmitter. Consequently, cameras had to be placed in sound-proof booths where they could operate without being heard. These booths were exceedingly cumbersome, being rather like small chicken-houses. They necessitated the camera photograph-



The first exterior recording in England. Note the microphone surrounded by sound-damping boards known as "goboos." The camera is unsilenced.

ing through glass (which, of course, had to be optically flat), and, being sound-proof, they were partially airtight, with the result that the camera-man and his assistants, closeted within, would become nearly asphyxiated if a scene were of any duration. In order to move these booths a gang of some half-dozen stagehands would be required, as they were quite heavy, due to the sound-absorbing material with which they were constructed and the lead lining of the joins. It will

be understood, therefore, that a moving camera shot (other than a small "pan" or movement in the horizontal plane) was an impossible proposition with such a device, the difficulty of moving it for different "set-ups" (close-up, medium view, long view) being complicated enough, without any attempt to move it while the camera was in action. This crippling of camera freedom led to a great many films being produced in which the characters would simply stand still and talk, the dialogue being punctuated occasionally by a change of view. Concurrent also with camera immobility due to booths, there was the extreme difficulty of moving the microphone after it had been adjusted for any particular shot. The ideal position for a microphone is directly in front of the person speaking into it.

Placing the Microphone.

Naturally this is impossible, as the microphone would be seen in the picture. The next most favourable position is above and slightly ahead of the speaker, and this is the position that has to be generally procured. The distance, vertically, of the microphone from the actor or actors is determined by the distance of the view the camera is photographing. Obviously, in a long view, the microphone will be farther away than in a close view, as in the former a greater area of the scene fills the screen, which means that more of the scene is seen in a vertical direction, thereby necessitating the microphone being at a greater distance from the actors than would be the case in a nearer view. The first microphones were very difficult to manipulate, inasmuch as they had to be suspended by tackle from the studio ceil-



An early microphone (R.C.A.) set-up, showing the camera in its sound-proof booth. Two microphones are in use.

The Sound Film—

ing and brailled into the requisite positions as the sets-up of the camera were changed. Adjustment by so broad a method was really quite inadequate for any nicety in setting, and, of course, once a microphone had been set it could not be moved. In the R.C.A. system the difficulties were further complicated by the fact that a two-stage amplifier in a box about the size of a portmanteau had to be hauled into position with the microphone over the actors' heads, this being occasioned by the insensitiveness of the capacity type microphone and the consequent need for preliminary amplification before transmission over the cables to the recording amplifier proper. The lower photograph on page 405 shows a suspended microphone, unfortunately with the amplifier

above the cable not visible, but nevertheless giving a clear enough indication of what such a position entailed. The assembly of string, paper clips and rubber bands is not, as might be supposed, an invention of Mr. Heath Robinson, but is representative of some of the difficulties in the early production days of setting microphones at all. It was the only means by which any nicety of angle adjustment could be made; the microphone and amplifier were intended, as was thought would be best at that time, for operation on a stand. The two camera assistants can be seen, one listening on the chief camera-man's monitor headphones (obsolete nowadays), and the other with a microphone and earpiece for communication with the recording booth in another part of the studio.

DISTANT RECEPTION NOTES

Dissecting the "Plan de Lucerne"

SOON after these notes appear in print we should be hearing something of the fate of the U.I.R. wavelength plan put forward at the Lucerne Conference. Will it become the Lucerne Plan? Certain alterations, I expect, will have to be made before everyone can be induced to accept it. One only hopes that they will not be so extensive as to rob it of half its value. The plan itself strikes one as being both well thought out and skilfully contrived. Particularly interesting is the adoption of a 9-kilocycle separation throughout, except in one or two places where large stations not more than moderately far apart geographically occupy adjacent channels. Here the separation has been made 10 kilocycles. Set manufacturers must have had a shock when they first saw that there were virtually three wavebands instead of two, but at present stations of importance are not

assigned wavelengths between 685 and 950 metres.

The basis of the plan is eminently sound, for full attention has been paid to the geographical position of transmitting stations. This has made it possible to assign common wavelengths to two, and in some cases three stations of fairly high power operating in different countries. Thus, the Scottish National will have Smyrna as a wavelength partner, the North National, Dnepropetrovsk (I am thankful that I have only to write that name and not to pronounce it!). So far as one can see there should be no interference, at any rate within the service areas of the stations which are grouped in this way in pairs and trios.

Another strong point of the plan is that for the first time not only Russia but also North Africa, Egypt and Asia Minor are included in the European scheme. One's

atlas readily proves that these countries are not in Europe, but wireless unfortunately takes no heed of national boundaries and past experience has shown that stations such as Rabat or Algiers can be very much in Europe when it comes to broadcasting.

There will no doubt be some heart-burning over the allocation of the higher wavelengths, for nearly everybody wants one of these. The scheme, though, goes a very long way towards satisfying all needs. By suppressing the Eiffel Tower and relegating Luxembourg to the medium band (let us hope that Luxembourg will suffer itself to be so relegated!) room is made for a surprising number of countries. England, France, Germany, Norway, Sweden, Denmark, Holland, Finland, Spain, Iceland, Roumania, Turkey, Switzerland and Poland have each one wavelength, whilst Russia has four, three of which are shared.

If it is adopted, as it is nearly certain to be, the plan should provide a good working basis for broadcasting in Europe and the neighbouring countries. Its success, though, will depend very largely upon international willingness to obey not only the spirit but the letter of the new law. With a universal 9-kilocycle separation it is essential that all stations should abide by their allotted wavelengths exactly. Deviations such as those which occur at present will wreck the whole scheme.

Atmospherics and Thunderstorms

For some little time now atmospherics have been distressingly bad—I was rash enough to suggest a fortnight ago that they might be on the wane. Even atmospherics, though, can be interesting at times. It is curious to notice that though atmospherics are believed to be produced by thunderstorms, their effects being noticeable sometimes at immense distances, by no means all thunderstorms appear to give rise to them. On a recent evening, for instance, great damage was done by lightning in a village within fifteen miles of my abode; yet I listened to numerous foreign stations and made a note in my log that atmospherics were completely absent.

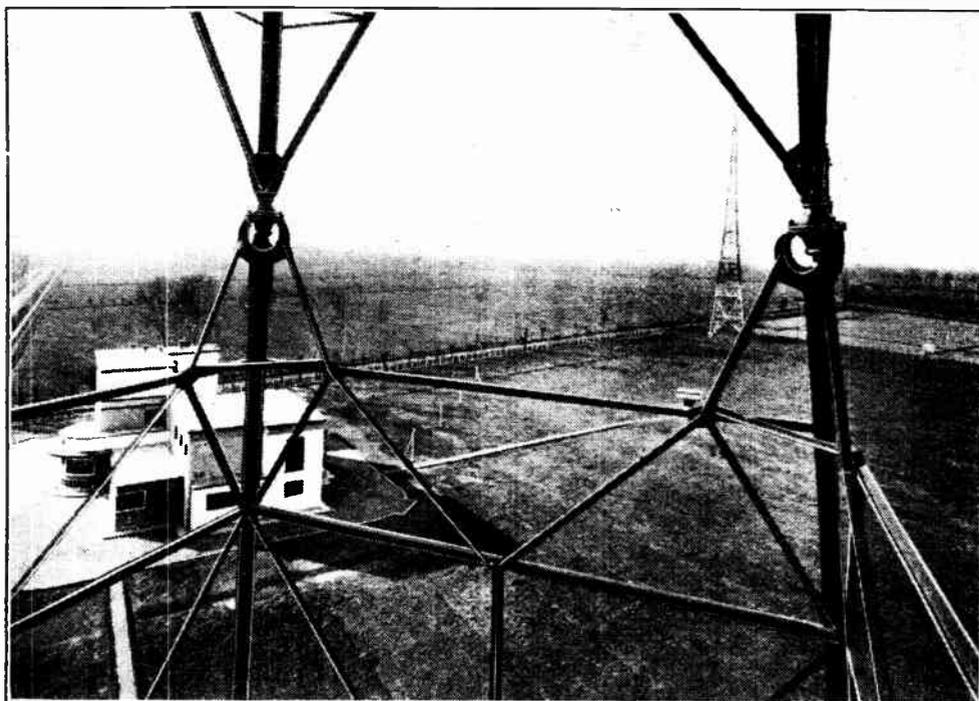
On the long waves Radio-Paris, Zeesien, Motala and Luxembourg are the most reliable transmissions. Huizen is always receivable but heterodynes sometimes occur and signal strength at the moment is not quite up to the mark. Amongst medium-wave stations I would select Bisemberg, Prague, Langenberg, Lyons Doua, Bero-münster, Rome, Stockholm, Hamburg, Strasbourg, Brussels No. 2, Breslau, Göteborg, Hilversum, Heilsberg, Frankfurt, Gleiwitz and Trieste.

D. EXER.

BOOKS RECEIVED

Les Construction Radio-électriques de l'Amateur, by L. Favre, giving details of the construction of a moving-coil loud speaker, pick-up, transformers, and other components, and of a complete all-wave receiver. Pp. 70 with eleven plates of diagrams and dimensional drawings. Printed by l'Imprimerie Arts et Sports, Paris.

Wireless Weather Messages (M.O. 252, Ninth Edition).—Particulars of meteorological reports issued by wireless telegraphy and telephony in Great Britain, Gibraltar, Malta, Middle East and Iraq, including the forecasts and gale warnings broadcast by the B.B.C. Issued by the Meteorological Office of the Air Ministry, and published by H.M. Stationery Office. Price 1s. 6d



SEEN FROM THE MAST. A novel view of the famous 50 kW. station at Milan. The station, which usually relays Turin, works on 331.5 metres and is easily heard in this country after dark.

New

Valves

How They Will Improve Receiver Performance

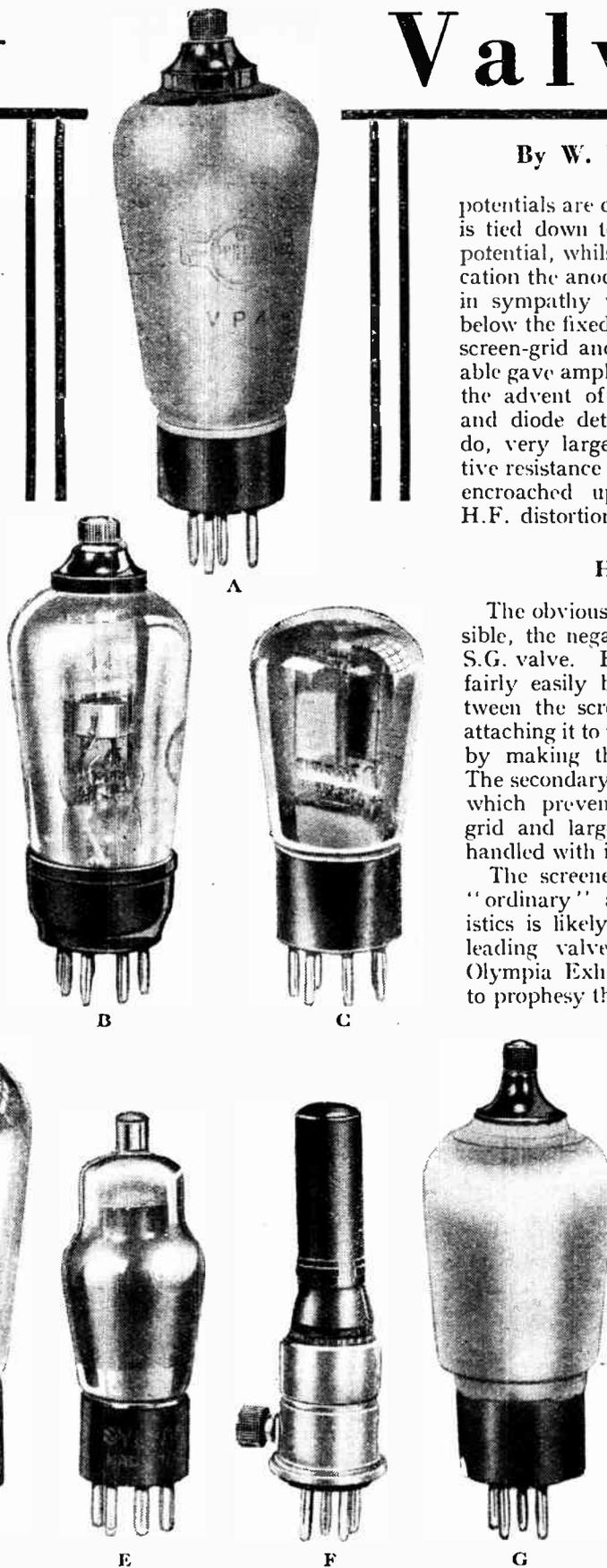
NEVER before has the amateur been afforded so large a choice of valves. Every type of receiver and every stage in the receiver is now provided with a specialised type; in a word, this is the era of valve specialisation and the "all-purpose" valve becomes the exception rather than the rule. In order to conserve space in the receiver many manufacturers are adopting the expedient of putting the elements of two valves into one bulb—a practice which, if not carried too far, makes for economy and greater efficiency.

It is the purpose of this article to explain why the new valves have been introduced and to give a brief account of the improvement in performance which may be expected when they are made to replace earlier types. The first series to be dealt with are the H.F. pentodes.

In the ordinary three-electrode valve, in which the anode is held at a comparatively high positive potential, electrons are shot off at high speed from the hot filament, and those which bombard the anode at the highest velocity are capable of dislodging other electrons known as "secondary" electrons. These eventually find their way back to the anode and the functioning of the valve suffers no detriment. When, however, a second electrode at a high positive potential is added, as is the case in the ordinary screen-grid valve and the variable-mu tetrode, it is just possible that some of these electrons may be attracted to the extra electrode or screening grid, as it is called, especially if the latter happens to be at a more positive potential than the anode. Thus there occurs the peculiar phenomenon that at certain anode voltages the screening grid may rob the anode of current and for a short distance along the characteristic curve an increase of anode volts is accompanied by a decrease of anode current.

This rather startling effect is just the opposite to that produced by a resistance, and so is called "negative" resistance; the effect of it is to cause a receiver in which the valve is included to oscillate uncontrollably.

Every effort is made to prevent this state of affairs by applying to all screen-grid valves a screen voltage which is



Typical new valves: (A) Mullard VP4, a variable - mu screened H.F. pentode; (B) Marconi double - diode triode, MHD4; (C) Mullard PM2B, twin Class "B" output valve; (D) Tungram PX46 single Class "B" valve, two of which will give 21 watts speech output; (E) Sylvania 6A7 Pentagrid; (F) Marconi Catkin pentode MPT4; (G) Tungram SE2018 variable-mu A.C.-D.C. valve.

roughly half that of the anode voltage, but it must be remembered that as far as signal

By W. I. G. PAGE, B.Sc.

potentials are concerned the screening grid is tied down to earth and so has a fixed potential, whilst for the process of amplification the anode voltage must rise and fall in sympathy with the signal above and below the fixed voltage. Until recently the screen-grid and variable-mu valves available gave ample margin of safety, but with the advent of automatic volume control and diode detection demanding, as they do, very large signal voltages, the negative resistance portion of the curve is often encroached upon, momentarily causing H.F. distortion.

H.F. Pentodes

The obvious remedy is to remove, if possible, the negative resistance effect of the S.G. valve. Fortunately, this can be done fairly easily by adding an electrode between the screening grid and anode and attaching it to the cathode—in other words, by making the tetrode into a pentode. The secondary electrons now find a barrier which prevents access to the screening grid and larger signal potentials can be handled with impunity.

The screened H.F. pentode with both "ordinary" and variable-mu characteristics is likely to be marketed by all the leading valve manufacturers before the Olympia Exhibition, and it is fairly safe to prophesy that it will supersede the S.G. valve and variable-mu tetrode. At present there are on the market one Ferranti and two Mullard models, shown in the tables which accompany this article. Apart from the advantage already described, namely, the capacity to handle very large signals without distortion, it is found that the screening-grid voltage is not nearly so critical as it is with the ordinary S.G. valve and less complicated resistance networks are needed. It is anticipated that H.F. pentodes will appear with screening grids capable of carrying the full anode voltage so that the feed network may be omitted altogether. This would lead to considerable economy of components in the H.F. stages.

High-frequency pentodes are at present marketed with 5-pin bases (the anode connection being at the top of the bulb) so that any variable-mu or ordinary S.G. valve can be readily replaced without alteration of wiring, but as soon as the standard 7-pin base is used it is hoped

New Valves—

that the "suppressor" grid now taken internally to the cathode will be brought out to one of the idle pins. We should then have a ready means of injecting volts from

a lot before oscillation starts. The effect is due to detector overload, and can be ascribed to the fact that in a grid detector the signal is rectified in the grid circuit and then amplified in the anode circuit, the

coupling. There is another great advantage in using a diode detector; the damping of the preceding tuned circuit is very small indeed, and may be five or six times less than with the conventional grid detector.

Of the multiple valves of this type the most popular is the double-diode triode now introduced by Marconi and Osram, Ferranti and Mullard. The first diode anode is used for half-wave detection, while the second is arranged to give delayed A.V.C. The single-diode tetrode (the Mullard SD4) cannot, of course, be

H.F. PENTODES.

Type.	Filament.		Max. Anode Volts.	Max. Screen Voltage.	Grid Base (Volts).	Average Anode Current Min. Bias.	Average Screen Current Min. Bias.	Mutual Conductance at Min. Bias.	Price.
	Volts.	Amps.							
Ferranti .. VPT 4* ..	4.0	1.0	200	100	24	5.5	2.0	2.0	19/-
Mullard .. SP 4 ..	4.0	1.0	200	100	5.0	4.0	1.4	3.0	19/-
VP 4* ..	4.0	1.0	200	100	40	6.0	2.0	2.5	19/-

* Variable-mu characteristic.

CLASS "B" VALVES.

Type.	Filament.		Working Anode Voltage.	Grid Bias.	Total Quiescent Anode Current.	Total Working Anode Current.*	Minimum Input Impedance (Ohms).	Anode-to-Anode Load (Ohms).	Max. Undistorted Output (Milliwatts).	Price.
	Volts.	Amps.								
Cossor .. 240 B ..	2.0	0.4	120	Zero	4.0	8.5	2,500	8,000	2,200	14/-
Ferranti .. HP 2 ..	2.0	0.4	120	Zero	3.0	8.5	2,500	8,000	2,000	14/-
HP 2 ..	2.0	0.4	150	Zero	3.0	—	2,500	8,000	2,700	
Mazda .. PD 220 ..	2.0	0.2	120	Zero	2.0	6.0	4,000	17,000	1,000 (A)	14/-
PD 220 ..	2.0	0.2	120	Zero	2.0	7.0	3,800	11,500	1,400 (B)	
PD 220 ..	2.0	0.2	150	0.5	2.0	8.0	4,000	14,000	2,100 (A)	
PD 220 ..	2.0	0.2	150	0.5	2.0	8.5	3,800	12,500	2,350 (B)	
Mullard .. PM 2 B ..	2.0	0.2	120	Zero	3.0	5.0	4,000	14,000	1,250	14/-
Tungsram .. PX46† ..	2.0	3.0	400	Zero	14.0	108	900	5,800	21,000	30/-

* Taken with a silver voltmeter during a typical broadcast programme. (A) Using an L2 valve as driver. (B) P 220 valve as driver. † Characteristics given for a pair of valves.

the oscillator valve into the H.F. pentode first detector. Also it has been found that when negative bias is applied to the suppressor grid the valve's A.C. resistance drops, thus causing damping of the associated tuned circuit and providing a method of reducing sideband cutting with the local station. The second idle pin could be connected to the metal covering of the bulb, since a cathode-connected screen in a single-valve frequency changer for instance—for which purpose the H.F. pentode can be used—is not desirable, as it is well above earth potential. The Mullard SP4 has been tried as a power grid detector in a straight set, and it was

DOUBLE-DIODE TRIODES, DOUBLE-DIODE PENTODES AND SINGLE-DIODE TETRODES.

Type.	Filament.		Mutual Conductance.	Max. Anode Volts.	Max. Screen Volts.	Grid Bias.	Average Anode Current.	Average Screen Current.	Price.
	Volts.	Amps.							
Cossor .. DD Pen ..	4.0	1.0	2.7	250	200	-1.5 to -40	Max. space current 15 mA.	—	20/-
Ferranti .. HD 4† ..	4.0	1.0	2.7	200	—	3.0	4.5	—	15/6
Marconi & Osram .. MHD 4† ..	4.0	1.0	2.2	200	—	3.0	2.5	—	15/6
Mullard .. TDD 4† ..	4.0	1.2	1.8	200	—	4.0	3.5	—	15/6
SD 4* ..	4.0	1.0	4.5	200	100	3.0	6.5	1.0	20/-

* Single-diode tetrode.

† Double-diode triodes.

found to be more sensitive in this position than any S.G. valve.

The next series of valves to be discussed is the multiple type, including a single or double diode. Every constructor must

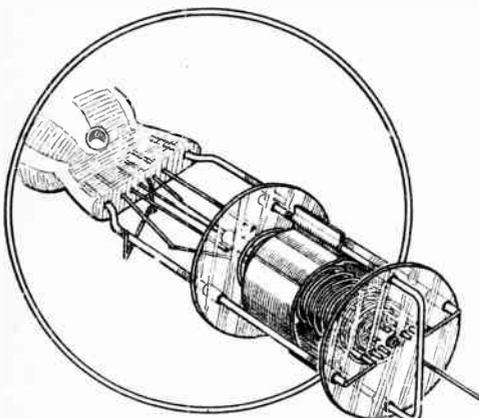
latter having to accept the H.F. plus the L.F. component. Anode bend rectification in opposite phase to grid rectification readily occurs with large inputs, and the output is not only restricted but distorted. Now that A.V.C. has come to stay in this country, the death of the power grid detector for superhets. and straight sets with 2 H.F. stages embodying this system is a foregone conclusion. Large control voltages for the early valves in the receiver are required and can best be supplied by a diode which will rectify a signal of 50 volts or more without any signs of overloading. Furthermore, the diode detector for reasonably large signals is nearly 100 per cent. efficient and distortionless.

The Double-diode Series

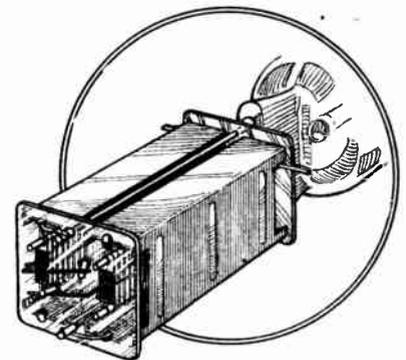
By mounting a triode in the same bulb as the diode, economy of space is effected, and if an H.F. filter is interposed so that the triode grid receives only L.F. impulses, the output is considerably greater than it would be were the same valve to be fully loaded as a grid detector. In fact, the Marconi and Osram MHD4 will fully load a PX4 output valve using resistance

used for delayed A.V.C., but it is a good detector followed by a highly sensitive tetrode for true L.F. amplification. Using resistance coupling, a large output valve can be satisfactorily loaded. In the Cossor double-diode pentode (D.D.Pen) the automatic volume control voltage is not only taken back to the H.F. and I.F. valves, but also forwards to the variable-mu grid of the pentode forming part of the multiple valve. By this means almost perfect A.V.C. is obtained. For a change of input over a quarter of a million to one the output only alters by 10 per cent.—a performance which is much in advance of other methods.

Class "B" valves have had so much space devoted to them lately that little



The electrode construction of a multiple diode valve for corrected A.V.C.—the Cossor D.D. Pen.



The double-triode assembly of the Ferranti Class "B" valve—the H.P. 2.

have experienced the overloading of a grid detector in a set with reaction control. As reaction is increased the signal strength grows to a maximum and then drops quite

need be said here. The battery set user can now obtain about seven times the watts output that he could extract from his single triode output valve for an H.T. battery consumption which is hardly increased. It is confidently expected that nearly all the coming season's battery sets will be

New Valves—

equipped with Class "B" output. An obvious development in this field is Class "B" valves for D.C. mains where there is perforce a limited anode voltage. For very large volume with A.C. mains sets class "B" output can show considerable

ment is used on D.C. supplies the rectifier becomes a passenger and acts simply as a resistance dropping only 15 volts.

No review of new valves would be complete without mention of the all-metal Catkins which, although they do not introduce new electrical characteristics, are of

type of car. The equipment comprises four separate units:—

(1) The receiver proper, mounted in a small but strong rectangular metal box, which may be mounted in any convenient position; accessibility need not be considered, as the set is remotely controlled.

(2) A small rotary H.T. generator, similarly enclosed.

(3) A moving-coil loud speaker designed for mounting under the dash or on the engine bulkhead.

(4) A remote control unit for attachment to steering column or dash. This includes an on-off switch, a cable-operated tuning control, a volume-adjusting potentiometer, and a pilot light.

PENTAGRIDS.

Type.	Filament.		Max. Anode Volts.	Max. Screen Voltage.	Grid Base (Volts).	Average Anode Current Min. Bias.	Average Screen Current Min. Bias.	Conversion Conductance (Micromhos) ‡	Price.
	Volts.	Amps.							
Sylvania* .. 2 A7 ..	2.5	0.8	250	100	50	4.0	2.0	475	17/6
	6 A7† ..	6.3	0.3	250	100	50	4.0	475	17/6

* Marketed by Claude Lyons, Ltd. † For car radio. ‡ Ratio of I.F. output component to H.F. signal input.

economy. Two Tungram PX46 valves (see table) used in positive drive will give the enormous output of 21 watts speech.

The Pentagrid

A new single-valve frequency changer known as the Pentagrid, which hails from America, has lately made its appearance here. From preliminary experiments in *The Wireless World* laboratory it is fairly safe to predict that it will find wide application in superhets. It has distinct advantages over the hexode now popular on the Continent, since by virtue of an extra screen within the valve it does not require an external balancing circuit. Within the Pentagrid are the elements of a triode oscillator and variable-mu screen-grid first detector with sufficiently large grid base to allow of full A.V.C. control. The "mixing" is electronic in nature and the screening between elements so effective that there is no interaction between tuned circuits and no aerial radiation even when an H.F. stage is not used. Due to the avoidance of first detector harmonics, whistles are conspicuous by their absence and the efficiency of the new arrangement, judged by the increased output, is greater by two or three times than any other single-valve changer and is a distinct improvement over the conventional two-valve scheme with separate oscillator.

Valves for A.C.-D.C. and Car Radio

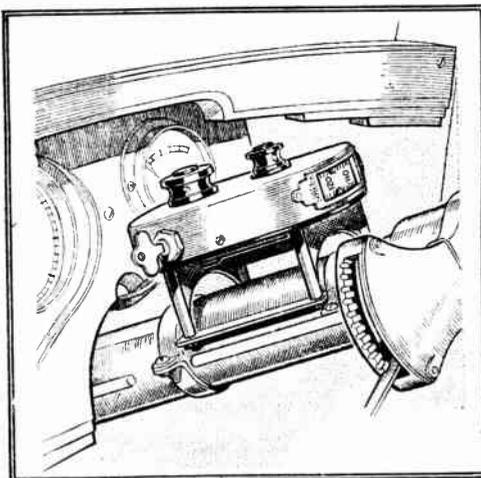
A range of A.C.-D.C. valves with 20-volt 0.18-amp. heaters has been introduced by Tungram for sets which can be operated on any mains supply irrespective of voltage or frequency. No mains transformer is required, and the half-wave mains rectifier contains a 20-volt heater connected in series with the heaters of the receiving valves. When this arrange-

ment is used on D.C. supplies the rectifier becomes a passenger and acts simply as a resistance dropping only 15 volts.

fundamentally new construction and are destined to cause an entire revision of ideas in valve design. Valves likely to be introduced in the near future are a series of indirectly heated types for car radio and a new design for providing A.V.C. in battery sets.

A Car Set Tested

Special American Superheterodyne



THE Sparton superheterodyne, an effective and well-designed motor car set of American manufacture, was recently demonstrated to *The Wireless World* by Mr. R. W. Hydes, who is the makers' agent in this country.

Of even greater interest than the electrical design of the receiver are the mechanical details of construction, which are planned to allow of its being fitted in almost any

Power from the Starter Battery

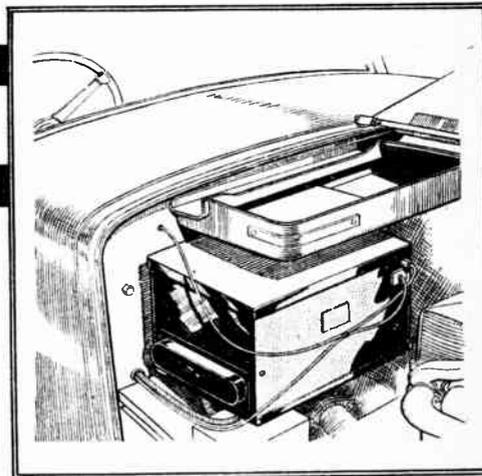
Low-tension current for the valves is drawn from the car battery, which also drives the H.T. generator and energises the speaker field.

The six valve stages of the set are arranged as an H.F. amplifier, a four-electrode detector-oscillator, one I.F. stage, a combined double-diode detector and A.V.C. valve, an intermediate L.F. amplifier, and finally a pair of push-pull pentodes.

Ample volume is obtainable, even when the car is travelling at a good speed, and, as for range, some fifteen or twenty stations were found to provide signals of programme value in broad daylight, on the open road, in spite of the necessarily limited pick-up of the small aerial which is built into the roof.

Without automatic volume control a car set is of little practical use while the vehicle is under way, as continuous adjustment is needed in order to compensate for the screening effect of bridges, buildings, etc. During our test such obstacles made practically no difference to reception, as the control system proved to be well capable of holding signal strength at a comfortable level. Bearing in mind the limited baffle area of the loud speaker, quality was all that one could expect or wish.

Interference from the electrical equip-



The Sparton Model 33 set fitted to a Talbot car. (Above) The remote control, clamped to the steering column, and (below) the receiver unit, mounted under the bonnet.

ment of the car was almost non-existent, and even that from passing tram-cars could hardly ever be detected. Spark-plug suppressors, etc., are, of course, fitted where necessary to the electrical system of the car. The complete receiver costs £33, and the agent's address is 24-26, Burgess Street, Sheffield.

A.C.—D.C. VALVES.

Type.	Use.	Filament.		Anode Volts.	Screen Volts.	Im-pedance.	Slope (mA V.).	Anode Current.	Output (Milliwatts).	Price.	
		Volts.	Amps.								
Tungram	SE 2018 ..	Vari-mu	20	0.18	200	100	—	1.2	4.0	—	14/6
	S 2018 ..	S.G.	20	0.18	200	100	330,000	1.2	3.0	—	14/6
	R 2018 ..	R.C. and Det.	20	0.18	200	—	13,300	3.0	4.0	—	10/6
	G 2018 ..	L.F.	20	0.18	200	—	7,000	3.5	7.5	—	10/6
	P 2018 ..	Power	20	0.18	200	—	2,800	2.5	25	900	13/-
	PP 2018 ..	Multi-Grid	20	0.18	200	200	31,250	2.5	2.5	1,100	17/-

Practical HINTS AND TIPS

AIDS TO BETTER RECEPTION

WHEN a voltmeter is used to measure the H.T. voltages existing in a mains-driven receiver, there will inevitably be some error. The meter will show something less than the true voltage, and the greatest error will exist when the circuit

Voltmeter Errors

resistances are high and when the meter resistance is low. Further, it should be remembered that voltage readings will be wildly inaccurate when the current consumed in the particular circuit under test is less than, or even comparable with, that required to actuate the meter.

A knowledge of these facts enables us to decide to what extent the indications given by the voltmeter may be trusted. Imagine that it is desired to measure the various H.T. and anode voltages in a typical H.F.-det.-L.F. set, such as that shown in skeleton form in Fig. 1. With the meter connected in position A, the total H.T. voltage may be read with a high degree of accuracy, for the reason that the internal resistance of the rectifier and smoothing system is low, and also because the extra current required to deflect the meter needle is bound to be considerably less than that flowing in the common anode circuit.

On transferring the instrument to position B, the H.T. voltage on the anode of the output valve may also be checked with hardly impaired accuracy. This is because

ance of many thousands of ohms, and sometimes a coupling resistance as well. It may therefore be assumed quite definitely that the voltage shown by the meter C will be at least 20 or 30 per cent. low, and in some cases it will indicate less than half the true difference of potential existing between anode and cathode.

In H.F. circuits a decoupling resistance of a few hundred ohms is generally sufficient, and the ohmic resistance of H.F. coupling devices is negligibly low. It may therefore be expected that a reading of H.F. valve anode voltage taken by connecting the meter in position D will be reasonably accurate. Screening grid circuits, on the other hand, almost always include high resistances, and so the voltage read at E will be very much below the true value.

IT is sometimes recommended that when a compression-type condenser is to be mounted on a metal baseplate it should be raised about $\frac{1}{4}$ in. above the metal by means of suitable washers or distance-pieces. This is done in order to reduce the comparatively high capacity which would otherwise exist between the condenser and earth; as

Reducing Stray Capacity

often as not, this extra capacity is definitely undesirable, and at the best may restrict the tuning range of the set.

It has been found that with many condensers the maximum capacity attainable is reduced by mounting them in such a way that their lower backing plates tend to bow downwards as the compression screw is tightened. This should be borne in mind, and if there is any doubt a condenser with a rather higher capacity rating than would otherwise be chosen should be employed when it is to be mounted on distance-pieces, or used in any

other way without the usual support of a solid backing. Of course, this reduction in maximum capacity may be offset by mounting the condenser on a sub-base of non-conducting material such as wood or ebonite, which will provide a rigid backing, and at the same time avoid excessive stray capacity to earth.

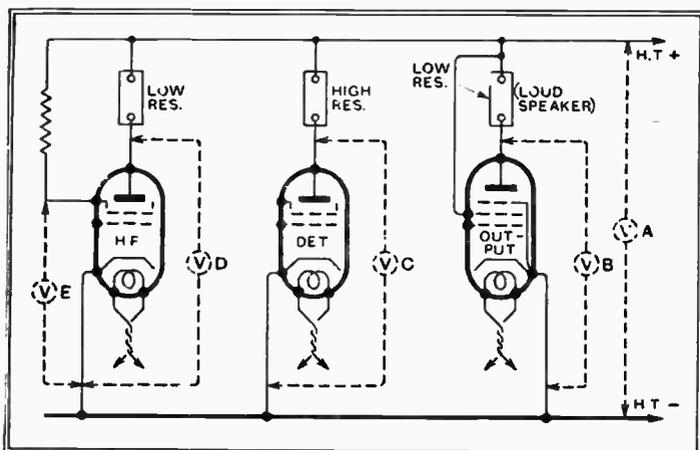
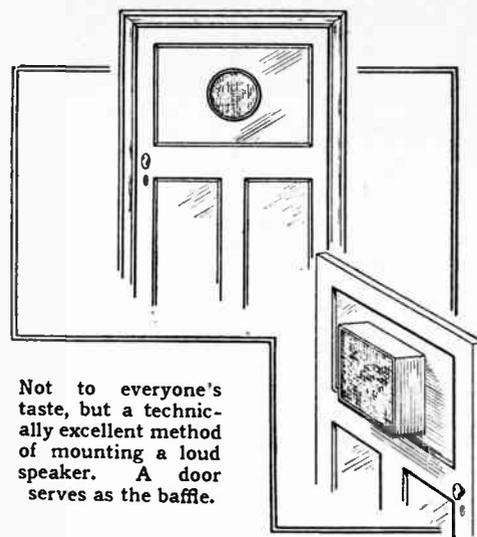


Fig. 1.—A guide to probable voltmeter errors: readings of anode voltage will be reasonably accurate where circuit resistances are low.

the extra resistance of the output valve load will probably amount to no more than a few hundred ohms, and there will be no decoupling resistance in this circuit to add to the error.

In measuring detector anode voltage, allowance must be made for a very considerable error; this is because the circuit nearly always includes a decoupling resist-



Not to everyone's taste, but a technically excellent method of mounting a loud speaker. A door serves as the baffle.

ALTHOUGH the idea is not a new one, it may be pointed out that a communicating door between two rooms makes one of the most satisfactory baffles that can be contrived for a moving-coil loud speaker of the cone type. On aesthetic grounds the use of a door for this purpose may not suit everyone, but with a little forethought and ingenuity

The Best Baffle

it is often possible to mount the loud speaker so that it is not unsightly; at any rate, the front of the aperture behind which the cone is mounted may be camouflaged quite successfully. The hole may be covered with metal gauze, held in position by a circular beading, the whole being painted in the same colour as the door.

With regard to the back of the door, it will generally be necessary to box-in the loud speaker in the manner suggested in an accompanying sketch. The back of the box, again, may be covered in with fabric or gauze, but should not be filled in with solid material. If the door is lightly built, resonances may be largely avoided by mounting the loud speaker on a heavy backing board before securing it in position.

WHEN a self-bias resistor breaks down, or when a resistor of the right value for this purpose is not available, it may be remembered that a bias battery of the right voltage may be used to replace it. This applies to true self-

Improved Bias

biased circuits, in which negative grid voltage is developed across a resistor in the circuit of the cathode lead of the valve concerned. In order that polarity may be correct, the usual procedure in connecting the bias cells in battery-operated sets must be reversed, and, instead of joining the positive pole to the H.T. negative-earth line, it must be joined to the cathode terminal of the valveholder. The negative side of the bias battery is joined to earth, and then, assuming that the grid return lead is also joined to earth in the usual manner, the grid of the valve will receive negative bias.

NEWS of the WEEK

Current Events in Brief Review

2RN Returns

TO satisfy crystal listeners in the Dublin area, 2RN will shortly return to the air with its old $1\frac{1}{2}$ kW. transmitter. We understand that the new wavelength will be 218 metres.

U.I.R. to Meet in Holland

THE next meeting of the Council of the International Broadcasting Union will probably be held in Holland in the autumn, soon after the new "Plan de Lucerne" is expected to come into operation.

New Hilversum Transmitter

HILVERSUM'S new transmitter has evoked many favourable observations from listeners on the 296-metre wave. The station is audible in England at any time of the day, although the aerial power does not exceed 20 kW.

A Good Scheme

THE electrical apparatus in this establishment is equipped with anti-interference devices" is the inscription on a certificate which the Spinalien Radio Club of France is proposing to issue to traders and others who comply with the municipal decree to fit radiation suppressors. The certificate would be displayed in shop windows.

The World's Worst

MR. LEROY HALEY, W9GNK (postmaster at Tacoma, Colorado, U.S.), claims the poorest radio site in America.

We hope the claim is not disputed. The station is at the bottom of a canyon, 900 feet wide and 1,000 feet deep, 300 feet from a 10,000 horse-power hydro-electric generating station, and surrounded by tall pine trees, between two of which the aerial is strung. "On the east," says Q.S.T., "the canyon wall goes on up for 6,000 feet more! Wow!"

Valve Price Cuts in Germany

DRASTIC reductions in the prices of German valves are to come into force on July 1st as a result of Government demands that radio should be available to all. According to our Berlin correspondent, the new prices will in some cases be 40 to 50 per cent. lower than those obtaining at present. The general public is being "kept in the dark" until near the date of the changes in order to allow traders to get rid of existing valve stocks at the current prices.

The cuts have been achieved by reducing the manufacturers' and traders' profits.

Policing the Ether Traffic

A NEW wavelength-checking station has been opened at Noisau, France. The station will check the wavelengths of all kinds of stations, commercial and broadcasting.

For Blind Listeners

THE circulation of the "Braille Radio Times," published by the National Institute for the Blind, has this year increased by 500 copies a week.

Catkins Demonstrated

BY arrangement with the Marconiphone Co., Ltd., a public demonstration of the Catkin valve will be given this evening (Friday) by the London Chapter of the International Short-Wave Club at the R.A.C.S. Hall, Cavendish Grove, Wandsworth Road, S.W.8, at 8 p.m. *Wireless World* readers are invited to attend.

Short Waves for University Expedition

GOOD reception over distances of 1,000 miles has been obtained with a power of only 3 watts in a series of field tests carried out recently by two amateurs, who are supplying a complete short-wave transmitting and receiving equipment to the University of Oxford Expedi-



PENALTY OF GREATNESS.

These pictures show how European statesmen landing at New York must first undergo ordeal by microphone, almost at a



tion to the Arctic regions, under the leadership of Mr. A. R. Glen. The short-wave equipment, which will be used to maintain touch between two sledging parties and with the base camp, has been specially built by Mr. R. F. Loomes (G5RL) and Mr. N. E. Read.

The short-wave receivers are of the simple detector and L.F. type; each is contained in an air-tight aluminium case, which, in its turn, is enclosed in a teak travelling case lined with sorbo rubber. Each set has been equipped with two Mullard PM11L valves, low tension being supplied from two dry cells and high tension from a Standard roov. battery. A wavelength of 80 metres will be used for distances of less than forty miles, but when the sledging parties are separated by greater distances the 40-metre band will be used.

Free Seats for the Deaf

RADIO-AID, LTD., who have just installed a deaf-aid equipment at Madame Tussaud's Cinema, Marylebone Road, London, state that a limited number of free tickets to the cinema are available to deaf persons desirous of testing the equipment during a performance. Application should be made to Radio-Aid, Ltd., 4, Idlesleigh House, Caxton Street, Westminster, London, S.W.1.

Beromunster on Long Wave

BEROMUNSTER is already testing on a long wave in accordance with the proposals of the "Plan de Lucerne." Last week a small military transmitter was set up close to the station to carry out long-wave tests, and it was shown that field strength was considerably increased. Swiss

listeners will probably be embarrassed by a long wave, as many of them have bought American receivers operating only on the medium-wave band.

Lucerne: The Last Week

THE sensation at the last week of the Lucerne Conference was the great fight between British and French delegates on the subject of France's second long wave. The British delegation (writes our Lucerne representative) was evidently of the opinion that France had decided to hand over the Eiffel Tower wave to Luxembourg at a later date, and put up a strong resistance. In the end the French gracefully withdrew their claim for a second long wave.

All the delegation, except perhaps the German, seemed up in arms against the Russians, who, by the way, have "sacrificed" two waves and refused to do more. They demanded, not without success, four exclusive waves for the Moscow transmitters, the intention being to prevent all reception of foreign stations in the Soviet capital. Russia also seems to have scored a point as regards its long-wave 500 kW station. The colossal power of this transmitter has caused all other countries to refuse to share the wave and brought about a separation of an extra kilocycle on each side; thus Moscow has the most exclusive European wavelength and can deal out as much propaganda as necessary!

The delegates, almost without exception, have fought shy of the new "shared" wavelengths, the argument being that these have not been tried, and countries may find themselves awkwardly placed when the plan leaves theory and becomes practice.

Class "B" Amplification

IT is regretted that an error crept into Table B on page 395 of our issue of June 2nd. Sound Sales market only two driver transformers. The first, known as "B," has a ratio per half secondary of 2:1 and sells at 9s., not 10s. as quoted. The other transformer, called "UB," has tapings to give ratios per half secondary of 2:1, 3:1 and 4:1; it sells at 10s.

Summer Evening Radio Classes

LECTURES on radio wave propaganda will be included in the electrical engineering course of the Manchester Municipal College of Technology, which opens summer evening classes on Monday next, June 12th. Full particulars are obtainable from the Registrar.

The Voice of Morocco

THE Moroccan stations may soon be regarded as regular programme providers for listeners in Europe. According to present plans, which are not confirmed, the stations at Algiers and Rabat will raise their powers to 75 and 50 kW. respectively, while Tunis-Kasbah, which at present transmits meteorological information for ten minutes only each day, will be transformed into an important broadcasting station with a power of 60 kW. The three transmitters will then be connected by cables.

moment's notice.

In the top view is Mr. Ramsay MacDonald addressing listeners on the N.B.C. chain from the Berengaria. (Left) M. Herriot of France. (Right)

Dr. Hjalmar Schacht of the German Reichsbank. (Below) Signor Guido Jung, Finance Minister of Italy.

Relaying Rabat

LABOUR of love is being carried on by Dr. Veyre, owner of the amateur station, CN8MC, Casablanca, who daily relays the Rabat programmes for the benefit of the Berber population of Morocco. According to a Casablanca correspondent, crowds of natives gather round the local shops to hear loud speaker music relayed from CN8MC.

Quite a number of cafés in the hinterlands of Morocco are radio equipped, and hooded Arabs sip aperitifs and smoke French cigarettes while listening. CN8MC transmits on 48 metres on Mondays and Tuesdays.

How the Superhet Works. 3.

The FREQUENCY CHANGER and the I.F. AMPLIFIER

IN this series of articles the path of the signal through the circuits of the superheterodyne receiver is explained stage by stage. Previous instalments have dealt with the signal frequency stage, the I.F. stage, and the oscillator.

A New Circuit for Minimising Interference in the Superheterodyne Receiver

By W. T. COCKING

THE course of the signal has now been traced as far as the grid of the first detector and we have briefly dealt with the oscillator. Inspection of the general circuit diagram published with the first part of this series (see p. 378, issue of May 26th) will show that the coil between the points 6 and 2 of the oscillator coil assembly is coupled to the tuned winding and is connected to the cathode lead of the first detector. Since the grid of this valve is joined to the earth line through a tuned circuit, this coil is really in the grid-cathode circuit of the first detector, and, as a result, a voltage due to the oscillator is applied to the first detector grid as well as that caused by the signals.

Sideband Theory

Ignoring interference for the moment, we thus have two different voltages of different frequencies applied to the first detector—one due to the wanted incoming signal, and the other to the oscillator. The valve is adjusted to work as an anode bend rectifier, so that both sets of voltages are rectified. This is the part of the superheterodyne which is really complicated, for it is not always easy to see just what happens, and there is much misapprehension. For a complete understanding of the operation, a complicated mathematical analysis is necessary, but this is quite beyond the scope of the present article.

Some of the chief considerations involved in the design of the frequency-changer will be considered later, and for the present it is sufficient to point out that although the input to the first detector consists of only two frequencies, the output contains many more. Due to the rectification process, there will be currents in the anode circuit of the signal frequency, the oscillator frequency, a fre-

quency equal to the sum of the input frequencies, and a frequency equal to the difference of the input frequencies; in addition, there may be harmonics of all these, and there will certainly be the usual direct current consequent upon all rectification. Thus, if the incoming signal has a frequency of 1,000 kc/s, and the local oscillator is adjusted to 1,110 kc/s, the currents in the anode circuit will have frequencies of 1,000 kc/s, 1,110 kc/s, 2,110 kc/s, and 110 kc/s.

In general, however, the incoming signal will not be a single frequency, for it will be modulated. A modulated carrier can be considered in two different ways; it can be thought of as a simple

wave of single frequency, the amplitude of which is varying at the modulation frequency, or it can be considered as a pure continuous wave accompanied by other similar waves spaced on either side of it by an amount equal to the modulation frequency. Thus, a carrier of 1,000 kc/s, modulated by a 5,000 cycles note, can be thought of as a wave of 1,000 kc/s, the amplitude of which is varying 5,000 times a second, or it can be considered as being a series of pure continuous waves with frequencies of 1,005 kc/s, 1,000 kc/s, and 995 kc/s. These two different viewpoints of modulation are known respectively as the amplitude variation and the sideband theories,

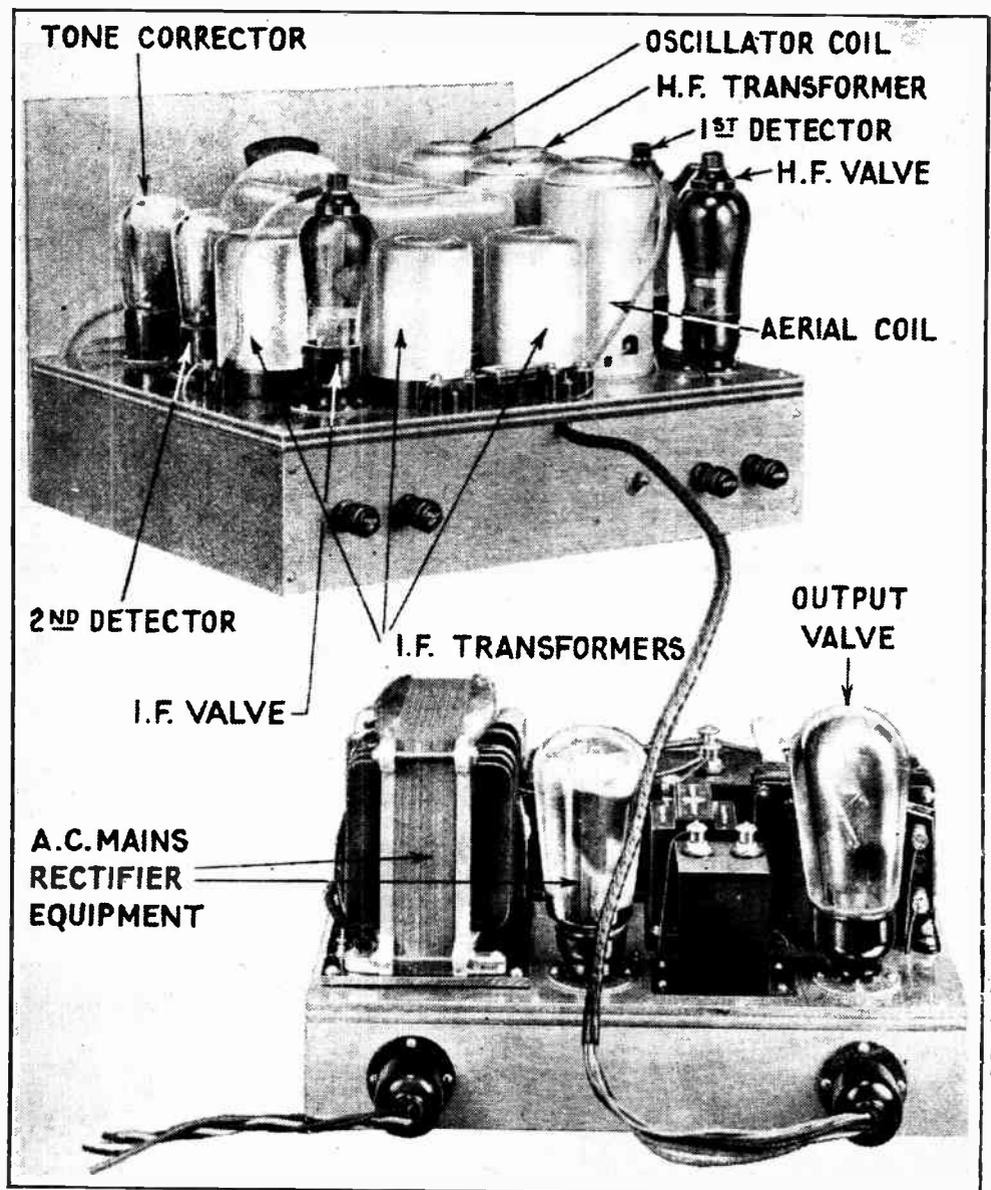


Illustration of a typical superhet, *The Wireless World Monodial*, with the various parts identified.

How the Superhet Works—

and they mean exactly the same thing. The theories have been the subject of much needless controversy; they are really two different ways of describing the same phenomenon, and they are both

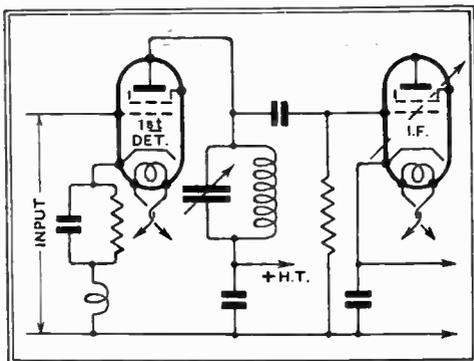


Fig. 1.—A tuned anode I.F. coupling can be used, but is not usually advisable, since the high-frequency detector output may reach the I.F. valve grid.

accurate and mathematically equivalent. We may choose, therefore, whichever is the more convenient for our purpose, and at different stages of the receiver we can change from one to the other at will. In general, the sideband theory is the simpler.

Band-pass I.F. Coupling

Let us apply it to the present case, therefore, and suppose that instead of an unmodulated signal of 1,000 kc/s, we have a signal of that frequency modulated at 5,000 cycles per second. The signal input to the first detector, therefore, will consist of a series of frequencies of 1,005, 1,000, and 995 kc/s, due to the signal, and a frequency of 1,110 kc/s from the oscillator. The output frequencies, therefore, will be 1,110, 1,005, 1,000, 995, 2,115, 2,110, 2,105, 115, 110, and 105 kc/s, and 5 kc/s, and possibly harmonics of these. Of these frequencies, that of 1,110 kc/s is the oscillator frequency; the group 1,005, 1,000, and 995 kc/s is the signal frequency with its sidebands; the group 2,115, 2,110, and 2,105 kc/s is a new frequency with sidebands due to the sum of the input frequencies; the group 115, 110, and 105 kc/s is another new frequency with sidebands due to the difference of the original frequencies; and the 5 kc/s frequency is the normal demodulation of the signal. Of this welter of frequencies in the output, it is the two new groups which interest us—the 2,110 kc/s and the 110 kc/s groups. The first thing to notice is that each group forms the equivalent of a modulated carrier of new frequency, but with the modulation unchanged. Thus, the first group is equivalent to a carrier of 2,110 kc/s modulated by a 5,000 cycles note, and the second to a carrier of 110 kc/s also modulated at 5,000 cycles. Either of these groups can be treated in exactly the same manner as an incoming signal of the same frequency; it can be amplified and passed through selective circuits until finally it is rectified in order to separate

the 5,000 cycles, or other modulation from the carrier in the usual way.

For reasons to be dealt with later, it is the general practice to make use only of the low frequency, the 110 kc/s, components of the first detector output, and this is termed the intermediate frequency. A tuned circuit resonating at this frequency, therefore, is included in the anode circuit of the valve in order to select the intermediate frequency and reject all the others. The design of such a circuit follows normal H.F. amplifier practice, save that it is not usually permissible to connect the first detector anode to a tapping on the coil nor to use a normal type of H.F. transformer. The matter is not usually so important with a screen-grid first detector valve as with a triode, but it is usually desirable that there should be a condenser connected between the valve anode and some point at earth potential.

A tuned-anode type of intervalve coupling would serve admirably, therefore, and the arrangement shown in Fig. 1 would be quite possible. It must not be forgotten, however, that we have a large number of different frequencies in the circuit, of which only the 110 kc/s group is required. Even though it may be very small, the tuned anode circuit offers some impedance at the highest frequency, so that with this simple coupling an appreciable voltage due to the unwanted frequencies may find its way to the grid of the next valve. These frequencies serve no useful purpose at this point, and their presence tends to reduce the input handling capacity of the valve for the wanted signal. It is the general practice, therefore, to use a considerably more selective type of intervalve coupling, and the circuit of Fig. 2 is commonly employed.

Use of Variable-mu Valve

With this arrangement there is no direct connection between the grid of the I.F. valve and the anode of the first

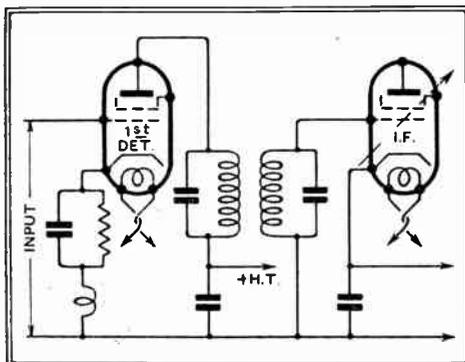
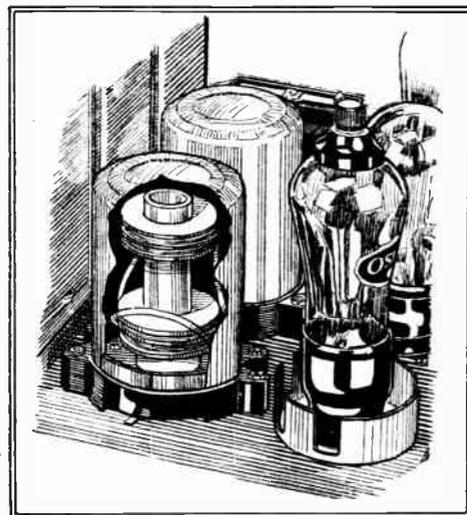


Fig. 2.—A band-pass I.F. coupling is the most satisfactory, for it gives high selectivity, and largely prevents unwanted frequencies from reaching the I.F. valve.

detector, and the coupling is entirely through the mutual inductance between the two coils. Each circuit is tuned to the intermediate frequency, and the coupling between the coils is adjusted to give the desired type of resonance curve. Since the selectivity with two circuits is much greater than with only one, it is

found that only the intermediate frequency group of the first detector output can reach the I.F. valve grid at any appreciable strength.

In the general receiver circuit (p. 378 issue of May 26th) an even more complex coupling is employed, and no fewer than four tuned circuits are connected between the first detector and I.F. valve. The filter is built up from a pair of double-tuned or band-pass circuits similar to those of Fig. 2 coupled together by a small capacity condenser C11. Through the use of this multiplicity of circuits a very high degree of selectivity is obtainable.



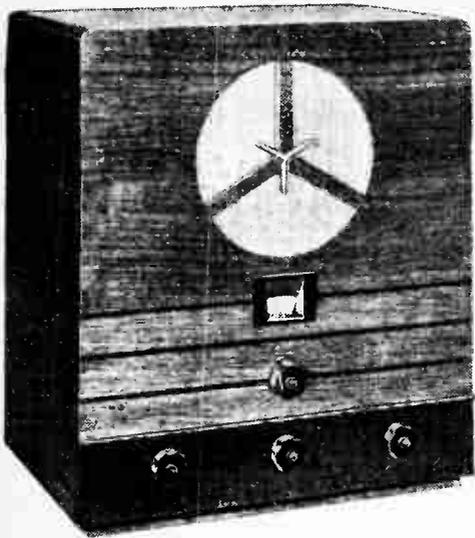
Two typical I.F. band-pass coils with adjustable coupling are shown in this illustration.

The voltages appearing across the terminals of the last of these four circuits are applied to the grid of another variable-mu valve which acts as the I.F. amplifier. Its operation is identical with that of the H.F. valve, save that it works at a different frequency, and it is coupled to the second detector through a pair of tuned circuits which act as a band-pass filter. The valve is biased negatively by the same amount as the H.F. valve, and its cathode, in fact, is connected directly to that of the H.F. valve. The variations of bias imposed on the latter for volume control, therefore, occur also on the I.F. valve, so that the amplifying power of both is reduced simultaneously.

The load impedance of an I.F. valve is not so important as that of the H.F. stage, since cross-modulation effects are far less likely to occur. From the point of view of distortion, of course, it is still advisable to keep the load impedance at a moderate value. It is found, however, that the usual type of I.F. transformer is entirely satisfactory in this respect, for the dynamic resistance of the tuned circuit is about 100,000 ohms.

LOW-FREQUENCY VALVE VOLTMETER

FOR measuring voltages at speech frequencies a valve voltmeter which can be calibrated by D.C., and in which the calibration is independent of valve characteristic, is undoubtedly a valuable asset in the laboratory. Such an instrument is described in the June number of *The Wireless Engineer*, copies of which can be ordered through newsagents or direct from the publishers of *The Wireless World*.



Murphy A4

A Four-valve Superheterodyne Giving Excellent Quality of Reproduction

FEATURES.

Type.—Four-valve superheterodyne receiver with pentode frequency changer. Moving-coil loud speaker. Provision for pick-up and external loud speaker. **Circuit.**—Pentode detector-oscillator-variable- μ I.F.—anode bend triode detector—pentode output. **Band-pass input filter.** **Controls.**—(1) Tuning, with illuminated dial calibrated in wavelengths; (2) Volume control (radio only); (3) Waverange and on-off switch. **Price.**—£14 10s. **Makers.**—Murphy Radio Ltd., Welwyn Garden City, Herts.

IN the Murphy range of receiving sets the new A4 model has been introduced to bridge the gap between the A3A straight three-valve receiver and A8 eight-valve superheterodyne with automatic volume control. It is a four-valve superheterodyne designed for use with an outdoor aerial, and, as might be expected, the range and selectivity are definitely better than in the A3A, though not quite so good as in the A8.

In our opinion, however, the set's claim to distinction rests primarily on the excellence of the quality of reproduction. There is a crispness and realism which is all too rare in receivers manufactured on a quantitative basis. The frequency range covered does not appear to be wider than that of other sets of similar type, and the principal response is probably confined between the limits of 90-100 cycles to 4,500-5,000 cycles, but the exemplary behaviour of the set and loud speaker over this range more than compensates for deficiencies at the extremities of the audible frequency range. The bass response is smooth and full, and resonances in the loud speaker and box resonance in the cabinet, if present, have

been skilfully merged to give a sensibly uniform output over the lower part of the musical scale. The same sort of effect is apparent in the upper register, and with the set accurately tuned and the tone control set to give maximum high note response, the balance is just right. Speech is natural, and the set excels in the reproduction of incisive sounds such as are met with in dance music and the cinema organ.

High Intrinsic Selectivity

The tone control is continuously variable and is useful in reducing background noise on weak signals, though the set is not unduly irritating from this point of view, and on stations of medium strength is as quiet as any straight set. Those who prefer the mellow type of quality can adjust the tone precisely to their taste.

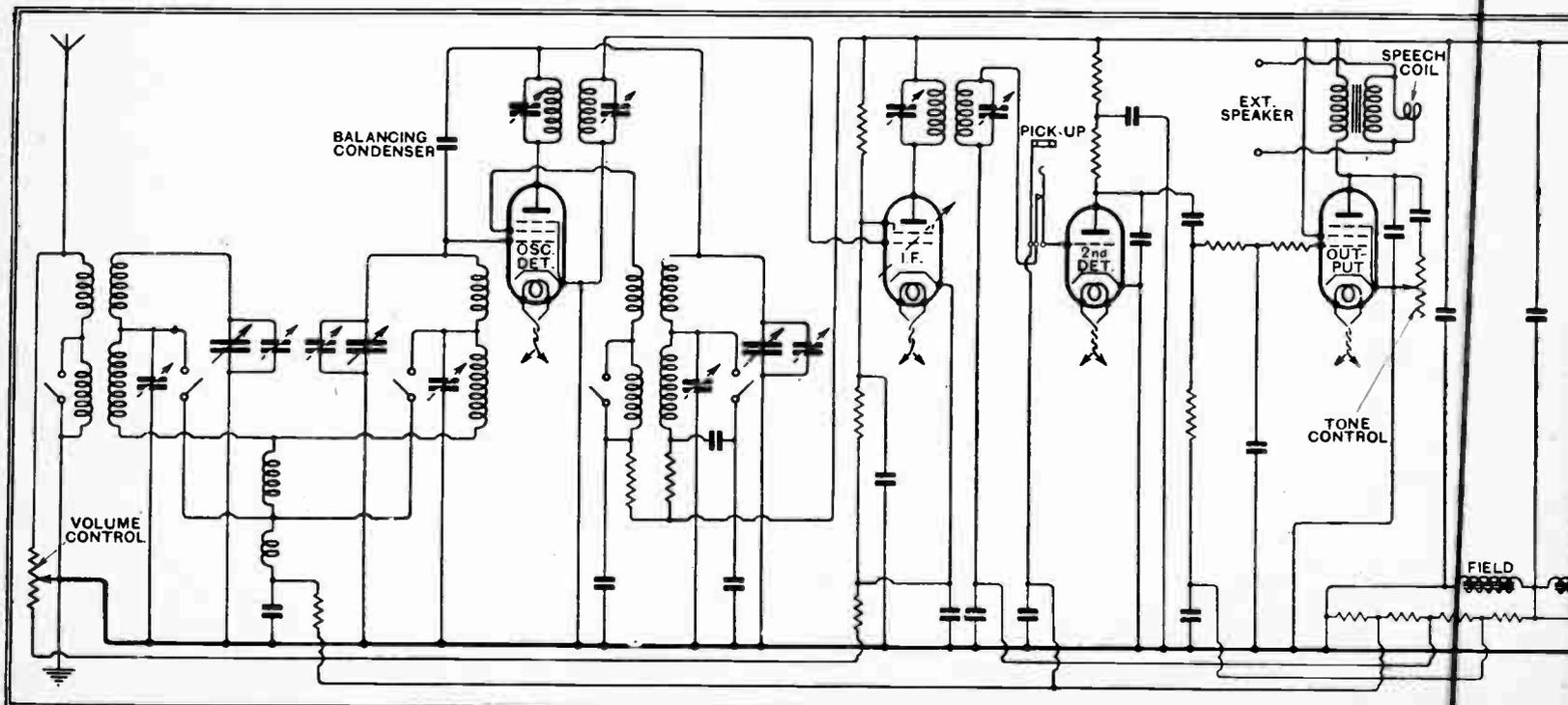
A rapid search round the dial is sufficient to convince one of the liveliness of the set from the point of view of range and the ease with which stations may be tuned-in. The set is not equipped with automatic volume control, so that a ready hand must be kept on the volume control. When overloaded, however, the volume decreases, so that un-

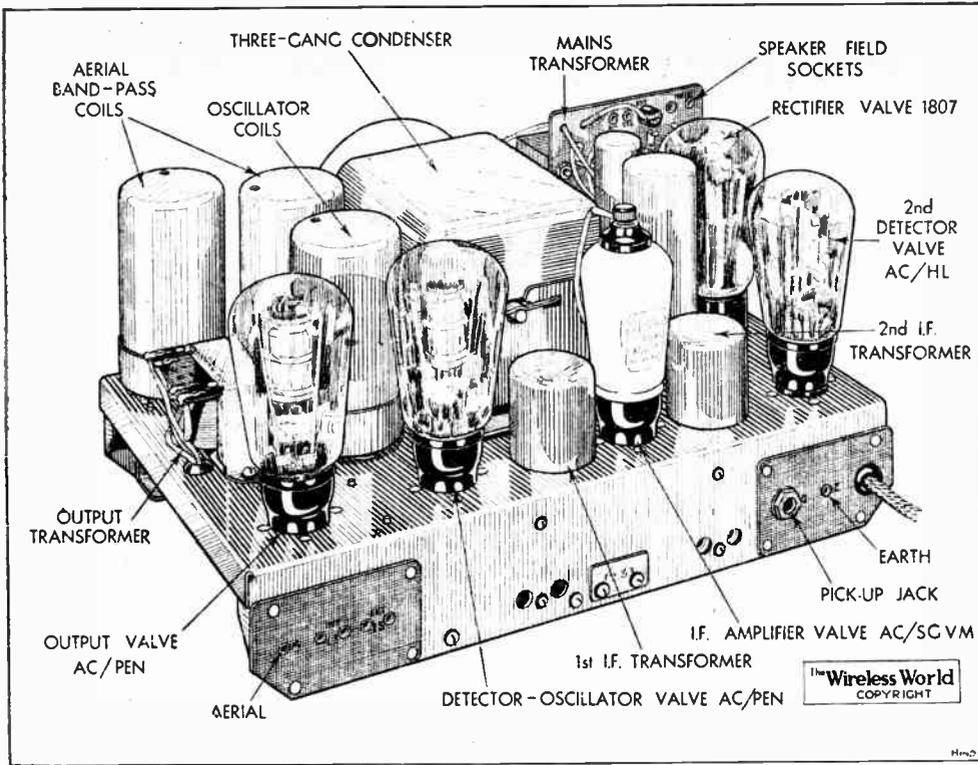
expectedly strong stations do not produce unduly startling noises. The four or five Continental stations that it is possible to pick up on medium waves in daylight were received in London with more than usual clarity and an ample reserve of volume.

Any estimate of the selectivity of a superheterodyne receiver should take into account not only the intrinsic selectivity of the set, but also the degree of interference and the number of stations lost due to second channel whistles. In the A4 receiver, instead of a multiplicity of whistles of medium strength covering most of the medium wave band, there are, in the London area, two fairly strong whistles, one on Poste Parisien and the other just above North Regional. On long waves there was one whistle at about 1,225 metres. In other districts, of course, the position and strength of the second channel whistles would depend on the wavelength of the local stations and their distance from the receiver.

The intrinsic selectivity on medium waves is very good, and only two channels are lost on either side of the two Brookmans Park transmitters with the set working at full sensitivity on an efficient outdoor aerial in Central London. On long waves Königs-

The use of a pentode as a single-valve frequency changer is an outstanding feature of the circuit which has been developed on well-tried lines.





Plug and socket connections to the loud speaker facilitate the removal of the Murphy A4 chassis from the cabinet. Double screening covers are used on the I.F. transformers.

wusterhausen was clear of its adjacent stations save for slight side-band "splashing" which could be dealt with by the tone control.

An inductively coupled band-pass filter in the aerial circuit contributes materially to the selectivity, and there are four tuned circuits associated with the I.F. amplifier. The single-valve frequency changer (detector-oscillator) is of the self-neutralised pentode type described in this journal on July 29th and August 5th last year. To ensure a close balance between the inter-electrode capacities and consequent freedom from radiation and interaction between the circuits, an external condenser of a few micro-mfds. has been connected between the working grid and the low potential end of the I.F. transformer primary.

The I.F. stage is perfectly straightforward, and volume is here controlled by varying the bias and, to a certain extent, the screen potential. Part of the volume control resistance is also shunted across the aerial circuit.

A jack is provided for pick-up connections in the grid circuit of the anode bend detector, which is resistance-coupled to the pentode output valve. Stray I.F. voltages are prevented from reaching the output by a two-stage resistance-capacity filter in the grid circuit.

The output from the full-wave valve

rectifier is smoothed by a tuned L.F. choke in addition to the loud speaker field which is connected in the negative lead. As a result mains hum can only be detected by placing the head alongside the loud speaker grille. From this point of view the set is one of the quietest we have tested.

Chassis Easily Removed

In design and construction the chassis maintains the reputation Murphy's have established for clean workmanship and finish. Plug and socket connections for the field winding and output to the speaker greatly facilitate the removal of the chassis from the cabinet—a point which will be appreciated by the service man. The loud speaker itself is rigidly mounted on a thick batten fixed transversely in the cabinet, which is

built on solid lines, and is finished in walnut and rosewood veneer. Although the price is low there is no suggestion anywhere in the set of cheapness, and both from the point of view of appearance and performance the A4 is unquestionably good value for money.

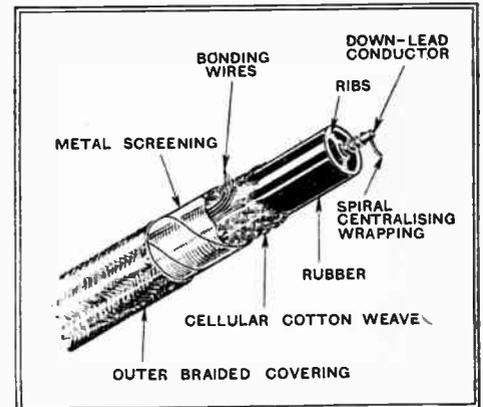
There are equivalent models for D.C. mains and batteries, the latter being equipped with "class B" output stage. The price in both cases is the same as that of the A4—£14 10s.

Minimising Electrical Interference

"Metocel" Down-Leads

THE firm of Ward & Goldstone, Ltd., of Pendleton, Manchester, were, it is believed, the first in this country to introduce a shielded aerial down-lead; their original production was described fully in *The Wireless World* of March 17th.

Although this type of down lead is still available, a cheaper, but nevertheless very effective, alternative to it has now been put on the market under the trade name of "Metocel." From the accompanying sketch it will be seen that the conductor is centred in an extruded insulating rubber



"Metocel" screened cable; how self-capacity and dielectric losses are reduced.

covering planned on the "tube within a tube" principle, with spacing ribs which ensure a large proportion of air dielectric. Still more air spacing is introduced by the use of a loosely woven braided covering between the outer rubber tube and the wrapping of metal foil which acts as a screen.

In order that the capacity of the lead may not change in wet weather (and thus upset ganging) a weatherproof external covering is added, but for the "outdoor" type only; a similar cable for indoor use is braided with ordinary cotton covering. Both types cost only 8d. per foot, any length being obtainable. Suitable connectors and other fittings are also produced, their uses being explained in a pamphlet in which methods of installation are described.

Capacity between conductor and screen was found to amount to no more than 11.25 micro-microfarads per foot—a commendably low figure, on the attainment of which the makers are to be congratulated.

The use of a "Metocel" down lead should confer a large measure of immunity from many forms of electrical interference; loss of signal strength should be almost negligible.

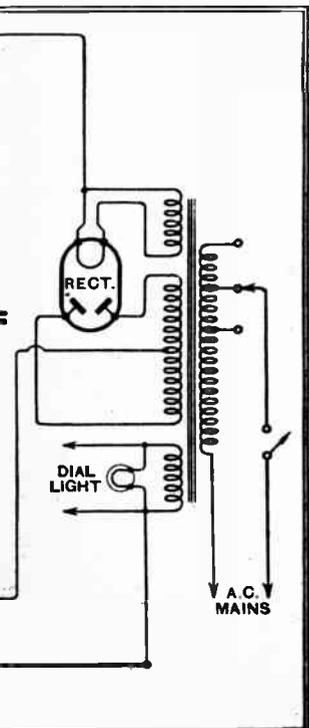
BLUE PRINTS

For the convenience of constructors, full-sized blue prints are available of the following popular *Wireless World* sets that have been recently described, price 1s. 6d., post free.

- Monodial A.C. Super. (Booklet, price 1s. 8d. post free.)
- Modern Straight Five. (June 22nd and 29th, 1932.)
- Short Wave Two. (November 4th and December 23rd, 1932.)
- Monodial D.C. Super. (December 2nd and 9th, 1932.)
- Straight Three. (December 16th, 1932.)
- Modern D.C. Threa. (December 30th, 1932, and January 6th, 1933.)
- All-wave Monodial Super. (January 27th and February 10th, 1933.)
- Modern A.C. Quality Amplifier. (February 17th, 1933.)
- Ferrocart III. (February 24th and March 3rd, 1933.)
- * A.V.C. Monodial Super. (March 17th and 24th, 1933.) With 2½ watt or 5 watt amplifier. State which is required when ordering.
- The Class "B" Ferrocart Receiver. (April 17th, 1933.)
- Universal A.C. Short-wave Converter. (April 28th, 1933.)

* Price of this blue print is 2s.

These can be obtained from the Publishers, Hiffe & Sons Ltd., Dorset House, Stamford Street, London, S.E.1.



Second Channel Suppression

An Effective New Input Filter

By R. I. KINROSS

THERE is a tendency in the interests of economy to cut down the number of signal-frequency circuits in a superhet, but unless special precautions are taken, second channel interference is likely to prove troublesome. A new input filter is described in this article combining the virtues of inductive and capacitive coupling which satisfactorily minimises the effect of "image" frequencies.

IT is fairly well known that receivers working on the superheterodyne principle fell into disrepute a few years ago for two reasons. The first was because of the poor quality of reproduction obtainable, and the second because of the degree of interference experienced throughout the waveband from a powerful local transmitter. The superheterodyne receiver owes its present well-deserved popularity to the use of well-designed I.F. band-pass filters which provide good quality without any sacrifice of selectivity. The second difficulty has been solved in the more expensive type of superheterodyne receivers by the use of selective signal-frequency circuits which, if enough are used, provide a very fair degree of freedom from second channel and kindred forms of interference due to the local station.

The causes of this interference have been already fully described in an article in *The Wireless World* of March 2nd, 1932, and it is sufficient to say here that it can occur when a receiver is tuned to a frequency differing from that of a powerful local station by twice its (the receiver's) intermediate frequency or by some simple fraction of the latter.

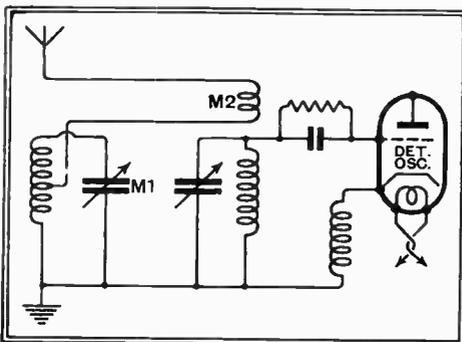


Fig. 2.—The image frequency will be cancelled out at one frequency by the inductively coupled winding, M2.

Assuming that the amplifying and rectifying conditions are as linear as is practicable, the degree of interference experienced for any given intermediate frequency will depend solely on the selectivity of the signal-frequency circuits. Until recently it has been usual to employ at least three or four of the latter, but lately the need for more economy in design has led to the use of only two tuned signal-frequency circuits. Under these conditions serious interference will occur, and it will now be shown what steps may be taken to reduce this.

Experience has shown that two inductively coupled tuned circuits, as shown in Fig. 1, are by far the most suitable form of a signal-frequency band-pass filter for superheterodyne receivers. Fig. 2 shows the same band-pass filter, but with the addition of the coupling M2. The object of this coupling is to feed the image frequency direct from the aerial into the secondary circuit in such a way as to be equal in strength yet opposite in phase to that which is leaking through the primary circuit via M1. The result is that the E.M.F. produced on the grid of the valve by the image frequency in the arrangement shown in Fig. 1 will be completely cancelled out in the arrangement shown in Fig. 2.

This arrangement was actually tried on a receiver close to Brookmans Park, using an I.F. of 125 kc/s. With a plain inductance coupling an annoying whistle was heard when listening to Brussels

(509 m.) due to second channel interference from the London Regional. By suitably adjusting M2 it was possible completely to remove this. It was found, however, that almost as serious interference was still caused by the National Transmitter (261.5 m.) on 335 m. unless

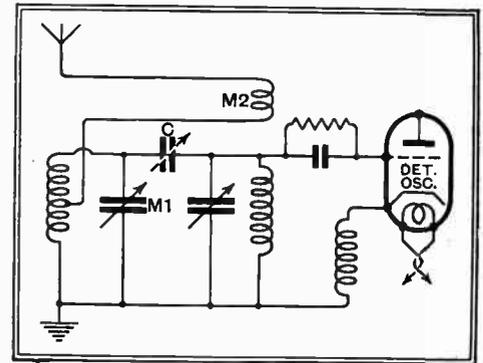


Fig. 4.—Combining the virtues of inductive and capacitive coupling.

M2 were readjusted by increasing its value. If this were done, of course, the interference from the Regional Transmitter would return to about its original intensity.

It was therefore decided to try a capacitive coupling as shown in Fig. 3, but this arrangement, though excellent at the particular frequency for which it was adjusted, again failed to work throughout the waveband. The merits of the two circuits are shown in Figs. 5 and 6, where in the one case suppression is arranged for about 320 metres, and in the other on about 500 metres. These at once suggested to the author an arrangement combining the two methods of suppression. In contrast with the results usually obtained when such perfect ideas are tried in practice, it may at once be said that the hopes entertained for the success of the arrangement shown in Fig. 4 were fully justified as shown by Fig. 7. It is important, however, that the capacitive coupling be used for suppression on the lower, and the inductive coupling on the upper part of the medium waveband.

The actual values of M2 and C were easily obtained mathematically, but as both of these are extremely small, it will be found best to make them semi-adjustable, and so obtain the best results by trial and error. If the band-pass coils are unscreened, M2 may consist of two or three turns of wire on a wooden former 1½ in. in diameter. This former should be

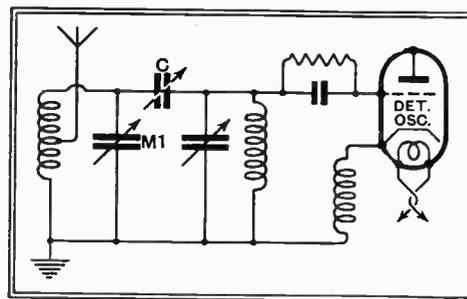


Fig. 3.—The coupling known as "top capacity" does not prevent second channel interference throughout the waveband.

Second Channel Suppression—

mounted along the side of the secondary coil by means of a screw through a hole drilled eccentrically in the former. When the best position has been found, the

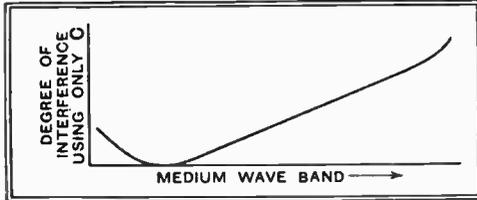


Fig. 5.—Suppression at about 320 metres using "top" capacity coupling.

screw should then be tightened up. Assuming the direction of rotation of the band-pass coils to be the same from the high potential end to earth, the direction of the coupling coil will be in the opposite direction from the aerial to the primary tap. If the coil is screened the amateur will have to make some provision for adjusting M2 through the can, the coupling coil being in this case about 1/2 in. in diameter and placed inside the secondary.

The condenser C may consist of two screws so arranged that the distance between their heads (which should be about 1/4 in. in diameter) is adjustable.

Adjustment is carried out as follows. Tune in a station on which interference is experienced. If this be above 350 m.

adjust the value of M2 until this disappears. Tune in another station below 350 m. on which a whistle is heard and adjust the value of C until this disappears. It may be found now that M2 will require a slight amount of readjustment on the first station. Care should be taken to reduce stray capacities between the aerial and grid of the first valve to a minimum since the value of C is only of the order of five micromicrofarads, and this value,

naturally, must not be exceeded elsewhere in the circuit.

It will be seen that the aerial band-pass filter of Fig. 1 feeds direct

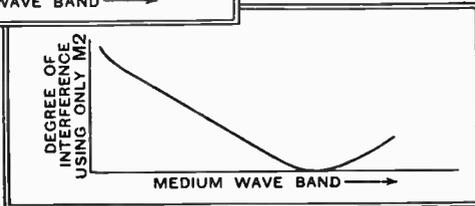


Fig. 6.—The use of the small inductive winding causes suppression at about 500 metres.

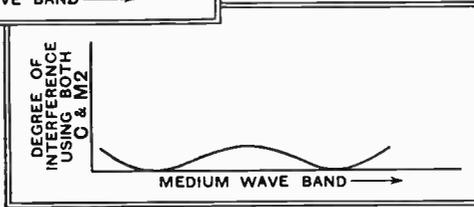


Fig. 7.—The suppression curve when using both inductive and capacitive coupling is nearly linear.

into the detector-oscillator, and although the former is tuned to a frequency differing from that of the oscillator by the intermediate frequency of the receiver, a certain amount of energy will be radiated from the aerial.

In Fig. 4 this radiation will be considerably decreased due to an action similar, but in a reverse direction, to that described above.

NEW BOOKS

RADIO RECEIVER SERVICING AND MAINTENANCE. By E. J. G. Lewis. Pp. 169, with 75 figures. Sir Isaac Pitman and Sons, Ltd., London, 1933. Price 7s. 6d. net.

IN the author's introduction it is stated that this book is intended to help the radio dealer, the salesman, and the keen amateur. The needs of this class of reader are catered for rather than those of the advanced service-man who is seeking information on the more elusive type of fault.

It is rightly emphasised that a mere list of possible faults and their cure is of little value. The underlying principle throughout has been to explain briefly the purpose and functioning of each section or component of a receiver, and then to enumerate the faults that may arise, their diagnosis, and cure.

The opening chapter deals simply but adequately with such fundamental considerations as the electron theory, Ohm's law, capacity, inductance, and tuned circuits. In later sections, valves, circuits, and loud speakers and other components and accessories are discussed in detail. Coming to the purely "service" section, chapters are devoted to testing equipment and the procedure to be adopted in locating faults.

In a manual intended for readers without much fundamental knowledge, it might have been advisable to give greater attention to the procedure to be followed when carrying out eliminative stage-by-stage and

point-to-point tests, showing the deductions that may logically be made at each step. However, the book is so practical, so replete with facts, and so well arranged, that, having digested its contents, the reader will gain sufficient knowledge to enable him to set to work in a logical manner.—H. F. S.

A TEXT BOOK OF WIRELESS TELEGRAPHY AND TELEPHONY (Second Edition). By W. Greenwood, B.Sc. (Eng.), A.M.I.E.E., A.C.G.I. Pp. 397, with 210 diagrams and illustrations. London. The University Tutorial Press, Ltd. Price 5s. 6d.

THE book is intended (according to the Preface to the First Edition) for the reader who has general physical or electrical knowledge but is not a wireless engineer. A knowledge of the principles of electricity is thus assumed, with only an intermediate standard of mathematics. Written with this orientation, the book succeeds very well in presenting the general principles of wireless, covering the whole field in a clear, expository manner. Mathematics are kept to a minimum in the text, but a final chapter on "A Few Mathematical Investigations" gives a more extended treatment (for those who wish it) of such problems as general a.c. circuit theory, the theory of the condenser discharge, coupled circuits, electromagnetic waves, and modulation. A chapter on measurements is also of consider-

able value to readers interested in more than general descriptive matter.

The volume under review is a Second Edition. The first was written when broadcasting and short-wave communication were in their very early infancy. Unfortunately, it shows traces of this chronology, and in the work of bringing it up to date, the author has been neither sufficiently ruthless in expunging obsolete material nor so complete as one might have desired in the exposition of most recent practice. Thus, the chapter on valves contains too much of the First Edition and too little of modern valves, such as the screened-grid, pentode, or indirectly heated-cathode types. In the same way, the chapter on wireless telephony contains too much of methods which must have been only of historical interest even at the time of the First Edition, and does not sufficiently explain the modern transmitter.—J. F. H.

APPLICATION OF THE CATHODE RAY OSCILLOGRAPH IN RADIO RESEARCH. R. A. Watson Watt, J. F. Herd, and L. H. Bainbridge Bell. 290 pp., 17 plates and 113 diagrams. H.M. Stationery Office. 10s.

MOST of the literature relating to the cathode ray oscillograph is distributed among the technical journals and transactions of societies, and for the most part is concerned with the results of investigations rather than the technique of manipulation of this most useful research tool.

The present volume deals primarily with the work of the Radio Research Station,



A PORTABLE "PORTABLE." The new Pye Q/MC battery portable lives up to its name.

Slough, on direction finding and wave propagation, and gives a very full account of circuit arrangements and the practical difficulties and problems involved. Most of this information will be found to be of equal importance to workers in other fields of radio research and the chapters on time bases and photographic recording may be cited as examples. There is a useful list of references to important papers on cathode ray and allied subjects in the appendix. The absence of an index is partly compensated for by a more than usually detailed table of contents.—F. L. D.

Correspondence

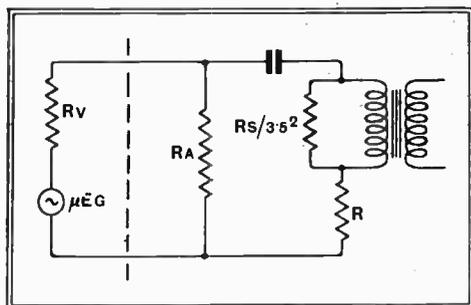
The Editor does not hold himself responsible for the opinions of his correspondents.

Correspondence should be addressed to the Editor, "The Wireless World," Dorset House, Stamford Street, S.E.1, and must be accompanied by the writer's name and address.

Increasing Bass Response

WHILE I appreciate the utility of the practical results described in the article on "Increasing Bass Response," I wish to disagree with the theoretical analysis given.

It was suggested that the A.C. voltage across the anode resistance would be constant at all frequencies; actually, the constant voltage should be introduced in series with the valve resistance R_v . Then again it is stated that the resistance load across the transformer secondary is equivalent to a series resistance in the primary circuit, whereas, of course, it should be represented by a resistance $R_s/3.5^2$ in parallel with the transformer primary. The completed equivalent circuit, with the transformer secondary load transferred to the primary side, is therefore as shown in the accompanying diagram. At resonance, the impedance



of the load in the valve anode circuit, which is the portion of the equivalent circuit to the right of the dotted line, falls to a very low value; consequently the majority of the available E.M.F. is lost in the valve resistance R_v , and the output at resonance is much less than would be the case if the E.M.F. across R_a remained constant. This explains the observed results without making the load on the secondary of the transformer a predominating factor.

A minor criticism of the original article is that the resonance curve (fig. 5) is plotted to a linear scale, so that the apparently large peak represents a gain of only 2.4 decibels, while the response curve to be corrected (fig. 1, curve B) shows a loss of 25 db. at 60 kc/s.

D. A. BELL.

Location of the Speaker

WITH reference to your editorial in the issue of the 19th regarding the location of the speaker in modern receivers, I do hope that you will be able to influence the manufacturers to design the coming season's receivers so that the speaker can be used apart from the set itself, especially in the case of the more powerful mains receivers.

Though I have been in business here but a short time, I could have sold many more of the better class of instrument if the speaker were separate from the receiver proper. The fact that an extra speaker can be used as an alternative does not appeal, as the one in the set is then idle and wasted. I see no reason why cabinets can-

not be built so that the two portions can be used one above the other or apart, and the speaker attached by either a short or long lead as the case may be.

Another failing with many sets, too, is the tuning scale. Why not *always* an open scale calibrated in wavelengths, and where names of stations are used an assurance to the purchaser that the scale will be replaced by a new one in the event of a wavelength shuffle? How many receivers now offered have the Western Regional and National marked?

In conclusion, please accept my thanks for *The Wireless World* and all it contains, especially the very fair and useful reviews of commercial receivers. These are most useful, and when produced in front of a "prospect" often convince that something good is being offered.

W. A. F. EDWARDS.

Glastonbury, Somerset.

Automatic Volume Control

WITH reference to the criticisms made by Mr. Chambers of my recent letter, I would offer the following observations:—

He states that the loss of sensitivity is nil, as A.V.C. is only operative with a loud signal. This is in agreement with my comment, but at the time my letter was written—several weeks before it received publication—the merit of A.V.C. was stated to be that of a remedy for fading. His paragraph explaining that A.V.C. does not operate on the modulation is, of course, correct, and no one would suggest it to be otherwise. In fact, I used this point in my original letter and made it quite clear that A.V.C. is actuated by the amplitude of the carrier and the amount of control is not governed by the modulation, the extent of which is responsible for the output signal.

Your other correspondent—Mr. Hodgson—appreciated this but disagrees with my remark that the resultant carrier of a weak station is partially demodulated by the time it reaches the second detector. The standard overall test for the superheterodynes for which I am responsible is that of applying a measured modulated signal input and noting the watts developed at the output. This test readily reveals (a) that very little signal voltage is developed at the second detector until a certain initial value of signal voltage is applied at the aerial terminal and, (b) that following a linear diode second detector the voltage developed across the output load does not start to rise in like ratio to the potential at the second detector until an appreciably further advance of aerial input has been made. These effects are, no doubt, due to the properties of the anode bend first detector and the subsequent H.F. amplifier but nevertheless support my original observation—with which Mr. Hodgson disagrees—that the extent of modulation for a weak signal is less than for a strong one assuming that they are each equally modulated initially. A.V.C. is controlled by the carrier amplitude at the second detector, an observation with which a

designer with the merest equipment would obviously not disagree.

By "some measure of A.V.C." I implied that which I have always used in my own designs—the self-biasing anode bend second detector—where the sensitivity falls with increase of carrier amplitude. This form of detection, by the way, has the advantage of being capable of handling widely different values of signal potential without overloading and is as distortionless as any system, in that the narrow modulated fringe falls on the straight part of the grid characteristic.

I agree with what is said with regard to Q.A.V.C. and might add that this has been embodied in my own designs for some months past. All the favoured systems of A.V.C. were summarised in my original letter in a form which revealed more than a theoretical acquaintance, and these have been available in practical working form to builders of superheterodynes bearing my name subject to using two triodes in place of the combined diode-triode only just issued.

Everyone realises the aims and effects of A.V.C., and the purpose of my letter was to contradict the general belief, then being voiced, that A.V.C. was the cure-all for the fading of the distant station. Although your correspondence columns contain the only two criticising letters which have come to my notice, on this point of fading and fading distortion they do not disagree but rather raise technical issues, the fundamentals of which are known and appreciated. The listener whose set is not A.V.C. equipped need have no regrets.

F. H. HAYNES.

London, E.C.1.

FOREIGN BROADCAST GUIDE

ATHLONE

(Irish Free State).

Geographical position: 53° 24' N.; 7° 58' W.

Approximate air line from London: 360 miles.

Wavelength: 413 m. Frequency: 725 kc/s. Power: 60 kW.

Standard time: Greenwich Mean Time (I.F.S. adopts B.S.T.).

Standard Daily Transmissions.

13.30 B.S.T., time signal, weather, news, etc.; 18.00, light music (records); children's hour, news, time signal, talks; 20.00, main evening programme; 22.00, station orchestra or play; time signal, weather, news. On Sundays, special sporting broadcasts towards 15.00; and main programme at 20.30. Special sponsored broadcasts, 21.45–22.45 (almost daily).

Announcers: Man and woman.

Call: In Gaelic and English: *Se Seo radio Ath Luain agus radio Corcaighe* (These are the Athlone and Cork radio stations). When Dublin is mentioned it bears its Gaelic name: *Baile Ath Cliath*.

Usually closes down with the playing of the Irish Free State National Anthem and good-night greetings in both Gaelic and English.

Relay: Cork, 224.4 m. (1,337 kc/s), 1 kW.

Broadcast Brevities

By Our Special Correspondent

Site Chosen in Northern Ireland

FOR better or for worse, the site has been chosen for the B.B.C.'s high-power station for Northern Ireland. I understand that the title deeds are now changing hands.

The transaction is wrapped in that dark shroud of mystery in which the B.B.C. always conceals new projects, but I can say that the new station will not be situated on any of the sites so far observed by the newspaper sleuths.

Several Miles from Belfast

Actually, the station will be built several miles away from the city in a district notable for its fecundity in the matter of one of old Ireland's most famous vegetables. I must not say which. It is rumoured that the farmers around will roll their eyes in dismay when they see the uprooting of good vegetables simply for the sake of a broadcasting station.

Droitwich Details

THE new National station at Droitwich promises to be quite the most interesting of the B.B.C. establishments. The two 700ft. masts will be equipped with lifts. In bold outline the transmitter buildings will follow the usual B.B.C. scheme, but the layout will differ in certain respects. For instance, heavy machinery is to be installed in a well sunk below ground level with the transmitter units occupying cubicles in a surrounding gallery.

The Midland Regional aerials will be slung, umbrella fashion, beneath those of the long-wave transmitter.

A Daventry Junk Sale?

The more economically minded are already discussing what is to happen to the old gear at Daventry. What an occasion it would be if Mr. Ashbridge could stage a grand junk sale on that windy hill! It would start a great pilgrimage of amateurs from all parts of the country, not excluding Aberdeen, and a still more impressive pilgrimage on the return journeys, for, despite runnours, there is quite a lot of usable material at 5XX.

A Holy Secret

However, no such auction is likely to be held. Some of the gear will actually be used at Droitwich and some of it will go into stock.

Where the B.B.C. keeps its stock is one of those profound secrets to which some of the engineers themselves cannot supply an answer. Suffice it to say that the stock does exist, and that as the years pass by its antiquarian value goes steadily up.

Complete Opera on Records

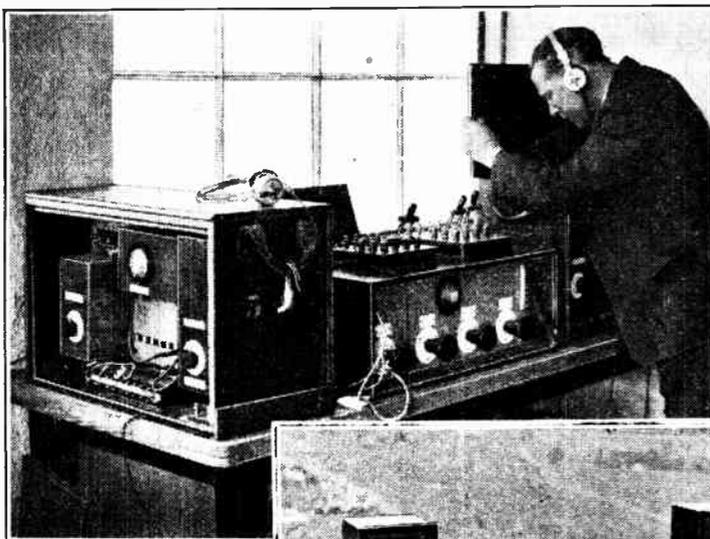
THE only opera that the B.B.C. has yet broadcast complete in the form of gramophone records is "Pagliacci," by Leoncavallo, which was heard through the pick-up some years ago. This afternoon (Friday) listeners to the National programme will again hear the complete opera on gramophone records. The performers are the principals and chorus of La Scala, Milan, the conductor being Maestro Sabajno.

The New Controller

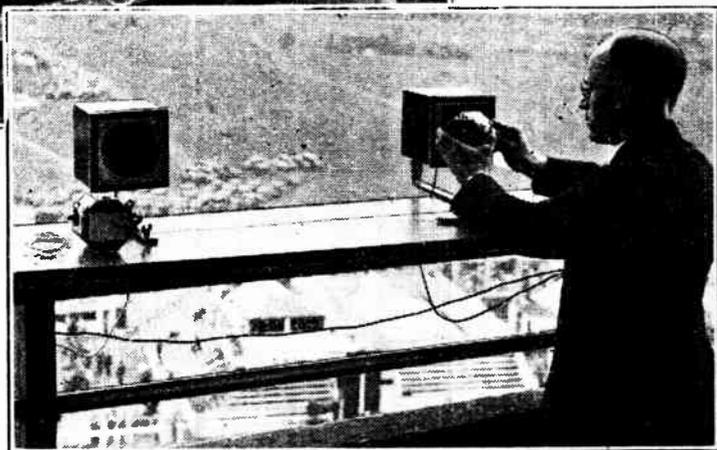
THE great reorganisation of the B.B.C. staff and the separation of the Administrative from the "Output" side reaches its climax with the appointment of Colonel Alan G. C. Dawnay, C.B.E., D.S.O., M.A., to the new collateral post of Controller, Output Division. Col. Dawnay will wield the same power in the artistic and programme branch that Sir Charles Carpendale exerts on the administration side.

A Happier Winter?

The new Controller assumes office on September 1st, so it rather looks as if the Corporation intends to make things hum during the winter. Listeners, however, will be the final arbiters, for no amount of organisation can atone for lack of vitality and originality at the microphone. Let us hope that this



AT EPSOM. Special "Wireless World" photographs of the B.B.C. engineers in the Epsom grandstand on Derby Day. (Above) The control engineer gives a final "look round." (Below) Inserting the microphones in vibration-proof sockets.



new era in B.B.C. management will mean a still more accurate appraisal of what the ordinary listener wants and a determination to see that he gets it.

Carillon Broadcast

BELL music always comes over the ether very realistically, and to those who like carillon chimes the broadcast from Midland Regional on June 9th should be specially interesting. On this occasion the carillon will be broadcast from the new Church of Our Lady of the Rosary at Saltley, Birmingham.

The largest bell weighs 25 cwt. and is a product of the Croydon firm which founded the two largest peals in the world at Chicago and New York. Herbert Withers is the carillonneur.

Aural Mobility

WHAT listeners to the broadcast of the Aldershot Tattoo lose on the spectacular side should be partially compensated for by their aural mobility, for, after hearing the massed bugles at the opening of the Tattoo to-morrow (Saturday), we shall be switched over from the Rushmoor Arena to the Tower of London for the Ceremony of the Keys. Then, before returning to Aldershot, we shall hear Mr. Stuart Robertson and the Wireless Male Voice Chorus in marching songs, followed by an eye-witness account of "The Battle of Omdurman," written by the late Major A. J. Hill-Smith during the Egyptian Campaign. We shall then be transported once more to Rushmoor to hear the dismounted bands of the Aldershot Command.

And So To Bed

Ambrose and his orchestra will take up the strain for part of their usual Saturday evening relay from the May Fair Hotel, but thirty-five minutes later listeners will again be back at Aldershot for the closing episodes, which will include a Pageant of Ancient Chivalry and a modern war display.

Harry Tate in "Motoring"

"MOTORING," perhaps their most famous sketch, will be performed by Harry Tate and Company in the Regional programme on Wednesday next, June 14th.

The Tourist Trophy

IMMEDIATELY following the motor cycle race in the Isle of Man for the International Auto-cycle Junior Tourist Trophy on Monday afternoon next, June 12th, an eye-witness account will be relayed for North Regional listeners.

New Scottish Regional Director?

WHO will be Director of the B.B.C. in Scotland? Several candidates are in the running, but I plump for Mr. Joseph Duncan, general secretary of the National Farm Servants' Union of Scotland. Mr. Duncan has paid several visits to Broadcasting House in the last few days, and, unless the indications are very deceptive, Scotland may consider the position is filled.

LABORATORY TESTS

New Radio Products Reviewed



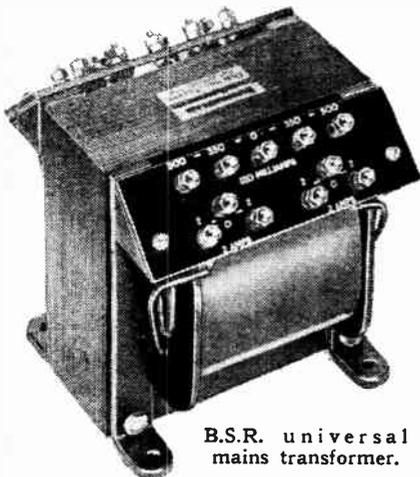
B.S.R. UNIVERSAL MAINS TRANSFORMER

A MAINS transformer which is very appropriately described as a universal model has been introduced by the Birmingham Sound Reproducers, Old Hill, Staffs. It is built on very generous lines and provides four separate L.T. windings, two of these are rated at two amps each, one at three amps and one at five amps. The high voltage secondary winding gives 500-0-500 volts maximum, but tappings are provided for an output of 350-0-350 volts so that either the "B" or the "C" class rectifying valves may be used. This winding will deliver up to 120 mA. without an appreciable voltage drop.

Tests were made with a "C" class valve, the filament current for which was taken from the 4-volt 3-amp. winding. With the remaining L.T. windings fully loaded measurements were then made of the smoothed D.C. output at various current loads. The smoothing equipment consisted of a choke of 100 ohms resistance and two 4-mfd. condensers.

Current in mA.	Volts.
20	654
40	625
60	596
80	565
100	536
120	507

The 500-0-500 secondary winding is exceedingly well regulated as the voltage changed by the small amount of 3.2 per cent. only throughout the tests. Regulation of the L.T. windings is equally satisfactory.



B.S.R. universal mains transformer.

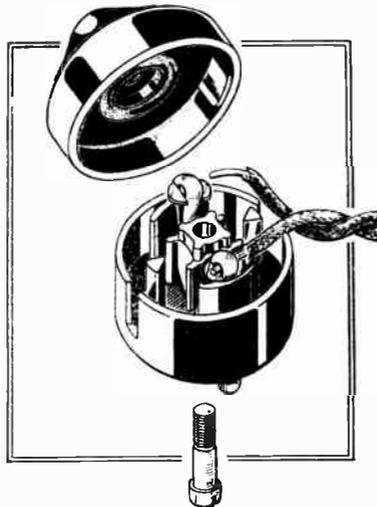
The rectifier was operated at 3.9 volts while the two 4-volt 2-amp. windings each gave 3.84 volts and the 5-amp. winding 3.80 volts. On half-load the voltages do not rise beyond the usual tolerance permitted for A.C.

valves. The primary is tapped to suit supply mains of from 200 to 250 volts, and the price is 55s.

In common with all B.S.R. products the workmanship and general finish are of a very high standard, and this model should prove exceedingly useful in the hands of the experimenter requiring a high-class transformer having universal application.

CLIX WALL PLUG

LECTRO LINX, LTD., 79A, Rochester Row, Westminster, London, S.W.1, have extended their range of Clix specialties and now include a series of wall plugs made in vertical, side entry and earthing pin models, and in all B.E.S.A. ampere ratings. In design these plugs constitute a radical departure from the usual practice, and much



Clix wall plug fitted with self-centring pins.

of their experience gained in the manufacture of small wireless connections is applied to the new plugs.

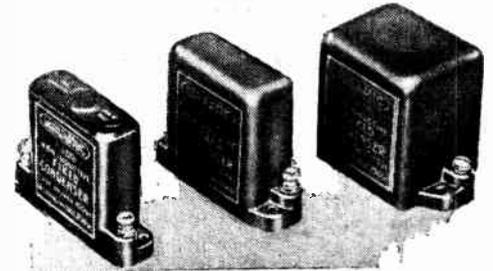
Comparatively large tolerances are permitted in the internal diameter of the standard socket, but so far as the Clix wall plug is concerned, quite big variations will not result in a bad contact, for they are fitted with spring prongs fashioned in the form of a cotter pin similar in design to those employed in their "Master" wander plugs. Moreover, the pins are not rigidly positioned, but are permitted a small lateral movement, and thus have the advantage of being self-centring.

The 5-amp. model examined made a perfectly good contact when inserted in sockets varying in diameter by as much as three to four times the permitted tolerance; furthermore, they are very robust, and seem well capable of standing up to hard wear. A simple but quite effective wire grip is employed in place of screw connections for the leads. The bared end of the flex is threaded through the eye of the cotter-pin-type prong and is gripped firmly by the cover plate when fixed in position by its screw.

The price of the 5-amp. model is 9d.

IGRANIC CONDENSERS

THE Igranic range of large capacity fixed condensers are made in one-, two- and four-mfd. sizes, the normal working voltage being 250 D.C. They are of the non-inductive type and are suitable for use, there-



Igranic non-inductive condensers.

fore, in anode and grid circuits for by-passing H.F. currents as well as in smoothing circuits. A specimen of each size was tested and in every case they successfully withstood D.C. potentials of 800 volts, this being 50 volts in excess of their test rating.

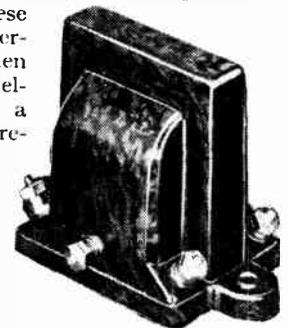
These condensers are mounted in attractive bakelite cases and the prices are, 2s. 3d. for 1 mfd., 2s. 9d. for 2 mfd. and 5s. for 4 mfd. The makers are Igranic Electric Co., Ltd., 147, Queen Victoria Street, London, E.C.4.

ORMOND TRANSFORMERS

IN order to meet the special requirements of Q.P.P. amplification, The Ormond Engineering Co., Ltd., Rosebery Avenue, London, E.C.1, have added to their range of L.F. transformers a miniature push-pull input model having a ratio of 1 to 8. Listed as type R531CT, it is similar in size and construction to their general purpose transformer, model R531. Both embody a high permeability nickel-iron core and utilise the same style of moulded case, the overall size of which is 3in. x 1-11/16in. x 2 1/4in.

Although these transformers perform best when used with a parallel-feed circuit, for a more uniform re-

Ormond Q.P.P. push-pull inter-valve transformer; step-up ratio 1:8.



sponse is obtained, small amounts of D.C. can be passed through the primary, but this should not exceed 2 mA.

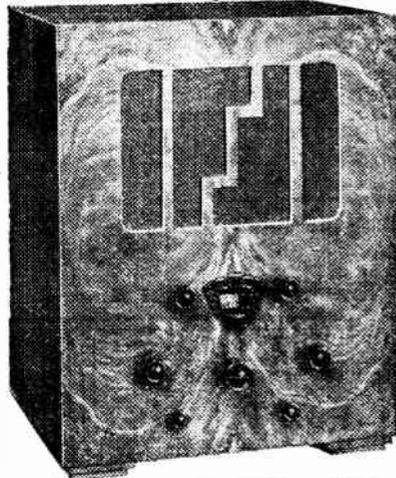
The measured primary inductance of the Q.P.P. model is 26.5 henrys with no D.C. flowing and with 3.5 volts A.C. applied to the winding. With 2 mA. of D.C. superimposed the inductance falls to 14.5 henrys. Measurements made under similar conditions with the general purpose model, which has a step-up ratio of 1 to 3.5, gave the inductance as 38 henrys without D.C. and 19.6 henrys with 2 mA. The price is 7s. 6d. in each case.



The C.A.C. GRANDFATHER CLOCK RADIO-GRAM CABINET.

This handsome and original piece of furniture represents the very last word in Radio-Gramophone Cabinet design. Intended to house an electric clock movement, it has provision for fitting, if desired, a pair of dual compensated Loud Speakers. Ample provision is given below the Speaker Grille to accommodate almost any type of Receiver, while the electric Gramophone Motor and Pick-up fit into the sliding drawer below. The two side compartments allow for the storage of a very large number of records.

Supplied in Burr Walnut, Mahogany or Figured Oak.
PRICE: 12 GUINEAS.



Something for Something

What, in your opinion, constitutes the ideal Radio or Radio-gram Cabinet?

If money were no object, what features would you have incorporated in your ideal Cabinet?



C.A.C. CABINETS LIMITED

invite "Wireless World" readers to enter an interesting

COMPETITION

SIMPLE RULES:

SEND US A SKETCH of what you consider to be the most useful design of Cabinet for a Radio set or a Radio-gram, or both.

DESIGN AND UTILITY are the two points upon which the judges will base their decisions.

ABILITY TO DRAW does not matter so long as your sketch is clear and conveys your idea.

NO LIMIT to the number of individual entries. No entrance fee.

ONLY ONE PRIZE will be awarded to each entrant.

In the event of two readers submitting a similar design of Cabinet adjudged to be a winner, each will be awarded a prize.

The decision of the Managing Director is final, and no correspondence in connection with the competition will be entertained.

REMEMBER, the simplest Radio Cabinet design incorporating useful suggestions stands an equal chance of winning a prize as the most elaborate Radio-gramophone Cabinet.

PRIZES:

A prize will be awarded to every reader whose design we adopt. It will take the form of his own ideal Cabinet and will be built, to his own dimensions, in Oak, Mahogany, Walnut or any desired timber. To the reader who submits the best design we will present, in addition to the Cabinet, a cheque for £20. All winning designs will be prominently featured on our

STANDS Nos. 55, 97, 98 and 99

at the Olympia Radio Exhibition in August. Manchester Exhibition, **STAND No. 115.**

Entries should be sent in a Sealed Envelope addressed to **COMPETITION DESIGNS, C.A.C. CABINETS, LTD., Angel Court, 173, Strand, W.C.2.**

Closing Date, first post Saturday, July 1st, 1933.

THE CLASS "B" FERROCART RECEIVER CABINET.

Selected by "The Wireless World" designer.

The fact that this handsome Cabinet, finished in beautifully figured Walnut, was chosen by "The Wireless World" for their latest Receiver speaks for itself. Fashioned on modern lines, it is of extremely neat design, and its construction leaves nothing to be desired. Special care has been taken to ensure that Cabinet resonances are eliminated. Overall dimensions:—Height, 19½ in. Width, 15 in. Depth, 12½ in. Complete with Loud-speaker Baffleboard, "Konductite" metal-lined baseboard and removable back. Front drilled ready to take the "Ferrocart" Receiver if desired, without extra charge.

Cabinet with metal-lined baseboard - - - - - **32/6**

KITS AS SPECIFIED

(Designer's first Choice).

- KIT 'A'** Complete (less Valves, Batteries, Cabinet and Loud Speaker) **£7-11-0**
- KIT 'B'** Complete with Valves (less Batteries, Cabinet, and Loud Speaker) **£9-17-3**
- KIT 'C'** Complete with Valves, Cabinet and Loud Speaker (less Batteries) **£13-9-3**

D-tailed Lists, Post Free.

In view of the phenomenal interest taken in this wonderful circuit, we have reprinted 10,000 copies of the original constructional article which appeared in "The Wireless World" of April 7th last, and these are being offered free to all readers of "The Wireless World" upon receipt of application. Wireless dealers will be supplied gratis with as many copies as they can conveniently dispose of amongst their customers. A cordial invitation is extended to all to visit our Showrooms at 4, Surrey Street, Strand, W.C.2, to see and hear this marvellous set.

Advt. of the City Accumulator Co. Ltd. 'Phone: Temple Bar 8620.

The VALUE of T.C.C. RESEARCH to YOU....



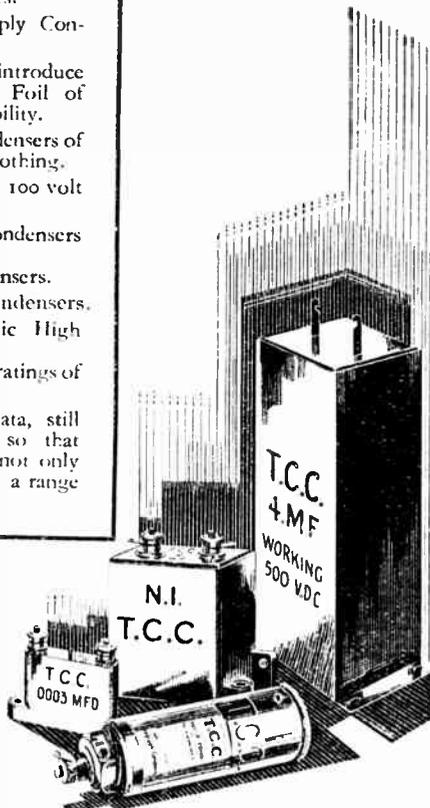
EVERY T.C.C. announcement has been a plain statement of fact—of achievement. No extravagant claims have been needed. Year by year T.C.C. research has been going on, large sums of money have been expended on pioneer work, the best brains employed. The T.C.C. efforts have been rewarded. Every development of note in condenser practice has emanated from the T.C.C. laboratories. The following facts provide the reason for the wonderful confidence held by set designers, serious experimenters and amateurs in T.C.C. Condensers.

MILESTONES IN RADIO HISTORY

- 1906 T.C.C. founded with factory operating solely on Condensers and artificial line for submarine cable work.
- 1914 T.C.C. introduce Mansbridge Condensers, and manufacture under original licenses.
- 1915 T.C.C. working on Condensers for War Office, to Admiralty—Air Service—etc.
- 1918
- 1920 T.C.C. manufacture heavy duty Transmitting Condensers.
- 1922 T.C.C. manufacture Power Condensers.
- 1926 T.C.C. contract with B.B.C. to supply Condensers for 2LO.
- 1927 T.C.C. discard Mansbridge type, and introduce Rolled Condensers using Aluminium Foil of higher conductivity—and greater reliability.
- 1928 T.C.C. introduce Dry Electrolytic Condensers of very high capacity for low tension smoothing.
- 1929 T.C.C. introduce Dry Electrolytics for 100 volt working.
- 1930 T.C.C. introduce Moulded-in Mica Condensers—the now famous "M" Type.
T.C.C. introduce Non-inductive condensers.
- 1931 T.C.C. introduce Wet Electrolytic Condensers.
- 1932 T.C.C. manufacture Dry Electrolytic High Voltage Condensers—(550v. peak).
T.C.C. first to publish Surge Voltage ratings of paper condensers.
- 1933 T.C.C. research still building up data, still adding to its specialised knowledge so that Radio Technicians may have available not only a "pedigree" range of condensers, but a range ahead of time.

T.C.C.

ALL-BRITISH
CONDENSERS



The Telegraph Condenser Co., Ltd., Water Farm Rd., N. Acton, W.3



The Product of British Capital & Labour
Britain's Best Reproducers
REPRODUCERS & AMPLIFIERS LTD., 5, CIVIL SERVICE.

"SHAKEPROOF" LOCK WASHERS

AND LOCKING TERMINALS.
Used by all the Leading Set Manufacturers—

The twisted teeth bite into the metal and prevent "slacking off." The more the vibration, the tighter they grip.

ASK YOUR DEALER FOR "SHAKEPROOF."



Manufactured by **BARBER & COLMAN LTD.,** Brooklands, MANCHESTER.

Dealers and factors enquiries to **Wm. CLARK (Spare Parts) Ltd.,** 5, Parkhalsea Road, London, S.E.1.

COST OF H.T. CUT IN HALF

A free booklet describing the remarkable Standard battery will be sent by return post. H.T. current from this unique battery is extremely economical and definitely improves reception. It recharges itself overnight and lasts for years. There is no corrosive acid or fumes. Sold direct and fully guaranteed, no skill is required to fix and maintain. End your H.T. troubles by becoming a Standard enthusiast.

The Popular Model H.5 for average sets. 126 volts No. 3 cells, costs 37/8 (or on easy payment terms)

STANDARD BATTERY CO. (Dept. W.W.)
184-188, SHAFESBURY AVENUE, LONDON, W.C.2

Grippleshell Aerial Brackets

are simple and economical to install and avoid unsightly poles. Write for leaflet to:—
PARTRIDGE WILSON & CO.,
Dept. 29, Davenset Works, Leicester.

CRESSALL RESISTANCES

"Cressall" Asbestos-Wire Woven Resistance Nets for voltage absorbing on D.C. Mains Receivers. Mica-Wound Resistance Units. Sliding Resistances. Resistance Wires

Please write for Lists

CRESSALL MANUFACTURING COMPANY,
31-32, TOWER STREET, BIRMINGHAM.

SAVAGE FOR PUBLIC ADDRESS AMPLIFIERS

56/53, CLERKENWELL RD., LONDON, E.C.1.

Phone: Clerkenwell 36819.

MISCELLANEOUS ADVERTISEMENTS

NOTICES.

THE CHARGE FOR ADVERTISEMENTS in these columns is

12 words or less, 3- and 3d. for every additional word.

Each paragraph is charged separately and name and address must be counted.

SERIES DISCOUNTS are allowed to Trade Advertisers as follows on orders for consecutive insertions, provided a contract is placed in advance, and in the absence of fresh instructions the entire "copy" is repeated from the previous issue: 13 consecutive insertions 5%; 28 consecutive, 10%; 52 consecutive, 15%.

ADVERTISEMENTS for these columns are accepted up to **FIRST POST** on **MONDAY MORNING** (previous to date of issue) at the **Head Offices** of "The Wireless World," Dorset House, Stamford Street, London, S.E.1. or on **SATURDAY MORNING** at the Branch Offices, 19, Hertford Street, Coventry; Guildhall Buildings, Navigation Street, Birmingham, 2; 280, Deansgate, Manchester, 3; 28a, Renfield Street, Glasgow, C.2.

Advertisements that arrive too late for a particular issue will automatically be inserted in the following issue unless accompanied by instructions to the contrary. All advertisements in this section must be strictly prepaid.

The proprietors retain the right to refuse or withdraw advertisements at their discretion.

Postal Orders and Cheques sent in payment for advertisements should be made payable to **LIFFE & SONS Ltd.**, and crossed & Co. Notes being untraceable if lost in transit should not be sent as remittances.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

RECEIVERS FOR SALE.

BETTER Part Exchange at Appleby's, 109, Edgware Rd., Hyde Park, London, W. [2650]

COMPLETE National Portable, with batteries, as new; 75.-Walker, 294, Galpian Rd., Thornton Heath. [2814]

MORE Part Exchange Receiver Bargains for Disposal; state approximate requirements for quotation.—Coutts, Wireless Engineers, Hurley. [2613]

CLIMAX All-electric 200-250 A.C. Band Pass Three, in walnut cabinet, complete with valves and moving coil speaker; listed £16/16, unopened, £8/8, c.o.d., carriage paid.

OSTER-GANZ Combined A.C./D.C. All-electric Set, 3 valves and Magnova moving coil speaker, in walnut cabinet; listed £11/11, our price £4/19/6, c.o.d., carriage paid.—Kays, 167, City Rd., Finsbury, E.C.1. [2835]

"**WIRELESS** World" Short Wave 2, exactly as described November 4th, 1932, with H.T. grid and L.T. batteries and valves; £2/10.—Box 7137, c/o The Wireless World [2811]

CHARGERS AND ELIMINATORS.

SERADEX Resistances; list for stamp.

SERADEX Battery Chargers, from £2/7/6; details of full range for stamp.

TREVOR PEPPER, 48, Wake Green Rd., Birmingham, 13. [2827]

TANTALUM for A.C. Chargers, H.T. and L.T.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [2139]

180 Accumulator Chargers, ½ amp., 2-6v., in ventilated metal case with mains flex (Westinghouse rectifiers); 7 days' trial; 10/8.—Arden Agency, Wollaston, Wellingborough. [2757]

HOBART C.P. Charger, 220-230 volt, 50 cycles input, 7½ volt, 60 amps. output, complete with 8ft. copper bus bars, battery clips, meters, cables, etc.; cost over £60, price £35 cash.—Liddiard, Wantage. [2828]

DUAL Purpose Eliminator, outputs 250v. 90 m.a. or 150v. 25 m.a. by simple tapping change; several H.T. taps, and 4v. 4a. L.T. Westinghouse rectification and finest material; stamp for full particulars; price 79 6.-8, Fishponds Rd., S.W.17. [2824]

HOYNES Transformers and Chokes the Best Obtainable, perfect insulation, regulation and reliability, used exclusively by discriminating set manufacturers, all fitted with tapped and screened primaries, filaments all centre tapped, stout cast aluminium clamps fitted to all models, also clearly marked terminal strips.

HOYNES Components are Guaranteed for One Year.

HOYNES Transformers Built to Your Specifications, at very competitive prices.

HOYNES Supply the Trade.

HOYNES—250-0-250v. 60 m.a., 4v. 1-2a., 4v. 2-4a.; 10/-. post 9d.

HOYNES—250-0-250v. 60 m.a., 4v. 1-2a., 4v. 2-4a., 4v. 1a.; 12/6, post 1/-. [2771]

(This advertisement continued in column 3.)

Specified by  the Experts

SOUND SALES

FIRST AGAIN!

Announcing the New Class "B"

UNIVERSAL THREE-RATIO DRIVER TRANSFORMER

The tapped primary of the "U.B." Type "U.B." assures perfect results with **10/-** MULLARD, MAZDA and COSSOR CLASS "B" Valves. Write for leaflet "T."

SOUNDER THAN EVER...

The New Sound Sales Class "B" SOUND UNIT, Fitted with special Plug-in Adaptor and Super Driver Transformer. No loose wires. Suits ALL Class "B" valves. ALL speakers, and ALL Battery sets. Price still **35/-** (less value)

Valuable data and circuit diagrams for converting the "S.T.400" etc., with every unit.

SOUND SALES LTD.
Tremlett Grove Works, Junction Rd., Highgate, N.19

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Application for Free Booklet should be made to **RADIO TRAINING INSTITUTE OF GREAT BRITAIN**, 35, NEW OXFORD STREET, LONDON, W.C.1.

WE Specialise in home-study training for appointments in Radio and Talking Picture Engineering. Introductions guaranteed. Students awarded our "Certificate of Proficiency" may become Associate Members of the R.T.I. and assume the designation "A.M.R.T.I. (Gr. Br.)"

SHORT WAVES! SCOTT SESSIONS' "EQUATOR-SUPER"

An advance design for
Overseas Battery users.
SPECIAL FEATURES:—

CIRCUIT:

7-valve Super-Heterodyne incorporating Westinghouse Metal-Oxide 2nd Detector, with Automatic Volume Control.

OUTPUT:

2 watts A.C. (Class B).

WAVE RANGE:

12 to 80 metres and 220 to 550 metres with no coil changing.

H.T. BATTERY CONSUMPTION:

Approx. 15 m/a only.

SPEAKER:

Fitted with latest "Celestion" P.M. Class "B" Moving Coil Speaker.

CABINET:

Teak, specially designed and finished for Tropical use.

COMPONENTS:

Specially selected and constructed for Overseas requirements.

PRICE £33 (plus £2-2-0 Royalties or £3-3-0 Overseas)

Specially packed for export.

Write for full details and specification.

SCOTT SESSIONS & CO.

RADIO ENGINEERS,
MUSWELL HILL, LONDON, N.10
Telephone No.: Tudor 5326.

Contractors to H.M. Government Departments, Crown Agents for the Colonies, Electricity Corporations, etc.

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Chargers and Eliminators.—Contd.

(This advertisement continued from column 1.)

HOYNES—350-0-350v. 60-70 m.a., 4v. 2-3a., 4v. 3-4a.; 12/6, post 1/-. [2771]

HOYNES—350-0-350v. 70-80 m.a., 4v. 2-3a., 4v. 3-4a., 4v. 1-2a.; 13/6, post 1/-. [2771]

HOYNES—350-0-350v. 120 m.a., 4v. 2-3a., 4v. 4-6a., 4v. 1-2a.; 16/-. post 1/3. [2771]

HOYNES—500-0-500v. 140 m.a., 4v. 2-4a., 4v. 4-6a., 4v. 2a., 4v. 2a.; 27/6, carriage 1/6, weight 12lb. [2771]

HOYNES—0-110-135v. 90 m.a., 4v. 2-4a., suitable for H.T. 6 or 7; 10/-. post 9d. [2771]

HOYNES—200v. 200 m.a., 4v. 2-4a., 4v. 1-2a., suitable for H.T.8; 15/6, post 1/-. [2771]

HOYNES—0-200-240v. 200 m.a., 4v. 2-4a., 4v. 1-2a., suitable for H.T. 8 or 9; 14/6, post 1/3. [2771]

HOYNES—Line transformers and chokes always in stock; we can also supply all components.

M. J. HOYNE, Offices and Works, 8a, Gardstone Rd., Wimbledon, S.W.9. Tel.: Liberty 3303. Open every day, including Wednesday and Saturday, till 7 p.m. [2771]

VORTEXION, Wimbledon, for the latest type transformers, all with screened primaries and 12 months' guarantee, absolute reliability (we supply talkie equipment); regulation guaranteed within 5% all models except supers, which are 2½%; you cannot buy more reliable or better looking transformers, not a pres-ed shrouding, but a substantial casting free from hum.

VORTEXION—Specified for A.C. quality amplifier, 400 volts 110 m.a., 4v. 3, C.T., 4v. 2, 4v. 1, C.T. terminals, 24/-; tagged leads, 20/-; shrouded, 24/-.

VORTEXION—Ferrocort III, 350-0-350, 60 m.a., 4v. 2.5, C.T., 4v. 3.5, C.T.; open type 15/6, shrouded 16/-; post 9d.

VORTEXION—250-0-250, 4v. 1 to 2a., 4v. 2 to 4a.; open type 10/6, shrouded 12/6; post 9d.

VORTEXION—Open type H.T.8 model, 4v. 4a.; 12/6; post 1/-. [2771]

VORTEXION—Super model for H.T.8 or 9 or 10, 4v. 1 to 2, 4v. 2 to 4; open type 14/6, shrouded 16/6; post 1/-. [2771]

VORTEXION—Parallel fed intervalve transformer for increasing bass response, large mu-metal core, 3 and 5 to 1, 180 henrys, 7 and 9 to 1, 120 henrys or to specification, in neat bakelite case terminals; 10/6.

VORTEXION—2½-watt Monodial A.V.C. model; open type 14/6, shrouded 16/6; post 1/-. [2771]

VORTEXION—5-watt Monodial A.V.C. model, 400-0-400, 120 m.a., 4v. 6a., 4v. 3½a., 4v. 2, 4v. 1a., super screened; 20/-, shrouded 24/-.

VORTEXION—350-0-350, 120 m.a., 4v. 2 to 5a., 4v. 2 to 4a., 4v. 2.5a.; open type 14/6, shrouded 16/6.

VORTEXION—400 or 450 or 500v., 120 m.a., 4v. 2 to 5, 4v. 2 to 5, 4v. 2 to 5; open type 19/-. shrouded 23/-. [2771]

VORTEXION—400 or 450 or 500, 150 m.a., 4v. 4a., 4v. 2.5, 4v. 2, 4v. 2, 4v. 2, core size 2¼in. x 1¼in., a super job, 2½ regulation; 35/-, shrouded, with terminals, less terminals 30/-, open type 26/-; post 1/3.

(This advertisement continued on next page.)

Chargers and Eliminators.—Contd.

(This advertisement continued from previous page.)
VORTEXION.—Autos to B.E.S.A. specification, 100 or 110 volts to 200 or 220 or 240 volt, 60 watts, 7/3, post 9d.; 120 watts, shrouded 12/6, open type 10/6, post 1/-; 200 watts, open 14/6, shrouded 15/6, post 1/3; 2,000 watt autos, £4 10.
VORTEXION.—Chokes, 20 h. at 120 m.a., 3 6; 30 h. at 60 m.a., 5 6; 30 h. at 150 m.a., open type 10/6, shrouded 12/6; post 1/-.

CABINETS.

RADIO-GRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon. [1696]

DYNAMOS, ETC.

CRYPTO Rotary Converter, 220 volts D.C. to 240 volts A.C. suitable for large amplifier.—9, Holborn Place, Plymouth. [2822]

LOUD-SPEAKERS.

3,000 Blue Spot 160C Inductor Units, guaranteed brand new, unopened; price 15/-, post paid.—Northern Radio, 13, Aston St., Birmingham. [2812]

COLUMBIA A.C. and D.C. Moving Coil Speakers, fitted variable ratio transformers in attractive figured oak cabinets; from 37/6 complete.

ALL Types of Moving Coil Speakers, pots and windings, etc.; going cheap.—R. Newman, 309, Roman Rd., Bow, E.3. [2418]

30/-!!—B.T.H. R.K. moving coil speakers, 6in. cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; suitable for public address work; weight 30 lb., and are vastly superior to cheap speakers now on the market, 100 volts, 150 volts, and 200 volts D.C.

27/6!!—6v. D.C. speaker, as above; £2/7/6, speaker as above for 100-250 A.C.

SIMPSON'S Electric Turntables, 25/-; carriage paid; cash with order, or c.o.d.

B.T.H. Brand New Public Address Amplifiers, 4-stage, including microphone stage, 2 types, 12 watts and 6 watts outputs, 12-watt type has 2 P.P.5/400s in output, 6-watt type has 2 P.P.3/425s in output, 12 watt type price £15. 6-watt type £12.10; B.T.H. cinema type pick-ups, brand new, 17/6.—Ward, 12, Tredgar Rd., Bow, E.3. [2793]

LAMPLUGH Silver Ghost Moving Coils, with transformer, 90-130 volts 2,500 ohms; listed 34/-, at 14/-; sealed cartons; carriage paid, cash with order, or c.o.d.—Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [2838]

LAST Batch Set Manufacturers' Surplus, positively no more at this price: Rolas F6, 6 volts (8 1/2 ohms), 50-130 volts (2,500 ohms), 110-175 volts (2,000 ohms), 150-200 volts (4,700 ohms), 200-250 volts (6,500 ohms); list 35/-, at 17/8, power or pentode transformers; F7s, all voltages as above list 46/6, at 25/-.

PERMANENT Magnets.—1/6 P.M., list 49 6, at 23/-; F7 P.M., list £3, at 33/-; also a few class B and dual compensated; ask for prices; carriage paid; cash with order or c.o.d.—Chal-Electric, 6, Conduit St., London, W.1. [2329]

B.T.H. R.K. Moving Coil Speakers, guaranteed new, unused, manufacturers' surplus, original price 6 guineas, highly sensitive and wonderful tone response, will handle up to 10 watts output, available for 5v., 100v., 200v., 30v.; also A.C. models £2 10; carriage paid, c.o.d. or cash with order; the best value in speakers obtainable to-day.—Seekamp, 46, Farringdon St., London, E.C.4. [1425]

VALVES.

THE Following Valves are guaranteed as New, and any valve differing from the makers' characteristics will be exchanged, all latest types.

A.C./Pens., P.T.4s, G.U.I.s, A.C.S.G./V.M.s, Pen.4V.s, P.T.625s, V.M.S.4s, D.C.2/Pens., D.P.T.s, M.P.T.4s, V.M.4V.s, A.C.S.I./V.M.s, P.M.24Bs, D.C.28.G./V.M.s, 11/-; M.S.4s, M.S.4Bs, A.C.S.C.s, 84V.A.s, 84V.B.s, M.S.G./A.A.s, D.S.B.s, A.C.S./2s, P.X.4s, D.C.28.G.s, 9/6; U14s, 10/.

M.L.4s, A.C./P.s, 41M.P.s, P.M.21s, 8/-; A.C./H.L.s, 164V.s, 354V.s, A.C.2/H.L.s, 41M.H.L.s, U10s, U.U.60 250s, M.H.4s, M.H.L.4s, 7 6; V.S.2s, 215S.G.s, 220S.G.s, P.M.12s, P.M.12As, 9/-; 442 B.U.s, D.W.3s, 8 6.

ALL Types of Brand New American Valves in Stock, first class makes: 247s, 235s, 224s, 236s, 237s, 235s, 244s, 12/-; 227s, 226s, 280s, 245s, 9 6; 242s, 232s, 11/-; U.X.210s, 15/-.

U.X.250s, 7 watts output, 15/-; 281s, 14 6; for quickest delivery send telegraph money order.

OVER 4,000 Valves Always in Stock for Immediate Delivery; carriage paid; cash with order or c.o.d.—Ward, 12, Tredgar Rd., Bow, E.3. [2794]

ANOTHER New Large Purchase of a Set Manufacturer's Stock of Valves, guaranteed as new, all latest types, and any valve differing from the makers' characteristic exchanged free.

210 H.L.s, 210H.F.s, 210L.F.s, P.M.11.F.s, P.M.11.L.F.s, 11L.210s, 1210s, 1210s, 3/9; 215P.s, 220P.s, L.P.2s, P.215s, D.E.P.215s, P.M.2s, P.220s, P.M.2A, 4/9; D.H.s, 41M.H.L.s, 41M.H.s, M.H.4s, A.C./H.L.s, A.C./2H.L.s, 354V.s, 904V.s, D.C.3/H.L., 7/-; 41M.P.s, M.L.4s, A.C./P.s, 7 6; P.T.4, P.T.41, P.E.N.4V., M.P./P.E.N.s, A.C./P.E.N.s, 12/-; latest metallised 8.4V.B.s, M.S.4B.s, M.S.G./H.A., A.C./S.G.s, 9/-; Ceso M.V.S.G., 12/-; 442 B.V., 1807s, 7/9; 1821s, 7/-; D.O.60s, 40/-.

4,000 Valves are Always in Stock for Immediate Despatch; prompt attention, for cash or c.o.d.

NEWMAN, 309, Roman Rd., E.3. [1659]

HEAYBERD CLASS 'B' A.C. and D.C. MAINS UNITS

Current demands are constantly fluctuating with Class 'B' amplification or Q.P.P., and it is therefore essential that there should be a constant voltage output from the mains unit. The most satisfactory method of ensuring practically perfect voltage regulation in the unit is by incorporating the Neon Stabiliser Tube produced by Cossors. This tube has a self-adjusting action and, no matter what current is taken from the unit, the voltage remains the same. Heayberd are the first to manufacture and market units for use with this tube. A complete unit is available for D.C. mains—price 55/- and a Kit of parts for A.C. mains costs 89/3. Write for particulars NOW.

Send me free Folder 971 to-day please!

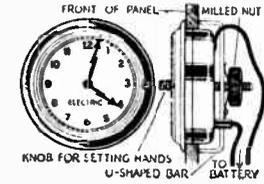
Mr.
Address

F. C. HEAYBERD & CO., 10 FINSBURY ST. LONDON, E.C.2



If you have any difficulty in obtaining Heayberd products locally—please write to us.

EPOCH MOVING COIL SPEAKERS The Finest in The World in Each of Their Price-classes. Ask your dealer or call for a demonstration at Exmouth House. Send for New Booklet W.S.5v It is free. EPOCH RADIO MANUFACTURING CO. Ltd. Exmouth House, Exmouth St., London, E.C.1



FIT THIS ELECTRIC CLOCK TO YOUR SET! NO MAINS NEEDED! KEEPS CORRECT TIME! NO WINDING!

Works off small battery lasting 12 months, or can be plugged into G.B. Battery without affecting reception. Uses practically no current. Fits into hole 3 1/2" dia. in any panel up to 1/2" thick. Easy to fix—no screws required. Only 1/4" from front of panel to back of case. Swiss movement. Hands set from front. Nickel plated bezel. Useful addition to any set. RIVERSIDE MFG. CO., LTD., COMPLETE WITH BATTERY. Dept. 20, Crisp Rd., Hammermith, W.6. Telephone: Riverside 6392. POSTAGE 6D

PARIMA SELENIUM CELLS FOR ALL PURPOSES. Parima Light-Sensitive Resistances are constant mechanically strong, moisture proof and exceedingly sensitive. Fully guaranteed for 12 months. 5/- Prices from PARIMA MANUFACTURING CO. 21, BROMLEY ROAD, S.E.6. Higher Green 3629.

COMPONENTS, ETC., FOR SALE.

R. SELECTED Parts for Sale, as new; any c.o.d. or "Wireless World" deposit system, which we recommend if in doubt as to the splendid value offered; we take risk of damage in transit to our customers; goods tested for callers and guaranteed.

WE Hold a Large Stock of First Class Radio Apparatus, meters, resistances, condensers, heavy chokes, etc., in addition to goods advertised.

METERS, moving iron and moving coil, all new instruments specially made for Ryal's Radio, all guaranteed for one year, moving coil meters to B.E.S. first grade specification, all panel flush type bakelite case.

MOVING Coil, 0-1 m.a., 25/-; 0-10 m.a., 0-5 m.a., 21/-; 0-250v., 1,000 ohm per volt, 32/-; 0-300v., ditto, 33/6; all with zero adjustment, size 3 1/2 in. diameter, 2 1/2 in. dial face.

RYAL'S Moving Iron Meters, first grade air damped, with zero adjustment, A.C. meters, 0-250v., 18/-; A.C. and D.C., 0-50 m.a., 15/-, size as above.

MOVING Iron Meters, in cases, as above, A.C. meters, 0-12v., 10/-; 0-250v., 12/-; 0-3 amps., 10/-; A.C. and D.C., 0-50 m.a., 10/-; 0-10 m.a., 8 6; D.C.

SUITCASE Cabinets in Best Cross-grain Leather, 14 x 14 x 8, ample room for 12in. turntable and pick-up, 15/-, new; Magnavox D.C. 144, with transformer, 2,500 ohms, 15/6.

T.C.C. type 84, 1 mid., 375v. working, 1/3; T.C.C., 2 mid., 350 working, 1/6.

RYAL'S Mains Condensers, offered with confidence, all with terminals, 4 mid., 250v. working, 400v. peak, 3/-; 4 mid., 400v. working, 600v. peak, 4/-; 4 mid., 750v. working, 1,000v. peak, 5/6; 2 mid., 750v. working, 3/6; new goods, guaranteed one year; ditto, bakelite cased, non-inductive, 350v. working, 1 mid., 1/6; 2 mid., 2/-; 4 mid., 3/-; 0.1 mid., 1/-.

SET Cabinets for 3v. A.C. fitted, room for speaker, suit "W.W." A.C.3, set, fitted, escutcheon; 16/-.

RYAL'S RADIO Offer Reliable Resistances, 1 watt, suitable for all "Wireless World" sets where a 1 watt resistance is specified, in values 100, 500, 1,000, 2,000, 5,000, 6,000, 10,000, 25,000, 30,000, 75,000, 150,000, 250,000, 2,000, all values stated in ohms, 6d. each, guaranteed one year, wire ends, new goods.

RYAL'S RADIO, 33, Chancery Lane, London, W.C.2 (nearest Tube Chancery Lane; bus 67 passes door, or tram to St. Mary St.), Holborn 3529. Open Saturday afternoon. Close 7 p.m., Thursdays 1 o'clock, Saturday 6 p.m.

R. PREMIER. [2776]

PREMIER SUPPLY STORES Offer the following Set Manufacturers' Surplus Brand New Goods at a Fraction of the original cost; all goods guaranteed perfect carriage paid over 5/-, under 5/-, postage 6d. extra. (Ireland carriage forward.)

MARCONI Straight 8 Set, one only left; 45/-.

H.M.V. Volume Controls for Remote Control; 2/- each.

WESTERN ELECTRIC Mains Transformers, input 200-250 volt, output 500-0-500 volt, at 150 milliamperes, 4v. 4a., 4v. 2.5a., 4v. 2a., 4v. 1a., 4v. 1a., massive job; 19 6.

ELLIOTT First Grade Moving Coil Milliammeters, projecting type, 0-10 m.a., 0-30 m.a., 0-50 m.a., 0-100 m.a., 0-150 m.a., 2 1/2 in. diameter, 15/- each; flush type, 0-100 m.a., 0-150 m.a., 3 1/2 in. diameter, 17/6 each.

HARLIE Pickup with Arm and Volume Control (27/6 model); 12 6 each.

T.C.C. Electrolytic Condensers, 10 mid., 100 volts working, 1/-; 15 mid., 1/3.

SPECIAL Offer of Mains Transformers, manufactured by Philips, input 100-115v. or 200-250v., output 180-0-180 volts, 40 m.a., 4v. 1a. and 4v. 3a., 4/6.

ALL Premier Guaranteed Mains Transformers have engraved terminal strips with terminal connections input 200-250 volts, 40-100 cycles, all windings paper interleaved.

PREMIER H.T.8 Transformer, 250v. 60 m.a. rectified, with 4v. 3.5a. c.t. L.T., and screened primary, 15/-; with Westinghouse rectifier, 25/-.

PREMIER H.T.9 Transformer, 300v. 60 m.a. rectified, with 4v. 3.5a. c.t. L.T., and screened primary, 15/-; with Westinghouse rectifier, 26/-.

PREMIER H.T.10 Transformer, 200v. 100 m.a. rectified, with 4v. 3.5a. c.t. L.T., and screened primary, 15/-; with Westinghouse rectifier, 26/-.

PREMIER Mains Transformers, output 135v. 80 m.a. for voltage doubling, 8/6; 4v. 3.4a. c.t. L.T., 2 extra; Westinghouse rectifier for above, giving 180v. 30 m.a., 8 6.

PREMIER Mains Transformers, output 250-0-250 volts 60 m.a., 4v. 1.2a., 4v. 2.3a., 4v. 3.4a. (all c.t.), with screened primary, 15/-.

PREMIER Mains Transformers, output 350-0-350 volts 90 m.a., 4v. 3.5a., 4v. 2.5a. (both c.t.), with screened primary, 15/-.

PREMIER Mains Transformers, output 400-0-400 volts 100 m.a., 4v. 4.5a., 4v. 2.3a. (both c.t.), with screened primary, 15/-.

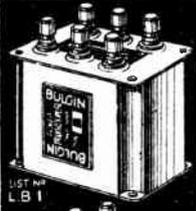
PREMIER Mains Transformers, 4 volts 3 amps. (c.t.) 7 6; 4 volts 5 amps. (c.t.) 8 6; 6 volts 2 amps, 7 6; 9 volts 1 amp, 7 6; 12 volts 1 amp, 7 6; 14 volts 4 amps, 12 6; 22 volts 1 amp, 10 6.

PREMIER Auto Transformers, 100-110/200-250 volts or vice versa, 60-watt, 7/9; 100-watt, 10 6.

SPECIAL Offer of Manufacturers' type Transformers, any input, output 250-0-250 volts, 60 m.a., 4v. 1a., 4v. 3a. (both c.t.), 8 6; 175v. 50 m.a., 4v. 4a., 4v. 1a., 5/6; H.T.3 transformer, with 4v. 3.4a. (c.t.), 8 6; with rectifier, 18/6.

(Continued in second column next page.)

CLASS 'B' COMPONENTS



BULGIN POWER "TRANSCOUPLER"
A NEW edition of an already famous component, especially suitable for Class B. The fed-transformer has a primary inductance of between 70 and 90 H., according to signal strength, and the ratio has been raised to 4:1. The grid-resistances are of a new power wire-wound type rated at 3 watts. Mounted in the Bulgin Universal Screening Case, frosted aluminium finished.
List No. L.B.1. 12/6 each.



BULGIN DRIVER TRANSFORMER
A NEW and efficient transformer of special type to couple the driver-valve to the Class B output-valve. The ratio is 1:1 per whole, or 2:1 per half-secondary. The D.C. resistance of the primary is 800 ohms and its inductance of the order of 27 H. at 2 mA. The D.C. resistance of the secondary is only 270 ohms total.
List No. L.B.2. 12/6 each.



BULGIN TAPPED OUTPUT CHOKE
This NEW Bulgin Tapped Choke acts as an auto-transformer providing ratios of 1:1, 1.15:1, 1.25:1, 1.5:1, 2:1, 2.5:1, and 3.5:1. The D.C. resistance is approx. 2 by 2.5 ohms, and the inductance is of the order of 9:9 H. at 10 mA.
List No. L.B.3. 12/6 each.



7 Pin Chassis Valveholders
6d. and 9d. each.

Send 2d. for 80 p. Catalogue and Manual "W."
A.F. BULGIN & CO., Ltd., Abbey Road, Barking, Essex
London Showrooms: 9, 10, 11, Currier Street, Chancery Lane, E.C.4.

ENGLAND LED! AMERICA FOLLOWED

S. G. Brown's Battery Superseder was years in advance. For Car, Wireless and all Battery Receivers.



No H.T. Batteries needed with a **SUPERSEDER**
H.T. D.C. from your Filament battery indefinitely.
A boon and blessing to all H.T. battery users. Reduced from £3 15s. to

1,000 other bargains in our SALE LIST W.
37'6 from us only.
ELECTRADIX RADIOS,
218, UPPER THAMES ST., E.C.4

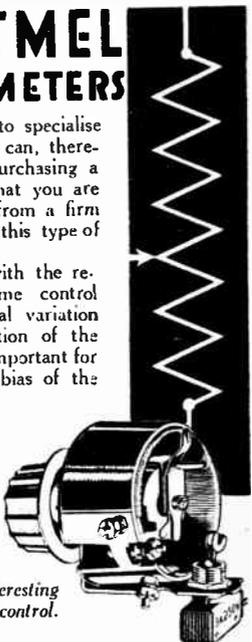
Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)
AMPLION Mains Transformers, input 100-250 volts, output 350-0-350 volts, 120 m.a., 4v. 5a., 4v. 2a., 6v. 1a. (all c.t.), 17/6.
PREMIER Chokes, 40 m.a., 25 hys., 4/-; 65 m.a., 30 hys., 6/-; 150 m.a., 30 hys., 10/6.
PYE Chokes, 20 or 32 hys., 4/-; Premier multi-ratio output transformers, 6 taps giving 15 different ratios, 7/6.
PREMIER Eliminators, input 200-250 volts, 40-100 cycles A.C., incorporating Westinghouse metal rectifiers, output 250v. 60 m.a., S.G. and 120v. taps, 42/6; with 4v. 4a. c.t. L.T., 7/6 extra.
PREMIER Eliminators, output 150v. at 30 m.a., S.G., and 100v. taps, with 4v. 3-4a. c.t. L.T., 37/6; or with trickle charger, 42/6.
PREMIER Eliminators, output 120v. at 20 m.a., S.G. and 100v. taps, 27/6; with L.T. trickle charger incorporated, 35/-.
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FOUR YEARS' SERVICE.

42, Hoxton Street,
Girlington, Bradford.
February 9th, 1932.

Just fancy, I shall have had the Milnes Unit four years next June . . . it has been splendid to have nearly four years of comfort and after the first cost, no expense to speak of. Five shillings is the whole of the cost during the time I have used your Unit. For the last twelve months, the cost of upkeep (H.T. and L.T.) has been 3½d. per week . . . it is a splendid addition to any set and I would not like to have to use any other.

George M. Batt.

FULL VOLTAGE—18 months after.

193, Bolton Road,
Walkden, M/c.
March 18th, 1933.

I have now had one of your 120 v. H.T. Units in daily use for eighteen months and it has given very satisfactory service. I have been using it to operate a 6 valve super-het and . . . the Unit to-day still registers 120 volts.

T. Gorton.

NO TROUBLE.

1, Cross Hill Villas,
Stoke, Devonport.

I purchased a Milnes Unit from you about eight months ago . . . I may say I am more than pleased with it . . . I am sure no one would be bothered with the continual expense of Dry Batteries if they realised the benefit from using the Unit. Not the slightest trouble in any way.

F. G. Pollmer.

7 HOURS USE—NO VOLTAGE DROP.

168, Richmond Road,
Handsworth, Sheffield.
April 8th, 1932.

It is a most excellent and reliable production. It has given me no trouble whatever, producing an unflinching supply of current at full capacity. Even after 6 or 7 hours running I need a magnifier to tell whether the voltmeter is below 120 v. or not. For Low Tension Supply it costs 8d. or 9d. a week . . . we would not be without it now, or go back to dry batteries which used to cost 2s. or 3s. per week. . . It has done all you claimed for it in every possible way.

D. H. Battrop.

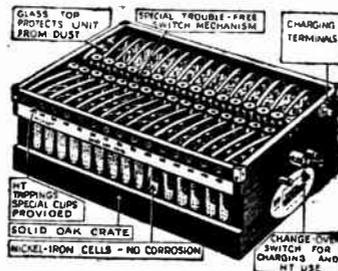
FIRST COST IS THE LAST.

Oakwell Cottage, Monk Ings,
Bradford Road, Birstall, Nr. Leeds.
May 22nd, 1933.

I have now had the Milnes H.T. Unit almost eighteen months and in my unbounded delight I am desirous of placing on record my unfeigned and candid appreciation of it. . . Without a doubt the initial cost is the final one, too a fact to which I am well able to testify. My set is called the Popular Wireless "Super Quad" 4 valver. Bi-grid, Screen-grid, 2nd Det. and Super Power. I have also my 2 valver Short Wave set, and your delightful unit, fed by 3 x 60 A.H. Exide accumulators and invariably kept well up to "concert" pitch, viz., 150 volts, runs the whole show and through the agency of a fine Celestion loud speaker provides the necessary entertainment for the household. The cost of all this runs out a fraction in excess of 6d. per week.

J. W. Brennan.

Keir Dawson - Bradford



The Milnes Unit makes a complete break-away from all other forms of H.T. supply. It is unique and unrivalled in efficiency and economy. It combines the purity and smoothness of a new dry H.T. battery or a newly charged H.T. accumulator with the age-long reliability of mains drive.

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The Milnes Unit never varies—it is always fully charged and in tip-top condition. It will meet the demands of the biggest set. It is ideal for Class B amplification. In recharging itself from the L.T. accumulators it takes only just the amount of current needed to restore itself to a fully charged condition when the flow tapers down to nothing. It does not waste a milliamp. The mains can also be used for recharging, in which case the Milnes Unit will stand many times normal charging rate without suffering damage. It cannot be harmed by overcharging, dead shorting or neglect. It improves with hard work. There is no possibility of corrosion of wires or terminals and no corrosive fumes are given off. Why continue to waste money on H.T. and put up with trouble and inconvenience?

Fit a Milnes Unit and forget you ever had H.T. troubles. It will give you reproduction, purer, fuller and more consistent than ever before. Ask your dealer for Free Book giving fullest particulars, or post the coupon to-day.

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"THE WIRELESS WORLD" SAYS "O.K."

Reprinted from *The Wireless World*, Sept. 16th, 1932.

"Approximately two years have elapsed since we first tested the Milnes H.T. Unit, and it is significant . . . that very little change has been deemed either necessary or desirable. . ."

The charging current is derived from a 6 volt L.T. battery, yet it provides an H.T. supply of from 90 to 200 volts, according to the size of unit installed. . . Sulphation is impossible, and, furthermore, the battery can be charged and discharged at any reasonable rate without fear of damage. . . The switch can be left in the charging position whenever the receiver is not in use, and no wastage of L.T. current will accrue. We have tested one of the latest Milnes Units and find it perfectly satisfactory. . . An all-night charge from a 6 volt accumulator suffices to keep the battery in tip-top condition, and there is very little additional work imposed on the L.T. battery, for it is necessary only to make good the few watts taken by the set in the form of H.T. during the course of the day."

TOTAL COST—3d. PER WEEK.

41, Whitethorne Avenue,
Yiewsley, Middx.

March 27th, 1933.

Having used a 150 v. Milnes H.T. Supply Unit since last July I think I am now qualified to assure you that it is absolutely the last word in trouble-free power.

. . . I am running a 3 valve set which gives an overall consumption of about 20 m/a but my outlay for really good reproduction costs me 3d. per week.

T. C. Wooster.

FIT AND FORGET.

55, Oseney Crescent,
Kentish Town, N.W.5.

February 18th, 1933.

I have invested in a 150 v. Milnes H.T. Unit and am overjoyed with it. . . I have only one regret now, that I did not get one before and save myself 30s. every six months (a super 150 v. dry H.T.) and about £30 hard cash on gadgets to obtain H.T. . . The great point about the Milnes is that you can "fit and forget."

C. Pollanza.

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ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0, Time, Gramophone Music, Exchange and Weather. 6.0, Programme for Children. 6.45, News. 7.0, Talk. 7.15, German Lesson. 7.30, Time. 7.32, Relay from the Gresham Hotel. 8.30, A Drama by Elizabeth Young and Company. 9.0, The Station Orchestra. 9.30, Accordion Solos by J. Hyland. 9.45, Sponsored Programme. 10.45, Time, News and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Records. 8.30, Exchange and a Talk relayed from the Academia de Belles Arts. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral, Weather, Exchange, and Market Prices. 10.5, Concert by the Station Orchestra. 11.15, Readings. 11.30, Sextet Concert, relayed from the Casino at San Sebastian. In the interval at 12 Midnight, News. 1.0 a.m. (Thursday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Announcements. 8.20, Giornale Radio. 8.30, Time and Announcements. 8.35, Chamber Music Concert. Soloists: Enza Motti Messina (Soprano) and Donato Marrone (Pianoforte). Overture, Egmont (Beethoven); Soprano Solos: (a) Posate dormire (Bassani), (b) Giran pure in ciel (Pasquini); Pianoforte Solos: (a) Dialogo d'amore (Palermi), (b) Cavalieri arabi (Palumbo), (c) Night in the Bay of Palma (Turina), (d) Piece (Turina); Overture, The Merry Wives of Windsor (Nicolai); Soprano Solo, Two Piedmontese Songs (Sinigaglia); (a) La rindine importanta, (b) Manina mia, vurrìa vurrìa; Pianoforte Solo, Xenia (Sgambati); Second and Third Movements from the Trio in E Flat, Op. 1 (Beethoven); Soprano Solo, Aria from Der Freischütz (Weber); Pianoforte Solos (Liszt): (a) Liebestraum, (b) Chasse-neige. In the interval, Talk. 10.30, Music from the Gran Caffè del Levante. 10.55, News.

BASLE—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.55 p.m., Time Signal and Programme Announcements. 7.0, National Song Recital by Jovancic-Lale. 7.30, A Discussion. 8.0, Violin and Viola Recital by Vladimir Statin and Jovan Zorka. 9.0, Gramophone Music. 9.40, News, followed by Concert by the Station Orchestra.

BERLIN

DEUTSCHLANDSENDER: 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert of Chamber Music. 2.45, Programme for Children. 3.30, Weather and Exchange. 3.45, Reading (Alfred Heit). 5.0, Reminiscences of a Miner-Student. 5.30, Song Recital by Cesar Scotti. Aria from Simone Boccanegra (Verdi); Ballad from The Barber of Bagdad (Cornelius-Schmaltli); Aria from La Bohème (Puccini); Aria from The Barber of Seville (Rossini). 6.0, Poetry Reading. 6.5, Talk: A. L. Merz and his Work. 6.35, Wireless Technical Talk. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, An Epigram. 8.5, Programme from Stuttgart. 8.50, Radio Report on the Life of the Flower-Sellers. Roses, beautiful Roses. 9.10, Concert from Berlin (Witzleben). 10.0, News. 10.45, Weather Report. 11.0, Concert from Heilsberg. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.40 p.m., The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.10, Folk Songs. 8.40, Concert of Light Music from the Traube Weinstaurant. 9.5, Topical Talk. 9.10, Concert of Otto Frickhoeffers Music by the Berlin Wireless Orchestra, conducted by the Composer: Two Songs for Contralto and Orchestra: (a) Aussonnung, Op. 10, from Goethes Trilogie der Leidenschaft, (b) Ermunterung, Op. 14; Symphonic Improvisations on an Original Theme, Op. 13. 10.0, News, followed by Concert of Light Music by Emil Roosz and his Band. In the interval from 11.0 to 11.5, Talk: What they are saying in Berlin. 12 Midnight, Close Down.

BERNE—See Schweizerischer Landessender.
BEROMUNSTER—See Schweizerischer Landessender.

BODEN—See Stockholm.

BODO—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—8.0 p.m., Agricultural Report. 8.15, News. 8.30, Andran Concert.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—5.55 p.m., Hungarian Programme: Recitations and Folk Songs by School Girls followed by Mandoline Band Concert. 6.55, Programme for Housewives. 7.0 till Close Down, See Prague. 10.15 (approx.), Close Down.
BREMEN—See Hamburg.

WEDNESDAY
JUNE THE FOURTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** A Scandinavian symphony concert.
- LONDON REGIONAL** Orchestral concert from Scarborough. Variety programme.
- MIDLAND REGIONAL** Military band programme.
- NORTH REGIONAL** Orchestral concert from Scarborough.
- SCOTTISH REGIONAL** Variety programme.
- BELFAST** "A Leap Year Proposal," play by J. H. McIlveen.

ABROAD

- BRNO** 7.30 p.m. Opera: "Khovanstchina," by Mussorgsky.
- COPENHAGEN** 10.10 p.m. Modern French Music.
- EIFFEL TOWER** 8.30 p.m. The Symphony Orchestra, conducted by E. Flament.
- FRANKFURT** 9.30 p.m. Viennese Folk Music.
- HEILSBURG** 8.10 p.m. Millöcker Programme by the Königsberg Opera House Orchestra and Soloists.
- PRAGUE** 7.30 p.m. Opera: "Don Quixote," by Massenet, from the Opera House.
- RADIO-PARIS** 8.45 p.m. Operetta: "Les cent Vierges," by Lecocq.
- SOTTENS** 8.30 p.m. Concert by the Radio Suisse Romande Orchestra.
- STRASBOURG** 8.45 p.m. The Municipal Orchestra.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—2.0 p.m., Time and News. 2.15, Operetta Music on Gramophone Records: Overture, Poet and Peasant (Suppé); Selection from Die Fledermaus (Joh. Strauss); Selection from Der Obersteiger (Zeller); Walzerausch from Hallo, die grosse Revue (Lincke). 2.45, Programme arranged by the Post Office with Gramophone Records. 3.10, Agricultural Prices. 3.30, Topical Talk. 3.50, Talk on Physical Culture. 4.15, Pianoforte Recital by Elisabeth Bernot: Sonata No. 31, No. 2, in D Minor (Beethoven); Rhapsody in G Minor (Brahms). 4.45, Review of Periodicals. 5.5, Violin Recital by Franz Kauf: Concerto in F Sharp Minor (Ernst); Spanish Dance No. 4, Jota Navarra (de Sarasate). 5.35, Agricultural Prices and Talk on Economics. 6.0, Concert by the Upper Silesian Women's Quartet. 6.30, Talk on the Upper Silesian Frontier. 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Si j'étais roi—Opera in Three Acts (Adam), relayed from the Municipal Theatre. In the intervals at 8.45, News, and at 9.55, Time and News. 10.50, Concert from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: News, Talk on Hygiene, and Gramophone Records. 7.0, See Prague. 7.25, Introductory Talk to the following Transmission. 7.30, Khovanstchina—Opera in Five Acts (Mussorgsky), relayed from the National Theatre. 10.0, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Station Orchestra, conducted by Franz André. Soloist: Mme. Deruelle (Songs). Overture, Les Dragons de Villars (Maillart); Waltz, Dolores (Waldteufel); Selection from Liège Time (Schubert-Berté); Danse macabre (Saint-Saëns); Popular Songs; Spanish Dances (Mozzkovsky); Potpourri (Ralph); Extracts from Conte d'Avril (Widor); Hungarian Dances (Brahms). 1.0 p.m., Le Journal Parlé. 1.10, Concert, relayed from the Grand Hotel, Antwerp. 5.0, Concert by the Station Symphony Orchestra, conducted by Meulemans. The Jupiter Symphony (Mozart); Feuilles d'album (Saint-Saëns); Minuet (Opsermer); Serenade (Elgar); Torch March (Meyerbeer). 6.0, Talk: Wallon Engraving. 6.15, Popular Song Recital by M. Tonteul (Baritone). 6.15, Sketches by Grock on Gramophone Records. 7.0, Gramophone Music: Serenade (Haydn); La follia (Corelli); Canzonetta (Mendelssohn). 7.15, Talk on Joseph Jongen, Belgian Musician. 7.30, Talk on Hygiene. 8.0, Concert by the Station Orchestra, conducted by M. André:

Marche française (Saint-Saëns); Ballet Music from Le Cid (Massenet); Rhapsody No. 14 (Liszt); Slav Dances (Borch); Finale from the "Cello Concerto (Lalo). In the interval at 8.15, Une opération magistrale—Radio Sketch (Tristan Bernard). 9.0, Monologues. 9.15, Concert by the Station Symphony Orchestra, conducted by Meulemans Soloists: Mlle. Tambuyser (Pianoforte) and Mlle. Thys (Songs). Extracts from La Mer (Gilson); Pianoforte Solo: Au bord d'une source (Liszt); La Source (Delibes); Songs: (a) Two Songs (Schubert), (b) An bord de l'eau (Fauré); Suite, The Moldau (Smetana). 10.15, Le Journal Parlé. 10.25, Gramophone Concert.

BRUSSELS (No. 2)

887, N.I.R., 338.2 metres; 15 kW.—12 Noon, Concert, conducted by Felkeman, relayed from the Grand Hotel, Antwerp. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Radio Orchestra, conducted by Franz André. Soloist: M. Geudel (Baritone). Overture, La petite Mariée (Lecocq); Waltz, Gold and Silver (Lohár); Offenbach Potpourri; The Nutcracker Suite (Tchaikovsky); Songs; Flemish Dances (Blockx); The Girl (Poot); Charles Stratton (Dejoncker); Slav Dances (Dvorák). 5.0, Dance Music, relayed from the St. Sauveur Palais de Dances. 6.15, Talk: A Voyage to the Moon. 6.30, Ballet Music from Faust—Opera (Gounod), on Gramophone Records. 6.45, Spanish Pianoforte Music—Talk with illustrations by P. Donlez: Three Pieces (Albeniz); (a) Sevillanas, (b) Seguidillas, (c) Leyenda; Andaluza (Falla); Spanish Capriccio (Mozzkovsky). 7.15, Talk: some Christian Names. 7.30, Talk on W. Kotzde's Wilhelmus von Nassau. 8.0, Water Music—Concert by the Station Symphony Orchestra, conducted by Meulemans. Soloists: M. Bogers (Baritone) and Mlle. Tambuyser (Pianoforte); Benediction de la Mer, from La Fiancée de la Mer (Blockx); The Brook—Andante from Symphony No. 6 (Beethoven); Songs from De Schelde (Benoit); Pianoforte Solo: Jardins sous la pluie (Debussy); Morgen aan de Leie (Duvosel). 9.0, Recitations. 9.15, Concert by the Radio Orchestra, conducted by Franz André: Ouverture burlesque (Mehul); Bistrottes (Ibert); Selection from Paganiuni (Lohár); Violin Solo: Waltz (Saint-Saëns-Ysaye); Spanish Melodies (Albeniz); Military March (Schubert). 10.0, Le Journal Parlé. 10.10, Dance Music, relayed from the St. Sauveur Palais de Dances.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: Marche, Peter the Great (Napraynik); The Emperor Waltz (Joh. Strauss); Overture, Iphigénie en Aulide (Gluck); selection from Hänsel and Gretel (Humperdinck); Potpourri Fortissimo (Kálmán); Fantasia on Bach Themes (Ulbrach); Serenata di baccor (Micheli);

Abendlied (Schumann); Träumerei (Schumann); Song and English Waltz (Hittner-Korngold); Puppe and Kolobd (Armandola). In an interval at 6.0, Radio Journal. 7.0, Educational Talks. In an interval at 7.20, Gramophone Music. 8.0, Pianoforte Recital. 8.30, Talk. 8.45, Song Recital by Mme. Nina Aurelina: Air from L'Enfant prodigue (Debussy); Poèmes d'un jour (Fauré); Mandoline (Debussy). 9.15, Horn Solos by S. Pineus: Nocturne, Op. 7 (Frantz Strauss); Sonata, Op. 17 (Beethoven). 9.45, Radio Journal. 10.0, Light Music and Romanian Music, relayed from a Restaurant.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Programme also played on 840 metres from 8.0 p.m. till Close Down.—5.0 p.m., Concert by the Pali Pertis Cigány Band. 6.0, Italian Lesson. 6.30, Song Recital. 7.20, Exchange Prices. 7.30, Talk: American Poets. 8.0, Orchestral Concert, conducted by Anton Fleischer, relayed from the School of Music. Prelude to Negro (Zichy); Symphonic Variations (César Franck); Cello Concerto, with Orchestral Accompaniment (Dohnanyi); Aria from the Oratorio Christus am Ölberg (Beethoven); Violin Concerto, with Orchestral Accompaniment (Dittersdorf); Pianoforte Solos ("Chopin"): (a) Andante spianato, (b) Polonaise; Reading: Brahms and Hungarian Music (Count Zichy); Serenade in D (Brahms). 10.15, News, followed by Cigány Music by the Anton Kocze Band, relayed from the Café Ostende; Hungarian Folk Songs by Paul Kalmar.

CASSEL—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the Teddy Petersen String Ensemble, relayed from the Wivex Restaurant. 2.0 to 2.30, Interval. 2.30, Concert by Carl Rydahl's Instrumental Ensemble: Overture, Maritima (Wallace); Ballet Music from The Little Mermaid (Henriques); Waltz, Les Fleurs (Waldteufel); Sover sødt i hellig Fred (Nielsen); Norwegian Bridal Procession (Grieg); Minuet in E flat (Mozart); Overture, Der Göttergatte (Lehar); Laengsel (Skovgaard); Amellevals (Lumby); Selection from Les Brigands (Offenbach); Luftaly (Danning); Valse sérieuse (Hansen); March, Berlinerluft (Lincke). In an interval at 3.15 (approx.), Talk for Women. 4.30, Programme for Boys. 5.35, Exchange and Fish Market Prices. 5.50, Talk: From Nice to Copenhagen on a Bicycle. 6.20, French Lesson. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.30, Agricultural Talk. 8.0, Time Signal from the Town Hall. 8.1, Concert of Folk Music by the Radio Orchestra, conducted by Emil Reesen: Fantasia on Hungarian Folk Songs (Liszt); Swedish Folk Melodies arranged for strings (Reesen); Fantasia on Scottish Folk Melodies, Robert Bruce (Bonhiesuan); Irish Folk Songs (Granger); (a) Molly on the Shore, (b) Mock Morris. 8.45, Talk. 9.15, Vocal Duets by Hertha Björvig and Hedvig Bus. 9.35, Reading. 9.55, News. 10.10, Concert of Modern French Music by the Station Orchestra, Conductor: Emil Reesen. Ballet Music from L'enfant prodige (Debussy); Nuits romaines (Florent Schmitt); Suite (Ibert); Slav Dance ("Chabrier"). 11.0, Dance Music, relayed from the Nimb Restaurant. In an interval at 12 Midnight, Time Signal and Chimes from the Town Hall. 12.30 a.m. (Thursday), Close Down.

CORK—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.10 p.m., Talk. 7.25, Miscellaneous Items and News. 7.35, Programme Announcements. 7.40, See Warsaw. 9.10, Talk in Esperanto: The Beauty of Polish Music. 9.25, See Warsaw. 11.0 (approx.), Close Down.

DANZIG—See Heilsberg.

DRESDEN—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Ronald and B. McNabb. 4.30, Concert for Portsmouth and Southsea Listeners: Chansonnette (Friml); Songs: (a) No More Love (Friend), (b) I'm looking on the Bright Side (Flynn); Under my Umbrella (Meyer); Songs: (a) Cloze Props (Charles), (b) The Porter's Love Song (Johnson), (c) When you look in my Eyes (Greer); And so I married the Girl (Stept); Songs: (a) You were meant for me (Brown), (b) Lady Divine (Kountz); I wake up smiling (Albert); Won't you stay to Tea (Revel). 5.15, Gramophone Concert for Isle of Wight Listeners: Selection from The Mikado (Sullivan); It's nothing to do with you, by Grace Fields; Ocarina Solo: Under the Double Eagle (Tapiero); Songs made famous by Harry Champion; Doggone, I've done it, by the Boswell Sisters; Jolly Fellows (Vollstedt); Bandonian Solo: Father Rhine March (Porschmann); Villikins and his Dinah, by John Thorne; The Golden Bird. 6.0 to 10.0 (approx.), Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music, by the Theolians: Overnight; The Japanese Sandman; Cheerful little Earful; Well, well, well; Balloons; Jack in the Box; Always in my Heart; Butterflies in the Rain; Drifting and dream-

JUNE 14th

WEDNESDAY

continued

ing; Old Father Thames: Where is this lady; This is the Rhythm for me; The King's Navee; Leave a little for me; Toasts; How do you do, Mr. Brown? 11.0, Request Concert; Overture, Poet and Peasant (Suppe). In the Mystic Land of Egypt (Ketilbey); Tiger Rag (La Rocca); Hungarian Rhapsody, No. 2 (Liszt); In the Sudan (Sebek); Sylvia, 11.30, Concert: Sextet; Kashmiri Love Song (Woodford-Finden); Song: In Sheltered Vale (Clarke); Violin Solo: Poem (Fibich); Sextets: (a) Someday I'll find you, (b) Le Cygne (Saint-Saens); Song: The English Rose, from Merrle England (German); Violin Solo: Valse Nocturne (Drigo); Serenade, 12 Midnight, Chh Concert for Porthewal Listeners; Potpourri Overture (Legatti), 12.5 a.m. (Thursday), Special I.B.C. Late News Bulletin. Concert (cont.): Roses of Picardy (Haydn Wood); Duet: Everybody loves my Baby (Williams); Coal Black Mammy; Duet: Stop the Sun, stop the Moon (Cook); It is only a Tiny Garden (Haydn Wood); Singing a Song to the Stars (Meyer); Cymru Ffss; Song: Paradise (Brown); Swanee; Song: You're still in my heart (Dougherty); Song: Wonderful; Selection from Waltzes from Vienna (Strauss), 1.0, Light Orchestral Music: 'Leven Thirty Saturday Night; Loving you; Song: Melody Divine; The Kiss Waltz; I'm yours; Song: I'll never be the same; Hittin' the Bottle; Get Happy, 1.30, Vocal Concert: Chinatown, my Chinatown (Schwartz); Blaydon Races from Tyne-side Songs; Keep your feet still, from Tyne-side Songs; Orchestra: Nautical Moments (arr. Winter); There is a Tavern in the Town (Traditional); Shepherd's Serenade; The Lincolnshire Poacher (Traditional); Orchestra: More Nautical Moments (arr. Winter), 2.0, Dance Music by the Beolians; I'll follow you; Isn't it romantic; A Million Dreams; Mim; Here's hoping; Dreaming; Always in my heart; Wanderer; A Little Street where Old Friends meet; Night after Night; Just an Echo in the Valley; What would happen to me; So ashamed; Love Tales; Southern Serenade; The Wise Old Owl said Ilo, 2.57, I.B.C. Good-night Melody, 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg. FLORENCE.—See Turin.

FRANKFURT

259.3 metres; 17 kW.; and Cassel, 245.9 metres; and Trier, 259.3 metres.—6.0 p.m., Talk on America, 6.25, Topical Talk, 6.45, Review of the Day, 6.50, Time and News, 7.0, Transmission for all German Stations relayed from Hamburg, 8.0, Orchestral Concert, 8.45, Sons of the Soil—A Dialogue on Every Day Life, 9.30, Concert of Viennese Folk Music, 10.15, Time and News, 10.45, Programme from Langenberg, 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo. FREIBURG.—See Stuttgart. GENEVA.—See Radio-Suisse Romande. GENOA.—See Turin. GLEIWITZ.—See Breslau. GOTEBOURG.—See Stockholm. GRAZ.—See Vienna. HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m. (from Hanover), Variety Programme, 6.40, Frankfurt Exchange, 6.50, Weather, 7.0, Transmission for all German Stations; Helgoland—Radio Sequence, 8.0, Sultan and Silk Merchant—Opera in Three Acts (Marsell, arr. Clermann). In an interval, Announcements, 10.15, Time and News, 10.25, Topical Talk, 10.35, Concert by the Station Orchestra, conducted by Adolf Secker. Overture, The Italian Girl in Algiers (Rossini); Two Movements from Eine Lustspielmusik (Maass); Caucasian Suite (Ippolitov-Ivanov); Dance Scene (Schmiedel); Selection from Die toten Augen (d'Albert); Russian Rhapsody (Housser); Extracts from The Nutcracker Suite (Tchaikovsky); Waltz, Lustige Brider (Vollstedt).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Variety Music on Gramophone Records. In an interval at 1.20, News, 2.30, Programme arranged by the Post Office with Gramophone Records, 3.0, Agricultural Prices and Exchange, 3.20, Hints for Housewives, 3.30, Programme for Children, 4.0, Talk for Parents, 4.25, Concert by the Small Station Orchestra, conducted by Eugen Wilken; Overture, Orpheus and Eurydice (Gluck); Deutscher Tanze (Beethoven); Liebeslied (Beethoven); Ländler (Mozart); Turkish March (Mozart); Waltz from Faust (Gounod); Selection from Ariadne auf Naxos (R. Strauss); Overture, Idomeneo (Mozart), 5.35, Book Review, 5.50, Reading, 6.15, Guitarr Recital by Luise Walker, 6.50, Weather, 7.0, Transmission for all German Stations, relayed from Hamburg, 8.10, Millbeker Programme. The Königsherg Opera House Orchestra, conducted by Karl Hrubetz and Soloists. Selection from (a) Die Sieben Schwaben, (b) Apajune, 9.40, Readings, 10.0, Weather and News, 10.5 (approx.),

Concert by the Small Station Orchestra, conducted by Eugen Wilken. Homage March from Sigurd Jorsalfar (Grieg); Serenata (Moszkovski); Visione Lirica (Mascagni); Prelude to I Rantau (Mascagni); Serenade (Jensen); Mirmelndes Lüfchen (Jensen); Suite, In einem Puppenhaus (Engelmann); Selection from Das Dorf ohne Glocke (Kunneke); Ballet Music from Czar and Carpenter (Lortzing); Waltz, Deutsche Grösse (Jos. Strauss), 12 Midnight (approx.), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.).—11.40, Concert by the Small V.A.R.A. Orchestra, conducted by H. de Groot. Danish March; Melody (Filippucci); Hiking Song (Grainger); Auf dem Karneval (Heuberger); Waltz (Gilbert); Selection from Show Boat (Kern); Gramophone Records; Comedians et ballettes (Razigade); Chanson triste (Sibelius); Gold and Silver (Lehar); Scherzo (d'Ambrosio); In the Harbour of Port Said (Armandola), 12.55 p.m., Organ Recital by J. Jong. Serenade (Waldau); Three Irish Melodies (Antell); The Sacred Hour (Ketelbey); Ikarische spelen (Vierweg); Eens (de Nobel), 1.25 to 1.40, Interval, 1.40, Programme for Women, 2.40, Programme for Children, 5.10, Concert by De Flierefluiters, conducted by J. van de Horst, 6.10, Concert by the V.A.R.A. Children's Choir, 6.40, Talk, 7.0, Gramophone Music, 7.39, S.O.S. Messages, 7.40, Talk, 8.0, Concert by the V.A.R.A. Orchestra, conducted by E. Gebert, Part I: Music by Strauss, Overture, Die Fledermaus; Sphärenklänge; Leichtes Blut; Roses from the South; Pizzicato; Overture, The Gipsy Baron, Part II: Soloist: M. Frenkel (Violin), Violin Concerto in G (Mozart); Burlesque for Violin and Orchestra (River); Verheerlijkte Nacht (Schönberg); Romanian National Dances (Bartok); Soir d'été (Kodaly). In the intervals at 8.40, Dramatic Programme, and at 9.40, News, 10.40, Gramophone Music, 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.55 a.m. till Close Down, Programme of the Christian Radio Society (N.C.R.V.).—11.55, Quartet Concert, 1.40 p.m., Time, 1.41, Agricultural Programme, 2.25, Programme to be announced, 2.40, Time Signal, 2.41, Sacred Reading, 2.55, Time, 3.10, Concert by a Children's Choir, 4.40, Time, 4.41, Programme for Children, 5.40, Time, 5.41, Pianoforte Recital by Bep Thijmsma: Sonata, Op. 109 (Beethoven); Waltz, Op. 70, No. 1 (Chopin); Westminster Abbey (Grovelez), 6.10, Programme arranged by the Department for Buildings and Roads, 6.40, Time, 6.41, Police Notes, 6.55, Time Signal, 6.56, News, 7.10, Recitations, 7.40, Time, 7.41, Concert by the N.C.R.V. String Orchestra; Soloist: Piet van den Hurk (Organ); Sacred Songs; Suite, Helvetia (Leopold); Variations on Kommt ein Vogel geflogen (Reckenwald); Sacred Songs, 8.40, Talk, 9.20, Concert (cont.): Sacred Songs; Blumenlied (Lange); Nocturne (Chopin); Waltz, Les Sirènes (Waldteufel); Selection from The Mikado (Sullivan); Suite, Orientalische Melodien (Leopold). In the interval at 9.40, News, 10.20, Gramophone Music, 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 10 kW.—7.25 p.m., Announcements and Gramophone Music, 7.40, See Warsaw, 10.45, Dance Music, 11.0, Answers to Correspondents in French.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—12 Noon, Time, Weather and News, 7.30 p.m., Talk, 7.50, Pianoforte Solos, 8.0, Time, Weather and News, 8.40, Programme to be announced, 9.0, Talk in Polish, 9.20, Concert, 9.50, Talk for Women, 10.10, Concert, Indian Suite (Luigini); Slav Dance (Dvorak); Festival Overture (Leutner), 11.0 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.50 p.m., Programme for Boys, 7.0, Flute Solos by Michele Orlando; Pastorale (Romanino); The Carnival in Venice (Herman); Melody (Reichert), 7.20, Talk, 7.45, Dance Music by the Amardilo Orchestra. In the interval at 8.0, Humorous Items, 8.45, News, in Finnish, 9.0, News in Swedish, 9.15, Light Music relayed from the Kappeli Restaurant, 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert conducted by Wolf: Overture, Rosa-

munde (Schubert); Adagio from the Sonata pathétique (Beethoven); Selection from Die Königekinder (Humperduck); Scandinavian Suite (Frederiksen); Waltz, Secrets of the Adige (Carena), 12.50 p.m., Weather, Time, and News, 1.0, Concert by the Station Quartet, Soloist, Margaret Brück (Contralto). In the interval at 2.0, News, 2.50, Sponsored Programme, with Gramophone Music, 3.0, Talk of Geography, 3.30 to 3.50, Interval, 3.50, Programme for Children, 4.30, Concert by the Orchestra, conducted by Eysoldt and the Station 'cello Quartet: Overture, Iphigenia in Aulis (Gluck); Selection from The Magic Flute (Mozart); 'cello Quartet: (a) Adagio and Fugue (Schenck), (b) Andante (Grützmacher); Petite Suite (Debussy); Intermezzo, Bilder aus dem Osten (Schumann); Waltz, Seid umschlungen, Millionen (Joh. Strauss), 5.50, Talk: Teaching Elocution, 6.10, Reading of an old Westphalian Legend, 6.20, Italian Lesson, 6.45, Time and News, 7.0, Transmission for all German Stations, relayed from Hamburg, 8.0, News, 8.5, Topical Talk, 8.15, Concert by the Station Orchestra, and Soloists: Hoersch (Tenor), Strienz (Bass), and Grape (Pianoforte), Talks by Bradehöft and Rauer, 8.45, Announcements, 9.0, The Stolen Soldier Radio Play (Gustav Herrmann), 10.5, Talk in connection with Nordic Week: Whitsum Customs, 10.15, News, 10.35, Orchestral Concert, conducted by Kühn. In the interval, Serenade, Op. 7, for Wind Instruments (Strauss), 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Concert by the Endé Orchestra, March, I'm den Lorbeer (J. Christ); Waltz, Krolls Balkklinge (Lumbye); Schubert Album (Zimmer); Intermezzo, Nixenknechtchen (Heyken); Song, Wenn aus tausend Blütenkelchen (von Blon); Selection from Where the Lark Sings (Lehar); Song from Der Obersteiger (Zeller); Waltz, Ever or Never (Waldteufel); Intermezzo, Schmeichelkätzchen (Eilenberg); Potpourri, Sänger herans (Ostermann); Gallop, Tik, Tak (Joh. Strauss). In an interval at 1.0 p.m., News, After the Concert, Second News Bulletin, 2.30, Talk on Transylvania, 3.0, Gramophone Concert for Young People, 3.35, Economic Notes, 4.0, Programme for Young People, 5.0, Economic Notes, Weather and Time, 6.0, Book Review, 6.20, Talk on Commerce, 6.45, Programme to be announced, 7.0, Transmission for all German Stations, relayed from Hamburg, 8.0, Topical Talk, 8.10, See Heilsberg, 9.30, Talk on Musical Instruments, with Illustrations, 10.20, News, 10.25, Concert of Dance Music and Light Music by the Endé Orchestra, 12.30 a.m. (Thursday), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—5.0 to 5.30, Programme in English by the I.B.C., F. Miklavcic announcing, 5.0, International Broadcasting Club Concert: How are you? When they're on the Love Parade; Let's all sing like the Birdies sing; Venetian Lady; Three's a Crowd; Sweethearts for ever; I do like to see a Game of Football; Underneath the Archies, 6.0, Readings, 6.30, English Music on Gramophone Records, 7.0, Modern Horos, 7.30, Literary Talk, 8.0, Talk on Music, 8.30, Vocal Concert, 9.30, Weather and News, 9.45, Dance Music, 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—7.0 p.m., Gramophone Music, 7.40, Weather, 7.50, Gramophone Music, 8.15, Recitations in French, Luxembourg Dialect and German, by School Children, 8.30, Topical Talk, 8.40, Gramophone Music, In the interval at 8.50, News in French, 9.20, Talk on the Jamboree in Budapest, 9.45, News in German, 10.15, Gramophone Music, In the interval, Announcements.

LWOW

788 kc/s, 381 metres; 16 kW.—6.15 p.m., See Warsaw, 7.20, Miscellaneous Items, 7.40 till Close Down, See Warsaw.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Music, 7.15, Lottery Results, 7.20, Talk on Camping, 7.30, News, 8.30, Orchestral Concert, Soloists: Mlle. Gaby-Riel (Songs) and Georges Rambaun (Tenor), Part I: Light Music. The Orchestra, conducted by Jean Daimierick, Part II: The Orchestra, conducted by Gaston Billet. Overture, La Princesse Jaune (Saint-Saens); Nocturne (Biederich); Im Kahne (Grieg); Suite, Gretta Green (Guiraud); Extracts from Bethlehem (Paillet); Dances from Prince Igor (Borodin); Piece (Weckerlin); En bateau and Cortège from Petite Suite (Debussy); Ma chère maison (Dalcroze); Minuet and Ballet from Petite Suite (Debussy). After the Concert, News.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Light Music, 11.45, Radio Chronicle, 12 midnight, Programme of Spanish Music, 12.35 a.m. (Thursday),

Talk, 12.40, Light Music, 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, Programme for Women, and Dance Music, 9.25, News and Political Review, 9.30 to 11.0, Interval, 11.0, Chimes, Time, and Political Review, 11.15 (approx.), A Esc.—Radio Play in Four Acts (Becerra and Pacheco), 12.45 a.m. (Wednesday), News and Dance Music, 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.5 p.m., Literary Talk, 6.15, See Prague, 6.25, Concert of Gramophone Music, 7.0, See Prague, 10.15 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.55 p.m., Wind Instrument Concert by Johann Schwarz and his Orchestra: Ernst August March (Blankenburg) Overture, Prince Methusalem (Joh. Strauss); Selection from Lohengrin (Wagner); Einzig der Rosenkönigin (Rhode), 6.5, Talk: The Caves of the Harz Mountains, 6.25, Dialogue: The Spiritual Resurgence of Germany, 6.45, Time, Weather, and Agricultural Report, 7.0, Transmission for all German Stations, relayed from Hamburg, 8.0, Talk with Gramophone Illustrations: Modern Dance Music, 8.45, The Czarevitch—Opera in Three Acts (Lehar), 10.20, Time and News, 11.0, Serenade relayed from Langenberg, 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres, 5.0, Concert by the Continental Orchestra, 6.0, French Lesson, 6.30, Programme for Girls, 7.0, Advertising Notes, 7.15, Weather, 7.30, Talk, 8.0, Time Signal, 8.1, Orchestral Concert, conducted by Hugo Kramm, 9.30, Sketch (L. du Garde Peach), 9.30, Agricultural Notes, 9.40, Weather and News, 10.0, Topical Talk, 10.15, Concert by the Valereng Male Voice Choir, 10.45, Dance Music on Gramophone Records.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements, Tourist Talk, Agricultural Notes, and Giornale Radio, 8.20, Gramophone Music. In the interval at 8.30, Time Signal and Announcements, 8.45, Concert; Soloists: M. Diamante (Flute) and I. Rondini (Violin); Overture, Don Giovanni (Mozart); Flute Solos: (a) Second Movement from the Flute Concerto (Mozart), (b) Waltz Caprice (Auber); First Movement from the Fantastic Symphony (Berlioz); Violin Concerto in G Minor (Brahm); Flute Solos: (a) Polonaise (Beethoven), (b) Burlesque (Beethoven); Nabucco (Verdi). In the interval, Confessions before the Microphone, 10.0 (approx.), Song Recital, 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (preliminary and 6-dot signals).—6.45 p.m., Theatre Talk, 7.0, Le Journal Parlé, 8.30, Concert by the Symphony Orchestra, conducted by E. Flament; Soloist, M. Cantrelle (Violin); Boccacerie (Delvincourt); Symphony in G Minor (Mozart); L'Echo dans la montagne (Flament); Nacthied (Schumann-Saint-Saens); Selection from Le Jongleur de Notre Dame (Massenet); Adagio cantabile for Violin (Tartini); Overture, The Bartered Bride (Smetana), 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music, 7.15, Le Journal Parlé, 7.30, Dramatic Programme by the Amis de Guignol à Paris, 8.0, Talk on Economics, 8.5, Social Assurance Report, 8.15, Interlude, 8.30, La Belle Marinière—Play (Aclard), 10.30, Dance Music from the Lido, 11.0, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture, 7.30, Weather and Physical Culture (contd.), 7.45, Gramophone Music, 8.0, Press Review and Weather, 12 Noon, Educational Talk, 12.15 p.m., Concert by the Radio Orchestra: Suite, The Three Bears (Coates); Selection from Fleur de thé (Lecocq); Madame Cupidon (Hesse); Selection from (a) Le talisman (Planquette), (b) Le petit Faust (Hervé). In an interval at 12.30, Organ Recital by G. T. Desserre, relayed from the Gaumont Palace. In the intervals at 1.0, Exchange and News, and at 1.30, Exchange, 2.0, Exchange and News, 3.45,

JUNE 14th

WEDNESDAY

continued

Exchange. 6.10, Agricultural Talk. 6.40, German Lesson. 7.0, Medical Talk. 7.20, Popular Concert. 8.0, Readings. 8.30, News. 8.40, Talk on Fashions. 8.45, Les gent vierges—Operetta (Leococ). In the interval at 9.15, Press Review and News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres, and 25.27 metres.—7.30 p.m., Utility Hall Programme. 7.45, KDKA Home Forum. 8.0 to 8.58, Radio Troubadours. 8.30, Happy Days in Dixie. 8.58, Baseball Scores. 9.0, Southern Symphonies, from New York. 9.30, Business News and Market Reports. 9.45, Riggs and Moke. 10.0, Baseball Scores. 10.5, Bass Solos by Fred Wehber. 10.15, Dick Darling, from New York. 10.30, The Singing Lady. 10.45, Little Orphan Annie, from New York. 11.0, Time Signal, Pittsburgh Spotlight and Address by Sir Francis Wiley, Secretary of the Rhodes Scholarship. 11.15, Weather Report. 11.16, Sport Review. 11.22, Press News-Reeler. 11.29, Temperature Report. 11.30, The Maid and the Minstrels. 11.45 to 1.30 a.m. (Thursday), New York Relay. 11.45, Today's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15 a.m., Al Mitchell's Orchestra, with Baritone Solos by Everett Marshall. 12.30, String Symphony. 1.0, Kio Crime Clues. 1.30, Programme to be Announced. 1.45, Phil Cook and the Ingram Shavers. 2.0, Programme to be Announced. 2.30, United States Marine Band, from New York. 3.0, Time Signal and Revelers' Quartet, from New York.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—6.0 p.m., Topical Talk. 6.16, See Warsaw. 7.20, Miscellaneous Items and News. 7.35, Theatre Notes and Programme Announcements. 7.40, See Warsaw. 7.58, Time Signal. 8.0, Orchestral Concert. Soloist: Mme. Zofia Leszczynska (Soprano); March (Bieliski); Overture, Orpheus in the Underworld (Offenbach); Aria from Madame Butterfly (Puccini); Aria from La Juive (Halévy); Aria from Faust (Gounod); Golden Rain Waltz (Waldeuteufel); Selection from Der Obersteiger (Zeller); Two Mazurkas (Najmyslowski). 8.50, See Warsaw. 9.0, Vocal and Instrumental Concert. Soloists, Klara Kaufmann (Violin), Janusz Nowak (Bass); Spanish Dance (Granados-Kreisler); Sketch (Arenski); Serenade (Böhm); Reverie (Wormser); Allegro Scherzoso (Cui); Hungarian Rhapsody (Hauer); Recitative and Aria from the Oratorio, Quo Vadis (Nowowiejski); Serenade (Gounod); Mephistopheles Aria from Faust (Gounod); The Clock (Loewe); The Two Grenadiers (Schumann). 10.0, Time Signal, Sports and Police Notes. 10.15, Dance Music on Gramophone Records. 12 Midnight (approx.). Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., Concert by a Village Orchestra, relayed from Radvanice in Silesia. Conductor: O. Cizek. 3.55 to 4.0, Exchange. 5.45, Talk: The Construction of Swimming Baths and Hotels. 5.55, Reading. 6.5, Agricultural Talk. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Talk for Workers, Talk on Dancing and Market Report. 7.0, Chimes from the St. Ludmila Church. 7.1, News. 7.10, Talk: How we search for water. 7.25, Introductory Talk to the following Transmission. 7.30, Don Quixote—Opera (Massenet), relayed from the Opera House. 10.0, Time, News, Press Review, and Sports Notes. 10.15, Announcements for Listeners Abroad, in French. 10.30 (approx.). Close down.

RABAT

721.1 kc/s, 416 metres; 6 kW.—1.30 p.m., Concert of Light Music: Overture (Michiels); Envoie de fleurs (Paul Delmet); Waltz, Frühlingstimmen (Joh. Strauss); Song (Barnaby); Melody (Böhm); Selection from Orpheus in the Underworld (Offenbach); Song (Heymann); Cello Solos: Reverie (Jensen); Suite from Iseyl (Pierne); Song (Whiting); Pizzicati from Les Deux Pigeons (Messager); Czardas (Michiels). 3.0 to 4.30, Interval. 4.30, Educational Programme. 5.0, Gramophone Music. 6.0 to 8.30, Interval. 8.30, Gramophone Music. 8.45, Le Journal Parlé. 9.0, Concert: Waltz, Die Schönbrunner (Lanner); Humoresque (Demaret); Overture, La part du diable (Anber); Song: Je ne veux que des fleurs (Barbirolli); Nocturne (Pierne); Selection from Le roi malgré lui (Chabrier); Song from Le roi d'Ys (Lalo); Talk; Violin Solos: (a) Air (Durant); (b) Le bavolet flottant (Cooperin); Aria: The Stars were shining from Tosca (Puccini); Evolutions (L'Enfant); Knowest thou the Land, from Mignon (Thomas); The First Quartet (Fauré). 11.0, Musical Programme.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW; and Geneva, 395 kc/s, 760 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News and Weather. 12.40 to 2.0 p.m., Programme from Geneva. 12.40, Gramophone Music. 1.0, Financial News. 1.10, Gramophone Music. 2.0 to 3.28, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Geneva), Concert. 4.30 (from Neuchâtel), Programme for Children. 5.30 to 7.0, Interval. 7.0 (from Lausanne), Talk:

The Life and Works of the Neuchâtel Writer, Mme. T. Combe. 7.30 (from Lausanne). Weather. 7.31 (from Lausanne), Talk: The Silver Jubilee of the Mézières Theatre. 8.0 (from Geneva), Reading. 8.20 (from Geneva), Duets by Mlle. Marcelle Privat and M. Hugues Coënod. 8.50, Concert by the Radio Suisse Romande Orchestra. 9.50, News and Weather. 10.0 (from Geneva), Talk: The Work of the League of Nations. 10.20, (from Geneva), Dance Music by the Broadcasting Serenaders. 11.0 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.0 p.m., English Lesson. 6.30, Agricultural Talk. 7.0, Weather. 7.5, Sketches and Songs. 8.0, News. 8.20, Literary and Dramatic Programme. 9.15, Concert of German Opera Music: Overture, Martha (Flotow); Selection from The Merry Works of Windsor (Nicolaï); Overture, Czar and Carpenter (Lortzing); Selection from Preciosa (Weber); Selection from Stradella (Flotow); Selection from The Armourer (Lortzing). 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.10 to 2.15 p.m., Orchestral Concert: March, Schöne Frauen (Clemus); Liebeswalzer (Stolz); Dance of the Merry Mascots (Ketelbey); Mio sogno felice (Pizzigoni); The Golden Spinning Wheel (Dvorak); Neapolitan Nights (Zamecnik); Riflesso di luce (José); Solitudine (de Crescenzo); The Night of Saragossa (Frey); Ti voglio bene (Marjotti). In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Weather Forecast. 5.15, Exchange, Report of the Royal Geographical Society and Giornale Radio. 5.30 to 6.15, Orchestral Concert: There's something about a soldier (Gay); Odette (Franceschi); Selection from La rondine (Puccini); Selection from Sigismond (Gilbert); Caprice (Brahms); Aria (Grieg); Toccata (Piek-Mangiaglioli); Pianoforte Solo, Giomeneigen (Liszt); Che strana cosa (Amsaldo). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 6.57, Report of the International Institute of Agriculture (in Italian and English). 7.10, Tourist Report. 7.20, Announcements in Different Languages. 7.40, Giornale Radio. 8.0, Time, Announcements, and Gramophone Music. 8.15, Medical Talk. 8.30, Giornale Radio and Sports Notes. 8.45, Variety Concert: Soloists, Luigi Silva (Violin) and Gianna Perea Labia (Soprano); Violin Solos: (a) Adagio with Variations (Respighi). (b) Polonaise (Popper); Soprano Solos: (a) La pastorella (Rossini). (b) Maria Wiegand (Reger). (c) Variations (Proch). 9.30, L'omo che ama la verita—Comedy in One Act (Franco Salva). 10.0, Popular Italian Songs on Gramophone Records. 10.30, Dance Music. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 to 10.0 (approx). New York Relay. 9.0, Pop Concert. 9.30, Texas Cow Girl. 9.45, Charis Revue. 12.45, a.m. (Thursday), Stock Reports. 1.0 to 2.30, New York Relay. 1.0, Variety Programme. 1.30, Donald Novis (Tenor). 2.0, Band of Famous Brands. 2.15, Band from Cartoon Land. 2.30, Variety Programme. 3.0, Corn Cob Pipe Club of Virginia, from New York. 3.30, Musical Programme, from New York, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres, 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from Berne), Gramophone Music. In an interval at 12.30, News. 1.25 (from Berne), Exchange, Time and Weather. 1.30 (approx.) to 5.0, Interval. 5.0, Programme for Children—A Visit to Radio Basle. 5.30 (from Basle), Gramophone Concert for Children. 6.30 (from Zürich), Talk for Women. 7.0, Time, Weather, and Market Prices. 7.10 (from Zürich), Gramophone Music. 7.30 (from Zürich), Elementary English Lesson. 8.0 (from Zürich), Talk on Ticino. 9.0, Weather and News. 9.10 (from Zürich), Concert by the Station Orchestra. 10.15 (approx.), Close Down.

SEVILLE

EAQ5, 815 kc/s, 368.1 metres; 1.5 kW.—3.0 p.m., Orchestral Concert, Two-step, Reliquia (Olivieras and Pantion); Cancion canaria (Torroba); Selection from El traüt de los tenorios (Serrano); Selection from The Girl in the Taxi (Gilbert); Flamencos. 4.0 to 10.0, Interval. 10.0, Programme relayed from Madrid, EA47.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 35 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m. (from Östersund), Accordion Music. 5.30, A Visit with the Microphone. 5.45, Gramophone Music. 6.45, Talk. 7.15, Weather and News. 7.30, Talk: Gotland's Domestic Animals, relayed from Visby. 8.0, Concert by the Station Orchestra: Soloist, Margit Ahlenius-Theorell (Harpisichord). Divertimento in D, No. 17 (Mozart); Concerto in B Flat for Harpsichord and Orchestra (P. E. Bach); Suite, Die Flöte von Sanssouci (Graener); Summer Pastoral (Honegger); Overture, A Midsummer Night's Dream (Mendelssohn). 9.15, Sigfrid Sivertz reads from his own Works. 9.45, Weather and News. 10.0, Dance Music by Ender's Orchestra, relayed from the Bern Hall. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Popular Music on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Light Music on Gramophone Records. 2.0 to 4.45, Interval. 4.45, Talk in German on Electricity. 5.0, Concert of Jazz Music, conducted by Roskam. March, The Arrival of the Circus (Rust); Waltz from Katinka; Russian Intermezzo, Between the Don and the Dniester (Lenschner); Overture, Les Sirènes (Auber); Selection from Il Trovatore (Verdi); Song (Caludi); Selection from The Merry Peasant (Fall); March, Piccadilly (Benifit). 6.0, Trio Concert, relayed from Lille, 1,130 kc/s, 265.4 metres. 7.0, Talk in French: Young People and Unemployment. 7.15, Talk in German on Economics. 7.30, Time and News. 7.45, Programme for Children, relayed from Paris (Eiffel Tower). 8.15, Press Review in German. 8.22, Gardening Talk, relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres. 8.30, Lottery Results and Announcements. 8.45, Concert by the Municipal Orchestra, relayed from the Orangerie. Soloist: G. Drillon (Violin). Musette and Allegro for Strings, No. 6, Op. 6 (Händel); Andante from the Violin Concerto in A Minor (Bach); String Quartet in D, No. 5, Op. 76 (Haydn); Suite, Ans Holbergs Zeit, Op. 40 (Grieg); Canon (Sokolov); Mazurka (Ljadov); Sarabande (Blumenfeld); Finale on a Russian Theme, Op. 48 (Tchaikovsky). In the interval, Press Review in French. 10.30, Orchestral Concert, relayed from the Grand Kléber Tavern. 11.30 (approx.), Close Down.

STUTTGART

MUHLACKER; 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12 Noon, Gramophone Concert of German Operetta Music. 1.15 p.m., Time and News. 1.30, Mozart and Schubert Concert, by the Württemberg Symphony Orchestra, conducted by Gustav Görllich. Part I: Mozart Music: March in D; Overture, Idomeneo; Pianoforte Concerto in C Minor; Adagio and Rondo for Musical Glasses, Flute, Oboe, Viola, and Cello; Duet for Two Flutes. Part II: Schubert Music: Entracte from Rosamund; Military March No. 2. 2.30, Programme arranged by the Post Office. 2.45, Talk, relayed from Karlsruhe. 3.0, Programme for Children. 4.30, See Langenberg. 5.50, Italian Songs and Arias from Berlin (Witzleben). 6.20, Agricultural Notes. 6.25, Talk: Landscape and Architecture. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.5, String Sextet in B Flat, Op. 18 (Brahms). 8.45, Talk on Oliver Cromwell. 9.30, Dance Music. 10.10, Time and News. 10.30 (from Mannheim), Dramatic Programme. 11.0, Concert from Langenberg. 12 Midnight (approx.). Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire. 5.30 p.m., Selection from Romeo and Juliet (Berlioz). 5.45, Light Music. 6.0, News. 6.15, Popular Music. 6.30, Opera Music: Coronation March from The Prophet (Meyerbeer); Overture, The Flying Dutchman (Wagner); Overture, Don Giovanni (Mozart). 6.50, Old Dance Music: Minuet from the Quartet in D Minor (Mozart); Minuet (Boccherini). Talk in an interval. 7.15, News. 7.25, Commercial Notes. 7.30, Music from Sound Films. 7.45, Accordion Music. 8.0, Music by a Viennese Orchestra. 8.15, Operetta Music. 8.30, Instrumental Solos. 8.45, Opera Music: Song of the Toreador from Carmen (Bizet); Airs from (a) Marouf (Rahaud). (b) Le roi malgré lui (Chabrier). 9.0, Concert by the La Toulousaine Concert Society, conducted by Palette. In the interval, Light Music. 10.15, North-African News. 10.30, Concert for Listeners in Morocco. 11.0, Dance Music. 11.30 till Close Down, Programme in English by the I.B.C. W. Brown Constable announcing. 11.30, Old Time Dance Memories: Mona Lisa; Joey the Clown; Ali Baba's Camel; The Sacred House; Melancholy; Lover

of my Dreams; Belle of Barcelona. 11.57, I.B.C. Goodnight Melody. 12 Midnight, News. 12.5 a.m. (Thursday), Bal Musette. 12.15, Tangos. 12.30 (approx), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 to 6.0 p.m., Concert. Magda Gusherti (Violin), Enrico Martucci (Pianoforte), Elettra Cananzi (Soprano), and Ettore Sigon (Cello). Violin Solo: Concerto in E (Bach); Soprano Solos: (a) Togli teni la vita ancor (Scazzati), (b) Wolyn (Schubert); (c) Du bist die Ruh (Schubert); Cello Solos: (a) Chant céleste, Op. 24 (Florent Schmitt); (b) Symphonie Variations, Op. 23 (Boellmann); Three Songs for Soprano; Violin Solos: (a) Liebesleid (Kreisler), (b) Danse rituelle du feu, from L'Amor brujo (Fallá). 6.35 till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.0 to 6.0 p.m., Song Recital. 6.35, Giornale Radio and Agricultural and Dopolavoro Notes. 7.0, Time and Tourist Report. 7.5 (approx.), Gramophone Music: Un sorriso (Villa); Spanish Waltz (Raiter Boella); Ragging the Scale (Claydoole); Vertige (Raiter); Parade of the Tin Soldiers (Jesse). 7.20, Announcements in Different Languages. 7.40, Gramophone Music. 8.0, News and Weather. 8.15, Medical Talk. 8.30, A Comedy in Three Acts. After the Comedy, Variety Music. 11.0, Giornale Radio. 11.5 (approx.) (Florence only), Dance Music from the Chez Moi Rajola. 11.30 (approx.), Close Down.

VATICAN CITY

ITALY, 15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Spanish. 8.0 to 8.15, Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—1.0 p.m., Time and News. 1.10, Operetta Music on Gramophone Records. 2.0 to 3.0, Interval. 3.0, Time and News. 3.20, Hints for the Housewife. 3.30, Talk on Petroleum. 3.55, Opera Music on Gramophone Records. 4.30, Talk: The Marizell Monastery. 4.55, Talk on Vocations. 5.20, Paul Amadens Pisk Concert, by the Anita Ast Quartet, Hanna Schwarz (Soprano) and Rita Kurzmann (Pianoforte). String Quartet, Op. 8, Tanzfolge, Op. 24, for Pianoforte; Songs, Op. 9: (a) Der Morgen war von dir erfüllt, (b) Es ist Nacht, (c) Nimm an, es gäbe einen Himmelsbirnen so wollen wir dies von im erleben. 6.10, Health Talk. 6.35, Talk: Women in the Wood Industry. 7.0, Talk: The Turks in Austria. 7.25, Time and News. 7.35, Variety Programme. 8.50, Topical Talk. 9.5, Moonlight Nights. 10.0, News. 10.15, English Talk: Camping in Austria. 10.25, Dance Music Relay.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Gramophone Music. 12.25, Polish Press Review. 12.35, Gramophone Music. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.10, Announcements. 3.15, Gramophone Records. 3.25, Economic Notes. 3.35, Gramophone Records. 3.45, Announcements. 4.0, Popular Music relayed from Ciechocinek. 5.0, Talk. 5.15, Gramophone Music. 6.15, Talk: Sport and the Ancients. 6.35, Song Recital by E. Mossakowski. Two Arias from Otello (Verdi); Aria from Halka (Moniuszko); Aria from Herodiade (Massenet); Stanislas' Song from Verbum Nobile (Moniuszko); Air (Bartlett); Prend cette fleur (Coché); Julie (Denza); Why? (Filippi); Night (Rubinstein). 7.10, Gramophone Music. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Reading. 7.55, Interval. 8.0, Light Music by Mme. Barrios (Songs), and M. Hiherman (Instrumental Solos). 8.50, Radio Journal. 9.10, Talk in Esperanto, relayed from Cracow, 959 kc/s, 312.8 metres. 9.25, Concert of Polish Music by the Station Orchestra, conducted by Oziminski. Soloist: A. Dobosz (Tenor); Overture, Marie (Statkowski); Ballet Music from Die Grafen (Moniuszko); Songs: (a) Jontek's Aria from Halka (Moniuszko), (b) Aria from Janek (Zelenski); Overture, Morskoe Oko (Noskowski). 10.0, Dance Music. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music, relayed from the Europa Restaurant, Ciechocinek.

WILNO

533 kc/s, 563 metres; 16 kW.—6.55 p.m., Programme for Young People. 7.25, Humorous Monologue. 7.40, See Warsaw. 9.10, See Cracow. 10.0, See Warsaw. 11.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Exchange, Weather, and Gramophone Music. 6.0, Programme for Children. 6.45, News. 7.0, French Lesson. 7.15, Talk: St. Patrick at Saul. 7.30, Time Signal. 7.32, Fiddle and Accordion Music. 7.50, Traditional Songs, by P. Parle. 8.5, Illustrated Lecture Recital, by C. M. MacDowell. 8.35, Orchestral Music. 9.0, Choral Concert. 9.20 (in the Interval), Orchestral Music. 9.45, Sponsored Programme. 10.45, Time, News, and Close Down.

BARCELONA

EAAJ, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Concert. 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral. Weather Forecast, Exchange and Market Prices. 10.5, Concert by the Station Orchestra. 10.30, Modern Dance Music. 11.15, Talk in Catalan. 11.30, 'Cello and Piano-forte Recital by Fernando Pérez Prió ('Cello) and Rosaura Coma (Piano-forte). 12 Midnight, News and Concert by the Station Orchestra. After the Concert, Gramophone Music. 1.0 a.m. (Friday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Announcements. 8.20, Giornale Radio. 8.30, Time and Announcements. 8.35, Band Concert, conducted by Salvatore Rubino. Overture, Arolda (Verdi); Prelude, Dance and Finale from Act III of La Gioconda (Ponchielli); Scenes pittoresques (Massenet); Fimle from Poliuto (Donizetti); Death of Siegfried from The Dusk of the Gods (Wagner); Ride of the Valkyries from The Valkyries (Wagner); Triumphal March from Cleopatra (Mascagni). Talk in the interval. 10.30, Gramophone Music. 10.50, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—7 p.m., Gramophone Music. 7.20, A Discussion. 8.0, Programme to be announced.

BERLIN

DEUTSCHLANDSENDER, 163.5 kc/s, 1,605 metres; 60 kW.—2 p.m., Gramophone Records of Verdi Opera Music. 2.45, Programme for Children. 3.10, Film Talk for Young People. 3.30, Weather and Exchange. 3.45, Reading from the Works of Max Danthendey. 4.0, See Heilsberg. 5.0, Talks for Women. 5.35, Songs and Instrumental Music by Georg Gähler. Spring Song for Violin and Piano-forte. Songs: (a) Geheimnis. (b) Der Tausch. (c) Abendlied. (d) Das stille Wasser. (e) Der Kuckuck. (f) Tanzliedchen. (g) Warnung. (h) Auf der Gartenbank. (i) Die schönste Jagd. 6.0, Poetry Reading. 6.5, Talk: Psycho-Analysis and Practical Life. 6.30, Agricultural Talk. 6.50, Weather and Announcements. 7.0, See Stuttgart. 8.0, An Epigram. 8.5, Military Band Concert from Stuttgart. 9.0, Talk: Behind Typewriters. 10.0, News, followed by Reading. 10.45, Weather. 11.0, Concert of Light Music from the Nationalen Gaststätten. 12 midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.30 p.m., Concert by the Berlin Wireless Orchestra, conducted by Gerhart Stiebler. Suite for Small Orchestra, Musik am Abend (Paul Graener); Lieder der Sehnsucht—A Song Symphony for Full Orchestra and Bass from the Text by Hanns Johst, Op. 59 (Erich Anders); Preludes and Wedding Music from Kormak (Erich Anders). 5.30, Reading from the Works of Karl Maerlin, with Introductory Talk by the Author. 5.50, Sacred Music, relayed from the Church of the Redemption, Prelude and Fugue (Bach); Gieh aus, mein Herz, und suche Freud (Harder); Die beste Zeit im Jahr ist mein (Seventeenth Century). Prelude in C (Bach); Herzlich tut mich erfreuen (Rilow); Himmelsan, licht und blau (Seventeenth Century). 6.10, Talk: The Companion. 6.30, Talk on Pomerania. 6.45, Topical Talk. 6.55, All the German Stations Calling—but only for a minute each—Talk on the Interval Signals. 7.15, Talk: Trips by Water. 7.25, Programme arranged by Heinrich Anacker. 8.5, Concert of Modern German Operetta Music by the Berlin Wireless Choir, the Wireless Orchestra, conducted by Dr. Rudolf von Schmidtseck, and Soloists. 9.0, Märkischer Adel—Radio Play (Martin von Katté). 10.0, News, followed by Dance Music. In the interval from 11.0 to 11.5, Talk: What they are talking about in Berlin. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—8.0, Talk on Wine. 8.15, News. 8.30, Simili—Comedy in Three Acts (Marx).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—4.0 p.m., Concert by the Station Orchestra, conducted by F. Dyk: Overture, The Kiss (Smetana); Over-

THURSDAY JUNE THE FIFTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL LONDON REGIONAL MIDLAND REGIONAL NORTH REGIONAL WEST REGIONAL SCOTTISH REGIONAL BELFAST AT HOME Vocal and piano-forte recital. "The Watched Pot," a play by "Saki." SONGS OF SUMMER, choral programme. CHORAL PROGRAMME. Orchestral concert. HARLECH CASTLE MUSICAL FESTIVAL. "Frae a' the Airts," feature programme. VARIETY PROGRAMME. ABROAD BERLIN (Witzleben) BRESLAU FRANKFURT HAMBURG HILVERSUM HUIZEN LANGENBERG RIGA TURIN VIENNA 8.5 p.m. Modern German Music by the Wireless Choir, Orchestra and Soloists. 9.0 p.m. Corpus Christi Festival by the Franciscan Choir and the Station Orchestra. 8.0 p.m. Opera: "Martha," by Flotow, from the Opera House. 8.0 p.m. Grieg concert to celebrate the Ninetieth Anniversary of his Birth. 7.45 p.m. Concert by the Wireless Orchestra. 9.10 p.m. The Amsterdam Orchestral Society. 9.0 p.m. Concert of Modern Music by the Station Orchestra. 7.5 p.m. Delibes Concert. 8.30 p.m. Opera: "I Camasciali," by Laccetti, relayed from Trieste, Milan, Genoa, and Florence. 5.55 p.m. Opera: "The Dusk of the Gods," by Wagner.

ture, The Bartered Bride (Smetana); Fantasia on Themes, by Dvorak (Leopold); Ballad (Ondrick); Selection from Polembht (Nedbal); Selection from an Operetta (Vipler); March (Kubin). 5.30, Talk: Early French Novels. 5.45, Gramophone Music. 5.55, Programme relayed from the Kadlicky Institution for the Blind. 6.55, Talk for Housewives. 7.0, See Brno. 7.15, See Prague. 8.10, Reading. 8.25, See Brno. 9.0, See Prague. 10.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.15 p.m., Concert by the Station Orchestra, conducted by Bruno Janz. 2.0, Time and News. 2.15, Operetta Music on Gramophone Records. 2.45, Programme arranged by the Post Office with Gramophone Music. 3.10, Agricultural Prices. 3.30, Talk: A Week end in Naumberg. 3.40, Book Review. 4.0, Sonata in E Minor, Op. 7, for Violin and Piano-forte (Grieg), played by Karl-Heinz Scholl and Hanna Horn. 4.40, Talk for Children. 5.10, Talk for Workers. 5.30, Agricultural Prices. 5.35, Soprano Song Recital by Margarethe Schirdevalh: Songs (Wetz); (a) Auf die sechste Madonna, (b) Legende; Songs (Strecke); (c) Marie im Rosenhag, (d) Geburt Mariä, (e) Rast auf de Flucht nach Agypten, (f) Von der Hochzeit zu Kana (e) Pietä, (f) Vom Tode Mariä. 6.5, Talk on Christiane Vulpins. 6.25, Programme to be announced. 6.50, Mandoline and Guitar Concert on Gramophone Records. 7.30, Talk on Hungary. 7.50, News. 8.0, String Quartet in A, Op. 49 (Bach). 8.50, News. 9.0, Corpus Christi Festival—Concert by the Franciscan Choir and the Station Orchestra. 10.0, Time and News. 10.30, Talk: Youth Hostels in Breslau. 10.50, Talk: The Production of a Play. 11.15 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—5.30 p.m., Jazz on Two Piano-fortes. 6.0, German Transmission: Soprano and Baritone Song Recital by Maria Sigmund and Herbert Schwarz: Maria's Aria Duet and Conrad's Aria from The Armourer (Lortzing); Duet and Papageno's Aria from The Magic Flute (Mozart); Don Giovanni's Aria and Duet from Don Giovanni (Mozart); Aria of the Page; Figaro's Aria and Two Duets from Mignon (Thomas). 7.0, Talk: Art and the Economic Crisis. 7.15, Concert by a School Boy's Choir. 7.50, Concert by a Village Band from Blisice. 8.25, Reading. 9.0, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans: Overture,

Light Cavalry (Suppé); Waltz, Fin de siècle (Waldteufel); Rondalla aragonesa (Granados); Selection from I Pagliacci (Leoncavallo); Violin Solo: Serenade (Bass); Hungarian Dances Nos. 5 and 6 (Brahms); Melody (Armandola); Selection from Nina Rosa (Romberg). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert. 5.0, Concert by the Station Orchestra, conducted by C. Walpot: March, Avec entrain (Weyts); Waltz, Spanish Sun (Popy); Violin Solo: Serenade (Collin); Selection from La Mascotte (Andran); In a Chinese Temple Garden (Ketilbey). 5.30, Programme for Young People. 6.0, Cooking Lesson. 6.15, Concert of Light Music on Gramophone Records. 7.15, Talk for Workers. 7.30, Sports Report. 8.0, Concert by the Station Symphony Orchestra, conducted by Meulemans: Overture, The Secret Marriage (Cimarosa); Violin Concerto (Paganini); Dances from The Bartered Bride (Smetana). 8.45, Talk: A Forty-Hour Week? 9.0, Concert by the Station Orchestra, conducted by Walpot, with Songs by the Echo du Peuple Choir: March, Semper fidelis (Souza); Overture, Maritana (Wallace); Waltz (Stróhli); Selection from La Bohème (Puccini); Songs by the Choir; Walloon Potpourri (Wangermée); Jungle Drums (Ketilbey). 10.0, Le Journal Parlé. 10.10, Gramophone Concert.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Report on the Progression of the Holy Blood, relayed from Hoogstraeten. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Little Station Orchestra, conducted by P. Leemans: Scenes pittoresques (Massenet); Suite pastorale (Gilson); Ballet Music from La Source (Delibes); Old Waltzes. 5.0, Concert by the Station Symphony Orchestra, conducted by Arthur Meulemans: R.V.R.O. Strijlded (Meulemans); Overture, Aeneas (Uytenhove); Waltz, Habanera (Mares); Suite, Heide (Meulemans); Canadian Fantasia (Gilson). 5.45, Programme for Children. 6.30, Programme to be announced. 7.10, Catholic Report. 7.15, Film and Book Review. 7.30, Programme for Women. 8.0, Programme to be announced. 8.45, Religious Address. 9.0, Concert by the Symphony Orchestra, conducted by Arthur Meulemans: Soloist, Irma De Berger (Songs); Overture, Le Roi d'Ys (Lalo); Norwegian Rhapsody (Lalo); Songs; Bourrée fantasque (Chabrier); Songs; Spanish Dances (Albéniz). 9.55, Evening Prayer. 10.0, Le Journal Parlé. 10.10, Gramophone Concert of Old Dances: Potpourri; Waltz, Donauwellen (Ivanovici); Quadrille from Orpheus in the Underworld (Offenbach); Polka (Corbin); Schottisch des Pierrots (Cohen); Mazurka; Dolls' Polka; Waltz, Sobra las olas (Rosas); Stéphanie Gavotte (Zibulka); Schottisch, Lena (Mewes); Cuckoo Waltz (Jonasson); Minuet; Polka, Fenerfes (Strauss); Gallop, Baha frei (Ed. Strauss).

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romantian Music by the Dinico Orchestra. In an interval at 6.0, Radio Journal. 7.0, Educational Talks. In an interval at 7.20, Gramophone Music. 8.0, Song Recital. 8.20, Symphony Concert by the Station Orchestra, conducted by C. C. Notara; Soloists: M. Koganof (Violin) and M. Balan (Piano-forte); Overture, Fidelio (Beethoven); Variations on a Theme for Violin (Corelli-Reger); Symphony No. 40 in G Minor (Mozart); Piano-forte Concerto No. 5 in F Flat (Beethoven); Suite, Children's Corner (Debussy). In an interval at 9.0, Talk. 9.45, Radio Journal. 10.0, Talk in German or Romania.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—Programme also relayed on 840 metres from 7.15 p.m. till Close Down. 5.30 p.m., Concert by the Béla Racz Cigány Band. 6.45, Talk on India. 7.15, Radio Report of the Chess Championship. 8.0, Operetta Concert by the Budapest Concert Society, relayed from the Municipal Gardens; Conductor: Wilhelm Komor: Overture, Pique Dame (Suppé); Melodies from The Count of Luxembourg (Lehár); The Merry Widow (Lehár); The Gelsia (Jones); Der Lustige Krieg (Oscar Straus); Der Orlov (Granichstaedten); The Merry Widow (Lehár); Die Fledermaus (Joh. Strauss); A Waltz Dream (Oscar Straus); Orpheus in the Underworld (Offenbach); Eva (Lehár); Frasquita (Lehár); The Merry Widow (Lehár); Der Teufelsreiter (Kálmán); Potpourri Fortissimo (Kálmán). In the interval at 9.30, News. 11.0, Weather, followed by Cigány Music by the Béla Radies Band, relayed from the Café Patria.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the Max Skalka String Ensemble, relayed from the Hotel d'Angleterre. 2.0 to 3.0, Interval. 3.0, Gramophone Concert: Emil Leisner: Delilah's Aria from Act I of Samson and Delilah (Saint-Saëns); Willi Dongraf-Fassbender: Figaro's Aria from Act I of Figaro (Mozart); Adolf Busch: Chaconne from the Sonata in D Minor for Violin (Bach); Ernst Ruckstuhl: Swiss Yodelling, The Red-haired Swiss; Red Sam; San (McPhail and Michels). 3.30, Reading. 3.50, Concert by the Teddy Petersen Orchestra, relayed from the Wivex Restaurant. 6.45, Exchange and Fish Market Prices. 5.50, Talk: Are there Petroleum Wells in Denmark? 6.20, English Lesson. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.20, Educational Talk. 7.30, Talk. 8.0, Time Signal from the Town Hall. 8.1, Danebrog Festival, relayed from the Cathedral, Aarhus. 9.15, Reading. 9.45, Saxophone and Piano-forte Recital by Paul Ströbech, Kisky and Viktor Fischer. 10.10, News. 10.25, Concert of Old Music: Sonata for Oboe, 'Cello and Harpsichord, Op. No. 8 (dall' Abaco); Sonata for Violin (Telemann); Two Songs from The Beggar's Opera (Gay); (a) I like a ship in storms was tossed, (b) Now ponder well; Songs (Purcell); (a) I attempt from Love's Sickness to fly, (b) An attempt from Love's love, (c) Nymphs and Shepherds; Trio Sonata for Oboe, Violin, 'Cello, and Harpsichord (Purcell). 11.5, Dance Music by Erik Taxon and his Orchestra, relayed from the Arena. In an interval at 12 Midnight, Time Signal and Chimes from the Town Hall. 12.30 a.m. (Friday), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—6.35 p.m., Programme Announcements. 6.40, Miscellaneous Items and News. 7.0, See Warsaw. 10.45, Light Music and Dance Music, relayed from the Pavillon Restaurant. 11.0, Fanfare from the Tower of St. Mary's Church.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m.—Programme in English by the I.B.C. T. St. A. Ronald and B. McNabb announcing. 4.30, Concert for Worthing and Littlehampton Listeners: That little Lock of Hair (Verrill); La Paloma (Yradier); Banjo Solo, Finger Tricks; Hawaiian Stars are gleaming (Rosen); That's my Love Song ('Oliville); Reef of Stars (Watts); Dirt Dishin' Daisy (Klein); Accordion Solo, Comedy Overture (Keler-Béla); Git along (Austin); Tango, Amparito (Cramer); Mama Mia (d'Amato); My South Sea Home (Camillio). 5.15, Concert for Brighton and Hove Listeners: He wanted Adventure (Wallier and Tunbridge); Song, Love everlasting (Friml); Ballet Music from Nuala (Delibes); Songs: (a) Melody (Haydn Wood), (b) Tired Hands (Sanderson), (c) At Santa Barbara (Kennedy Russell); Some of these Days (Brooks); Songs: (a) The Hills of Home (Fox), (b) Wine, Woman and Song (Joh. Strauss), (c) Four Jolly Sailormen (German); Goodbye (Tosti). 6.0 to 10.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Ibcolians: Sweetheart; What did I get

JUNE 15th THURSDAY continued

in return; Can't we meet again; Hold up your hands; Moon Song; Hyde Park Corner; Twenty Million People; What have I got to lose? Oh you Sweet Thing; Rosa Mia; Deep Forest; Let me explain; Rock your cares away; The London Fire Brigade; Nightfall; I'll never have to dream again; 11.0, Listeners' Request Half Hour; Light Cavalry Overture (Suppe); The Mountains of Mourne; Gipsy Moon (Borganov); Selection from The Gondoliers (Sullivan); Bells across the Meadow (Ketelbey); Overture, Morning Noon and Night (Suppe). 11.30, Scottish Concert on Gramophone Records; Caledonian Reels; McLeod's Galley (Kennedy-Fraser); The Foulie Reel; Caller On (Fraser); Three Fishers went Sailing (Kingsley); Come o'er the Stream Charlie; Comin' thro' the Rye (arr. Smart); Mr. Ferguson of Rath's delight. 12 Midnight, Club Concert for Cowbridge Listeners; Blossoms (cont.); I am Fate (Hauembo); Vienna City of my Dreams (arr. Beave); Y. Rose Glas; Over the Garden Wall; The Wooden Soldier and the China Doll; The Sun God (James); Selection from Chu Chin Chow (Norton); Shoo the Hoodoo away; Waltz from The Gipsy Princess (Kalmán); After the Ball; Two Little Girls in Blue; Lucretius (Hullu); Tales from the Vienna Woods (Joh. Strauss). 1.0 a.m., Instrumental Solos; He's my Secret Passion (Young); Petit Jean (Cuvellier); Here comes the Band; Song, Every little kindness; My Heart is where the Mowhawk flows; International Medley; Song, Dark Red Roses; Let us waltz through the Night (Miller). 1.30, Vocal and Orchestral Concert: Songs: (a) Music Hall Favorites, (b) Mama (O'Donnell); Oh I wish I could sing a Love Song; Songs: (a) Baby won't you please come Honor, (b) Maudie; Okay Baby; Songs: (a) Dear Old-fashioned Thing (Harrington), (b) More Music Hall Favorites. 2.0, Dance Music by the Dolobans; Kalua; You know what I'll do; Dancing Time; Blue turning grey over you; When Work is through; Take a Spot of Happiness; Gosh Daru; Love is the sweetest thing; How in I don't; Round the Bend of the Road; Say it isn't so; While we danced at the Mardi Gras; Don't tell a Soul; Love me to-night; What makes you so adorable; I don't know why. 2.57, I.B.C. Goodnight Melody. 3.0 (approx.). Close Down.

FLENSBURG.—See Hamburg. FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; and Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.0 p.m., A Short Story, 6.25, Wilhelm von Scholz reads from his Own Works. 6.45, Topical Talk. 6.50, Time and Announcements. 7.0, See Stuttgart. 8.0, Martha Opera in Four Acts (Flotow), relayed from the Opera House. 10.15, Time and News. 10.45, Dance Music, relayed from Berlin (Witzleben). 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo. FREIBURG.—See Stuttgart. GENEVA.—See Radio-Suisse Romands. GENOA.—See Turin. GLEIWITZ.—See Breslau. GÖTEBORG.—See Stockholm. GRAZ.—See Vienna. HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayd by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Men, Machines and Profits Radio Sequence (Dreyer and Fritz Meissner) with incidental Music by the Station Chamber Orchestra, conducted by Gerlurd Maasz. 6.45, Frankfurt Exchange. 6.50, Weather. 7.0, See Stuttgart. 8.0, Grieg Concert on the Ninetieth Anniversary of his Birth. The Hamburg Philharmonic Orchestra, conducted by José Eilenshütz, a Women's Choir and Soloists: Eva Selzer (Contralto), Lola Fischer (Soprano) and Gerhard Gregor (Organ). Old Norwegian Romance with Variations Op. 51; Vor der Klosterpforte Op. 20 for Contralto, Soprano, Choir, Orchestra and Organ; suite, Aus Holberg's Zeit; Norwegian Bridal Procession; Symphonie Danse No. 4. 9.10, News. 9.20, Concert by the Station Chamber Orchestra, conducted by Gerhard Maasz. Wundere, wann erscheint der Meister (Goebel); Deutsche (Arnold); Seid' emig; An alle (Wilkenbruch); Rittszene (Schüler); Wenn einig Schenkenorden; Der verlorne Sohn (Dommel); Ans Werk (Warnke); Einigkeit und Recht und Freiheit. 10.10, Time and News. 10.20, Topical Talk. 10.30, German Dances and Marches by the Station Chamber Orchestra, conducted by Gerhard Maasz. Soloists: Gerhard Gregor and Gerhard Maasz (Pianofortes). HANDVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW.—Relayed by Danzig, 662 kc/s, 453 metres.—1.5 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Overture,

Martha (Flotow); Gute Nacht du mein herziges Kind (Abt); O Jugend wie bist du schön (Abt); Waltz, Auf saunten Wogen (Esslinger); Selection from Boccecco (Suppe); Overture, Le Premier Jour de bonheur (Anber); Waltz, Wir sind heut so vergnügt (Meisel); Potpourri, Auf der Wanderschaft (Mannfred); Trinkt aus Kameraden (Lautenschlager); in the interval at 1.20, News. 2.30, Programme arranged by the Post Office with Gramophone Records. 3.0, Agricultural Prices and Exchange Rates. 3.30, Talk for Young People With Gramophone Music. 4.0, Concert by the Königsberg Opera House Orchestra, conducted by Erich Börschel: Festival Overture (Lortzing); Friedemann Bach Suite (Leuschner); Kéler-Béla Potpourri (Rhode); Overture, Fatinitza (Suppe); Selection from Der Obersteiger (Zeller); Kaiser-Walzer (Joh. Strauss); Overture, Frau Luna (Lincke); Selection from Der Tenor der Herzogin (Künneke); Im Galopp durch Wald und Feld (Eilenberg). In the interval at 5.0 (approx.). Political Book Review. 5.45, Talk: German Boys in the Home. 6.15, Agricultural Prices. 6.25, Agricultural Talk. 6.50, Weather. 7.0, See Stuttgart. 8.5, Grieg Memorial Concert on the Ninetieth Anniversary of his Birth. Songs and String Quartet Music. 8.55, News. 9.0, See Berlin (Witzleben). 10.0, News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. up to 4.40 p.m.—11.10 till Close Down. Programme of the Algemeene Vereeniging Radio Orroep (A.V.R.O.). 11.10 a.m., Concert of Light Music by the Rentmeester Orchestra. 12.10 p.m., Concert, relayed from the Kurhaus, Scheveningen; Soloists: Pierre Pallu (Organ), Evert Miedema (Tenor), Boris Lensky (Violin). 1.40 to 1.55, Interval. 1.55, Concert of Gramophone Music. 2.40, Dress-making Lesson. 3.25, Gramophone Music. 3.40, Programme for Hospitalists. 4.10, Piano-forte Recital by P. Agi Jambor; Chromatic Fantasy and Fugue (Bach); Allegro (Searatutti); Solfeggio (Ph. E. Bach); Toccata (Poulenc); Prelude (Jambor); Die Uhr (Sauer); Waltzes (Chopin). 4.40, Radio Play for Children. 5.20, Concert by Kovacs Lajos and his Orchestra; Soloist: Bob Scholte (Songs). 6.10, Sports Talk by H. Hollander. 6.40, Concert (cont.). 7.10, Talk by A. Pieters: The Ardennes. 7.40, Time Signal. 7.41, News. 7.45, Concert by the Wireless Orchestra, conducted by Albert van Raalte; Soloist: Hilmar Biehe (Tenor); Overture, Le Roi Et dit (Delibes); Aria from La Traviata (Verdi); Aria from La Bohème (Verdi); Ballet Music from Faust (Gounod); Cavatina from Faust (Gounod); Mors et vita (Gounod); Nocturne (Franck); Chanson triste (Duparc); Czardas from Coppélia (Delibes). 8.40, Concert by a Male Voice Choir, conducted by J. J. v.d. Bos. 9.0, Concert by the Wireless Orchestra, conducted by Albert van Raalte; Soloist: Wim Noske (Violin); Variations on a Theme of Tchaikovsky for String Orchestra (Arensky); Concerto for Violin (Mendelssohn); Extracts from The Nutcracker Suite (Tchaikovsky). 9.55, Song Recital by Hilmar Biehe. 10.10, Concert by Cornelius Godolban and his Orchestra, relayed from the Carlton Hotel, Amsterdam. 10.40, News. 10.50, Gramophone Music. 11.40 (approx.). Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW. 1.40 p.m. till Close Down. Programme of the Christian Radio Society (N.C.R.V.). 1.40, Time Signal. 1.41, Handicrafts Lesson. 2.40, Violin concerto in E Minor, Op. 84 (Mendelssohn), by Fritz Kreisler on Gramophone Records. In the interval at 2.55, Time. 3.10 to 3.40, Interval. 3.40, Bible Reading and Organ Music. 4.40, Cello Recital by Henk Berg-hout; Sonata in C (Hendel/Röntgen); Sonata in F Sharp Minor (Burr); Scherzo from Sonata No. 3 in D Minor (Brockner); Gramophone Records: Tre Canti (Pizzati). 5.25, Handwork for Children. 5.55, Talk: Jacobus Haerius van 't Hoff. 6.25, Dress-making Lesson. 6.40, Time and Policy Notes. 6.55, Religious Information. 7.10, Review of the Week. 7.40, Time. 7.41, Literary and Musical Programme. 8.40, Gramophone Music. 9.10, Concert by the Amsterdam Orchestral Society; Conductor: Frans van Diepenbeek; Marche russe (Ganne); Way Down South (Myddleton); The Battle of Waterloo (Wijman); Overture, Athalie (Mendelssohn); Wedding March (Mendelssohn); Even-song (Adam) on Gramophone Records; Overture, The Merry Wives of Windsor (Nicola); Hungarian Rhapsody No. 1 in F (Liszt); Two Elegiac Melodies (Grieg). In the interval at 9.40 (approx.). News. 10.40, Gramophone Music. 11.10 (approx.). Close Down.

INNSBRUCK.—See Vienna. KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.0, See Warsaw. 7.40, Talk on History. 8.0, See Warsaw.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—6.0 p.m., Talk on Temperance Week. 5.20, Variety Entertainment. 5.50, Talk on the Fire Brigades of Lithuania. 6.10, Light Music. 6.30, Talk for Housewives. 6.50, Orchestral Concert: Selection from Eine einzige Nacht (Stolz); Waltz, Siesta (Waldteufel); Barcarolle (Tchaikovsky). 7.20, Popular Programme. 7.40, Talk. 8.0, Time and Weather. 8.5, Medical Talk. 8.25, Orchestral Concert: Leonora Overture No. 3 (Beethoven); Symphony in B Flat (Schubert). 8.50, Economic Review. 9.10, Sports Review. 9.20, Talk. 9.40, Talk: Summer in Lithuania. 10.0, Concert. 11.0 (approx.). Close Down.

KIEL.—See Hamburg. KLAGENFURT.—See Vienna. KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Talk. 6.40, Piano-forte Recital. 7.5, Talk. 7.30, The Station Orchestra, conducted by Erkki Linko; Melody from La Bohème (Puccini); Waltz, Tesoro mio (Boccecco). 7.50, Reading. 8.10, Concert of Estonian Music by the Station Orchestra. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music, relayed from the Kappeli Restaurant. 10.0 (approx.). Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert by the Orchestra, conducted by Eysoldt and the Station Choir, conducted by Maier. Soloist, Otto Stier (Flute). Overture, The Thieving Magpie (Rossini); Spanish Rhapsody (Chabrier); Songs for Choir; Capriccio for Flute and Orchestra (Kempfer); Lyric Scene and Grotesque (Huppertz); Songs for Choir; Six New Dances (Hasenöhrl); Selection from Der Bettelstuden (Müllacker). 2.30, Interval. 2.45, Anecdotes from the Life of a Miner. 3.0, Talk: The Clothes of our Ancestors in Early Times. 3.25, Talk: The Workers' Musical Society. 3.55, Talk in Dialect. 4.10, Educational Talk. 4.30, See Stuttgart. 5.30, Report on Gramophone Records of the Corpus Christi Festival. 6.30, Recital of Folk Songs by Mozart, Beethoven, Schubert, Weber, and Brahms. The Station Children's Choir, the Station Chamber Choir, and Soloists: Hansen (Soprano), Wocke (Baritone), and Grape (Pianoforte). 7.0, See Stuttgart. 8.0, Sports Report. 8.10, Concert by the Station Quintet. 8.50, Three Ballads (Blumek). 9.0, Concert of Modern Music by the Station Orchestra, conducted by Busch-kötter. Soloist, Julius Weismann (Pianoforte). Heiteres Spiel (Blumek); Suite for Piano-forte and Orchestra (Weismann); Divertimento (Wolfart). 10.0, Talk in connection with Nordic Week: Characteristic Features of Germanic Philosophy. 10.10, News. 10.35, Report on the Cologne Cycle Races. 10.50, Serenade and Dance Music, conducted by Eysoldt. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon Grieg Concert for his Ninetieth Birthday, on Gramophone Records. 1.0 p.m., News. 1.15, Popular Music on Gramophone Records, followed by News. 2.10, Film Report. 2.30, Zither Recital by Ferdinand Kollmaeck and Erik Tschierchewitz. 3.0, Programme for Young People. 3.35, Economic Notes. 4.0, Concert by the Leipzig Symphony Orchestra, conducted by Willy Stelzen; Overture, Pyramus and Thisbe (Hasse); Allegretto quasi Andantino from Op. 164 (Schubert); Gondoliera (Ries); Perpetuum mobile (Ries); Variations on a Thuringian Folk Song (Raff); Overture, Scherzo and Finale, Op. 52 (Schumann); Orchestral Suite (Maasz). In an interval, Recitations. 5.50, Economic Notes, Weather, and Time. 6.0, Talk: Medical Health Insurance. 6.30, Travel Pictures; Fritz Behrend Piano-forte Recital, with the Composer at the Piano-forte: Im Riesengebirge; Spitzbergen. 6.55, See Berlin (Witzleben). 7.35, Recital of Transylvanian Songs by Helene Esslinger. 8.0, Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer; Overture to a Revue (Lincke); Scherzo, Irrlichter und Kolohole (Hofmann); Swabian Folk Dances (Scharlach); Fairy Tales from Old Vienna (Zieher); Czardas No. 10 (Mielchels); Selection from Der Tenor der Herzogin (Künneke); March, Heil dir, mein Vaterland (Zobler). 9.10, Der glückliche Schiffbrüch (The Lucky Shipwreck)—Radio Play (Ludwig von Holberg). 10.10, News and Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW. 5.0 p.m., Concert by the Station Orchestra. 8.0, See Prague. 10.0, Weather and News. 10.15, Light Music by the Station Jazz Band. 11.0 (approx.). Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—7.0 p.m., Gramophone Music. 7.40, Weather. 7.45, Gramophone Music: Overture, Coriolanus (Beethoven); Siegfried Idyll (Wagner); Death and Transfiguration (R. Strauss). 8.25, Songs. 8.30, Topical Talk. 8.40, Gramophone Music. In the interval at 8.50, News in French. 9.45, News in German. 10.15, Gramophone Music. In the interval, Announcements.

LWOW

788 kc/s, 381 metres; 16 kW.—5.15 p.m., Festival, relayed from Kossow. 6.40, Announcements. 7.0 to 11.0, See Warsaw. 11.0 (approx.). Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., News. 8.30, Concert, relayed from the Modière Hall. After the Concert, News.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Programme from Madrid (EAJ 7) 1.0 a.m. (Friday), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal and Programme for Children. 9.15, News and Political Review. 9.30 to 10.30, Interval. 10.30, Linguaphone English Lesson. 11.0, Chimes, Time Signal, Political Review and Talk; Educational Films. 11.30 (approx.). Trio Concert of Chamber Music by Enrique Iniesta (Violin), Juan Ruiz Casaux (Cello), and Fernando Ember (Pianoforte). The Archduke Rudolph Trio (Beethoven); Trio, Op. 1, No. 1 (Götsar-Franck). 12.45 a.m. (Friday), News and Dance Music. 1.30, Chimes and Close Down.

MALMO.—See Stockholm. MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.0 p.m., See Prague. 7.0, See Brno. 7.15, See Prague. 8.10, Piano-forte Recital by Marianna Sperlová-Kursová. Feux d'Artifice (Debussy); The Juggler (Bortkiewicz); The Humming Bird (Niemann); Silver Cascade (Niemann). 8.25, See Brno. 9.0, See Prague. 11.0 (approx.). Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayd by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.5 p.m., Concert conducted by Erich Kloss; Overture, Figaro (Mozart); Largo (Beethoven); Invitation to the Dance (Weber); Selection from André Chénier (Giordano); Waltz, Für einen guten Freund (Schütt); Little Suite No. 3 (de Michel); Soprano Solos by Gertrud Kuchenbamer: (a) Air from Die tote Aue (d'Albert), (b) Waltz, Doerschwalben aus Oesterreich (Joh. Strauss); Piedmontese Dances (Sinf-gaglia); March, Mit dem Flugzeug durch die ganze Welt (Rust). In the interval, Radio Report from Dagflung. 6.0, Talk on Edward Grieg. 6.20, Concert for Piano-forte, Trombone, Soprano and Baritone. 7.20, Weather and Sports Notes. 7.30 (from Nürnberg). Wagner Concert by the Nazi Symphony Orchestra. 8.30, Der Doktor von Paris—Play in Four Acts (Jacobus Bidermann). 9.50, Hamburg—A Cycle of Thirteen Pieces for Piano-forte (Walter Niemann), played by the Composer. 10.20, Time and News. 11.0, Brahms Concert; Movement from the Sonata for Violin and Piano-forte (Posthumous Work). Talk by Helene Laff; Personal Reminiscences of Johannes Brahms. Trio in A minor, Op. 114 for Piano-forte, Clarinet and Cello. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayd by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.15 p.m., Song and Violin Recital by Haldis Halvorsen and Leif Halvorsen. 6.0, German Lesson. 6.30, Studio Service. 7.0, Advertising Notes. 7.15, Weather and News. 7.30, Concert of Old Country Dances: Per Bolstad (Violin) and Alfred Wergeland (Accordion). 8.0, Time and Agricultural Talk. 8.30, Recitations. 8.55, Grieg Piano-forte Recital by Waldemar Alne. 9.15, Advertising Notes. 9.38, Announcements and Weather. 9.45, News. 10.0, Topical Talk. 10.15, Popular Concert by the Heinschén Trio.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements, Agricultural Report and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time Signal and Announcements. 8.45, Programme

JUNE 15th

THURSDAY

continued

of Popular Songs and Humorous Items. In the interval: Titratto di Fanciullo—Comedy in One Act (Lucio d'Ambr). 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,446.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals)—6.45, p.m., Theatre Talk. 7.0, Le Journal Parle. 8.30, Gramophone Concert of Popular Music. 10.0 (approx.), Close Down.

PARIS

RADIO PARIS, Call CFR, 171 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Music. 8.0, Press Review and Weather. 12 Noon, Protestant Address. 12.30 p.m., Orchestral Concert: Part I, Children's Music: Suite Jamboulesque (Messager); Four Sketches by Bach and Laverne, on Gramophone Records: (a) Au salon de l'auto, (b) Les gendarmes à pied, (c) A la foire, (d) Les marins bretons. Suite. At the Circus (Armandola); Two Sketches by Georges Chiffer, on Gramophone Records: (a) La première Communion du gamin, (b) La petronille se remarie. Part II, Opera and Sound Film Music: J'adore ça (Christine); Air and Entracte from Ciboulette (Hahn); Gramophone Records: Two Airs from Nina Rosa (Romberg); Selection from The Vagabond King (Friml). In the intervals at 1.0, Exchange and News, and at 1.30, Exchange. 2.0, Exchange. Programme for Children. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.30, Scènes Alsaciennes (Massenet), on Gramophone Records. 6.45, Legal Talk. 7.0, Talk on French Poetry. 7.20, Orchestral Concert: Overture, Rosamunde (Schubert); Suite Algérienne (Saint-Saëns); Marche Ecossaise (Debussy). 7.45, Review of the German Press. 8.0, George Sand's Salon at Nohant—Sketch. 8.10, Review by Dominique Bonnaud. 9.15, Press Review and News. 9.30, Gramophone Concert: Andante from the Concerto in E (Mendelssohn); On the Wings of Song (Mendelssohn); Cello Concerto in A Minor (Schubert); Melody (Schubert); Der Erlkönig (Schubert); Ballad in F (Chopin); Tristesse (Chopin); Les Préludes (Liszt).

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayed by WBXK on 48.66 metres and 25.27 metres.—7.30 p.m., KDKA Home Forum. 7.55, Care of the Garden, by Alfred C. Holtes. 8.0, Betty and Bob, from New York. 8.15, Radio Troubadours, from New York. 8.45, State Federation of Pennsylvania Women. 8.55, Baseball Scores. 9.0, Business Day Special, from New York. 9.30, Business News and Market Reports. 9.45, Riggs and Moke. 9.58, Baseball Scores. 10.0, Concert Favorites, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal and Pittsburgh Spotlights. 11.15, Weather Report. 11.16, Sport Review. 11.22, Press News-Keeler. 11.29, Temperature Report. 11.30 to 4.0 a.m. (Friday), New York Relay. 11.30, Three X Sisters. 11.45, Today's News, by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15 a.m., Booth Tarkington's Mand and Cousin Bill. 12.30, Variety Programme. 12.45, Merle Thompson Talks. 1.0, Captain Diamond's Adventures. 1.30, Roy Tin Tin Thrillers. 1.45, Floyd Gibbons. 2.0, Death Valley Days. 2.30, Wayne King's Orchestra with Lady Esther. 3.0, Time Signal and Contralto Solos by Gladys Swarthout.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW. 6.35 p.m., Theatre Notes and Programme Announcements. 6.40, Miscellaneous Items and News. 7.0, See Warsaw. 7.40, Gramophone Music. 7.58, Time Signal. 8.0, Choral Concert; Soloist: Witold Luczynski (Tenor). 8.55 (approx.), News from Warsaw. 9.5, Soloist Concert. 10.0, Talk. 10.15, Time Signal, Sports and Police Notes. 10.30 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.0 p.m., See Bratislava. 5.30, Talk: A Summer Tour of Norway. 5.45, Gramophone Music. 6.0, German Transmission: A Religious Play after Calderon arranged for Broadcasting by Richard Kralik. After the Play: News in German. 7.0, See Brno. 7.15, Military Band Concert, relayed from Strelecky Ostrov. 8.10, Russian Song Recital by A. Lanrova-Demkova. 8.25, See Brno. 9.0, Concert by the Station Orchestra, conducted by Otakar Jeremias. Soloist: Mila Levova (Songs). Selection from Morana (Gotova); Yugoslavian Songs; Yugoslavian Symphonic Dances (Dobron). 10.0, News, Press Review and Sports Notes. 10.15, Orchestral Concert, conducted by J. Skalicky. 11.0 (approx.), Close Down.

RABAT

721.1 kc/s, 416 metres; 6 kW.—5.0 p.m., Gramophone Music. 6.0 to 8.0, No Transmission. 8.0, Arab Programme—News and Gramophone Music. 8.45, News. 9.0, Concert: Overture, The Crown Diamonds (Auber-Tavan); Selection from Les Mousquetaires au Convent (Varney-Tavan); Two

Songs: Ballad for Cello (Prokofiev); Song, Donne-moi des baisers (Dahiderv); Talk; Overture, The Master-Singers (Wagner); Two Songs from Boris Godounov (Moussorgsky); Die Moldau (Smetana); Song, Der Erlkönig (Schubert); Extracts from the Symphonic Fantastique (Berlioz). 10.0, Gramophone Music.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News. 12.40 (from Geneva), Gramophone Music. 12.45 (from Geneva), Pricholin and his Associates. 1.0 (from Geneva), Financial Notes. 1.10 (from Geneva), Gramophone Music. 2.0 to 3.28, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Geneva), The Broadcasting Serenaders. 4.0 (from Geneva), Talk by M. G. Verdène. 4.20 (from Geneva), The Broadcasting Serenaders. 5.30 to 7.0, No Transmission. 7.0 (from Geneva), Recitations and Talk. 7.30 (from Geneva), A Radio Interview. 8.0 (from Lausanne), Songs by G. Doret and Jacques Dalerzo—Baritone Songs Recital by Paul Sandoz. 8.30, Concert by the Radio-Suisse Romande Orchestra. 9.20, Viennese Music. 9.50, News. 10.0 (from Lausanne), Gramophone Music. 10.30 (from Geneva), Talk: The Work of the League of Nations. 10.50 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.30 p.m., English Lesson. 7.0, Weather. 7.5, Delibes Concert. Ballet Music from Sylvia; Ballet Music from Kassandra; Ballet Music from Coppélia; Indian Ballet from Lakmi; Ballet Music from La Source. 8.0, News. 8.20, Piano-forte Recital: Six Waltzes (Brahms); Capriccio in B Minor (Brahms); Sonata in C Minor (Brahms); Prelude in F Sharp (Kalmus); Etude (Schubert). 8.40, Popular Concert. 9.0, News. 9.30, Relay of Foreign Stations. 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1R0, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres.—1.5 to 2.15 p.m., Concert of Variety Music. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Weather Report. 5.15, Exchange and Giornale Radio. 5.30 to 6.15, Concert by the Rome Mandoline Quartet. Soloists: Gino Conti (Bass) and Augusta Licaura (Soprano). Marcia caratteristica (Madami); Carillon (Silvestri); Fantasia, Una festa a Roma (Macchini); Bass Solos (a) Aria from Salvatore Rosa (Gomez), (b) Aria from Luisa Miller (Verdi); Soprano Solos: (a) Aria from Manon (Massenet), (b) Song from Louise (Charpentier), (c) Aria from La cena delle beffe (Giordano); TANGO dei fiori (Domenici); Scherzo (Milanesi); Campagnola romana (Macchini). 6.40, (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 7.10, Tourist Report. 7.20, Announcements in Different Languages. 7.40, Giornale Radio. 8.0, Time, Announcements and Talk. 8.15, Gramophone Music. 8.30, Giornale Radio and Sports Notes. 8.45, Symphony Concert, conducted by Renzo Bianchi. In the intervals: Talk on Literature and Art, and Announcements. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WCY, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—12.45 a.m. (Friday), Stock Reports. 1.0, Fleischmann Hour, from New York. 2.0, Captain Henry's Show Boat, from New York. 2.0, Lucky Strike Hour, from New York, followed by Programme Résumé

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory. 12 Noon (Basle), Ländler and Jodling Music on Gramophone Records. 12.30 p.m., News. 12.40 (from Basle), Sound Film Music. 1.25 to 1.30, Exchange, Time and Weather. 1.5 (from Zurich), Orchestral Concert. 6.0 (from Berne), Gramophone Music. 6.30 (from Basle), Talk: The Mysterious Ladoga Islands. 7.0 (from Basle), Time and Weather. 7.10 (from Basle), Gramophone Records of Italian Opera Music. 7.45 (from Basle), Elementary Italian Lesson. 8.30 (from Basle), Concert by a Mandolin Orchestra. 9.0, Weather and News. 9.10 (from Basle), William Tell—Play (Schiller). 10.45 (approx.), Close Down.

SEVILLE

EADJ, 815 kc/s, 368.1 metres; 1.5 kW.—3.9 p.m., Orchestral Concert: Tango, Jardin del amor (Planas); Serenade, En la Alhambra (Bréton); Selection from Doña Francisquita (Aves); Selection from Manon Lescaut (Puccini); Programme of Dances. 4.0 to 10.0, Interval. 10.0, Concert of Light Music: Paso doble from Die ideale Gattin (Lohr); In a Chinese Temple Garden (Ketelbey); Syncope (Kreisler); Selection from La gran via (Chueca); Romance from Manxua (Aves); Una noche en Calatayud (Luna); Barcarolle (Norton); Aria from La favorita (Donizetti); Waltz (Posford); Selection from Il Trovatore (Verdi); Gopak (Moussorgsky). After the Concert, News, Exchange, Weather, and Programme of Dance Music. 12 Midnight (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 654 kc/s, 542 metres.—5.5 p.m., Studio Service, relayed from Malmö, 1,301 kc/s, 231 metres. 5.30, Programme for Children, relayed from Visby. 5.55, Gramophone Music. 6.55, Talk: Gotland's Limestone and Cement Industries, relayed from Visby. 7.15, Weather and News. 7.30, Recital of Gotland Folk Music, with an Introductory Talk, relayed from Visby. 8.15, Talk. 8.45, Song and Piano-forte Recital by Ebba Höglund, Larka and W. Witkowski. Piano-forte Solo: Variations on a Theme of Schumann (Brahms); Songs: (a) Zigeunerlieder (Brahms); (b) Amorskronan (Wolf); (c) Auf ein altes Bild (Wolf); Impromptu in A Flat (Schubert). 9.25, Talk: Gotland Traditions. 9.45, Weather and News. 10.0, Acts III and IV of La Bohème—Opera (Puccini), on Gramophone Records, by the Cast of the Scala, Milan. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Selection from Carmen—Opera (Bizet), on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Orchestral Concert, conducted by Maurice de Villers. 2.0, Programme for Children. 3.0 to 4.15, Interval. 4.15, French Elocution Lesson. 4.30, Programme for Children, relayed from Bordeaux-Lafayette. 6.0, Talk in German: French Rhapsodie Art. 6.15, Talk for Women in French. 6.30, Orchestral Concert, conducted by Maurice de Villers: Overture, Raymond (Thomas); Ballet Music from Lakmé (Delibes); Selection from Madame Butterfly (Puccini); Ballet Suite, La Source (Delibes); Jewish Rhapsody (Montferré); Chant sans paroles (Tchaikovsky); March, Hollywood (Léopold). 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.15, Press Review in German. Lottery Results and Announcements. 8.30, Military Band Concert, relayed from Metz; Conductor, F. Leroy; Regimental March: Overture, Rosamund (Schubert); Symphony Sketch, In the Steppes of Central Asia (Borodin); Romance in F for Violin (Beethoven); Obce Solo; Ballet Music from La Maladetta (Avidal); March, Fréguignon (Forge); Ballet Suite, Carnival (Mazellier); Baritone Solo: La vieille chaminée (Desnoyons); March héroïque; March Finale. In the interval, Press Review in French. 10.30 (approx.), Close Down.

STUTT GART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—1.0 p.m., Concert from Langenberg. 2.30, Talk: The Basques. 3.0 (from Mannheim), Recital of Folk Songs. 3.30, Programme for Children. 4.30, Orchestral Concert, conducted by Gustav Göhrlich. Soloists: Gieda Hansi (Soprano), Margarete Welter (Soprano), Liesl Ohmsdahl (Contralto) and Hans Hanns (Tenor). Prelude, Chorus, Ballad and Dance from Das Pensionat (Suppé); Songs from Boeracacio (Suppé); Selection from Eine Nacht in Venedig (Joh. Strauss); Songs from The Mikado (Sullivan); Waltz from Die sieben Schwaben (Müllacker); Overture, Pique Dame (Suppé). 6.0, Talk: Hiking in the Böhmerwald. 6.25, Talk: With the Film Camera and Microscope in search of Nature Steady Films. 6.50, Time and News. 7.0, Jahm—Biographical Play (Michael Ebbauer). 8.5, Military Band Concert, relayed from Minsingen. 9.0, Saint Cecilia—Legend (Heinrich von Kleist). 9.30 (from Karlsruhe), Variety Concert. 10.20, Time and News. 10.50, See Langenberg. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—Transmission irregular owing to fire.—5.30 p.m., Selection from Parsifal—Opera (Wagner). 5.45, Opera Music. Airs from: (a) Fortunio (Messager),

(b) Le Bohème (Puccini), (c) Werther (Massenet), (d) Don Quixote (Massenet). 6.0, News. 6.45, Music by an Argentine Orchestra. 6.50, Programme for Children. 7.0, Accordion Music. 7.15, News. 7.25, Commercial Notes. 7.50, Music from Sound Films. 7.45, Music by a Viennese Orchestra. 8.15, Light Music. 8.30, Orchestral Music. 8.45, Military Music. 9.0, Music Hall Programme. 9.30, Light Music. 9.45, Variety Music. 10.15, North-African news. 10.30, Concert for Listeners in Morocco. Overture, Miroia (Gounod); Air from La vivandière (Godard); Cristalline (Biemant); Marins (Bagnol); Fimoussette (Marecan). 11.0, Songs. 11.15, Military Music. 11.30 to 12 Midnight, Programme in English by the I.B.C. Announcer: W. Brown-Constable. 11.30, Dance Music: Ain't I the lucky one? Wah-de-dah; Underneath the Harlem Moon; Sweet Rhythm; I'm playing with Fire; I'll never be the same; Here it is Monday; As long as love lives on. 11.57, I.B.C. Good-night Melody. 12 Midnight, News. 12.5 a.m. (Friday), Music by a Symphony Orchestra. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m. till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 to 6.0 p.m., Concert of Variety Music. 6.35, Giornale Radio and Agricultural and Dopolavoro Notes. 7.0, Time and Tourist Report. 7.20, Announcements in Different Languages. 7.40, Gramophone Music. 8.0, News, Weather and Gramophone Music. 8.20, Talk on the following Transmission. 8.30, I carnasciali—Opera in Three Acts (Guido Laccetti). In the intervals: Talk on Science and Literary Review. After the Opera, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.45 a.m., Religious Information in French. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,028 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—12.30 p.m., Orchestral Concert. 2.0 to 3.0, Interval. 3.0, Time and News. 3.5, Reading of Legends. 3.20, Talk with Gramophone Illustrations: Songs and Dances of the South American Indians. 4.0, Theatre Talk. 4.10, Talk: An Idyll from Central Carinthia. 4.35, Talk: The Centenary of Theodor Hermann Meyner. 5.45, Orchestral Concert. 5.55, The Dusk of the Gods—Opera (Wagner). In the intervals, News.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Weather Report. 12.15, Concert by the Station Orchestra, conducted by Oziminski; Soloist, M. Mokrzycka (Soprano); Overture, Paris (Moniuszko); Oriental Suite (Grusky); Five Songs; Symphony No. 3 in D (Schubert). 2.0, Agricultural Talk. 2.15, Concert by a Vocal Sextet. 2.45, Talk. 3.5, Tenor Song Recital by S. Narocz-Kowicki. 3.30, Gramophone Music. In the intervals, News. 4.0, Programme for Children. 4.30, Songs from Reviews. 5.0, Talk: Impressions of an Excursion in Estonia. 5.15, Popular Concert, relayed from the Cichocienek Park. 6.35, Programme Announcements. 6.40, Miscellaneous Items. 7.0, Dramatic Programme. 7.40, Answers to Technical Correspondence. 7.55, Interval. 8.0, Concert by the Station Orchestra, conducted by S. Naylor; Soloists, Mmes. St. Argasinska (Soprano) and H. Diekstein (Pianoforte); Polonaise from Eugene Onegin (Tchaikovsky); Ballet Music from The Merry Wives of Windsor (Moniuszko); Three Songs; Czardas in G Minor (Brahms); Mountain Dances (Moniuszko); Minuet (Boccherini); Piano-forte Solos: (a) Soirées de Vienne (Schubert), (b) Reverie (Meier); Waltz, Tales of the Vienna Woods (Strauss); Crakoviak, from Pan Twardowski; Songs: (a) Coton (Rosycki), (b) Le Temps des Lilas (Chausson). (c) Ma Poupée chérie (de Severac), (d) Ouvre tes Yeux bleus (Massenet); Piano-forte Solos: (a) Sailors' Dance, from a Ballet (Maliszewski), (b) The Spinner (Manusko-Meleer), (c) Dance of the Elves (Pieck-Mangialilli); Contaxienne (Ludwigowski); Mazurka from Jawurta (Moniuszko). 10.0, Dance Music. 10.25, Sports Notes. 10.40, Aviation Weather Report and Police Notes. 10.45, Dance Music.

WILNO

533 kc/s, 563 metres; 16 kW.—6.35 p.m., Lithuanian Talk. 6.40, The Letter Box. 7.0, See Warsaw. 11.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landeseender.

FRIDAY

JUNE THE SIXTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL Running commentary on the Senior T.T. Race. "The Watched Pot," a play by "Saki." "How's that, Umpire?" a revue, by Ashley Sterne and A. A. Thomson. Song and flute recital. LONDON REGIONAL MIDLAND REGIONAL NORTH REGIONAL WEST REGIONAL SCOTTISH REGIONAL BELFAST

ABROAD

- BARI 8.35 p.m. Concert of Opera Music. BERLIN (Witzleben) 9.30 p.m. Contemporary Orchestral Music by the Prussian Academy of Arts. BRUSSELS (No. 1) 8.0 p.m. The Station Symphony Orchestra. BRUSSELS (No. 2) 8.0 p.m. Offenbach Concert. HAMBURG 9.30 p.m. Festival Concert from Hanover. PALERMO 8.45 p.m. Concert of Opera Music. STRASBOURG 8.30 p.m. Gala concert from the Casino, Vichy. STUTTGART 9.25 p.m. Max von Schillings Concert. TOULOUSE 8.30 p.m. Concert of Saint-Saëns' Music. VIENNA 8.30 p.m. Recital by Moritz Rosenthal.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—8.0 p.m., Spanish Lesson, 8.15, News, 8.30, Orchestral and Vocal Concert.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.20 p.m., Song Recital by A. Ostapenk-Naumenkova. 6.55, Talk for Housewives, 7.0, See Prague, 7.25, See Brno, 8.25, See Prague, 8.45, Concert of Sacred Music by the Station Orchestra and a Mixed Choir. Conductor: A. Abrecht, 10.0 See Prague, 10.30 (approx.). Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.15 p.m., Wagner Concert on Gramophone Records, 2.0, News, 2.15, Request Music on Gramophone Records, 2.45, Programme arranged by the Post Office with Gramophone Records, 3.10, Agricultural Prices, 3.30, Reading for Children, 4.0, See Leipzig, 5.0, Talk: Richard Wagner and the Art of Song-writing, 5.20, Agricultural Prices and Reading, 5.45, Talk: The Liabilities of the Landlord, 6.0, Pianoforte Recital by Hantje Wandzik: Ballade in G Minor, Op. 23 (Chopin); Etude in A Flat, Op. 25 (Chopin); Mephisto-Walzer (Liszt), 6.30, Talk: New Prussianism, 6.50, News, 7.0, Transmission for all German Stations, relayed from Heilsberg, 8.0, Topical Programme, 8.30, Programme for Hikers, 10.0, Time and News, 10.30, Talk, 10.45, See Frankfurt, 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: News, Sports Notes and Readings, from the Works of Gottfried Keller, with Introductory Talk, 7.0, See Prague, 7.25, Concert by the Station Orchestra, conducted by Janota. Overture, Spring (Goldmark); Bacchanale, from Tannhäuser (Wagner); Symphonic Poem from the Cycle; My Country (Smetana); Four Moravian Dances (Janáček), 8.25, See Prague, 8.45, Recital of Romanian Songs (Cyprian Perambusec) by Vera Mora, 9.20, See Prague, 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra: Marche chevaleresque (Poppy); Slav Rhapsody (Volpatti); Strauss' Potpourri (arr. Winter); Violin Solo: Guitare (Moszkovsky Sarasate); Selection from La Bohème (Puccini); Moment musical (Schubert); Melody (Mariani); Fantasia (Yonmans), 1.0 p.m., Le Journal Parlé, 1.10, Gramophone Music: Songs from: (a) La Mascotte (Andran), (b) La Vie parisienne (Offenbach), (c) The Merry Widow (Lehar), 2.0, Programme for Schools, 5.0, Gramophone Concert: Symphony No. 1 (Sibelius);

carolle from The Tales of Hoffmann; Selection from La Périochole. In the interval, Gramophone Music, 8.45, Talk, 9.0, Announcements, 9.5, Suppé Concert by the Radio Orchestra, conducted by Franz André, Overture, Die Frau Meisterlin; Selection from Fatinitza; Selection from Boccaccio; Overture, Die schöne Galathee. In the interval, Gramophone Music, 10.0, Le Journal Parlé, 10.10, Musical Programme: Overture, Tannhäuser (Wagner); Après un rêve (Fauré), 10.25, Gramophone Music.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra. Soloists: G. Draghici (Cello); Overture, The Cunning Peasant (Dvorak); Impressions d'Italie (Charpentier); Italian Caprice (Tchaikovsky); Adagio religioso (Singaglia); Serenade No. 3 for Cello (Wolffmann); Lyric Suite (Grieg). In an interval at 6.0, Radio Journal, 7.0, Educational Talks. In an interval at 7.20, Gramophone Music, 8.0, Opera Music on Gramophone Records. In the intervals, Radio Journal.

BUDAPEST

545 kc/s, 550 metres; 18.5 kW.—Programme also relayed on 840 metres from 7.30 p.m. 1.11 Close Down, 5.0 p.m., Song Recital, 5.30, Talk, 6.0, Sacred Music from Veszprém Cathedral, 7.5, Review of Foreign Politics, 7.20, Market Prices, 8.0, A Government Crisis Comedy in Three Acts (Koloman Vándor), 10.0, News, 10.15 (approx.), Greetings in French from the Hungarian Radio Society to the Haut Marnais Radio Club of Chaumont, France, followed by Concert by the Opera House Orchestra, conducted by F. Friaal. After the Concert, Cigány Music by Sandor Farkas and his Band, relayed from the Café Bodo.

CASSEL.—See Frankfurt.

COPENHAGEN

1,367 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time Signal and Chimes from the Town Hall, 12.1 p.m., Concert by a String Ensemble, relayed from the Bellevue Strand-noteh, 2.0 to 3.0, Interval, 3.0, Concert by the Station Orchestra, conducted by Launy Gröndahl, Soloist, Carmen Suria Bang (Song); Overture, Casanova (Lincke); Potpourri of Songs of the Sea and Shanties (Gröndahl); Serenade (Rachmaninov); Medley of Finnish Folk Songs; Waltz, Loreley Rindklänge (Joh. Strauss); Oriental March (Andersen); Overture, Die beiden Husaren (Doppler); Lullaby for Strings (Dahl); Evening Song for Strings and Harp; Waltz, Hesperus (Lambey); Slav Poem (Poszy); Danish Rhapsody (Olson). In the interval at 3.45 (approx.), Six Contralto Solos, 5.0, Reading, 5.35, Exchange and Fish Market Prices, 5.50, Talk on Africa, 6.20, German Lesson, 6.50, Weather Report, 7.0, News, 7.15, Time Signal, 7.30, Talk on Social Reform, 8.0, Time Signal from the Town Hall, 8.1 to 11.30, Variety Programme, 8.0, Modern Music by Louis Prells' Instrumental Ensemble: March, The Derby Winners; Waltz, Intermezzo (Kappuschel); Selection from Good News (Sylvia, Brown and Henderson); Evening Song (Blume); Pianoforte Acrobatics (Caplan), 8.30, Item by Knud Hegland, 8.40, Modern Music (contd.); Melody (Turri); Winter (Blume); Russian Rhapsody (Niss-Shamm); Two American Sketches (Krüger), 9.10, Spring and Summer in Modern Danish Songs, 9.25, Summer Pictures with the Song of Nightingales, 9.55, News, 10.10, Modern Dance Music, 10.30, Humorous Programme, 10.45, Dance Music (contd.).

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.10 p.m., Talk: Education and Ethics in Japan, 7.25, Miscellaneous Items and News, 7.35, Programme Announcements, 7.40, See Warsaw, 11.0 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C., F. St. A. Ronald and B. McNabb announcing, 4.30, Concert for Southhampton and Winchester Listeners: The Fortune Teller (Herbert); Love's Nocturne (Drigo); Poor Butterfly (de Philippis); Violin Solo, Le Cygne (Saint-Saëns); Serenade (Toselli); Ballet Music from La Source (Delibes); In the Blossing (Lamandale); Violin Solo, Air on the G String (Bach); And wouldst thou thus have sullied (Verdi); Ay, Ay, Ay (Freire); Room for the Facetum from The Barber of Seville (Rossini); Bacchanale from The Seasons (Glazunov), 5.15, Concert for Southampton and Weymouth Listeners: Selection from The Desert Song (Romberg); Heather Moon (Dammere); At Dawning (Caldman); Evolution of Dixie (Lake); Bonnie Mary of Argyll (Lauder); Sweethearts of Yesterday; The Clock is playing; Only a Rose, from The Vagabond King (Friml); Softly as in a morning Sunrise (Romberg); Come to the Fair (Easthope Martin); Med-

ATHLONE 725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Exchange, Weather, and Gramophone Music, 6.0, Programme for Children, 6.45, News, 7.0, Gardening Talk, 7.15, Literary and Dramatic Talk, 7.30, Time Signal, 7.32, Variety Concert, 8.30, Violin Solos by R. Kiernan, 8.40, Baritone Solos by J. Austin, 9.0, Violin Solos, 9.20, Music for Pipes and Fiddle by S. MacAoughliss and Frank O'Higgins, 9.45, Sponsored Programme, 10.45, Time, News, Weather, and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Erio Concert, 8.0, Request Gramophone Records, 8.30, Exchange and Talk on Hygiene, 9.0, Gramophone Music and News, 10.0, Chimes from the Cathedral, Weather Forecast, Messages to Seamen, Exchange, and Market Prices, 10.10, Concert by the Station Orchestra: Italian Serenade (Holmes); Overture, Coriolanus (Beethoven), 10.20, Modern Dance Music, 11.0, Recitation of Poems, 11.15, Band Concert, relayed from the Café Español. In the interval at 12 Midnight, News, 1.0 a.m. (Saturday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Announcements, 8.20, Giornale Radio, 8.30, Time and Announcements, 8.35, Concert of Opera Music. Soloists: M. De Santis Bruno (Soprano) and Franco Signorile (Tenor); Selection from Le donne curiose (L'isiglio); Soprano Aria from Luisa Miller (Verdi); Tenor Aria from La nave rossa (Seppilli); Soprano Aria from Faust (Gounod); Tenor Aria from La Bohème (Puccini); Overture, Salvatore Rosa (Gomez); Soprano Aria from Martha (Floviata (Verdi); Tenor Aria from Il II voto (Giordano); Soprano Aria from The Pearl Fishers (Bizet); Tenor Aria from Rigoletto (Verdi); Selection from Faust (Gounod), Theatre Notes in the interval, 10.30, Music from the Gran Caffè del Levante, 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.55 p.m., Time Signal and Programme Announcements, 7.0, Concert by the Station Orchestra, 7.50, A Discussion, 8.30, Relay from the Kolareva Zadrubina Exhibition Hall, 9.30, Organ Recital by M. Meljac, 10.0, National Song Recital by Milan Timotic, 10.30, News, followed by Light Music Relayed from the Ratnički Dom Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert of Folk Music, 3.0, Talk for Girls, 3.30, Weather and Exchange, 3.45, The Letters of Wilhelm von Kügelgen, 4.0, See Leipzig, 5.0, Educational Talk, 5.25, Topical Talk, 5.35, Serenade in D, Op. 25, for Flute, Violin and Viola (Beethoven), 6.0, Poetry Reading, 6.5, Song Recital by Irma Drummer, Four Songs (Robert Franz); (a) Gekommen, (b) Rosemarie, (c) Für Musik, (d) Im Herbst, Four Songs (Brahms); (a) Ein Wanderer, (b) Der Kranz, (c) Immer leiser, (d) Liebestreu, 6.30, Dialogue: A German Woman Returns from Russia, 6.50, Weather and Announcements, 7.0, Transmission for all German Stations relayed from Heilsberg, 8.0, An Epigram, 8.5, Concert from Stuttgart, 9.5, U Boat 11—Ballad for Radio (Karl Lehrs), 10.10, News, followed by Radio Report: Two Hundred Schoolboys compete in Aerial Sports, 10.45, Weather, 11.0, Serenade from Frankfurt, 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.15 p.m., Topical Talk, 6.40, The Witzleben Station informs its Listeners, 6.45, Topical Talk, 7.0, Transmission for all German Stations, relayed from Heilsberg, 8.10, Concert by the Potsdam Wind Instrument Orchestra, conducted by Hans Althoff: March, Immer mit Fener (Gützel); March, Klar zum Gefecht (Wrede); Overture, Au mein Vaterland (Allport); Waltz, Wie ein Hehnest (Münchke); Zauberei (Meyer-Helms); Torch Dance (Hänsler); Chinese Fantasia (Albott); Puppe und Hampelmann (Santeda); Alle Tage ist kein Sonntag (Windsay-Thomson); Rheinländer-Potpouri (Lindsmar); Marching Song, Berlin ist richtig (Geisler); Marching Song, Trinkt aus Kameraden, die Nacht wird kühl (Lautenschläger), 9.25, Talk: Have you yet heard...? 9.30, Concert of Contemporary Orchestral Music by the Prussian Academy of Arts, relayed from the Singakademie, The Berlin Philharmonic Orchestra, conducted by Eugen Jochum, 10.0, News, 10.15 (approx.), Dance Music from the Zoo. In the interval from 11.0 to 11.5, Talk: What they are talking about in Berlin, 12 Midnight (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

JUNE 16th

FRIDAY

continued

ley, Childhood Memories (arr. Somers). 6.0 to 10.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.4, Dance Music by the Icolians. My Heart's to let; Willow, weep for me; When you've fallen in Love; Look what you've done; Her Name is Mary; This is no Dream; Roll along Kentucky Moon; One little Word led to another; My Romance; On a Dreamy Afternoon; Three Wishes; Moonlight on the River; Let me give my Happiness to you; Young and Healthy; Farewell to Arms; You'll always be the same Sweetheart. 11.0, Listeners' Request Half Hour: The Skaters' Waltz (Waldfenfel); Danny Boy; Butterflies in the Rain (Myers); Paradise; Underneath the Arches (Planagan); Little Brown Jug; Review of the Troops. 11.30, Tango Band; España Cani; Flora Castellana; Song, La Paloma; Adios Muchachos; Media Luz; Luz de Granada; Song, Mama Mia; Tierra Hispana. 12 Midnight, Club Concert for Ninth Listeners: March of the Mannikins. 12.5 a.m. (Saturday), I.B.C.: Late News Bulletin; Concert (contd.); Chorus from Miss Hook of Holland (Rühens); Happy Dances; Y Bwtyn Bach to Gwellt; Skylark Polka; Chorus, The Hills of Home; Songs my Mother taught me; The Brooklyn Cake Walk; The Lads with the delicate Air; Duet, Come to Arendia (German); The Laughing Polka; Songs of Araby (Clay); Chorus, When you and I were young, Maggie; A Life on the Ocean. 1.0, Organ Recital with Songs: en c'est Madrid; Just humming along; Song, Let's put out the Lights; Rain on the Roof (Ronell); There's something about a Soldier; Song, How deep is the Ocean; Sing, Brothers; Selection, Illegal. 1.30, Vocal Duets: Where rainbows rest; Just a little Tear; When Baby cries for the Moon; Moon over Dixie; Yes, indeed; When I catch you alone; I've always wanted to call you my Sweetheart; Hot Toddy. 2.0, Dance Music by the Icolians; Cabin in the Cotton; Just another Dream of you; The Sent Song; One Hour with you; Don't tell a Soul; Get Happy; Land of Love and Laughter; A Big Bouquet for you; Happy-go-lucky you; Just one more Chance; They all start whistling Mary; Fooling me; Can't we talk it over; When we're alone; Lawd, you made the Night too long; Somebody loves you. 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

259.3 metres, 17 kW.; and Cassel, 245.9 metres, and Trier, 259.3 metres.—4.30 p.m., Orchestral Concert, conducted by Reinhold Merten; Soloist: Christian Hufnagel (Tenor). 6.45, Economic Notes. 6.0, Talk: Hans Breuer. 6.20, A Conversation between two Soldiers; Patrols at Verdun. 6.45, Topical Talk. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.5, See Stuttgart. 9.0, Variety Item. 9.25, See Stuttgart. 10.20, Time and News. 10.45, Orchestral Concert; Soloist: Dorothea Bruns (Pianoforte). 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Variety Programme. 6.40, Frankfurt Exchange and Hamburg Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Concert by the Station Chamber Orchestra, conducted by Gerhard Maasz: Egyptian March (Joh. Strauss); Overture, The Thieving Magpie (Rossini); Waltz from The Nutcracker Suite (Tchaikovsky); Selection from The Merry Wives of Windsor (Nicolai); Intermezzo from Si (Mascagni); Kleine Suite No. 3 (de Michelé); Overture, The Ace of Hearts (Künnecke); Der erste Liebestraum from Don Cesar (Dellinger); Selection from Eine Nacht in Venedig (Joh. Strauss); March from Der Feldprediger (Müllacker). 9.20, News. 9.30 (from Hanover), Festival Concert on the Eight Hundredth Anniversary of the Laying of the Foundation Stone of St. Godehard's Church in Hildesheim. Tocatta in D Minor for Organ (Rott); Sanctus and Agnus dei from the Missa brevis for Choir (Palestrina); Kyrie and Benedictus from the Missa O quam gloriosum for Choir (Vittoria); Fugue in G Minor for Organ (Frescobaldi); Motets for Choir: (a) Adoramus te (Clemens non Papa), (b) cantate Dominio (Pitoni), (c) Regina coeli (Lotti). Address: St. Godehard's Church, Gloria, Op. 59, for Organ (Reger). 10.15, Time and News. 10.25, Topical Talk. 10.35 (from Hanover), Concert by the Symphony Orchestra, conducted by Otto Ebel von Sosen. Overture, Russian and Ludmilla (Glinka); Mozartiana (Tchaikovsky); Gavotte (Gossec); Selection from The Barber of Seville (Rossini); Waltz, Herein-

spaziert from Der Schatzmeister (Ziehrer); Mein Lied (Gumbert); Selection from The Arabian Nights (Joh. Strauss); Admiral-Marsch (Friedmann). HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.0 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Suite, A Day in Cairo (Taubé); Overture, Eine Nacht in Venedig (Joh. Strauss); Pesther Walzer (Lanner); Selection from Undine (Lortzing); A Schubert Evening in Old Vienna (Ralf); Waltz Potpourri, Tanze mit (H. Weber). In the interval at 1.20, News. 2.30, Programme arranged by the Post Office with Gramophone Music. 3.0, Agricultural Prices and Exchange Rates. 3.25, Johannes Gutenberg—Radio Play for Children (Schmalmauer and Schoenau). 4.0, Talk for Women. 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Overture, Der Frieschütz (Weber); Scènes pittoresques (Godard); Four Pieces (R. Strauss): (a) Glück und Dank on Motives from Die Frau ohne Schatten, (b) Heitere Scene on Motives from Feuersnot, (c) Orientalische Burleske on Motives from Der Bürger als Edelmann, (d) Rauschende Musik on Motives from Guntram. In the interval at 5.0 (approx.), A Dialogue: The Objective of Our Next Flight. 5.45, Talk on the Agricultural Research Expedition in Germany. 6.15, Agricultural Prices. 6.25, Clemens Schmalstich Song Recital by Georg Höllger. 6.50, Weather Report. 7.0, Transmission for all German Stations, East Prussian Programme. 8.0, News. 8.10, Chinese Legends—Poems arranged by Dr. Jto Takura, with Music by Nino Neidhardt. The Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky. 9.0, Reading from the Germania of Tacitus. 9.20, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky. Overture, Coriolanus (Beethoven); Serzerz and Finale from the Sixth Symphony in C (Schubert); Suite Op. 2 (Weigl); Extract from the Serenade in D, Op. 11 (Brahms). 10.10, News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. to 3.40 p.m., Programme of the Allgemeines Vereinizing Radio Orchest (A.V.R.O.). 11.40, Time and Gramophone Music. 12.10 p.m., Concert of Light Music by Kovacs Lajos and his Orchestra, with Gramophone Interludes. 1.50, Talk: How to keep Flowers fresh. 2.10, Gramophone Music. 2.40, Talk. 3.10, Gramophone Music. 3.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 3.40, Gramophone Music. 4.40, Programme for Children. 5.10, Organ Recital by Johan Jong; Melody (Mauschinger); Selection from Tosca (Puccini); Dance of the Dervishes (Bendix); Dors, petite mère, dors (Michaëlov); Deine schwarze Augen (Aspiatz). 5.40, Concert by the Amsterdam Salon Orchestra, conducted by D. Kiekens; Festival Overture (Leuschner); Waltz, Dolores (Waldfenfel); Potpourri, Aus Mozarts Reich (Urbach); Adagio (Siniaglia); Serenade (Fleischmann); Three Dances (German); Selection from Hansel and Gretel (Humperdinck); Nymphie et faune (Delibes-Fétras); Mighty lak' a Rose (Nevin); Waltz from The Count of Luxembourg (Lohár); Overture, Die schöne Galathee (Suppé); San Lorenzo (Silva). In the interval at 6.20, Talk. 7.40 to 10.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 10.40, V.A.R.A. Programme. Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.55 a.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.). 11.55, Trio Concert. 1.40, Organ Recital by E. Hank: Entrée du Cortège (Dubois); Andante (Handel); Nocturne, Op. 48, No. 2 (Chopin); Gramophone Records; Andante sentimental, Op. 19, No. 4 (Tchaikovsky); Romance, Op. 5 (Tchaikovsky); Movement from the Fifth Symphony for Organ (Widor). 3.0, Song Recital by Mlle C. Pezaro Tieleman; Aria from Julius Caesar (Handel); Auf dem Wasser zu singen (Schubert); Wanderers Naehthild (Schubert); Rheinlegenden (Mahler). 3.25, Recitations, 3.40, Song Recital (contd.); La Mamma Marta (Giordano); Aria from Madame Butterfly (Puccini); Aria from La Bohème (Puccini). 3.55, Gramophone Music. 4.0, Recitations. 4.15, Gramophone Music. 4.25, Gardening Talk. 4.55, Concert, conducted by S. van Leeuwen, relayed from Assen: March, Folies bergères (Lincke); Overture, Der Geist des Wajwooden (Grossmann); Moonlight on the Alster (Fétras); Chant hindou (Rimsky-Korsakov); Finlandia (Sibelius); Selection from The Gondoliers (Sullivan). 5.40, German Lesson. 5.55, Concert (contd.): March, Wien bleibt Wien (Schrammel); Overture, Light Cavalry (Suppé); Ballet Music from Sylvia (Delibes); Piece (Geldard); Die Backfish Parade

(Lincke); March, Sweepstake (Leeuwen); Gramophone Records in the intervals. 6.40, Police Notes. 6.55, Talk. 7.15, Gramophone Music. 7.25, Talk. 7.40, A Midsummer Night's Dream—Play (Shakespeare), arranged by Dr. L. Burgersdijk; Music by Mendelssohn. In the interval at 8.55, News. 9.20, Recitations. 9.40, Concert by the K.R.O. Orchestra, conducted by M. van 't Woud. 10.40, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.25 p.m., Announcements and Gramophone Music. 7.40, See Warsaw. 10.5, Concert. 11.0, Answers to Correspondents in French.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Wolf; Soloist, Tomi Fässbender (Violin); Overture, Der Wildschütz (Lortzing); Ballet Music from Maudred (Reinecke); Violin Solos: (a) Canzonetta (Tchaikovsky), (b) Slav Dance (Dvorak), (c) Zefir (Hubay); Selection from Tosca (Puccini); Airs (Rimsky-Korsakov): (a) The Flight of the Bumble Bee, (b) Dance of the Tumblers; Chinese Rhapsody (Gabriel-Marie); Dance and Hungarian March from The Damnation of Faust (Berlioz). In an interval at 2.0 (approx.), Announcements. 2.30, Sponsored Programme with Gramophone Music. 3.30, Economic Notes and Time Signal. 3.50, Programme for Young People. 4.30, Handel and Haydn Concert of Chamber Music; Otti Kersten (Pianoforte), Gertrud Girshansen (Violin), Margret Flecken (Mezzo-Soprano), and Kurt Friedrich (Cello and Viola da Gamba); Part I: Handel Music; Sonata in D for Violin and Pianoforte; Suite No. 7 in G Minor for Pianoforte; Sonata in C for Viola da Gamba and Pianoforte; Part II: Haydn Music; Scottish and Welsh Folk Songs for Mezzo-Soprano with Trio Accompaniment: (a) Einst ging ich im Sommer, (b) Es weiden meine Schafe, (c) Solang die liebe Sonne leuchtet, (d) Am Blumenstrand des klaren See, (e) Wenn ich meine Schafe weide; Trio No. 1 in G for Pianoforte, Violin and Cello. 5.50, Reading (Max Halbe). 6.10, Reading of Two Poems. 6.20, English Conversation. 6.45, Weather, Time and News. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Announcements. 8.5, Pianoforte Concerto in D Minor (Bach), on Gramophone Records. 8.30, Der Strom—Play (Max Halbe). 10.10, Talk in Connection with Nordic Week; The Soul of the Nordic Races. 10.15, News. 10.35, Wireless Notes. 10.45, Topical Talk, followed by Serenade, conducted by Wolf. In an interval, Radio Report from Cologne Aerodrome (on Gramophone Records). 11.30 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber; Jubel-Overture (Weber); Faschingsbilder, Op. 24 (Nicolé); Selection from The Mastersingers (Wagner); Ballet Music from Austin (Marschner); Overture, The Force of Destiny (Verdi); Ballet Music from King Manfred (Reinecke); Selection from Cleopatra (Ema); Waltz from Das fatale Ei (Schütt); Overture, Waldmeister (Joh. Strauss). In an interval at 1.0, News. After the Concert, News. 2.10, Art Notes. 3.0, Soprano Song Recital by Edith Schmidt. 3.15, Talk for the Country Woman; Village Music. 3.35, Economic Notes. 4.0, Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer. Soloist: Alfred Patzak (Cello). Overture to La Cid (Cornelius); Concerto for Cello, Strings and Kettledrums, Op. 44 (Mosser); Sinfonia di caccia in G (Mozart) for String Orchestra and Four Horns; Mephisto-Walzer (Liszt); Selection from Eugene Onegin (Tchaikovsky); Overture, Beherrscher der Geister (Weber). In an interval at 5.0, Reading. 5.50, Economic Notes. 6.0, Discussion on Plauen. 6.25, An Interview with a Swimming Instructor. 6.45, Talk for E. L. Schleichberg's Fiftieth Birthday. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.20, Folk Song Recital by St. Paul's Church Choir, conducted by Paul Gaisdorf. 9.15, Instrumental Concert of Early Nineteenth Century Music; Two Duets for Flute and Violin (Göbner); Sextet for Clarinet, Horn, Violin, Viola, Cello and Bass (Eggert); Schottisches for Two Violins, Flute, Oboe, Two Horns and Bass (Walch). 10.10, News. 10.15 (approx.), Concert by the Station Orchestra, conducted by Willy Steffen; Overture, Lachendes Leben (Rust); Bilder aus Osten, Op. 66 (Schumann); Invitation to the

Dance (Weber); Serenade Music, Op. 40 (Joon); Old Styrian Music (Pachnerger); Prelude to Schirin und Gertraude (Graener); 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—7.0 p.m., Gramophone Music. 7.40, Weather. 7.45, Symphony Music on Gramophone Records. 8.50, News in French. 9.15, Gramophone Music. 9.45, News in German. 10.15, Gramophone Music. In the intervals, Announcements.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Music. 7.15, Music Review. 7.30, News. 8.30, Literary Programme. After the Programme, News.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Spanish Music. 11.45, Radio Chronicle. 12 Midnight, Programme of Spanish and Light Music. 12.35 a.m. (Saturday), Answers to Correspondence. 12.30, Spanish South-American Talk, followed by Light Music. 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, Request Gramophone Records and Science Talk. 8.30, Talk; Educational Films. 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal and Political Review. 11.15 (approx.), Symphony Music on Gramophone Records. Leonora Overture (Beethoven); Sicilienne from Pelléas et Mélisande (Fauré); Triana (Albéniz-Arbois); Symphony, No. 39 in E Flat (Mozart); Extraits from Le Sacre du Printemps (Stravinsky). 12.45 a.m. (Saturday), News, Programme Announcements for Listeners Abroad and Dance Music. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.15 p.m., See Prague. 7.25, Concert by the Station Orchestra, conducted by V. Musil. Soloist: R. Balda (Accordion); Overture, Im Reiche des Indra (Lincke); Waltz, Gold and Silver (Lohár); Intermezzo (Mahr); The Black-Eyed Maid (Plichta); Polka from an Operetta (Plichta); Selection from Ilac Time (Schubert-Berté); Melody Carnival Polka (A. Aust); Tango (Mahr); Folk Waltz (Kovarik); March (V. Vackár). 8.25, See Prague. 10.30 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert from Langenberg. 5.45, Talk: The Bushmen. 6.5, Orchestral Concert, conducted by Erich Kloss; Soloist: Hugo Becker (Violin); The Butterfly Waltz (Erind); Die kleine Liliste (Niemann); Märlisches Ständchen (Graener); Tondo Latin (Razzini); Andante (Tchaikovsky); Serenade (Kark); Prelude (Rachmannov); Slow Waltz (Schütt); Albumblatt (Wagner); Ständchen (Schubert); Minuet (Mozart). 6.45, Time, Weather, and Agricultural Report. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Introductory Talk to the following Transmission. 8.5, Li-Tai-Po—Opera in Three Acts (Clemens von Frankenstein), relayed from the National Theatre. 8.50 (in the interval), Topical Talk. 10.30, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—8.0, A Visit to the Egersund Potteries. 9.30, Agricultural Notes. 9.38, Announcements and Weather. 9.45, News. 10.0, Topical Talk. 10.15, Gramophone Concert; Coronation March from The Prophet (Meyerbeer); Overture, Der Opernball (Heuberger); The Dance of the Seven Veils, from Salome (H. Strauss); Uranus, from The Planets, Op. 32 (Holst); L'Apprenti sorcier (Dukas).

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopo-lavoro Announcements, Tourist Talk, Agricultural Report, Report of the Royal Geographical Society and Giornale Radio. 8.20 Gramophone Music. In the interval at 8.30, Time Signal and Announcements. 8.45, Con-

JUNE 16th

FRIDAY

continued

cert of Opera Music: Overture, La vestale (Spontini); Duet from Act I of The Girl of the Golden West (Puccini); Aria from Lodoletta (Mascagni); Duet from Lohengrin (Wagner); Good Friday Music from Parsifal (Wagner); Aria from Turandot (Puccini); Aria from Thais (Massenet). In the interval, Talk. 10.55, News.

PARIS

IFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals). 6.45 p.m., Theatre Talk. 7.0, Le Journal Parle. 8.30, Literary and Musical Programme for Young People. 9.15, Symphony Concert, conducted by E. Flament. 10.0 (approx), Close Down.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Music. 8.0, News. 12 Noon, Jewish Programme. 12.30 p.m., Gramophone Concert: Overture, Euryanthe (Weber); La Bataille (Jancquin); Elegy (Vidal); Ballad in F Minor (Chopin); Sarabande (Bucasse); Songs (R. Strauss); (a) Traum durch die Dämmerung, (b) Ständchen; Ballet Music from The Three-cornered Hat (Falla); Le temps des lilas (Chansonn); Concerto (Rachmaninov). In the intervals at 1.0, Exchange and News, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.30, Review of New Books. 6.50, Social Assurance Review. 7.0, Dialogue. 7.20, Gramophone Music: Selection from The Arabian Nights (Joh. Strauss); Noctella (d'Ambrósio); Je suis une coquette jolie (Christine); Indian song (Contabelle); Melody (Blangy); The Spanish Manilla (Guerrero). 7.45, Commercial Prices and News. 8.0, Literary Talk. 8.30, News and Weather. 8.40, Gastronomic Review. 8.45, Fen la Mère de Madame Play (Feytaud). 9.25, Press Review and News. 9.40, Variety Concert on Gramophone Records: Burlesque of Lehar's Gigolette; La Tour Eiffel (Bach and Laverne); Chanson des petits bateaux (Merleier-Pujol); Chez le Pharmacien (Bach and Laverne); L'Heritage (M. P. E. V. Chepfer); Les gendarmes à pied (Bach and Laverne); La première communion du gamain (Chepfer); Le chirurgien du roi s'amuse (Mortier); Bonhomme (Nadand); Humorous Scenes (Leonard); Au magasin (Bach and Laverne); Blagues (Paraphrase on Il Trovatore (Verdi-Lange); Melody (Cuttelli); Souvenir de Cirque (Peter).

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W3XK on 48.86 metres and 25.27 metres.—7.30 p.m., Utility Hour Programme. 7.45, KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, International Sunday School Lesson by Rev. S. S. Lappin. 8.30, Tenor Solos by John Dundlap. 8.45, Happy Jack, from New York. 8.58, Baseball Scores. 9.0, Hotel Cosmopolitan Orchestra, from New York. 9.36, Business News and Market Reports. 9.45, Riggs and Moke. 10.0, Baseball Scores. 10.5, Programme to be announced. 10.15, Concert Favourites, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal and Hotel Roosevelt Orchestra, from New York. 11.15, Weather Report. 11.16, Sport Review. 11.22, Press News-Recd. 11.29, Temperature Report. 11.30 to 1.0 a.m. (Saturday), New York Relay. 11.30, Major, Sharp and Minor. 11.45, Today's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15 a.m., Booth Tarkington's Maid and Cousin Bill. 12.30, Pastoral. 1.0, Programme to be announced. 1.30 to 3.15, New York Relay. 1.30, Adventures in Health. 1.45, Phil Cook and his Ingram Shavers. 2.0, Echoes of the Palisades. 2.30, Variety Programme. 3.0, Time Signal and Music is my Hobby.

PORSGRUND. See Oslo.

POZNAN

896 kc/s, 335 metres; 1.0 kW.—6.0 p.m., Talk. 6.15, See Warsaw. 7.20, Miscellaneous Items and News. 7.35, Theatre Notes and Programme Announcements. 7.40, See Warsaw. 7.58, Time Signal. 8.0, See Warsaw. 10.0, Time Signal, Sports and Police Notes. 10.15, Dance Music relayed from the Cafe Polonia. 11.50 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—5.55 p.m., Talk on Fish. 6.5, Agricultural Report. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission; Book Review, Agricultural Bulletin and Talk. 7.0, Chimes from the St. Ludmila Church. 7.0, News. 7.10, Talk: Textiles. 7.25, See Brno. 8.25, A Sketch (Kautsky). 8.45, Vocal Quartet Concert of Popular Songs. 9.20, Concert by the Prague Wind Instrument Quintet. 10.0, Time, News, Press Review and Sports Notes. 10.15, Russian Notes. 10.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News. 12.40 (from Lausanne), Orchestral Music. 1.0 (from Lausanne), Financial Notes. 1.10 (from Lausanne), Orchestral Concert. 2.0 to 3.28, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30, (from Geneva), Gramophone Music. 4.30, (from Geneva), Talks for Women. 5.30 to 7.0, No Transmission. 7.0 (from Lausanne), Talk: Swimming for Health. 7.25 (from Lausanne), News. 7.30 (from Lausanne), Review of Politics. 8.0 (from Lausanne), Clarinet and Pianoforte Recital. 8.30, Choral Concert, relayed from La Chaux-de-Fonds. 9.0 (from Lausanne), Un petit service d'Ami—Comedy. 9.50, (from Lausanne), 9.50, News. 10.0 in One Act (Paul Gavault). 9.50, News. 10.0 (from Lausanne), Illustrated Talk: Hot Jazz. 10.30 (from Geneva), Talk: The Work of the League of Nations. 10.50 (approx.), Close Down.

RIGA

372 kc/s, 525 metres; 15 kW.—6.0 p.m., Talk on the Latvian Choral Festival. 6.30, Agricultural Talk. 7.0, Weather. 7.5, Smetana and Dvorák Orchestral Concert: Overture, Mein Heim (Dvorák); Selection from The Bartered Bride (Smetana); Suite pathétique (Dvorák); Selection from Dalibor (Smetana); Slav Rhapsody in D (Dvorák). 8.0, News. 8.20, Soprano Solos by Milda Brechman-Stengels. 8.40, Orchestral Concert of Popular Music. 9.0, Weather and News. 9.30, Dance Music. 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Orchestral Concert: Consuelo (Mazzini); Melody (Lohr); Francesca va dicendo (Molto); Pianoforte Solo, Notte a Granada (Bilotti); Sogno (Culotta); Selection from The Czarevitch (Lehar); Mignolito (Valdes); Jazz allegro (Bongato); Onda (Petrillia); Per piacere (Narducci). 4.45, Children's Radio Review. 5.10, Weather Forecast. 5.15, Exchange and Giornale Radio. 5.30, Concert: Maria Biondi Briganti (Soprano); Giacomina Protto (Violin); and Germand Arndidi (Pianoforte). Pianoforte Solos: (a) Rondo in G (Beethoven), (b) Tocata (Bocllmann); Soprano Solos: (a) Aria from Anna Bolena (Donizetti), (b) Vergiliches Ständchen (Brahms); Violin Solos: (a) Rondo (Schubert), (b) Polka-Song (Szymanovsky), (c) Bulbuli (Liviabella); Pianoforte Solos: (a) Marionette (Goossens), (b) Polka (Sauter); Soprano Solos: (a) Nannetta's Aria, from Falstaff (Verdi), (b) Micaela's Aria, from Carmen (Bizet). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 6.57, Report of the International Institute of Agriculture (in Spanish, German, and French). 7.10, Tourist Report. 7.20, Announcements in Different Languages. 7.30, Sports Notes. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Sponsored Music. 8.30, Giornale Radio and Sports Notes. 8.45, Gramophone Concert. 9.45, Moglietta—Comedy in One Act (A. Mancini). 10.15, Variety Programme. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 p.m., Biblical Drama. 9.15, Variety Programme, from New York. 9.30, Talk: The Mind Age. 9.35, U.S. Marine Band, from New York. 9.45, Stock Report and Police Notices. 10.0 (approx.), Interval. 12.45 a.m. (Saturday), Stock Reports. 1.0, Cities Service Concert, from New York. 1.30, WGY Farm Forum. 2.0 to 3.30, New York Relay. 2.0, Musical Programme. 2.30, Variety Programme. 3.0, Variety Programme. 3.30, Richfield Country Club, from New York, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—10.20 a.m. (from Zürich), Programme for Schools. 10.50 to 11.59, Interval. 11.59, Time Signal from Neuchâtel Observatory. 12 Noon (from Zürich), Concert by the Station Orchestra. 12.30 p.m., News Bulletin. 12.40 (from Zürich), Concert (contd.). 1.25 to 1.30 (from Zürich), Exchange, Time and Weather. 5.0 (from Zürich), Programme for Children. 5.30 (from Zürich), Concert by the Small Station Orchestra. 6.30 (from Berne), Talk: Old and Modern Peasant Costumes. 7.0 (from Berne), Time and News. 7.20 (from Berne), Gramophone Music. 7.50 (from Berne), Concert of Modern Music. 8.30, Concert by the Station Orchestra. 9.0, Weather and News. 9.10 (from Berne), Concert of Renaissance and Baroque Music. 9.45, Programme in Dialect. 10.40 (approx.), Close Down. SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Swedish Scout Report. 5.25, Gramophone Music. 6.25, Microphone Report, relayed from Visby. 7.15, Weather and News. 7.30, Legal Talk. 8.0, Concert by the Station Orchestra. Soloists: Set Svanholm (Songs) and Ernst Törnqvist (Violin). 9.15, Kalle Johansson—Comedy (Sven Zetterström). 9.45, Weather and News. 10.0, Concert of Light Music by a String Ensemble. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Variety Music on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Orchestral Concert, conducted by Maurice de Villers. 2.0 to 3.30, Interval. 3.30, Concert, relayed from the Casino, Vichy. Conductor: Brouillac. Soloists: Svendsen (Violin) and Gottermann (Cello). Overture, Roy Blas (Mendelssohn); Romance for Violin (Svendsen); Contéure for Cello (Gottermann); Selection from The Mastersingers (Wagner); Military March (Schubert). 5.0, Literary Talk in French. 5.15, Concert of Jazz Music, conducted by Roy Kan. 6.0, Trio Concert, relayed from Lille. 1.30 kc/s, 265.4 metres. 7.0, Topical Talk in German. 7.15, Gramophone Records. 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.15, Press Review in German and Announcements. 8.30, Gala Concert, relayed from the Casino, Vichy. Conductor: Paul Paray. Overture, Patrie (Bizet); Symphonic Fragment from La Redemption (Frank); In the Steppes of Central Asia (Borodin); Fifth Symphony (Bertelshoven). After the Concert, Press Review in French. 10.0 (approx.), Close Down.

STUTTART

MUHLACKER; 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12 Noon, Promenade Concert, relayed from the Schloss-Platz. 1.0 p.m., Gramophone Music. 1.15, Time and News. 1.30, Lortzing's Opera Music, on Gramophone Records. 2.0, Concert arranged by the Post Office. 2.30, Advanced English Lesson. 3.0 to 4.0, Interval. 4.0, Soprano Song Recital by Hedwig Cantz, Part I: Hugo Wolf: (a) Auch kleine Dinge können uns entzücken, (b) Wer rief dich denn? (c) Wenn du, mein Liebster, steigst zum Himmel auf, (d) Wie viele Zeit verlor ich, Part II: Max Reger: (a) Glückes genug, (b) Aoldnarfe, (c) Am Dorfsce, (d) Kindes Gebet, Part III: Othmar Schoeck: (a) Nachruin, (b) Stumme Liebe, (c) Mit einem gemalten Band. 4.30, See Frankfurt. 5.45, Time and News. 6.0, (from Freiburg), Talk. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.5, Orchestral Concert, conducted by Baden-Baden: Overture to Goldoni's Comedy, Le Baruffe Chiozzote (Simgaglia); Invitation to the Dance (Weber-Weingartner); L'Apprenti Sorcier (Dukas); Two Scottish Dances (Grainger); The Blue Danube (Joh. Strauss); Overture, The Bartered Bride (Smetana). 9.5, Reading. 9.25, Max von Schilling's Concert. The Württemberg Symphony Orchestra, conducted by Ferdinand Drost: Prelude to the Second Act of Inxwelder; Das Heulenied; Suite from Mona Lisa. 10.20, Time and News. 10.45, See Frankfurt. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—Transmissions irregular owing to fire. 6.0 p.m., News. 6.15, Operatic Concert: Extracts from Tannhäuser (Wagner), Faust (Gounod), Scheherazade (Ravel), and The Tales of Hoffmann (Offenbach). 6.30, Overture 1812 (Tchaikovsky) by the Symphony Orchestra. 6.45, Light Music. 7.0, Medical Talk: The Causes and Treatment of Sciatia. 7.15, News. 7.25, Commercial Prices. 7.30, Orchestral Music. 7.45, Operetta Music: Selection from The Gipsy Baron (Joh. Strauss); Le Coeur et la Main (Lecocq); and Suzanne (Paladille). 8.0, Accordion Solos. 8.15, Sound Film Music. 8.30, Concert of Saint-Saëns Music: Marche héroïque; Danse macabre; Aria from Samson and Delilah; Le Cygne; Selection from La Princesse jaune; Symphonic Poem, Le Ronet d'Orphée. 9.0, Popular Melodies. 9.15, Military Music. 9.30, Music by an Argentine Orchestra. 9.45, Opéra-Comique Melodies; Selection from Si j'étais roi (Adam); Don Quixote (Massenet), and L'Attaque du Moulin (Bruneau). 10.0, Operetta Music: Selection from Pagatini etta (Lehar); Elle est à vous (Yvain), and The Land of Smiles (Lehar). 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.30 to 12 Midnight, Programme in English by the I.B.C. Announcer, W. Brown-Constable. 11.30, Organ Recital: Sunshine Snie (Abraham); The Twilight Waltz (Dubin); Three little Words (Kalmar); Close your Eyes (Carter); I'm just wearing out my

Heart (Keyes); You are my Heart's Delight (Lehar); Will they love me up in Heaven? (Cuban Love Song (Stothart). 11.57, I.B.C. Goodnight Melody. 12 Midnight, News. 12.5 a.m. (Saturday), Music by a Viennese Orchestra. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 985 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.0 to 6.0 p.m., Concert of Chamber Music. 6.35, Giornale Radio and Agricultural and Dopolavoro Notes. 7.0, Time, Report of the Royal Geographical Society, and Gramophone Music. 7.20, Announcements in Different Languages. 7.40, Gramophone Music. 8.0, News and Weather. 8.15, Sponsored Musical Programme. 8.30, Symphony Concert, conducted by Rito Selva. 10.0, Concert of Variety Music. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in German. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—1.0 p.m., Time and News. 1.10, Symphonic Poem, Don Quixote (R. Strauss) on Gramophone Records. 2.0 to 3.0, Interval. 3.0, Time and News. 3.20, Talk: The Raphael Exhibition in the Albertina. 3.30, With Song and Music from Many Lands—Musical Play (Doll Niessner), by the Composer and a Small Children's Choir. 4.15, Music from Sound Films on Gramophone Records. 4.35, Talk for Women on Balzac and Frau von Hanska. 5.0, Talk on Caves. 5.20, Concert of Modern Austrian Choral Music by the Vienna Women's Chamber Choir and a Chamber Orchestra, conducted by Ernst Kanitz. Soloists: Josef Knapp (Baritone), Friedrich Wildgans (Clarinet) and Ada Goldschmid and Hugo Zeller (Pianoforte); Cantata for Women Soloists, Women's Choir, Baritone Soloist and Chamber Orchestra (Kanitz); Wohin entziehen? for Women's Choir, Clarinet, and Pianoforte (Pless); Songs for Women's Choir (Willner); (a) Ach wie flüchtig, (b) Altes Sprüchlein; Der Abend, for Women's Choir, Flute, Clarinet, and String Quartet (Kornauth). 5.55, Tourist Report. 6.10, Talk: Present Day Athletics. 6.25, Sports Notes. 6.35, Technical Talk. 7.0, Old Dance Music by the Louis Seidl Orchestra: Polonaise in A, Op. 40 (Chopin); Invitation to the Dance (Weber-Berlioz); Waltz, Doktrinen (E. Strauss); Minuet (Bocherini); Gavotte, Frauentritt from Der Glückseliger (Zizbicka); Cake Walk from Frühlingssitt (Jos. Strauss-Reiterer); Polka Mazurka, Frauenherz (Jos. Strauss); French Polka, Pflügel (Ziehrer); Carmen Quadrille (E. Strauss); Dance from Orpheus in the Underworld (Offenbach); Waltz, Promotionen (Joh. Strauss). 7.35, Time and News. 8.15, Topical Talk. 8.30, Recital by Moritz Rosenthal with the Vienna Symphony Orchestra. Conductor: Oswald Kabasta. 9.40, Report on the World Economic Conference in London. 10.0, News. 10.15, Programme to be announced.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 12.15 p.m., Gramophone Records. 12.25, Polish Press Review. 12.35, Gramophone Records. 1.0, Interval. 2.55, Radio Journal. 3.10, Announcements. 3.15, Gramophone Records. 3.25, Economic Notes. 3.35, Gramophone Records. 3.45, Aviation Report and Anti-Gas Drill. 3.50, Gramophone Records. 3.55, Naval and Colonial Report. 4.0, Light Music, relayed from Lwów. 788 kc/s, 381 metres. 5.0, Book Review. 5.15, Gramophone Records. 6.15, Talk. 6.35, Song Recital by Maria Bojar-Premienicka. Two Airs from Manni (Paderevski); Arias from: (a) Der Pacha (Mozart), (b) La Gioconda (Ponchielli), (c) The Force of Destiny (Verdi); Songs (Noskovski); (a) Chanson d'automne, (b) Le soir; (c) La dernière fleur (Marewski); Song (Grieg); Two Songs (Dziesinski). 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Topical Talk. 8.0, Concert by the Station Symphony Orchestra, Conductor: B. Wolfstad. Soloist: Sophie Adamska (Cello). Overture, Le carnaval romain (Berlioz); Cello Concerto (Sant-saëns); Symphonic Poem (Karłowicz); Symphonic Poem, Nevermore (Morawski); Selection from Pan Twardowski (Rozycki). In the interval, Radio Journal. 10.0, Dance Music from the Europe Restaurant, (Czechoslovak). In an interval at 10.35, Aviation, Weather Report and Police Notes.

ZURICH.—See Schweizerischer Landeseender.

SATURDAY

JUNE THE SEVENTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL "How's that, Umpire?" a revue.
LONDON Greenwich Night Pageant, relayed from the Royal Naval College.
MIDLAND REGIONAL Merry Concord Follies, from the Pavilion, Leamington Spa.
NORTH REGIONAL A relay from the Coliseum, Douglas, Isle of Man.
WEST REGIONAL Instrumental and vocal concert.
SCOTTISH REGIONAL Orchestral concert.
BELFAST Grand opera. Orchestral concert.

ABROAD

- BERLIN 7.0 p.m. A Radio Sequence on the Life of Frederick the Great, relayed by other German Stations.
BRESLAU 8.0 p.m. Opera: "Liselott," by Künneke.
BRUSSELS (No. 2) 5.30 p.m. Recital of Brahms' Sonatas.
RIGA 5.0 p.m. The Latvian Choral Festival.
ROME 8.45 p.m. Italian Operatic Programme.
VIENNA 8.0 p.m. Gala Concert by the Garrison Military Band.
WARSAW 9.30 p.m. Chopin Recital.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.15 p.m., Gramophone Concert. In the interval at 2.0, News. 2.45, Programme arranged by the Post Office with Gramophone Records. 3.10, Agricultural Prices. 3.30, Talk: Fostering German Interests in the Lost Provinces. 3.50, Book Review. 4.10, Weekly Film Review. 4.30, Concert by the Silesian Symphony Orchestra, conducted by Gerhard Ewald. 4.50, Soloist, Bruno Jagielski (Tenor); Suite from King Christian II (Sibelius); Music by Grieg: (a) An das Vaterland, (b) Letzter Frühling, (c) Ein Schwam, (d) Lichte Nacht, (e) Auf der Reise zur Heimat, (f) Symphonie Danes. In the interval, 5.0 to 5.10, Reading. 5.40, Programme Announcements. 5.50, Reading (Paul Wegener). 6.10, Programme to be announced. 6.30, Gramophone Music. 6.50, News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Liselott—Opera (Künneke). 10.0, Time and News. 10.30, Dance Music from Berlin (Witzleben). In an interval, Talk: What People are Saying in Berlin. 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—2.40 p.m., Concert by the Station Orchestra, conducted by Janota: March from Sigurd Jorsalfar (Grieg); Overture, A Midsummer Night's Dream (Mendelssohn); Ballet Suite from Sleeping Beauty (Tchaikovsky); Czech Humoresque, Op. 173 (Roob); Ballet Music (Neibal); Slav Dance, No. 5 (Dvorak). 5.0, Readings. 5.10, Gramophone Records. 5.35, Talk: Modern English Society. 5.45, Gramophone Records. 6.0, Theatre and Film Review. 6.15, See Prague. 6.25, German Transmission, News and Concert by the German Vocal Union. 7.0, See Prague. 7.25, Military Band Concert. 8.15, See Prague. 10.15, See Moravská-Ostrava. 11.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R.; 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans. Soloist, Mme. Myriam d'Orion (Songs). Overture, Tancred (Rossini); Suite, Scènes alsaciennes (Massenet); Serenade (Pierné); Songs: (a) Like to the Danask Rose (Elgar), (b) Rondel (Elgar), (c) Serenade from Frasquita (Lehar); Potpourri, Portissimo (Kálmán); Cello Solo: Elegy (Massenet); Dance from Tom Jones (German). 1.0 p.m., Le Journal Parlé. 1.10, Popular Concert on Gramophone Records. 4.45, Talk: The Belgian Mechanical Construction Industry. 5.0, Dance Music, relayed from the St. Sauveur Dance Hall. 6.0, Talk: Agriculture as a Career in Belgium. 6.15, Gramophone Music: Souvenir (Drdla); Medieval Serenade (Costa); The Clock and

the Dresden Figures (Ketelbey); Ay, ay, ay (Freire). 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans: March from The Three Musketeers (Riesenefeld); Suite, Woodland Sketches (Fletoher); Salut d'amour (Elgar); Pianoforte Solos: (a) Valse caprice (Newland), (b) Pianoflage (Bargy); Selection from The Barber of Seville (Rossini); Ukrainian Melody (Akinenko). 7.15, Talk: Accidents at Work and Occupational Diseases. 7.30, Le Journal Parlé. 8.0, Gramophone Music. 8.15, German—Radio Play (Pierre Huberman). 8.45, Gramophone Music. 9.0 p.m., Song Recital by Mlle. Bonavia. 9.30, Talk on Leon Chenoy, a Belgian Writer. 9.45, Gramophone Music. 10.0, Le Journal Parlé. 10.10, Jazz Music by Robert de Kers and his Cabaret Kings, relayed from the Century Hotel, Antwerp.

BRUSSELS (No. 2)

N.I.R., 878 kc/s, 338.2 metres; 15 kW.—Programme in Flemish.—12 Noon, Gramophone Concert of Variety Music. 1.0 p.m., Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, La belle Hélène (Offenbach); Waltz, Très jolie (Waldteufel); Ton doux sourire (Ray); Songs: (a) Aria from Figaro (Mozart), (b) Après un rêve (Fauré), (c) Mattinata (Leoncavallo); Selection from Cavalleria rusticana (Mascagni); Waltz (Romberg); Fox trot, Punch and Judy (Black). 4.45, Reading. 5.0, Concert by the Station Orchestra, conducted by Charles Walpot: Homage March (Gibson); Invitation to the Waltz (Weber); Selection from Lilac Time (Schubert-Berte); Réverie, La voix des cloches (Luigini); Ballet Music from The Nutcracker Suite (Tchaikovsky). 6.0, Gramophone Records: Selection from Stand up and Sing (Furber-Ellis-Churrig); Selection from L'Africaine (Meyerbeer). 6.15, Reading. 6.30, Recital of Brahms Sonatas by Mme. Swaels-Wauters and Charles Scharrès. 7.15, W. Putman reads from his own Works. 7.30, Agricultural and Gardening Talk. 8.0, Concert by the Station Orchestra, conducted by Charles Walpot. Soloists: Mme. Bruylants and M. Vereamer (Songs); Egyptian March (Strauss); Waltz, Gold and Silver (Lehar); Overture, The Nuremberg Doll (Adam); Songs: In the Harbour of Port Said (Armando); Songs; March of the Tin Soldiers (Jessel); Selection from The Merry Widow (Lehar); Songs; Potpourri, Extravaganza (Morena); Songs; Potpourri of Popular Songs. In an interval at 8.45, Reading. 10.0, Journal Parlé. 10.10, Dance Music, relayed from the St. Sauveur Palais de Danse. 11.30, Dance Music on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Roumanian Music by the Sibiceano Orchestra. In an interval at 6.0, Radio

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Stock Exchange, Weather, and Gramophone Music. 6.0, Gramophone Music. 6.45, News. 7.0, Talk: Tobacco Growing in Ireland. 7.15, Gaelic Talk by Seamus O'Duinn. 7.30, Time Signal. 7.32, Liam Breathnach (Pipes). 7.45, Anglo-Irish Songs by Moore, Lover and Stanford. 7.55, Irish Music for Orchestra. 8.5, songs (contd.). 8.15, Lecture Recital by Grace O'Brien. 8.45, Orchestral Music. 9.0, Tri Music. 9.30, Talk: Fruit Growing as an Irish Industry. 9.45, Sponsored Programme. 10.45, Time, News, and Close Down.

BARCELONA

EADJ; 860 kc/s, 348.8 metres; 8 kW.—6.30 p.m., Programme for Children. 8.0, Request Gramophone Records. 8.30, Exchange and Catalan Grammar Lesson. 9.0, Gramophone Music. 10.0, Chimes from the Cathedral, Weather, Exchange, and Market Prices. 10.5, Concert by the Station Orchestra. 11.15, Recitation of Poems. 11.25, Choral Concert. 12 Midnight, News, and Dance Music on Gramophone Records. 1.0 a.m. (Sunday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Announcements. 8.20, Giornale Radio. 8.30, Time and Announcements. 8.35, Tosca—Opera in Three Acts (Puccini) on Gramophone Records. In the intervals, Talk and Notes. After the Opera, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.55 p.m., Time Signal and Programme Announcements. 7.0, National Songs. 7.30, Violin Sonata (Franck) by Milan Dimitrijevic. 8.0, Radio Play. 8.30, Concert by the Station Orchestra. 9.30, News. 9.50, Talk. 10.30, Cigány Band Concert, relayed from the Rumunski Kralj Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Records of the Weitschach Military Band. 3.0, Programme for Children. 3.30, Weather and Exchange. 3.45, Reading (Hermann Eris Busse). 4.0, See Hamburg. 5.0, Review of the Week. 5.35, String Quartet in A (Heinrich Hofer). 6.0, Poetry Reading. 6.5, Student Songs—Recital by Johannes Maximilian. Alt Heidelberg, du feine (Zimmermann); Der war der Herr von Bodenstein (Christoph Schmeser); In jedem vollen Glase Wein (Otto Lob); Die Lore am Tore (Folk Melody); Die Lindenwirtin (Franz Abt); German Student Hymns (Otto Lob). 6.30, Talk: The Construction of a United Italy. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, An Epigram. 8.5 (approx.), New German Dance Music, by the Eugen Sountag Band. 8.45, See Langenberg. 10.0, News, followed by Dialogue; Rowing as a Competitive Sport or as a Pastime. 10.45, Weather. 11.0, See Munich. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.0 p.m., Concert of Light Music by the Berlin Concert Society, conducted by Clemens Schmalstieg: Overture, Die Geschöpfe des Prometheus (Beethoven); Romantic Ballet Suite, Op. 46 (A. Reissner); Variations on a Children's Song (Wilmann). 4.45, Sports Notes. 4.55, Concert (contd.); Waltz, Verlorenes Glück (Schmalstieg); Antium Moods (Headam-Morley); Selection from Carmen (Bizet); Overture, William Tell (Rossini). 5.30, Radio Report of the Opening of the Friedrichshagen Homeland Week. 6.0, Recital of Songs in North German Dialect. 6.20, Talk: Between Town and Country—From Theatre Stall to Cow Stall. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations: The People and their King—A Radio Sequence on the Life of Frederick the Great (Eberhard Wolfgang Müller). 8.10, Amusing Stories. 8.20, Dur und Moll im ewigen Berlin—a Radio Sequence of the City's Daily Life (Roellinghoff). 10.0, News. 10.15 (approx.), Dance Music from the Europa Pavilion. In the interval from 11.0 to 11.5, Talk: What they are talking about in Berlin. 1.0 a.m. (Sunday), Close Down.

BERNE.—See Schweizerischer Landessender.

BERGMUNSTER. -- See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

996 kc/s, 304 metres; 13 kW.—8.0 p.m., News. 8.5, English Lesson. 8.20, News. 8.30, A Radio Fantasy.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.5 p.m., Programme for Children. 6.55, Talk for Housewives. 7.0, See Prague. 7.25, See Brno. 8.15, See Prague. 10.15, See Moravská-Ostrava. 11.30 (approx.), Close Down.

BREMEN.—See Hamburg.

Journal. 7.0, Educational Talks. In an interval at 7.20, Gramophone Music. 8.0, Concert by the Kreuzer Schrammel Quartet: Dornbacher Heltz (H. Schrammel); Viennese Song from Lilac Time (Schubert-Berte); A kleine Dreherei (R. Stolz); Und der Himmel hängt voller Geigen (Fall); Das muss ein Stück vom Himmel sein (Abraham); S'wird schöne Maderluge'n, und . . . (L. Gruber); Overture, The Caliph of Bagdad (Boieldieu); Nocturne from La Navarraise (Massenet); In the Steppes of Central Asia (Borodin); Malaguena (Moskovsky); Rhapsody in Blue for Pianoforte (Gershwin). In an interval at 8.30, Talk. 9.45, Radio Journal. 10.0, Light Music, relayed from a Restaurant.

BUDAPEST

545 kc/s, 550 metres; 18.5 kW.—Programme also relayed on 840 metres from 6.40 p.m. (approx.), till Close Down.—5.30 p.m., Choral Concert. 6.10, The Letter Box. 6.40, Pianoforte Recital of Jazz Music. Potpourri (Fejer); Kitten on the Keys (Contry); Etude (Fejer); Paraphrase on The Cuban Love Song; Variations on O du lieber Augustin (Fall); Rhapsody in Blue (Gershwin). 7.20, Exchange. 7.30, Variety Concert. 8.45, Radio Report. 9.15, Concert by the Opera House Orchestra, conducted by Johann Ferencsik. Soloists: Elizabeth Sandor and Koloman Pataky. 10.0, News, followed by Cigány Concert from the Café Pannonia.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time Signal and Chimes from the Town Hall. 12.1 p.m., Music by the Bendix String Ensemble, relayed from the Wivex Restaurant. 2.0 to 2.30, Interval. 2.30, Light Gramophone Music. 3.0, Programme for Children. 3.30, Concert by the Radio Orchestra, conducted by Emil Reesen. Soloist: Gertraud Vernernielsen (Cello). Overture, Czar and Carpenter (Lortzing); Waltz, Manola (Waldteufel); Selection from A Masked Ball (Verdi); Sarabande (Chausson); Polonaise (Glazunov); Cello Solos: (a) Berceuse de Jocelyn (Godard), (b) Minuet (Valentin), (c) Elegy (Massenet), (d) Minuet No. 2 (Popper), (e) Scherzo (van Goens); Overture, Prinz Methusalem (Joh. Strauss); Funeral March of a Marionette (Gounod); Persian Dance (Guiraud); Selection from A Life for the Tsar (Glinka); Allegro di bravura and Tarantelle from Gipsy Suite (German). 5.35, Market Prices. 5.50, Talk: Religious Instruction in Literature. 6.20, French Lesson. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.30, Concert by Two Students' Choirs. Conductors: Johan Ilye-Kundsen and Josef Hedar; relayed from the Tivoli Concert Hall. 8.30, Talk. 9.0, Concert by the Radio Orchestra, conducted by Lamy Gröndahl. Overture, Masaniello (Auber); Waltz, Krölls Balklänge (Lambye); Extracts from Peer Gynt (Grieg); Italian Caprice (Tchaikovsky). 9.30, Microphone Report. 10.30, News. 10.45, Dance Music from the Lodberg Restaurant. 12 Midnight, Time and Chimes from the Town Hall.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.10 p.m., Topical Talk. 7.25, Miscellaneous Items and News. 7.35, Programme Announcements. 7.40, See Warsaw. 10.40, Light Music and Dance Music, relayed from the Pavilion Restaurant. In an interval at 11.30, News for Members of the Polish Polar Expedition, relayed from Lwow, 788 kc/s (381 metres). 12 Midnight, Fanfare from the Tower of St. Mary's Church.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Ronald and B. McNabb. 4.30, Concert for Tambridge Wells and Isle of Thanet Listeners: Keyboard Capers (Steele); Songs: (a) Peg Leg Jack (Robison), (b) I wish I knew a bigger Word than love (Pola); Shower of Notes (Steele); Why waste your Tears (Hullbert); Songs: (a) Have you ever been lonely? (Brown), (b) His old Cornet (Robison); Jack o' Clubs (Steele); Where are you? Songs: (a) The Desert Song (Romberg), (b) Nobody but you (Edwards); Slippery Fingers (Steele). 5.15, Concert for Dover and Folkestone Listeners: Wedding of the Birds; Song Medley: (a) Up in the Clouds, (b) Do, do, do, (c) I want to be happy; Duna Until; It seems to me; Waltz, Donauwelta; Mighty lak a rose; When the Dew is falling; Lady Chloë; Some of these days; Wiener Praterleben; Ye Banks and Braes; Barefoot Trail; No, no, Nannette. 6.0 to 11.0, Programme in French. 11.0 till Close Down, Programme in English by the I.B.C. 11.0, Gramophone Concert: Selection from Love me To-night; That Man of my Dreams; Another little Drink from The Bing Boys (Grey); Come along with me (Robison); In charge of a Bookstall; I stopped, I looked, and I listened, from The Bing Boys (Grey); Down among the sheltering Palms; Selection, The Crooner. 11.30, Mandoline Band Concert; Loin du Bal (Gillet); In Old Seville (Ege and Rosen); Song:

JUNE 17th **SATURDAY** continued

Tarantella Napolitana, La Danza (Rossini); La Czarine (Ganne); Capriccio Mazurka (Arienzo); Neapolitan Folk Song: Santa Lucia; Napolitana (Hay and Meisel); Mandoline (Thome). 12 Midnight, Club Concert for Swansea Listeners; Strauss Potpourri. 12.5 a.m. (Sunday), I.B.C. Special Late News; Concert (cont'd.). Soprano Solo: Who is Sylvia? (Schubert); Bass Solo: In Cellar Cool (Traditional); Monastery Bells (Wely); Chorus: Land of my Fathers; Soprano Solo: Ave Maria (Gounod); My Old Kentucky Home (Foster); Pianoforte Solo: Selection from Words and Music (Coward); Selection from The Maid of the Mountains (Fraser-Simson); Whistling Solo: In a Clock Store (Orth); Stonecracker John (Coates); Caro mio ben (Giordano); Songs of Wales. 1.0, Variety Music: A Cottage for Sale; Yodelling Trio: Show Boat Blues; Pianoforte Solo: Everyone says I love you; Child Impersonations: Drawing on a Slate; Song: Burlington Bertie from Bow; Yodelling Duet: Prancein', dancein'; Monologue: Lino is Linoelum; Until we meet again, Sweetheart. 1.30, Vocal and Instrumental Concert; Guitar Solo: Old Folks at Home. Brother, can you spare a Dime? (Harburg); Under the spell of your Kiss (Jerome); Guitar Solo: Hawaiian Sweetheart of Mine (Haugheny); Banjo Solo: In the Moonlight (McHugh-Kress); Here in my Heart (Campbell); Sunshine, won't you shine for me (Shapiro); Guitar Solo: Picking my way (Lang-Kress). 2.0, Dance Music by the Dicolians; You're my everything (Dixon); Was that the Human thing to do? (Young); Moonlight, the Danube, and you (Mannheimer); An Evening in Caroline (Donaldson); Mad about the Boy (Coward); Three little Times (Sarony); The Younger Generation (Coward); I don't know why (Ahler); If you were only mine (Leman); Bahama Mama (Gilbert); My Silent Love (Suesse); Cabin in the Cotton (Parish); For you, just you, my Baby (Connelly); Isn't it romantic? (Rodgers); Night shall be filled with Music (Collins); Love me Tonight (Rodgers). 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; and Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—3.30 p.m., Programme for Children. 4.25, Economic Notes. 4.35, See Munich. 5.45, Economic Notes. 6.0, Book Review. 6.25, Time and News. 6.30, Weekly Review. 6.50, Topical Talk. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Variety Concert. 10.15, Time and News. 11.0, See Munich. 12 Midnight, Close Down.

HAMBURG

Call ha. (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 268.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—4.0 p.m., Concert by the Station Choir and Orchestra, conducted by Adolf Secker. Overture, Der Freischütz (Weber); Selection from the Suite, Karelia (Sibelius); (a) Intermezzo. (b) Ballade, (c) Alla marcia; Siegfried Idyll (Wagner). Choir Ballad, Der Feuerreiter (Wolf); Scherzo capriccioso (Scheffler). 5.0, (from Kiel), Talk: The Open-Air Plays in Marienburg. 5.15, Talk: Seven Hundred Years of the Wierhaus Monastery. 5.30 (from Bremen), Recital of German Folk Songs with Introductory Talk. Wiederhall; Frau Nachtigall; Wechselsang; Künzlein; Traum; Wie kommt's dass du so traurig bist?; Der Abschied im Korb. 6.0 (from Bremen), Variety Programme. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, See Langenberg. 10.0, Time and News. 10.20, Topical Talk. 10.30, Programme from Berlin (Witzleben).

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—11.30 a.m., Concert by the Königsberg Opera House Orchestra, conducted by Karl Hrbetz. March, Kieler Woche (Kellner); Overture, Die kensche Barbara (Nedbal); Waltz from Das Fürstentum (Lehár); Ballet Suite, Faun and Elfenreigen (Kark); March (Hrbetz); Overture, on Johann Strauss Themes, Frühlingsluft (Reiterer); Waltz, Jubiläumsklänge (Müller); Selection from (Rigiri (Lincke); In einem kleinen Café in Hernald (Leopoldi); Gavotte, Die Lautenschlägerin (Komzak); Storchschnebel-Galopp (Fahrbach); Egerländer-Marsch (Kopetzky). 1.5 p.m., Gramophone Music. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office with Gramophone Music. 3.0, Agricultural Prices and Exchange. 3.30

(from Danzig), Handwork for Children. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Part I—Johann Strauss Music. Overture, Indigo and die vierzig Räuber; Polka-Mazurka, Die Wirtstaugerin; Gallop, Leichtes Blut; Waltz, Singedichte; Selection from Prince Methusalem. Part II—Lehár Music. Overture, Der Göttergatte. Violin Solo: Magyardalok. Serenade; Waltz, Gold and Silver; selection from Gipsy Love. In the interval at 4.50 (approx.), Road Report. 5.40, Reading in Dialect. 6.5, Programme Announcements. 6.15, Agricultural Prices. 6.25, Talk: Democracy and Dictatorship. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, News. 8.20, Programme from Berlin (Witzleben). 10.0, Weather and News. 10.15 (approx.) Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). 11.40 a.m. till Close Down. Programme of the Workers' Radio Society (V.A.R.A.). 11.40, Concert by the Little V.A.R.A. Orchestra, conducted by Hugo de Groot. 12.10 p.m., Organ Recital by Johan Jong; Overture, Masaniello (Auber); Selection from Gipsy Love (Lehár); March (Ganne); Potpourri (Feldmann). 12.40, Gramophone Music. 1.55, Gramophone Music. 2.30, Talk. 2.50, Concert by De Notenkrakers, conducted by D. Wims. 4.20, Literary Talk. 4.40, Concert by De Fliedersluifers, conducted by J. M. v. d. Horst. 5.40, Programme for Children. 6.40, Organ Solo: Around the World in Thirty Minutes (Steyn). 7.10, Talk. 7.35, S.O.S. Messages. 7.40, Concert by the V.A.R.A. Orchestra, conducted by Hugo de Groot; Overture, Maximilian Robespierre (Litolff); Selection from Mignon (Thomas); Plnie dor (Waldteufel); Frisch durchs Leben (Strauss); Polka (Millöcker); Die Reise durch Europa (Conradi). 8.25, Songs to the Lute by P. Holz. 8.40, Concert (cont'd.): Suite, Four Ways (Coates); Berenice (Kunitz); By the Blue Waters of Minnetonka (Lionearne); Piece (Carena); Overture, Taucerdi (Rossini); Selection from Fedora (Giordano); Selection from Rigoletto (Verdi); Song; Selection from Nakhris Hochzeit (Lincke); Selection from Mariska (Lehár); Sullinata (Leoncavallo); The Lost Chord (Sullivan); Selection from Teufelsreiter (Kálmán). 9.10, Variety Programme. 10.40 (approx.), Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW. 11.55 a.m. till Close Down. Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Orchestra, conducted by M. van 't Woud. 1.40, Programme for Young People. 2.10, Programme for Children. 3.40, Concert by the Harlem Salon Orchestra, conducted by J. Stoffor; March, Hoeh Heidecksberg (Herzer); Overture, Martha (Flotow); Selection from Tosca (Puccini). 4.10, Sports Notes. 5.40, Gramophone Music. 5.55, Talk in Esperanto. 5.10, Concert (cont'd.): Herzen (Lincke); Waltz, Winterstürme (Fuefick); Piece (Kling); The Week-end Girl (Siede); Musikalische Seifenblasen (Urbaeh); Hungarian Dances Nos. 5 and 6 (Brahms). 6.0, Journalistic Review. 6.20, Concert (cont'd.). 6.40, Police Notes. 6.55, Gardening Talk. 7.15, Gramophone Music. 7.25, Talk. 7.40, Variety Concert by the K.R.O. Boys' conducted by P. Lustenhouwer. Soloists: J. Mossel, Jan van den Bergh and Kees van der Schie (Songs). 10.40, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.25 p.m., Announcements and Gramophone Music. 7.40, See Warsaw. 11.35, Dance Music.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—12 Noon, Time and News. 7.30 p.m., Rifle Club Report. 8.0, Time and News. 8.40, Concert: Selection from Cavalleria rusticana (Mascagni); Descriptive Pieces (Jessel); Gavotte (Lelner). 9.10, Talk. 9.30, Programme to be announced. 9.50, Sports Report. 10.0, Dance Music. 11.0 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Sports Talk. 6.40, Accordion Recital by Kaarlo Helander. 7.0, Talk. 7.20, Concert by the Station Orchestra. In the interval at 7.55, Recitation. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music relayed from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert by the Station Orchestra, conducted by

Josef Breuer. Soloist: August Schreiber (Cello). Overture, Libusa (Smetana); Selection from Ariadne auf Naxos (R. Strauss); Cello Solos: (a) Romance in E Flat (Becker), (b) Elegy (van Goens), (c) Minnet (Becker); Witches' Dance (MacDowell); Hungarian Rhapsody No. 1 (Liszt). 12.50 p.m., Weather, Time and News. 1.0, Concert by the Station Orchestra, conducted by Kálmán, Soloist: Gerta Schmitz (Soprano). Grand March (Haydn); Soprano Solos: (a) Morgentau (Grieg), (b) Ein Schwan (Grieg), (c) Der Nussbaum (Schumann). (d) Die Zigeunerin (Wolf); Overture, The Secret Marriage (Cimarosa); Norwegian Rhapsody No. 3 (Svendson); Scenes from Der Rosenkavalier (R. Strauss); Straumirchen (Felber); Selection from André Chénier (Giordano); Ballet Waltz from Geheimnis um Annette (Schneiderhan). After the Concert, Announcements. 2.30, Concert. 3.0, Programme for Children. 3.30, Economic Notes and Time—Towns on the Erft. 3.50, Talk: Rumbles in the Rhineland and Westphalia. 4.15, Talk on Amateur Photography. 4.30, Concert by a Male Voice Choir and the Rheingold Quartet; Soloist: Willy Stech (Pianoforte); Three Choral Pieces; Pianoforte Solos (Brahms): (a) Ballade in B Minor, (b) Intermezzo in B Flat Minor, (c) Ballad in G Minor; Two Choral Pieces; Rhapsody (Brahms); Three Pieces; Two Impromptus for Pianoforte (Schubert). 5.50, Talk on Taxation. 6.0, Reading. 6.10, Reading of Anecdotes (Johannes Pauli). 6.20, English Lesson. 6.45, Weather, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Announcements. 8.5, Concert from Vienna. 8.45, Lachen im Hintergrund—Humorous Sketch (Paul Schaad), with Incidental Music by Leo Justimus Kauffmann. 10.5, Talk in connection with Nordic Week—German Script.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Variety Music on Gramophone Records. 1.0 p.m., News. 1.15, Light Music on Gramophone Records. In an interval at 1.45, Wireless Notes. 2.0, News. 2.10, Wireless Notes. 2.20, Light Music on Gramophone Records. 2.45, Programme for Children. 3.30, Review of Periodicals. 3.45, Economic Notes. 4.0, Concert, relayed from Berlin (Witzleben). In an interval at 5.0, Talk on Music. 6.0, German for Germans. 6.20, The Modern Dictionary. 6.30, Harp and Cello Recital by Maria Stenz-Smeindl and Emil Gmeindl. Harp and Cello (a) Prelude and Sarabande (Corcelli), (b) Minuet (Beethoven); Harp Solo: Sarabande (Händel); Harp and Cello: Gavotte (Händel); Harp Solo: Waltz (Gillmann); Harp and Cello: (a) German Dance (Mozart), (b) Minnet (Becker). 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.20, Topical Talk. 8.30, Variety Programme from Plauen. 10.5, News. 10.10 (approx.), Dance Music Relay. 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.6 p.m., Concert by the Station Orchestra. 7.0, Educational Talk. 7.30, Talk. 8.0, Music for Physical Exercises. 8.30, Choral Concert. 9.15, Weather and News. 9.30, Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—7.0 p.m., Gramophone Music. 7.40, Weather. 7.45, Pianoforte Concerto in G Minor (Sant-Saens), on Gramophone Records. 8.30, Talk. 8.50, News in French. 9.15, Programme to be announced. 9.45, News in German. 10.15, Gramophone Music. In the intervals, Announcements.

LWOW

788 kc/s, 381 metres; 16 kW.—6.15 to 7.20, See Warsaw. 7.20, Miscellaneous Items. 7.40 to 10.0, See Warsaw. 10.0, Literary Programme. 10.20, A Gramophone Record. 10.25 to 10.40, See Warsaw. 10.40, Concert of Mandoline Music. In the interval, News for Members of the Polish Polar Expedition. 12 Midnight (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., News. 8.30, Operetta Programme relayed from Paris (Ecole Supérieure). 671 kc/s (447.1 metres). After the Programme, News.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—7.0 to 9.0 p.m., Programme for Listeners in the Canary Islands, Guinea and America. 7.0, Concert of Popular Music. 8.15, Talk. 8.30, Light Music. 11.15 (approx.), Programme from Madrid (EAJ 7). 1.0 a.m. (Sunday), Close Down.

MADRID

UNION RAD'U, CII EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes. Exchange Radio Journal, Medical Talk and Request

Gramophone Records. 9.15, News. 9.30 to 10.30, Interval. 10.30, Linguaphone English Lesson. 11.0, Chimes and Time Signal. 11.5 (approx.), La Bohème—Opera (Puccini) on Gramophone Records. In the interval at 12.45 a.m. (Sunday), News Bulletin. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., Concert of Popular Music. 7.0, See Prague. 7.25, See Brno. 8.15, See Prague. 10.15, Concert of Light Music by the Station Orchestra, conducted by J. Plichta. 11.30 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

553 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.35 p.m., Orchestral Concert. Soloist: Johanna Egli (Contralto); Overture, Egmont (Beethoven); Three Sacred Songs (Neubek); Symphonic Poem, Tod und Verklärung (R. Strauss); Ballet Music from Rosamund (Schubert); Waltz, Die Werber (Lanner). 5.40, Horst Wessel—Radio Play for Children (Hans, Ewers and Paul Beyer). 6.25 (from Nürnberg), Armin Knab Song Recital by a Nürnberg Boy's Choir. 6.45, Wireless Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Song Recital. 8.30, Variety Concert. 9.45, Dance Music. 10.20, Time and News. 11.0, Serenade, conducted by Oscar Wolff. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 80 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.30 p.m., Gramophone Music. 5.15, Programme for Children. 6.15, Concert of Norwegian Music. 6.45, Talk on Economics. 7.0, Advertising Notes. 7.15, Weather. 7.30, Talk. 8.0, Time Signal. 8.1, Concert by the Station Orchestra, conducted by Hugo Kramm. Wedding Day on Trolldhaugen (Grieg); Potpourri, Offenbachiana (Conradi); Intermezzo from Cavalleria rusticana (Mascagni); Melody (Merikanto); Ti stille i fugle (Reidarson); Prelude for Four Violins (Haastrand); Plaisir d'amour (Martini); Selection from The Bayadere (Kálmán); The Phantom Brigade (Myddleton). 9.0, Talk and Reading by Jørgen Moe. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Half-an-Hour of Fantasy by Pitt and Pott. 10.45, Dance Music on Gramophone Records.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Doppolavoro Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 8.20, Sports Notes and Gramophone Music. In the interval at 8.30, Time Signal and Announcements. 8.45, Madame di Tebe—Operetta in Three Acts (Lombardo). In the intervals: Book Review and Announcements. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals)). 6.45 p.m., Talk on Music. 7.0, Le Journal Parlé. 8.30, L'Aventurière—Play in Four Acts (Emile Augier). 10.0 (approx.), Close Down.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW. 6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd.). 7.45, Gramophone Music. 8.0, Press Review and Weather. 12 Noon, Concert by the Radio Paris Orchestra: Welsh Memories (Sullivan); Dansas fantastiques (Turina); Nuits de Buenos-Ayres (Zoubalov); Scottish Memories (Sullivan); Caprice viennois (Kreisler); Russian Mazurka (Glinka); Selection from Das Nachtlager in Granada (Krentzer); Chanson georgienne (Rachmaninov); Moorish Rhapsody (Canaro). In the intervals at 1.0 p.m., Exchange and News, at 1.30, Exchange. 2.0, Exchange. 3.0, Programme for Children. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.30, Concert by the Radio Paris Orchestra. 7.0, Talk on Science. 7.20, Dance Music by the Radio Paris Orchestra. 7.45, Review of the Latin Press. 8.0, Song Programme arranged by Dominique Bonnaud. In the intervals at 8.30, News and Weather, at 8.40, Review by Jean Rieux, at 8.45, Sports Report, and at 9.15, Press Review and News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Radio Debuts. 7.45, Riggs and Moke. 8.0, Radio Troubadours, from New York. 8.30, Wealth of Harmony, from

JUNE 17th

SATURDAY

continued

New York. 8.55, Baseball Scores. 9.0, Mitchell Schuster Tugodahl Orchestra. from New York. 9.30, Concert Favorites, from New York. 9.55, Baseball Scores. 10.0, The United States Government in Pittsburgh—Behind the Scenes in the Railway Mail Service by M. E. Evans. 10.15, Hotel Sherman Orchestra, from New York. 10.30, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie, from New York. 11.0, Time Signal and Hotel Lexington Orchestra, from New York. 11.15, Weather Report. 11.16, Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, A Recreo by Bill and Alex. 11.45, Jack Pettis and his Orchestra. 11.59, Time Signal. 12 Midnight, American Tax Payers' League, from New York. 12.15 a.m. (Sunday), Al Mitchell's Orchestra with Baritone Solos by Everett Marshall from New York. 12.30, Songs of Melody. 12.45 to 3.0, New York Relay. 12.45, Irene Bordani and Emil Coleman. 1.0, Joint Commission on Emergency in Education. 1.15, The Leaders. 1.30, Kalltanmeyers Kindergarten. 2.0, Gilbert and Sullivan Goms, from New York. 3.0, Time Signal and Programme to be announced.

PORSGRUND. See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—6.35 p.m., Trio for Piano, Violin and Cello (Beethoven). 7.0, Recital of Songs by Poznan Composers. 7.20, Miscellaneous Items and News. 7.35, Theatre Notes and Programme Announcements. 7.40, See Warsaw. 7.58, Time Signal. 8.0, See Warsaw. 10.0, Time Signal, Sports and Police Notes. 10.15, Dance Music relayed from the Café Esplanade. 11.50 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 to 4.0 p.m., See Brno. 5.45, Talk. 5.55, Talk on Commerce. 6.5, Agricultural Report. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Dr. Merker and R. Lindenbaum read from their own Works. 7.0, Chimes from the St. Ludmila Church and News. 7.25, See Brno. 8.15, Variety Programme. 10.0, Time, News, Press Review and Sports Notes. 10.15, See Moravska-Ostrava. 11.30 (approx.), Close Down.

RABAT

MOROCCO, 721.1 kc/s, 416 metres; 6 kW.—5.0 p.m., Gramophone Music. 6.0 to 8.0, No Transmission. 8.0, Arab Programme—Concert of Arab Music. 8.45, News. 9.0, Concert: Selection from Miss Dollar (Messager-Moreau); Song (Tagson-Dangry); Selection from Le Violoncelle (Offenbach-Gauvain); Song (Bixio); Selection from Un bon gargon (Yvain-Salabert); Song, Quatre mots (Erwin); Selection (Szule-Salabert). 10.0, Gramophone Music.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 15 kW.; and Geneva, 395 kc/s, 760 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News. 12.40 (from Geneva), Gramophone Music. 1.0 (from Geneva), Financial Notes. 1.10 (from Geneva), Gramophone Music. 2.0 to 3.28, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Lausanne), Orchestral Concert. 5.30 to 7.0, No Transmission. 7.0 (from Geneva), Talk. 7.30 (from Geneva), A Radio Interview. 8.0, See Vienna. 9.50, News. 10.0 (from Geneva), Talk: The Work of the League of Nations. 10.30 (from Lausanne), Dance Music. 11.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—5.0 to 9.0 p.m., The Latvian Choral Festival, relayed from the Esplanade, Chorus Masters: Teodoris Reiters, Teodoris Kalnins and Emīlis Mehigišis. 5.0, The Opening Ceremony, followed by Songs by the Chorus and Soloists. In the intervals at 6.0, Talk on the Festival and at 7.20, News. 9.0, Weather. 9.5, Concert of Sacred Music by Latvian Composers, relayed from the Church of Santa Mara. 10.0, Dance Music. 11.0, Close Down.

RJUKAN. See Oslo.

ROME

Call 1R0, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2R0, 11,810, kc/s, 25.4 metres.—1.0 to 2.15 p.m., Orchestral Concert. Ernestina (Connolly); Fior di passione (Selsis); Two Indian Dances (Skilton); Melody (di Piramo); Billio Iuzano (Ferraris); Melody (Petralia); Neveia (Pick-Mangiagalli); Settanta sette allodole edun marito (Cusina); Mamma (Stransky); Fanny (Ferrario). 4.30, Children's Radio Review. 4.45, Report of the Royal Geographical Society and Giornale Radio. 5.15, Exchange and Weather Report. 5.30 to 6.15, Orchestral Concert. Soloist:

Adriana L'Abbate (Pinnoforte). Adalatevi con me (Bergamini); La perla rossa (Ranzato); Selection from Fedora (Giordano); Piccola (Scrobar); Concert Etude (Mattiucci); Mallorca (Albini); Pianoforte Solo: Fantastic Dance (Paderewski); Melody (Dostal). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopplavoro Notes. 7.0, Tourist Report. 7.10, Lesson in Morse. 7.20, Announcements in Different Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Gramophone Music. 8.30, Giornale Radio and Sports Notes. 8.45, Italian Operatic Programme. Part I: La voglia—Musical Play in One Act (Arrigo Pedrollo). Part II: Il finto Arlecchino—Musical Comedy in One Act (G. Malipiero). Part III: L'ospite inatteso—Musical Comedy in One Act (Pick-Mangiagalli); Giornale Radio after the Programme.

SALZBURG. See Vienna.

SCHENECTADY

(WCY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—12.45 a.m. (Sunday), Stock Reports. 1.0 to 4.0, New York Relay. 1.0, Soloist Programme. 1.30, The Economic World To-day. 2.0, Band of Famous Brands. 2.15, Zora Layman and her Debonairs. 2.30, K—7, Secret Service Spy Story. 3.0, B. A. Rolfe and his Orchestra. 4.0, Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from the Neuchâtel Observatory, followed by Weather. 12 Noon (from Berne), Concert by the Kursaal Orchestra. 12.20 p.m., News. 12.40 (from Berne), Concert (contd.). 1.25, Exchange, Time and Weather. 1.30, Talk on Wireless. 1.45 (from Berne), Book Review. 2.15 (from Berne), Gramophone Records. 3.0 (from Berne), Talk: The Care of the Baby in Summer. 3.30 to 4.50, Interval. 4.50 (from Berne), Part-Relay of the Song Competition from Inter-lake. 6.0 (from Berne), Talk on Sport. 6.30 (from Basle), Talk: Byrd's Flight to the South Pole. 7.0, Chimes from the Zürich Churches. 7.10 (from Basle), Time and News. 7.20 (from Basle), Gramophone Music. 8.0 (from Basle), A Variety Programme. 8.30, Concert by the Basle Orchestral Society. 10.10 (from Basle), Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

SEVILLE

(EAJ 5), 815 kc/s, 368.1 metres; 1.5 kW.—3.0 p.m., Concert by the Station Orchestra: Pasodoble, Albaicin (Prometeo); Waltz, Dolores (Grosman); Selection from Lysistrata (Lincke); Selection from A Waltz Dream (O. Strauss); Programme of Dance Music. 4.0 to 10.0, Interval. 10.0, News, Exchange and Weather. 10.10 (approx.), Selection from the Musical Play Doña Francisquita (Vives). After the Programme: Dance Music. 12 Midnight (approx.), Close Down.

SOTTENS. See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.0 p.m., Organ Recital by Gösta Berlin: Midsummer (Marquardt); Norwegian Dance (Grieg); En liten saga (Svensson); Selection from Madame Butterfly (Puccini); Sahit d'amour (Elgar); Humoresque (Dvorak); Waltz, Wo die Zitronen blühen (Joh. Strauss). 4.30, Programme for Children. 5.5, Gramophone Music. 5.55, The Practical Corner. 6.10, Old Dance Music, relayed from Malmö, 1,301 kc/s, 231 metres. 6.55, Talk: Fishing in Gotland, relayed from Visby. 7.15, Weather and News. 7.30, Concert by Gotland's Choral Society, relayed from the Cathedral, Visby. 8.30, Cabaret. 9.15, Orchestral Concert of Light Music, relayed from Falun, 977 kc/s, 307 metres. 9.45, Weather and News. 10.0, Dance Music by Helge Lindberg's Orchestra. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Light Music on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5,

Orchestral Concert, conducted by Roskam. 2.0, Legal Talk in German. 2.15, Dance Music on Gramophone Records. 2.45, Talk in French on Debussy. 3.0 to 3.30, Interval. 3.30, Gala Concert, relayed from the Casino, Vichy. Conductor: Brouillac. Overture, Die Flehmanns (Joh. Strauss); Bohemian Scenes from The Fair Maid of Perth (Bizet); Orchestral Pieces (d'Ambrusio); (a) Andantino, (b) Paysannerie, (c) Ronde des lutins, (d) Tarantella; Selection from Aida (Verdi); The Emperor Waltz (Joh. Strauss). 5.0, Orchestral Concert, conducted by Maurice de Villers; Prelude, Lordey (Bruch); Ballet Music from Isolde (Messager); Selection from Mignon (Thomas); A Mediterranean Cruise (Jalowicz); Three Spanish Dances (Muszkavsky). 6.0, Tourist Talk in French. 6.15, French Elocution Lesson. 6.30, Concert of Jazz Music, conducted by Roskam. 7.15, Agricultural Talk in French. 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.15, Press Review in German, Lottery Results and Announcements. 8.30, Popular Music on Gramophone Records. 8.45, Symphony Concert, relayed from the Orangerie. Conductor: Monferrand. Overture, Phidre (Massenet); Norwegian Dances (Grieg); Waltz, Künstlerleben (Joh. Strauss); Orchestral Suite, Les Perses (Léonov); Scenes Alsaciennes (Massenet). In an interval, Press Review in French. 10.30, Dance Music from the Savoy. 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12.50 p.m., Gramophone Music. 1.30, Concert from Langenberg. 2.30, Time and News. 2.45, Readings. 3.0 (from Freiburg), Accordion Recital by Paul Weber and Ewald Knobel. 3.30, See Frankfurt. 4.30, Erde (Schrafft), for Solo Contralto Male Voice Choir, Boys' Choir, and Orchestra, relayed from Vaihingen, the Composer conducting. 5.0, Choral Concert, conducted by Emil Diemant: Gruss aus Oberinntal (Fittig); Heimatrösen (Opladen); Im Walde (Schäffer); Der Rhein (Steinhauer); Döblein still (Klein); Brückenroll (Kirch); Erde wohl ein schöner Maientraum (Pfeil). 5.30, Gramophone Music. 5.50, Time and Sports Notes. 6.0, Reading. 6.25, Talk on the German Christian Movement: Adolf Hitler's Religious Mission. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.10, See Berlin (Witzleben). 10.0, Time and News. 10.10 (approx.), Radio Report of a Nazi Book Burning Raid in Karlsruhe (on Gramophone Records). 11.0, See Munich. 12 Midnight, Close Down.

SUNDSVALL. See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 9 kW. Transmissions irregular owing to fire.—6.0 p.m., News. 6.15, Opereita Music. Extracts from Le Grand Mogol (Audan), La Mascotte (Audran); Les Cloches de Corneville (Planquette) and Marins à Paris (Madien). 6.30, Scènes pittoresques—suite (Massenet), by the Symphonie Orchestra. 6.45, Popular Melodies. 7.0, Instrumental Solos. 7.15, News. 7.25, Commercial Prices. 8.0, Opéra Music. Duet from Aida (Verdi); Cavatina from Norma (Bellini); The Jewel Song from Faust (Gounod). 8.15, Accordion Solos. 8.30, Badalaka Music and Russian Melodies. 8.45, Instrumental Music. Serenade (Gomodo); EXTASE (Ganne); Rigandon (Rameau). 9.0, Extract from The Mastersingers—Opera (Wagner). In the Intervals: Military, Opera and Opereita Music. 10.15, North-African News. 10.30, Concert for Listeners in Morocco. 11.0, Request Concert. 1.30 to 12 Midnight, Programme in English by the I.B.C. Announcer: W. Brown—Constable. 11.30, Variety Music. Selection from Wonder Bar. Little Dolly Daydream (Woods); A Girl Friend of a Boy Friend (Stuart); Voice in the Old Village Choir The Buggin's Picnie (Constanduros); Good-night Sweetheart (Noble); Wheezy Anna. 11.57, I.B.C. Good-night Melody. 12 Midnight, News. 12.5 a.m. (Sunday), Opereita Music. 12.15, Orchestral Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m. till Close Down. See Turin.

TRONDHEIM. See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 to 6.0 p.m., Gramophone Concert. 6.35, Giornale Radio and An-

nouncements. 7.0, Time and Tourist Report. 7.5 (approx.), Dance Music on Gramophone Records. 7.20, Announcements in Different Languages. 7.40, Gramophone Music. 8.0, News, Weather, and Gramophone Music. 8.30, Talk: Events and Problems. 8.45, Concert of Opereita Music. After the Programme, Review of New Books. 10.0, Variety Programme. 11.0, Giornale Radio. 11.5 (Florence only), Dance Music from the Club Moi Rajola.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Announcements in Different Languages. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—1.15 p.m., Classical Music on Gramophone Records. 2.0 to 2.45, Interval. 2.45, Time and News. 3.0, Programme for Young People. Turandot, Princess of China—Tragi-Comedy Fairy Play in Five Acts after Gozzi (Schubler). 5.0, Concert by the André Hammer Orchestra, relayed from Bad Ischl. Coronation March from The Prophet (Meyerbeer); Overture, Die Fledermaus (Joh. Strauss); Waltz, Das war mein Wien (Hummer); Scenes from Tieland (d'Albert); Intermezzo from I Pagliacci (Leoncavallo); Vienna Opereita Revue (Rebrecht); Hungarian Dance in G Minor (Brahms). 6.0, Hungarian Folk Songs on Gramophone Records. 6.45, Topical Talk. 7.0, Song and Aria Recital by Rosette Anday. 7.35, The Maxim. 7.40, Time and News. 7.50, Topical Talk. 8.0, Vienna Festival Week, 1933, Gala Concert by the Vienna Garrison Military Band and a Soldiers' Massed Choir, relayed from the Heidenplatz. Reveille, with Chorus of Trumpets and Rifles; Glockenlied, with Fanfare (Thann); Folk Song, Muss ich denn zum Stadler hinaus (Thann); Jostias Coburg March; Artillery March; Prince Eugen March; Am Lagerfeuer (Urbach); Retreat with Drummer's Chorus (Köcher); Alarm for Trumpets and Drums; Two-Part Choir: Wolan! Kameraden (Zahn); Wagrammarsch (Wiedemann); Zehn Marsch (Mander); Choir: Niederländisches Dankgebet (Kreuzer); Kampfesruge (Richter); Four-Part Choir: Folk Melody in G major; Kamerade (Umland); Radetzky March (Joh. Strauss); Trio and Choir: O du mein Oesterreich (Preis-Suppe). 9.45, News. 10.0, Programme to be announced.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Gramophone Records. 12.25, Polish Press Review. 12.40, Gramophone Records. 12.55, Radio Journal. 1.0, Interval. 2.55, Gramophone Records. 3.5, News. 3.15, Gramophone Records. 3.35, Economic Notes. 3.35, Gramophone Records. 3.50, Answers to Military Correspondents. 4.0, Programme for Invalids. 4.30, Concert by the Station Orchestra, conducted by Oziminski; Soloist, C. Węgrzynowska (Song). 5.0, Topical Talk. 5.15, Gramophone Records. 6.15, Talk, relayed from Wilno, 533 kc/s, 563 metres. 6.35, Concert of Chamber Music: Quartet in G for Strings, No. 2, Op. 18 (Beethoven); Quartet in G, Op. 96 (Dvorak). 7.20, Miscellaneous Announcements. 7.35, Programme Announcements. 7.40, Jean Wasniewski reads from his own Works. 7.55, Interval. 8.0, Concert by the Station Orchestra, conducted by S. Sawrol; Soloists, Helena Ażarowicz and S. Witas (Songs); Overture, Morning, Noon and Night (Suppé); Waltz from Eva (Lehár); Song, A ton premier signe (Barris); Song (a) Barenolle (Tchaikovsky), (b) Ains from The Rose of Stamboul (Fall); Gallop (Graz); Duet from La faire aux jeunes filles (Gaubert); Festival in Florence (Mignone); Selection from The Czardas (Lehár); Two Songs (Niewiadomski); Waltz, The Christmas Tree (Rehikov); Piccolo Polka (J. Strauss); Three Songs; Barenolle from The Tales of Hoffmann (Offenbach); Waltz, Frühlingsstimmen (Joh. Strauss); Mazurka (Lewandowski); Gallop, Prestissimo (Waldteufel). In the interval, Radio Journal and Gardening Talk. 9.30, Chopin Recital by Stanislaw Szpilanski; Fantasia in F Minor; Waltz in A Flat, Op. 34, No. 1; Scherzo in B Minor. 10.0, Dance Music. 10.25, Sports Notes. 10.35, Weather and Police Report. 10.40, Dance Music.

WILNO

533 kc/s, 563 metres; 16 kW.—6.15 p.m., Talk. 6.35, See Warsaw. 7.20, Weekly Report in Lithuanian. 7.35, Miscellaneous Announcements. 7.40, See Warsaw. 8.0, Concert of Request Gramophone Music. 9.0, Programme from Warsaw. 12 Midnight (approx.), Close Down.

ZURICH. See Schweizerischer Landessender.



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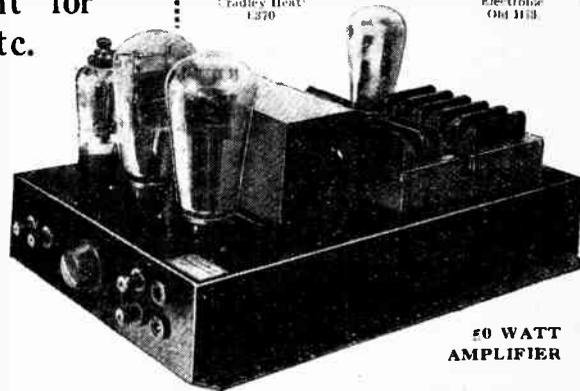
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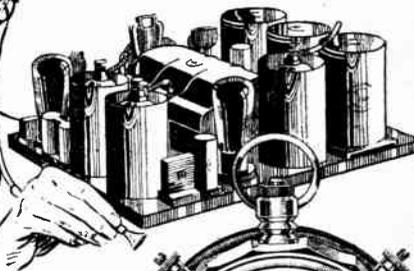
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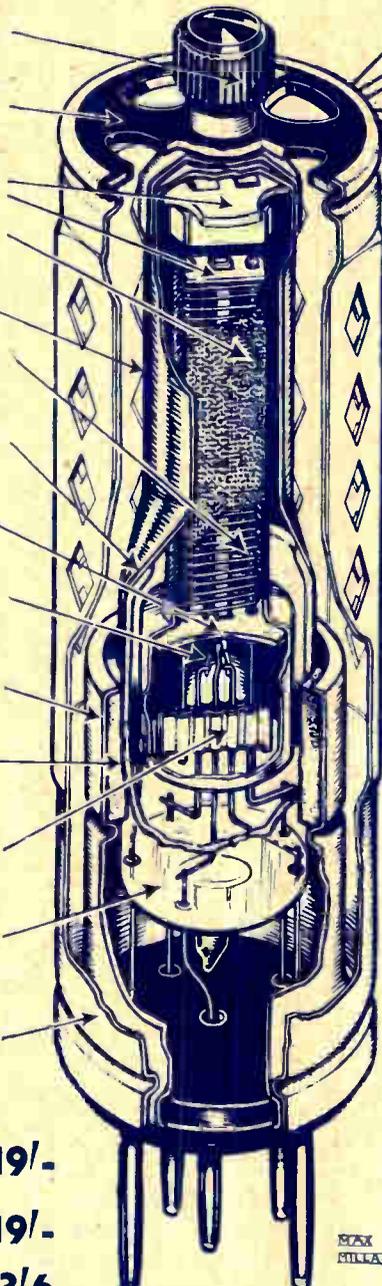
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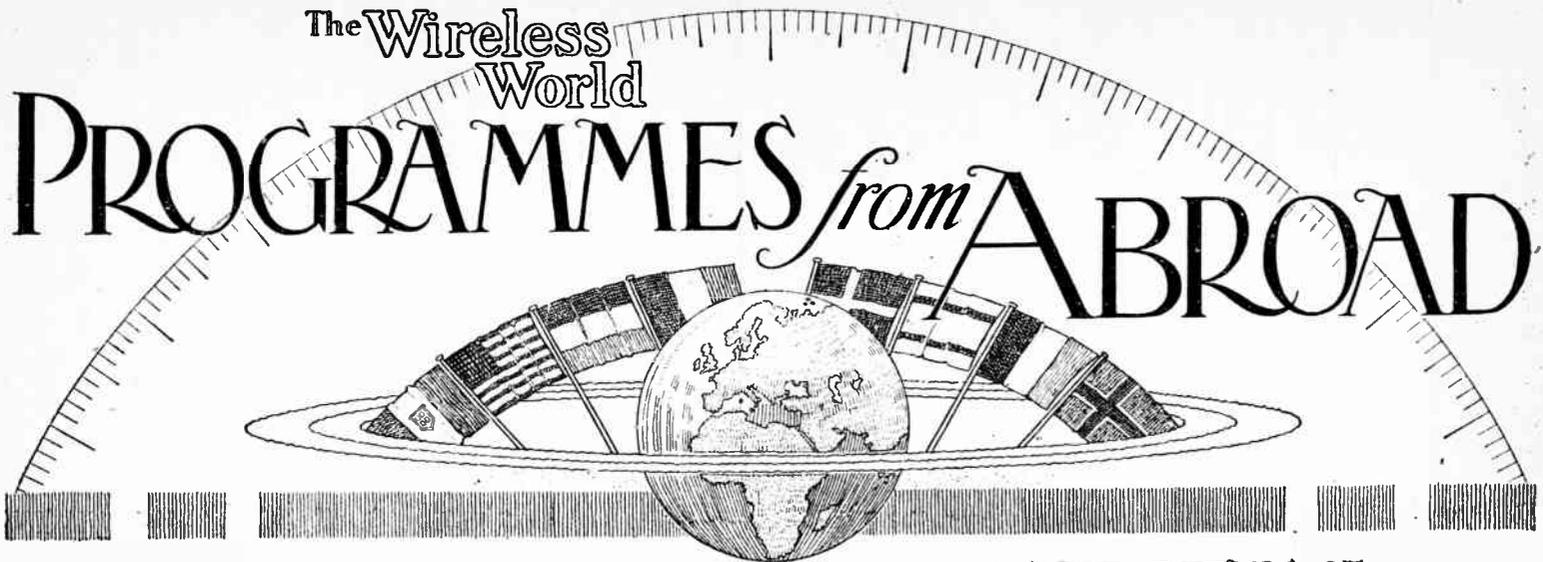
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**BROADCASTING STATIONS
ARRANGED IN ORDER
OF WAVELENGTH**

**TIMES AND DETAILS OF
FULL WEEK'S FOREIGN
TRANSMISSIONS**

Metres.	Kc.s.	kW.	Station.	Tuning Positions.	Metres.	Kc.s.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania) .. .. .	.....	453.2	662	7	Milan (<i>Experimental Relays Rome</i>) .. .. .	.....
1875	160	8.5	Huizen (Holland) .. .. .	.....	450.3	666	20	Madona (Latvia). (<i>Relays Riga</i>) .. .. .	.....
1796	167	40	Lahti (Finland) .. .. .	.....	447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Hjukkan (0.15 kW.), Notodden (0.08 kW.) Aalsund (0.35 kW.) (Norway) (<i>relays Oslo</i>).	.....
1725	174	75	Radio Paris, C.F.R. .. .. .	.....				Rome, I.R.O. (<i>S.-W. Station, 2 RO on 25.4 m.</i>) .. .. .	.....
1635	183.5	60	Berlin (Deutschlandsender) (Germany). (<i>S.-W. Stn. DJA on 31.38 m., DJB on 19.73 m., DJC on 49.83 m., DJD on 25.51 m., DJE on 16.89 m.</i>)	.....	441.2	680	50	Stockholm, SASA (Sweden) .. .. .	.....
					435.4	689	55	Belgrade (Yugoslavia) .. .. .	.....
1554.4	193	30	Daventry National .. .. .	.....	430.4	697	2.5	Madrid, EAJ7 (Union Radio). (<i>After 7.0 p.m.</i>)	.....
1538	195	7	Ankara (Angora) (Turkey) .. .. .	.....	424.3	707	2	Moscow, Imeni Stalina (Russia) .. .. .	.....
1481	202.5	100	Moscow, RVI (Old Komintern) (Russia)	.....	424.3	707	100	Berlin, Witzleben (Germany) .. .. .	.....
1446	207.5	13	Eiffel Tower, P.L. Paris .. .. .	.....	419.5	715	1.5	Rabat (Morocco) .. .. .	.....
1412	212.5	120	Warsaw I (Poland) .. .. .	.....	416.4	720.5	5	Athlone (Irish Free State) .. .. .	.....
1380	217.5	100	Novosibirsk, RV6 (Russia) .. .. .	.....	413	725	60	Katowitz (Poland) .. .. .	.....
1354.4	221.5	30	Motala (Sweden). (<i>Relays Stockholm</i>)	.....	408.7	734	16	Sottens (Radio Suisse Romande) (<i>Switzerland</i>)	.....
1304	230	500	Moscow, WZSPS (Trade Union) (Russia)	.....	403.8	743	25	Midland Regional. (Daventry) .. .. .	.....
1275	235	0.5	Tunis-Kasbah (Tunisia) .. .. .	.....	398.9	752	25	Bucharest (Roumania) .. .. .	.....
1230	244	0.6	Boden (Sweden). (<i>Relays Stockholm</i>)	.....	394.2	761	12	Leipzig (Germany) .. .. .	.....
1200	250	5	Stamboul (Turkey) .. .. .	.....	389.6	770	120	Toulouse (Radiophonie du Midi) (France)	.....
1200	250	21	Reykjavik (Iceland) .. .. .	.....	385.1	779	8	Stalino, RV26 (Russia) .. .. .	.....
1190	252	200	Luxembourg (<i>Testing</i>) .. .. .	.....	385.1	779	10	Lwow (Lemberg) (Poland) .. .. .	.....
1170	256	25	Tashkent, RV11 (Russia) .. .. .	.....	381	788	16	Scottish Regional (Falkirk) .. .. .	.....
1154	260	7.5	Kalundborg (Denmark). (<i>Relays Copenhagen</i>)	.....	376.4	797	50	Hamburg (Germany) .. .. .	.....
1117	268.5	40	Moscow, Popoff RV58 (Russia) .. .. .	.....	372.2	806	1.5	Radio, L.L., Paris .. .. .	.....
1083	277	60	Oslo (Norway) .. .. .	.....	370.1	810.5	0.8	Seville, EAJ5 (Union Radio) (1.0 kW.); Galicia EAJ4 (0.2 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Helsinki (10 kW.) (Fin- land) (<i>relays Lahti</i>); Kharkov, RV20 (10 kW.) (Russia).	.....
1071	280	35	Tiflis, RV7 (Russia) .. .. .	.....	368.1	815		.....	.....
1035	290	36	Kiev, RV9 (Russia) .. .. .	.....				.....	.....
1000	300	100	Moscow (Russia) (<i>S.-W. Stn. on 50 m.</i>)	.....	365.8	820	0.7	Fredriksstad (Norway). (<i>Relays Oslo</i>) .. .. .	.....
938	320	20	Kharkov, RV4 (Russia) .. .. .	.....	364.1	824	1	Bergen (Norway) .. .. .	.....
867	350	100	Leningrad (Russia) .. .. .	.....	363.6	825	13	Algiers (Algeria) .. .. .	.....
840	357	18.5	Budapest (Hungary) .. .. .	.....	360.6	832	60	Mühlacker (Stuttgart) (Germany) .. .. .	.....
825	363.6	50	Sverdlovsk, RV5 (Russia) .. .. .	.....	355.9	843	50	London Regional (Brookmans Park) .. .. .	.....
760	395	1.3	Geneva (Switzerland). (<i>Relays Sottens</i>)	.....	352.1	852	7	Graz (Austria). (<i>Relays Vienna</i>) .. .. .	.....
720	416.6	15	Monte Ceneri (Switzerland). (<i>Testing</i>)	.....	348.8	860	7.6	Barcelona, EAJ1 (Spain) .. .. .	.....
720	416.6	20	Moscow, RV2 (Experimental) (Russia)	.....	348.8	860	10	Leningrad, RV70 (Russia) .. .. .	.....
690	434.6	1.5	Oulu (Uleaborg) (Finland) .. .. .	.....	345.2	869	11.5	Strasbourg, PTT (France) .. .. .	.....
680	441.2	0.6	Lausanne (Switzerland). (<i>Relays Sottens</i>)	.....	341.7	878	35	Brno (Brunn) (Czechoslovakia) .. .. .	.....
574.7	522	7	Ljubljana (Yugoslavia) .. .. .	.....	338.2	887	15	Brussels II, Velthem (Belgium). (<i>In Flemish</i>)	.....
569	527	0.25	Freiburg-im-Breisgau (Germany). (<i>Relay Stn.</i>)	.....	335	896	5	Cadiz (Spain) .. .. .	.....
568.1	528	2	Grenoble (France) .. .. .	.....	334.4	897	1.9	Poznan (Poland) .. .. .	.....
566	530	0.25	Hanover (Germany). (<i>Relays Hamburg</i>)	.....	331.5	905	50	Milan (Italy). (<i>Relays Turin</i>) .. .. .	.....
563	533	16	Wilno (Poland). (<i>Relay Station</i>) .. .. .	.....	328.2	914	60	Poste Parisien (France) .. .. .	.....
560	536	0.25	Augsburg (Germany). (<i>Relays Munich</i>)	.....	325	923	60	Breslau (Germany) .. .. .	.....
560	536	1.5	Kaiserslauten (Germany). (<i>Relays Munich</i>)	.....	321.9	932	10	Göteborg (Sweden). (<i>Relays Stockholm</i>)	.....
550	545	18.5	Budapest No. 1 Lakihegy (Hungary)	.....	318.8	941	0.25	Dresden (Germany). (<i>Relays Leipzig</i>)	.....
542	554	10	Sundsvall (Sweden). (<i>Relays Stockholm</i>)	.....	318.8	941	1.5	Naples, INA (Italy). (<i>Relays Rome</i>) .. .. .	.....
537.6	558	3	Palermo (Italy) .. .. .	.....	315.8	950	1.6	Marseilles, PTT (France) .. .. .	.....
533	563	60	Munich (Germany) .. .. .	.....	312.8	959	0.7	Radio Vitus (Paris). (<i>S.-W. Stn. on 43.75 m.</i>)	.....
525	571	15	Riga (Latvia) .. .. .	.....	312.8	959	1.7	Cracow (Poland) .. .. .	.....
518	579	100	Vienna (Bismarck) (Austria) .. .. .	.....	312.8	959	10	Genoa, IGE (Italy). (<i>Relays Turin</i>) .. .. .	.....
509	589	15	Brussels No. 1, Velthem (Belgium). (<i>In French</i>)	.....	309.9	968	1	Cardiff .. .. .	.....
500.8	599	20	Florence, IPI (Italy). (<i>Relays Turin</i>) .. .. .	.....	307	977	0.75	West Regional (Washford Cross) .. .. .	.....
495.8	605	1.2	Trondheim (Norway) .. .. .	.....	304	986	13	Zagreb (Yugoslavia) .. .. .	.....
488.6	614	120	Prague, No. 1 (Czechoslovakia) .. .. .	.....	301.5	995	50	Bordeaux Lafayette, PTT (France) .. .. .	.....
480	625	50	North Regional (Manchester) .. .. .	.....	298.8	1004	11	North National (Manchester) .. .. .	.....
472.4	635	60	Langenberg (Germany) .. .. .	.....	296.1	1013	20	Tallinn (Esthonia) .. .. .	.....
465.8	644	1.5	Lyons la Dona, PTT (France) .. .. .	.....	293.5	1022	0.7	Hilversum (Holland). (<i>7 kW. before 4.40 p.m.</i>)	.....
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland) .. .. .	.....	293.5	1022	2.6	Limoges, PTT (France) .. .. .	.....
					291	1031	13.2	Kosice (Czechoslovakia) .. .. .	.....
453.2	662		San Sebastian, EAJS (0.6 kW.); Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (<i>relays Heilsberg</i>); Klagenfurt (0.5 kW.) (Austria) (<i>relays Vienna</i>); Porsgrund (0.7 kW.) (<i>relays Oslo</i>); Tromsø (0.1 kW.) Bodo (0.5 kW.) (Norway); Uppsala (0.15 kW.) (Sweden) (<i>relays Stockholm</i>).	.....	288.3	1040	50	Viiipuri (Viiborg) (Finland). (<i>Relays Helsinki</i>)	.....
					288.3	1040	1	Scottish National (Falkirk) .. .. .	.....
					288	1049	0.8	Bournemouth (Relay Station) .. .. .	.....
453.2	662	0.25	Agen (France) .. .. .	.....				Montpellier (France) .. .. .	.....

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Table with columns: Metres, kc/s, kW, Station, Tuning Positions. Lists various international broadcasting stations and their technical specifications.

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent B.S.T.)

Table with columns: Metres, kc/s, Call Sign, Station, Tuning Positions. Lists principal short-wave stations with their call signs and transmission times.

JUNE 18th

SUNDAY

continued

Harry Lauder's Songs. Old Music Hall Memories; I'd love to be a Sailor; Saturday Night; Selection, The Thistle (Myddleton); Back to the Shore where the Heather grows; Bella, The Belle of Dunoon; I think I'll get wed in the Summer; Old Music Hall Memories. 6.0, Special Club Concert for Blind Listeners. Overture Medley (arr. Carl Peters); The Whip, from Golden Dawn (Harbach). Song: Mountain Lovers (Squire). Waltz from The Sleeping Beauty (Tchaikovsky); One Little Drink, from Song of the Flame (Aktst); The Wrangle-taggle Gipsies O (arr. Sharp); Hares on the Mountain (arr. Sharp); My Darling (Heyman-Myers); Selection from The Merry Widow (Lehar); A Ghost of a Chance (Washington); The Doll's Song, from The Tales of Hoffman (Offenbach); The Bumble Bee's Wedding (Clare). 7.0, Songs. Wine, Women and Song (Strauss); The Lass with the Delicate Air; One Morning very Early (Sanderson); Dear Old Fashioned thing (Harrington); Modern Conception of Russian Melodies (de Filippi); When the House is asleep; Selection from New Moon (Romberg). 7.30, A Musical Flower Garden. Selection from Wild Violets (Stolz). Song: Rose in the Bud (Forster); When the Lilac Blooms again (Rottler). Song: Violets (Wright). Mignouette (Friml); Selection from The Flower of Hawaii (Abraham). 8.0, Concert of Opera and Operetta Music. 9.0 till Close Down, Programme in English by the I.B.C. 9.0, Music by a Rhythm Band. Sloppy Joe; Jungle Nights in Harlem; Hot Feet; Swanee Shuffle; Rhythm Spasm; Deep Forest; White Lightning; Old Yazoo. 9.30, Concert of Light Music. Nautical Moments (arr. Winter). Soprano Solo: The Crystal Spring (Traditional). Baritone Solo: Tommy Lad (Margelson). Ginger Snaps (Bourdon). Chorus: When you and I were young, Maggie. Guitar solo: Picking my Way (Lang). Song: No more Love (Friend). Waltzes from a Waltz Dream (O. Straus). 10.0, Light Music. The Old Rustic Bridge by the Mill (arr. Wood); Love me Tonight (Crosby); Three Little Words; The Jug and Bottle (Noble); Sweet Adeline (Armstrong); We just couldn't say goodbye (Woods); After the Ball (Harris). 10.30, Popular Melodies. Forty-Second Street; Stormy Weather; That's my Home (Rene); Contented (Ellison, Turk and Bestor); It pays to advertise (O'Hagan); London Bridge is falling down (Williams); I sigh for you Rio Rita (Santeghini and Adam); Selection from The Student Prince (Romberg). 11.0, Light Music. Selection from He Wanted Adventure, Part 1 (Waller). Song: The Crystal Spring (Traditional). Xylophone Solo: Snappy Sticks (arr. Robbins). Song: If I am dreaming (Mackeben). Suite of Serenades: (a) Spanish, (b) Chinese. Xylophone Solo: Snappy Sticks (part 2) (arr. Robbins). Song: I give my Heart (Mackeben); Selection from He Wanted Adventure, Part 2 (Waller). 11.30, Request Concert. In a Monastery Garden (Ketebe); A Bachelor Gay (Tate); Medley of Old Times (arr. Griffiths); Selection from Cavalleria Rusticana (Mascagni); The Gladiators March (Souza); Sir Roger do Coverley (Hargreaves); Song of the Islands (King). 12.5 a.m. (Monday), I.B.C. News. 12.10, Special Club Concert for Blind Listeners. Overture Medley (arr. Carl Peters); The Whip, from Golden Dawn (Harbach). Song: Mountain Lovers (Squire). Waltz from The Sleeping Beauty (Tchaikovsky); One Little Drink, from Song of the Flame (Aktst); The Wrangle-taggle Gipsies O (arr. Sharp); Hares on the Mountain (arr. Sharp); My Darling (Heyman-Myers); Selection from The Merry Widow (Lehar); A Ghost of a Chance (Washington); The Doll's Song, from The Tales of Hoffman (Offenbach); The Bumble Bee's Wedding (Clare). 1.0, Light Orchestral Music. Wiener Blut (Strauss); Under Heaven's Blue (Payan); Barcarolle (Waldteufel); By the Sleepy Lagoon (Contes); Gipsy Moon (Borganov) The Song of the Nightingale (Albion). 1.30, Negro Songs. Down South (Myddleton); I got Shoes; Carry me back to old Virginia; Way down upon the Swanee River. Choir: Swing Low sweet Chariot; By the Swanee River (Myddleton); I wanna be ready; Tone de bell; Plantation Song Medley. 2.0, Dance Music by the Jbolians. The King's Navee (Leslie); Leave a little for me (Abraham); Toasts (Sarony); How do you do Mr. Brown? (Abraham); I can't write the Words (Marks); Let's all dance the Polka (Lawton); The Lady I love (Young); How are you? (Pola); Isn't it romantic? (Hart); Balloons (Shawn); Liszt, Chopin and Mendelssohn (Nicholls); Ain't cha coming out To-night (Robison); When they're on the Love Parade (Hogan); Big Ben's Saying Good-night (Murray); Play Fiddle Play (Lawrence); I may never pass your way again (Dubin). 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.
FLORENCE.—See Turin.
FRANKFURT
1,157 kc/s, 259.3 metres; 17 kW. Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Concert by the Trier Municipal Orchestra. 1.0 p.m., Scenes from the Second and Third Acts of Tannhäuser (Wagner), on

Gramophone Records. 2.30, Talks arranged by the Wiesbaden Board of Agriculture. 2.40, Rural Programme—Two Talks. 3.30, Programme for Young People. 4.30, See Langenberg. 6.0, Talk. 6.15, Tales of Everyday Life. 6.35, Entr'acte. 7.20, Sports Notes. 7.30 to 10.30, See Stuttgart. 10.30, Time and News. 10.50, Programme from Berlin (Witzleben). 12 Midnight, Close Down.
FREDRIKSSTAD.—See Oslo.
FREIBURG.—See Stuttgart.
GENEVA.—See Radio-Suisse Romande.
GENOA.—See Turin.
GLEIWITZ.—See Breslau.
GOTEBORG.—See Stockholm.
GRAZ.—See Vienna.
HAMAR.—See Oslo.

HAMBURG
Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayd by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—11.15 a.m. (from Kiel), Borderland Demonstrations in Rendsburg; Addresses, Planting of an Oak, and Programme of Music by Young Hitlerites. 12.50 p.m., Time and Weather. 1.0, Promenade Concert. 2.0 (from Hanover), Radio Report of the Meeting of Young Girl Hitlerites in Gundersheim. 3.0 (from Hanover), Country Visits Town and Town Visits Country—a Radio Report. 4.0 (from Hanover), Radio Report of the North West German Gymnastic Society's Championships. 4.30, Concert by the Station Chamber Orchestra, conducted by Gerhard Maasz. 5.30 (from Hanover), The Gundersheim Festspiel. 7.0 (from Flensburg), Borderland Festival in the Deutsches Haus; Choral Concert by the Flensburg Wanderkantorei. 7.30, Talk on Sport. 7.40, Sports Notes. 7.55, Weather. 8.0, Orchestral Concert, conducted by Horst Platen; Soloist, Margarethe Dörr (Songs); Overture, Oberon (Weber); Songs: (a) Im Abendrot (Schubert-Reger); (b) Nacht und Träume (Schubert-Reger); German Dances (Schubert); Military March No. 1 (Schubert); Ballet Music from Die Geschöpfe des Prometheus (Beethoven); Two Songs (Brahms): (a) Immer leiser wird mein Schlummer; (b) Auf dem Kirchhofe; First Rhapsody (Liszt); Prelude to the Third Act and Bridal Chorus from Lohengrin (Wagner); Two Songs (Wagner): (a) Selmerzen; (b) Träume; Overture, Tannhäuser (Wagner). 10.0, News. 10.20, A Review of the Week's Events in the Hansatic Towns. 10.25, Programme from Berlin (Witzleben).
HANOVER.—See Hamburg.

HEILSBURG
1,085 kc/s, 276.5 metres; 60 kW. Relayd by Danzig, 662 kc/s, 453.2 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Concert by the Königsberg Opera House Orchestra, conducted by Karl Hubertz; March, Deutschland allzeit (Sartorius); Overture, The Vintage's Bride (Nedbal); Serenade in Four Movements (Rösch). 12.30 p.m., Commemorative Programme at the Infancy Memorial in Königsberg. 1.0, Concert (contd.). 2.0, Talk on Chess. 2.30, East Prussian Fairy Tales. 3.0, Talk: The Open-air Museum in the Königsberg Tiergarten. 3.30 (from Danzig), Old Times—Modern Times; Concert by the Danzig Male Voice Choir. 4.0, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky, relayed from the Tiergarten, Königsberg. In the intervals, Report on Gramophone Records: The Unveiling of the Monument to Ferdinand Schulz. 5.50, Sports Notes. 6.0, Part Relay from Tannenberg of the German Gymnastic Festival. 6.30, Recitation from the Poems of Ludwig Tieck. 7.0, Recital of Brahms Songs by Ludwig Hess, with Introductory Talk: Todessehnen, Op. 86; Songs, Op. 63: (a) Frühlingsstrost; (b) Erinnerung; (c) An ein Bild; (d) Die Tauben; Four songs: (a) Vor dem Fenster; (b) Ein Sonett; (c) Da unten im Tale; (d) In stiller Nacht; Four songs: (a) Erlaub' mir, feins Mädchen; (b) Schwesterlein; (c) Feinschehen, du sollst mir nicht barfüssig gehn; (d) Mein Mädel hat einen Rosenmund. 7.35, Zwei Briefe an den lieben Gott—a Radio Scene (Rudolf Kluntamm). 7.50, Sports Notes. 8.0, See Stuttgart. 9.30, News. 9.40, Spring, Summer, Autumn, Winter—a Radio Sequence, with Music (Joachim Lange and Fritz Henschke). 10.20, News, followed by Programme from Berlin (Witzleben). 12 Midnight, Close Down.

HILVERSUM
1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—8.40 to 11.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 8.40, Horticultural Talk. 9.10, Orchestral Concert. 9.40, Recitations. 9.55, Concert (contd.). 10.25, Talk: The Cinema. 10.40, Concert (contd.). 11.10, Address. 11.40 to 4.40 p.m., Programme of the Allgemeiner Vereinigung Radio Omroep (A.V.R.O.). 11.40, Gramophone Music. 11.55, Concert by the Wireless Orchestra, conducted by Nico Treep.

Gramophone Music in the interval. 1.40 p.m., Weekly Book Talk. 2.10, Recital of Italian Songs by Re Koster. 2.40, Concert by the Orchestra of the Hague, conducted by Ignaz Neumark. Soloist: Hans Schouwman (Pianoforte). 3.40, Gramophone Music and Sports Notes. 4.40 to 5.40, Programme of the V.A.R.A. 4.40, Organ Recital. 4.55, Concert by a Choir. 5.10, Organ Recital (contd.). 5.25, Choral Music (contd.). 5.40 to 7.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 5.40, Review of Books. 6.25, Divine Service. 7.40 till Close Down, Programme of the A.V.R.O. 7.40, Time and News. 7.55, Concert by the Concertgebouw Orchestra, conducted by E. van Beinum, relayed from the Concertgebouw, Amsterdam. Soloist: Jac. Urlns (Tenor). Overture, La dame blanche (Boieldieu); Aria from Joseph (Méhul); Symphonic Poem, Le Rouet d'Omphale (Saint-Saëns); Danse macabre (Saint-Saëns). 8.15, Concert by the Wireless Orchestra, conducted by Nico Treep. 9.0, Concert by the Concertgebouw Orchestra, conducted by Eduard van Beinum, relayed from the Concertgebouw, Amsterdam. Soloist: Jac. Urlns (Tenor); Wagner Programme: Legend of the Graal from Lohengrin; Overture, Tannhäuser; Walter's Prize Song from The Mastersingers; Prelude to the First Act of The Mastersingers. 9.55, Gramophone Music. 10.10, Concert of Light Music by Kovacs Lajos and his Orchestra. Songs by Bob Scholte. In the interval: Light Music on Gramophone Records. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.
HUIZEN
160 kc/s, 1,875 metres; 8.5 kW.—11.55 to 4.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Boys, conducted by P. Lustenhouwer; Soloist: J. Mossel (Songs). 12.40 p.m., Literary Talk. 1.0, Concert by the K.R.O. Boys (contd.). 1.40, Religious Address. 2.10, Anno Sancto—Religious Drama (Luns), followed by Lauds, relayed from Amsterdam. 4.40 to 7.25, Programme of the Christian Radio Society (N.C.R.V.). 4.40, Concert of Sacred Music by a Mixed Choir, conducted by Rudolf Karsmeyer. 5.30, Divine Service, relayed from a Church. After the service, Sacred Music on Gramophone Records. 7.25 till Close Down, K.R.O. Programme. 7.25, Talk on Architecture. 7.50, Football Results. 7.55, Concert by the K.R.O. Orchestra, conducted by J. Gerritsen; Soloist: Minc. Bolten (Songs). In the intervals at 8.40 to 9.55, News. 10.20, Epilogue. 10.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.
JUAN-LES-PINS
1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusements' Guide and Sports Notes. 8.15, Press Review. 8.30, Radio Concert. 9.0, News. 9.15, Radio Concert. 10.0, The Listeners' Half Hour. 10.30 to 1.30 a.m. (Monday), Programme in English by the I.B.C. 10.30, Vocal and Orchestral Concert: Hochzeitsreigen (Lincke). Songs: (a) The Lincolnshire Poacher (arr. Tait); (b) Angus Macdonald (Weatherley); Speak to me of love (Lenoir); Duet: The Little Irish Girl; Songs: (a) The Wheel-tapper's Song (Charles); (b) Temple Bells (Woodford-Finden); Jollification (Reeves). 11.0, Light Music, Accordion Band: Mona Lisa (Sullivan); Violin Solo, Le Balcon (St. Denis); Song: The Lavender Seller (Reville Smith); Bandonian Solo: Blaze away (Holzman); Accordion Band: Whistling Waltz (Evans); Song: If I am dreaming (Millocker); Violin Solo, Waltz, Dolores (Waldteufel); Accordion Nights. 11.30, Billy Arnold's Dance Band, relayed from the Hollywood Cabaret. 12 Midnight, Orchestral Concert, with Songs by the Studio Chorus. Roses from the South (Strauss); Song and Dance from A Midsummer Night's Dream; Song: It was a Lover and his Lass (Fellows); Jollity on the Mountains (Fetras); Trio: Sleepy Rio Grande (Vincent); Selection from Cavalcade (Coward); Wiener-vogel (Translatour). 12.30 a.m. (Monday), Gramophone Concert. Sextet: In the Gloaming (Harrison); Song: Uncle Ned (Foster); Violin Solo: Waltz, Estudiantina (Waldteufel); Song: Old Black Joe (Foster); Sextet: Frühlingsstimmen (Joh. Strauss); Song: False Phyllis (arr. Lane Wilson); Selection from Mother of Pearl (O. Straus). 1.0, Music by a Rhythm Band; Harlem Fuss; Stevedore Stomp; The Minor Drag; The Ditty Glide; Misty mornin'; Washboards get together; Saratoga Swing; Kazoo. 1.27, I.B.C. Good-night Melody. 1.30 (approx.), Close Down.
KALUNDBORG.—See Copenhagen.
KIEL.—See Hamburg.
KLAGENFURT.—See Vienna.
KOSICE.—See Prague.

LANGENBERG
635 kc/s, 473 metres; 60 kW.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12.5, Reading from Das Grab zu Heidelberg (Emil Strauss). 12.30, A Young German Miner tells how a Mining Accident made him a Cripple. 1.0, Orchestral Concert, conducted by Wolf. Soloist:

Margarete Wirwain (Contralto). 2.0, Humorous Reading in Dialect (Heinz Magka). 3.0, Talk on Chess. 3.20, Talk by a hired Waiter. 3.40, Talk: Points of Interest from the Cologne Zoological Congress. 4.0, Relay of the German Swimming Tournament in Weill. 4.30, Concert, conducted by Eysoldt. Soloist: Paul Traut (Pianoforte). 6.0, Radio Report on the Eighth Centenary Festival of the Altenberg Abbey (Church and Cistercian Abbey). 7.0, Variety Programme. 7.30, See Stuttgart. 8.0, Sports Notes. 8.10, Titus Feuerfuchs—Sketch with Songs in Three Acts (Nestroy). 9.40, Concert by the Station Chamber Quintet. 10.15, News. 11.0, Dance Music. 12 Midnight, Close Down.
LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG
769.9 kc/s, 389.6 metres, 120 kW.; and Dresden, 941 kc/s, 319 metres.—11.30 a.m., Transmission for all German Stations: O Ewigkeit du Donnerwort—Cantata (Bach), by the Municipal and Theatre Orchestra, the Choir of St. Thomas and Soloists. 12.5 p.m., Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber. 2.0, Weather and Time. 2.5, The Week's Programme. 2.25, Agricultural Notes. 2.35, Concert by the Harmonia Male Voice Choir. 3.5, Heinrich Anacker reads from his own work. 3.30, String Quartet, Op. 64, No. 5 (Haydn), by the Geracy String Quartet. 4.0, The Storm Troops—a Radio Report from Erfurt. 4.45, Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen. In the interval, Talk: What the Layman does not know about Chemistry. 6.50, Topical Talk. 7.30, See Stuttgart. 8.0, The Tyrol—Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer, with Soloists: Extract from the Symphony, In the Tyrol (Josef Pembaur); Songs (Arthur Kerschneider): (a) Sonnwend, (b) Heilige Zeit, (c) Sonnenwend-sunn; Romantic Overture (Ludwig Thullie); The Tyrolese Folk Song—Melodies for Orchestra (Karl Senn); Tyrolese Peasant Dances; Yodelling with Zither accompaniment; Four Tyrolese Waltzes for Flute, Violin and Guitar; Three Ländler from the Tyrol for Clarinet, Violin and Guitar; Der Brandltanz, for two Mandolines and Guitar; Yodelling with Zither accompaniment; Tyrolese March (J. F. Wagner). 10.1, News. 10.15 (approx.), Concert by the Dresden Soloist Ensemble.
LINZ.—See Vienna.

LUXEMBOURG
262 kc/s, 1,191 metres; 200 kW. English Programme.—7.0 p.m., Gramophone Music. 7.40, Weather. 7.45, Gramophone Music: Introduction and Allegro for Strings (Elgar); In a Summer Garden (Debussy); Concert Overture, Cockaigne (Elgar). 8.0 to 9.0, Programme in English by the I.B.C. Concert: George Gerstwin Medley (Gerstwin); Violin Solo, Gavotta variata (Corelli); Potpourri, Fortissimo (Kalmán); Soprano Solos: (a) Bantury Bay (Molloy); (b) When Love is Kind (arr. Crofts); Violin Solo, Air on the G String (Bach); Kern Potpourri; Banjo Solo, Cheummy Banjo (Fills); Farewell to Arms (Silver); Banjo Solo, Dizzy Diggs (Fills); Two Pieces for Quintet: (a) Ich liebe dich (Grieg); (b) Angels' Serenade (Braga); Baritone Solo, Cuban Love Song (McHugh); A Lullaby (Woodwin). In an interval at 8.30, Topical Talk in English. 9.15, Gramophone Music. 9.45, News in German. 9.55, Dance Music and Variety Music on Gramophone Records. In the interval, Exchange and News.

MADRID
UNION RADIO (EAJ7), 707 kc/s, 424.3 metres; 2 kW.—9.0 to 10.0 a.m., Topical Review. 12.30 p.m., Concert by the Madrid Municipal Band, relayed from the Retiro. 3.0, Chimes, Time Signal, Theatre Notes and Concert of Popular Music. 5.0 to 8.0, Interval. 8.0, Chimes and Radio Journal. 8.15 (approx.), Concert by The Rondalla Galindo Orchestra. Conductor: Jose Galindo. 9.30 to 11.0, Interval. 11.0, Chimes and Time Signal. 11.5 (approx.), Violin Solos by Manuel Perez Diaz, Songs by Conchita Aguilo and Flamencos by Nino de la Flor. 1.30 a.m. (Monday), Chimes and Close Down.

MALMO.—See Stockholm.
MILAN.—See Turin.

MORAVSKA-OSTRAVA
1,137 kc/s, 263.8 metres; 11 kW.—7.50 p.m., Concert of Light Music by the Station Orchestra, conducted by J. Plichta. 8.35 till Close Down, See Prague. 11.0 (approx.), Close Down.

MOTALA.—See Stockholm.
MUHLACKER.—See Stuttgart.

MUNICH
563 kc/s, 533 metres; 60 kW. Relayd by Augsburg and Kaiserslautern, 536 kc/s, 566 metres; and Nürnberg, 1,256 kc/s, 239 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, See Frankfurt. 1.0 p.m., Time, Weather and Programme Annoncements. 1.10, Agricultural Talk. 1.30, Gramophone Music. 2.0, Relay of the Sechsstämter Choral Society's Festival from Oberröslau. 3.0, Recital of Songs by Women Composers. 3.20, Violin and Cello Recital of Music by Josef Sudek.

JUNE 18th

SUNDAY

continued

with the Composer at the Pianoforte. 3.45, Talk: The National Revolution. 4.5, Humour in Austria—A Radio Sequence (Dr. Erich Portner). 5.10, Reading (E. G. Kolbenheyer). 5.30, Concert, conducted by Erich Kloss; Soloist, Anita Wich (Soprano). 6.40, The Strange Story of the War Volunteer Edmund O'Donovan. 7.0, Six Pieces for Singer and Speaker from a Peasant Tale (Johannes Günther). Music by Wolfgang Jacobi. 7.30, Weather and Sports Notes. 7.40, Talk: The German People and Music. 8.0, Military Band Concert. 9.0, Papa Geis—a Radio Picture with Gramophone Records. 9.20, Concert by the Station Orchestra, conducted by Hans Winter; Soloist, Otto Wolf (Tenor): Overture, The Barber of Seville (Rossini); Aria from Otello (Verdi); Entr'acte from Carmen (Bizet); Scherzo (Dvorák); Selection from Tannhäuser (Wagner); Overture, Rienzi (Wagner). 10.20, Time and News. 11.0, Serenade from Berlin (Witzleben). 12 Midnight (approx.). Close Down.

NAPLES.—See Rome.
NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—6.30 p.m., Readings. 7.0, Parliamentary Notes. 7.15, Weather and News. 7.30 (approx.). Popular Concert. 8.0, Time. 8.1, A Comedy by Stefan Zweig. 9.20, Balalaika Music by Nicolai Arsenjeff. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Old Dance Music. 10.45, Dance Music on Gramophone Records.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—10.25 a.m., Religious Address. 10.40, Sacred Music. 11.5, Agricultural Talk. 12.45 p.m., Giornale Radio. 1.0 to 2.0, Concert of Light Music. In the interval at 1.30, Time and Announcements. 5.30 to 6.30, Gramophone Music. 8.0, Dopplavoro Announcements and Giornale Radio. 8.20, Sports Notes and Gramophone Music. In the interval at 8.30, Time and Announcements. 8.45, Symphony Concert, conducted by A. La Rosa Parodi; Soloist: Arrigo Serato (Violin). In the interval, Talk: The Poetry of Francesco Pastonchi. After the Concert, Gramophone Music. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on

2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—1.0 p.m., News. 1.15, Weather. 1.30, Concert by the Jean Ibos Orchestra: Part I: Cigány Music; Part II: English Music. 3.0, Radio Report of the Autentil Steeple-Chase relayed from the Hippodrome, Auteuil. 6.45, Le Journal Parlé. 8.30, Gramophone Concert. 10.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—10.0 a.m., Sounding of Clarions and Beating of Drums. 10.20, Press Review. 10.30, Gramophone Music. 11.0, Sponsored Programme. 11.35, Gramophone Music. 12 Noon, Interval. 12.15 p.m., Sound Film Music on Gramophone Records. 12.45, Sponsored Programme. 12.50 p.m., Recital of Songs by Paul Weil. 1.20, Interval. 1.30, Gramophone Music. 2.0 to 7.0, Interval. 7.0, Le Journal Parlé. 7.30, Catholic News. 8.0, Gramophone Music. 8.15, Interval. 8.30, In the Land of the Sun—Songs by the Accord Parfait Vocal Quartet. Four Songs of Provence: (a) Venez tôt voir la jeune fille, (b) Magali ma bien-aimée, (c) Les Métamorphoses, (d) Tur-lure-lure; Song of the Landes: L'enfançon; Two Basque Songs: (a) A la fontaine, (b) Chant de la mer; Three Corsican Songs: (a) Berceuse, (b) Venetta, (c) Tarantella. 9.0, Interval. 9.15, The Glass of White Wine—Play (René Wachthausen). 9.45, Gramophone Music. 10.30, News.

PARIS

RADIO PARIS, 174 kc/s, 1,725 metres; 75 kW.—7.45 a.m., Gramophone Music. 8.0, Press Review and Weather. 8.30, Physical Culture. 10.0, Elementary Book-keeping Lesson. 10.20, Advanced Book-keeping Lesson. 10.40, Spanish Lesson. 12.0 Noon, Religious Address. 12.20 p.m., Sacred Music: Prelude, Fugue and Variations (Frankel); Toccata (Gigout). 12.30, Bilbouquet. 12.45, Press Review, News, and Weather. 1.0, Radio Report: A Day in Le Mans by the Unknown Speaker. 1.30, Gramophone Concert: Overture, Anacron (Cherubini); Romance in F (Beehoven); Song of the Flea (Mussorgsky); Variations (Proch). 2.0, Concert of Popular Music. 2.30 to 3.0, Programme in English by the I.B.C.: P. St. A. Ronald announcing: Concert of Gramophone Records. 3.30, Radio Report: A Day in Le

Mans (contd.). 5.30, Gramophone Music: Fête au Harem (Priehrystad); Reviens (Fragonard and Christine); Si l'on ne s'écrit pas connu (Pares-van Parys); Melody (Codini); La petite Tonkinoise (Scottot); Waltz, España (Waldteufel); Honolulu (Yvain); La Czarine (Ganne). 6.0, Popular Concert. 7.0, Concert of Variety Music. 8.0, Radio-Paris Circus. 8.30, News, Sports Notes and Weather. 8.45, Radio-Paris Music Hall; Overture, La Belle Hélène (Offenbach); Song Cycle, La petite ville (Satie); Trois petits piéces montées (Satie); Songs: (a) Pourtant (Monfred), (b) La Chanson du pays (Kaper), (c) Désir (Learsi), (d) Ecoute l'echo (Ackermans); Quand on est jeune (Mercler); Sans rien dire (Legay); Aviation March (Bernieux-Gael); Avril du cœur (Pierre l'Amor); Pays du rêve (Bernieux-Leblond); Selection from Il est Charmant (Morettil); Toi que j'aime (Akberty-Leojac); Ma Rosine (Tarault); Eperdument (Akberty); Dormir sur ton cœur (Gael-Berniaux); Les jolis mots d'amour (Mercler); Tango du vaquero (Akberty-Marino); La Faubourienne (Akberty-Beriaux); Dans la Nuit (Lupin-Berniaux); La Java du Samedi (Akberty-Loyraux); Soir à Montmartre (Messager). In the interval at 9.15, Press Review and News. 10.30 to 11.0, Programme in English by the I.B.C.: Popular Concert: The Robbers' March from Chin-Chin-Chow (Norton); Selection from The Show Boat (Kern); Two Step, Hudson Belle (Caryll); Waltz, Betty (Rubens); Potpourri, Communityland.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—5.15 to 6.15 p.m., Radio City Concert, from New York. 6.15, South Sea Islanders, from New York. 6.30, Allegheny County Memorial Park Concert. 7.0, Summer Idyll, from New York. 7.15, The Boys of Wynnewcastle. 7.30, The Northwestern Chronicle, from New York. 8.0, National Opera Concert, from New York. 9.0, All-quippa Male Chorus. 9.15, Symphonette, from New York. 9.30, Vesper Services from Shadyside Presbyterian Church. 10.30, Pages of Romance, from New York. 11.0, Time Signal, Sextet and Trio from Girls Glee Club of Westminster College. 11.15, Weather Report. 11.16, Sport Review. 11.22, Press News-Review. 11.29, Temperature Report. 11.30, L'Heure Exquise, from New York. 12 Midnight, Time Signal and Jack Pettis and his Orchestra. 12.30 to 3.0 a.m. (Monday),

New York Relay. 12.30, Great Moments in History. 1.0, Riesenfeld's Viennese Programme. 1.45, Floyd Gibbons. 2.0, Will Rogers with Orchestra. 2.30, Pianoforte Recital by Maria Carreras. 2.45, Phil Dewey and his Fireside Songs. 3.0, Time Signal and Programme to be announced.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—10.40 a.m., Old Italian Arias by Zorka Studká-Dolel. 11.0, Military Band Concert, relayed from Podesbrady. 12 Noon, Chimes from St. Ludmilla's Church. 12.5 p.m., Wind Instrument Concert conducted by A. Modr. 1.30, Agricultural Talk. 1.45 to 1.55, Talk. 1.40, Municipal Band Concert, relayed from Ostrov. 5.0, Gramophone Music. 5.30, Talk. 5.45, Gramophone Music. 6.0, German Transmission: Concert by Members of the German Academy of Music, Review of Czech Musical Broadcasts, and News. 7.0, See Brno. 7.50, See Moravská-Ostrava. 8.30, Organ Recital. 9.0, Concert by the Station Orchestra, conducted by O. Parik. Soloist: Josef Schwarz (Bass-Baritone). 10.0, Time, News, Press Review and Sports Notes. 10.20, Popular Orchestral Concert. 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres. 10.25 a.m., Chimes. 10.30, Protestant Service from the Temple du Bas, Neuchâtel. 11.15 (from Lausanne), Gramophone Concert. Part I: Classical Music. Part II: Romantic Music. Part III: Modern Music. 12.30 p.m., News. 12.40 (from Lausanne), Gramophone Concert. Part I: Popular Swiss Music. Part II: French Ballet Music; Literary Interlude. Part III: Hawaiian Guitar Music. 2.0 to 3.0, Interval. 3.30 (from Lausanne), Concert by the Radio Orchestra, conducted by Eduard Moser. 4.15 (from Lausanne), Concert by a Peasant Orchestra. 4.45 (from Lausanne), Concert (contd.). 5.30 to 7.0, Interval. 7.0 (from Lausanne), Catholic Address. 7.40 (from Lausanne), Sports Notes. 8.0, Concert by the Radio-Suisse Romande Orchestra. 9.0 (from Lausanne), Talk by Jean Peytraquin. 9.10 (from Lausanne), Cello Recital by Maurice Maréchal; Largo Maestro (Ph. E. Bach); Variations on a Mozart-Beehoven Theme (Ph. E. Bach); Suite No. 2 (d'Hervelois); Esquisses (Karjinsky); Gopak (Mussorgsky); Liebestraum (Liszt); Two Spanish Songs (Nin). 9.50, News. 10.0 (from Lausanne), Dr. Freischütz—Opera in Three Acts (Weber) on Gramophone Records. 10.30, Close Down.

RJUKAN.—See Oslo.

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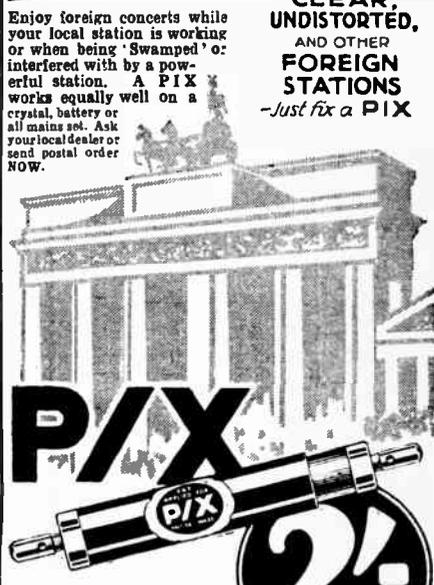
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JUNE 18th

SUNDAY

continued

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—10.10 a.m., News, Sports Notes, and Amusement Guide. 10.30, Agricultural Talk. 10.45, Bible Reading. 11.0 to 12 Noon, See Turin. 12.30 p.m., Concert of Variety Music. 1.30 to 2.30, See Turin. 4.45 (Naples), Programme for Children, Weather, and Sports Notes. 5.0, Orchestral Concert. In the interval, Sports Notes. 6.15, Announcements. 7.30, Sports Notes. 7.45, Soprano Solos by Carlotta La Ferlita. 8.0, Time and Announcements. Introductory Talk to the following Transmission. 8.30, See Turin. In the intervals, Talk and Science Review. After the Opera, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—5.0 to 9.45 p.m. (approx.), New York Relay. 8.0, Wayne King's Orchestra. 8.30, Dr. Ralph W. Sockman in the Radio Pulpit. 9.0, Fiddlers Three. 9.15, Wildroot Institute. 9.30 to 9.45, Temple of Song. 12.45 a.m. (Monday), Horse Sense Philosophy. 1.0 till 3.45, New York Relay. 1.0, Popular Programme. 2.0, Manhattan Merry Go Round. 2.30, American Album of Familiar Music. 3.0, Variety Programme. 3.15, Highlights and Shadows. 3.45, Sunday at Seth Parker's, from New York, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER; 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—10 a.m. (from Basle), Protestant Service. 10.45 (from Basle), Chamber Music. 11.30 (from Basle), Emil Beumann reads from his own Works. 12 Noon (from Basle), Famous Singers on Gramophone Records. 12.30 p.m., Time, Weather, and News. 12.40 (from Zürich), Concert of Italian Music by the Radio Orchestra. 1.30 (from Basle), Agricultural Talk: Climate and Systems of Cultivation in Switzerland. 2.0 (from Basle), Concert by a Peasant Orchestra. 2.30 to 5.0, Interval. 5.0, Gramophone Music. 6.0 (from Basle), Talk: Man's Debt to Animals in the Great War. 6.30 (from Basle), Talk. 7.0 (from Basle), Time and Sports Results. 7.5, Concert by the Radio Orchestra. 8.0 (from Basle), Religious Talk. 8.30 (from Basle), Viola Music. 9.0 (from Basle), News. 9.10 (from Basle), Concert of Folk Songs by the Male Voice Choir and the Radio Orchestra, conducted by Walter Müller. 10.15 (from Basle), Sports Report and Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 35 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,344 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—11 a.m., Divine Service Relay. 12.45 p.m., Weather. 3.0, Gramophone Music. 3.45, Talk. 4.15, Choral Concert relayed from Filipstad. Conductor: John Nordquist. 5.5, Programme for Children. 5.30, Reading. 6.0, Evensong. 7.15, Weather and News. 7.35, Outside the Law—Play (Hertzman-Erleson). 8.30, Orchestral Concert. Soloist: Helga Görin (Songs). Overture, Don Giovanni (Mozart); Two Arias from Figaro (Mozart); Symphonic Poem, The Moldau (Smetana). Songs (Grieg): (a) Herzvinden, (b) Solveig's Lied, (c) An den Frühling. Suite in Old Style (Halvorsen); Aria from Madame Butterfly (Puccini). 9.45, Weather and News. 10.0, Reading of Modern Swedish Poetry. 10.15, (from Göteborg), Military Band Concert, conducted by Bror Lundström. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—9.30 a.m., Orchestral Concert, conducted by Maurice de Villers. 10.45, Protestant Service in German. 11.30, Catholic Service in French, relayed from the Bon Pasteur Church. 12 Noon, Light Music on Gramophone Records. 12.45 p.m., News. 1.0, Time Signal. 1.1, Dance Music on Gramophone Records. 2.30 to 3.0, Interval. 3.0, Radio Report on the Grand Steeple Chase, from the Hippodrome. Antennil. 4.15, Variety Music on Gramophone Records. 5.15, Concert of Sacred Music from St. Paul's Church. Soloists: Rupp (Organ) Roskam (Cello), and O. Lehmann (Songs). 6.15, Sports Notes in French. 6.30, Concert of Jazz Music, conducted by Roskam. 7.15, Medical Talk in German. 7.30, Time, News and Sports Notes. 7.45, Gramophone Music. 8.0, Press Review in German, Lottery Results and Announcements. 8.15, The Office of Corpus Christi, with Introductory Talk in German, Chimes, and Benediction of the Blessed Sacrament, relayed from the Bon Pasteur. 9.0, Alfred De Musset Programme: On ne saurait penser à tout—Play in One Act; Louison—Two-Act Comedy

in Verse. In the interval, Press Review in French. 11.0, Dance Music from the Savoy. 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Concert by the Freiburg Concert Orchestra, conducted by Karl Körner, relayed from Glotterbad. 1.0 p.m., Topical Talk. 1.15, Popular Music on Gramophone Records. 2.30, Choral Concert. 3.0 (from Karlsruhe), Agricultural Talk. 3.30, See Frankfurth. 4.30, See Langenberg. 5.0, Mandoline Concert. 6.30, Concert by the Beber Quartet. Quartet in G (Mozart); Quartet in C Minor (von Schillings). 7.15, Sports Notes. 7.30, The Fifteenth German Gynastic Festival in Stuttgart 1933. 8.0, Titus Fenerfuchs—or The Talisman—Lyric Play in Three Acts (Nestroy). 9.30, Extracts from L'Elisir d'Amore—Opera (Donizetti), on Gramophone Records. 10.30, Time and News. 10.50, Programme from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—9.40 a.m.—See Turin. 9.55, Mass from the Cathedral of San Giusto. 11.0, Religious Address. 11.20, Agricultural Talk. 11.40 to 12.30 p.m. (approx.), Interval. 12.30 (approx.) till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.0 metres.—9.40 a.m., Giornale Radio. 9.55 to 10.40, Interval. 10.40, Agricultural Talk. 11.0, Mass from the Church of the Annunciation, Florence. 12 Noon to 12.15 p.m., Bible Reading. 12.30, Concert of Variety Music. In the interval at 1.0, Time and Announcements. 1.30 to 2.30, Orchestral Concert, conducted by Ugo Tanini. 4.30, Variety Concert. Sports Notes in the Interval. 6.15 to 6.30, Sports Report. 7.0, Time, Announcements and Gramophone Music. 8.0, Giornale Radio and Sports Notes. 8.20, Talk on the following transmission. 8.30, I carnasciali—Opera in Three Acts (Guido Luccetti). In the intervals, Talk and Theatre Notes, Giornale Radio after the Opera.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—11.30 a.m., Concert of Music by Austrian Composers, by the Vienna Symphony Orchestra, conducted by Anton Konrath; Soloist, Alfred Arbter (Pianoforte). 1.10 p.m., Concert by the Vienna Mandoline Orchestra Society. 3.0, Time and Programme Announcements and Report of Events during the past week. 3.5, Review of Books of Poetry. 3.30, Concert of Romanian Music. 4.30, Talk: Ceylon. 5.0, Concert by the Vienna Chamber Orchestra, conducted by Karl Wiesmann. 6.20, Recital of Ballads and Songs (Börries von Münchhausen), by Otto Löwe, with Introductory Talk. 6.50, Variety Programme. 8.0, Time and Sports Notes. 8.10, An American Comedy in Three Acts (Jack Larric). 9.45, News. 10.0, Concert of Light Music.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements and Weather. 12.15, Parliamentary Report. 12.45, Concert by the Station Orchestra, conducted by J. Ozimiski. Soloist: Uloniewski (Songs). 2.0, Agricultural Talk. 2.15, Weather for Farmers. 2.20, Choral Music. 2.45, Veterinary Talk. 3.5, Programme relayed from Katowice, 734 kc/s, 408 metres. 3.15, News. 3.20, Gramophone Music. 4.0, Programme for Young People. 4.15, Programme for Children. 4.30, Concert relayed from Ciechocinek. 5.0, Medical Talk. 5.15, Musical Programme relayed from Ciechocinek. 5.45, Song and Violin Recital by J. Goebel-Tarnawa and M. Fluderbaum. 6.35, Programme Announcements and Miscellaneous Items. 7.0, Comedy (Kozłowski). 7.40, Answers to Technical Correspondence. 8.0, Concert by the Station Orchestra, conducted by S. Nawrot. Soloist: H. Makowska (Songs); Spanish Overture (Keler-Bela); Berceuse and Prelude (Bernefeld); Invitation to the Waltz (Weber-Berlioz); Songs; Spanish Suite, La Feria (Lacôme); Doubt (Glinka); Potpourri of Polish Melodies (Osmaniski); Songs; Waltz, Künstlerleben (Joh. Strauss); Serenade (Titt); Melody (Dargomyzski); Helen Polka (Wrónski); Mazurka (Namiński); Polish March (Helmberg). 10.0, Dance Music. 10.25, Sports Notes. 10.40, Announcements, Aviation Weather Report and Police Notes. 10.45, Dance Music, relayed from Ciechocinek.

ZÜRICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1.337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Stock Exchange Quotations and Weather Report. 6.0, Programme for Children. 6.45, News. 7.0, Gaelic Talk. 7.15, Talk by P. Ryan: The Manufacture of Cement. 7.30, The Station Orchestra. 8.0, Mezzo-Soprano Solos by G. Mortimer. 8.15, The Station Orchestra (contd.). 8.40, Dramatic Sketch by M. O'Hea and Company. 9.10, Pianoforte Recital by M. MacNamee. 9.25, Fintan Lalor Band. 9.45, Sponsored Programme. 10.45, Time, News, Weather and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. Meditation from Thaïs (Mussenet); Appassionato (Ackermans); Selection from La Traviata (Verdi); Intermezzo (Barbi); Rondo alla turca (Mozart); Selection from Tannhäuser (Wagner). 8.0, Request Gramophone Concert. 8.30, Exchange Sports Notes and Talk in Catalan. 9.0, Gramophone Music and News. 10.0, Climes from the Cathedral, Weather. Exchange and Market Prices. 10.5, Humorous Review of the Week in Verse. 10.15, Concert by the Station Orchestra. 11.0, Soprano Song Recital by Enriqueta Noguera. 11.30, Radio Gazette in Catalan. 12 Midnight, News and Dance Music by the Sobré Band, relayed from the Casa Llibre. 1.0 a.m. (Tuesday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Report, and Dopolavoro Notes. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35, Symphony Concert, conducted by Daniele Anfiteatrof. Soloists: Remy Principe (Violin) and Benedetto Mazzacurati (Cello). Overture, Figaro (Mozart); Concerto in C, Op. 102, for Violin and Cello (Brahms); Rondo for Violin and Orchestra (Sinigaglia); Eight Popular Russian Songs (Liadov); Symphonic Picture, La notte di Platon (De Sabata); Overture, The Mastersingers (Wagner). In the interval, Literary Notes. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—4.0 p.m., Accordion Recital of Folk Music. 4.30, Gramophone Music. 5.0, German Lesson. 6.55, Time Signal and Programme Announcements. 7.0, Concert by the Station Orchestra. 8.0, An Opera, relayed from the National Theatre. In the interval at 9.30, News and Time.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,638 metres; 60 kW.—2.0 p.m., Gramophone Concert. 3.0, Talk for Women: Knitted Garments for the Summer. 3.30, Weather and Exchange. 4.0, Talk from Heilsberg. 4.20, Concert from Breslau. 5.0, Educational Talk: German Schools and the School Life of Germans Abroad. 5.35, Schubert Song Recital by Elizabeth Ide. Waldesnacht; Wohin? Heilige Nacht, du sinkest nieder; An den Mond; Das Lied im Grünen; Im Abendrot. 6.0, A Poem. 6.5, Talk by A. Myerz. 6.25, Reading: Idle Thoughts of an Idle Fellow (Jerome K. Jerome). 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Epigrams. 8.5, Dances of To-day and Yesterday by the Anton Gorony and the Bernhard Dercksen Bands. 10.0, Weather and News. 10.45, Weather for Shipping. 11.0, Concert from Leipzig. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW. 4.30 p.m., Concert by a Stalhelm Orchestra from the Zoological Gardens. 5.25, Talk: Modern Art in the Grosser Berliner Exhibition. 5.45, Talk: Frederick the Great as a Poet. 6.5, Talk on Music: Operetta. 6.15, Sonata in F for Violin and Pianoforte Op. 21 (Beethoven). 6.40, The Witzleben Station informs its Listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations relayed from Frankfurt. 8.10, Siegfried Wagner Concert by the Berlin Wireless Chorus, the Berlin Wireless Orchestra, conducted by Rudolf von Schmidtseck, and Anita Oberländer (Soprano). Overture, Der Bärenhäuter; Introduction to the Third Act and Verena's Lament from Der Kobold; Overture, Vision and Waltz Scene from Bruder Lustig. 9.0, Dialogue between a Doctor and an Economist on the Fostering of the Race. 9.20, Talk: Have you heard? 9.30, Variety Programme. 10.10, Weather and News, followed by Dance Music from the Wilhelmshalle of the Zoological Gardens. In the interval from 11.0 to 11.5 Talk: What they are talking about in Berlin. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMÜNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

MONDAY

JUNE THE NINETEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Variety programme.
- LONDON REGIONAL** Operatic and orchestral programmes.
- MIDLAND REGIONAL** Light music.
- NORTH REGIONAL** Orchestral concert.
- WEST REGIONAL** Orchestral concert from the National Museum of Wales.
- BELFAST** Music of Coleridge Taylor.

ABROAD

- BARI** 8.35 p.m. Symphony concert, conducted by Daniele Anfiteatrof.
- BELGRADE** 4.0 p.m. Accordion recital of folk music.
- COPENHAGEN** 10.10 p.m. Recital of Norwegian and Finnish songs, by Hjørdis van Asten.
- LEIPZIG** 4.20 p.m. Concert by the Emdé Orchestra.
- MUNICH** 9.30 p.m. Concert of chamber music by the Raucherisen Trio.
- STOCKHOLM** 7.30 p.m. Cabaret.
- STRASBOURG** 8.45 p.m. Opera: "Orphé et Eurydice" (Gluck), relayed from the Casino, Vichy.
- TURIN** 10.0 p.m. Programme of variety music.
- VIENNA** 7.10 p.m. Military Band concert.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW. 6.15 p.m., Radio Journal. 7.30, News. 7.35, Talk: Bordeaux a Hundred Years Ago. 7.50, Lottery Results. 8.0, Talk on Hygiene. 8.15, Charades. 8.20, News. 8.30, Request Gramophone Music. 8.45, Orphée et Eurydice—Opera in Three Acts (Gluck), relayed from the Casino, Vichy.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.10 p.m., Violin Sonatas by Norbert Kubát. 6.55, Talk for Housewives. 7.0, See Prague. 7.25, See Brno. 8.0, Violin Recital, relayed from Kosice, 1,022 kc/s, 293 metres. 8.35, Recital of Yugoslav Songs. 9.0, Concert of Sacred Music. 10.0, See Prague. 10.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Głowiitz, 1,184 kc/s, 253 metres.—1.0 p.m., Gramophone Concert of Popular Music. 2.0, Time and News. 2.20, Weber Concert on Gramophone Records. 3.0, Market Prices. 3.40, Review of New Books—Short Stories. 4.0, Concert by the Station Orchestra, conducted by Bruno Janz; Soloist, Wanda Mazarek (Soprano). 5.30, Market Prices, followed by Talk on German Culture. 5.55, Programme to be announced. 6.15, Talk: How to keep Young. 6.35, Trio in G (Haydn), on Gramophone Records. 6.50, Weather, News and Market Prices. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Programme of Songs and Prose by Working-Class Writers (arr. Hans Krieger). 9.0, News. 9.10, Variety Programme. 10.10, Time and News. 10.30, Wireless Technical Talk. 10.40, Talk: St. John's Eve Customs in Silesia. 11.0 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: News, Elementary French Lesson and Educational Talk. 7.0, See Prague. 7.25, A Peasant Play in Dialect. 8.0, Violin Recital, relayed from Kosice, 1,022 kc/s, 293 metres. 8.35, Talk on Czech Poems with Recitations by Nina Balarová. 9.5, Orchestral Concert by Members of the Brno Conservatoire; Conductor, Z. Chalabala. 10.0, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by Leemans. Overture from "Semi-ranis" (Rossini); Introduction and Humoresque for Violin (d'Ambrosio); Ma poupée chérie; Melody (de Séverac); Fantasy on "La Vivandière (Godeard); La cinquantaine; Solo for Cello (Derissen); Napoli, Serenade (d'Ambrosio); Fantasy on Gianni Schicki

(Puccini); Selections from Film Music (Heyman). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Music: Overture from La Bohémienne (Balfe); La promenade en voiture (Alix); Henry VIII: Qui donc commande (Saint-Saëns); Melody (Noak); Kashmiri Song (Woodford-Finden); The Forge in the Forest (Michiels); Air from The Queen of Spades (Tchaikovsky); Kund an die Wolga (Borchert); Melody (Lattès); Arioso from Benvenuto Cellini (Diaz); Selection from La fille de Madame Angot (Lecocq). 2.0, Broadcast for Schools. 5.0, Concert by the Station Symphony Orchestra, conducted by Kumpfs: Overture, The Thieving Magpie (Rossini); Three Little Pieces (Güirod); The Flight of the Bumble Bee (Rimsky-Korsakov); Dance of the Tumblers (Rimsky-Korsakov); Scènes alsaciennes (Massenet); Trois Pieces pour mes Petits Amis (Pierne); Suite of Viennese Waltzes (Gilsen). 6.0, Talk: Youth Hostel in Belgium and Abroad. 6.15, Gramophone Records. 6.30, Concert by the Small Station Orchestra, conducted by Leemans. 7.15, Horticultural Talk. 7.30, Film Review. 8.0, Concert by the Radio Orchestra, conducted by Walpot. Soloist, Mme. Dorine Pauwels (Songs). Marche heroique (Saint-Saëns); Waltz, Frühlingstimmen (Joh. Strauss); Overture, Zampa (Hérold); Songs: (a) Habanera, from Carmen (Bizet), (b) La Vivandière (Godard); Waltz (Paradis). 8.30, La Farce des Bossus—One-Act Comedy in Verse (after Pierre Jalabert). 9.5, Concert (contd.): Polpourri (Morena); Russian Dance (Bulleman); Songs; Selection from Hans the Flute Player (Ganne); Ballet Music (Popy). 10.0, Le Journal Parlé. 10.10, Concert, conducted by Felleman, relayed from the Grand Hotel, Antwerp.

BRUSSELS (No. 2)

N.I.R.; 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Gramophone Concert of Popular Music. 1.0 p.m., Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Leemans. Soloist, Donliez (Pianoforte). Festival March (Henneberg); Overture, Les cent vierges (Lecocq); Aubade (Caludi); Selection from The Merry Widow (Lehár); Dance Suite for Pianoforte (Mayert); Serenade (Moszkowsky); Tango (Rotter-Rubens); Foxtrot, Ein nettes kleines Fräulein (Sachs-Schwarz). 2.0, Broadcast for Schools. 5.0, Concert by the Radio Orchestra, conducted by C. Walpot: Jubilation March (De Bock); Waltz, Mia cura (Bucalossi); Overture, The Caliph of Bagdad (Boildieu); Extracts from Insalah (d'Agrevès); Selection from Hansel and Gretel (Humperdinck); Two Flemish Sketches (Brusselmann). 5.45, Programme for Children. 6.30, Gramophone Concert: Fantastic Variations, Don Quixote (R. Strauss); Overture, The Secret Marriage (Cimarra). 7.15, Talk on Wireless. 7.20, Educational Talk. 7.30, Programme by Pirreke Pirrewit. 8.0, Concert by the Station Symphony Orchestra,

conducted by J. Kumps: Part I, Schumann Music: Overture, Manfred; Songs: (a) Die Lotosblume, (b) Der Nussbaum; Pianoforte Concerto in A Minor. Part II: Prelude to Hansel and Gretel (Humperdinck); Three Songs (Schumann); Serenade for Wind Instruments (Mozart); Interlude in Old Style (Glazunov); Ecossaises (Beethoven). 10.0, Journal Parlé. 10.10, Old and Modern Dance Music on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Dance Music by the Seidmann Jazz Band. In the interval at 6.0, Radio Journal. 7.0, Educational Programme. In an interval at 7.20, Gramophone Music. 8.0, Trio in B for Violin, Pianoforte, and Cello (Brahms). 8.30, Pianoforte Recital of Jazz Music, by T. Sibiceanu. 9.0, Talk. 9.15, Light Music by the Marco Orchestra, relayed from the Continental Restaurant. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—Also relayed on 840 metres from 8.10 p.m. till Close Down. 5.0 p.m., Radio Report from the Zoological Gardens. 6.45, Gramophone Music. 7.30, Exchange. 7.40, Talk. 8.10, Musical Programme. 9.15, News. 9.30, Concert by the Opera House Chamber Music Society: Quintet in E Flat (Beethoven); Quintet (Ibert); Chamber Symphony, Op. 8 (Wolff-Ferrari). 10.10, Weather. 10.45, Concert by the Lajos Kiss Cigány Band, relayed from the Gellert Hotel.

CASSEL.—See Frankfurt.

COPENHAGEN

1,057 kc/s, 281 metres; 0.75 kW. Relayed by København, 260 kc/s, 1,153 metres.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, relayed from the Hotel d'Angleterre. 2.0 to 2.45, No Transmission. 2.45, Hints for the Housewife. 3.0, Gramophone Music. 3.30, Concert by the Radio Orchestra, conducted by Lanny Gröndahl. Overture, Casanova (Lincke); Swedish Folk Melody and Dance (Södermann); Hindu Song from Sadko (Rimsky-Korsakov); Valse mignonne (Palmgren); Serenade for Flute and Viola (Bahne); Three Pieces from Much ado about Nothing (Korngold); Reading: Prelude to Lohengrin (Wagner); Waltz, Tales from the Vienna Woods (Joh. Strauss); Colonial Song (Grainger); Norwegian Wedding March for Strings (arr. Herman Sandby); Bellmaniana (Malm); Russian Dance. 5.35, Exchange and Fish Market Prices. 5.50, Talk. 6.20, English Lesson. 6.50, Weather Forecast. 7.0, News. 7.15, Time Signal. 7.30, A Discussion on Christianity. 8.50, Concert of Opera Music by the Station Orchestra, conducted by Lanny Gröndahl. Overture, Titus (Mozart); Ballet Music from Orpheus and Eurydice (Gluck); Selection from Il Trovatore (Verdi); Intermezzo from Cavalleria rusticana (Mascagni); Selection from Samson and Delilah (Saint-Saëns); Dance of the Hours from La Gioconda (Ponchielli). 9.20, Reading (Edgar Wallace). 9.40, Pianoforte Recital by Viktor Fischer. 9.55, News. 10.10, Recital of Norwegian and Finnish Songs by Hjørdis van Asten. Violin (Svendsen); Til et barn (Jordan); Såven (Jordan); Mot kveld (Bæcker-Gröndahl); Liten Kirsten (Almest); Serenade (Per Reidarson); Skogsulvora toner (Merikanto); En varvissa (Palmgren). 10.30, String Quartet in A Minor, Op. 41, No. 1 (Schumann), by the Gerhard Rafn Quartet. 11.0, Dance Music from the Lodborg Restaurant. 12 Midnight (in the interval), Time and Chimes from the Town Hall. 12.30 a.m. (Tuesday), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.20 p.m., News. 7.35, Programme Announcements. 7.40, Programme from Lwów, 788 kc/s, 381 metres. 8.0, See Warsaw. 11.0 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Ronald and B. Mc-Nabb. 4.30, Concert for Chichester and Bognor Listeners: My Hero, from The Chocolate Soldier (O. Strauss); Songs: Captain Mac (Sanderson); The Sunshine of your Smile; Song: The Pipes of Pan (Monckton); Barefoot Trail; Song: Down in the Forest (Landon Ronald); The Wedding of the Birds; Songs: (a) Patiently Smiling (Lehár), (b) Jus' keeping on (Phillipe Carter); Flowers of Spain; Ziganette; Evolution of Dixie (Lake). 5.15, Concert for Hastings and Eastbourne Listeners: The Toy-maker's Dream (Golden); Try a little Tenderness (Woods); Paradise (Brown); Brother, can you spare a Dime? (Harburg); I'm playing with Fire (Berlin); Childhood Memories Medley; A Ghost of a Chance (Washington); Street of Dreams (Lewis and Young); I saw down and go Boom (Stevens); Deep Water (Brian); Heather Moon (Damprell); The Bogie Wail (Myers). 6.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.8, Dance Music by the Ibcilians; Tell me

JUNE 19th

MONDAY

continued

to-night (Spoliansky); Same Old Moon (Baskette); Where is this Lady? (Lehar); Goodbye Blues (McHugh); Marry Me (Krauss); Rock your cares away (Towers); After to-night we say Goodbye (Towers); A Bedtime Story (Towers); Silver Hair and Heart of Gold (Gilbert); Kalua (Kern); Song of the Bells (Pola); Dancing Time (Kern); Happy Feet (Ager); Harlem Madness (Azer); You know what I'll do? (Büchel); Blue turning Grey over you (Waller). 11.0, Gramophone Concert: Yip-Laddy-Lay (Cobb and Flynn); Organ Solo: Rain on the Roof (Ronell); Seven Veils (de Sylva); Morning aboard the Saucy Sue; Love, here is my Heart (Ross); The Clock is playing (Howitt); After the Ball (Harrie). 11.20, Orchestral Music: Overture, A Midsummer Night's Dream (Mendelssohn); The Witches' Ride, from Hansel and Gretel (Humperdinck); The Gingerbread Waltz, from Hansel and Gretel (Humperdinck); Aria of the Miller (Dorogovizhsky); Melody (Wagner); Song without Words in A Minor (Tchaikovsky); Minuet No. 1 (Mozart). 12.5 a.m. (Tuesday), I.B.C. Late News. 12.10, Club Concert for Drott-wich Listeners: The Mad Major (Aldford); If I were King (Coslow); Xylophone Solo: Gipsy Rondo (Haydn); March, Pomp and Circumstance (No. 1) (Elgar); A Bachelor Gay (Tate); Music from Cavalcade (Coward); Simmers and Saints (Geel); Pianoforte Solo: Jack o' Clubs (Steale); If I ever meet the Sergeant (Sterndale Bennett); Colonel Bogey (Alford). 1.0, Instrumental Solos: That Tiny Teashop (Raymond); Xylophone Solos: Aeroplane Polka; Highland Schottische; Songs: (a) Dance away the Night, (b) Let me dream in your Arms again; Argentina Amor (Blum); Xylophone Solo: Dance of the Marionettes; War March of the Priests, from Athalia (Mendelssohn). 1.30, Sea Shanties: Nautical Moments; Blow the Man down; The Drunken Sailor; Nancy Lee; My Bonny; Sailing, Sailing; Shenandoah; More Nautical Moments; One more Day; One Dollar Fifty a Day. 2.0, Dance Music by the Heolians: Happy Feet (Ager); Bessie couldn't help it (Warner); Like to do things for you (Ager); Cinderella Brown (McHugh); Let's put out the Lights (Hupfeld); Sons les toits de Paris (Moret); I can't write the Words (Field); Beyond the Blue Horizon (Whiting); Here comes Emily Brown (Conrad); When Work is through (Sherman); Cheer up and Smile (Conrad); Gosh, Daru (Young); Yes, Mr. Brown (Abraham); Love is the sweetest thing (Noble); Take a Spot of Happiness (Rei-feld); Round the Bend of the Road (Klenner). 2.57 a.m., I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., Concert from Munich. 5.45, Economic Notes. 6.0, German Almanac. 6.15, Italian Lesson. 6.45, Topical Review. 6.50, Time and News. 7.0, Transmission for all German Stations: Saarland Programme. 8.0, Talk by Carl Stueber. 8.10, Bunter Abend. 8.45, Variety Programme. 9.0, Concert of Modern German Music by the Station Orchestra, conducted by Hans Roshaud; Solists, Tiny Dehüser (Soprano) and Rheinhold Merten (Organ); Suite, In Memoriam (Gorissen); Cantata for Mezzo-Soprano and Orchestra; Das Mittelde (Sachse); Music for Chamber Orchestra (Maasz); Brantled for Soprano and Organ (Kaminski); Song for Soprano and Orchestra: Liebesklage, from Des Knaben Wunderhorn (Unger); Ballet Suite, Op. 130 (Reger). 10.15, Time and News. 10.35, Friedrich Huel reads from his own works. 11.0, See Munich. 12 Midnight, Close Down.

FREDRIKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENÈVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Eremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Variety Programme. 6.45, Exchange and Weather. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Variety Programme. 9.30, First General News. 9.40, Programme in Commemoration of Ferdinand Avenarius, Recitations by Käthe Wittenberg and Kurt Eggers-Kestner. 10.10, News. 10.20, Topical Talk. 10.30 (from Kiel), Concert by the Orchestra of Unemployed Musicians, conducted by Hans Döring. Overture in Italian Style (Schubert); Selection from Don Carlos (Verdi); Intermezzo, Blue Porcelain (Kettelby); Prologue to I Pagliacci (Leoncavallo); Selection from Der lachende Ehemann (Eysler); Waltz, Sinnbild (Lüncke); March, Friendship (Sousa). HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert: Potpourri, Bei Lied und Wein (Armandola); The Women in the School (Brown); Ist das nicht Wunder-voll (Meisel); Mattinata (Leoncavallo); Lolita (Buzzi-Pecchia); Melody (Brown); Selection from The Czarevitch (Lehar); Russian March (Ikanov); Japanese Scene (Zamerlik); Intermezzo, Oregon (Penna); Serenade (Beda); Hungarian Melodies; Potpourri of Folk Songs. In the interval at 1.20, News. 2.30 (from Danzig), Exchange and Market Prices. 3.0, Market Prices. 3.30, Talk: To become a Housewife is not difficult—but to be a Housewife is very difficult. 4.0, Talk: The Wehlauer Horse Market. 4.20, Concert by the Small Station Orchestra conducted by Eugen Wilcken; Czardas, Czikos et Bohémienne (Bolin); Suite, La Source (Delibes); Selection from Der arme Jonathan (Müllcker); Serenade (Marazzi); Hesse Liebe (Wappaus); Selection from A Masked Ball (Verdi); Serenade in E (Meyer-Köln); Czardas, Ziegen-schmucht (Nicklas-Kempner); Waltz, Hoffmungssterne (Fetras); Selection from The Trumpeter of Säckingen (Nessler). In the interval at 5.0, Reading from André (Ruth Kristekat). 5.50 (from Danzig), Talk for Young People: From the Palms to the Eternal Snows. 6.15, Market Prices. 6.25, (from Danzig), Talk: Organs and Organ Music in Old Danzig. 6.50, Weather. 7.0, Transmission for all German Stations relayed from Frankfurt. 8.15 (approx.). See Langenberg. 9.0, News. 9.5, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetzky. Soloists: August Nöthing (Flute) and Friedel Ellguth (Harp). 10.15, Weather and News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. 7 kW. up to 4.40 p.m.—10.40 a.m. till Close Down. Programme of the Allgemeine Vereinigung Radio Onroep (A.V.R.O.). 10.40, Organ Recital by Marthe Braquard. 11.25, Gramophone Music. 11.40, Time Signal. 11.41, Concert of Light Music by the Reut-meester Orchestra. 1.55 p.m., Interval. 2.10, Pianoforte Recital by Rie Batenburg. 2.40, Gramophone Music. 3.40, Oboe Recital by Sam Zilverberg. 4.10, Talk and Gramophone Music. 5.10, Concert by the Wireless Orchestra, conducted by Nico Treep. Overture, Flotte Bursche (Suppé); Selection from Les Dragons de Villars (Maillart); Waltz (Kahnig); Yvette (Schmalstich); Two Dutch Dances (Sancetini); Martial Moments (Ambrey); Serenade (Heykens); American cakwalk (Lüncke). 6.10, Book Talk: Modern Prose and Modern Criticism. 6.40, Concert (contd.). A Feast in Aranjuez (Demerseman); Mondnacht auf der Alster (Fetras); March. 7.10, Talk. 7.40, Time Signal. 7.41, News. 7.45, Concert of Light Music by Kovacs Lajos and his Orchestra, with Songs by Bob Scholte. 8.55, Gramophone Music. 9.40, Recital of Modern Songs by Mariette Serk. 10.0, Concert by the Wireless Orchestra, conducted by Nico Treep: March, The Blue Devils (Williams); Hungarian Waltz; Rhapsody (Lindsay); Theimer; Song, Max and Moritz (Zimner); Song, Si vous, Faviat, compris (Denza); Czardas (Monti); Selection from Das süsse Mädel (Reinhardt); Cherry Blossom Festival (Diecker); March, Old Comrades (Teike). 11.10, Gramophone Music. 11.40, Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.55 a.m. till Close Down. Programme of the Christian Radio Society (C.S.R.V.). 11.55, Yodel Music. 12.10 p.m., Organ Recital by Jan Zwart, relayed from a Lutheran Church in Amsterdam. 1.40, Soprano Song Recital by Co Van der Mark. Songs (Mozart): (a) Ridente la calma, (b) An Chloë, (c) Das Veilchen, (d) Warnung; Songs (Brahms): (a) Geheimmis, (b) In Waldesemskait, (c) Immer leiser wird mein Schlummer; Songs (Reger): (a) Zum Schlafen, (b) Marie Wiegenlied; Wie nähte mir der Schlummer (Weber). In the interval, Gramophone Records: Overture, Rienzi (Wagner). 2.25, Cookery Lesson. 2.55, Dressmaking Lesson. 3.25, Programme to be announced. 3.40, Religious Programme in Frisian Dialect. 4.40, Song Recital by J. de Heer. 4.55, Quartet Concert. 6.10, Answers to Correspondents. 6.40, Political Review. 6.55, Press Review. 7.40, Battle of Waterloo Commemoration Concert relayed from Hagen. A String Orchestra, Massed Choirs and Soloists. 9.25, Press Review. 9.40, Gramophone Concert of Popular Music.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.20 p.m., Talk: The Jagellon Dynasty. 7.35, Announcements and Gramophone Music. 7.40, Programme from Lwow. 7.88 kc/s, 381 metres. 8.0, Programme from Warsaw. 10.5, Dance Music. 11.0, Talk in Serbian.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—7.30 p.m., Variety Items. 8.0, Time, Weather and News. 8.40, Variety Items. 9.0, Health Talk. 9.20, Violin Sonata (Beethoven). 9.50, Review of Foreign Politics. 10.10, Sports Report. 10.15, Concert. 11.0 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Talk. 6.40, Music Programme. 7.0, Recitations. 7.20, Concert by the Station Orchestra: Overture, Die schöne Galathée (Suppé); Waltz, Golden Rain (Waldteufel); Selection from Mamezelle Nitouche (Healy); Andante Lamentoso (Humphries); Frischer Mut, leichtes Blut (Blon). 8.0, Talk. 8.25, Concert by the Kansallis Choir. 8.45, News in Finnish and Swedish. 9.15, Light Music relayed from the Kappeli Restaurant.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Orchestral Concert, conducted by Wolf. Soloist: Otto Noethe (Violin). Festival Overture in F (Kalliwoda); Violin Solo, Czardas (Monti); Potpourri of Lehar Music; Second Serenade (Heykens); Ziegenmieset (Heykens); Waltz, Die Königskinder (Löh). 12.50 p.m., Weather, Time and News. 1.0, Concert by the Station Chamber Quintet. In the interval, at 2.0, News. 2.30, Meat Market Prices. 3.30, Exchange and Time Signal. 3.50, Tale of Adventure for Young People. 4.30, Orchestral Concert, conducted by Eysold; Overture to an Opera (Cardoni); A Festival in Aranjuez (Demersemann); Carnival turque (Luigini); Old Russia—Fantasia on Favourite Russian Themes (Leuschner); Slav Rhapsody (Friedemann); Military March (Schubert). 5.50, Talk for Women. 6.10, Reading from the Works of Friedrich Hebel, on his Sixtieth Birthday. 6.35, Summer Landscape—Poems of Young Men. 6.45, Weather, Time, Exchange and Sports Notes. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, First General News. 8.5, Talk. 8.15, Selection in Tad-Mädchen im Saal—Kontakale Things about Rosses—A Radio Sequence (Artur Kuhnert). 9.0, Music by the Station Orchestra, conducted by Breuer. 9.20, Concert by the Station Orchestra conducted by Breuer: Prelude to and Silliene from Cavalleria rusticana (Mascagni); Scene from Der Evangelinam (Kienz); Heroic March (Schubert). 9.45, The Life of the Race Horse—Morning Exercise—a Report on Gramophone Records. 10.5, News. 10.30, Chamber Music by the Riels Quing Quartet. Soloist: Paul Gloger (Clarinet). Quartet in G, Op. 161 (Schubert); Phantastische Reigen, Op. 50 (Weismann); Clarinet Quintet in A, Op. 108 (Mozart). 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—1.15 p.m., Gramophone Concert of Scherzos. News after the Concert. 2.10, Notes of Art and the Cinema. 2.30, Talk for Women: New Ways of Serving Fruit. 3.0, Pianoforte Recital. 3.20, Recitation, Bruder Alardus (Otto Stolfregen-Stauffen). 3.35, Exchange Quotations. 4.0, Reading: König Rother. 4.20, Concert by the Emde Orchestra: March, Gott mit uns (Schneider); Overture, The Italian Girl in Algiers (Rossini); Fantasia on the Song, Alle Tage ist kein Sonntag (Schmalstich); Selection from The Arabian Nights (Joh. Strauss); Potpourri, Ein Opern-Album (Schreiner); Waltz, Was der Wald erzählt (Zimmer); La Serenata (Braga); Potpourri, Schwäbische Ländler (Lindemann); Marche-Intermezzo Der Zirkus kommt (Rust). 5.50, Economic Notes, Weather and Time. 6.0, Educational Talk: Political Geography in the Elementary Schools. 6.25, Talk: The German-speaking Island of Gottschee in Yugoslavia. 6.45, Programme to be announced. 7.0, Transmission for all German Stations relayed from Frankfurt. 8.0, Concert of Operetta Music by Dresden Composers, by the Dresden Orchestra conducted by Bruno Brenner. 9.0, Talk: National and International. 9.20, News. 9.30, Concerto in A Minor, Op. 25 (Max von Schillings) by Hans Bassermann (Violin) and the Leipzig Symphony Orchestra, conducted by Willy Steffen. 10.15, News. 10.30 (approx.), Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen: Overture, Der Vampyr (Marschner); Four Old Dances (Niemann); Entrance and Hymn from Stimmungsbilder (von Fielitz); Greenland Suite (Juel-Frederiksen); Elegiac March (Reinberger); Overture, Simplizius (Joh. Strauss); Cradle Song (Pfitrich); Lyric Suite (Brahms). 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—7.0 to 8.40 p.m., Italian Programme. 7.0 p.m., Gramophone Music. 7.40, Weather. 7.45, Italian Opera Music on Gramophone Records: Selection from Norma (Bellini); The Thieving Magpie (Rossini); The Barber of Seville (Rossini); La Traviata (Verdi); The Force of Destiny (Verdi); and Cavalleria rusticana (Mascagni). 8.20, Song Recital. 8.30, Topical Talk in Italian. 8.40, Gramophone Music. 8.50, News in French. 9.15, Gramophone Music. 9.45, News in German. 9.55, Dance Music and Variety Music on Gramophone Records. In the intervals, News and Exchange.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—6.30 p.m., See Strasbourg. 7.30, Radio Gazette for Lyons and the South-East. 8.20, Elocution Lesson. 8.45, Orphée et Eurydice—Opera in Three Acts (Gluck), relayed from the Casino, Vichy. After the Relay, News.

MADRID

ARANJEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m. Popular Concert. In an interval at 11.45, Radio Chronicle. 12.15 a.m. (Tuesday), Sports Review. 12.40, Light Music. 1.0 (approx.), Close Down.

MADRID

UNION RADIO (EAJZ), 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange and Radio Journal. 9.15, News. 9.40 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.30 p.m., German Transmission: E. Finke reads from his own works. 7.0, See Prague. 7.25, See Brno. 8.0, Violin Recital, relayed from Kosice, 1,022 kc/s, 293 metres. 8.35, One-Act Comedy (Vrbsky). 9.0, Concert of Popular Music by the Station Orchestra, conducted by V. Musil. 10.0, See Prague. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—2.45 p.m., Weather Report. 3.0, Orchestral Concert. 4.0, Talk: Work Organisation at Harvest Time. 4.30, Extracts from a Novel (Valentin Katajev). 5.30, Programme Announcements. 5.45, Talk: The Moscow-Karankum Motor Race. 6.30, Dance Music. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5, Review of the Pravda.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 556 metres; and Nürnberg, 1,256 kc/s, 295 metres.—4.30 p.m., Orchestral Concert, conducted by Karl List; Soloist, Palma von Paszthory-Erdmann (Violin); Overture to a Comedy by Shakespeare (Scheinpflug); Poetic Walks (Brandt-Buys); Don Quixote (Bleyer); Concerto for Violin and Orchestra (Vioti); Ballet Music from Rosamund (Schubert); Polonaise from Eugene Onegin (Tchaikovsky). 5.45, Talk: Latest Conquests of Science. 6.5, Reading (Moeller van der Bruck), with Introductory Talk. 6.25, Recital of Less-Known Songs of Well-known Masters: Two Songs (Hildach); (a) Gehet, (b) Der Leiz; Two Songs (Wengartner); (a) Du bist ein Kind, (b) Der Schuster; Two Songs (Max von Schillings); (a) Aus den Nibelungen, (b) Julinacht. 6.45, Time, Weather and Market Prices. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Friedrich Iri Leutlen—a Play in Four Acts (Julius Bernhard). 9.30, Concert of Chamber Music, by the Raucheisen Trio and Eva Gehlold (Soprano); The Scottish Songs for Soprano, Pianoforte, Violin and Cello (Beethoven); Pianoforte Trio in E Flat, Op. 100 (Schubert). 10.20, Time and News. 11.0, Serenade by the Bavarian Wireless Schrammel Orchestra. In the interval, New Songs by the Harmony Singers. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 452.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Concert of Popular Music by the Radio Ensemble; Conductor, Oscar Gustafson. 6.0, German Lesson. 6.30, Cello Recital by Arne Melsom; Sonatina (Beethoven); Minuet (Fjeldstad); Serenade (Cassado); French Song (Burmester); Allegro appassionato (Saint-Saëns). 7.0, Advertising Notes. 7.15, Weather. 7.30, Political Talk. 8.0, Time. 8.1, Pianoforte Recital by Alme. 8.1, Geditsch Engelbreten. 8.30, Carl Selöy reads from his own works. 8.55, Harp Recital by Georgy de Martens; Passacaglia (Händel); Minuet (Rameau); Extracts from

JUNE 19th

MONDAY

continued

Les Gymnopédies (Satie); Le Coucou (Daquin); Romance in F Minor (Sibelius). 9.20, Talk. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Music for String Instruments on Gramophone Records.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.0 metres; 3 kW.—8.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time and News. 8.45, Concert of Chamber Music. (Clara and Marisa Bentivegna (Violin and Pianoforte) and E. Russo (Soprano). Sonata in B Flat for Violin and Pianoforte (Mozart); Songs (Tirindelli): (a) Amore, (b) Di te; Toccata in D Minor for Pianoforte (Bach-Busoni); Sonata in A Minor for Pianoforte and Violin (Schumann); Songs: (a) Un certo non so che (Vivaldi), (b) Torna, amore (Buzzi-Peccia); Pianoforte Solos: (a) Nocturne (Sgambati), (b) Mazepka (Liszt). After the Concert, Gramophone Music. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot signals)—6.45 p.m., Talk on the Theatre. 7.0, Le Journal Paris. 8.45, Orpheus—Opera in Three Acts (Gluck), relayed from the Casino, Vichy. 11.15 (approx.), Close Down.

PARIS

POSTE PARISIEN: 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Hot Jazz on Gramophone Records. 8.0, Medical Talk. 8.5, Talk on Motor Cars. 8.15, Interval. 8.30, Song Recital. 9.0, Interval. 9.15, Sponsored Concert. 9.45, Sponsored Concert. 10.30, News.

PARIS

RADIO PARIS: Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture, 7.30, Weather and Physical Culture (contd.), 7.45, Gramophone Music. 8.0, Press Review and Weather. 12 Noon, Concert by the Radio Paris Orchestra: Overture, Fidelio (Beethoven); Selection from Mephistopheles (Boito); Gramophone Records: (a) Cavatina from The Queen of Sheba (Gounod), (b) Ballad and Duet from Romeo and Juliet (Gounod); Ballet des fleurs (David); Selection from Bellagor (Respighi); Ballet Music from Izeil (Pierne); Gramophone Records: Melodies from Prince Igor (Borodin); Selection from Marouf (Rabaud); Le petit elfe ferme l'œil (Schmitt). In the interval at 1.0 p.m., Exchange, News, and Weather; and at 1.30, Exchange, 2.0, Exchange, 3.45, Exchange and Market Prices. 6.10, Agricultural Talk and Market Prices. 6.30, Elementary English Lesson. 6.50, Film Review. 7.0, Book Review. 7.20, Concert by the Radio Paris Orchestra: Overture, Alessandro Stradella (Flotow); Aubade, from Chérubin (Masse); Fête bretonne (Lazzari); Deux carillons flamands (Perillou). 7.45, Commercial Notes and News. 8.0, The Sparrow—Comedy (André Birabenn). In the interval at 8.40, Review by Paul Reboux; and at 9.15, Press Review and News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relay by W8XK on 48.86 metres; and 25.27 metres.—7.30 p.m., KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Monday Matinee, from New York. 8.45, Human Values. 8.58, Baseball Scores. 9.0, Radio Guild—Drama, from New York. 10.0, Rhythm Kings. 10.15, Organ Recital by Larry Larson. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal and Press News-Reeler. 11.5, Sam Robbins and his Hotel McAlpin Orchestra, from New York. 11.15, Weather Report. 11.16, Sport Review. 11.23, One Song. 11.28, Announcements. 11.29, Temperature Report. 11.30, Pittsburgh Spotlights. 11.45 to 4.0 a.m. (Tuesday), New York Relay. 11.45 Today's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, Al Mitchell's Orchestra with Baritone Solos by Everett Marshall. 12.30, Johnny Johnson and his Orchestra. 1.0, Cliquot Club Eskimos. 1.30, Polish and Perlmutter. 1.45, Phil Cook and the Ingram Shavers. 2.0, Sinclair Minstrels. 2.30, Jack Frost Melody Moments. 3.0, Time Signal and The Hour Glass.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—4.15 p.m., Pianoforte Recital: Four Pieces (Chopin): (a) Fantasia, Op. 49, (b) Mazurka, Op. 17, No. 4 (c) Mazurka, Op. 63, No. 3, (d) Scherzo, Op. 20; Theme with Variations (Paderewski); Pieces (Debussy): (a) La Cathédrale engloutie, (b) Jardins sous la pluie. 5.0, Miscellaneous Items. 5.15, See Warsaw. 6.35, Two Talks. 7.15, Topical Talk. 7.20, Miscellaneous Items and Announcements. 7.35, Theatre Guide and Programme Announcements. 7.40, Talk, relayed from Lwow, 788 kc/s, 381 metres. 7.58, Time. 8.0, See Warsaw. 10.0, Time, Sports Review and Police Notes.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—6.30 p.m., German Transmission: Two Talks: (a) Singing as a Health Exercise, (b) Europe To-day and Fifty Years Ago. 7.0, Chimes from St. Ludmilla's Church. 7.0, News. 7.10, Medical Talk. 7.25, See Brno. 8.0, Violin Recital from Kosice, 1,022 kc/s, 293 metres. 8.35, Scandinavian Folk Songs. 9.0, See Bratislava. 10.0, Time, News, Press Review and Sports Notes. 10.15, News in German. 10.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW; and Geneva, 395 kc/s, 750 metres.—1.10 p.m., (from Lausanne), Gramophone Concert, Part I: Songs and Choruses. Part II: Violin Solos. 2.0 to 3.28, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Lausanne), Orchestral Concert, conducted by Eduard Moser. 4.0 (from Lausanne), Talk. 4.15 (from Lausanne), Concert (contd.). 5.0 (from Lausanne), Programme for Children. 5.30 to 7.0, Interval. 7.0 (from Lausanne), Talk on Animals. 7.30, News. 7.35 (from Lausanne), Answers to Correspondence. 7.57 to 9.0, Interval. 9.0 (from Lausanne), Reading. 9.15 (from Lausanne), Song Recital by Mme. Lotte Leonard. 9.50, News. 10.0 (from Lausanne), Gramophone Music. 10.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—7.15 p.m., Concert by an Estonian Choir. 8.0, News. 8.20, Orchestral Concert of Ballet Music. In an interval at 9.0, Weather and News. 10.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

IRO, 680 kc/s, 441 metres; 50 kW. Relay by Naples, 941 kc/s, 319 metres; and by 2R0, 11,810 kc/s, 25.4 metres, from 4.0 p.m. (approx.)—1.0 to 2.15 p.m., Gramophone Concert. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30, Concert. Maria Flori (Violin), Carlo Platania (Baritone) and Elisa Capolino (Soprano). Violin Solos: (a) Nostalgia (Breschi), (b) Madrigal (Simonetti); Baritone Solos: (a) Aria from Dinorah (Meyerbeer), (b) Melody from Faust (Gounod); Soprano Solos: (a) Aria from Iris (Mascagni), (b) Two Arias from Turandot (Puccini); Baritone Solos: (a) Song from Zingari (Leoncavallo), (b) Aria from Ruy Blas (Marchetti); Violin Solo: Zigennerweisen (Sarasate). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopplavoro Notes. 7.10, Tourist Report. 7.20, Announcements in Foreign Languages. 7.40, Giornale Radio. 8.0, Time, Announcements and Gramophone Music. 8.30, Giornale Radio and Sports Notes. 8.45, Orchestral Concert: Un napoletano a Londra (Zecca); F' m'arriccore 'e te (de Curtis); Melody (Gill); Rondinella and Romance (Spagnolo); Who believes in Love (Gross); Chi sa quanno (Valente); Tango della felicità (De Angelis); Non c'è sabato senza sole (Staffelli); Stornellata a nessuno (Alfieri); Arminia d'ammore (Bonavolonta); Ninnanna delle dolci manne (Spadaro); Fanfara (Cannio); Chi parla c' Napule (Nardella); Sempre allegro (Ansaldo); Talk after the Concert.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 790 kc/s, 379.5 metres; 50 kW. Relay at intervals by W2XF on 31.48 metres; and by W2XAF on 19.56 metres.—9.0 p.m., Book News by Leveré Fuller. 9.15, U.S. Marine Band, from New York. 9.45 to 10.0 (approx.), Lady Next Door, from New York. 12.45 a.m. (Tuesday), Stock Reports. 1.0, Soconyland Sketch, from New York. 1.30, Dramatised Penny. 1.45, Band of Famous Brands, from New York. 2.0, A. and P. Gipsies, from New York. 2.30, WGY Players, One Man's Family. 3.0, Contented Programme from New York. 3.30, Tales by Titans, from New York, followed by Programme Resumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres, 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory, and Weather. 12 Noon (from Basle), Melodies from Operettas on Gramophone Records. 12.30 p.m., Time, Weather, and News. 12.40 (from Basle), Wind Instrument Music on Gramophone Records. 1.25 (from Basle), Exchange, Time and Weather. 1.30 to 5.0, Interval. 5.0 (from Basle), Talk for Women. 5.30 (from Basle), Concert of Sound Film Music by the Radio Quintet. 6.30, Programme for Children. 7.0, Time and Weather. 7.5, Concert by the Radio Orchestra. 7.30 (from Zürich), English Lesson. 8.0 (from Zürich), Concert of 18th century

Music. 9.0, Weather and News. 9.10 (from Zürich), Talk: The Human Voice. 10.15, Close Down.

SEVILLE

UNION RADIO (EAJ5), 815 kc/s, 368.1 metres; 1.5 kW.—3.0 to 4.0 p.m., Concert by the Station Orchestra: Schottische, La conquista de Edmundo (Franco); Córdoba (Albeniz); Selection from Carmen (Bizet); Selection from Gigantes y Cabezones (Caballero); Dance Music. 4.0 to 10.0, Interval. 10.0 to 12 Midnight, Popular Concert. Part I: Pasodoble, El dos de Mayo (Chueca); Waltz from Arabian Nights (Joh. Strauss); Fox trot (Young); La reina mora (Serrano); Serenade, Fantasia morisca (Chapi); Oriental Dance (Glazunov); Aria from La Traviata (Verdi); Intermezzo from Bohemios (Vives); Tango de corte antiguo (Charlo); Mazurka (Popper); Selection from Rose Marie (Primi); Polonaise, No. 2 (Liszt). Part II: Dance Music. In the interval, News, Exchange and Weather. 12 Midnight (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relay by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m. (from Göteborg), Song, Violin, and Pianoforte Recital by Hjordis Wahlgren-Arnell, Lars Feramens and Sigrid Gyllencrutz-Feramaens. Chaconne for Violin and Pianoforte (Vitali); Chi vuol comprar la (Niccolò Jommelli); Suite, Den unge piges viser (Palmgren); Violin Solos: (a) Zerkuirselung (Bloch), (b) Jubel (Bloch), (c) Arva (Jaton). 5.45, Gramophone Music. 6.45, Talk. 7.15, Weather and News. 7.30, Cabaret. 8.15, Parliamentary Report. 8.45, Pianoforte Recital by Gunnar de Frumerie. Chaconne (Bach-Busoni); Pieces (Brahms): (a) Romance, in F, (b) Intermezzo in B Flat Minor, (c) Ballad in D Minor, (d) Rhapsody in F. 9.15, Talk, relayed from Örebro, 1,265 kc/s, 237.2 metres. 9.45, Weather and News. 10.0 (from Göteborg), Concert by the Göteborg Chamber Orchestra. Suite from Lustige Feldmusik (Kreiger); Serenade in E Flat (Wolf-Ferrari); Litany (Bromann); Swedish Folk Songs and Dances (Söderman). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Variety Music on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Orchestral Concert, conducted by Maurice de Villers. 2.0 to 3.30, Interval. 3.30, Festival Concert, relayed from the Casino, Vichy; Conductor: H. Brouillard; Overture, Martha (Flotow); Airs (Lacombe): (a) Aubade aux mariés, (b) Aubade printanière; Orchestral Suite, Fête galante (Lacôme); Breton Rhapsody (Farigoul); Selection from Romeo and Juliet (Gounod); Concert Mazurka (Pfeiffer). 5.0, Gramophone Music. 5.15, Concert of Jazz Music, conducted by Roskam. 6.0, Film Review in French. 6.15, Review of the Week in German. 6.30, Beethoven Chamber Music: Trio in D for Pianoforte, Violin, and Cello; Septet for Strings, Clarinet, Bassoon, and Horn. 7.30, Time and News. 7.45, Popular Music on Gramophone Records. 8.15, Press Review in French. Lottery Results and Announcements. 8.30, Gramophone Music. 8.45, Orphé et Eurydice—Opera in Three Acts (Gluck), relayed from the Casino, Vichy. After the Opera, Press Review in French.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relay by Freiburg, 527 kc/s, 570 metres.—12 Noon, Concert by the Municipal Orchestra, conducted by Karl Assmuss, relayed from Baden-Baden. Triumphal March from Aida (Verdi); Overture, Waldmeister (Joh. Strauss); Legend, Zorahayda (Svendson); Hungarian Rhapsody (Liszt); Waltz, Accelerationen (Joh. Strauss); Selection from The Bartered Bride (Smetana); Prince August Grenadier March; Old Prussian Army March. 1.15 p.m., Time and News. 1.30, Concert from Langenberg. 2.0 to 2.15, Programme arranged by the Post Office, with Gramophone Records. 2.30, Spanish Lesson. 3.0 to 3.30, Elementary English Lesson. 4.30, See Munich. 5.45, Time and News. 6.0, Talk: Modern Germany, her Leaders and Makers—Wilhelm Frick. 6.25, Programme from Frankfurt. 6.45, Time and News. 7.0, Transmission for all German Stations relayed from Frankfurt. 8.5, Operatic Concert by the Württemberg Symphony Orchestra, conducted by Ferdinand Drost. Soloist: Ludwig Hofmann (Bass-Baritone); Overture, The Force of Destiny (Verdi); Songs: (a) Aria from Simone Boccanegra, (b) Aria from Sicilian Vespers (Verdi); Ballet Music from Aida (Verdi); Songs: (a) Aria from Don Carlos (Verdi), (b) Aria from The Barber of Seville (Rossini); Overture, William Tell (Rossini). 9.20, War Stories of Old Soldiers. 9.40 (from Mannheim), The Kreuzer Sonata in A, Op. 47, No. 9 (Beethoven), for Violin and Pianoforte. 10.15, Time and News. 10.30,

Three Days in the Harz—a Radio Report. 11.0, See Munich. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m., till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relay by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 p.m., Concert of Variety Music. 6.0 to 6.5, Announcements. 6.30, Giornale Radio, Agricultural and Dopplavoro Notes. 7.0, Time Signal and Tourist Report, followed by Songs on Gramophone Records. 7.20, Announcements in Foreign Languages. 7.40, Gramophone Music. 8.0, Giornale Radio, Sports Notes, Weather and News. 8.30, A One-Act Comedy. 9.0, Concert of Chamber Music. Soloist: Matilde Valfrè di Bonzo (Soprano); Per la gloria di adorarvi (G. B. Bononcini); Lasciateci morire (Monteverdi); Canzonetta (Haydn-Viardot); Nobody knows de trouble I see (Negro Spiritual); Les Cloches (Debussy); Song: Traum durch die Dämmerung (R. Strauss); Tes yeux (Rabey); Come un cipresso notturno (Davico); Foglie seche (Calosso); Cradle Song (G. C. Visconti); Stornellatrice (Respighi). 10.0, Programme of Variety Music. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres; (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Italian. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relay by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—1.0 p.m., Time and News. 1.10, Gramophone Music. 3.0, Time, Weather and Exchange. 3.20, Talk: The Origin of Smoke and Soot. 3.30, Programme for Children. 3.55, Operetta Music on Gramophone Records. 4.35, Reading (Otto Erhardt-Dachan). 5.0, Talk on Music.—From Beethoven to the Moderns. 5.25, Song and Pianoforte Recital by Maria Schubert and Mykysa Tarras. Recitative and Leonora's Aria from Fidelio (Beethoven); Selection from Tannhäuser (Wagner); Air from Tosca (Puccini); Pianoforte Solos (Liszt): (a) Sonata, Après une lecture de Dante, (b) Irrlichter. 5.5, Talk on Dramatic Criticism. 6.25, Books of Reference in connection with the Week's Talks. 6.30, English Conversation. 6.50, Thoughts on Happiness. 7.10, Military Band Concert. 7.40, Time, Weather and Programme Announcements. 7.45, Military Band Concert (cont.). 8.15, Topical Talk. 8.30, Reading. 9.0, Concert by the Vienna Symphony Orchestra, conducted by Oswald Kabasta. Soloist: Moriz Rosenthal (Pianoforte); Pianoforte Concerto in F Minor (Chopin); Selection from Legends (Dvorák); Slavonic Dances (Dvorák); Fantasia on Hungarian Folk Melodies (Liszt). 10.15, News. 10.30, Talk: Austria as seen by an Italian. 10.40, Dance Music on Gramophone Records.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Gramophone Music. 12.25, Polish Press Review. 12.35, Gramophone Music. 12.55, Radio Journal. 1.10, Interval. 2.55, Gramophone Music. 3.5, News and Announcements. 3.15, Gramophone Music. 3.25, Economic Notes. 3.45, Tourist Report. 3.50, Gramophone Music. 4.0, Popular Concert, relayed from Cichocinek. 5.0, Talk in French. 5.15, Concert of Chamber Music: M. Trombini-Kazuro (Harpischord), T. Ochlewski (Violin), and Szaleski (Viola); Sonata in G (Lotti); Extracts from Les concerts royaux (Couperin); Polish Sonata (Telemann). 5.45, Song Recital by J. Anusz. 6.5, Gramophone Music. 6.15, Reading. 6.35, Talk, relayed from Poznan, 896 kc/s, 335 metres. 6.55, Military Programme. 7.20, Miscellaneous Announcements. 7.35, Programme Announcements. 7.40, Talk, relayed from Lwow, 788 kc/s, 381 metres. 8.0, The Dragon and the Princess—Operetta in Three Acts (O. Straus). In the interval, Radio Journal and Agricultural Notes. 10.0, Dance Music. 10.25, Sports Notes. 10.35, Announcements, Weather, and Police Notes. 10.40, Dance Music.

WILNO

533 kc/s, 563 metres; 16 kW.—6.35 p.m., Miscellaneous Items. 6.40, Sports Notes. 6.55, See Warsaw. 7.20, Programme Announcements. 7.25, Lithuanian Talk: Alsace-Lorraine and Belgium. 7.40, Talk from Lwów. 8.0, See Warsaw. 11.0 (approx.), Close Down.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—7.15 p.m., Book Review. 7.30, Announcements. 7.50, Introductory Talk to the following Transmission. 8.0, See Belgrade. In the intervals, News and Weather.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,387 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Stock Exchange Quotations and Weather Report. 6.0, Programme for Children. 6.45, News. 7.0, Gaelic Reading. 7.15, Recitation by Cathleen Murphy. 7.30, Time Signal. 7.31, Balfe and Wallace Opera Music by the Station Orchestra. 8.0, Songs from the Operas of Balfe and Wallace by Chrissie Manning. 8.10, Mascagni Selection by the Station Orchestra. 8.25, Mascagni and Leoncavallo Songs by Chrissie Manning. 8.35, Leoncavallo Selection by the Station Orchestra. 8.55, Variety Programme. 9.10, Pianoforte Recital by Mme. Grossi. 9.30, Talk. 9.45, Sponsored Programme. 10.45, Time, News, Weather and Close Down.

BARCELONA

EAJ1; 860 kc/s, 343.8 metres; 8 kW. 7.0 p.m., Trio Concert: Overture, Zampa (Hérod), Abendlied (Schumann); Puppenwälder from Die Puppenfee (Bayer); Prelude in B Flat (Chopin); Träume (Wagner); Selection from Hamlet (Thomas). 7.45, Talk in Catalan. 8.0, Request Gramophone Concert. 8.30, Exchange and Art Notes. 9.0, Gramophone Music and News. In an interval at 9.15, Football Notes. 10.0, Chimes from the Cathedral, Messages to Seaman, Exchange Quotations, and Market Prices. 10.5, Sponsored Programme. 10.30, Dance Music by the Melody Boys' Band, conducted by Antonio Udina. 11.15, Vincente Diez de Tejada reads from his own works. 11.30, Concert of Catalan Music by the Station Orchestra. Soloist, Concepcion Callio (Songs). In the interval at 12 Midnight, News. After the Concert, Gramophone Music. 1.0 a.m. (Wednesday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 50 kW.—8.0 p.m., Agricultural Notes, Tourist Report and Dopolarvo Notes. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35, Quartet Concert: Overture, Fausta (Donizetti); Prelude to Ore tristi e liete (Anelli); Minuet (Coletta); Suite, La festa al villaggio (Cannas); Prelude to Act IV of I goliardi (Cassani); Serenade, Ricordo di Sorrento (Donizetti); Interlude (Rodighiero); Scherzo from the Second Symphony in D (Beethoven); Legend (Wenawski); Overture, Titus (Mozart). In the intervals, Talk and Amusement Guide. 10.30, Gramophone Music. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—4.15 p.m., Gramophone Records. 5.0, Talk on Cosmetics. 6.55, Time Signal and Programme Announcement. 7.0, Concert by the Station Orchestra. 7.50, Talk. 8.30, Programme from Zagreb, 977 kc/s, 307 metres. 10.30, Press Review and Time. 10.35 (approx.), Music from the Ratnicki Dom Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Der Bittelstudent—Operetta (Millecker), on Gramophone Records. 3.0, Talk for Young People: In the Woods with the Foresters. 3.30, Weather and Exchange. 3.45, Reading (Karl Benno von Meixlow). 4.0, See Leipzig. 5.0, Talks for Women: (a) What the Young Mother should know about the Babies, (b) Books and Literature on Cookery, Gardening and Fashion. 5.25, Topical Talk. 5.35, Operatic Duets by Werner Schupp (Tenor), and Wolfgang Wolf (Baritone); Duets from La Bohème (Puccini); The Pearl Fishers (Bizet); The Force of Destiny (Verdi); and Otello (Verdi). 6.0, A Poem. 6.5, Talk: Local Government in Italy. 6.30, Political Press Review. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations. Andreas Hollmann—Play (Hans Christoph Kaergel). 8.0, Epigrams. 8.5, Talk on Wireless. 8.30, Tebalkovsky Concert by the United Orchestras of Deutschlandsender and Witzleben, conducted by Edwin Lindner. Prelude to Romeo and Juliet; Pianoforte Concerto in B Flat Minor, Op. 23; Symphony No. 6, in B Minor, Op. 71. 10.15, News. 10.45, Weather for Shipping. 11.0, Concert from Hamburg. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.0 p.m., Talk: The Listener and his Set. 6.15, Review of Books. 6.40, The Witzleben Station informs its Listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.10, The Lamentations of Job—Radio Play (Richard Krüger). 9.10, First Symphony in C Minor (Bruckner) by the Berlin Philharmonic Orchestra, conducted by Eugen Jochum. 10.0, Weather and News. 10.30 (approx.), See Hamburg. In the interval from 11.0 to 11.5, Talk: What they are talking about in Berlin. 12 Midnight (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMÜNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

TUESDAY

JUNE THE TWENTIETH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Military Band and orchestral concert.
- LONDON REGIONAL** Repeat of Command Performance programme by the Bach Cantata Club.
- NORTH REGIONAL** Historic Cities of the North: Ripon; feature programme.
- WEST REGIONAL** "The Runaways," a Devonshire comedy, by Eden Phillpotts.
- SCOTTISH REGIONAL** Orchestral concert.
- BELFAST** String orchestral concert.

ABROAD

- BARCELONA** 10.30 p.m. Dance music, conducted by Antonio Udina.
- BELGRADE** 10.35 p.m. Music from the Ratnicki Dom Restaurant.
- HAMBURG** 10.30 p.m. Concert, conducted by Adolf Secker.
- HILVERSUM** 5.10 p.m. Concert by Kovacs Lajos and his orchestra.
- LEIPZIG** 8.30 p.m. Opera: "Frühlingsnacht," by Gerhard Schjelderup.
- MUNICH** 6.5 p.m. Soprano song recital, by Petra li Zäpfel.
- PITTSBURGH** 8.15 p.m. Radio Troubadours, relayed from New York.
- STRASBOURG** 6.30 p.m. Concert of chamber music, by Eugene Saëys.
- WARSAW** 10.15 p.m. Dance music, relayed from Ciechocinek.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.30, News. 7.40, Programme for Women. 7.55, Lottery Results. 8.0, Topical Talk. 8.15, News. 8.30, Programme from Paris (Eiffel Tower).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.15 p.m., Recital on Two Pianofortes. 6.55, Talk for Housewives. 7.0, See Prague. 8.15, Reading, relayed from Kosice, 1,022 kc/s, 293 metres. 8.30, See Brno. 9.30, See Prague. 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gliwicz, 1,184 kc/s, 253 metres.—1.0 p.m., Grieg Concert on Gramophone Records. 2.0, Time and News. 2.20, Variety Concert on Gramophone Records. 3.0, Market Prices. 3.30, Talk: From Apprentice to Master, now and in the past. 4.0, Programme for Children. 4.30, Chamber Music by Hans Schmack-Ubach (Violin), Fritz Binnowsky (Cello) and Ruth Stelzer (Pianoforte). Pianoforte Trio in E Flat, Op. 12 (Hänmel); Pianoforte Trio in C Minor, Op. 1, No. 3 (Beethoven). 5.30, Market Prices and Review of Books. 5.55, Programme to be announced. 6.30, Talk: A Journey to Bess-Arabia. 6.50, Weather, News and Market Prices. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Concert of Military Marches, with Introductory Talk. 9.6, News. 9.10, Animal Stories by Hunters, Explorers and Writers (arr. Erich Köhler). 10.10, Time and News. 10.30, Political Press Review. 10.50, Concert of Light Music and Dance Music from the Hindenburg Café in Benthien. 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.0 p.m., Music Review. 6.15, Talk for Women. 6.25, German Transmission: News, Broadcast for Farmers, and a Talk: Speech Impediments in Children. 7.0, See Prague. 8.15, Reading, relayed from Kosice, 1,022 kc/s, 293 metres. 8.30, Radio Musical Play (Kuntal and Radek). 9.30, Wind Quintet (Haydn). 10.5, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

590 kc/s, 509 metres; 15 kW.—12 Noon, Concert of Opera Music by the Small Station Orchestra, conducted by Leemans; Overture, Le Nouveau Seigneur (Boieldieu); Romance de La Sauge (Massenet); Ballet Music from Herodiade (Massenet). Overture, Masaniello (Auber); Selection from Carmen (Bizet); Prelude to Marouf (Rabaud); Dance of the

Sylphs from The Damnation of Faust (Berlioz); Overture, Mignon (Thomas). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Music. 1.30, Lido Concert: Overture, Le Roi d'Ys; Norwegian Rhapsody. 5.0, Beethoven Concert on Gramophone Records; Overture, Die Geschöpfe des Prometheus Symphony No. 8. 5.30, Programme for Children. 6.5, Literary Review. 6.15, Organ Recital relayed from the Church of Jette St. Pierre; Invocation (Mailly); May Song (Gougenot); Noël ardenais (Jacquemin); Marche Solennelle (Benoit). 6.45, Concert of Chamber Music by Eugene Saëys; The Brussels Instrumental Ensemble, Suzanne Saëys (Songs), M. Vincent (Pianoforte), and the Composer; Rhapsody for Violin, Harp and Cello; Song, La Siesta; Pianoforte Solos: (a) D'innombrables Insects tournent dans le Sabal, (b) Danse Fatale; La Mort de petit Baya, for Instrumental Ensemble and Voice; Songs: (a) La Joie du Soleil (de Wissocq), (b) Le cochant (Saëys), (c) La valse de l'ourson (Fort). 7.15, Review of the Week and Film Review. 7.30, Notes on Art and Review for Women. 8.0, Concert by the Station Symphony Orchestra, conducted by Menlemans; Soloist, M. Lombarts (Pianoforte); Part I: Saint-Saëns Music; Prelude, Le Déluge; Symphonie Poem, Le Ronet d'Omphale; Pianoforte Concerto in G; Danse Macabre. 8.45, Talk: Religious Instruction in Spain. 9.0, Concert (contd.); Part II: French Ballet Music; Ballet Music from Faust (Gounod); Cydalise et le chevre-pied (Pierné); Pianoforte Solos: (a) Jeux d'eau (Ravel); Clair de Lune (Debussy). 10.0, Le Journal Parlé. 10.10, Request Gramophone Records. 10.40, Concerto for Two Violins (Bach), on Gramophone Records. 10.55, Christus Vincit (Liszt).

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish. 12 Noon, Variety Music on Gramophone Records. 1.0 p.m., Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans; Overture, La princesse jaune (Saint-Saëns); Waltz, Frühlingsstraum (Joh. Strauss); Gramophone Record, Notturmo d'amore (Drigo); Selection from The Bayadere (Kálmán); Gramophone Record, Serenade (Toselli); Selection (Leoncavallo); Selection from Yes (Yvain). 5.0, Concert by the Radio Orchestra, conducted by Walpot; March (Gilbert); Valse caprice (Rubinstein); Plaisir d'amour (Martini); Gramophone Records: (a) Ocelli celesti (de Crescenzo), (b) Air from The Hugonots (Meyerbeer); Russian Dance (Tebalkovsky); Melody (Rubinstein); Waltz, Wiener Zugvögel (Translatour). 5.45, Programme for Children. 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans; Soloist, Jan te Slaa (Bass-Baritone); Overture, Il sogno di Scipione (Mozart); Minuet from The Septet (Beethoven); Two Arias from The Magic Flute (Mozart); Three Songs

without Words (Mendelssohn); Aria from The Barber of Seville (Rossini); Nelusko's Ballad from L'Africain (Meyerbeer); Hungarian Divertissement (Schubert). 7.30, Tourist Talk. 8.0, Concert by the Radio Orchestra, conducted by C. Walpot; Soloist, Geertruida van Vladeracken; Florentine March (Fucik); Selection from Le chemin du Paradis (Hemann); Romance bohémienne (Boldi); Songs: (a) My lovely Celia, (b) Annie Laurie, (c) Celtic Lullaby, (d) Ich halte treulich still (Bach), (e) Old German Song, Gute Nacht; Minuet (Bocherini); Aragonese (Fallu); Funeral March of a Marionette (Gounod); Potpourri of Belgian Songs (André and Candrix); Old Dutch Peasant Dance (Step); Six Flemish Songs; Jota, En Espagne (Lacôme); Gopak (Mussorgsky); Flemish Dances (Bloeky). In an interval, Talk: The Co-operative Movement. 10.0, Le Journal Parlé. 10.10, Popular Music on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Motos Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Programme. In an interval at 7.20, Gramophone Music. 8.0, Song Recital. 8.20, Concert by the Station Orchestra; Overture, Le roi Fa dit (Debbs); Modern Dance Music Suite (Niemann); Waltz, Acclamation (Waldteufel); Hindoo Song (Dvorák); Selection from Where the Lark Sings (Lehár); Potpourri (Slivestri). In an interval at 9.0, Talk. 9.45, Radio Journal. 10.0, Talk in French on Romania.

BUDAPEST

545 kc/s, 500.5 metres; 18.5 kW. Programme also relayed on 840 metres from 8.30 p.m. till Close Down.—6.10 p.m., Concert by the Budapest Concert Orchestra, conducted by F. Fridl. 7.40, Market Prices. 7.50, A Dialogue. 8.30, Andor Kozma Commemoration Programme; Concert by the Opera House Orchestra, conducted by Ernst Dohnanyi with Speeches. 10.30, News. 10.45 (approx.) Dance Music, relayed from the Cafe Floris CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time and Chimes from the Town Hall. 12.2 p.m., Concert by the Andersen String Ensemble, relayed from the Bellevue Strand Hotel. 2.0, Opening Ceremony of Housewives' Dairy Week. 2.30 to 3.0, Interval. 3.0, Concert by the Station Orchestra, conducted by Launy Gröndahl; Overture, The Twins of Damascus (Kuhlau); Suite from King and Marshall (Heise); Piece from the Suite I Alhambra (Lange-Müller); Minuet from the Rocco Suite (Danning); Prelude (Danning); Fantasia, Drömmelbilder (Lumbye); Gallop Bouquet-royal (Lumbye). 4.0, Song Recital of Norwegian Romantic Music, by Inge Michelsen. 5.0, Programme for Children. 5.35, Exchange and Fish Market Prices. 5.50, Swedish Talk: Swedish Literature. 6.20, German Lesson. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.30, Religious Talk. 8.0, Time Signal from the Town Hall. 8.2, Introductory Talk to the following Transmission. 8.15, Samson's Imprisonment—Tragedy in Five Acts by Rameau, with Music by Composers of the 16th Century. 10.0, Jazz Songs on Gramophone Records. 10.15, News. 10.30, Light Music by the Station Orchestra, conducted by Launy Gröndahl; Cossack March (Sperber); Waltz from The Dolla Princess (Fall); Spanish Suite, Le Feria (Lacôme); Romance d'amour (Arcusky) Overture, Das Modell (Suppé). 11.0, Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.10 p.m., Talk: Old Cracow. 7.25, News. 7.35, Programme Announcements. 7.40, See Warsaw. 11.0 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,325 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Round and B. McNabb. 4.30, Concert for Torquay and Exeter Listeners. Oetels: (a) Spring Song (Mendelssohn), (b) Hungarian Dance in D (Brahms), (c) Trocador et Andalous (Rubinstein); Songs: (a) Because (d'Hardeot), (b) The Second Minuet (Besly); Oetels: (a) Hungarian Dance in A Minor (Brahms), (b) Av-Maria (Schubert), (c) Romance (Rubinstein); Song: The sweetest flower that blows (Hayley); Valse Bluettes (Drigo); The Butterflies (Baudix); Mock Morris (Grainger). 5.1, Concert for Plymouth and Devonport Listeners: Waltz, Tris Jolie (Waldteufel); Quartet: Come to the Fair (Easthope Martin); The Cockshafers' Tea Party (Noack); Song of Hybris (the Cretan (Elliott)); Song: Do Jolly Jenkin (Sullivan); Wee Macgregor's Patrol (Amers); Song of the Vagabonds (Friml); Ole Man River (Kern); Colonel Boggy (Alford); Love and War (Cook); Song of the Drum (Ellis); Waltz, Künstlerleben (Strauss). 6.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the

JUNE 20th **TUESDAY** continued

collans: How'm I doin'? (Fowler); While we danced at the Mardi Gras (Mercer); Say it isn't so (Berlin); Love me To-night (Yonck); Don't tell a Soul (Pepper); How are you? (Steininger); What makes you so adorable? (de Rose); Let's all dance the Polka (Lowton); Let's Put out the Lights (Hupfeld); Moonlight, the Danube and You (Mannheimer); Moon (Miles); You're my Everything (Dixon); Was that the Human thing to do? (Young); Mad about the Boy (Coward); An Evening in Carolina (Donaldson); The Younger Generation (Coward); 11.0, Military Band Concert: The Standard of St. George (Alford); Præliudium (Jannefelt); March Past of the Brigade; Selection from The Belle of New York (Kerker); Valse's Song from Piliémon et Baucis (Gomod); Valse triste (Sibelius); The Gay Highway (Drummond); Mons Star March. 11.30, Gramophone Concert: Selection from The Flower of Hawaii (Abramson); In Santa Lucia (Stransky); Rosa Mia (Ginzler); Song; Matantain Lovers (Squire); Finlandia (Sibelius); Wine, Women and Song (Strauss); My ain Polk (Lemon); Träum (Wagner). 12.5 a.m. (Wednesday), I.B.C. Late News. 12.10, Club Concert for Malvern Listeners; (Kriml); Bieder (Gungl); Love Everlasting (Kriml); Demande et Réponse (Coleridge Taylor); Baby, won't you please come Home; The Crystal Spring (arr. Sharp); Songs made famous by Vesta Victoria; Siciliana Serenata (Schmalstieg); The Wraggle Taggle Gipsies O (arr. Sharp); Horses on the Mountains (arr. Sharp); In the Camp of the Ancient Britons (Kettelbey). 1.0, Light Orchestral Music: In a Monastery Garden (Kettelbey); Chorus: Come where my Love lies dreaming; Poor Butterfly (Hubert de Filippi); Clarinetto (Goodman); Serenade (Herbert); Selection from Sari (Kálmán); Valse Septembre (Godin). 1.30, Gramophone Concert: Wiener Bht (Strauss); The Verdict; Under Heaven's Blue (Payan); The Last Trail; The Musical Clock of Madame Pompadour (Nouck); Scene from Private Lives (Coward); Waltz, Gold and Silver (Lehar). 2.0, Dance Music by the Heollans; Three Little Times (Sarony); If you were only mine (Newman); I don't know why (Turk-Ahler); My Silent Love (Suesse); When Yulia plays the Rumba on the Tuba (Uppfeld); Bahama Mama (Gilbert); In Sunny Monterey (Nicholls); Cabin in the Cotton (Parish); For you, just you, my Baby (Connely); Love me To-night (Rodgers); Light shall be filled with Music (Collins); Isn't it Romantic? (Rodgers); Song of the Bells (Collins); This is my Love Song (Burke); Just another dream of you (Burke); Give me a Tune (Jones Koger). 2.57, I.B.C. Good-night Melody. 3.0 (approx.). Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.0 p.m., Humorous Programme. 6.25, Talk. 6.45, Review of the Day. 6.50, Time and Announcements. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Talk by Wilhelm Müller-Scheidt. 8.10, Saint Crispin Comedy in Five Acts (Paul Ernst). 9.0, Concert by the Station Orchestra, conducted by Reinhold Merten; Husarenritt (Spindler); Gallop, Durchs Ziel (Transtalauer); Potpourri, Heimatklänge (Krome); Lippzbacher-Walzer (Koschat); Polka, Im Fluge (Jos. Strauss); Polka-Mazurka (Krad); Humorous Potpourri, Life in Munich (Polack); March, Jahrmärktsrummel (Lübeck); Foxtrot, Batavia (Künneke); March, Tararaboom-de-ray (Komzak); Potpourri, Wiener Weisen auf Reisen (Recktenwald); Song from Frühlingsluft (Jos. Strauss); March Potpourri (Recktenwald). 10.25, Time and News. 10.45, Concert from Hamburg. 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 259.8 metres; Flöhbürg, 1,319 kc/s, 222.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m. (from Kiel), Talk: Frisian Proverbs. 6.25, Exchange. 6.30, Radio Report of the Maiden Trip of the Preussen for the East Prussian Marine Service. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, De Kadmannen und de Hertocze—A Radio Play from the Lübeck Town Hall, adapted from the Chronicles of Nikolaus Flöbecke (1371), by Arthur Illies. 8.50, Radio Report from Lübeck of the Opening of the East Prussian Marine Service. 10.0, News. 10.20, Topical Talk. 10.30, Concert by the Station Orchestra, conducted by Adolf Seeker. Overture, Agrippina (Handel); Concert, Suite from Idomeno (Mozart-Busoni); March (Schubert); Two Pieces from the Symphony, Von der Nordsee (Koch); Prelude, Air and Rigaudon from the Suite, Aus Holbergs Zeit

(Grieg); Prelude and Death of Isolde from Tristan and Isolde (Wagner); Extract from The Moorish Rhapsody (Humperdinck)

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 to 2.30 p.m., Gramophone Concert. In the interval at 1.20, News. 3.30, Programme for Children. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Faust Overture (Spohr); Dreaming (Jensen); The Mill (Jensen); Suite, The Merchant of Venice (Sullivan); Selection from Gaudeamus (Humperdinck); Russian Rhapsody (Mans); Waltz, Wiener Extrablätter (Jos. Strauss); Selection from Die toten Augen (d'Albert); Overture, Le Puits d'amour (Balle). In the interval at 4.50, Review of Books. 5.45, Reading from the Works of Herbert Becker. 6.15, Market Prices. 6.25, Talk: The Work of a Königsberg Official. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, News. 8.5, Trio for Strings (Mozart). 8.30, The Last Days of Mozart—Radio Play (Bernhard Paumgartner). 9.40, Pianoforte Quartet (Mozart). 10.15, News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Algeencine Vereeniging Radio Omroep (A.V.R.O.).—12.10 p.m., Concert: Pierre Palla (Organ); Hilde Jäger (Song); and Boris Lensky (Violin). 1.40, Interval. 1.55, Concert by the Hofstad String Quartet; Hunting Quartet (Mozart); Andante from the Quartet in G (Dittersdorf). 2.40, Dressmaking Lesson. 3.40, Pianoforte Recital by Gerda Broekhuizen. 4.10, Concert by a Children's Choir, conducted by Jacob Hamel. 4.40, Programme for Children. 5.10, Concert by Kovacs Lajos and his Orchestra, with Song Refrains by Bob Scholte. In the interval, Gramophone Music. 6.10, Talk. 6.40, Talk: District Nursing. 6.55, Gramophone Music. 7.10, Talk: A Holiday in the Dolomites. 7.40, Time and News. 7.45, Concert by an Orchestra and a Children's Choir, relayed from Arnhem; Conductor: Peter Frequin. 8.40, Radio Play. 8.55, Concert by the Wireless Orchestra, conducted by Albert van Raalte; Soloist: Stephan Bergmann (Pianoforte); Fourth Symphony in A, Op. 90 (Mendelssohn); Pianoforte Concerto in A, No. 23 (Mozart). 9.50, Gramophone Music. 10.10, Concert by the Wireless Orchestra (cont'd); Overture, The Mikado (Sullivan); Cachucha from The Gondoliers (Sullivan); Waltz from The Sleeping Beauty (Tchaikovsky); Albumblatt (Wagner); Serenade and Spanish Dance (Moszkovsky); Gavotte from Mignon (Thomas); Chanson triste (Tchaikovsky); Canzonetta (d'Ambrosio); Melody (d'Ambrosio); Mazurka (Drilmsa); Marche lorraine (Ganne). 11.10, Gramophone Music. 11.40, Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.55 a.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Sextet: March, Unter freiem Himmel (Morena); Only Love (Griff); In Camarosa (Griff); Waltz from Im Reiche des Indra (Linke); Oriental Suite (Poja); Un peu d'amour (Sileau); Gramophone Music; Serenade valsette (Dotter); Selection from Les Saltimbanques (Ganne); Waltz from The Rose of Stamboul (Fall); Lolita (Buzzi-Poechi). 1.25 p.m., Interval. 1.40, Talk for Women. 2.40, Gramophone Music. 3.40, Programme of the H.I.R.O. 4.50, Concert by the K.R.O. Boys, conducted by P. Lustenberger. Soloist: J. Mossel (Songs). In an interval at 5.40, Talk. 6.40, Police Report. 6.55, Talk. 7.15, Gramophone Music. 7.25, Talk. 7.40, Concert of Czechoslovakian Music by the K.R.O. Orchestra, conducted by H. Swoboda. Soloist: Liza Frank (Songs). Introductory Talk by the Czechoslovakian Ambassador, Symphonic Poem, The Moldau (Smetana); Lyric Intermezzo (Jirak); Symphonic Overture (Koromant); Serenade (Martini); Scherzo fantastique (Suk); Three Hessian Songs (Kaufmann); Two Songs (Seidl); Symphony. From the New World (Dvorák). In the interval at 8.10, News; at 8.40, Talk; and at 9.40, Gramophone Music and News. 10.40, Gramophone Music. 11.40 (approx.). Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.25 p.m., Gramophone Music and News. 7.30 till Close Down, Programme from Warsaw.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—8.0 p.m., Time, Weather and News. 8.40, Variety Items. 9.0, Talk. 9.20, Concert. 9.50, Talk. 10.10, Sports Report. 10.15, Concert: Potpourri, Ein Souper bei Suppé (Morena);

Overture, The Nuremberg Doll (Adam). 11.0 (approx.). Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 30 kW. and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Concert by the Station Orchestra, March (Teike); Waltz (Albeniz); Selection from A Waltz Dream (O. Strauss); Hungarian Dance No. 5 (Brahms). 7.15, Song Recital. 8.0, Scene from Act III of La dame aux camélias—Play (Dumas); relayed from Vignori, 1,331 kc/s, 291 metres. 8.25, Gramophone Music. 8.45, News in Finnish and Swedish. 9.15, Light Music, relayed from the Kappeli Restaurant.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Wolf; Soloist, Magde Weibert (Pianoforte); Overture, The Peasant Rogne (Dvorák); Pianoforte Solo, Scherzo in E Flat Minor, Op. 4 (Brahms); First Little Suite (de Michel); Scherzo, Sonnenkind und Wolkenmum (Lenus); Selection from The Merry Wives of Windsor (Nicolai); Eljen-Czardas (Stephani); Favourite Themes from Music by Strauss, Millöcker and Ziehrer. In the interval at 2.0, News. 2.30, Sponsored Programme with Gramophone Records. 3.0, Programme for Children; Bathing in the Open Air. 3.30, Economic Notes and Time Signal. 3.50, Review of New German Novels. 4.5, Educational Talk: Higher Mathematics in Schools. 4.30, Concert by the Station Chamber Orchestra. In the Interval, Recital by the Station Chamber Choir. 5.50, Talk: Westphalia's Part in the Napoleonic Wars, 1813-1815. 6.10, Topical Talk. 6.20, Italian Lesson. 6.45, Weather, Time, Economic and Sports Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, First General News. 8.5, Die Hermannschlacht—German Drama (Christian Dietrich Grabbe), arranged as a Radio Play by F. Walthar Jiges. 9.5, Concert by the Station Orchestra, conducted by Kühn; Soloist, Carl Ottersbach (Pianoforte); Overture, The Barber of Bagdad (Cornelius); Pianoforte Concerto in E Flat (Liszt); Elegy and Waltz from the Serenade for String Orchestra (Tchaikovsky); Moorish Rhapsody (Humperdinck). 10.5, News, Sports Notes and Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—1.15 p.m., Chamber Music on Gramophone Records. 2.0 to 2.10, News. 3.35, Economic Notes. 4.0, Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer. Part I.—Leipzig Composers: Kleine Musik for Orchestra (Hermann Ambrosius); Extracts from the Serenade in G Minor for String Orchestra, Op. 242 (Reinecke); Variations on a Scottish Folk Melody (Raphael). Talk. Part II.—Dances: Blues (Eugen d'Albert); Der gelbe Tango (Neimann); Probekuss-Walzer (Millöcker); Tarantella napoletana (Bece); Gallop, Tritsch-Tratsch (Jgh. Strauss); Lolo-Quadrille (Lehar); Polonaise, Five Hundred Thousand Devils (Graben-Hoffmann). 5.50, Exchange, Weather, and Time. 6.0, Talk: Introduction to Wagner's The Mastersingers. 6.30, Talk: The Winding Up of the Inquisition Case against Galileo, on June 22nd, 1632. 6.45, Talk on Erich Schmidt, on his Eightieth Birthday. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Merseburg—Talk on the History of the Town for the Millennium Festival. 8.30, Frühlingsnacht—Opera in One Act (Gerhard Schjelderup); The Leipzig Symphony Orchestra, conducted by Hilmar Weber. 10.5, News. 10.15 (approx.). Midnight, Close Down.

LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. Belgian Programme.—7.0 p.m., Gramophone Music. 7.40, Weather. 7.45, Symphony in D Minor (Franck), on Gramophone Records. 8.30, Talk in Flemish. 8.40, Gramophone Music. 8.50, News in French. 9.15, Gramophone Music. 9.45, News in German. 9.55, Grock in his Music Hall Sketch. In the intervals, News and Exchange.

LYONS

LA DOUA, 644 kc/s, 466.8 metres; 1.5 kW. 7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, See Paris (Eiffel Tower). After the Programme, News.

MADRID

ARANJEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Light Music. 11.45, Radio Chronicle. 12 Midnight, Concert of Popular Music. 12.35 a.m. (Wednesday), Talk. 12.40, Light Music. 1.0 (approx.). Close Down.

MADRID

UNION RADIO (EAJZ), 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, Scientific Talk and Request (Gramophone Records). 8.30, Talk by Joaquin Espana Cantos, Talk on Educational Films and Request Gramophone Records (cont'd.). 9.15, News and Political Review. 9.30 to 10.30, Interval. 10.30, English Lesson. 11.0, Chimes, Time and Political Review. 11.30, Relay from a Theatre. In the interval at 12.45 a.m. (Wednesday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by J. Plichta. Overture, Erlikönig (Weber); Selection from Lucia di Lammermoor (Donizetti); Dance from Dinorah (Meyerbeer); Monte Carlo Waltz (Seibald); Cossack Lullaby (Jirnek); Polka (Provanik); Furiant (Bayer); Waltz Potpourri (Tichy); Intermezzo from Puppel and Kolbold (Armaudola); March (Labsky). 3.55 to 4.0, See Prague. 5.45, Talk. 5.55, See Prague. 6.5, Talk. 6.15, See Brno. 7.0, See Prague. 8.15, Reading, relayed from Kosice, 1,022 kc/s, 293 metres. 8.30, See Brno. 9.30, See Prague. 11.0 (approx.). Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres, and Nürnberg, 1,256 kc/s, 239 metres.—6.5 p.m., Soprano Song Recital by Petra li Zäpel; Four Songs by Brahms: (a) Sonntag, (b) Waldeinsamkeit, (c) Auf dem Kirchhof, (d) Das Mädchen spricht; Four Songs by Wolf: (a) Verborgenheit, (b) Der Gärtner, (c) Anakreons Grab, (d) Ich hab' in Penna. 6.25, Talk: Bulgaria, the Land of Roses. 6.45, Time, Weather and Agricultural Report. 7.8, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Leaves and Flowers from the Gardens of the Earth—Radio Sequence by the Small Station Orchestra, Maria Sunko-Saller (Soprano), and Walter Holten (Recitativo). 9.0, Wilhelm Schäfer reads from his own works. 9.20, Dance Music. 10.20, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 463.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—2.0 to 3.0 p.m., Military Music. 6.0, Programme for Women. 6.45, Music by a Children's Choir. 7.0, Advertising Notes. 7.15, Weather and News. 7.30, English Lesson. 8.0, Time Signal. 8.1, Concert by the Radio Orchestra, conducted by Hugo Kraumm; Overture, Semiramis (Rossini); Potpourri, Major and Minor (Schreiner); Melody (Rubinstein); Gavotte (Gosse); Berceuse (Jordan); Air de ballet (Borch); La Gitana (Kreisler); Selection from The Gipsy Princess (Kálmán); Love Song from Mignon (Thomas); Der Roschheitzszug (Jessel). 9.10, Talk. 9.38, Announcements, Weather and News. 10.0, Topical Talk. 10.15, Song Recital by Mme. Asta Jørgensen.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time and Announcements. 8.45, Othello—Opera in Four Acts (Verdi). In the intervals, Talk and Announcements. After the Opera, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5, kc/s, 1,445.7 metres; 13 kW.—Time, Signals (on 2,650 metres), at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Theatre Talk. 7.0, Le Journal Parlé. 8.30, Concert of French Opéra Music by the Station Orchestra, conducted by M. Flament. Selection from the Operettas of Cuvillier, Moretti, Moreau and Le Febvre. 10.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music. 7.15, Le Journal Parlé. 7.30, Gramophone Music. 8.0, Talk: The Cinema. 8.5, Talk: The Circus. 8.15, Interval. 8.35, Love Songs—Concert by the Station Symphony Orchestra: Mme. Marie Tissier and M. Georges Jonatte (Songs); Overture, Gwendoline (Chabrier); Songs from the Cycle, Frauenthe und Lehen (Schumann); Legend, Sauge fleurie (d'Indy); Träume (Wagner); Le Poème de l'amour et de la mer (Chausson); Pelléas et Mélisande (Fauré). 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture, 7.30, Weather and Physical Culture (contd.), 7.45, Gramophone Music, 8.0, Press Review and Weather, 12 Noon, Concert by the Kretly Orchestra: Overture, The Caliph of Bagdad (Boieldieu); Selection from The Barber of Seville (Rossini); Overture, Zampa (Hérold); Melodies from Lakmé (Delibes); Le Baiser d'Enrico from Quo Vadis (Nougues); Ballet Music from Cendrillon (Massenet); The Peer Gynt Suite (Grieg); Suite from L'Arlesienne (Bizet); Selection from Antar (Dupont); Overture, The Bartered Bride (Smetana); Polish National Dance (Scharwenka); March (Nicodi). In the interval at 1.0, Exchange, News and Weather, and at 1.30, Exchange, 2.0, Exchange and Announcements, 3.45, Exchange and Market Prices, 6.10, Agricultural Talk and Market Prices, 6.30, Advanced English Lesson, 6.50, Theatre Notes, 7.5, Talk: Modern Art in Germany and France, 7.20, Music by the Kretly Orchestra: Cavatina (Vreulst); Chinese Story (Dorson); Melody (Steck); Petite Suite d'orchestre (Pierné). 7.45, Review of the Anglo-Naxon Press, Commercial Notes and News, 8.0, Variety Programme, 8.45, Symphony Concert, conducted by Eugène Bigot; Overture, A Russian Easter (Rimsky-Korsakov); 'Cello Concerto (Bocherini); Entr'acte from Messidor (Bruneau); Symphonic Variations for Piano and Orchestra (César Franck); Symphony No. 3 (Brahms). In the interval at 8.30, News and Weather, at 8.40, Review by Pierre Soize, and at 9.15, Press Review and News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W2XK on 48.86 metres; and 25.27 metres.—7.7 p.m., KDKA Home Forum, 8.0, Betty and Bob, from New York, 8.15, Radio Troubadours, from New York, 8.45, Congress of Clubs Period, Contralto Solos by Mabel King, 8.58, Baseball Scores, 9.0, Meredith Wilson's Orchestra, from New York, 9.15, Jack Walton and his Casanova Orchestra from New York, 9.30, Market Reports, 9.45, Riggs and Moke, 9.58, Baseball Scores, 10.0, Rhythm Kings, 10.15, Concert Favorites, from New York, 10.30, The Singing Lady, from New York, 10.45, Little Orphan Annie, 11.0, Time Signal and Press News-Reciter, 11.15, Weather Report, 11.16, Sport Review, 11.23, One Song, 11.28, Announcement, 11.29, Temperature Report, 11.30, Pittsburgh Spotlights, 11.45 to 2.59, a.m. (Wednesday), New York Relay, 11.45, Today's News by Lowell Thomas, 12 Midnight, Amos 'n' Andy, 12.15, National Advisory Council on Radio in Education, Constructive Economy in Government, 12.45 Baritone Solos by Ray Heatherstone, 1.0, Crime Clues, 1.30, Adventures in Health, 1.45, Floyd Gibbons, 2.0, Goldmund Band, 2.59, Time Signal, 3.0, Household Musical Memories, from New York.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—6.50 p.m., Book Review, 7.5, Talk, 7.20, Miscellaneous Items and Announcements, 7.35, Theatre Guide and Programme Announcements, 7.40, See Warsaw, 7.58, Time, 8.0, Concert. In the intervals: News and Agricultural Notes, 10.0, Time, Sports Review and Police Notes, 10.15, Dance Music from the Esplanade Café, 11.50 (approx.). Close Down.

PRAGUE

614 kc/s, 438.6 metres; 120 kW.—2.50 p.m., See Moravská-Ostrava, 3.55 to 4.0, Exchange, 5.45, Talk, 5.55, Talk on Commerce, 6.5, Agricultural Talk, 6.15, Talk for Workers, 6.25, News in German, 6.30, German Transmission, Talk and Musical Programme, 7.0, Chimes from St. Ludmila's Church, 7.1, News, 7.10, Radio Fenilleton, 7.25, Military Band Concert, relayed from Královská Obora. Conductor: Jan Pesta; Florentine March (Fucik); Academic Overture (Pesta); Humoresque (Kobz); Wagner Potpourri (Morena), 8.15, Reading, relayed from Kosice 1.022 kc/s, 293 metres, 8.30, See Brno, 9.30, Piano Concerto in G (Mozart), by Juliette Arányi (Pianoforte), and the Station Orchestra, conducted by Otakar Jeremias, 10.0, Time, News, Press Review and Sports Notes, 10.20, Gramophone Music, 11.0 (approx.) Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—1.10 p.m. (from Lausanne), Variety Concert on Gramophone Records, 2.0 to 3.28, Interval, 3.28, Time Signal from Nenehätel Observatory, 3.30 (from Lausanne), Concert by the Radio Lausanne Orchestra, 5.0 (from Lausanne), Talk for Women, 5.30 to 7.0, Interval, 7.0 (from Geneva), Talk, 7.30 (from Geneva), Answers to Correspondence, 8.0, (from Lausanne), C'est si simple d'aimer—Comedy in Three Acts (Berger), 9.50, News, 10.0 (from Lausanne), Village Dances by the Radio Lausanne Peasant Orchestra, conducted by Eduard Moser, with Humorous Comments by Jean-Louis, 10.30 (approx.), Close Down.

JUNE 20th

TUESDAY

continued

RIGA

572 kc/s, 525 metres; 15 kW.—6.30 p.m., Talk, 7.0, Weather, 7.5, Concert of Opera Music by Thomas and Massenet, Overture, Raymond (Thomas); Selection from Hérodiade (Massenet); Selection from Mignon (Thomas); Selection from Manon (Massenet); Selection from Thaïs (Massenet); Berceuse from Mignon (Thomas); Aria from Hérodiade (Massenet); Drinking Song, from Hamlet (Thomas); Selection from: (a) Werther (Massenet), (b) La Navarraise (Massenet); Suite, Fête du printemps, from Hamlet (Thomas). In the intervals at 8.0, News, and at 9.0, Weather, 9.30, Dance Music, 10.0 (approx.). Close Down.

RUKAN.—See Oslo.

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres, and 2RO, 11,810 kc/s, 25.4 metres, from 5.30 p.m.—1.0 to 2.15 p.m., Orchestral Concert. In the interval from 1.30 to 1.45, Giornale Radio and Exchange, 4.45, Children's Radio Review, 5.15, Exchange and Giornale Radio, 5.30 to 5.15, Orchestral Concert, 6.40 (Naples), Shipping and Sports Notes, 6.50, Agricultural and Dopolavoro Notes, 7.0, Tourist Report, 7.10, Lesson in Morse, 7.20, Announcements in Foreign Languages, 7.40, Giornale Radio, 8.0, Time, Announcements and Talk, 8.15, Sponsored Gramophone Music, 8.30, Sports Notes, 8.45, Variety Concert, Soloists: Vincenzo Mannino (Pianoforte), Dina Fiumana (Soprano) and Mario Cavagnis (Tenor), Overture, Egmont (Beethoven); Toccata in C for Pianoforte (Bach); Duet from the Second Act of Rigoletto (Verdi); Pianoforte Solos: (a) Navarra (Albeniz), (b) Gavotte and March (Prokofiev); Duet from the First Act of La Bohème (Puccini); Selection for Pianoforte from Petrushka (Stravinsky), 9.30, The Quartet-Comedy in One Act (Carlo Salsà), 10.0 (approx.). Dance Music, 10.55, Giornale Radio, SALZBURG.—See Vienna.

SCHENECTADY

WGY; 750 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF, on 31.48 metres, and by W2XAO, on 19.56 metres.—12.45 a.m. (Wednesday), Stock Report, 1.0 till 3.30, New York Relay, 1.0, Popular Programme, 1.30, Wayne King's Orchestra, 2.0, Ben Bernie's Orchestra, 2.30, Ed. Wynn and the Fire Chief Band, 3.0, Lives at Stake, 3.30, National Radio Forum, from New York, followed by Programme résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from the Nenehätel Observatory and Weather, 12 Noon (from Zurich), Concert by the Radio Orchestra, 12.20 p.m., Time, Weather, and News, 12.40 (from Zurich), Concert (contd.), 1.25 (from Zurich), Exchange, Time, and Weather, 1.30 to 5.0, Interval, 5.0 (from Zurich), Concert by the Small Radio Orchestra, 5.30 (from Basle), Tea-time Dance Music on Gramophone Records, 6.30 (from Berne), Programme to be announced, 7.0 (from Berne), Time, Weather, and Broadcast for Schools, 7.10 (from Berne), Gramophone Music, 7.45 (from Berne), Radio Report, 8.20 (approx.), Concert by the Radio Orchestra, 9.0, Weather and News, 9.10 (from Berne), Dorothy-Comic Opera in One Act (Offenbach), 10.15 (approx.). Close Down.

SEVILLE

UNION RADIO, EA45, 815 kc/s, 358.1 metres; 1.5 kW.—9.30 to 10 a.m., News, 3.0 to 4.0 p.m., Concert by the Station Orchestra, Spanish Serenade, Suspiros de mi patria (Pedro Palau); Intermezzo, Capriccio andaluz (Orjon); Selection from The Barber of Seville (Rossini); Selection from El molinero de Subiza (Oudrid); Flamenco Songs, 10.0 to 12 Midnight, News, Exchange and Weather, followed by Maruxa—Opera (Vives), 12 Midnight (approx.). Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

669 kc/s, 436 metres; 35 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres, and Sundsvall, 554 kc/s, 542 metres.—5.5 (from Sundsvall), Literary and Musical Programme, 5.30, Reading, 6.0, Gramophone Music, 7.0, The Practical Corner, 7.15, Weather and News, 7.30, Talk: Swedish Trade with Foreign Countries, 8.0, Concert by the Station Orchestra, Soloist: Oluf Nielsen (Violin); Overture, Masaniello (Auber); Suite from The Sleeping Beauty (Tchaikovsky); Hungarian Rhapsody No. 2 (Liszt); Zigeunerweisen, for Violin and Orchestra (Sarasate); Waltz (Kálmán); Irish Dances (Grainger);

Suite, The Three Bears (Coates), 9.15, Talk, 9.45, Weather and News, 10.0, A Duet on Crutches—Play (Erik Asklund), 10.45 (approx.). Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Offenbach Gramophone Concert, 12 Noon, Orchestral Concert, conducted by Maurice de Villers. In the intervals at 12.45 p.m., News, and at 1.0, Time and Exchange, 2.0 to 5.0, Interval, 5.0, Talk in French: The Towns of Moissac and Cahors, 5.15, Orchestral Concert, conducted by Roskam; Overture, Pique Dame (Suppé); Waltz (Fetras); Selection from The Daughter of the Regiment (Donizetti); A Sea Lull (Denison); Réve des fleurs (Translateur); A bâtons rompus (Gillet); March (Schlögel), 6.0, Talk in French on Baron Haussmann, 6.15, Topical Talk in French, 6.30, Offenbach Concert of Orchestral Music for the Hundred and Fortieth Anniversary of the Composer's Birth; Selection from La Périochole; Musette for Cello and Orchestra; Selection from Le joaillier de Tolède, 7.30, Time and News, 7.45, Light Music on Gramophone Records, 8.15, Press Review in German, Lottery Results and Announcements, 8.30, Concert by a Virtuoso Septet, relayed from the Casino, Viçly; Overture, Le roi Fa dit (Delibes); Song, Le Colibri (Chausson); Serenade (Pierré); Eine kleine Nachtmusik (Mozart); Prelude to Messidor (Bruneau); Humoresque (Lalo); Canzonetta (Tchaikovsky); Ballet Music from Les deux Pigeons (Messager). After the Concert, Press Review in French.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—1.30 p.m., Concert from Langenberg, 2.0, Programme arranged by the Post Office, with Gramophone Records, 2.30, Advanced English Lesson, 3.30, Talk: Flowers, 4.0, Talk for Women: Eggs, Butter and Sandwiches, 4.35, Orchestral Concert, conducted by Albert Hitzig, relayed from Badenweiler, March from Signor Jorsalfar (Grieg); Overture, Oberon (Weber); Waltz, Tales from the Vienna Woods (Joh. Strauss); Selection from La Traviata (Verdi); Procession of the Women to the Minster, from Lohengrin (Wagner); Serenade (Hoykens); Selection from The Maid of the Black Forest (Jessel); Badenweiler March (Füßler), 5.45, Time and News, 6.0, Talk, 6.25, Countess Giulia Cattaneo, a Young Italian Woman, gives her Impressions of Germany, 6.50, Time and News, 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender), 8.0, Siegfriedsblude—a Radio Report from the Voluntary Labour Service Camp in the Welzheimer Wald, 8.45, Die kleine Chronik der Anna Magdalena Bach—a Fantasia on Themes from the above-named book with Music by Johann Sebastian Bach (arr. Wilhelm Locks), Rhoda von Glehn (Soprano), Emmy Remolt (Recitations), 9.20, See Munich, 10.20, Time and News, 10.45, Concert from Hamburg, 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.15 p.m. till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 950 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.15 p.m., Dance Music from the Savoia, Milan, 6.0 to 6.5, Announcements, 6.35, Giornale Radio, Agricultural and Dopolavoro Notes, 7.0, Time and Report of the Royal Geographical Society, followed by Gramophone Records of Variety Music, 7.20, Announcements in Foreign Languages, 7.40, Gramophone Music, 8.0, Giornale Radio, Sports Notes and Weather, 8.15, Sponsored Gramophone Music, 8.30, Gramophone Music, 8.45, Commentary on and Reading from the Thirtieth Canto of the Inferno, 9.15, Variety Programme, 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW. 11.0 to 11.15 a.m., Religious Information in English, 8.0 to 8.15 p.m., Religions in formation in Italian.

VIENNA

581 kc/s, 517 metres; 160 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 215.5 metres.—1.0 p.m., Time and News, 1.10, Gramophone Music by Famous Musicians: Elisabeth Schumann; Freundliche Vision (R. Strauss);

Theodor Scheidl; Heinrich der Vogler (Carl Loewe); Franz Völker; Aria from Der Freischütz (Weber); Maria Nemeth; Aria from Il Seraglio (Mozart); Miguel Fleiter; Cradle Song (Gretchaninov); Alexander Kipnis; Am Meer (Schubert); Emmi Lehner; Song from (Armen) (Bizet); Irene Kissinger; Lauretta's Aria from Gianni Schicchi; Chaliapin: The Song of the Flea (Musorgsky), 2.0 to 3.0, Interval, 3.0, Time, Weather and Market Prices, 3.20, Talk: The Fifth Exhibition of the Austrian Amateur Photographers' Society, 3.30, Concert by a Children's Choir, 3.55, Gramophone Music: Overture, The daughter of the regiment (Donizetti); Polka from Schwanda the Piper (Weinberger); Felsenbeller Reitermarsch; Song, Fahrt im Wiener Wald (Johann Strauss); Song, I want your heart (Wood); Hawaiian Duet, La Paloma; Kinderliedermarsch; Gretchen's Lieblingsstanz (Steeger); Seifertitz Marsch; Kaiserwalzer (Johann Strauss); March, The Regiment's Kinder (Fucik), 4.35, Technical Talk, 5.5, Talk: The Value of Experience, 5.25, Concert by Henriette Ribarz-Hemina (Pianoforte), Leontine Gartner ('Cello), and Gertrude Haak (Soprano), Sonata in D Minor for Cello and Pianoforte (Fuchs); Sonus (Schubert); (a) An den Mond, (b) Air from Aeschylus, (c) Elafsee, (d) So lasst mich scheinen, (e) Im Abendrot, (f) Klärchen Lied, 6.5, Agricultural Talk, 6.40, French Lesson, 7.0, Rimsky-Korsakov Concert on the Twenty-fifth Anniversary of the Composer's Death, The Vienna Symphony Orchestra, conducted by Ivan Boutnikov, Soloist: Maria Gerhart (Soprano), Symphonic Suite, Op. 35, Scheherazade; Air from The Snow Maiden; Selection from The Golden Cockerel, 8.5, Time, Weather and Programme Announcements, 8.15, Concert of Operetta Music by Josef Holzer's Orchestra, Soloists: Otti Santera (Soprano), Rudolf Lustig (Tenor), and Josef Knapp (Baritone), Extracts from: (a) Die schöne Galathee (Suppé), (b) Die lustigen Nibelungen (O. Strauss), (c) Heimkehr des Odysseus (Offenbach-Leopold Schmidt), (d) La Belle Hélène (Offenbach), (e) Der Göttergatte (Lehár), (f) Rhodope (Felix), (g) Orpheus in the Underworld (Offenbach), 10.0, News, 10.15, Dance Music from the Grabel Café; Gods and Heroes in Operetta; Overture, Pygmalion's Prayer, the Awakening of Galatea and Duet from Die schöne Galathee (Suppé); Overture, Siegfried's Song, Love Duet and Prelude to Act III from Die lustigen Nibelungen (O. Strauss); Selections from The Return of Ulysses (Offenbach-Schmitt); Overture and Duet from La belle Hélène (Offenbach); Overture, Songs and Pantomime from Der Göttergatte (Lehár); Song and Aria from Rhodope (Felix); Song, Duet and Overture from Orpheus in the Underworld (Offenbach).

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fantare from St. Mary's Church, Cracow, 12.5 p.m., Gramophone Music, 12.25, Polish Press Review, 12.35, Gramophone Music, 12.55, Radio Journal, 1.0, Interval, 2.55, Gramophone Concert, 3.5, News and Announcements, 3.15, Gramophone Music, 3.25, Economic Notes, 3.35, Gramophone Music, 3.45, Aviation Report and Anti-Gas Drill, 3.50, Gramophone Music, 3.55, Announcements, 4.0, Concert, relayed from Ciechocinek, 5.0, Answers to Technical Correspondence, 5.15, Programme relayed from Lwow, 788 kc/s, 381 metres, 6.15, Talk on Palestine Society, 6.35, Pianoforte Recital by Marie Oglio; Toccata and Fugue in A Minor (Bach-Busoni); Fury over a lost trochsen vent in a Caprice (Beethoven); Allegro de Concert (Chopin); Etude in C Sharp Minor, Op. 10, No. 4 (Chopin); Cordoba (Albeniz); Fire Dance (Fallá), 7.20, Miscellaneous Items, 7.35, Programme Announcements, 7.40, Topical Talk, 8.0, Concert by the Station Orchestra, conducted by J. Oziminski, Soloist E. Wejsis (Tenor), Overture, Semiramis (Rossini); Orchestral Fantasia, Aus Norwegens Berg und Tal (Andersen); In the Steppes of Central Asia (Borodin); Turkish March from The Dances of Athens (Beethoven); Hymn to St. Cecilia (Gounod-Noskowski); Songs; Scenes a l'acques (Massenet); Songs; Romance from The Serenade for Violin (Karlowicz); Waltz (Kronenberg); Cortège (Moszkowski), In the interval at 8.50, Radio Journal, and at 9.0, Agricultural Notes, 10.0, Reading, 10.15, Dance Music, 10.25, Sports Notes, 10.35, Announcements, Aviation Weather Report and Police Notes, 10.40, Dance Music relayed from Ciechocinek.

WILNO

533 kc/s, 563 metres; 16 kW.—7.20 p.m., Programme Announcements, 7.25, Lithuanian Talk The German Minority in Italy, 7.40, See Warsaw, 8.0, Concert of Request Gramophone Music, 9.0, See Warsaw.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—8.10 p.m., Announcements, 8.30, Concert of Yugoslav Chamber Music by the Station Quartet, 9.30, Two Comedies, 10.30, News and Weather, 10.40, Dance Music, 11.30 (approx.). Close Down.

ZURICH.—See Schweizerischer Landessender.

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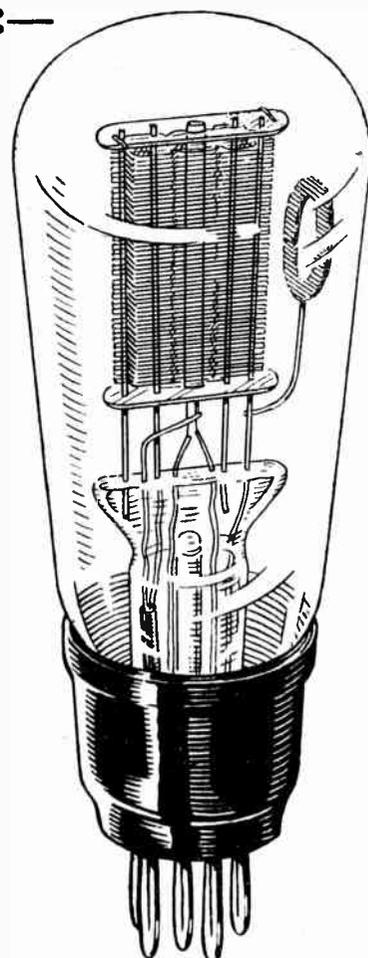
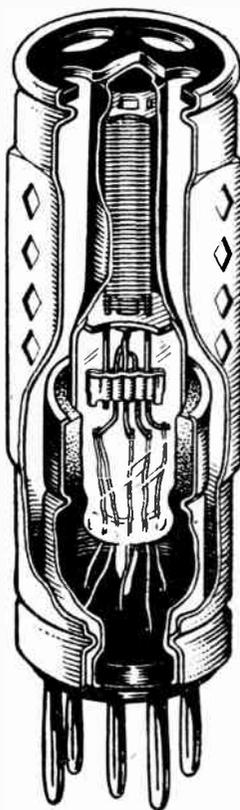
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* With or without screening cover.

Write to the Marconiphone Company Ltd., 210 Tottenham Court Road, London, W.1, for a folder describing these remarkable new valves.

We show here a cut-away drawing of the screened Marconi triode Catkin Valve MH4 in comparison with an equivalent glass valve drawn to the same scale. Note how the grid and heater of the former are rigidly locked at both ends inside the metal anode, which, in its turn, is rubber mounted and metal-armoured, and compare this with the glass valve, with its fragile pinch, many bent wires and delicate joints.

ASK FOR THE UNBREAKABLE



MARCONI CATKIN VALVE

The Wireless World

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As many of the circuits and apparatus described in these
pages are covered by patents, readers are advised, before
making use of them, to satisfy themselves that they would
not be infringing patents.

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EDITORIAL COMMENT

Television

A Phantom Audience?

IN a Leader in this month's issue our contemporary, *Television*, takes to task a contributor to the *Evening Standard* whom he accuses of a change of front in his attitude towards television. The accusation is based upon the publication recently by that contributor of a statement that "fewer than 5,000 people have televisors in this country and some experts would estimate the number at half that figure," whilst it was alleged that the same author last summer estimated that between 5,000 and 10,000 televisors were already in use.

Television is justified in calling attention to apparently contradictory estimates of this kind, and it is part of the obligations of an editor to enlighten public opinion on matters coming within the sphere of his journal's activities. Unfortunately, *Television* has still left the question in the air and has not proceeded, as we hoped it would, to attempt to give us the correct figure.

It is, in our view, of paramount importance that anyone likely to be concerned in furthering the interests of television should have available some indication of the response the public is giving to the B.B.C. transmissions. No better indication could be found than an accurate statement of the approximate number of television receivers or parts which have been sold up to date. We would strongly urge that it is in the best interests of all parties, however meagre the figures may prove to be, that they should be made known. In the early days of broadcasting the Post Office receiving licences were an excellent index of public interest, but since television reception is covered by the

broadcast licence, the licence figures provide no information on the popularity of television.

The B.B.C., as is well known, has spent a great deal of time and money in arranging for satisfactory transmissions in conjunction with the Baird Company, and from our own experience of reception under more or less ideal conditions we are satisfied that the transmissions are far ahead of the facilities for reception. A talk with officials of the B.B.C. elicited the information that they, too, appear to be in the dark as to how many television enthusiasts constitute their audience. For all we know B.B.C. television programmes may be radiated for the benefit of a phantom audience.

A Voice from the Air

New Ultra Short-Wave Test

THERE is a natural tendency among amateurs to-day to imagine that all the "plums" in wireless research must inevitably go to the highly specialised professional. Up to a point this attitude is justified, but opportunities do occasionally occur when the free-lance experimenter and the specialist can compete on equal terms. Such an opportunity, we believe, arrives on Sunday, June 25th, when two well-known contributors to this journal, Messrs. S. G. Morgan and H. L. O'Heffernan, are inviting the co-operation of listeners up and down the country in the reception of ultra short-wave transmissions from an airplane.

So far as we are aware, transmission on "optical" wavelengths has not yet been attempted from the air, and some highly important observations may be expected if listeners will help in the experiment, full particulars of which, together with a design for a 5-7-metre receiver, appear elsewhere in this issue.

Ultra Short Wave Two

Simple Two-valve Super-regenerative Receiver for 5-7 metre Working

By H. B. DENT



SIMPLICITY and ease of control form the basis of this receiver design, which has been specially evolved for 5 to 7 metre working. A practical opportunity for using this set will occur in nearly every part of Great Britain on Sunday, June 25th, when the first amateur transmissions on ultra short waves from an aeroplane will take place.

specially concerned with a particularly high quality of reproduction.

The special components comprise one small variable condenser (C2) having a very low minimum capacity and a maximum value of not more than 35 mmfds. This is used to tune a circuit consisting of two small coils L1 and L2 joined in series with a semi-variable condenser C1. This has a maximum value of 50 mmfds. (0.0005 mfd.), and is of the

ELSEWHERE in this issue particulars are given of a special short-wave test arranged by two amateur experimenters and to take place on a wavelength of five metres. Although not an entirely unexplored field, very little is known outside certain official quarters as to the practical usefulness of these wavelengths, so that this venture might bring to light some hitherto unpublished facts regarding transmission and reception on the very short wavelengths. It is known that their range is somewhat restricted, being accepted generally as an optical one, which, if this contention be true, means that the horizon is their limit, for it is assumed that they do not follow the curvature of the earth.

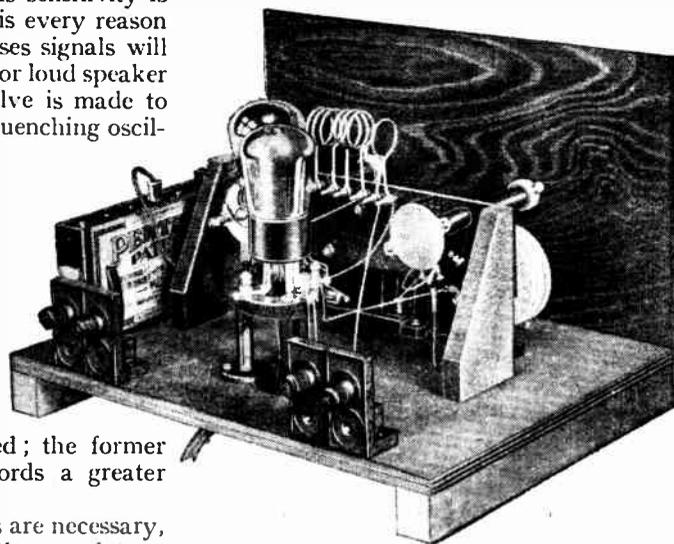
Your Urgent Attention, Please!

Since the success of these tests relies largely on the number of reports received from widely spaced observation posts, as many collaborators as possible are invited to participate, and, in order to further this end, a receiver designed especially for use on the 5- to 7-metre waveband is illustrated and described here.

The set is a simple two-valve super-regenerative receiver intended for head-

phone reception; but, as its sensitivity is of a very high order, there is every reason to believe that in many cases signals will attain an intensity suitable for loud speaker reproduction. A single valve is made to serve the dual function of quenching oscillator and detector, its sensitivity being controlled by a 50,000-ohm resistance (R2, Fig. 1) in the H.T. supply lead to this valve. A single, low-frequency amplifier is employed and coupled to the detector by a step-up transformer. In the last stage either a pentode or a triode valve may be used; the former is recommended, as it affords a greater amplification.

A few special components are necessary, but the remainder are of the usual type employed for broadcast use, and many of these can be found in the workshop, for those that have been replaced by more up-to-date designs would be quite suitable for our purpose, since we are not



Unnecessarily long leads are avoided in the detector circuit by raising the valve above the baseboard. Note the mounting of the sub-panel.

type usually employed for trimming purposes.

The two H.F. chokes, Choke 1 and Choke 2, come within the category of special components, and could, if desired, be home-made. Those fitted in the receiver are the Eddystone 5-10-metre type. A home-made choke consisting of fifty turns of fine-gauge wire spaced to occupy one inch and wound on a 1/2 in. former would answer the purpose.

The quenching coils, L3 and L4, are wound on a two-section bobbin built up from thin plywood to the dimensions given in Fig. 3. Each slot contains 500 turns of No. 34 enamel wire, and both coils are wound in the same direction. Their respective inner and outer ends are connected as marked on the theoretical circuit diagram (Fig. 1).

For the small tuning coils, L1 and L2, three turns only of No. 16 S.W.G. tinned copper wire are required in each case. They are wound on a 3/4 in. former, and the turns spaced to occupy 1/2 in. in length. Both coils are wound in the same direc-

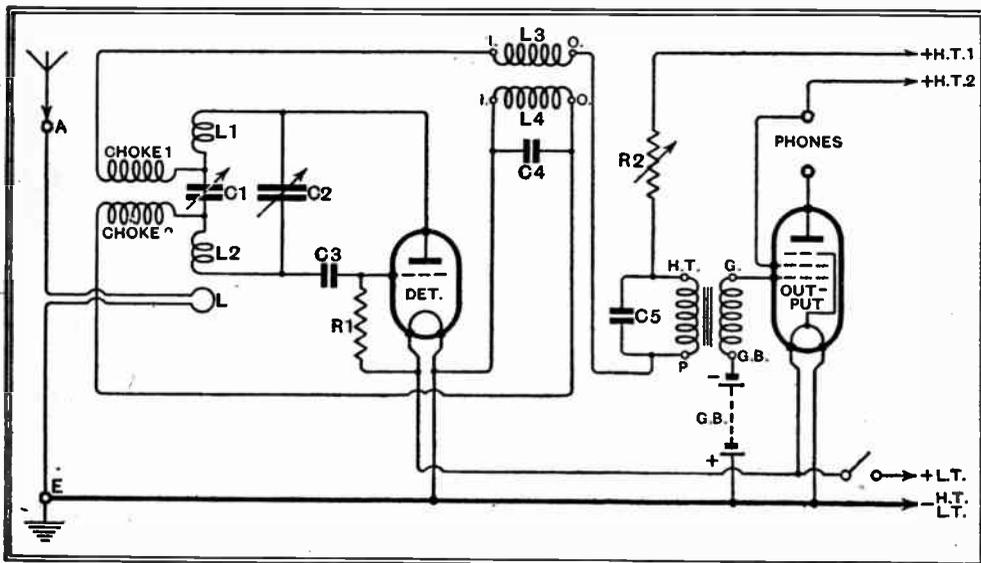


Fig. 1. The theoretical circuit diagram; values of components are: C1 = 50 mmfds. max., C2, 35 mmfds. max., C3 = 0.0001 mfd., C4, 0.01 mfd., C5, 0.001 mfd., R1 = 2 megohms, R2 = 50,000 ohms variable.

"Wireless World" Ultra Short Wave Two—
tion, and when assembled this sense must
be maintained. That is to say, ignoring
the presence of C₁, coils L₁ and L₂ may
be regarded as one continuous winding.
The aerial coupling coil, L₁, is a single
turn having the same diameter as the
others, and all three coils are spaced 3/8 in.
apart. A normal aerial can be used.

Several of the special components, such
as the quenching coils, small tuning coils,
H.F. chokes, and the small sub-panel,
ready drilled, can be obtained from the
Scientific Supply Stores (Wireless), Ltd.,
126, Newington Causeway, Southwark,
London, S.E.1.

Choice of Valves

The tuning coils, variable condenser
C₂, semi-variable condenser C₁, and the
variable resistance R₂, are assembled on
a small Paxolin sub-panel, 8 1/2 in. long and
2 in. wide, screwed to two wooden sup-
ports 3 1/2 in. high. This is mounted 3 1/2 in.
back from the front panel so as to avoid
hand capacity effects, and the two con-
trols, namely, C₂ and R₂, are each fitted
with 3 in. ebonite extension rods.

Little need be said regarding the as-
sembly and the wiring, for the various
illustrations and the drawings are self-
explanatory. The bulk of the wiring is
carried above the baseboard; in the under-
deck space is the filament wiring, output
leads, and the on-off switch. Incidental-
ly, the baseboard is mounted on one-
inch battens.

The set is designed for two-volt valves,
and for the detector any valve normally
serving this function is suitable. Of the
many different types tested mention can
be made here of a few only: the Mullard
PM2DX, Marconi HL2, Osram HL2,
Mazda HL210, Cossor 210 Det., EUI
BY1815, and the Hivac H210, were all
found quite satisfactory. The detector
(HT+1) requires between 40 and 60
volts, the best operating conditions vary-

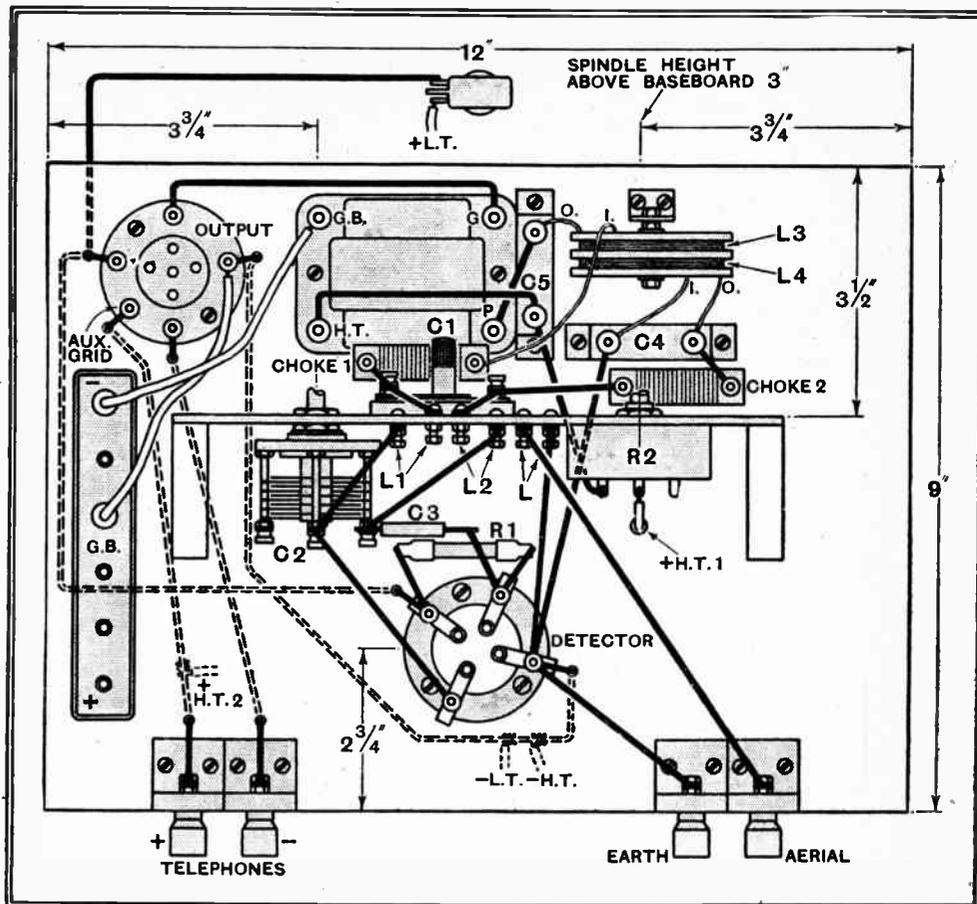
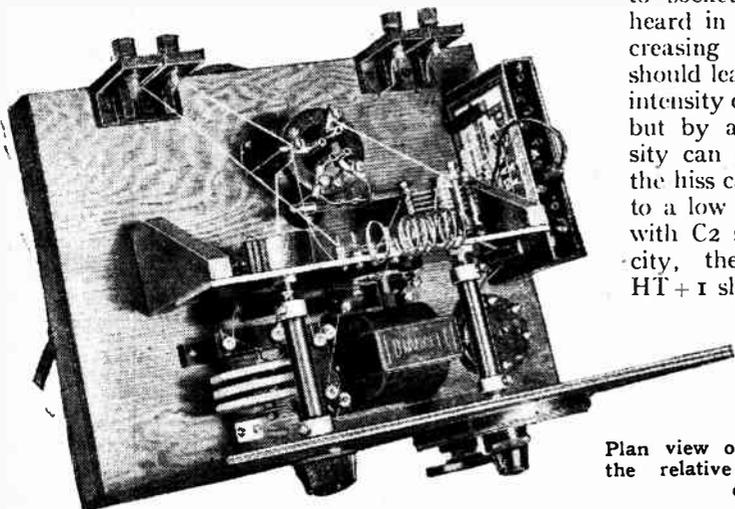


Fig. 2. Layout of the components and the practical wiring plan. The leads shown dotted are carried below the baseboard.

type such valves as the Mazda Pen 220, Marconi P.T.2, Osram P.T.2, Mullard PM22A, or the Cossor 220HPT are recommended as being suitable types.

Before connecting the batteries adjust C₁ to within a fraction of a turn of maximum capacity; set R₂ at minimum resistance, and adjust C₂ to read about 75 on the 0-100 division dial. Now connect the batteries, switch on the L.T., and move the HT + 1 wander plug from socket to socket until a faint hiss is heard in the headphones. Decreasing the capacity of C₂ should lead to an increase in the intensity of the background hiss, but by adjusting R₂ its intensity can again be reduced. If the hiss cannot be brought down to a low level by the resistance with C₂ set to minimum capacity, then the wander plug HT + 1 should be moved one or two sockets nearer the negative end of the battery.

The hiss is charac-



Plan view of the receiver showing the relative position of all the components.

ing slightly with different valves, while the output stage (HT + 2) can be operated at any voltage up to its maximum. The grid bias must be adjusted accordingly. Either a small power triode or a pentode will serve the purpose. Of the latter

teristic of super-regenerative circuits, and signifies that the set is working correctly. The hiss practically disappears when the receiver is tuned to a carrier wave, and when signals are heard R₂ can be adjusted to give the loudest signals with the

minimum of background. The condenser C₁, being in series with the two coils L₁ and L₂, has a marked effect upon the

LIST OF PARTS

After the particular make of component used in the original model, suitable alternative products are given in some instances.

- 1 4-pin short wave valveholder (Eddystone No. 501)
- 1 Microdenser 35 mmfds. (Eddystone No. 900)
- 2 Ultra short wave H.F. chokes 5-10 metres (Eddystone No. 928)
- Scientific Supply Stores.
- 2 Extension rods, 3in. (Eddystone No. 925)
- Bulgin, Red Diamond.
- 1 5-pin A.C. valveholder (W.B.)
- Benjamin, Junit, Eddystone, Wearite, Trix, Lissen, Telsen, Graham Farish.
- 1 50,000 ohm. potentiometer (Bulgin V.C.36)
- Wearite, Watmel, British Radiophone, Igranic, Lewcos, Colvern.
- 3 Valveholder supports (Bulgin T.S.1.)
- 1 pair grid battery clips (Bulgin No. 3)
- 1 Knob 3/4 in. hole (Bulgin K.18)
- 1 Baseboard mounting trimming condenser 0.00005 mfd. (J.B. No. 1017)
- (Ferranti AF10)
- 1 L.F. transformer ratio 1 : 3 (Igranic, Telsen, R.I., Varley, Lissen, Lewcos.
- 1 Fixed condenser, 0.01 mfd. (Dubilier No. 620)
- 1 Fixed condenser, 0.301 mfd. (Dubilier No. 620)
- 1 Fixed condenser, 0.0001 mfd. (Dubilier No. 665)
- T.C.C., Igranic, Graham Farish.
- 1 Grid leak with caps and wire ends, 2 meg. (Loews FZ128.30)
- 1 Indigraph slow motion dial with large knob (Igranic No. 2296/62)
- 1 5-way battery cable, 30in. with plugs (Belling-Lee)
- Bulgin, Goltone, Lewcos, Harbros.
- 4 Terminal mounts (Goltone R38/99)
- Junit, Belling-Lee, Lissen.
- 4 Terminals, L.S.+ L.S.-, A, E. (Belling-Lee Type "R.")
- Clix, Igranic, Eelex, Burton, Goltone.
- 1 19-volt grid battery
- 1 On-off switch (British Radiophone No. 407)
- Bulgin, Igranic, Claude Lyons.
- 2 Wander plugs, G.B.+ G.B.-. (Clix Type "B")
- Belling-Lee, Eelex.
- 1 Bobbin with 2 quenching coils (See text).
- 3 Tuning coils (See text).
- 1 Wooden panel, 12in. x 8in. x 3/8 in.
- 1 Baseboard, 12in. x 9in. x 3/8 in., mounted on 1in. battens.
- 1oz. No. 20. tinned copper wire
- Screws required: 5. 3/4 in. No. 4 csk/hd; 8. 3/4 in. No. 4 r/hd; 8. 3/4 in. No. 4 csk/hd; 4. 3/4 in. No. 4 csk/hd; 6. G.B.A. 3/4 in. r/hd; 2. G.B.A. 3/4 in. csk/hd; G.B.A. nuts.

"Wireless World" Ultra Short Wave Two—tuning range as well as upon regeneration, and very small variations in its capacity might be tried from time to time. The setting given above for this condenser will bring the 5-metre tuning point between 20 and 30 on a 100-division dial. It varies considerably with the valve used.

Although no regular transmission takes place on this waveband it is not devoid of interest, for several experimental stations use it, and this receiver gives the enthusiast an opportunity to explore an entirely new field which may soon become quite a profitable one for the listener.

The Receiver described is on view at 116, Fleet Street, for the benefit of those who may wish to call and inspect it.

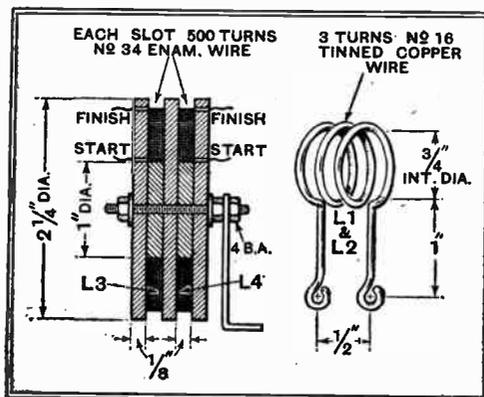


Fig. 3.—Dimensional drawing of former for coils L3 and L4, also details of small tuning coils L1 and L2.

Ultra Short Waves from a 'Plane

Amateur Effort in Which All Listeners Can Share

TEN years or more ago the amateurs were startling Government and commercial wireless concerns with their achievements on the "useless" short-wave band. And now the possibility of fresh pioneer work for amateurs is opened up by important tests about to take place on the ultra short waves.

LISTENERS all over Great Britain are invited to take part in the reception of 5-metre speech signals from an airplane on Sunday, June 25th, when a machine equipped with an ultra-short-wave transmitter and receiver will cover a triangular route between London and Liverpool.

It is hoped that amateur reception reports will reveal new possibilities on the very high frequency band.

For the first time in wireless history, listeners all over Great Britain are to be given an opportunity to participate in an airplane test which, it is hoped, will unravel many problems concerning the very high frequencies and their behaviour over varying tracts of country.

On Sunday, June 25th, Mr. S. G. Morgan (G6SM) will leave Heston Aerodrome or Hanworth Park at 10 a.m. on a 'plane flight to Liverpool, returning via Hull or Leeds to London in the afternoon. During the flight it is hoped to maintain two-way telephonic communication on the wavelength of 5 metres with Mr. H. L. O'Heffernan, operating station G5BY.

Certain amateurs have already notified their willingness to undertake reception, but it cannot be too strongly emphasised that if amateurs are once more to "pull off" a success they must help in large numbers, supplying reports from all parts of the country. It is one of the essential aims of the test to discover how far the waves can be picked up and whether, indeed, they are limited by the so-called "optical range."

It is believed that the 'plane, flying at a height of 10,000 feet, will have an extremely wide optical range, but it is quite possible that owing to phenomena at present only half understood the signals may get past the horizon, follow the curvature of the earth, and so enable amateurs beyond to score record reception. It is possible, too, that atmospheric conditions may affect the strength and direction of the transmissions.

To encourage listeners all over Britain to participate, *The Wireless World* publishes in this issue the design for an extremely simple 5-7-metre receiver, which practical tests have shown to be eminently suitable for such a test as that outlined. It comprises a super-regenerative circuit which greatly facilitates tuning on the very high frequencies and overcomes to a large extent the disadvantages of hand capacity effects and sharpness of tuning. All the parts are readily obtainable, and the assemblage of the set should not take more than a few hours.

Further details of this pioneer air test will be given in next week's issue. Readers to whom it makes an appeal now have at least nine clear days in which to rig up the little set ready for G6SM's signals on Sunday week.

Readers who wish to try out their re-

ceivers before the test should note that 5-metre transmissions are sent out nightly at 11 p.m. (B.S.T.) from G5CB at Bedford Park (Chiswick) and G6JP at Hammersmith. These transmissions consist of duplex telephony between the two stations. Various aeriels are used by G5CB, the most usual being a horizontal current-fed half-wave Hertz. Reports of these tests will be welcomed by Mr. D. Walters (G5CB), Fairfax Corner, Bedford Park, London, W.4.

In next week's issue of *The Wireless World*—two days before the airplane test—it will be possible to publish the complete schedule of transmissions from the air and the probable route to be taken, together with the approximate times of arrival at various points. In the unfortunate event of unsuitable weather the flight may have to be postponed until the first favourable Sunday, but listeners would be wise to have their receivers ready in time rather than rely too much upon the fickleness of the English climate.

It is hoped that readers will appreciate the fascinating possibilities of the test and send in their reports to *The Wireless World*, Dorset House, Stamford Street, London, S.E.1, or to Mr. S. G. Morgan (G6SM), 3, High Street, Croydon, Surrey. All reports will be wel-



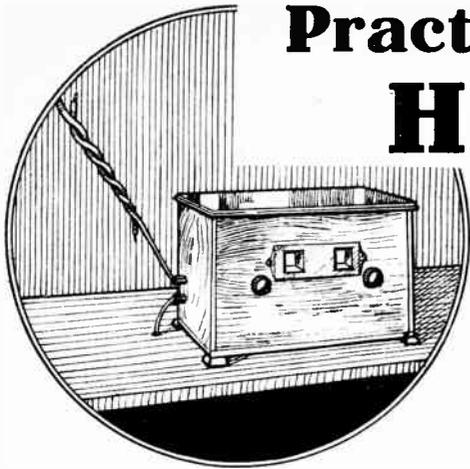
"ULTRA-SHORTS" RECEPTION ON A CAR. Mr. L. H. Thomas (G6QB) demonstrating one method of reception on the very high frequencies. An ordinary aerial will be suitable for use with *The Wireless World* "Ultra Short Wave Two."

come, whether they are received from within a few miles of the 'plane's route or 200 miles away.

When the speech is once tuned in it may be possible to hold it long after the airplane has left the locality, and thereby, perhaps, create a new record for ultra-short-wave reception!

Practical HINTS and TIPS

AIDS TO BETTER RECEPTION



A rough-and-ready series aerial condenser, made by cutting the lead-in wire and twisting together its ends.

IT is well known that the sensitivity of the average receiver tends to fall off as wavelength is increased; most receivers seem to work at their best at about 300 metres. As a result of fitting automatic volume control, there is generally an apparent levelling up of amplification, especially when the set has a fair reserve of sensitivity.

Levelling Up Sensitivity

This effect is, of course, a spurious one, as A.V.C. can do nothing to increase the sensitivity of the top end of the wave-band, nor should it reduce sensitivity at lower wavelengths. The aural impression that it does so seems to be due mainly to the fact that the overloading, which is normally produced by so many stations working in the neighbourhood of 300 metres, is no longer taking place.

When it is suspected that the receiver is behaving abnormally it is always wise, before making a test, to disconnect the A.V.C. valve, or to render the control inoperative in some other way.

ALTHOUGH it has never been suggested as being a suitable appliance for precision work, various ways of making a buzzer "kick" a tuned circuit into self-oscillation have been described in these columns. The radiation from a circuit energised in this way is apt to be inconstant, and for this reason the device is not really suitable as an aid to making absolute, or even comparative, measurements. It would appear, however, that the oscillations generated in the circuit remain substantially constant so long as the average value of pulsating current flowing through the buzzer windings from the battery is also constant.

Constant Buzzer Output

Thus, by connecting an ammeter or milliammeter between the buzzer and its battery, and observing the amount of current flowing, one can decide whether any serious change has taken place. This is useful when making comparative tests with an appreciable interval of time between them; it is reassuring to know that the output from the source of testing signals has remained unchanged.

MUCH as we may dislike the idea, most of us are forced, at some time or another, to obtain selectivity, if only temporarily, by the expedient of inserting a small condenser in the aerial lead. Selectivity gained in this way is, of course, at the expense of range.

The Simplest Selectivity Device

Many readers are aware that a small condenser may be improvised from a length of twisted twin flex. Similarly, an aerial series condenser may be made in a moment by cutting the leading-in wire, if of the insulated type, and twisting together the two ends for a length of three or four inches, as shown in the accompanying illustration. The greater the area of overlap the higher is the capacity of the condenser formed by the two wires.

THE amount of smoothing provided by a loud speaker field winding is enough for all practical purposes in many sets, especially as the anode current supplied to the earlier valves in the receiver usually receives additional smoothing by the decoupling resistances and condensers which are usually fitted.

Extra Smoothing

For the benefit of those who are hypercritical with regard to background noises, and who therefore wish to fit extra smoothing, it may be pointed out that the additional choke and condenser which will be used for this purpose should always be inserted on the rectifier side of the existing smoothing equipment, as shown in Fig. 1. It is

For the extra smoothing choke needed for the purpose in question, an inductance of some ten henrys is enough. D.C. resistance is of importance, and the addition of more than 200 ohms or so is always to be avoided. If care be taken the loss of voltage in the choke, under average conditions, need not exceed 10 or 20 volts.

IT is inevitable that the addition of a Class "B" output stage to an existing battery-operated receiver will add appreciably to the amount of current drawn from the L.T. accumulator; the extra load may amount to something between 50 and 100 per cent. It is accordingly desirable in many cases to take suitable steps against an undue reduction in L.T. voltage due to the extra demands made upon the battery.

Adding Class "B"

The accumulator leads should be no longer than is necessary; and if they are of very light flexible wire it might be as well to replace them by a heavier conductor. Battery terminals should be clean, and any corrosion should be removed from the "spade ends" through which connections are often made.

A loss of voltage sometimes takes place in the on-off switch, and if this component be of an out-of-date pattern, likely to introduce a resistance of even a small fraction of an ohm, it should be discarded in favour of a more modern type. Lastly, it may be worth while going to the trouble of replacing the existing filament wiring of the set with heavier wire.

While dealing with this subject, the

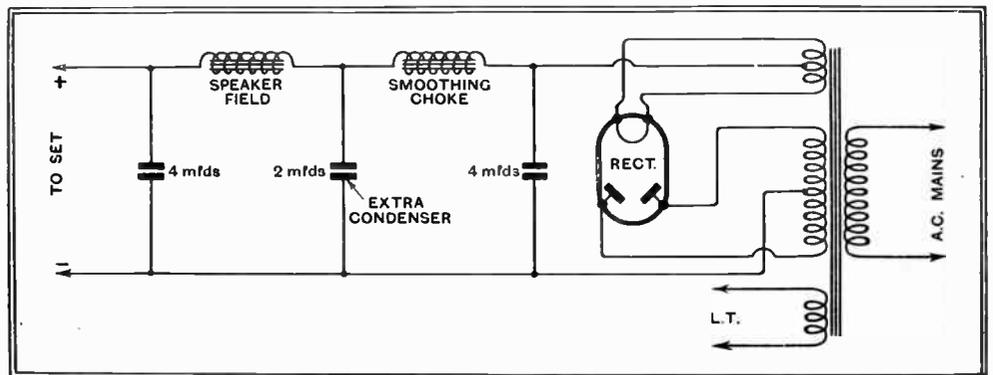


Fig. 1.—Correct positions for an extra smoothing choke and condenser.

especially important that this position should be chosen in cases where the loud speaker is not fitted with a hum-neutralising coil. Indeed, these remarks apply particularly to these cases, as otherwise more scientific methods of reducing hum may be used than that now being advocated, which must admittedly be classed among the "brute force" systems.

reader may be reminded that the smallest and cheapest type of "mass" accumulator has a fairly high internal resistance, and is only intended for supplying a set of which the L.T. consumption is low. If the estimated total filament current is found to exceed the recommended discharge rate of the existing cell, it should be replaced by a larger one.

The Sound Film



A camera crane in action.

(Photo: Universal Pictures, Ltd.)

2. Freedom for Camera and Microphone

By DALLAS BOWER

IT soon became obvious to the supervisors of sound departments that cameras would have to be capable of being used without booths in order to give them greater flexibility. The technical problem was to achieve a camera which would possess all the attributes of the normal instrument, but which, in action, would be perfectly silent. Adjustments of a minor nature were made to the gate mechanisms by one or two well-known manufacturers, but, as a cine-camera is an exceedingly delicate and complicated piece of machinery to design and build, rather than spend a great deal of money in research and time, the idea of sound proofing was still adhered to, in contradistinction to an entirely new type of instrument.

It would have been imprudent for camera manufacturers to have approached the problem other than in this way as professional ciné-cameras are very expensive. Already the big production organisations had plenty of first-class instruments in excellent condition, and, moreover, the initial sums expended as a result of the coming of sound itself, made it unlikely that producing companies would be inclined to scrap good cameras for an improvement which, although extremely advantageous, could hardly be described as vital from a commercial viewpoint. Very profitable films had been produced using cameras operating in booths. And that, very properly, to the financial departments of the studios, was the only issue involved. So if cameras were to be used as they had been in the days of mute-film production, an inexpensive form of sound proofing would have to be devised, or they must stay in booths.

Modern Camera "Blimps"

The first course that suggested itself was to wrap them in absorbent materials, such as heavy blankets or sponge-lined woollen bags, but these first attempts at "blimps" were not very successful. They were not sufficiently soundproof to shut out all the noise; they were dirty and not too convenient in operation. A booth in miniature was the real requirement.

As a result, the modern camera blimp has been evolved. Its form is a carefully constructed box in which the ciné-camera, still a self-contained unit which can be taken out, can operate without being heard at all. The outer shell is usually of wood, and the inside construction, based on the well-known principle of mass-elasticity-mass, consists of alternate layers of sorbo-sponge and felt-lined wood. The essential

THE noise caused by the operation of the ciné-camera has presented a problem since the early days of talkie production. In this article the author describes two methods of overcoming the difficulty: first by the use of camera "blimps," and, secondly, by the taking of "wild" or non-synchronous sound records in crowd scenes.

controls, eyepiece, focus adjustment, etc., are brought through the blimp so that the cameraman is as much in control of his instrument as if it were non-soundproof.

The adjoining illustration shows a modern blimp in its closed position ready for shooting. It will be noticed that the mounting is such that alteration of angle can be made in a few seconds, and for change of set-up the whole device is wheeled to the required position by means of the tri-car arrangement supporting the vertical adjustment column. For loading with film and inspection of the interior of the camera proper the top of the blimp can be lifted up into such a position as to expose the bare camera entirely.

In the same illustration and that on the next page will be noticed the microphone supported at the end of a metal boom. It soon became apparent that microphones would have to be as free for moving about as cameras. The early method of using a multiplicity of microphones on shots where there were a number of characters moving about within the shot was unsatisfactory for a variety of reasons, the most important being the very careful manipulation required of the recordist in bringing one microphone into action while

taking another out, the complete lack of guarantee that an actor or actress would move *exactly* to the required positions for both camera and microphone at one and the same time during the actual shot as he or she did during rehearsal, and variation of hiss level in the amplifiers of different microphones.

Silent Movement

The ideal arrangement is to use one microphone only whenever possible, in such a way that it may follow the players as they move about. Obviously, this most desirable end was quite impossible with heavy amplifiers and microphones suspended from the ceiling. Consequently, prior to any considerations of booms for manipulating microphones around the set, it was necessary to develop a more compact microphone and amplifier unit which could be handled with comparative ease on brail lines and tackle. In the Western

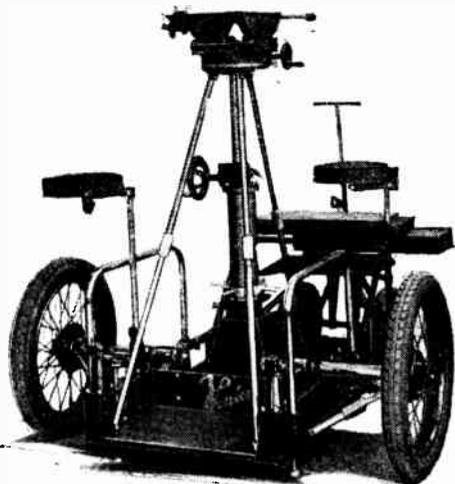


A typical set-up for a modern sound film. Note the microphone on its swinging boom.

The Sound Film—

Electric and R.C.A. systems, units were developed which were quite light enough to be suspended at the end of a counterpoised boom, and full use was made of this by booms being introduced to studios throughout the world within a short time of their conception, to be used exclusively from henceforth.

The essential requirements of a microphone boom are that it should be free to move in any direction, that it should operate noiselessly, and that its overall size and construction should not make it too heavy. The modern boom consists of



A tracking truck designed to transport the microphone boom noiselessly from point to point in the studio.

a tripod mounted on wheels for transportability about the studio, not with intention to move it by this means while in operation. A vertical column supported by the tripod carries at its top a universal joint which holds the boom proper. At the apex of the tripod are the necessary controls for moving it in both vertical and horizontal directions, while, as the picture above indicates, lines attached to a cross-tree on a swivel at the end of the boom enable a vernier adjustment to be made in the horizontal direction. The boom arm itself takes the form of a telescopic tube, which can be lengthened or shortened at wish and during operation. This elaboration may seemingly be unnecessary to those unacquainted with the nature of complicated shooting, but it is, in fact, absolutely essential for efficient working as a real universality of movement from a fixed point for the whole device could not be achieved without it.

Making "Wild" Shots

The microphone and camera are to-day free enough to allow resource to the invaluable technique of the mute film, but, even with modern blimps and booms, it is more convenient to take complicated moving camera shots without sound than with it. Consequently, it has become, and is becoming, more so as time passes, a practice to take all moving camera shots without sound except those in which the camera distance is such that lip synchronisation for dialogue is necessary. Post and pre-

synchronisation, re-recording, and sound editing, which we shall discuss later in detail, are all, apart from the specific qualities of each, a means of giving the greatest possible freedom to the ciné-camera—the ciné-eye, in fact, which may see just what it pleases.

Let us take two examples of moving-camera shots which would be best taken silent and the sound added afterwards. First, we will suppose our viewpoint is the same as the camera's. The view we see is a big hotel reception hall with people going about their business just as one sees in any establishment of the kind, and, having absorbed this for a short while, we move forward across the hall, passing people and having people cross our path as we go, arriving at the grill-room, passing amongst its tables and their occupants, until eventually we arrive at a particular table where we find two people seated in whom we are particularly interested. Such a shot is very common in modern sound films and is called "a forward tracking shot." It is done by using a tracking truck as shown on this page. This, as the picture indicates, is a truck on which the camera can be mounted, and on which the camera-man and his assistant sit while it is pushed over those parts of the set the director wants to show—in our example, the hotel hall and grill-room. Now, although the tracking truck itself will run silently enough, the business of directing the action of the players, the instructions the camera-man and director, or both, may wish to give during the actual shooting, make such a shot much more difficult to do if the sound is recorded synchronously with it.

Obviously, no sound other than that it is desired should accompany the



Elaborate arrangements for filming Gloria Swanson in bed. The cameras, in sound proof "blimps," and the swinging microphone are clearly shown.

shot—in our example, the gentle bustle and conversation of a large hotel—can be allowed. As a result, studio conditions must be the same as for dialogue shots from a fixed camera position; absolute silence everywhere except the voices of the players. Upon a moment's consideration, however, it will be understood that there is no reason why the sound we hear should be exactly synchronous, because what we are seeing is not a view which implies one specific sound but a variety of sounds at different pitch and volume. No one particular person is talking. We may therefore take a "wild" or non-synchronous record of the generalised sound, which is what we need, and when that record is mounted by the film editor with the "mute," or photograph, it will appear just as if the sound were coming from the people and objects we see on the screen.

Using the Camera Crane

Our second example, although similar to the first, is different in so far as it would be impossible to record the sound at the same time the picture is being photographed, whereas in the other case that would have been quite possible, but not wise or efficient. Again, our viewpoint is the camera's, and the scene a battlefield. We see first a single soldier lying in the mud. He starts to crawl slowly forward, and we follow him as though we were walking backwards. Suddenly, our speed increases slightly, and we go farther away from him, so widening our view, to see that a whole line of soldiers are advancing on their hands and knees. All we hear is the swish of the mud and gentle jangle of accoutrement. Then we swing round to our right (or left) to find a disused farmhouse. We no longer move backwards but wholly to our right (or left), rising as we do so. We come up quite close to a window with broken panes—and poking through one of them is the muzzle of a machine gun. The only means by which a shot such as this can be put into practice is with a camera crane. Obviously, it would be impossible to record the comparatively quiet sounds—the men crawling—while the crane is in action as it would make far too much noise. Again, we record wild tracks of the sounds we need, for the editor to mount in the editing room when the shooting of the film is finished.

BOOKS RECEIVED

Television for the Amateur Constructor, by H. J. Barton Chapple, Wh. ScL., B.Sc., with a Foreword by J. L. Baird.—Including the general theory of television, fitting up a home workshop, and general advice and directions for constructing television receivers of the Baird type. Pp. 233 + xx, with 102 diagrams and 48 plates. Published by Sir Isaac Pitman and Sons, Ltd., London. Price 12s. 6d.

Patents Explained, by H. J. W. Wildbore.—A short summary of information and facts useful to manufacturers and inventors, explaining in simple language the kinds of invention adopted for protection, the way in which a patent is obtained and the effect of the patent when granted, and including the new provisions introduced by the Act of 1932. Published by the author at 101, Leadenhall Street, London, E.C.3. Price 5s.

How the Superhet Works. 4

SELECTIVITY and TONE CORRECTION

The Action of the Second Detector

By W. T. COCKING

IN the preceding instalments little mention has been made of the selectivity of the intermediate frequency circuits, and as this is the *raison d'être* of the superheterodyne it is fitting to give the matter considerable attention. Let us suppose that we have the carrier of the wanted station on 1,000 kc/s, and that there is an interfering station on 1,010 kc/s. The aerial tuned circuit favours the wanted carrier, so that on the grid of the

tuned circuit, expressed in the practical form of its power of rejecting a current at a fixed frequency different from resonance, increases as the resonance frequency becomes lower. For equally efficient circuits at all frequencies, the power of rejecting an unwanted station spaced from the wanted one by a fixed percentage frequency difference is a constant. Thus, at 1,000 kc/s a station on 1,010 kc/s is 1 per cent. off tune, but at 110 kc/s a station on 100 kc/s is nearly 10 per cent. off resonance.

THIS, the fourth article of a series on the theory of the superheterodyne, explains why selectivity is so greatly improved if tuned circuits resonating at a comparatively low frequency (the I.F. wavelength) are used. The problems of sideband attenuation and subsequent tone-correction are also covered.

sideband cutting in an I.F. amplifier, therefore, is similar to the reception of a carrier of 1,000 kc/s, modulated by a frequency of 50,000 cycles. Unless we are very careful we shall find that the high intrinsic selectivity is not an unmixed blessing, for it will be accompanied by a serious degree of sideband cutting.

A series of tuned circuits on the broadcast band is not usually productive of very great sideband cutting, even if the band-pass principle is not employed. On the intermediate frequency, however, it is usually entirely prohibitive, and special circuit arrangements become necessary.

Type of Resonance Curve

One method is to use band-pass filters in order to obtain an overall resonance curve for the receiver which is substantially flat-topped with very steeply sloping sides, as shown in curve A of Fig. 1. Another method is to permit sideband cutting to take place, and to correct for the attenuation of high notes in the L.F. amplifier; the type of resonance curve then found is shown by curve B. The third way out of the difficulty aims at a compromise between these two, and this is the one adopted in the receiver of Fig. 1 of the first instalment of this series. The I.F. circuits are adjusted to give a characteristic passing only a narrow band of frequencies without attenuation, and tone correction is employed to restore the moderate loss of high notes which results. This type of resonance curve is shown by curve C.

The choice between the different methods will depend largely upon circumstances, and no definite ruling can be given. The full band-pass circuit is probably too difficult to adjust without special apparatus, and it is chiefly suitable for manufactured sets. Full sideband cutting is usually prohibitive when the required selectivity is obtained by ordinary means, although it is not necessarily so with special circuits, on account of the difficulties of tone correction. In general, for

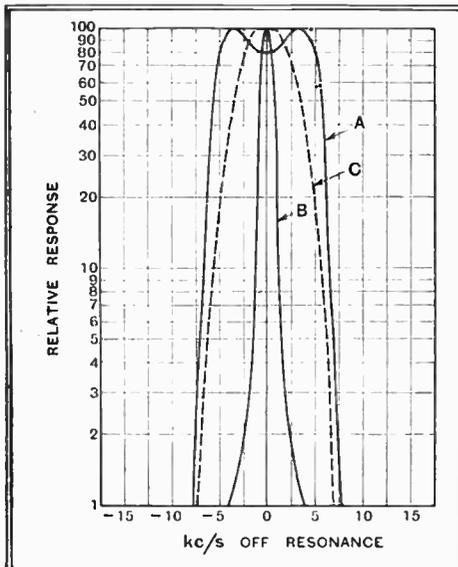


Fig. 1—The type of resonance curve to be expected in an I.F. amplifier. Curve A is for a purely band-pass receiver; curve B for a very sharply tuned amplifier; and curve C for a semi-band-pass arrangement.

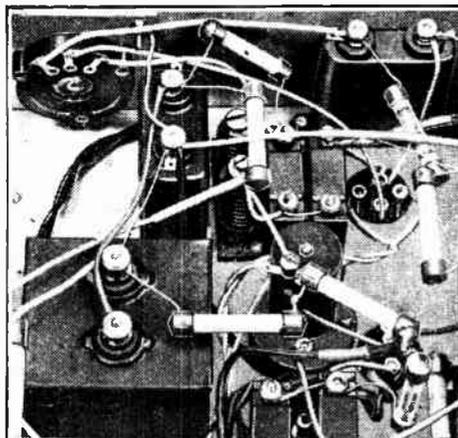
first valve the wanted carrier is stronger, relatively, to the unwanted, than it was in the aerial. Similarly, the intervalve coupling again favours the wanted carrier, and, as a result, the disparity at the first detector grid is increased.

This, of course, is the normal selective action, and if the wanted station be weaker originally than the interference, very many tuned circuits would be necessary if amplification were carried out throughout at the signal frequency, when this has a high value. Changing the frequency to a lower value, however, gives us a great gain. The intermediate frequency for the wanted carrier becomes, as before, 110 kc/s, and that for the interfering station 100 kc/s. The difference is still 10 kc/s, and at first sight there appears to be no advantage. The gain is to be found, however, in the fact that the selectivity of a

Selectivity with Quality

With circuits of equal efficiency, therefore, one tuned to 110 kc/s is as effective in rejecting a station on 100 kc/s as would be a circuit tuned to 1,000 kc/s in rejecting a frequency of 1,100 kc/s. The vast improvement to be obtained in selectivity through the use of a low resonance frequency for selective circuits can readily be seen, for the effect is really to increase the percentage frequency separation of stations.

The question of quality of reproduction must be considered, however. Although from the point of view of interference a station spacing of 10 kc/s at the intermediate frequency is equivalent to a spacing of 100 kc/s at the signal frequency, the sidebands occupy a proportionately large range. They still spread by only about 5 kc/s on either side of the carrier, but the I.F. tuned circuits are likely to attenuate them much as signal frequency circuits would reduce a sideband spread of 50 kc/s. The problem of selectivity without



The components associated with the second detector and tone-corrector stages of a superhet.

How the Superhet Works—

home constructed sets, the middle course is the wisest, and it readily permits both high quality and selectivity to be obtained.

It will thus be seen that the input to the second detector of the receiver described in the first article consists of a voltage due to the desired signal, which still carries the original modulation. The modulation, however, has been affected by the passage through the receiver, and the higher musical frequencies are represented much less strongly.

Diode Action

The action of the detector is quite complex, for it rectifies, amplifies, and provides tone correction in conjunction with its associated circuits. It is by no means difficult to understand, however, if considered from the viewpoint of the circuit of Fig. 2. In this illustration two valves are shown doing the work which is normally performed by one; in the actual circuit of Fig. 1 (first article), the anode of the diode and the grid of the triode are the same electrode. The I.F. voltages developed across the secondary of the last I.F. transformer are applied simultaneously to both valves, through the grid leak and condenser R₉ and C₁₂.

Rectification occurs in the diode, and, as a result, there is a direct current flow round its anode-cathode circuit. This current flows through the grid leak R₉, and there is consequently a voltage drop across it in such a direction that the anode takes up a potential negative with respect to the cathode. Since the grid of the triode is joined directly to the diode anode, and the cathodes of the two valves are common, the triode grid is also biased negatively. When a signal is applied, therefore, the steady anode current of the triode is reduced, and in practice this may readily be seen by connecting a milliam-

of different frequencies to sort out, just as we had in the case of the first detector.

In this case we require only the modulation frequencies, and neither the direct nor the I.F. currents are of any use to us. The direct current causes no trouble, but a filter is required to prevent the I.F. currents from reaching the later circuits, and, accordingly, the choke CH₁ and condenser C₁₃ are introduced. For the best results their values should be such that the choke offers a high impedance to currents of the intermediate frequency, and the condenser has a low reactance at that same frequency.

If a large condenser be used for C₁₃, the load impedance of the triode to I.F. currents will be small, and only a small I.F. potential can be developed in the anode circuit. As a result, only a small current can be fed back to the grid of the valve through the inevitable capacity which exists between the grid and anode electrodes. The tuned grid circuit, therefore, will not be damped, and its full efficiency will be maintained.

Tone Correction

It is found in practice, however, that when the capacity is large enough for this to occur it seriously attenuates the higher modulation frequencies. These are already weak, and require abnormally high amplification, so that the effect is inadmissible. In general, therefore, we shall

triode action of the detector, Fig. 2, will depend upon the value of the valve load impedance at that frequency. We can, therefore, make the amplification vary with frequency by the simple expedient of choosing a circuit the impedance of which

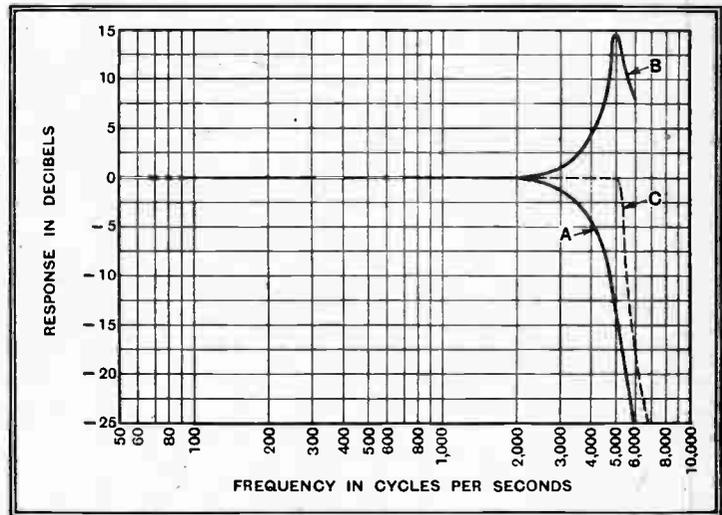


Fig. 3.—Curve A represents the effect upon quality of the sideband cutting of the receiver, while curve B shows the required shape of tone-correction curve to compensate for this. Curve C is the result of combining the two.

varies with frequency in the requisite manner. A parallel tuned circuit in series with a resistance will do this. The load impedance to modulation frequencies, therefore, consists of the choke CH₂, which has a definite value of resistance, the parallel condenser C₁₄, and the resistance R₁₀. At very low frequencies the reactance of C₁₄ is high, and that of CH₂ negligibly small. At these frequencies, therefore, the coupling simply consists of R₁₀ in series with the D.C. resistance of the choke, and for the values shown is about 1,400 ohms.

Overall Response Curve

The valve has an internal A.C. resistance of some 10,000 ohms, with an amplification factor of 35. The amplification at low frequencies, therefore, is about 4.3 times; quite a low value. As the frequency is increased the impedance of the tuned circuit rises, but it does not change greatly until 2,000 cycles is reached. Up to this frequency, therefore, the amplification remains substantially constant. When this frequency is passed, however, the impedance rises rapidly until it reaches its maximum at about 5,000 cycles, after which it again falls off. At 5,000 cycles the parallel tuned circuit has a dynamic resistance of about 22,500 ohms, and with the 1,000 ohms series resistance this means a total load impedance of 23,500 ohms. At this frequency, therefore, the amplification is about 24.5 times.

It will be seen, therefore, that, as a result of this non-uniform stage of amplification, correction is obtained for the sideband cutting which has been permitted in the I.F. and signal frequency tuned circuits. The overall response curve to the output of the second detector, therefore, is substantially a straight line over

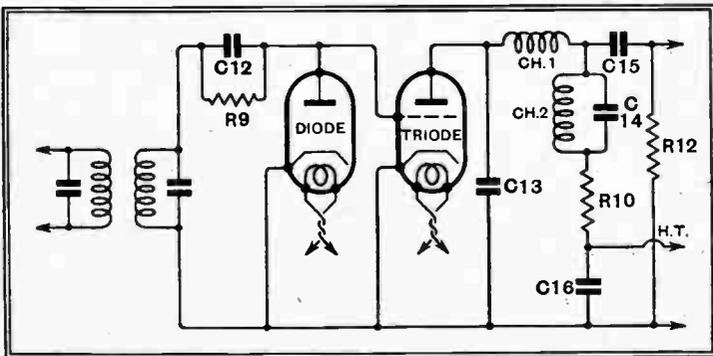


Fig. 2.—A simplified diagram showing the action of the second detector split between two valves. The tone-correction circuit in the anode of the triode should be noted.

meter in the anode circuit of the detector.

In addition to the steady direct current through the grid leak, there are also currents of the modulation frequency, which in turn set up alternating voltages across this resistance. These are applied to the grid of the triode, and cause corresponding variations in the anode current of this valve. In the output of the triode, therefore, we have a whole series of currents

there is a serious loss of high notes. If this is to be avoided in the overall response it is obvious that the coupling between the detector and the following valve should have a response curve which is the inverse of this one (curve B), so that the final result will be a straight line, curve C.

If we use a simple form of impedance coupling, the amplification given by the

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the range of modulation frequencies up to 5,000 cycles. All subsequent amplification must obviously apply to all frequencies equally so that the overall response curve will still remain flat.

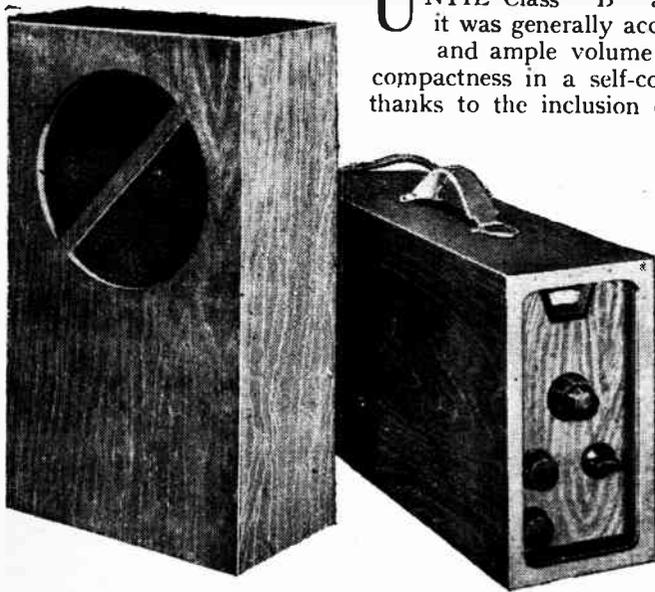
The potentials appearing across the load impedance of the detector are transferred to the grid of the following valve by means of a condenser and resistance C₁₅ and R₁₂, and this valve is itself coupled to the output stage by means of an L.F. transformer. These circuits differ in no way from those employed in any ordinary straight set, and they have been fully described many times in the pages of this journal, so that no useful purpose would be served by treating them here. This remark applies also to the decoupling circuits, the mains and other associated equipment.

We have now examined in some detail the purely superheterodyne portion of the apparatus, and have traced the course of a signal in the aerial to its appearance as a series of low-frequency currents in the anode circuit of the second detector. The fundamental operating principles of the superheterodyne, therefore, should by now be clear, and we can proceed to a more detailed discussion of a number of the more important design considerations.

Previous articles in this series have dealt with the following stages of the superheterodyne receiver:—(1) The signal frequency stage; (2) the H.F. stage and the oscillator; (3) the frequency changer and the I.F. amplifier.

In Next Week's Issue:—**The Two-Unit Portable**

**Exceptional Quality and Volume
Combined with Compactness**



UNTIL Class "B" amplification was introduced, it was generally accepted that good reproduction and ample volume could not be combined with compactness in a self-contained receiver. But now, thanks to the inclusion of this and other recent developments, the Two-unit Portable compares well with a heavy mains-operated stationary receiver.

The true portability of the new set has been greatly enhanced by building it as two separate units, which are connected together in a moment by a flexible cable, and which can be accommodated in cars, motor boats, yachts, etc., much more conveniently than the conventional portable set.

LIST OF PARTS

After the particular make of component used in the original model, suitable alternative products are given in some instances.

- | | |
|---|---|
| 1 2-gang condenser, 0.0005 mfd., with air-dielectric trimmer (Utility Type W.312) | 1 Fixed resistor, 1 megohm $\frac{1}{2}$ watt (Erie) |
| 1 Set of 2 coils (aerial and H.F. transformer) (Varley "Nicore") | 2 Fixed resistors, 1,000 ohms $\frac{1}{2}$ watt (Erie) |
| 3 4-pin valve holders, anti-microphonic (Benjamin "Vibrolider") | 1 Fixed resistor, 5,000 ohms $\frac{1}{2}$ watt (Erie) |
| 1 7-pin valve holder, Class "B" (Benamin) | 1 Fixed resistor, 10,000 ohms $\frac{1}{2}$ watt (Erie) |
| 1 Variable condensers, bakelite dielectric, 0.0003 mfd. (Burton) | 1 Fixed resistor, 20,000 ohms $\frac{1}{2}$ watt (Erie) |
| 1 Fixed condenser, 2 mfd. (Igranic No. 2231/70) | 2 yds. 5-way cable (Goltone No. R.39/5 MR) |
| 1 Fixed condenser, 1 mfd. (Igranic No. 2231/69) | 2 Cases and frame ("Camco") |
| 1 Fixed condenser, 0.01 mfd., tubular (British Radiophone) | 1 5-pin adaptor plug (Bulgin Type P.3) |
| 3 Fixed condensers, 0.1 mfd., tubular (British Radiophone) | 1 Valve holder, 5-pin, chassis mounting type (Clix) |
| 2 Fixed condensers, 0.005 mfd., tubular (British Radiophone) | 2 Plugs (Clix No. 10) |
| 1 Fixed condenser, 0.0002 mfd., tag type (Igranic) | 2 Insulated sockets (Clix No. 11) |
| 2 Fixed condensers, 0.0003 mfd., tag type (Igranic) | 2 ozs. No. 20 tinned copper wire, 6 lengths Systoflex, etc. |
| 1 Potentiometer, 10,000 ohms, with 3-point switch (British Radiophone Type No. 484) | Screws: 24 $\frac{1}{4}$ in. No. 4 R/hd.; 4 $\frac{1}{2}$ in. No. 4 R/hd.; 4 $\frac{3}{8}$ in. No. 4 R/hd.; 6 $\frac{1}{4}$ in. No. 6 R/hd. |
| 1 L.F. transformer, 3:1 (Ormond Type 531) | 1 L.T. accumulator cell, unspillable (Oldham PZV3) |
| 1 L.F. transformer, Class "B" (Wearite) | 1 H.T. battery, 130 volts (Pertrix No. 312) |
| 1 H.F. choke, screened (Graham Farish Type H.M.S.) | 1 Bias battery, 4 $\frac{1}{2}$ volts (Siemens Size G.1) |
| | 1 Loud speaker, permanent magnet, Class "B" type (Blue Spot No. 29 P.M.) |
| | Valves: Mullard PM.12M, metallised, Mullard PM.1HL, Mazda L2, Mazda PD220. |

**DISTANT
RECEPTION NOTES**

THE new Belgrade transmitter appears to be working on 430.4 metres, though full power does not seem to be used yet except on occasional evenings.

On 209.8 metres the 1.5 kilowatt Pecs relay has recently come into operation. Though the wavelength is shared with two other stations Pecs comes through so strongly that it is frequently to be received without interference. The station is well worth trying for when conditions are favourable on the shorter wavelengths of the medium band.

It is rather interesting if you possess a set which will do it by means of plug-in coils or otherwise, to run over the band of wavelengths between 560 and 938 metres. There are several well heard stations in this region, and the band is one of which considerable use will be made if and when the Lucerne plan comes into service. At the present time the stations most worth attention are Ljubljana on 574.7 metres, Monte Ceneri which is using various wavelengths in an endeavour to find a suitable one, and Budapest on 840 metres.

New Ether-Policing Gear

The Brussels Laboratory of the U.I.R. is, I understand, being completely re-equipped with frequency-checking instruments. This is very good news; but it is one thing to be able to discover wavelength wanderers, another to compel them to recognise the error of their ways, and quite another to prevent them from doing it again!

There seems to be a perfect mania amongst German stations at the moment for adopting new interval signals. Hamburg's old HA in morse is to be replaced by the opening bars of an old German tune, and other stations that are doing the same kind of thing are Frankfurt, Heilsberg, and Langenberg.

This is certainly the most amazing summer for long-distance reception that we have had since the beginning of broadcasting. June began with a record heat-wave for the time of year, and the heat-wave itself was a continuation of a drought of several weeks' duration. Add to this British Summer Time plus a full moon, plus absolutely cloudless skies, which meant that there was hardly any real darkness, and you have a combination which nine out of ten long-distance men would regard as the worst possible for the reception of distant foreign stations. Yet it required only a few minutes at the controls of the wireless set on any evening to convince oneself that almost any number of stations could be received—and well received.

As an instance of the excellence of reception at the height of summer I may mention that the other afternoon, when wanting some music at tea-time, I found all of the long-wave stations, as well as Brussels No. 1, Prague, Langenberg, Rome, Leipzig, Strasbourg, the Poste-Parisien, Brussels No. 2, Breslau, Hilversum, Heilsberg, Trieste, Nürnberg, and Fécamp, all coming in at fine strength.

On the long waves Radio-Paris, Zeesen, Warsaw, and Motala provide superb reception, and on the medium band the pick of the stations in addition to those already mentioned are Lyons Doua, Stockholm, Katowice, Hamburg, Milan, Bordeaux Lafayette (now quite in form again), Frankfurt and Gleiwitz.

D. EXER.

News of the Week

Events of the Week in Brief Review

Modes at the Mike

THE most successful talks at Hilversum recently have been the dressmaking lessons sponsored by the "Avro" association, and an explanatory pamphlet has sold to the tune of 20,000.

B.B.C., please note!

Television and Talkies

THE cinema seems to be meeting its rival, television, half-way. Mr. M. H. Aylesworth, President of the Radio Keith Orpheum Corporation, and of the American National Broadcasting Company, has announced plans for the construction of a television studio at Hollywood early in the summer.

5-Metre Fever in U.S.

NO fewer than two hundred amateurs in New York, it is estimated, are now working on the 56 m.c. (5-metre) band. A large network of stations in the city has been organised to handle short-distance messages, telephony or modulated C.W. being used.

In New Hampshire State, a 5-metre transmitter has been erected at the summit of one of the loftiest mountains in the neighbourhood, and distances up to nearly 150 miles have been covered. Regular traffic is handled by this station, particularly in connection with forest fires.

There are indications that amateurs in this country are also perceiving the exceptional possibilities of the ultra short waves, particularly as a solvent of the selectivity problem.

The King's Birthday Honours List

IN the list of Honours issued in connection with His Majesty's Birthday is a peerage conferred upon Sir Edward Iliffe, C.B.E., the chairman of Iliffe and Sons Ltd., proprietors of this journal. Sir Edward is past-president of the Association of British Chambers of Commerce. He represented the Tamworth Division of Warwickshire in the Conservative interests from 1923 to the end of 1929, when he resigned. During the War he was appointed Deputy Controller, and afterwards Controller, of the Machine Tool Department of the Ministry of Munitions, remaining until the middle of 1919 in order to supervise the liquidation of contracts.

For many years he acted as chairman of the Coventry and Warwickshire Hospital, and took an active part in the administration thereof. He is an Officer of the Legion of Honour and a Justice of the Peace for Warwickshire. Sir Edward's main business interests are in connection with publishing and insurance. He is proprietor of the local evening paper at Coventry, and is associated with Lord Camrose and Sir J. Gomer Berry in many newspaper enterprises. He is chairman of the Guildhall Insurance Company, Ltd., and a director of the London Assurance Co.

International Listeners' Union

WE learn that a "Union Internationale des Auditeurs" is under discussion, the object being an organisation which would unite the amateurs and listeners of different countries to defend their common interests and represent them at international radio conferences. The French International Federation of Radio Clubs has undertaken to join.

French Broadcasting in India

THE B.B.C. may soon have a competitor in India in the shape of a broadcasting station at Pondicherry, which would relay the daily programmes of the French Radio Colonial station at Pontoise. According to a French

Toulouse on High Power

LARGE deputations from ten of the French Departments have petitioned the Postal Authorities to permit Radio Toulouse to operate the new 60-kW. transmitter now standing idle at St. Agnan. It is believed that the official permit will not long be withheld.

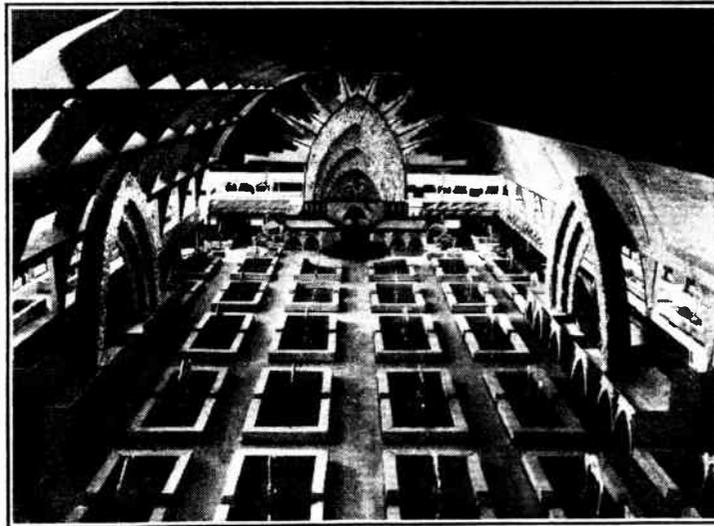
Listen for the Tom-Tom

LOUD speakers which will do justice to the rich tones of the tom-tom may soon be in demand in African villages. According to the French "Dépêche Coloniale" several negro chiefs have sent in a petition to the Government of the Haut-Katanga province asking for the erection of a broadcasting station which would be suitable, among other things, for the transmission of tom-tom concerts for

Lucerne: Lost and Saved!

AFTER one of the most hectic weeks in the history of radio legislation it is now possible to say that Europe will have a new wave plan of sorts. According to our Lucerne correspondent, a "Plan Définitif" is now maturing which transforms the original "Plan" almost out of recognition. Under the new "Plan" wavelengths would be allotted to the British stations as follows:—

Daventry	1,500 m. (200 kc/s)
Athlone	530 m. (565 kc/s)
North Regional and Jerusalem (20 kW.)	450 m. (668 kc/s)
Midland Regional (later Scottish Regional) and Skoplje (Southern Serbia)	396 m. (758 kc/s)
Scottish Regional (later West Regional) and Salonika	373 m. (804 kc/s)
London Regional West Regional (later Northern Ireland Regional) and Haifa	342 m. (877 kc/s)
North National (later Midland Regional) and Dnepropetrovsk	307 m. (977 kc/s)
Scottish National and Bournemouth and Stalino	295.5 m. (1,050 kc/s)
Belfast and Alexandria	271.5 m. (1,104 kc/s)
London National and West National and Istanbul	259 m. (1,158 kc/s)



OLYMPIA IN MINIATURE. Here is a foretaste of pleasures to come in the shape of a model indicating the decorative scheme for Olympia Radio Show to be held from August 15th to 24th.

official announcement, the station would be in direct telegraphic touch with Paris.

French Listeners to Pay

AT long last it has been ordained that French listeners must pay. The Chamber of Deputies and the Senate have both voted in favour of receiving licences, 50 francs to be payable annually on valve sets and 15 francs on crystal. They have turned a deaf ear to appeals to postpone this enactment until after the passing of the long-promised Broadcasting Bill. As our Paris correspondent remarks, no one knows better than a parliamentarian how remote that happy day may be!

The much-discussed tax on valve imports is also an accomplished fact. In future, 3 francs will be payable on valves retailing at 50 francs, 4 francs on 50-70-franc valves, and 5 francs on all exceeding this price.

Holland is now the only European country where listening is free.

loud speaker reception in the villages.

Enterprising manufacturers might seize the opportunity to submit tenders for portable amplifiers for reproducing war whoops.

Big London Field Day

MANY clubs in the London area will co-operate with the Golders Green and Hendon Radio and Scientific Society on Sunday, June 17, in a big direction-finding contest which constitutes the Society's main summer competition for 1933. Col. Ashley-Scarlett, the retiring President, is again to be in charge of the arrangements, as he has been for the last seven years.

The Society's D.F. competition is always one of the big events of radio's "London Season," and is notable for originality in portable set design and resourcefulness in the use of these receivers under difficult conditions. It is believed that this year's competition will have a record entry.

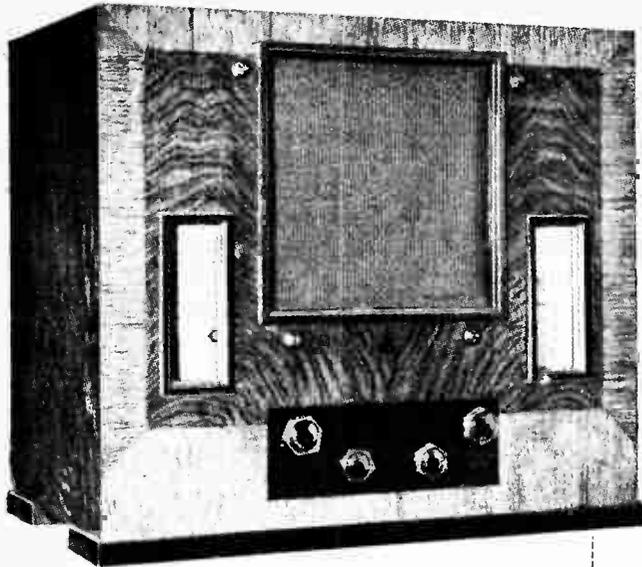
On Thursday, June 8, the Conference appeared to be breaking up on a question of "shared" wavelengths. These were mainly objected to by those countries which feared that international propaganda would be valueless without exclusive waves. However, the firmness of the Chairman M. Muri (Swiss) in adjourning the Conference until the following afternoon no doubt helped to clear the air. At the time of going to press Britain and eleven other countries were still objecting to the principle of shared wavelength. Under the latest scheme Germany would have seven exclusives and France five, while Britain would have none.

More "Hams" Than Ever

SOME remarkable statistics concerning amateur transmitting activity in the United States have just been made public by the American Radio Relay League.

Outstanding among the figures are those relating to messages handled by amateurs. During 1932 no fewer than 1,194,995 messages were dealt with by 20,656 operators, which contrasts strikingly with 1926 (the first year for which statistics were compiled), when 294,972 messages were handled by 8,140 amateurs. As is well known, American "hams" have an extensive network of stations for the transmission free of charge of private messages.

Another noteworthy fact is that there are now over 30,000 amateur transmitters in U.S.A., the popularity of the hobby, it is thought, being due to its inexpensiveness in these days of trade depression.



H.M.V. "Superhet Selective Five"

MODEL 438

A High-grade Receiver at a Very Reasonable Price

FEATURES

Type: Table model superheterodyne; five valves including rectifier; moving-coil loud speaker; provision for mains or external aerial, gramophone pick-up and external loud speaker. **Circuit:** Band-pass input circuit compensated for image interference; screen-grid detector oscillator—variable- μ I.F.—screen-grid second detector—pentode output valve. **Controls:** (1) Tuning with independent illuminated wavelength scales; (2) Combined radio and gramophone volume control; (3) Tone control; (4) Wave-range, gramophone and on-off switch. **Price:** 15 gns. **Makers:** The Gramophone Co. Ltd., 363-367, Oxford Street, London, W.1.

THE four-valve superheterodyne (five with rectifier) bids fair to be one of the predominant types in the coming season. In selectivity and range it is incomparably superior to the straight three-valve set and it can be sold at a price very little in excess of that asked for the latter type. The problem of obtaining good quality of reproduction no longer presents any real difficulty, and the only remaining objection to the simpler type of superheterodyne, viz., second channel interference whistles, has been met in the H.M.V. Model 438 by a clever compensation circuit associated with the input band-pass filter.

First impressions, however, are less concerned with technical details than with the general appearance and performance of the set. The finish of the cabinet maintains the H.M.V. high standard, but a more modern note is struck in the general design and the dual tone walnut veneer panelling is skilfully arranged to balance the rectangular loud speaker grille and tuning scales. In spite of the fact that only four stages are employed, there is nothing of the "midget" superhet about this receiver, and looking at the wealth of detail constructional work in

the chassis one wonders that it can be produced at the price.

Independent vertical tuning scales calibrated in wavelengths and stations are allotted to the medium- and long-wave ranges, the appropriate scale being illuminated through contacts on the main control switch. The volume control is well graduated and functions both on radio and gramophone reproduction, and a tone control is provided to give the purchaser scope in adjusting the reproduction in accordance with his own views.

Tone Control

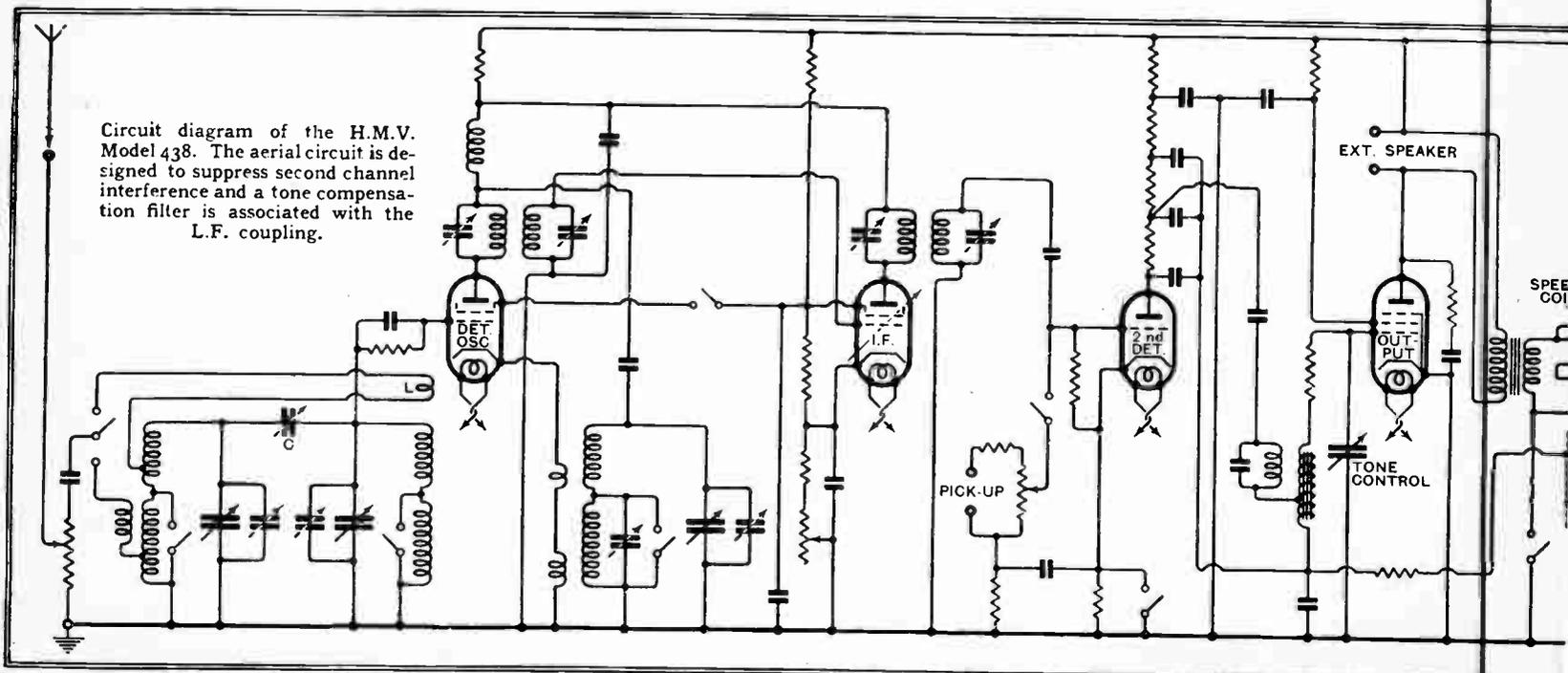
Personally, we were content to accept the maker's own compromise in the matter of quality, and the tone control was left in the "high" position throughout the tests. The top cut-off has been adjusted to 5,000 cycles, and this gives just the necessary high note response to balance the characteristically full bass usually associated with H.M.V. sets without letting through atmospheric background noise or record surface scratch. The full bass response which adds so much to the realism of orchestral broad-

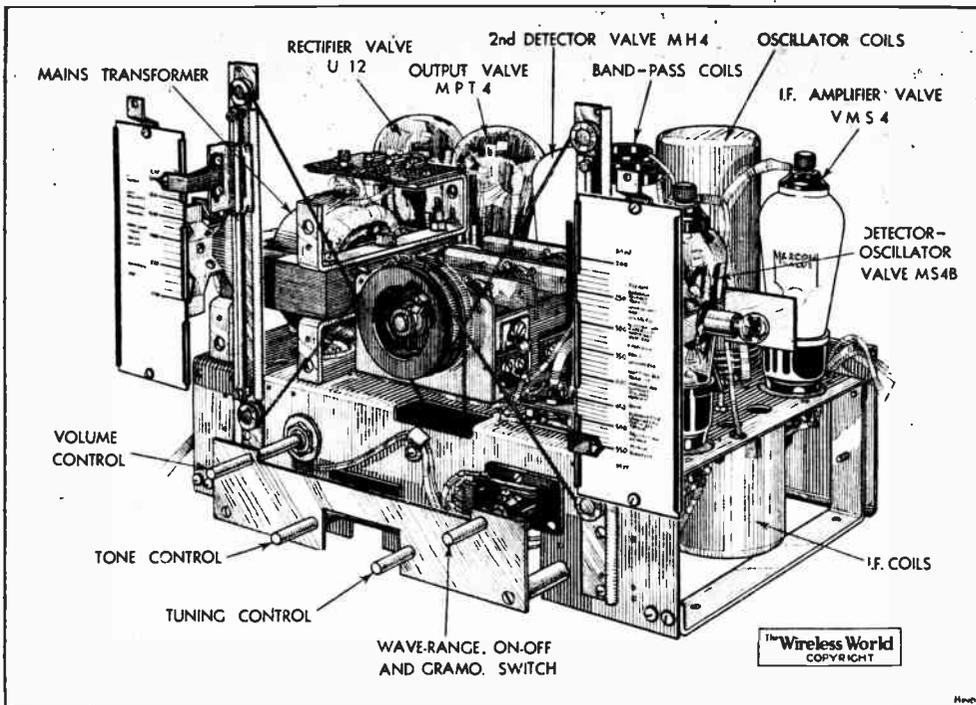
casts does not intrude into the range of frequencies used in speech, which is quite natural and free from hollowness.

The range on both long and medium waves is probably the maximum commercially obtainable with four stages. It is certainly equal to, if not slightly better than, that of any other superheterodyne of its type so far tested. The daylight range on medium waves is always a useful indication of performance in this respect, and with the Model 438 we were able to tune in nine Continental stations on this wave-range at mid-day without extending the set to its maximum sensitivity.

The selectivity is just what we would expect from the circuit, and not more than two to three channels are lost on either side of the medium-wave local station transmitters at fifteen miles, but more distant stations on adjacent channels are easily separated. Zeesen on long waves comes through well in London with only an occasional "twitter" from Radio-Paris and no background from Daventry.

From the point of view of second channel or image frequency interference the performance is definitely above the average for





The chassis is notable for the detail work in the cord drive to the vertical tuning indicators, and the high standard of finish throughout.

a set employing a conventional intermediate frequency. Not a single station is lost on the medium waveband from this cause. The intermediate frequency is of the order of 125 kilocycles, and in London one would expect at least two second channel whistles from the Brookmans Park transmitters on 590 and 335 metres. The former could be detected faintly when Brussels was not working, but caused no interference on that station even under daylight reception conditions. No trace of the 335-metre whistle or of any others due to harmonics could be found.

The means by which these results have been achieved are simple and ingenious. Any residue of signal from the local station which succeeds in breaking through the band-pass filter when the latter is off tune by twice the intermediate frequency is neutralised by injecting a small E.M.F. direct from the aerial into the secondary

tuned circuit in opposite phase. In the upper part of the medium waveband this function is performed by the small coupling coil L, and in the lower part by the condenser C of about 5 micromfds. By giving the direct magnetic coupling between the two elements of the filter the right sense, and carefully adjusting the value of C and the coupling from L, immunity from second channel interference is obtained over the whole waveband. An incidental advantage of this arrangement is that radiation from the oscillator is further reduced.

The detector-oscillator is of the screen-

grid type with cathode coupling. When reproducing gramophone records the screen-grid is open-circuited and the oscillator is put out of action. Radio volume, as usual, is controlled in the I.F. stage, and the rest of the circuit follows well-tried practice. The use of a tuned tone compensation circuit in series with the feed to the L.F. auto-transformer is, however, of interest. This has been included to ensure a sharp cut-off at 5,000 cycles without affecting the amplification of frequencies immediately below this value.

It is possible to connect external loud speakers of high or low resistance to the set, and terminals are available for running a gramophone motor. The pick-up may be left permanently connected to the set as the switching is arranged to isolate it from radio-frequency circuits when receiving broadcasting.

From every point of view the Model 438 is a first-class job which sets a new standard of value for a class of receiver which is steadily gaining in favour.

"Omega"

25-watt Amplifier

A Three-stage A.C.-power Equipment

THE "Omega" 25-watt power amplifier is a self-contained, portable three-stage A.C. unit designed to have a universal application, for it can be used either for gramophone reproduction, as the low-frequency and power section of a radio receiver, or in conjunction with a microphone. A three-position switch is fitted, which not only enables the amplifier to be connected separately to these several pieces of apparatus, but also enables the microphone output or the gramophone to be superimposed on the radio reproduction.

The model tested and illustrated here incorporates the gramophone equipment consisting of a Garrard induction motor and a B.T.H. Senior gramophone pick-up. This equipment is, however, optional.

The circuit employed comprises a 164V valve resistance-capacity coupled to a 104V valve, this stage being linked by a one-to-two ratio transformer to a DO24 power valve. The output from this stage is fed through a choke capacity filter to the loud speaker terminals. A volume control is included and located between the first and second valves. High-tension current is obtained from a D.W.4 full-wave rectifier working at an anode potential of 430 volts. Mullard valves are used throughout. A Ferranti milliammeter is fitted in the anode circuit of the power valve. Anode and grid circuits are fully decoupled, and every precaution has been taken to preclude L.F. instability and parasitic oscillation.

The unit is enclosed in a massive cast aluminium case finished in blue cellulose enamel and fitted with a removable front adequately ventilated. Carrying handles are provided.

On the right-hand side of the case are the loud speaker terminals, mains, and gramophone motor switch, mains input socket, and the milliammeter. The turntable and pick-up arm are mounted on the top, where, also, is the volume control and the selector switch.

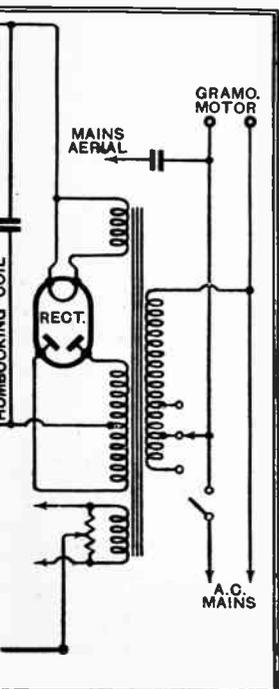
Gramophone reproduction is, on the whole, very pleasing; there are no apparent reson-



Hughes "Omega" 25-watt power amplifier embodying gramophone equipment.

ances, the middle and upper registers are well balanced, but the bass inclines slightly towards the weak side. Nevertheless, there is a quite good output of 100 cycles, and it is only at frequencies below this that the falling off in amplification is at all apparent. If a loud speaker having a good bass response is used, this small deficiency in the amplifier will generally pass unnoticed. One advantage, however, accrues, for the almost entire absence of mains hum is one of the features of this amplifier. The overall response characteristic, including the pick-up, is sensibly flat from 150 cycles up to 3,500 cycles. The amplification begins to fall off above this point, but rises again between 7,000 cycles and 8,000 cycles, then follows a further decline.

On the whole, the Omega 25-watt amplifier is a very workmanlike job, being robust and capable of hard wear, easily transportable, and giving a good, all-round performance. It is made by F. O. and H. S. Hughes, Ltd., 128a, Narborough Road, Leicester, and the price complete with gramophone equipment is £30. The amplifier alone costs £25.



UNBIASED

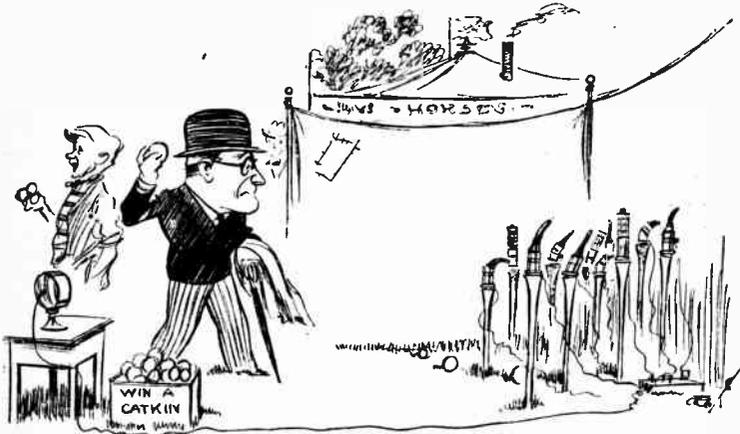
Have Catkins Nine Lives?

IT is surprising what a large amount of enterprise is exhibited by the showmen at our old country fairs. I am moved to make this remark as the result of a visit made to 'Appy 'Ampstead on Whit-Monday. Everyone is familiar with such amusements as coconut shies and skittle alleys, but one genius whose spirit has evidently moved with the times had evolved a new variation on the old theme.

A row of Catkin valves was set up in valveholders mounted on the top of sticks, each valveholder being correctly wired up and connected to a large-scale milliammeter, which was conveniently placed by the pay desk. The usual charge of seven for sixpence was made for the wooden balls, and the prize, consisting of the valve itself, was awarded to the person who struck it with such vigour as to cause the milliammeter needle to kick.

It was quite clear, of course, that, apart from knocking the valve clean out of its holder, the only way to agitate the milliammeter was by a direct hit, which so damaged the valve that its electrical characteristics were altered.

The former alternative seemed impossible, as the valves were well and truly rammed home into their holders, and the second no less so, for in spite of repeated hits which I saw scored the milliammeter needle remained stationary, even though some of the valves had been struck so hard by a few "leg theory" bowlers that they were bent almost double and formed an inverted letter U.



In spite of repeated hits . . .

Not unnaturally I suspected dirty work, and said so in no uncertain terms to the proprietor of the show. So far from letting fly a volley of abuse, which I expected, he actually invited me to check up on the circuit, and, taking me behind the scenes, removed a few of the bent valves and allowed me to examine them on some valve-testing equipment made by a well-known firm.

After exhaustive tests I was forced to apologise for my suspicions; nevertheless,

By
FREE
GRID

I still feel that there was some factor I may have overlooked, and I hope, therefore, that some of you will make a point of visiting the show on August Bank Holiday in order to check my results.

Bus Radio

I HAVE just had my first ride through the streets of London in a wireless-equipped bus. The vehicle is actually intended for use in the North, but was doing private trials in the great metropolis.

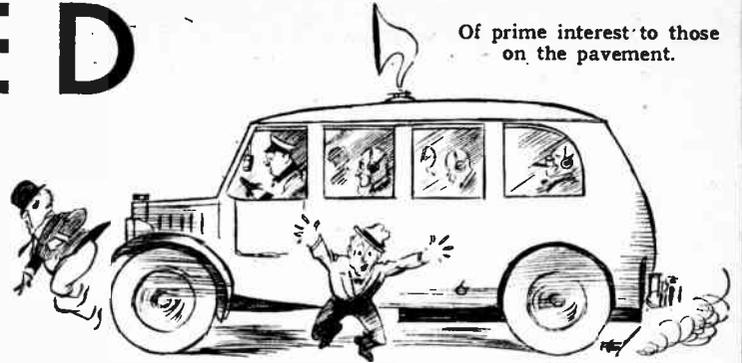
Each seat was equipped for a pair of headphones, and either of the two Brookmans Park programmes could be received at will by plugging into one or other of two jacks fixed to the seat in front. Reception was very good, but the thing which, to my mind, lifted the whole thing out of the common rut was the provision of a microphone by the side of the driver.

At each stopping place, having put all 'phones in circuit with the mike by a small switch affixed to his steering column, he reeled off the name of the stopping place and the local places of interest, and then the names of the places which the bus would pass before reaching its destination and disgorging its weary load.

The first part of the announcement was obviously only of interest to people in the bus; for the last part, which was of prime interest to those on the pavement, the driver switched the output of the amplifier to a large public-address type loud speaker mounted on the roof.

Such an arrangement, you will say, would be a source of annoyance to certain passengers who desired none of the information. Even this had been thought of by the all-wise bus company, for, near to the two jacks I have mentioned, was a third with a little red warning light beside it, together with an explanatory note neatly executed on ivory.

The notice explained that if the 'phones were kept in No. 1 or No. 2 jacks either of the programmes would be received without interruption. Immediately the driver



switched in his mike the red light would be illuminated and those passengers desiring to receive his words of wisdom would immediately transfer their 'phone plugs to No. 3 jack.

Actually I found that every woman passenger, regardless of the broadcast programme, at once plugged in to the driver's remarks directly the red light showed.

There is something profoundly psychological in this, but at the moment it escapes me.

Like Casabianca

I SEE that a learned professor has been disparaging the use of lightning switches. The average lightning flash, he said, consists of a current of fifteen hundred million amperes propelled by a voltage of two thousand million, and it's no use expecting any lightning switch to stand up to that.

Are we to gather from this that the learned man honestly thinks that a lightning switch ought to stand up to it without batting an eyelash? It is high time that he learnt that, apart from its normal function of dealing with small charges, the ordinary lightning switch, in the case of a direct hit, is expected to do its duty by perishing miserably. It should, in fact, emulate the half-witted youth who, we are told, was fool enough to stand on the burning deck when everybody else had done the sensible thing.

A Quiet Hour

PICKING up a "late extra" which had been left in a bus the other night, I turned to the radio page to see what new thing had happened in wireless since I had breakfasted. I found that the paper was full of suggestions from its readers for novel outside broadcasts which they desired the B.B.C. to attempt. One man, whose suggestion was given prominence, wanted the voice of the City of London on Saturday night, including such noises as the "din of the dirt track, the dance hall, and dog-racing."

It is true that the name and address of the good gentleman indicated that he hailed from the back blocks of Scotland, but I should have thought that the spread of popular knowledge would have reached up there long ago, and that this blown-away Norwegian would have known that on Saturday night—or indeed on every other night for that matter—the city is one of the most deserted spots in the world.

Broadcast Brevities

By Our Special Correspondent

A Broadcasting Hall at Olympia

THE B.B.C. may soon take an opportunity to satisfy the thousands of disgruntled listeners who have never had, and are never likely to have, a chance of attending a vaudeville performance at Broadcasting House. I understand that arrangements are going forward for the erection of a Listening Hall at the Olympia Wireless Show, accommodating at least 1,500 people. If the plans materialise, vaudeville performances and perhaps a few orchestral concerts will actually be broadcast from the Hall.

Better Than Studio Clagues?

Whether listeners in their homes will appreciate the presence of this vast studio audience is another question; I rather fancy that a really large assemblage will be far less distracting than the usual collection of twenty or more "deadheads" who feel under an obligation to clap out of common courtesy to their hosts, whether the "turn" be good or bad.

Sir John at Madame Tussaud's

I SUPPOSE the real test of greatness is not the inclusion of one's name in "Who's Who," but representation among the gallery of wax celebrities at Madame Tussaud's. This special honour, I hear, is to be conferred on Sir John Reith in the near future.

More Secret Tests

WHY is the B.B.C. maintaining such deadly secrecy over the tests now proceeding in the synchronisation of West National and London National? The first experiment was made in the middle of last week, and on most evenings now it is possible at a reasonable distance from London to get a suspicion of a second carrier wave on the 261.5-metre wavelength.

Let Listeners Know

Possibly by the time these lines are read the Engineering Department may have seen fit to take the public into their confidence—a far safer course, for nothing infuriates a listener more than unexplained whistles superimposed on his favourite transmission.

Surely, it would be better for the Chief Engineer to make a clear public statement on the test and its objects, explaining that everything that is being done, whether successful or otherwise, is intended to serve the best interests of all listeners? The public would then feel encouraged to co-operate, and many helpful reports might result.

Empire Programme Innovation

THE first Children's Hour to be transmitted from the Empire short-wave station at Daventry will be included in the Indian Zone programme on July 20th, when L. Du Garde Peach's play "The Rose of England" will be the principal feature.

Although such a programme may scarcely appeal to the Indian population, it should bring a real breath of home to Anglo-Indians scattered throughout Asia.

In Western Australia

Incidentally, the Indian programmes are heard very clearly in Western Australia, reports going to show that listeners in Perth

hear these transmissions very much better than those of Zone 1, which are specially intended for Australia and New Zealand.

Hallé Concerts for the North

NORTHERN listeners will be grateful to the B.B.C. for completing negotiations with the Hallé Society for the broadcasting of ten of the Society's concerts during the next season.

New Organ To-night

TO-NIGHT should be a great occasion for all lovers of legitimate organ music, as distinct from the cinema variety, for at 8 p.m. we are to hear the inaugural recital on the new Compton instrument in the Concert Hall at Broadcasting House.



HEAR IT TO-NIGHT. Sir W. G. Alcock at the console of the new organ in the Concert Hall of Broadcasting House. Dr. Adrian Boult is standing on the left; on the right is the B.B.C.'s official accompanist, Mr. Berkeley Mason.

I hear that Sir W. G. Alcock, as designer, is showing pardonable pride in this child of his brain, and came up specially to London from Salisbury to be photographed at the console of the organ. He is taking part in the recital this evening, together with Mr. Thalben-Ball and Mr. G. D. Cunningham.

Part of the programme will consist of an organ concerto by Handel, in which the B.B.C. orchestra, conducted by Adrian Boult, will take part.

Northward Bound

MR. A. PATERSON, who has been in charge of the B.B.C.'s £10,000 sports ground at Motspur Park, is to take sole charge of the Aberdeen Station.

No Thrills at the "Proms"?

THERE are to be no "sensations" at this year's Promenade Concerts which open at the Queen's Hall on Saturday, August 12th, and continue for eight weeks, finishing on Saturday, October 7th. There will be the usual number of first performances.

This will be the thirty-ninth summer season under the conductorship of Sir Henry Wood and the seventh under the auspices of the B.B.C. The concerts will be broadcast from one or other of the B.B.C. stations each night.

Dresden Programme for London

ON July 1st London Regional listeners will hear a relay from Dresden carried out in co-operation with the Central German Broadcasting Company and the Reichs-Rundfunk-Gesellschaft. The programme, which will last one hour, will consist of Act 1 of "Arabella" by Richard Strauss, conducted by Clemens Krauss, with Eva Plaschke van der Osten as music producer.

A Voyage to Lilliput

"GULLIVER'S Travels" are to be drawn upon for a programme by Lance Sieveking to be broadcast on the National wavelength on June 28th under the title "A Voyage to Lilliput." As on the occasion of the last Lilliputian broadcast in 1931, Mr. Sieveking's production will rely largely on the clever music of Robert Chignell.

Two More Regional Stations?

AT the time of writing, my news basket is filled with conflicting messages concerning the ultimate fate of the "Plan de Lucerne." One very interesting item emerges.

I am told that the British delegation (which, of course, includes Mr. Ashbridge and Mr. Hayes, of the B.B.C.) has been demanding waves for two new stations, styled respectively "North Scottish" and "North Eastern."

A Border Transmitter

Now "North Scottish," wherever that may be situated, is scheduled to use a frequency of 1,104 kc/s., at present the property of Rennes, P.T.T., and later to be allocated to Belfast until North Scottish is ready.

"North Eastern" defeats me. Can the B.B.C. be flirting with the idea of a station on the Scottish Border, perhaps near Berwick-on-Tweed?

Tactless

It is all very mysterious. A Lucerne friend of mine who dared to ask the British delegates for the merest hint of an explanation was made to understand that he was a tactless person.

Broadcasting the Neo-Bechstein

LAST week Christopher Stone treated us to a broadcast of a recording of the Neo-Bechstein piano, the instrument which was described and illustrated in *The Wireless World* of January 27th last. It would now be an excellent thing to give us a direct broadcast of the Neo-Bechstein, which would lend itself admirably to the purpose, as the output could be directly coupled to the amplifiers.

What about it, Programme Branch?

Correspondence

The Editor does not hold himself responsible for the opinions of his correspondents.

Correspondence should be addressed to the Editor, "The Wireless World," Dorset House, Stamford Street, S.E.1, and must be accompanied by the writer's name and address.

"Pick-ups and Bass Response."

HAS not Mr. Willans (in his letter published in the June 2nd issue of *Wireless World*) misread the data supplied by Mr. Bloxam in connection with the article on "Increasing Bass-Response"?

I read the data in question as indicating that at 100 cycles the electrical output (presumably voltage) is approximately 40 per cent. greater than that at 240 cycles.

In this case the variation of pick-up output, in terms of decibels, would not exceed 3 dbs.

The derived curve (pick-up plus recording) would then indicate a variation of level of the order of 4.5 dbs. between 50 and 100 cycles.

I support Mr. Willans' contention, however, that the use of resonances in the design of components intended for everyday application is a practice to be deprecated.

I append three reasons for this belief:—

(1) Resonance phenomena are notoriously complex and, used indiscriminately, can be as detrimental as they can be helpful.

(2) There exists already a multiplicity of variables in the electro-acoustic chain, and the encouragement of others (of ill-defined characteristics) does not make for simplification of the art.

(3) "Tone-correction" can be performed with greater precision elsewhere in the system.

The manipulation of resonance phenomena is essentially a matter for the filter designer, in whose hands a resonance loses all its fickleness, and becomes an asset of considerable worth.

Let component manufacturers continue, therefore, to strive after a flat response characteristic and one that has as broad a frequency range as possible.

By this means will the path of progress be smoothed and a satisfactory basis for the judgment of meritorious design be provided.

London, W.13. GEORGE E. POHU.

Components

I NOTED your leader on the all important question of quality or price, and suggest this article is to a large extent a fitting reply to your leader of April 7th under the heading of "Price of Components—The Case for Reduction."

I particularly would draw your attention to your phrase in the original article—"We have now almost reached the point when it can be profitable to buy a complete set in order to make use of the parts in constructing some new circuit employing the latest principles, and discarding the surplus material, rather than buying the components as separate items"—(my italics).

Firstly, we have not reached this stage, and the only cases approaching this possibility are those in which obsolete "end of season" sets figure, or bankrupt stock is offered; in both instances the material is either out of date or obviously inferior as bankruptcy is not an advertisement in favour of quality.

A correct analysis of the set and component markets will reveal that set manu-

facturers are compelled more or less to stabilise their designs for at least twelve months, and new types appear about once a year, round about show time, whereas new developments which arise from time to time all the year round are immediately available to radio constructors, such as your readers, in the form of new components; thus constructor circuits are usually at least nine months ahead of set manufacturers' designs.

A point that is often missed is the universal fittings features that have to be embodied in components, but are often totally dispensed with in manufactured designs. Other items of separate and extra cost include technical literature, fixing templates, free blue prints, separate packing and despatch, etc., etc.

Another important point is the home constructor himself; he is keener to-day than ever, more technically minded and demands a high degree of quality allowing no "skimping." The home-constructed set scores in many cases over the manufactured job because performance and not price is the first consideration, and the constructor is able to employ a combination of H.F. and L.F. circuits that manufacturers dare not introduce, as they are always endeavouring to limit their types to the lowest possible number for reasons which will be obvious to your readers.

Faulty marketing of shoddy components

must not be allowed to ruin the British radio trade, which gives employment to hundreds of thousands. There is every indication that British radio fans do not want second-rate components; let anyone who doubts spend a day on some of the component stands at Olympia.

London.

"OBSERVER."

I HAVE only seen two letters published up to the present in reply to your efforts to get the price of components reduced. Doubtless you have had several and possibly these are a fair sample of the many. Evidently one correspondent has a financial interest in the component trade and is therefore biased. I entirely agree with Mr. Curtis' remarks in your May 26th issue and so, I imagine, do most other people.

It is possible to quote from memory many components which have not been reduced in price for five years. The other day I came across an old catalogue or two and in two instances of well-known makers of transformers and coils there had been no reduction for the above period.

There is also the case of the 2-volt double-grid valve, which is still priced at 20s., whilst the screen grid is 3s. 6d. less, and the pentode half a crown.

There are many other items which could quite possibly be reduced and allow a fair margin of profit, notably coils, mains transformers, some fixed condensers, etc.

Many a good circuit appears from time to time in *The Wireless World*, but genuine experimenters may hesitate to make them up by the price of some of the components.

"OLD HAND."

W.W. Universal Short-Wave Converter

I DESIRE, through the courtesy of your Correspondence columns, to record my appreciation of your "Universal Short-wave Converter."

The converter has been included in a modified "Monodial" (A.V.C.) receiver, deriving H.T. from the same source. The unit is completely shielded from the rest of the receiver, and decoupling precautions have been taken. Results have far exceeded expectations.

The list of stations received at good entertainment value is too long to enumerate here, but special mention must be made of daylight reception.

On Whit Monday at 14.00 hours W3XAL on 16.87 metres was received at full volume with negligible background. It was broadcasting a description of the World's Fair at Chicago. This was followed by a talk on the Agricultural Adjustment Act and the weather report. For four hours the entire programme was received, which speaks well for A.V.C. I may add that this particular station has been most consistent during the past week.

W8XK (19.72 metres) is another station which is well received during daylight.

In conclusion, I must remark upon the wonderful ease of operation and the entire absence of hand-capacity troubles, particularly on the shorter wavelengths.

ZETA.



THE UBIQUITOUS AMPLIFIER. Loud speakers and microphones are much in evidence at the World Economic Conference in the Geological Museum, South Kensington. Marconi engineers are here seen fitting Catkin valves to a large amplifier.

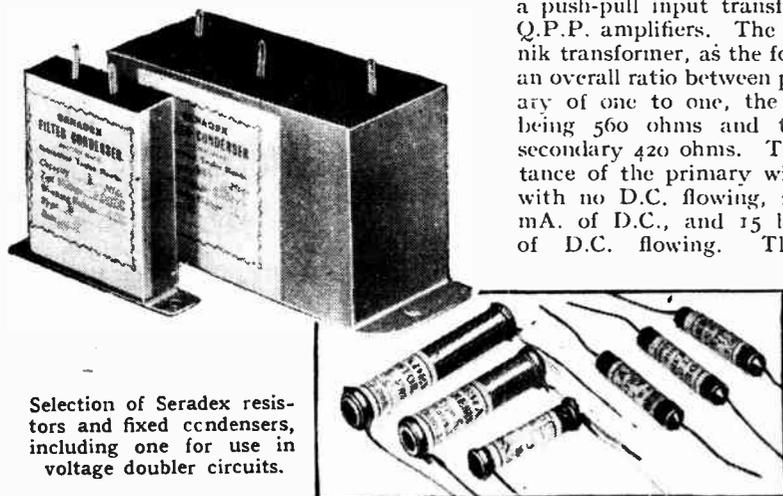
LABORATORY TESTS

NEW RADIO PRODUCTS

REVIEWED

SERADEX RESISTORS AND CONDENSERS

THE Seradex range of Glasswound resistors has been considerably extended and now includes four types, viz., the G.125, G.250, G.500, and the G.800, their respective rating being 1.5, 2.5, 5, and 8 watts. They derive their designation from the method of construction adopted, for the resistors are of the wire-wound type on a tubular glass former. They are available in a wide range of values, the 1.5-watt type extending from 25 to 10,000 ohms, the prices varying between 9d. and 1s. 3d. The 2.5-watt models are obtainable up to 20,000 ohms in value at prices between 1s. and 1s. 6d., while the 5-watt models extend to 30,000 ohms, the smaller values costing 1s. 3d. and the higher resistances 1s. 9d. In the 8-watt style resistors up to 50,000 ohms are made and these range in price from 1s. 6d. to 2s. each.



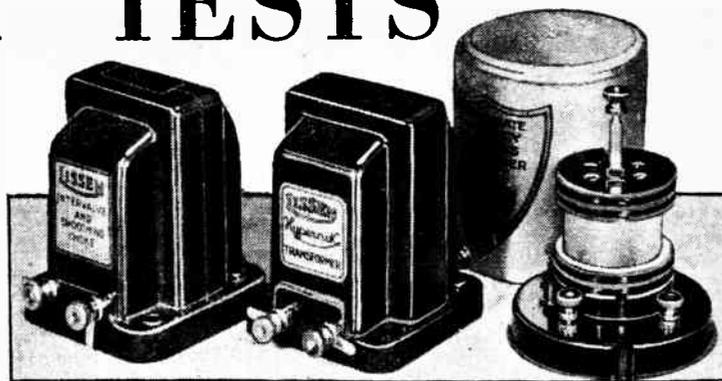
Selection of Seradex resistors and fixed condensers, including one for use in voltage doubler circuits.

Tests made with several specimens show that the measured resistances are in very close agreement with the marked values, the maker's statement that they are accurate to within 2.5 per cent. is fully substantiated. At maximum load the temperature rise is not above the normal for resistances of this type.

The range of moulded resistors, listed as the type M-150 and rated at 1.5 watts dissipation, extends from 100 ohms to 2 megohms. Although an accuracy of 4 per cent. is claimed the specimens tested showed a much closer agreement than this when dissipating their maximum wattage, and the temperature rise is no greater than that of other makes of similar type. The price is 8d. each for all values.

Some sample fixed condensers of the 400-volt D.C. working type were tested also. These are of the non-inductive style and are contained in rectangular metal cases. They are available in sizes of from 1 to 8 mfd., the prices ranging from 1s. 6d. to 7s. 1d., according to capacity. In this series is included some block condensers arranged as 4+4 mfd. and 8+8 mfd., which are especially suitable for use in voltage doubler circuits; the former costs 7s. 3d. and the latter 14s. 6d. Tested at 800 volts D.C. we found no trace of leakage, neither

Selection of Lissen components, including 126 kc/s. I.F. transformer, new Class "B" input transformer and high inductance smoothing choke.



did a single specimen fail to withstand this voltage during a prolonged test. They represent excellent value for money and the makers are Trevor Pepper, Wake Green Road, Birmingham, 13.

LISSEN TRANSFORMERS

THE range of Hypernik L.F. transformers made by Lissen, Ltd., Lissenium Works, Worple Road, Isleworth, Middlesex, has been extended, and now includes two new models, the one designed for use with the Class "B" output stage, while the other is a push-pull input transformer for use with Q.P.P. amplifiers. The Class "B" Hypernik transformer, as the former is known, has an overall ratio between primary and secondary of one to one, the primary resistance being 560 ohms and that of the whole secondary 420 ohms. The measured inductance of the primary winding is 36 henrys with no D.C. flowing, 23.3 henrys with 2 mA. of D.C., and 15 henrys with 5 mA. of D.C. flowing. The transformer is housed in a neat bakelite case of small dimensions and its price is 12s. 6d.

The Lissen Q.P.P. transformer affords a voltage step-up overall of one to eight, and is designed to carry up to 4 mA. of D.C. in the primary circuit. Its inductance varies between 20 and 35 henrys, according to the D.C. current flowing. It is enclosed in the same size and style of moulded bakelite case as the other new model, and the price is 12s. 6d. also.

In their new range of smoothing chokes is a miniature model fitted with a high permeability core but capable of carrying D.C. current up to 25 mA. Suitable for use in eliminators and mains receivers taking a total anode current within its range, it maintains a satisfactorily high value of inductance throughout, for with no D.C. flowing its inductance is 90 henrys, with 10 mA. 52 henrys and with 25 mA. 41.5 henrys. There are several uses to which a choke having this order of inductance can be put, and where its rather high resistance—namely, 1,500 ohms—is of little consequence. It is housed in a neat bakelite case and the price is 7s. 6d.

Lissen superheterodyne I.F. transformers consist of two separate coils wound in slotted formers and fixed in relation to each other. Both are tuned by small semi-variable condensers accommodated in the base of coil former and correctly adjusted to give band-pass tuning at a frequency of 126 kc/s. No further adjustment is necessary.

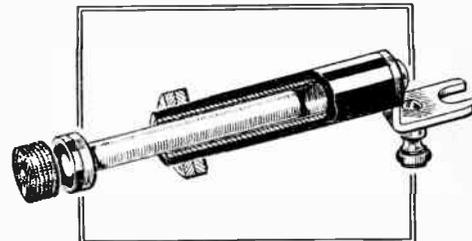
Some specimens when tested were found to be correctly adjusted to 126 kc/s, and the peak separation was approximately 5.7 kc/s. Various specimens tested showed a good agreement in matching. These I.F. transformers are fully screened and the price is 7s. 6d.

PRESSLAND TERMINAL COP

THE Pressland Terminal Cop is a small selectivity device which may be attached either to the aerial terminal of the receiver or mounted on the terminal strip in place of or adjacent to this terminal. It consists of an ebonite cylinder 2½ in. long and ½ in. in diameter, having at one end a spade connector for fixing to the aerial terminal. Pressed into the inside of this cylinder is a brass tube lined with insulating material, and in the centre is an adjustable brass plunger fitted with a terminal and an ebonite finger grip.

The device is in effect a small variable condenser, but with the difference that in the position of maximum capacity the two plates are short-circuited, giving a straight-through connection. By adjusting the position of the plunger any value of capacity between 0.0002 mfd. and 0.00015 mfd. can be placed in series with aerial lead, thereby affording a simple but effective control of selectivity. Volume may be controlled also by this means. The actual minimum value of the condenser is slightly less than 0.0002 mfd., but the plunger is then only just beginning to engage and the slightest jolt will displace it.

It should prove a very useful addition when a ready means of selectivity adjustment is required, and the price is 2s.



Pressland Terminal Cop selectivity device.

The makers are Clifford Pressland (Sales), Ltd., 84, Eden Street, Kingston-on-Thames, London.

Change of Address

THE Eta Tool Company, hitherto occupying premises at 70a/70c, Asylum Street, Leicester, having now taken over the business of Gandy and Co., 18, Metcalf Street, Leicester, manufacturers of woodworking machines, will in future carry on both their coil winding machine business and the manufacture of woodworking machines from this address. The telephone number is Leicester 5386.

READERS' PROBLEMS

Amplifier for Headphones

IT is asked whether any special precautions should be observed in designing a mains-operated amplifier for use with headphones instead of for a loud speaker. Apparently the amplifier is to be used for feeding a number of pairs of phones.

A standard amplifier with an output of, say, 100 milliwatts for each set of 'phones should be suitable for this purpose. Smoothing should be exceptionally thorough, as a residue of hum which might pass unnoticed with a loud speaker would probably be annoying for headphone work. Especial care should be taken in isolating the 'phones from the mains, either by means of double-wound transformers or a choke-capacity feed system; whichever system be adopted there should be a large margin of safety in the matter of insulation resistance. The question of matching the 'phones to the output valve should also be considered.

Stage-by-Stage Hum Tests

WE are asked to describe the proper course of procedure to be adopted in locating the source of hum in a det.-z L.F. "quality" set. It is operated from A.C. mains, and apparently the hum has only recently become noticeable.

As a set of this kind is usually free from complications, it should not be difficult to find the cause of the trouble. Referring to Fig. 1, the grid leak of the output stage should be short-circuited, and if the hum

here again the decoupling condenser and resistance should be checked. There is a possibility, however, that the voltages causing the hum are being induced into the grid circuit, and this is particularly likely to be the fact if the interference is high-pitched in tone. In such cases it is often beneficial to enclose the valve itself in a metal shield.

A Quieter Background

SO far as sets with a modern volume control system—and particularly superheterodynes—are concerned, it may be stated definitely that anything which tends to reduce overall sensitivity will inevitably tend to accentuate "valve hiss."

An inefficient aerial is only one of the possible causes of low sensitivity, but it is quite a serious one, and those readers who have recently written to us on the subject are strongly advised to make an effort to improve matters in this direction.

Although an up-to-date superheterodyne can receive most European stations with a ridiculously inefficient aerial, it must generally be operated at full sensitivity to do so, and hiss is then likely to be in evidence. As the amount of amplification needed for a given strength is reduced the ratio between signal and background noises is bound to become more favourable to quiet reception.

Admittedly, users of even the best superheterodynes who live in the immediate vicinity of a powerful station have some excuse for using inefficient aerials; experiments

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers. Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which brief particulars, with the fee charged, are to be found at the foot of this page.

sive voltage from the H.T. rectifier to the condensers, etc., of the receiver and smoothing equipment during the warming-up period. His query relates, of course, to an A.C. mains set.

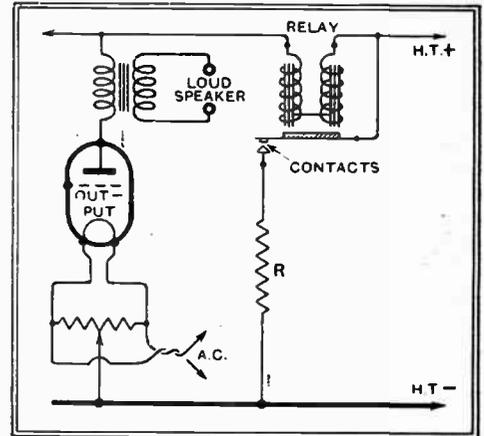


Fig. 2.—Preventing voltage rise; the artificial load resistance, R, remains connected across the H.T. supply until the valves begin to pass anode current.

This subject was dealt with in *The Wireless World* some time ago; as stated then, a fairly satisfactory protective device may be made in this way, but the improvised article can hardly be so effective as a proper thermal-action switch.

From Fig. 2 it will be seen that the bell is converted into a relay, its windings being inserted in the H.T. circuit. Until the valves warm up, no current passes through the windings, and so the armature is not attracted, and the contacts remain closed. In this position, the resistance R is connected across the output from the H.T. supply equipment, and provides an artificial load during the warming-up period.

As soon as the valve has attained a normal working temperature, the loading circuit will be interrupted by the relay and operating conditions will be normal. It will almost invariably be necessary to rewind the bell magnets with finer wire in order to obtain sufficient magnetising force to attract the armature. The resistance R should be of such a value that it passes about one-half to one-third of the current normally consumed in the anode circuits.

The Wireless World

INFORMATION BUREAU

THE service is intended primarily for readers meeting with difficulties in the construction, adjustment, operation, or maintenance of wireless receivers described in *The Wireless World*, or those of commercial design which from time to time are reviewed in the pages of *The Wireless World*. Every endeavour will be made to deal with queries on all wireless matters, provided that they are of such a nature that they can be dealt with satisfactorily in a letter.

Communications should be addressed to *The Wireless World* Information Bureau, Dorset House, Stamford Street, London, S.E.1, and must be accompanied by a remittance of 5s. to cover the cost of the service. The enquirer's name and address should be written in block letters at the top of all communications.

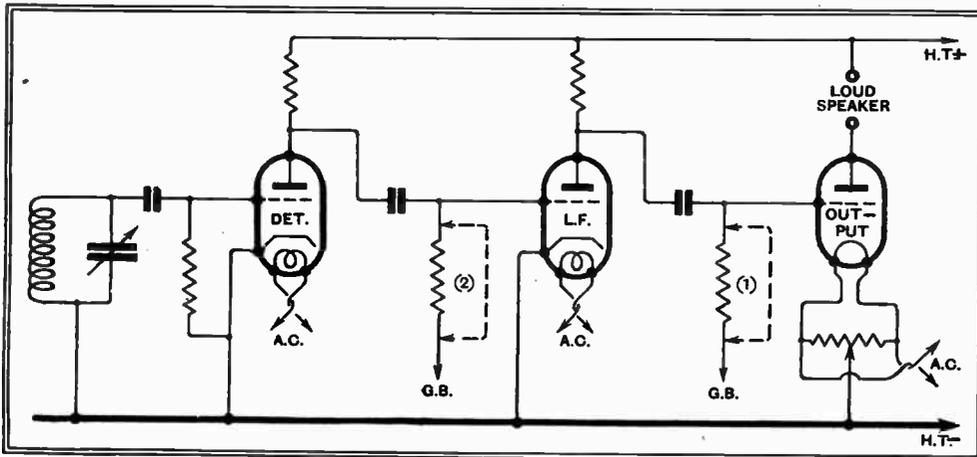


Fig. 1.—Tracking down the source of hum in a resistance-coupled amplifier. The grid leaks should be temporarily short-circuited in the order shown.

persists, it may obviously be assumed that the trouble lies in the output stage—the valve, loud speaker field, or, even possibly, in the mains smoothing equipment.

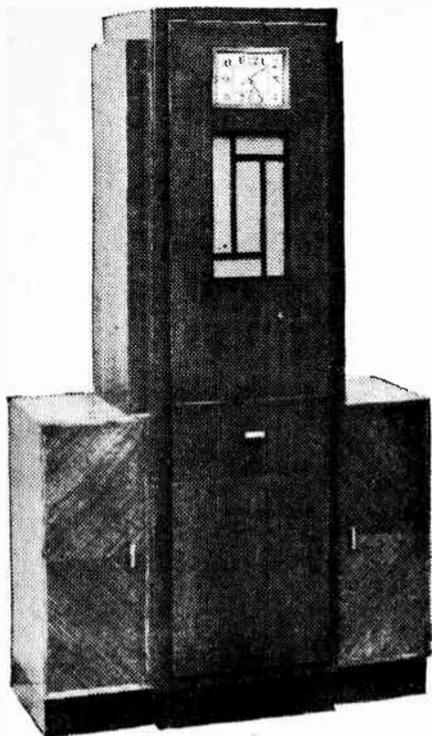
If, on the other hand, the hum disappears, the test may be carried a stage farther by short-circuiting the grid leak of the preceding valve. If hum is still audible, this valve, or its associated apparatus, is at fault. Replacing the valve or attending to the decoupling in its anode circuit are the usual cures.

Should hum disappear on the application of test No. 2, only to reappear after removing the short-circuit, the detector valve or its anode circuit are to be suspected, and

show that the first detector may be overloaded by the local station even when the tuned circuits are adjusted to 40 or 50 kilocycles "off tune." This is probably the cause of the excessive number of whistles of which another correspondent complains. Even here we suggest that it would be better to make provision for coupling the aerial more loosely to the tuned input circuit rather than to reduce its length.

Home-made Delay Switch

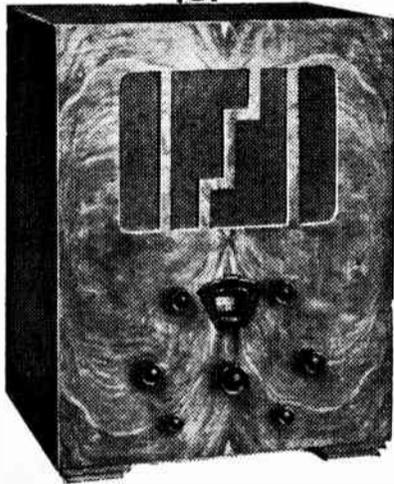
A CORRESPONDENT asks whether an electric bell mechanism could be converted into a delay-action switch; his object is to prevent the application of exces-



The C.A.C. GRANDFATHER CLOCK RADIO-GRAM CABINET.

This handsome and original piece of furniture represents the very last word in Radio-Gramophone Cabinet design. Intended to house an electric clock movement, it has provision for fitting, if desired, a pair of dual compensated Loud Speakers. Ample provision is given below the Speaker Grille to accommodate almost any type of Receiver, whilst the electric Gramophone Motor and Pick-up fit into the sliding drawer below. The two side compartments allow for the storage of a very large number of records.

Supplied in Burr Walnut, Mahogany or Figured Oak.
PRICE: 12 GUINEAS.



Why keep your thoughts to yourself?

What, in your opinion, constitutes the ideal Radio or Radio-gram Cabinet?

If money were no object, what features would you have incorporated in your ideal Cabinet?

C.A.C. CABINETS LIMITED

invite "The Wireless World" readers to enter an interesting

COMPETITION

SIMPLE RULES:

SEND US A SKETCH of what you consider to be the most useful design of Cabinet for a Radio set or a Radio-gram, or both.

DESIGN AND UTILITY are the two points upon which the judges will base their decisions.

ABILITY TO DRAW does not matter so long as your sketch is clear and conveys your idea.

NO LIMIT to the number of individual entries. No entrance fee.

ONLY ONE PRIZE will be awarded to each entrant.

In the event of two readers submitting a similar design of Cabinet adjudged to be a winner, each will be awarded a prize.

The decision of the Managing Director is final, and no correspondence in connection with the competition will be entertained.

REMEMBER, the simplest Radio Cabinet design incorporating useful suggestions stands as good a chance of winning a prize as the most elaborate Radio-gramophone Cabinet.

PRIZES:

A prize will be awarded to every reader whose design we adopt. It will take the form of his own ideal Cabinet and will be built, to his own dimensions, in Oak, Mahogany, Walnut or any desired timber. To the reader who submits the best design we will present, in addition to the Cabinet, a cheque for £20. All winning designs will be prominently featured on our

STANDS Nos. 55, 97, 98 and 99

at the Olympia Radio Exhibition in August. Manchester Exhibition, STAND No. 115.

Entries should be sent in a Sealed Envelope addressed to
COMPETITION DESIGNS, C.A.C. CABINETS, LTD.,
Angel Court, 173, Strand, W.C.2.

Closing Date, first post Saturday, July 1st, 1933.

THE CLASS "B" FERROCART RECEIVER CABINET.

Selected by "The Wireless World" designer.

The fact that this handsome Cabinet, finished in beautifully figured Walnut, was chosen by "The Wireless World" for their latest Receiver speaks for itself. Fashioned on modern lines, it is of extremely neat design, and its construction leaves nothing to be desired. Special care has been taken to ensure that Cabinet resonances are eliminated. Overall dimensions:—Height, 19½ in. Width, 15 in. Depth, 12½ in. Complete with Loud-speaker Baffleboard, "Konductite" metal-lined baseboard and removable back. Front drilled ready to take the "Ferrocart" Receiver if desired, without extra charge.

Cabinet with metal-lined baseboard - - - - - **32/6**

KITS AS SPECIFIED

(Designer's first Choice).

- KIT 'A' Complete (less Valves, Batteries, Cabinet and Loud Speaker) £7-11-0
- KIT 'B' Complete with Valves (less Batteries, Cabinet, and Loud Speaker) £9-17-3
- KIT 'C' Complete with Valves, Cabinet and Loud Speaker (less Batteries) £13-9-3

Detailed Lists, Post Free.

In view of the phenomenal interest taken in this wonderful circuit, we have reprinted 10,000 copies of the original constructional article which appeared in "The Wireless World" of April 7th last, and these are being offered free to all readers of "The Wireless World" upon receipt of application. Wireless dealers will be supplied gratis with as many copies as they can conveniently dispose of amongst their customers. A cordial invitation is extended to all to visit our Showrooms at 4, Surrey Street, Strand, W.C.2, to see and hear this marvellous set.

Advt. of the City Accumulator Co. Ltd. 'Phone: Temple Bar 8620.

Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.

£4/15, at 47/6; B.I.H. (A.C.) Semicon, disc 21110, 22110 (3 only); Rola's F.6 90-130 volts (2,500 ohms), 110-175 volts (2,000 ohms), 200-250 (6,500 ohms), all listed 35/-. at 18/-; state if power or pentode transformer; F.7, voltages as above, listed 47/6, at 25/-; permanent magnets, F.6 P.M., list 49/6, at 28/-; F.7 P.M., listed at £3 at 35/-; Lamplugh Silver Ghost M.C. (2,200 ohms), listed 34/-, at 14/9, with transformer; all carriage paid, cash with order or c.o.d.—Chal-Electric, No. 6, Conduit St., London, W.1. [2874]

VALVES.

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(This advertisement continued on next page.)

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MISCELLANEOUS ADVERTISEMENTS

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XV.

Wireless World

JUNE 16th, 1933

XX

Wireless World

JUNE 16th, 1933

(Hamblen); Serenade (Pierne); They all do the Rumba (Pola); Song, If I were (Henry); Glow Worm Idyl (Lincke); Song, Invidius (Halm); In Santa Lucia (Strausky); Selection from Veronique (Messager); 6.0, Programme in French, 10.0 (approx.) till Close Down, Programme in English by the I.B.C. 10.0, (approx.). Dance Music by the Ibcollans; Heavenly Light (David); Fairy on the Clock (Reaves); There'll never be another Gal like Mary (N. H. Brown); Beyond the Blue Horizon (Whiting); Indiana (Hanley); Was it wrong? (Arrhelms); Blue Jazz (Gifford); I wouldn't change you for the World (Leman-Jones); Paradise (Clifford); Home (Van Steeden); My Extraordinary Gal (Shand); One Little Quarrel (Goodhart); I don't mean a thing (Ellington); Oh, you sweet thing (Hines); Rose Room (Hickman); Blue Drag (Hines). 11.0, Tango Band and Mandoline Solos: Clara Mucha, España Cani, Flora Castellana; Mandoline Solo; Capriccio Mazurka, Adios Muchachos, Mia Cara; Mandoline Solo; Mandoline; Luz de Granda. 11.30, Concert of Gramophone Records: Lord you made the Night too long (Lewis); Siboney (Simons); Selection from The Desert Song (Romberg); Seven veils (de Salva); Tired Hands (Sander-son); Nonchalant Nonsense (Wayne); Selection from The Cat and the Fiddle (Harbach). 12.5 a.m. (Saturday), The I.B.C. News Bulletin. 12.10, Club Concert for Kidderminster Listeners: Selection from Rigoletto (Verdi); O Mistress Mine (Quilter); Organ Solo, Cathedral Chimes (Lindahl); That's my Song; The Turkish Patrol (Michaels); Duet, Bella, the bold, bad Bandit (Wheldon); Serenata (Toselli); Chorus, There is a Tavern in a Town (Traditional); Commander of the Legion. 1.0, Concert of Songs and Trios: A Night of Happiness; Will you forget?; The Wedding in the Ark; Songs: (a) River stay away from my Door, (b) Show the Hoodoo away; Narcissus; Mia Bella Rosa; Pearl of Mine. 1.30, Variety Concert of American Music: The Railroad Boomer; Hallelujah, I'm a Bum; Duet, Poor Man's Heaven (Robison); Onstep, Sailing on the Robert E. Lee; I don't work for a living; Duet, Don't marry a Widow (Robison); Peg Leg Jack (Luther Robison); Steamboat Bill (Leighton). 2.0, Dance Music by the Ibcollans; I've got the World on a String (Arten); Wanderer (Flanagan); Harlem Holiday (Koehler-Arten); The Old Man of the Mountain (Young-Brown); Wild Man Blues (Armstrong Norton); How deep is the Ocean? (Berlin); Melancholy (Bloom and Melrose); I'll never have to dream again (Newman-Jones); Love is the sweetest thing (Noble); Ich liebe Dich my dear (Hart Bight); I'll do my best to make you happy (Noble); Just an Echo in the Valley (Woods); One of us was wrong (Goering); Try a little tenderness (Woods); By the Fireside (Noble); Let's put on the Lights (Huppfeld). 2.57, I.B.C. Goodnight Melody. 3.0, Close Down.

FLENSBURG. See Hamburg.

FLORENCE. See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.25 p.m., Anecdotes, 6.45, Review of the Day, 6.50, Time and Announcements, 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Talk by Dr. Sven Schacht. 8.15, Concert by the Wireless Military Band, relayed from London. 8.40, Dialogue between two soldiers: Before Verdun. 9.15 (from Cassel), Concert of Regier Music. 10.10, Time and News, 10.45, Concert by the Station Orchestra, conducted by Reinhold Merten; Soloist, R. Langs (Pianoforte); Concert Overture, Michel Angelo, Op. 39 (Gade); Pianoforte Concerto in E Flat, Op. 36 (Draeske); Two Marches (Mozart); Triumphant March from Tarpeia (Beethoven); March in B Minor (Schubert); Selection from The Geisha (Jones). 12 Midnight, Close Down.

FREDRIKSSTAD. See Oslo.

FREIBURG. See Stuttgart.

GENEVA. See Radio-Suisse Romande.

GENOA. See Turin.

CLEIWITZ. See Breslau.

GOTEBORG. See Stockholm.

GRAZ. See Vienna.

HAMAR. See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Variety Programme, 6.45, Frankfurt Exchange, 6.50, Weather, 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Concert of Georg Schumann Music, with Introductory Talk by the Composer. The Station Orchestra, conducted by the Composer. Im Ringen um ein Ideal, Op. 86; Pianoforte Pieces from the Cycle, Dur und Moll; Humoresque; Gestern Abend war Vetter Michel da, Op. 71. 9.10 (from Flensburg), Instrumental and Choral Concert of North Silesian Folk Music, relayed from the Deutsches Haus. Conductor: Alfred Huth. 10.0, News,

JUNE 23rd

FRIDAY

continued

10.20, See Berlin (Witzleben). 10.35, Dance Music by the Station Orchestra, conducted by Gerhard Maasz.

HANOVER. See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 652 kc/s, 453.2 metres.—1.5 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Overture, Sylsava (Weber); Second Jota Aragonesa (Albeniz); Suite, In einem Puppenhaus (Engelman); Selection from Donna Juanita (Shpé); Wiener Moment (Häuser); Drolerie (Hohmann-Webau); Overture, The Black Domino (Auber). In an interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Agricultural Prices and Exchange. 3.30, Programme for Children. 4.0, Talk for Women. 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Overture, Die Irrfahrt um Glück (Suppe); Waltz, Klänge vom Delaware (Lanner); Pesther Karneval (Liszt); Selection from The Gipsy Princess (Kálmán); Waltz, Loreley-Rheinklänge (Joh. Strauss); Overture, Narkis Hochzeit (Lincke); Selection from Der Mann mit den drei Frauen (Lehar); Overture (Czibulka). In an interval at 5.50 (approx.), Talk. 6.15, Agricultural Prices. 6.25 (from Danzig), Concert of Instrumental Music by Erich Goebel; Trio in A, Op. 17, for Violin, Viola and Cello, Op. 17; Pianoforte Concerto in Old Style, Op. 19. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Talk by Kurt G. Sell; What People are talking about in America, relayed from Washington. 8.15, Concert by the Königsberg Opera House Orchestra, conducted by Erich Seidler. 10.0, News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. to 3.40 p.m., Programme of the Algemeine Vereniging Radio Omroep (A.V.R.O.). 11.40, Time and Gramophone Music. 12.10, Concert by Kovacs Lajos and his Orchestra. 1.40, Talk. 2.0, Gramophone Music. 2.40, Talk. 3.10, Gramophone Music. 3.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 3.40, Organ Recital by M. C. Steyn. 4.40, Programme for Children. 5.10, Gramophone Music. 6.0, Orchestral Concert conducted by H. de Groot; Liberty (Carstens); Waldeslustler (Czibulka); Serenade (Braga); Wo die Zitronen blühen (Joh. Strauss); Russian Rhapsody (Michiels). 6.25, Talk. 6.40, Concert (cont.); Overture, The Gipsy Baron (Joh. Strauss); Selection from Polshch (Nedbal); Indian Love Call (Friedl); March (Gilbert); Waltz from Eva (Lehar); Motoy (Kálmán); Quadrille from La belle Héloé (Olsenband); Waltz from Die geschiedene Frau (Fall); March from The Merry Widow (Lehar). 7.40 to 10.40, Programme of the Christian Radio Society (C.P.R.O.). 7.40, Talk. 8.10, Song and Pianoforte Recital by Jo Vincent and Betsy Rijkens-Gulp. In the interval at 8.40, Talk. 9.40, Religious Information. 9.45, News. 9.55, Talk. 10.25, Gramophone Music. 10.40, Organ Recital by J. Jong; Air from Boris Godunov (Mussorgsky); Selection from Mignon (Thomas); Selection from Werther (Massenet); Selection from Carmen (Bizet); Waltz from Faust (Gounod); Selection from Cavalleria rusticana (Massenet); March from The Prophet (Meyerbeer). 11.10, Gramophone Music. 11.40 (approx.), Close Down.

HORBÝ. See Stockholm.

HUIZEN

160 kc/s, 1,375 metres; 8.5 kW. Programme of the Christian Radio Society (N.C.R.V.).—12.55 p.m., Organ Recital. 1.40, Programme to be announced. 2.10, Reading. 2.40, Talk for the Housewife. 3.10, Song Recital by Corry Bister (Soprano); Two Songs (Handel); (a) Aria from Siroe, (b) Aria from Rinaldo; Two Songs (Bach); (a) Steh' ich bei meinem Gott, (b) Jesus, unser Trost und Leben; Prelude and Fugue in B flat for Organ (Bach), on Gramophone Records; Four Songs (Schubert); (a) Totengräbers Heimweh, (b) Dem Unendlichen, (c) Verklärung, (d) Im Abendrot; Larghetto for Pianoforte (Henselt Zadora) on Gramophone Records; Four Sacred Songs (Hugo Wolf). 4.10, Talk for the Amateur Photographer. 4.40, Concert by the Ariehem Trio; Dumky Trio, Op. 99 (Dvorák); Trio in G Minor, Op. 3 (Chausson). 5.40, Agricultural Talk. 6.10, Gardening Talk. 6.40, Police Notes. 6.55, News. 7.10, Literary Talk. 7.40, Military Band Concert; March (Laukien); Overture (Fischer); Aria from The Creation (Haydn); Divertissement from Coppélia (Delibes); Waltz, Enfants du Printemps (Waldteufel); Academic Festival Overture (Rehd). 8.40, Recitations. 9.10, Concert (cont.); Overture, Le Pic aux Clères (Hérolt); Fantasia, Souvenir de Chopin (Bekker); Selection from St. Paul (Abendssohn-Kling). In the interval at 9.40, News. 10.10, Gramophone Concert. 11.10 (approx.), Close Down.

INNSBRUCK. See Vienna.

KALUNDBORG. See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.25 p.m., Announcements and Gramophone Music. 7.40, See Warsaw. 11.0, The Letter Box, in French.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—8.0 p.m., Time, Weather, and News. 8.40, Variety Items. 9.0, Talk. 9.20, Concert. 9.50, Talk in Yiddish; The Jews in Lithuania. 10.10, Sports Talk. 10.15, Concert. 11.0 (approx.), Close Down.

KIEL. See Hamburg.

KLAGENFURT. See Vienna.

KOSICE. See Prague.

LAHTI

167 kc/s, 1,796 metres; 10 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.40 p.m. (from Helsinki), Violin Recital. 7.5, Talk. 7.25, Song Recital. 7.45 (from Helsinki), Dance Music by the Rouders' Band. 8.15 (from Helsinki), Violin Recital of Popular Dance Music. 8.30 (from Helsinki), Dance Music (cont.). 8.45, News in Finnish and Swedish. 9.15, Light Music from the Kapell Restaurant.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert, conducted by Wolf; Overture, Lisola disabitata (Haydn); Träumerei (Schumann); Jagdlied (Schumann); Selection from La Faviotta (Donizetti); Norwegian Rhapsody (Svendson); Waltz, Wiener Frauen (Strauss). 12.50 p.m., Weather, Time and Announcements. 1.0, Orchestral Concert, conducted by Eysoldt; Soloists: Albert Arenz (Cello) and Ernst Günther (Double Bass). March, Deutschland, mein Deutschland (Dörning); Overture, Der vierjährige Posten (Schubert); Paraphrase on the Song, Über die Heide geht mein Gedanken (Hinno-Weninger); Einsame Feldwacht (Graener); Die Glocken von Saint Cyr (Schmalstieg); Andante and Polonaise for Cello and Double Bass (Battesini); Suite (Chiechi); The Witch's Ride, from Hansel and Gretel (Humperdinck); Bachelard (Glazunov). In an interval at 2.0 (approx.), Announcements. 2.30, Sponsored Programme, with Gramophone Records. 3.30, Economic Notes and Time. 3.50, Programme for Young People. 4.30, Concert by the Station Quintet. 5.50, Talk on Albert Dürer. 6.10, Political Talk. 6.20, English Lesson. 6.45, Weather, Time, Economic Notes, and Sports Notes. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Talk by Kurt G. Sell; What People are talking about in America, relayed from New York. 8.15, A Summer Dance—Musical and Humorous Programme. The Large and Small Station Orchestras, Soloists, a Peasant Orchestra, a Mandoline Society, and a Wind Instrument Orchestra. 9.30, See Berlin (Witzleben). 10.5, Announcements, Educational Notes, and Sports Notes. 10.25, Wireless Notes. 10.35, A Summer Dance (cont.). 11.30 (approx.), Close Down.

LAUSANNE. See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Orchestral Concert, conducted by Rudolf Willi Steinbach; Overture, Die vier Menschenalter (Lachner); Eleven Viennese Dances (Beethoven); Selection from Preciosa (Weber); May and June from The Seasons (Tchaikovsky); Selection from Il Trovatore (Verdi); Dance from The Winter's Tale (Humperdinck); Siziiletta (von Bion); Liebesserenade (von Bion); Waltz from Les Cloches de Corneville (Planquette); Selection from Der Vagabund (Zeller); Overture, Der Wahrheitsmund (Platzbocker). In the interval at 1.0 p.m., News. After the Concert, News. 2.10, Poetry Reading (Friedrich Kuhn and Alfred Brenscheidt). 2.30, Gramophone Music. 3.0, Interval. 3.15, Talk for the Country Woman. 3.35, Economic Notes. 4.0, Concert by the Station Orchestra, conducted by Hilmar Weber; Soloist: Anton Rohden (Pianoforte); Tafelmusik in B Flat (Telemann); Pianoforte Concerto in D (Haydn); Ballet Music from Paris and Helena (Glück); Overture, Fidelio (Beethoven); Selection from Fudine (Lortzing); Waltz, Op. 25 (Fuchs); Selection from Die Folkinger (Kretschmer). In the interval at 5.0, Reading. 5.50, Economic Notes, Weather, and Time. 6.0, Reading (Alfred Hein), with Commentary. 6.40, Review of Wireless Periodicals. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Talk by Kurt G. Sell; What People are talking about in America, relayed from America. 8.15, Songs and Stories from the Erz Gebirge. 9.15, News. 9.25, Mass in E Minor, Op. 87 (von Herzogenberg), by Soloists, the Dresden Chamber Orchestra, conducted by Richard Fricke, and the Rühmchild Choir. 10.40, News. 11.0, Third Act of the Mastersingers—Opera (Wagner). 12 Midnight, Close Down.

LINZ. See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. Dute Programme.—7.0 p.m., Gramophone Music. 7.40 Weather. 7.45, Gramophone Concert; Suite from Alcina (Handel); Le Ronet d'Orphée (Saint-Saëns); Prelude to Lohengrin (Wagner); Overture, The Flying Dutchman (Wagner). 8.30, Talk in Dutch. 8.40, Gramophone Music. 8.50, News in French. 9.15, Gramophone Music. 9.45, News in German. 9.55, Dance Music and Variety Music on Gramophone Records. In the intervals, News and Exchange.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.0 p.m., Concert of Opera Music; Selection from Lakmé (Delibes); Aria from Raouf (Massenet); Aria from La Bohème (Puccini); Selection from Romeo and Juliet (Gounod). 7.15, Musical Programme. 7.30, Radio Gazette for Lyons and the South-East. 8.30, Music Hall Programme; News after the Programme.

MADRID

ARANJUEZ, EAQ, 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Spanish Music. 11.45, Radio Chronicle. 12 Midnight, Selection from The Dollar Princess (Fall). 12.35 a.m. (Saturday), Answers to Correspondence. 12.30, Spanish-South American Talk. 12.45, Light Music. 1.0 (approx.), Close Down.

MADRID

UNION RADIO (EAJ7), 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, Science Talk, and Request Gramophone Records. 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal, and Political Review. 11.15 (approx.), Symphony Concert on Gramophone Records; Carnival Overture (Dvorák); Ballet Suite (Rameau); Rhapsody No. 2 (Liszt); First Symphony (Beethoven); Suite from The Fire-Bird (Stravinsky). 12.4 a.m. (Saturday), News, Programme Announcements for Listeners Abroad, and Dance Music. 1.30, Chimes and Close Down.

MALMO. See Stockholm.

MILAN. See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by V. Musil. 3.55, See Prague. 5.45, Tenek Bar recites his own Poems. 5.55, Gramophone Music. 6.5, Talk on English Literature. 6.15, See Prague. 7.10, See Bratislava. 7.25, See Prague. 10.30 (approx.), Close Down.

MOTALA. See Stockholm.

MUHLACKER. See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert by the Palatinate Orchestra, relayed from Bad Reichenhall; Conductor, Florenz Werner. In an interval, Talk on Gold Refining. 5.45, Talk: How to Use the Telephone. 6.5, Talk: The Dignity of the National Culture. 6.35, Songs on Gramophone Records; Heinrich Schunsius; Minnelied (Brahms); Galli-Curei; The Nightingale (Albanys); Marcel Wittrich; O Mädchen, mein Mädchen, from Friederich (Lohé). 6.45, Time, Weather and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Talk: What people are talking about in America, relayed from America. 8.20, Flamme eno—Mitsummer Programme by the Station Choir, conducted by Eduard Zengeler. 8.50, Topical Talk. 9.10, Concert of the State Academy of Music, relayed from the Odor; The Schmid-Linder Chamber Orchestra; and Soloists; Conductor, August Schmid-Linder; Concerto grosso in F for Strings (Handel); The Brandenburg Concerto, No. 5, in G, for Harpsichord, Flute, Violin and string Orchestra (Bach). 9.55, Topical Report. 10.20, Time and News.

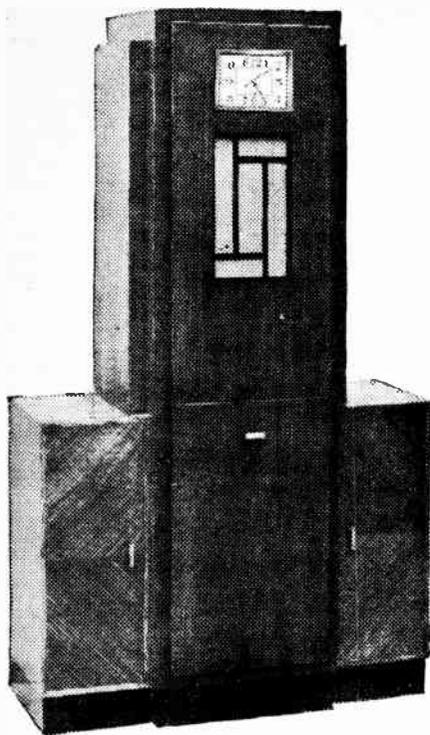
NAPLES. See Rome.

NOTODDEN. See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Concert by the Station Orchestra, conducted by Hugo Kramm; March of the Boyars (Halvorsen); Overture, A Midsummer Night's Dream (Mendelssohn); Swedish Rhapsody, Midtsommarvaka (Alfvén); Idyll for Strings, St. John's Eve (Holter); Melody (Paulsen); Piece (Andersen-Wingar); Old Waltz (Mourad-Johansen); Abend im Hochgebirge (Grieg); Waltz, Soir d'été (Waldteufel); Old Dances (Crsin). 6.30, Literary Talk. 7.0, Advertising Notes. 7.15, Weather and News. 7.30, Talk. 8.0, Time. 8.1, Programme to be announced. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Variety Programme; Midsummer. 10.45, Dance Music by the Station Dance Orchestra.

OSTERSUND. See Stockholm.



The C.A.C. GRANDFATHER CLOCK RADIO-GRAM CABINET.

This handsome and original piece of furniture represents the very last word in Radio-Gramophone Cabinet design. Intended to house an electric clock movement, it has provision for fitting, if desired, a pair of dual compensated Loud Speakers. Ample provision is given below the Speaker Grille to accommodate almost any type of Receiver, whilst the electric Gramophone Motor and Pick-up fit into the sliding drawer below. The two side compartments allow for the storage of a very large number of records.

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SEND US A SKETCH of what you consider to be the most useful design of Cabinet for a Radio set or a Radio-gram, or both.

DESIGN AND UTILITY are the two points upon which the judges will base their decisions.

ABILITY TO DRAW does not matter so long as your sketch is clear and conveys your idea.

NO LIMIT to the number of individual entries. No entrance fee.

ONLY ONE PRIZE will be awarded to each entrant.

In the event of two readers submitting a similar design of Cabinet adjudged to be a winner, each will be awarded a prize.

The decision of the Managing Director is final, and no correspondence in connection with the competition will be entertained.

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Cabinet with metal-lined baseboard **32/6**

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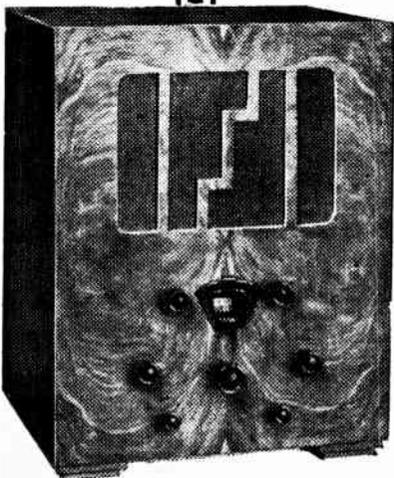
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RECEIVERS FOR SALE.

19/6!!! 3-valve battery set, in oak cabinet, perfect order; caller preferred.

69/6!!! 3-valve A.C. set (2-W. output), Magnavox speaker, solid oak cabinet, chassis built, perfect.

59/6!!! 4-valve A.C. S.G. receiver (faulty hand-passing only), best material (Polar, Lewcos, etc.), chassis built.

FERRANTI 7-valve A.C. 1933 Superhet, perfect selectivity and quality, used 3 months without any trouble; demonstration any time (listed 22 guineas); 12½ guineas.

R. A. ARNELL, 8, Fishponds Rd., S.W.17. Phone: Streatham 8209. Moving to Bromley on July 1st. [2861]

BETTER Part Exchange at Appleby's, 109, Edgware Rd., Hyde Park, London, W. [2650]

OSRAM M.M. IV, S.P. output, cost £10/10 six months ago, perfect; £6.—Thornley, 21, Venice St., Bolton. [2842]

R.G.D. 701 Radiogram, little used; heard evenings.—Murgatroyd, "Riddlesden," Elm Av., Crosby, Liverpool. [2865]

PHILIPS Radioplayer, A.C., new valves; gift to first reasonable offer.—Pawley, 6, Ovington Terrace, Cardiff. [2859]

PHILIPS 3-valve D.C. Receiver, complete, with loud speaker, perfect order; £5. Bex, 20, Victoria Gardens, W.11. [2848]

McMICHAEL Short Wave Superhet, as received from makers; £7/10.—Teleradio Service, 214, Kensington, Liverpool. [2345]

"WIRELESS World" All Mains A.C. Three, requires attention; sell 30.—Reply post, Hiscock, 3, Elthorne Mansions, N.19. [2865]

MORE Part Exchange Receiver Bargains for Disposal; state approximate requirements for quotation.—Coutts, Wireless Engineers, Horley. [2613]

PHILIPS Model 630A Super Inductance Five; cost 23 guineas, accept £12, or near offer; heard evenings.—Jasper, 3, Eaton Rise, Ealing, W.5. [2840]

PHILIPS Superinductance Five Type 630A, unused, guaranteed as new, £12; Philips Portable Four, shop soiled only, £4/10.—Amalgamated Services, 161, Wardour St., W.1. [2856]

CLIMAX All-electric 200-250 A.C. Band Pass Three, in walnut cabinet, complete with valves and moving coil speaker; listed £16/16, unopened, £9/8, c.o.d., carriage paid.

OSTER-GANZ Combined A.C./D.C. All-electric Set, 3 valves and Magnavox moving coil speaker, in walnut cabinet; listed £11/11, our price £4/19/6, c.o.d., carriage paid—Kay, 167, City Rd., Finsbury, E.C.1. [2835]

BROWN Public Address Amplifiers, complete with all batteries, valves, M-I. converter, and microphone, contained in teak carrying case; listed at £95, price £15.—Spratleys, Hayes. [2855]

CELESTION A.C. Automatic Gramophone, Walnut Junior, complete, less amplifier, £12; Whiteley Super Six A.C. chassis, new, 55.—less valves and speaker.—32, Bassett Gardens, Osterley. [2898]

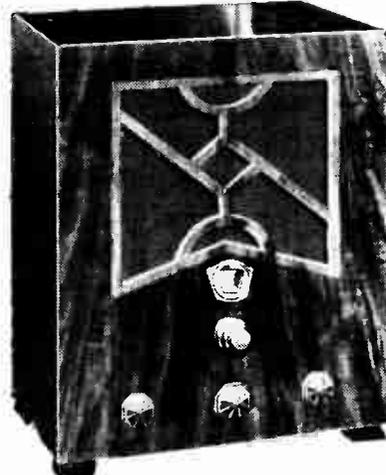
POWER Amplifier, 100-watt, complete with 4 P.P.5/400, 1 M.H.4, 2 G.U.1 valves, 2 pick-ups and twin turntables and faders, 4 Magnavox Magna speakers, heard any time; £45, or offer, worth £150.—Phone: Fulham 3964. [2884]

RADIO Bargains.—Majestic Knightswood, brand new, 13 guineas; Climax radio gram., cost 22 guineas, accept 11 guineas; Ultra 4-valve, 2 S.G., det. pentode, moving coil Console, 14 guineas.—Warren, 139, Kettering Rd., Northampton. [2853]

REGENTONE 4-valve A.C. Sets, in walnut cabinets, 2 S.G.s, etc., Westinghouse rectifier, dual wave, as new, £4/19/6, carriage paid; Radio Recordian 3-valve A.C. set, Rola M.C., S.G., D.E.T., Pen., new, 1 only, £6, carriage paid.—Mains Radio Development Co., 4-6, Muswell Hill Rd., London, N.6. [2858]

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CLASS "B" FERROCART PETO-SCOTT CABINET



THE perfect cabinet for "Wireless World's" latest triumph. Its neat design and beautiful finish will make your set equal in every way to the best commercial receivers to-day. In beautifully figured Walnut with front accurately drilled to take the "Class B" Ferrocart. Size, 19" high x 15" wide x 12" deep. Shelf and Baffle Board 3/6, and Carriage 2/9 extra.

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DELIVERY PER RETURN GUARANTEED. Finished instrument as illustrated above. Ready assembled with Valves, Cabinet and Speaker exact to Designer's Specification and Broadcast Tested. **£14-7-6.** Your old set taken in **PART EXCHANGE.**

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If you want to see the **CLASS "B" FERROCART** before you buy—hear it demonstrated without obligation by:

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77, CITY ROAD, LONDON, E.C.1.
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TRADE SUPPLIED—BEST DISCOUNTS.

CHARGERS AND ELIMINATORS.

500 Only. Tantalum trickle chargers, complete in case.

PLUG Into Your Mains and Attach Your Accumulator, all guaranteed, 7/6, postage 6d., cash with order with Westinghouse metal rectifier, 2.6 volts ½ amp 11/3, postage 9d.—Melbain and Co., 154, Hainault Rd. Romford. [2885]

N.P. Have a Few Soiled Battery Chargers at Bargain Prices; stamp.

N.P.—75 volts 6 amps, 3-circuit valve charger, unused. Ammeters 0-1, 0-2, 0-4; will charge over 100 cells in series at once, 250 cells in parallel; bargain, £13; c.o.d., guaranteed 12 months; photograph.

N.P. Super model chargers now available; 75/- to £40; trade list; stamp.

N.P.—Battery station chargers, using Westinghouse or valve rectification; trade list lowest on market; cash or terms.

N.P. Specialise Only Chargers and Eliminators.—Send for Two, 1 to 36 2v. cells at once, variable resistance, ammeter, etc.; 105/-—Nash Products, Ltd., Stechford, Birmingham, 9. [2835]

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12 MONTHS' Guarantee, absolute reliability (we supply talkie equipment); regulation guaranteed within 2% all models except supers, which are 2½%. you cannot buy more reliable or better looking transformers, not a pressed shrouding, but a substantial casting free from hum. Fitted with detachable test for mounting in any position.

VORTEXION—Specified for A.C. quality amplifier, 400 volts 110 m.a., 4v. 3, C.T., 4v. 2, 4v. 1, C.T., terminals, 24/-; tagged leads, 20/-; shrouded, 24/-.

VORTEXION—Ferrocart III, 350-0-350, 60 m.a., 4v. 2.5, C.T., 4v. 3.5, C.T.; open type 13/6, shrouded 16/-; post 9d.

VORTEXION—250-0-250, 4v. 1 to 2a., 4v. 2 to 4a.; open type 10/6, shrouded 12/6; post 9d.

VORTEXION—Super model for H.T. 8 or 9 or 10, 4v. 1 to 2, 4v. 2 to 4; open type 14/6, shrouded 16/-; post 1/-.

VORTEXION—2½-watt Monodial A.V.C. model; open type 14/6, shrouded 16/6; post 1/-.

VORTEXION—5-watt Monodial A.V.C. model, 400-0-400, 120 m.a., 4v. 6a., 4v. 3½a., 4v. 2, 4v. 1a., super screened; 20/-, shrouded 24/-.

VORTEXION—350-0-350, 120 m.a., 4v. 2 to 5a., 4v. 2 to 4a., 4v. 2.5a.; open type 14/6, shrouded 16/6.

VORTEXION—400 or 450 or 500, 120 m.a., 4v. 2 to 5, 4v. 2 to 5, 4v. 2 to 5; open type, 19/-, shrouded 23/-.

VORTEXION—400 or 450 or 500, 150 m.a., 4v. 2, 4v. 2.5, 4v. 2, 4v. 2, 4v. 2, core size 2½ in. x 1½ in. a super job, 2% regulation; 35/-, shrouded, with terminals, less terminals, 30/-; open type 26/-; post 1/3.

VORTEXION Auto Transformers to B.F.S.A. Specification, 100, 110, or 120v. to 200, 220 or 240 volts, 60 watts, 7/5, post 9d.; 120 watts, shrouded, 12/6, open type 10/6, post 1/-; 200 watts, open 14/6, shrouded 16/6, post 1/-; 500 watts 30/-, 2,000 watts 44/10.

VORTEXION 600 watt Transformers, £4/10, carriage free.

VORTEXION 30h. at 60 m.a. Chokes 5/6, 40h. at 60 m.a., 8/6, 50h. at 150 m.a., 200 ohms, 10/6 open type, 12/6 shrouded.

VORTEXION 200v. 30 m.a. Eliminators, 110 or 120 input with 4v. 3a. winding, 37/6.

VORTEXION—Transformers made to your specification.

VORTEXION (S. A. Brown), 182, The Broadway, Wimbledon. Tel.: Liberty 2814. [2894]

TANTALUM for A.C. Chargers, H.T. and L.T.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [2839]

180 Accumulator Chargers, ½ amp, 2-6v., in anti-rust metal case with mains flex (Westinghouse rectifiers); 7 days' trial; 10/8.—Arden Agency, Wollaton, Wellingborough. [2757]

DEMON Moves to Bromley July 1st, so is clearing stock. Selection as follows: Eliminator, chassis built, best material, input 200-250 A.C., output 350v. 60 m.a. and 4v. 4a., guaranteed 2 years; 39/6.

LOTUS Transformer, 200-250v., 250/250, 60 m.a., 4v. 2a., 4v. 4a., 9/6; 350/350, 60 m.a., 4v. 2a., 4v. 3a., 10/6 (suitable Ferrocart 3).

350—120 m.a., 4v. 4a., 4v. 2½a., 4v. 2a., all £10. 11/9; Savage Massico 350/350, 80 m.a., 4v. 5a., 4v. 3a., 4v. 1a., 14/6; transformer and Westinghouse rectifier, output 4v. 5a. and 250v. 60 m.a., 22/6 pair.

KIT Parts for Mains Unit, including Westinghouse rectifier, output 120v. 15 m.a., 22/6, including smoothing.

SAVAGE Choke, 25h. 60 m.a., 7/6; 25h. 120 m.a., 9/6 (260 ohms); output transformers, for P.X.4s, in push-pull, secondary 1.6 ohm, for Magnavox or Rola, weights 4lb., 9/6; heavier model, 11/6.

OUTPUT Transformers, taken off Magnavox and Rola speakers, match any valve (see 1.6 ohm); 5/- each.—Denon Radio, 8, Fishponds Rd., S.W.17. See Receiver. [2863]

A.C. or D.C. Chargers for 2 to 200 Cells at Low Prices; state requirements; dynamo and rotaries in stock, all sizes; Brown's Genometer, battery supercharger, for H.T. for 2v. or 6v. input, 37/6 and 52/6; television and sewing machine universal motors, 25/-; lists.—Electradix Radios, 218, Upper Thames St., E.C.4. [2398]

Chargers and Eliminators.—Contd.

HOYNE'S Transformers and Chokes the Best Obtainable, perfect insulation, regulation and reliability, used exclusively by discriminating set manufacturers, all fitted with tapped and screened primaries, filaments all centre tapped, stout cast aluminium clamps fitted to all models, also clearly marked terminal strips.

HOYNE'S Components are Guaranteed for One Year. **HOYNE'S** Transformers Built to Your Specifications, at very competitive prices. **HOYNE'S** Supply the Trade.

HOYNE'S—250-0-250v. 60 m.a., 4v. 1-2a., 4v. 2-4a.; 10/-, post 9d.

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HOYNE'S—350-0-350v. 60-70 m.a., 4v. 2-3a., 4v. 3-4a., 12/6, post 1/-.

HOYNE'S—350-0-350v. 70-80 m.a., 4v. 2-3a., 4v. 3-4a., 4v. 1-2a.; 13/6, post 1/-.

HOYNE'S—350-0-350v. 120 m.a., 4v. 2-3a., 4v. 4-6a., 4v. 1-2a.; 16/-, post 1/3.

HOYNE'S—500-0-500v. 140 m.a., 4v. 2-4a., 4v. 4-6a., 4v. 2a., 4v. 2a.; 27/6, carriage 1/6, weight 12lb.

HOYNE'S—0-110-135v. 90 m.a., 4v. 2-4a., suitable for H.T.6 or 7; 10/-, post 9d.

HOYNE'S—200v. 200 m.a., 4v. 2-4a., 4v. 1-2a., suitable for H.T.8; 13/6, post 1/-.

HOYNE'S—0-200-240v. 200 m.a., 4v. 2-4a., 4v. 1-2a., suitable for H.T.8 or 9; 14/6, post 1/3.

HOYNE'S—Line transformers and chokes always in stock; we can also supply all components.

M. J. HOYNE, Offices and Works, 8a, Gladstone Rd., Wimbledon, S.W.19. Tel.: Liberty 3303. (Open every day, including Wednesday and Saturday, till 7 p.m.) [2771]

CABINETS.

RADIO-GRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon. [1686]

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SUPER 60 and Band Pass Coils; 30/-.—Hinton, 25, Winifred St., Swindon. [2841]

FERROCART Coils, 27/6 set three.—Bigdod, 7, Cranbourne Rd., Chorlton-cum-Hardy, Manchester. [2893]

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DYNAMOS, ball bearing suitable charging, lighting, guaranteed, 12-volt 10-amp. C.A.V., 12/6; 6-volt 12-amp. C.A.V., 10/6; many others in stock; 12-volt cut-outs, 1/6, post 6d.—R. Wickham, 18a, Hercules Rd., Lambeth, S.E.1. [2880]

LOUD-SPEAKERS.

BAKER Super Power, 100v. field, high resistance; £4/10.—Ritson, Stromness, Orkney. [2850]

B.T.H. R.K. Moving Coil Speakers, guaranteed new, unused, manufacturers' surplus, original price

6 Guineas, highly sensitive and wonderful tone response, will handle up to 10 watts output, available for 6v., 100v., 200v., 30/-; also A.C. models,

£2/10; carriage paid, c.o.d., or cash with order; the best value in speakers obtainable to-day.—Seekamp, 46, Farringdon St., London, E.C.4. [1425]

R. AND A. Challenger M.C. Loud Speaker, as new; 18.-.—Write C. Capper, 234, Whalebone Lane, Chadwell Heath, Essex. [2843]

MILGATE Moving Coil Speaker, 200/250 volt D.C., brand new surplus, including transformer; 17/6.—G. Illingworth, Shipley Glen, Bradford. [2890]

30/-—B.T.H. R.K. moving coil speakers, 6in. cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; suitable for public address work; weight 30 lb., and are vastly superior to cheap speakers now on the market, 100 volts, 150 volts, and 200 volts D.C.

27/6—6v. D.C. speaker, as above; £2/7/6, speaker as above for 100-250 A.C.

SIMPSON'S Electric Turntables, 25/-; carriage paid; cash with order, or c.o.d.

B.T.H. Brand New Public Address Amplifiers, 4-stage, including microphone stage, 2 types, 12 watts and 6 watts outputs, 12-watt type has 2 P.P.5/400s in output, 6-watt type has 2 P.P.3/425s in output, 12 watt type price £15, 6-watt type £12/10; B.T.H. cinema type pickups, brand new, 17/6.—Ward, 12, Tredegar Rd., Bow, E.3. [2793]

MAGNAVOX Super Speaker, in solid walnut corner cabinet, with mains transformer, Westinghouse rectifier, smoothing, and tapped output transformer weighing 6lb., extension suitable for R.G.D. radiogram or similar, will handle 10W. undistorted (material worth about 12 quid); £4/19/6 only; demonstration.—8, Fishponds Rd., S.W.17. [2862]

PUBLIC Address Western Electric Speakers, 42in. horn, straight, with power base, 90/-; bases only, 45/-; similar type base, 35/-; R.K. moving coils, 6 volt, 30/-; motor generator, 400 volt 50, 3-phase motor, coupled 100 volt 5 amp. D.C. generator, channel bedplate, field regulator, switchboard with volt and amp. meters, switches, fuses, £9; 100 Exide, 10 volt 5,000 m.a., charged, 3/3; Brown D headphones, 8/-; all new condition, guaranteed electrically, mechanically.—British Radio, 9, South Castle St., Liverpool. [2844]

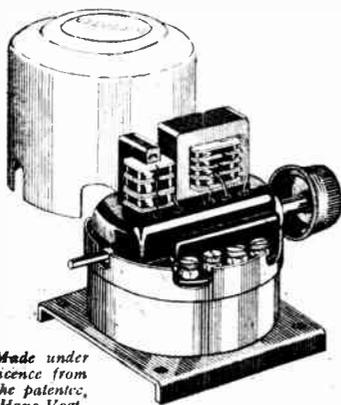
LAST Batch Set Manufacturer's Surplus M.C. Speakers, positively no more at this price.—Ultra 95 P.M. (really hefty jobs), with Power-pentode transformer, list £4/15, at 47/6; B.T.H. (A.C.) Seniors, list £7/15, £4/5 (3 only); Rola's F.6 90-130 volts (2,500 ohms), 110-175 volts (2,000 ohms), 200-250 (6,500 ohms), all listed 35/-, at 18/-; state if power or pentode transformer; F.7, voltages as above, listed 47/6, at 25/-; permanent magnets, F.6 P.M., list 49/6, at 28/-; F.7 P.M., listed at £3 at 33/-; Lamplugh Silver Ghost M.C. (2,200 ohms), listed 34/-, at 14/9, with transformer; all carriage paid, cash with order or c.o.d.—Chal-Electric, No. 6, Conduit St., London, W.1. [2874]

VALVES.

1/3 Each, several 6-volters; clearing other valves.—8, Fishponds Rd., S.W.17. (See Eliminators.) Pileo 42/- De Luxe meter; 18/6. [2864]

COLVERN FERROCART COILS

A DEFINITE advance in the design of radio frequency coils . . . large diameter coils now unnecessary . . . greater selectivity . . . and higher efficiency attained with the compact Ferrocart Coils.



Made under licence from the patentee, Hans Vogt.

Increased sales . . . increased production facilities . . . mean reduced costs.

Prices of Ferrocart Coils NOW REDUCED

Types F1, F2, F3, ganged on sub base with wave-change switches,

NOW 37/6 per set.

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London Wholesale Depot, 150, King's Cross Rd., W.C.1

Valves.—Contd.

THE Following Valves are Guaranteed as New, and any valve differing from the makers' characteristics will be exchanged, all latest types.

A.C./Pens., P.T.4s, G.U.1s, A.C.S.G./V.M.s, Pen.4V.s, P.T.625s, V.M.S.4s, D.C.2/Pens., D.P.T.s, M.P.T.4s, V.M.4V.s, A.C.S.1/V.M.s, P.M.24Bs, D.C.28.G./V.M.s, 11/-; M.S.4s, M.S.4Bs, A.C.S.G.s, S4V.A.s, S4V.B.s, M.S.G./L.A.s, D.S.B.s, A.C.S./2s, P.X.4s, D.C.28.G.s, 9/6; U14s, 10/-.

M.L.4s, A.C./P.s, 41M.P.s, P.M.24s, 8/-; A.C./H.L.s, M.164Vs, 354Vs, A.C.2/H.L.s, 41M.H.L.s, U10s, U.U.60/250s, M.H.4s, M.H.L.4s, 7/6; V.S.2s, 215S.G.s, 220S.G.s, P.M.12s, P.M.12As, 9/-; 442 R.U.s, D.V.3s, 8/6.

ALL Types of Brand New American Valves in Stock, first class makes: 247s, 235s, 224s, 236s, 237s, 233s, 244s, 12/-; 227s, 226s, 280s, 245s, 9/6; 242s, 232s, 11/-; U.X.210s, 15/-.

U.X.250s, 7 watts output, 16/-; 281s, 14/6; for quickest delivery send telegraph money order.

OVER 4,000 Valves Always in Stock for Immediate Delivery; carriage paid, cash with order or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. [2794]

AND Another Large Purchase of Set Manufacturers' Stock, guaranteed as new, and any valve differing from the makers' characteristics will be exchanged free; all latest types.

H.L.210s, H210s, L210s, 210H.L.s, 210H.F.s, P.M.1H.F.s, 3/9; P.M.2s, P.M.2As, L.P.2s, 220Ps, 215Ps, 4/9; D.H.s, 41M.H.L.s, M.H.4s, A.C./H.L.s, A.C.2H.L.s, 354Vs, D.C./3H.L.s, 1821s, 7/-; M.L.4s, A.C. Ps, 164Vs, 104Vs, P.M.24s, 442B.U.s, 1807s, 7/6; S4V.B.s, S4V.s, M.S.4Bs, M.S.4G.s, A.C./S.G.s, A.C./S.2, 41M.S.G.s, D.S.B.s, 215S.G.s, P.M.12s, P.M.12As, 9/-; Pen.4Vs, V.M.S.4s, A.M.4Vs, P.T.41s, P.T.41Bs, D.P.T.s, A.C./Pens., 11/-; 620Ts, 680Ps, 10/-.

OVER 4,500 Valves Always in Stock for Immediate despatch; carriage paid for cash or c.o.d.; prompt delivery.

NEWMAN, 309, Roman Rd., E.3. [2892]

SPECIAL Purchase.—Set manufacturer's surplus, as new, A.C./S.G./V.M.s, metallised, 8/11; also S.4V.B.s, 8/4; 904v., 7/-; P.M.24s, 4/11; S.215s, 7/6; M.S.4B.s, 6/5; D.S.B., 5/6; D.S., 5/3; P.T.4, 8/-; M.S.4s, 5/3.—Mains Radio Development Co., 4-6, Muswell Hill Rd., London, N.6. [2859]

COMPONENTS, ETC., FOR SALE.

PREMIER.

PREMIER SUPPLY STORES Offer the following Set Manufacturers' Surplus Brand New Goods at a Fraction of the original cost; all goods guaranteed perfect carriage paid over 5/-, under 5/-, postage 6d. extra. (Ireland carriage forward.)

CELESTION Auditorium Loud Speakers, 24in. diaphragm; 55/-.

PYE 3-valve Battery Set, with valves; 30/-.

KOLSTER BRANDES 1933 All-electric 3-valve Set, with M.C. L.S.; list price, £6/6.

KOLSTER BRANDES 1933 All-electric 2-valve Set, with L.S.; list price £7/10, £4/19/6.

KOLSTER BRANDES 1933 2-valve Battery Set, with L.S.; list price £4, 10, 59/6.

KOLSTER BRANDES 1933 All-electric 6-valve Superhet, long, medium and ultra short waves, moving coil L.S.; list price £24/17/6, to clear £17/17.

H.M.V. Volume Controls for Remote Control; 2/- each.

WESTERN ELECTRIC Mains Transformers, input 200-250 volt, output 500-0-500 volt, at 150 milliamps., 4v. 4a., 4v. 2.5a., 4v. 2a., 4v. 1a., 4v. 1a., massive job; 19/6.

ELLIOTT First Grade Moving Coil Milliammeters, projecting type, 0-10 m.a., 0-30 m.a., 0-50 m.a., 0-100 m.a., 0-150 m.a., 2 1/2in. diameter, 15/- each; flush type, 0-100 m.a., 0-150 m.a., 3/4in. diameter, 17/6 each.

HARLE Pick-up with Arm and Volume Control (27/6 model); 12/6 each.

T.C.C. Electrolytic Condensers, 10 mfd., 100 volts working, 1/-; 15 mfd., 1/3.

SPECIAL Offer of Mains Transformers, manufactured by Philips, input 100-115v. or 200-250v., output 180-0-180 volts, 40 m.a., 4v. 1a. and 4v. 3a., 4/6.

ALL Premier Guaranteed Mains Transformers have engraved terminal strips with terminal connections, input 200-250 volts, 40-100 cycles, all windings paper interleaved.

PREMIER H.T.8 Transformer, 250v. 60 m.a. rectified, with 4v. 3.5a. c.t. L.T. and screened primary 15/-; with Westinghouse rectifier, 25/-.

PREMIER H.T.9 Transformer, 300v. 60 m.a. rectified, with 4v. 3.5a. c.t. L.T. and screened primary, 15/-; with Westinghouse rectifier, 26/-.

PREMIER H.T.10 Transformer, 200v. 100 m.a. rectified, with 4v. 3.5a. c.t. L.T. and screened primary, 15/-; with Westinghouse rectifier, 26/-.

PREMIER Mains Transformers, output 135v. 80 m.a., for voltage doubling, 8/6; 4v. 3-4a. c.t. L.T., 2/- extra; Westinghouse rectifier for above, giving 180v. 30 m.a., 8/6.

PREMIER Mains Transformers, output 250-0-250 volts, 60 m.a., 4v. 1-2a., 4v. 2-3a., 4v. 3-4a. (all c.t.), with screened primary, 15/-.

PREMIER Mains Transformers, output 350-0-350 volts 90 m.a., 4v. 3-5a., 4v. 2-3a. (both c.t.), with screened primary, 15/-.

PREMIER Mains Transformers, output 400-0-400 volts 100 m.a., 4v. 4-5a., 4v. 2-3a. (both c.t.), with screened primary, 15/-.

PREMIER Auto Transformers, 100-110/200-250 volts or vice versa, 60-watt, 7/9; 100-watt, 10/-.

SPECIAL Offer of Manufacturers' Type Transformers, any input, output 250-0-250 volts, 60 m.a., 4v. 1a., 4v. 3a. (both c.t.), 8/6; H.T.8 transformer, with 4v. 3-4a. (c.t.), 8/6; with rectifier, 18/6.

(This advertisement continued on next page.)

Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)

AMPLION Mains Transformers, input 100-250 volts, output 350-0-350 volts, 120 m.a., 4v. 5a., 4v. 2a., 6v. 1a. (all c.t.), 17/6.

PREMIER Chokes, 40 m.a., 25hys., 4/-; 65 m.a., 30 hys., 6/-; 150 m.a., 30 hys., 10/6.

PYE Chokes, 20 or 32 hys., 4/-; Premier multi-ratio output transformers, 6 taps giving 15 different ratios, 7/6.

PREMIER Eliminators, input 200-250 volts, 40-100 cycles, A.C. incorporating Westinghouse metal rectifiers, output 250v. 60 m.a., S.G. and 120v. taps, 42/6; with 4v. 4a. c.t. L.T., 7/6 extra.

PREMIER Eliminators, output 150v. at 30 m.a., S.G., and 100v. taps, with 4v. 3-4a. c.t. L.T., 37/6; or with trickle charger, 42/6.

PREMIER Eliminators, output 120v. at 20 m.a., S.G. and 100v. taps, 27/6; with L.T. trickle charger incorporated, 35/-.

PREMIER D.C. Eliminators, output 120v. at 20 m.a., S.G. and 100v. taps; 15/-.

ACCUMULATOR Chargers, 200-250 volts A.C. all incorporating Westinghouse metal rectifiers; 2, 4, and 6v. at 1/2 amp., 17/6; 2, 4, and 6v. at 1 amp., 22/6; 12v. 1a. 27/6; 6v. 2a., 35/-; 12v. 2a., 35/-; 12v. 1.5a., 30/-; 6v. 3a., 39/6; 12v. 3a., 52/6; 3 separate 12v. 1a. circuits, 75/-.

AMPLION High Inductance Chokes, resistance 2,500 ohms, 80 hys., 60 m.a., 5/6.

WESTINGHOUSE Metal Rectifiers, 120v. at 20 m.a., 6/6; 180v. at 30 m.a., 8/6; 250v. at 60 m.a., 10/-; 300v. at 60 m.a., 11/-; 200v. at 100 m.a., 11/-; 8v. at 1/2 amp., 6/6; 6v. at 1 amp., 9/6; 12v. at 1a., 12/6; 6v. at 2a., 20/-.

KOLSTER BRANDES Electric Gramophone Motors, complete with turntables and automatic stop, 100-250v. A.C. and D.C.; list price £5, to clear £2.

B.T.H. Induction Type (A.C. only) Electric Gramophone Motors, 100-250v.; 30/- complete.

ROLA Type F6 Moving Coil Speakers, 2,000 or 6,500 ohms, with power or pentode output transformers, 17/6; A.C. conversion kit for this speaker, 10/- extra.

AMPLION Moving Coil Speakers, type E.M.644, dual fields, 2,500 and 5,000 ohms (100 and 200v.), with output transformer, 12/6; A.C. conversion kit for this speaker, 10/- extra.

WESTERN ELECTRIC Condensers, 250v. working, 1 mfd. 6d., 2 mfd. 1/-; 500v. working, 1 mfd., 1/-; 400v. working, 3 separate 4 mfd. condensers, 8/6.

T.C.C. Condensers, 750v. working, 2 mfd. 4/-, 4 mfd. 6/-; 400v. D.C. working (300v. A.C. working), 4 mfd., 4/-.

T.C.C. Condensers, 250v. working, 4x4x1 mfd., 5/-; 300v. working, 4x4x2x2 mfd., 7/-; 300v. working, 4x4x2x1 mfd., 6/-.

SPECIAL Offer of Wire Wound Resistances—4 watts, any value up to 10,000 ohms, 1/-; 8 watts, any value up to 15,000 ohms, 1/6; 15 watts, any value up to 50,000 ohms, 2/-; 25 watts, any value up to 50,000 ohms, 2/6; 50 watts, any value up to 50,000 ohms, 3/6.

WIRE Wound Potentiometers, 15,000 ohms, 1/6; Centralab Potentiometer volume controls, 50,000 ohms, 2/-; wire wound Climatostat Potentiometer, 50,000 ohms, 2/6; Colverstat, logarithmically wound Potentiometers, 6,000 ohms, 1/9.

HEAVY Duty Variable Resistances, slider type, wound on porcelain, 2,000 ohms quarter-amp. and 500 ohms half-amp.; 5/- each.

FOR Callers Only.—The following valves, guaranteed as new: P.T.625, M.P., P.E.N., D.C.S.G., V.D.S., V.M.S., S.4V.A., A.C.S.G., A.C.S.G.V.M., V.M.S.G., 41M.S.G., V.M.S.4, M.S.4B, U.5, 904V., M.S.G.L.A., M.S.G.H.A., M.H.L.4, M.H.L.4, M.H.4, F.14, S.4V.B., D.W.3, P.T.4, D.S., D.S.B., M.S.4, 41M.L.F., M.V.S.G., A.C.H.L.; at half list price.

THE Last Few Western Electric 4211-D. Valves, 10v. 3a. filament, 750-1,000v. plate, 50-65 m.a., impedance 3,500 ohms, amplification factor 12; cost £5, to clear at 15/-.

500-VOLT 125-milliamper. Full Wave Rectifying Valves, 4v. 2a. filament; 7/6.

PHILIPS 328 Valves for L.T. Charging, 5/6; 329 Barretter lamps, 2/-.

ALL the Following Lines 6d. each, or 5/- doz. assorted: Shielded S.G. or Pentode leads; 2ft. lengths of screened wire; 5-pin valve holders; Crabtree 5-amp. sunk switches; T.C.C. 0.1 mfd. condensers; 0.5 condensers.

ALL Orders to the Premier Supply Stores, 20-22, High St., Clapham, S.W.4, Maccubly 2188. Closed 1 o'clock Wednesdays, open to 9 o'clock Saturdays. Nearest Station, Clapham North Underground.

PREMIER. [2836]

SURPLUS RADIO Bargains:—

T.C.C. Electrolytic Condensers (aqueous type), 4 mfd., 440 volts working, 3/-; 8 mfd., 3/6, post 4d.

AMPLION Moving Coil Speakers, 100v.-250v., with output transformers, E.M.644; 10/-, post 1/-.

B.T.H. Pick ups, with arm and volume control, 25/- model, 18/-, post 9d.; De Luxe model, 31/-, post 9d.

POLAR 3-gang Condensers, 0.0005, split end vanes, totally screened, disc drive; 7/6, post 9d.

AMERICAN 3-gang 0.0005 Condensers, with trimmers, listed at 35/-, a robust job, 5/-, post 1/-.

BURNDEPT Drum Drive Condensers, left and right hand, 0.0005, 1/3, post 4d.

ORMOND 0.0005 Condensers, all N.P. brass, 1/-, post 4d.; 2-gang semi shielded type, 2/6, post 6d.

FILAMENT Transformers, tapped primaries, 200-240 volts, 4 volts 3-4 amps c.t., 5/-, post 6d.; 4 volts 4-6 amps c.t., 6/-, post 6d.; N.P. terminals and engraved panels.

T.C.C. Conden- or Banks, 375 volts working, 6x4x2x2x2 mfd.; 7/6, post 9d.

ALL Goods Cash with Order or e.c.d.—Radio Stores, 165, Fleet St., E.C. Central 2833. Open till 7 o'clock week-days, 1 o'clock Saturdays. [2885]

ULTRA SHORT WAVE TWO

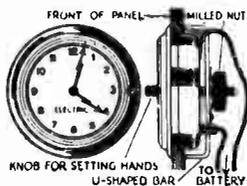
"SCIENTIFIC" COMPONENTS

as specified by the designer

- 1 Quenching Coil - - - 3/6 each (on bakelite former, with brackets)
- 2 H.F. Chokes 5-metre - - - 1/6 each
- 1 Sub-Panel, 2" x 8 1/2" - - - 1/3 each (drilled, with screws)
- 1 Set of 3 Short Wave Coils 8d. set

We can supply all the parts for this interesting S.W. Set.

SCIENTIFIC SUPPLY STORES (Wireless) LTD.,
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Tel.: 110p 4177.



FIT THIS ELECTRIC CLOCK

TO YOUR SET!
NO MAINS NEEDED!
KEEPS CORRECT TIME!
NO WINDING!

Works off small battery lasting 12 months, or can be plugged into G.B. Battery without affecting reception. Uses practically no current. Fits into hole 3 1/2" dia. in any panel up to 1 1/2" thick. Easy to fix—no screws required. Only 1" from front of panel to back of case. Swiss movement. Hands set from front. Nickel plated bezel. Useful addition to any set.

RIVERSIDE MFG. CO., LTD.,
Dept. 20, Crisp Rd., Hammersmith, W.6.
Telephone: Riverside 6392.



COMPLETE WITH BATTERY
POSTAGE 6D

FIRST CLASS REPRODUCTION

AN UNREPEATABLE OPPORTUNITY TO SECURE A REAL B.T.H. R. K. LOUDSPEAKER



R. K. SPEAKER
Originally listed at £6. 6. 0
Now offered for **30/-** A.C. MODELS £2. 10. 0

GUARANTEED NEW AT BARGAIN PRICES

Specification:—6 in. diameter cone Moving Coil Loudspeaker giving full bass response and handling the output from the heaviest power valve. Far superior to many small modern moving coil speakers. Weight 30 lbs. Field winding to suit 6, 100, or 250 volts D.C. Send cash with order or C.O.D.

O. H. SEEKAMP, 46, FARRINGTON ST., E.C.4

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of exclusive modern design, made by craftsmen in highly figured Oak, Walnut or Mahogany, post free.

REMARKABLE VALUES. Cabinets made to order a speciality. *Maker, under license, of the* **HOWE BOX BAFFLE.** Recommended by the B.B.C. Full details on request.

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GRESSALL RESISTANCES

"Cressall" Asbestos-Wire Woven Resistance Nets for voltage absorbing on D.C. Mains Receivers. Mica-Wound Resistance Units. Sliding Resistances. Resistance Wires.

Please write for Lists
GRESSALL MANUFACTURING COMPANY,
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HAVE YOU HAD ?

particulars of the famous "Magnum" Short Wave Adaptor, which is now available for every type of receiver? Full particulars, with a list of short wave stations and free trial order, on request.

BURNE-JONES & CO. LTD.
296, Borough High St., London, S.E.1

Components, etc., for Sale.—Contd.

R.

SELECTED Parts for Sale, as new, any c.o.d. or "Wireless World" deposit system, which we recommend if in doubt as to the splendid value offered; we take risk of damage in transit to customers; goods tested for callers and guaranteed.

RYALL'S Mains Transformers, new goods—250v. 10 m.a., 4v. 1 amp., 4v. 3 amp., 10 g.; ditto super type, with 4v. 3.5 amp., tapped at 150, 150v., 15/6; 35v. 60 m.a., 4v. 2 amp., 4v. 4 amp., 12/9; step up or down transformers, 60 watt 110v. to 250v., tapped, 10/-; H.T. 6 or H.T. 7, with 4v. 4 amp., 10/9; filament, 4v. 3.5 amp., 8/9; H.T. 8, 12/9.

RYALL'S Chokes—20h. 120 m.a. resistance, 260 ohms, 8/9; 40h. at (C.T.) 100 m.a. resistance, 600 ohms, 10/6; 25h. at 60 m.a. resistance, 260 ohms, 6/9; constant inductance chokes: 200h. at 5 m.a., resistance 1,200 ohms, 8/9; 60h. 60 m.a., 2,500 ohms, 12/9.

POLAR Star 3-gang Condensers, 16/6; with drive, 18/6; Radiophone 3-gang condensers, fully screened, with trimmers, Radiopack type, 9/-, post 9d.; Polar Uniknob 2-gangs, with drive, 7/6; Radiophone 4-gangs, 12/6; with cover and drive, 16/6; Radiophone 4-gang superhet. type, screened, with trimmers, Radiopack type, 9/-, post 9d.

T.C.C. Block Condensers, 2.4 mf., 250v. working, 3/6; ditto, 2.4 mf., 2.2 mf., 2-2 mf., 4/-; Ryall's condenser block, 4 mf., 2-2 mf., 400v. working, 8/-; Ryall's S.T. 300-400 coils, 4/- pair, to clear; Lotus new 4-gangs, 17/6.

VALVES, all guaranteed as new, full emission—P.N.4, 10/-; A.C./P.L. 8/6; A.C. H.L., 6/6; M.H.F., 7/6; A.C. S.2, 9/-; S.4V.A., new, 12/-; Mazda N.G.V. 7/-; M.E.T.T., 9/6; S.21, 7/6; A.C. D. 8/-; A.C./P.E.N., 10/6; P.E.N. 220A, 8/6; U.10, 7/-; D.W.3, 8/-; 164v., 7/6. Following callers only: P.625, 5/-.

R.I. Hypercote Chokes, second-hand, 10/6; R.I. 7.1 H choke, 10H at 100 m.a., second-hand, 10/6; Colverton T.G.S.C. coils, 3/-; Burndept needle armature pick-ups, 25/-; Formo 6 mf. blocks, 3/-; Parmeko mains transformers for A3 rectifiers, tapped to 14v., 10/6; Zetax 8-valve superhet. automatic V.C., £9.

RYALL'S RADIO, 33, Chancery Lane, London, W.C.2 (nearest Tube, Chancery Lane; bus 67 passes door, or tram to Savoy St.), Holborn 3529. Open Saturday afternoon. Close 7 p.m., Thursday 1 o'clock, Saturday 6 p.m. [2847]

R.

MAINS Radios, guaranteed set manufacturer's surplus, as new, carriage paid.

CONDENSER Blocks, T.C.C., 4x4 mf., 300v. working, 3/4; 3 mf., 800v. working, 5/-; 4x4x1x0.5, 25v., working, 4/6; 15 mf., 100v., for grid-bias, 1/9; 0.1 mf., 400v., 9d.

HELSBY 2.2x1 mfd., 250v., 1/6; 6 mf., 500v., 5/6; Cossor 4x2 mf., 350v., 2/-.

CLANG Condensers.—Dur Amesco 3-gang, with trimmers, wave-stake drive, 9/11; Radiophone Super-het 4-gang, trimmers, 9/11; Utility 2-gang, complete, drive, etc., 7/11; ditto, trimmers only, 5/4; special 3-gangs, trimmers, shrouded, 7/-; Mains Radio Development Co., 4-6, Mareswell Hill Rd., N.6. [2840]

PEPPER Offers the Following Under Usual Guarantee, carriage paid over £2.

VALVES, as new.—L.S.6A., 12/6; U.U.60 250, P.M. 10, P.M.16, P.M.24, P.M.26, 7/5; A.C. P.1, P.M.20, P.M.24b, P.M.10g, V.M.S.G.220, 8/6; 354V., 10/6; 6/11; A.C.084, A.C.064, A.C.104, P.625a., 5/3; P.m. 10, P.M.5b, D.E.H.610, D.E.L.610, P.614, P.414, etc., 1/11.

CONDENSERS—Lotus 2-gang, complete, 8/6; J.B. H.2, 8/6; R.I. 4.11; B.A.T. 4-gang, boxed, 8/11; Ormed ditto, 7/6; Polar Uniknob 2-gang, 7/6; H.M.V. 2-gangs, 4/3 each.

MAINS Transformers, Ferranti S.M.2 for H.P.7, 4v. 6a., 12/6 ditto E.M.3, for H.T.5 or 7 only, 10/6; Parmeko 200-0-200v., 120 m.a., 4v. 3a., 6v. 2a., 13/6; Heavibrid for H.T.5 or 6, 6/6; H.M.10 12/6; H.T.9, 12/6; 400-0-400v., 120 m.a., with L.T.s., 21/-.

COILS—Telsen W.76, 3/9; Interval, 2/9; Wearite Binowaves, type C, 3/6; K.G.C., K.S.W., Varley R.P.22, Osc.44 126 (Lewcos), 4/3 each; R.2rs., 80 turns, etc., 2/3 each.

METERS—Sifam 0-1,000 m.a., 8/11; Rollersmith 0-500 m.a., 9/6; 0-1 m.a., 15/-; 0-100 m.a., Buben pattern, 12/6; all above moving coil movements. Weston Thermo-Galvanometer type 425, listed £4.10, £2/2, as new; moving iron A.C. or D.C. meters, 0-30 m.a., 0-1 v., 0-10 amps, single range, 3/11 each.

L.F. Transformers, etc., all R.I. goods second-hand—L.A.1.3, 10/6; A.F.5, 15/-; A.F.6, 15/-; O.P.4c., 8/6; Eason Super L.F., British-General ditto, 6/3; Hyperms, 9/6; Hypermites, 5/11; Parafeds, 4/3; G.P. 7-1a, 4/6; Niclets, 3/11; B.T.H. output transformers, 3/11; latest double-ratio types, 5/6; Varley Pentode outputs, 7/6; R.I. Pentamids, 8/6; ditto Pentamites, 8/3; R.I. Q.P. transformers, 8/11.

MANUFACTURERS' Surplus—Wire-ent 1 watt resistors, various values, brand new, assorted; 4/6 per dozen.

ANY Goods on 3 Days' Approval Against Cash.—Trefor Pepper, Wakegreen Rd., Birmingham. [2847]

MILDMAY RADIO EXCHANGE Offers the Following sound and perfect, post paid:—

J.B. Unitane 2-gang Condensers, complete with disc drive and screened, 10/-; 3-gang ditto, 14/-; Polar 3-gang tubs, 10/-; 2-gang ditto, 8/-; Radiophone 3-gang, fully screened, 16/6.

FERRANTI A.F.3, 10/-; A.F.3c, 14/-; A.F.5, 11/-; A.F.5c, 20/-; A.F.5cc, 21/-; B.T.H. transformers, 2-1, 4-1, 4/- each; Nicore 1, 9/-; Nicore H, 6/6; Varitane, 6/6; Reatone, 8/6; second-hand Parafed, 4/-.

OPEN All Day Thursday, closed Saturday—24, Midmay Grove, London, N.1. Clissold 5001. [2852]

ELECTRADIX BARGAINS
The DIX-MIPANTA

is the latest A.C. Multimeter. Bake-lite Case. Worth Two Guineas, but only **19/6**



Ask for Leaflet M/A.

Scrap that cheap dud, pocket "any ohms per volt" iron meter, taking 30 m.a. to give a reading. It will ruin your H.T. battery.

GET A DIX-ONEMETER

The ideal of multi-range moving coil meters. Micro-amps to 20 amps., milli volts to 1,000 volts. 50 ranges on one meter. Two clear scales with mirror and knife-edge pointer.

ONLY **60/-** A remarkably low price for a meter worth £10. For Novice or expert. Test Booklet free.

The **GENEROMETER BATTERY SUPERSEDER** makes H.T. from your L.T. 2-volt battery, rectified and smoothed. Gives 3 tappings with output exactly suited to **Class B Amplification** and lasts indefinitely. A boon to those who are not on the mains. **Reduced from £3.15s. New and Guaranteed. 37/6**

PARCELS of experimental odd coils, magnets, wire chokes, condensers, switches, terminals, etc., post free. 10 lbs., 7/-, 7 lbs., 5/-, 1,000 other Bargains in New Sale List "W."



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218 UPPER THAMES ST., LONDON, E.C.4



"We're Fluxite and Solder—the reliable pair—Famous for Soldering—known everywhere!"
We're **HERE** to remind you whatever your SET—If something goes wrong—you'll be glad we met!"

See that Fluxite and Solder are always by you—in the house—garage—workshop—anywhere where simple, speedy soldering is needed.

ALL MECHANICS WILL HAVE FLUXITE
IT SIMPLIFIES ALL SOLDERING

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FLUXITE LTD.,
(Dept. W.W.), ROTHERHITHE, S.E.16

FOR ALL REPAIRS!



Components, etc., for Sale.—Contd.

SOUTHERN RADIO'S Wireless Bargains; set manufacturer's guaranteed surplus:—

CONDENSERS.—4 mfd., 2/6 each; 2 mfd., 1/9 each; 1 mfd., 1/- each, all 750 volt test guaranteed; block condensers, 20 mfd., 2+2+2+2+2+2+2+2+1+1, 11/- each; 12 mfd., 2+2+2+2+2+1+1, 6/9 each; 10 mfd., 2+2+2+2+1+1, 6/3 each, all 1,500 volt test guaranteed; Radiophone 4-gang condensers, variable, fully shrouded and trimmers, 0.0005, 9/6 each (list 45/-); Cyclon 3-gang condensers, shrouded and trimmers, 8/9 each, 0.0005 (list 32/-); Utility 2-gang condensers, fully shrouded, trimmers, complete with dial, escutcheon and knob, 9/- each (list 39/6); Celestion Soundex permanent magnet speakers, brand new and boxed, 16/- each (listed 27/6); Rola permanent magnet, F.6, 28/- each (listed 49/6) (6 of these only); D.C. mains, energised 2,500 to 6,500 ohms, complete with hum-bucking coils and transformers, 16/6 each (listed 39/6); Westinghouse metal rectifiers, H.T.8, complete with mains transformer for same, 25/- the 2 (listed at 40/- the pair); 4 sets only of genuine Colvern Ferrocart coils, listed at 37/6 the set of 3, to clear at 28/6 per set.

CONSTRUCTORS' Kits.—Ready Radio 303 battery kits, less valves, 16/6 each, with 3 Mullard valves (P.M.11.F., 2D.X., P.M.2), 33/- (listed at £3/10); Meteor Screen Grid 3-valve battery kit, less valves, 26/- each, with 3 Mullard valves (P.M.12a., 2D.X., P.M.2), 49/- each (listed at £5 7/6); all kits in manufacturer's original sealed cartons, the valves are manufacturer's specified valves; bargain parcels of assorted wireless components, each parcel contains useful brand new components to the value of 35/- and includes valve holders, resistances, fixed condensers, volume control (H.M.V.), Lewens coils, 20 articles in each parcel, 7/6 per parcel; every article sold by us is guaranteed in every way and is carriage paid.—Southern Radio, 323, Euston Rd., London, W.1 (near Warren St. Tube). Phone: Museum 6324. [2891]

BRITISH Radiophone Radiopak, complete, as new, 39/6.—Marine, 2, Lennox St., Brighton. [2876]

BRAND New Set Manufacturer's Surplus, all guaranteed or money refunded without quibble.

RADIO Gramophone Cabinet.—Metropolitan, walnut, overall 40" x 19" x 16", take chassis up to 19/16, list price £8/10, at £2/10 each, if collected; £2; gramophone motors, Paillard 100,250 A.C., complete with turntable, 25/-.

VARIABLE Condensers.—Polar Star 3, 1933, with covers, trimmers, escutcheon, light, knob, etc., boxed, last 25, list 30/6 each, at 17/-; J.B. Nu gank, as above, few only, at 15/-; J.B. 2-gang, fitted as above, 10/-.

COILS, 9 sets only, Colvern Ferrocart F1, F2, F3, C ganged on sub-base with wave change switch; at 29/6; boxed.

VALVES.—Mazda A.C./Pens, 220a., A.C./S.G.V.M., A.C./S.G., U.U.120/350, S.215, all at 9/-; A.C.2 H.L., at 7/6; 50 in all only.

SMOOTHING Chokes.—Metropolitan Vickers, 20-henry 100 m.a. (400 ohms), at 9/-; another, 100 henrys 35 m.a., 1,800 ohms, at 5/-.

SMOOTHING Condensers.—T.C.C., C.E.C., and Murphy, 800 test, 1 mfd. 1/9, 2 mfd. 1/9, 4 mfd. 2/6; 1,500 test, 500 A.C. working, 800 peak, 1 mfd. 1/9, 2 mfd. 2/4, 4 mfd. 4/-; blocks, separate tappings, 1,500 test, 20 mfd., 4+4+2+2+2+2+1+1, at 11/-; 11 mfd., 4+2+2+2+1, at 6/9; 14 mfd., 4+4+4+1+1, at 8/-; 9 mfd., 4+4+1, at 5/6; electrolytics, T.C.C. 8 mfd., 500 working, list 9/-, at 5/6.

THE Following Goods, brand new but not boxed.—Variable condensers, H.M.V. 3-gang, 0.0005, fitted drum drive trimmers, etc., at 10/-; British Radiophone 4-gang, 0.0005, list 32/-, at 15/- (without drive), fitted trimmer, 1/-; Mex. potentiometers, 2/3 each; please note all goods are boxed; all carriage paid; each with order or c.o.d.—Chal-Electric 6, Conduit St., London, W.1. [2875]

DIX-ONE-METER, with shunts 0-10 m.a., 0-75 m.a., 0-500 m.a., 0-5a., 0-150v., 0-100v., as new; 40/-.

M-L Anode Converter, type C, with smoothing, 12v. input, 250v. 60 m.a. output, perfect; £3 5.-18, Amesbury Av., Streatham Hill, S.W.2. [2883]

EVERYTHING for Movies and Talkies.—Phone, write, or, better still, call and inspect immense stock of bargains.

ILLUSTRATED ENTERPRISES, 159, Wardour St., London, W.1. Tel.: 6889 Gerrard. [1621]

SERVICE RADIO, 46, Lisle St., London, W.C.2, offer the following amazing bargains in wireless components, etc.:

SMOOTHING Chokes, 20 henrys 120 m.a., 9/- each; 50 henrys 60 m.a., 7/3 each; 40 henrys 40 m.a., 6/3 each; block condensers, 20 mfd., 2-2+2+2+2+2+2+2+1+1, 11/-; 12 mfd., 2+2+2+2+2+1+1, 6/9 each; 10 mfd., 2+2+2+2+1+1, 6/3 each; all 1,500 volts test; Mullard Radio for the Million A.C. kits, including 3 Mullard valves (Pen. 4v., 354v. S.4V), £3/10 each (listed £6/10); H.M.V. tone controls, 1/3 each (listed 12/6); Paillard A.C. gramophone motors, complete with turntables, 100 volts to 250 volts, 17/6 each (listed £3); Utility 2-gang condensers, fully shrouded and trimmers, complete with escutcheon knob, etc., 9/- each (listed 39/6); Rola permanent magnet speakers, F.6, 28/- each (listed 49/6); mains energised H.C. speakers, 2,500 volts to 6,500 volts, complete with transformers, 16/6 each (listed 39/6); bargain parcels containing 6 chassis mounting 5-pin valve holders, 6 assorted fixed condensers (all useful capacities), 6 assorted Lewens coils, 3 coils connecting wire, 6 assorted resistances, 7/6 per parcel (value £1/15); we invite callers to inspect our large stocks at our address; hundreds of bargains in mains transformers, valves, sets, kits, etc.; every article guaranteed and carriage paid.—Service Radio, 46, Lisle St., London, W.C.2. Phone: Gerrard 6653. [2873]

HAND Telephones, 4/6; pedestal, 7/6; wall boxes, 6/6; phone bells, 3/-; loud ringing, 7/-; microphones, 1/-, 2/6 and 4/6.—Below.

TWO-VALVE Transmitting Sets, with valves, 15/-; H.T. units to suit, 7/6; Morse transmitters, 12/6; 2-valve receivers, 7/6.—Below.

VACUUM Cleaner Hair Driers, with heating element, bag, plug, and cord, small plate missing, not important, A.C. or D.C., 220v. to 240v.; 10/- each.—Below.

SPARK Coil, 10in., complete, £3/10; ditto, less contacts, 50/-; 1in., complete, 6/5; 1 1/2in., complete, 10/-; Morse inter-spring, motor driven, £3; ditto, weight driven, £2 10.—Below.

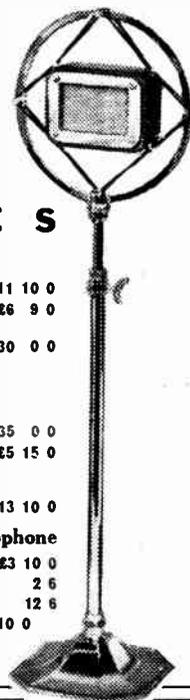
ROTARY Converter, 12v. D.C. input, 30v. 1a. A.C. output, 15/-; ditto, 50v. input, 2,500v. 400 m.a. output, both D.C., £7; and others.—Below.

(This advertisement continued on next page.)

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This Savage equipment is ideal for hire work at sports meetings, fêtes, etc. Reproduction from gramophone records is crisp and clear-cut with plenty of genuine bass, while the quality of speech obtained with the new type 'M' microphone is a revelation. This instrument is so even in its response it is possible to get a relatively large volume from speakers in the same room before singing-back occurs. It is equally capable of dealing faithfully with band relay.



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Microphone in ring.....	£3 10 0
Handle.....	2 6
Table Stand.....	12 6
Floor Stand.....	£1 10 0
Microphone Transformer.....	£1 5 0

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PUBLIC ADDRESS
EQUIPMENT

W. BRYAN SAVAGE, 56 58, CLERKENWELL ROAD, LONDON, E.C.1.

Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)

TALKIE Reduction Gears, 40 to 1, two shafts, as new, 9/-; large dimmer rheostats, 110v. or 220v., 15/-; hot wire; milliammeter, 0-500 m.a., 4/-; double current Morse keys, 12/6; polarised relays, 12/6; Simplex telegraph sets, £2; Morse sounders, 10/-; also dynamos, motors, meters, resistances, regulators, switches, transformers, 'phone gear, and electrical gear generally.—Below.

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RADIOPHONE Radiopak 4-gang 0.0005 Superhet. Condensers, fully screened, trimmers; 9/11.

ZENITH Mains Transformer, input 105-250v., output 500-0-500, 4v. 6a., 6v. 4a., 7.5v. 3a. (listed £5/15); 5/6; remarkable bargain.

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C.O.D., or cash with order.—Epton, 93, New Rd., South Chingford, E.4. [2878]

FERRANTI A.F.5C, O.P.M.1C, £1 each; Parafed, as new, 6/-; Igranic "J" 6:1, 6/-; Telsen Ace, 2/6; Polar 0.0005 variable; Marconi do., 3/6 each.—Ritson, Stromness, Orkney. [2851]

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1933, brand new, tested, guaranteed British radio at half price, P.M. moving coil speakers, £1; "Classic" super model, 25/-; oak and walnut speaker cabinets, 12/6; 20 m.a. A.C. eliminators, 30/-; trickle charger models, £2; D.C. eliminators, £1, 15 m.a. models 15/-; 120v. H.T. batteries, 7/6; Amplion Guinea cone speakers, complete, 10/-; dual range coils, 2/11; transformers, 3/11; 20 A.H. accumulators, 2/11; 40 A.H., 5/11; D.C. all-mains units, 39/-; A.C. ditto, 55/-; all-electric and battery sets at very special prices; c.o.d.; cash refunded if not approved; trade enquiries invited.—Collin's Depot, 9-11, Riversley Rd., Nunceaton, Warwickshire. Phone: 78. [0400]

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FOR Sale, 2 Gaumont Standard electric cinema projectors, complete; £5 each.—Below.

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WANTED, January, February and March, 1931, "Experimental Wireless."—78, Osinston Rd., Prenton, Birkenhead. [2355]

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Hatton Heath,
Chester.

TO: Messrs. Claude Lyons, Ltd.,
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Liverpool, 3, Lancashire.

May 25th, 1933.

Dear Sirs,

I have something to thank you for. It will interest you to know that after five years' excellent service from my Wireless demonstration receiver, I decided to overhaul same. I thoroughly tested all the components out of the set, and all the parts of your manufacture will go in again, and will be sentenced to another five years' hard labour.

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stand up to their job; for Radio they are the best in the World, and they are worth more money.

I can recommend them with confidence. Thank you very much for this Good Stuff.
Yours truly, (Signed) W. Johnson.

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8	500v. A.C.	5/-	2	1500v. A.C.	3/6
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6	500v. A.C.	4/-	2	500v. A.C.	1/9
4	T. 3500v. A.C.	20/-	2	500v. D.C.	1/3
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4	2000v. D.C.	6/-	1	1500v. D.C.	1/3
4	1500v. A.C.	5/6	1+1	3500v. A.C.	3/-
4	500v. A.C.	3/-	1+1	2000v. A.C.	1/6
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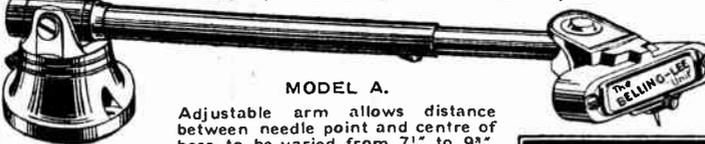
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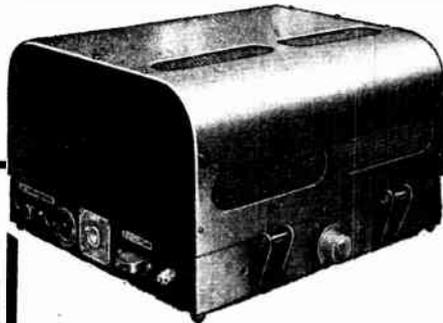
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WEDNESDAY

JUNE THE TWENTY-FIRST

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** White Coons Concert Party.
- LONDON REGIONAL** Band and orchestral concerts.
- MIDLAND REGIONAL** Military Band concert.
- NORTH REGIONAL** The Arcadian Follies, relayed from Morecambe.
- BELFAST** "Twelfth Night," by William Shakespeare.

ABROAD

- ATHLONE** 7.31 p.m. Dublin Postal Band.
- BARI** 8.35 p.m. Concert of chamber music.
- BRUSSELS (No. 2)** 5.0 p.m. Concert of jazz music, by Robert de Kers and his Cabaret Kings.
- LANGENBERG** 1.0 p.m. Concert, conducted by Eysoldt.
- LJUBLJANA** 9.45 p.m. Light music, by the Station Orchestra.
- RADIO-PARIS** 9.0 p.m. Operetta: "White Horse Inn" (Benatzky), from the Mogador Theatre.
- ROME** 8.45 p.m. Programme of modern Italian opera.
- STRASBOURG** Orchestral concert, relayed from the Casino, Vichy.
- TRIESTE** 5.10 p.m. Concert by the Trieste Lute Quartet.

ATHLONE
725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Stock Exchange Quotations and Weather Report. 6.0, Programme for Children. 6.45, Time Signal and News. 7.0, Gaelic Talk. 7.15, German Lesson. 7.30, Time Signal. 7.31, Dublin Postal Band. 8.30, Simon the Fool—a Sketch, by P. L. MacCann and Company. 9.0, Soprano Solos by May Doyle. In an interval at 9.10, Orchestral Music. 9.30, Violin Solos by R. Potterton. 9.45, Sponsored Programme. 10.45, Time, News, Weather and Close Down.

BARCELONA
EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Station Trio: Selection from Sylvia (Delibes); Les Cloches (Debussy); Selection from Tosca (Puccini); Adagio from the Pathetic Sonata (Beethoven); Entr'acte (Humphries); Czardas (Monti). 8.0, Request Gramophone Music. In the interval at 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral, Weather, Exchange, and Market Prices. 10.5, Concert by the Station Orchestra. 11.15, Lope F. Martinez de Ribera recites his own Poems. 11.30, Sextet Concert from the Casino San Sebastian. In the interval at 12 Midnight, News. 1.0 a.m. (Thursday), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Report and Dopplavoro Notes. 8.20, Giornale Radio, Weather and Sports Notes. 8.30, Time and Announcements. 8.35, Concert of Chamber Music; Soloists: Franco Ruggiero (Pianoforte) and De Santis Bruno (Soprano); Comedy Overture (Lincke); Pianoforte Solo: Sonata, Op. 110 (Beethoven); Songs (Napoli): (a) Per la tomba, (b) Filastrocca; Prelude to La carmago (de Leva); Song, Chi vuol la zingarella (Paisiello); Pianoforte Solos (Gubitosi): (a) Humoresque, (b) A briglia sciolta; Overture to a Comedy (Aletta); Songs: (a) Ich liebe dich (Grieg), (b) O fiore (Santoliquido); Pianoforte Solos: (a) Scene infantili (Napoli), (b) Prelude to I Rantzau (Maseagni); Song: Primavera (Muller); Pianoforte Solo: Vienna Carnival (Schumann). In the interval, Talk. 10.30, Dance Music from the Gran Caffe del Levante. 10.55, News.

BELGRADE
697 kc/s, 430.4 metres; 2.8 kW.—4.0 p.m., Concert by the Station Orchestra. 5.0, Talk. 6.55, Time and Programme Announcements. 7.0, Talk. 7.30, Folk Song Recital. 8.0, Talk. 8.30, Concerto for Two Violins, Viola and Cello (Rimsky-Korsakov). 9.0, Songs from Opera. 9.50, Gramophone Music. 10.30, Time and News.

BERLIN
DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Second Act of The Mastersingers—Opera (Wagner) on Gramophone Records. 2.45, Programme for Children. 3.30, Weather and Exchange. 3.45, Herman Essig's Widow reads from her late husband's autobiography. 4.0, Programmes from Hamburg. 5.0, Talk: Eugenic in the New Germany. 5.30, Pianoforte Sonata in B Flat (Schubert) by Irene Selmering. 6.0, A Poem. 6.5, Contemporary Music: Six Songs (Justus Hermann Wetzel); Lyric Suite—Five Songs for Soprano, and Six solo Instruments (Hans Chemin-Petit). 6.35, Wireless Technical Talk. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Epigrams. 8.5 (approx.), Midsummer Festival for Young People. 9.0, Bunter Abend. 10.0, Weather and News. 10.45, Weather for Shipping. 11.0, Concert from Heilsberg. 12 Midnight, Close Down.

BERLIN
715 kc/s, 419.5 metres; 1.5 kW.—6.20 p.m., Talk: Excursions by Water. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Munich. 8.10, Songs of the National Socialist Movement (arr. Dr. Johannes Koepf). 8.50, Talk: A Flight in the D 2500 over Berlin. 9.20, Ino-Cantata (G. Ph. Telemann) by the Berlin Wireless Orchestra, conducted by Eugen Jorlum and Mia Peltenburg (Soprano). 10.0, News. 10.10 (approx.), Dance Music. In the interval: Dance Songs by the Berlin Wireless Chorus. In an interval from 11.0 to 11.5, Talk: What they are talking about in Berlin. 12 Midnight, Midsummer Festival.

BERNE—See Schweizerischer Landessender.
BEROMUNSTER—See Schweizerischer Landessender.
BODEN—See Stockholm.
BODO—See Oslo.

BORDEAUX-LAFAYETTE
986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.30, News. 7.40, Tourist Talk. 7.55, Lottery Results. 8.0, Agricultural Notes. 8.15, News. 8.30, Programme

of Serenades, Rondos and Ballet Music by a Symphony Orchestra.

BRATISLAVA
1,076 kc/s, 279 metres; 14 kW.—5.55 p.m., Concert of Hungarian Music by the Station Orchestra, conducted by F. Dyk: Overture, Hunyady Laszlo (Erkel); Selection from The Masks (Hubay); Intermezzo from Hary Janos (Kodaly); Selection from The Countess Maritza (Kalmán). 6.55, Talk for Housewives. 7.0, See Prague. 7.10, See Brno. 8.0, See Prague. 10.15 (approx.), Close Down.

BRESENLAU
923 kc/s, 325 metres; 60 kW. Relayed by Gliowitz, 1,184 kc/s, 253 metres.—2.20 p.m., Gramophone Concert of Old Waltzes. 3.0, Market Prices. 3.30, Talk: Travelling down the Danube. 3.50, Talk on Photography. 4.15, Pianoforte Recital by Centa Maucher: Sonata in G Minor, Op. 12 (Schubert); Scherzo in E Flat Minor, Op. 4 (Brahms). 4.45, Talk: Weather Conditions for Sport and Hiking. 5.0, Upper Silesian Ballads (Paul Habraschka). 5.15, Agricultural Prices. 5.20, Soprano Song Recital by Ruth Bail. 5.45, Talk: Upper Silesia and the Jews of East Europe. 6.5, Song Recital by the Station Quartet. 6.35, Dialogue from the Cosec Cellulose and Paper Factories. 6.50, News. 7.0, Transmission for all German Stations relayed from Munich. 8.0 (from Gliowitz), Programme of the Upper Silesian Young Hitlerites. 9.0, News. 9.10, The Midsummer Festival in an Old Silesian Village—Radio Sequence (Ernst Schenke). 10.10, Time and News. 10.30, Midsummer Festival—Radio Report relayed from Zobten. 12 Midnight, Close Down.

BRNO
878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: Talk on the World Fair in Chicago, and Programme for Workers. 7.0, See Prague. 7.10, Concert by the Station Orchestra, conducted by Jan Janota: Overture, Mignon (Thomas); Three Pieces (Moussorgsky); Introduction to Act III of The Cricket on the Hearth (Goldmark); Melody from Raduz and Mahulena (Suk); Slav Dance, Op. 72, No. 15 (Dvorak). 8.0, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)
590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by Primas Sylva and his Cigany Band. 1.0 p.m., Le Journal Parle. 1.10, Concert relayed from the Grand Hotel, Antwerp. 5.0, Dance Music relayed from the St. Sauveur Palais de Danses. 6.0, Talk: The Evolution of Matter. 6.15, French Folk Song Recital by M. Toutenel. 6.45, Gramophone Music: Overture, Le Caid (Thomas); Flute Solo: Polka-Rondo, La Voliere (Louard);

Pastorale and Bourree (Billaut); Serenade-Berceuse (Luciani); Barcarolle No. 6 (Faure); First Waltz (Durand-Mouton); Overture, The Grand Duchess of Gerolstein (Offenbach). 7.15, Talk: Impressions of the Season's Football Championship. 7.30, Review of Hygiene. 8.0, Concert by the Symphony Orchestra, conducted by Dufauw; Soloist: Emile Bosquet (Pianoforte); Symphonie Classique (Prokofiev); Pianoforte Concerto (Rachmaninov); Fugato (Poot); Four Songs for Vocal Quartet (Schmitt); Three Pieces (Franck): (a) Psyche, (b) Choral, (c) Le Chasseur maudit. In the interval at 8.45, Reading of Works dedicated to Antwerp. 10.0, Le Journal Parle. 10.10, Concert of Old and Modern Dances on Gramophone Records.

BRUSSELS (No. 2)
N.I.R., 914 kc/s, 338.2 metres; 15 kW. Programme in Flemish. 12 Noon, Concert conducted by André Feilman, relayed from the Grand Hotel, Antwerp. 1.0 p.m., Le Journal Parle. 1.10, Concert by Primas Sylva (Violinist) and his Cigany Band. 5.0, Concert of Jazz Music by Robert de Kers and his Cabaret Kings, relayed from the Century Hotel, Antwerp. 6.15, Talk: The Construction of Canals. 6.30, Cello Recital by Van Hamburg; Sonata (Cervetto); Suite (Caux de Hervevois); Aria (Taniglieri); Tarantella (Popper). 7.0, The Clock Symphony (Haydn) on Gramophone Records. 7.15, Religious Address. 7.30, Educational Talk. 8.0, Gramophone Music: Selection from The Rose of Stamboul (Fall); Concert Version of Rigoletto (Verdi-Liszt). 8.15, Accordion Recital by Eugen Hansen; Spanish March, Granada (Garcia); Valse caprice, Miss L.N.R. (Van Herck); Impromptu No. 4 (Schubert); Spanish Waltz, Ma Gitana (Hansen). 8.30, Gramophone Records: La craquette (Clerie); Waltz and Bolero from Lanterne magique (Godard). 8.45, Recitations. 9.0, Concert by the De Pout Troupe: Liebeslied (Schubert); Airs from (a) The Count of Luxembourg (Lehar), (b) Viktoria and her Hussar (Abraham), (c) The Merry Peasant (Fall); Duet from Lilac Time (Schubert); Gern habe ich die Frauen geküsst from Paganini (Lehar); Airs from (a) Desert Song (Friml), (b) Frasquita (Lehar), (c) Viktoria and her Hussar (Abraham); Duet from The Merry Peasant (Fall). 10.0, Le Journal Parle. 10.10, Concert of Jazz Music by Robert de Kers and his Cabaret Kings, relayed from the Century Hotel, Antwerp.

BUCHAREST
761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra; Soloist: D. Teodoru (Violin) Overture, Carnival (Ghazimov); Ballet Suite, La Farandole (Dubois); Waltz from Eugene Onegin (Tchaikovsky); Une Larme (Mussorgsky); Violin Concerto No. 22 (Viotti). In the interval at 6.0, Radio Journal. 7.0, Educational Programme. In an interval at 7.20,

Gramophone Music. 8.0, Pianoforte Recital. 8.30, Song Recital by Mme. Sylvie Tiron: Aria from Tosca (Puccini); Aria from Madame Butterfly (Puccini); Aria from Tannhäuser (Wagner); Aria from Ernani (Verdi). 8.50, Talk. 9.5, Violin Recital by Anton A. Sarvas: Sonata in D (Nardini); Improvisation (Bloch); Two Pieces, Op. 17 (Suk): (a) Un poco triste, (b) Burlesque. 9.35, Light Music by the Fancia Luca Orchestra, relayed from a Restaurant. 10.0, Radio Journal.

BUDAPEST
545 kc/s, 550.5 metres; 18.5 kW.—Programme also relayed on 840 metres from 8.15 p.m. till Close Down.—6.30 p.m., Concert by the Joseph Vidak Cigany Band. 7.30, Market Prices. 7.40, Recital of Ladislau Szekes' Songs. 8.15, Dramatic Programme. 10.15, News. 10.30, Recital of Hungarian Sonatas by Andor Foldes (Pianoforte) and Anton Friss (Cello); Sonata, Op. 8 (Dohnanyi); Sonata, Op. 4 (Kodaly). 11.15, Dance Music from the Rajnapark Cafe.

CASSEL—See Frankfurt.

COPENHAGEN
1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, relayed from the Wivex Restaurant. 2.0 to 3.0, Interval. 3.0, Gramophone Music. 3.30, Concert by Louis Preils' Instrumental Ensemble: Afskedsmarsch (Preil); Waltz (Menichetti); Spilledaasen (Albech); Blomster-sang (Schröder); Poeme d'Extase (Bullerian); Selection from The Flower of Hawaii (Abraham); Pasodoble, Sevilla (Alfonso); Waltz from Die schöne Galathee (Suppe); Italian Serenade (Caludi); Melody (Rasbach) Ruder Knaegt (Steele); Jazz Rhapsody on Themes of Cesar Franck (Rosenberg); Swabian Peasant Waltz (Krome); Foxtrot, Me and mine are doing fine (Woods-Connelly). 5.35, Exchange and Fish Market Prices. 5.50, Talk. 6.20, French Lesson. 6.50, Weather Forecast. 7.0, News. 7.15, Time Signal. 7.30, Agricultural Talk. 8.0, Chimes from the Town Hall. 8.5, Concert of Operetta Music by the Station Orchestra, conducted by Walter Meyer-Radon: Overture, Les Cloches de Corneville (Pianquette); Selection from The Dubarry (Millöcker-Mackeben); Dances from Polenblut (Nedbal); Selection from The Gipsy Princess (Kalmán); Prelude to Eva (Lehar); March from Wiener Frauen (Lehar). 8.45, Talk on Trade Conditions. 9.15, Cello Recital by Herman Sandby; Sonata in F (Marcello); Sonata in D (Locatelli). 9.45, Gunder Knudsen in a Recital of his own Songs Gule Krokus; Spindevisse; Mimat; Bondevise; Den blanke Aa; Under Sea; Over Heden; Saa selleda Danmark nordvestend. 10.5, News. 10.20, Concert by the Station Symphony-Orchestra, conducted by Walter Meyer-Radon: Overture, Alceste (Gluck); Ballet Music from Paris and Helen (Gluck); Symphony No. 95 in C Minor (Haydn). 11.5, Dance Music relayed from the National Scala. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Thursday), Close Down.

CORK—See Athlons.

CRACOW
959 kc/s, 312.8 metres; 1.5 kW.—7.5 p.m., News. 7.10, Talk. 7.25, News. 7.35, Programme Announcements. 7.40, See Warsaw. 10.0, Gramophone Music and Sports Notes. 10.35, See Warsaw. 11.0 (approx.), Close Down.

DANZIG—See Heilsberg.
DRESDEN—See Leipzig.

FECAMP
1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Ronald and B. McNabb. 4.30, Concert for Portsmouth and Southern Listeners: Musical Comedy Switch (arr. Hall); Songs: (a) Boots (McCall), (b) The Gay Highway (Drummond); The Smuggler's Song (Mortimer); Spanish Serenade (Herbert); Chinese Serenade (Herbert); Songs: (a) To Mary, (b) Down Vauxhall Way (Oliver); By the Swanee River (Myddleton); Songs: (a) A Border Ballad (Cowan), (b) The Mighty Deep (Jude), (c) March of the Cameron Men (Campbell); Wiener Blut (Strauss). 5.15, Military Band Concert for Isle of Wight Listeners: On the Quarter Deck (Alford); Wagonlied (Brahms); Old Comrades (Teike); The Battle of Waterloo (Eckersberg); Xylophone Solo: National Emblem (Bagley); Jungle Drums (Kettleby); Serenade (Heykens); Cornet Solo: The Lost Chord (Sullivan); Carry On (Dundas); Selection, Shamrockland (Stoddon); Marche Iorraine (Game). 6.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Beolians: Sharing (Lombardo); We just couldn't say goodbye (Woods); With Summer coming on (Ahbert); I'll never be the same (Kahn); You Rascal, you (Theard); Room 1411 (Goodman); Jungle Blues (Widton); Get Cannibal (Woems); Clarinet Marmalade (Shields); The Sheik of Araby (Wheeler); Sweet Sue, just you (Harris); Blue Ramble (Ellington); Cotton Club Stomp (Ellington); Is I in love? I is (Robinson);

JUNE 21st

WEDNESDAY

continued

Wall Street Wail (Ellington); Hummin' to myself (Magidson). 11.0, Request Concert: When the Band goes marching by (Sarony); In an Old-fashioned Town (Squire); Accordion Solo: Restless Fingers (Cavelier); A Boy and a Girl were dancing (Davis); Falling in Love again; Golden Gates of Paradise; Softly awakes my Heart, from Samson and Delilah (Saint-Saëns); The Stein Song (Colcord-Enstead). 11.30, Gramophone Concert: Items by the Boswell Sisters; Moon over Dixie (Ellington); Doggone, I've done it; Down among the Sheltering Palms; Stop the Sun, stop the Moon (Cook); Baby, when you ain't there (Ellington); Hand me down my Walking Cane; We just couldn't say goodbye; Rhapsody (Ellington). 12.5 a.m. (Thursday), Club Concert for Stourbridge Listeners: It seems to me; Selection from The Quaker Girl (Reaves and Myers); Pianoforte Solo: Butterflies in the Rain (Reaves and Myers); Duet: The Keys of Heaven (Broadwood); Pianoforte Solo: Melodies from Viktoria and her Hussar (Abraham); Gooseberry Tart (Matthews); Duet: A Paradise for Two (Tate); Ballet Egyptian (Luigini). 1.0, Instrumental Solos: A Good Old Irish Stew; Bandonian Solo: Father Rhine March (Porschmann); Banjo Solo: The Buffoon (Curzon); Song: Here comes Annie Lee (Holzmann); Song: The Jolly Sailor (Carter); Mouth Organ Solo: Scottish Airs; Sweet Adeline (Armstrong). 1.30, The Songs of Sophie Tucker: Get Happy; Washin' the Bines from my Soul; Follow a Star; That Man of my Dreams; O ya, ya; What good am I without you; If your Kisses can't hold the Man you love; Sing, you Sinners. 2.0, Dance Music by the Hecolans: You've got me in the Palm of your Hands (Friend); Moon (Caleo); Sing a New Song (Ager); Same Old Moon (Baskette); Pagan Moon (Dubin); Trees (Kilmer); If you were only mine (Newman); Star Dust (Carmichael); Crosby Colombo and Valle (Burke); Hot and Anxious (Redman); Now's the time to fall in love (Sherman); I got Rhythm (Gershwin); How'm I doin'? (Fowler); Bugle Call Rag (Pettis); Try getting a Good Night's Sleep (Pinkard); Minnie the Mocher (Galloway). 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.0 p.m., Anecdotes, 6.25, Topical Talk, 6.45, Review of the Day, 6.50, Time and News, 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Talk by Dr. Eberhard Moes. 8.10, The Tragedy of the Baltic Lands. 9.10, Concert, 10.15, Time and News, 11.0, Midsummer Celebrations on the Mountains, 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 259.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,252 kc/s, 232.2 metres.—6.0 p.m., Variety Programme, 6.45, Frankfurt Exchange and Weather, 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Topical Talk, 8.10, Programme of Songs by the National Socialists, relayed from Berlin (Witzleben). 8.50, First General News, 9.0, Solstice Festival—Bonfires on the Banks of Lübeck Bay, 9.50, News, 10.0 (from Kiel), Concert by the Orchestra of Unemployed Musicians, conducted by Hans Döring, relayed from the Kieler Förde; Marche, Hoch Angeln (Hansen); Overture, Die Matrosen (Plotow); Waltz, Dreams of the Ocean (Gungl); Am Meer (Schubert); Meeresleuchten (Urbach); Waltz, The Wedding of the Winds (Hall); Gruss an Kiel (Spöhr).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 to 2.30 p.m., Gramophone Concert of German Opera Music. In the interval at 1.20, News, 2.30, Programme arranged by the Post Office, with Gramophone Records, 3.0, Market Prices, 3.20, Hints for the Housewife, 3.30, Programme for Children, 4.0, Talk for Parents: Co-operation between School and Home in the Country, 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Japanese Suite (Yoshitomo); Chinese Street Serenade (Siede); Indian Veil Dance (Siede); Oriental Suite (Leuschner); Forest Idylls (MacDowell); Potpourri of German Folk Songs (Atzler). In the interval at 5.10, Review of Books, 5.55, Recital of German Folk

Songs by a Choir of Young Girls, 6.15, Market Prices, 6.25, Talk: Midsummer's Eve on an East Prussian Estate, 6.50, Weather, 7.0, Transmission for all German Stations, relayed from Munich, 8.0, Talk: German Youth and Politics, 8.30, News, 8.40, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky: Prelude to Masaniello (Auber); Procession to the Münster from Lohengrin (Wagner); Prelude to Sicilian Vespers (Verdi); Dance from Prince Igor (Borodin); Tarantelle (Liszt); Turkish March (Beethoven), 9.40, Reading (Walter Scheffler), 10.10, News, 10.20 (approx.), Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Isabella (Suppé); Wiener Weisen (Joh. Strauss); German Dances (Reger); Modern Dance Suite (Niemann); Old Styrian Dances (Pachernegg); Dance from The Winter's Tale (Humperdinck); Tanzrausch (Schmalstich); Waltz, Torero (Translateur), 12 Midnight (approx.), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.), 11.40, Organ Recital by C. Steyn, 12.10 p.m., Concert by the Small V.A.R.A. Orchestra, conducted by de Groot: Melody (Berger); Chanson triste (Tchaikovsky); Serenade (Bece); Melody (Chaminade); Pygmalion (Michael); In grünen Wald, wo die Lerche singt (Oscheit); A Street in Hong Kong (Humphries), 12.40, Concert by the De Notenkrakers Orchestra, conducted by D. Wins, 1.25, Interval, 1.40, Programme for Women, 2.40, Programme for Children, 5.10, Concert of Dance Music by De Plierefluiters, conducted by Ray Forest, 5.55, Gramophone Music, 6.10, Talk, 6.20, Organ Recital by J. Jong: Eine kleine Nachtmusik (Mozart); Vilja's Song from The Merry Widow (Lehar); Kamplied der Arbeiter (Hegeraat), 6.40, Talk, 7.0, Song Recital by Yvonne Fabre: Songs (Reinitz): (a) Shadows above Harlem, (b) Song from Dixieland, (c) White Sister, what will you say? Gramophone Music: Vornehme Leute, Zwölf Hundert Meter hoch (Tiesens); Le chemin à Fusine (Pringsheim); Song (Gross), 7.20, Talk, 7.39, S.O.S. Announcements, 7.40, News, 7.50, Gramophone Music, 8.10, Das Welterz—Musical Play (Mehring), 9.10, Variety Programme, 9.15, Gramophone Music, 9.30, Concert by the V.A.R.A. Orchestra, conducted by de Groot: The Children's Symphony (Haydn); Allegretto from The Symphony No. 8, Op. 93 (Beethoven); Le carnaval des animaux (Saint-Saëns); Overture, The Grand Duchess of Gerolstein (Offenbach); Rendezvous bei Lehar (Hrubny); Der Sorgenbrecher (Strauss); Ballet Music from Ritter Pasman (Joh. Strauss); Parisiana (Leopold), 11.10, Gramophone Music, 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUZEN

160 kc/s, 1,875 metres; 5.5 kW. Programme of the Christian Radio Society (N.C.R.V.).—11.55 a.m., Organ Recital, 12.40 p.m., Gramophone Music, 12.55, Trio Concert: Overture, Light Cavalry (Suppé); Waltz, Die Schönbrunner (Lanner); Selection from Gri-Gri (Lincke); Intermezzo (Czibulka); Salut d'amour (Elgar); Selection from Samson and Delilah (Saint-Saëns), 1.40, Programme to be announced, 2.10, Talk for Young Stamp Collectors, 2.40, Instrumental Concert; Soloist: Bram Misset (Songs); Sonata for Violin and Pianoforte (Corelli); Songs: (a) Aria from The Seasons (Haydn), (b) An die Lieder (Schubert), (c) Der Krenzeng (Schubert); Sonata in D Minor for Cello and Pianoforte (de Fesch); Overture, Lilac Time (Schubert-Berté) on Gramophone Records; Pianoforte Solos: (a) Impromptu in A flat, Op. 90, No. 4 (Schubert), (b) Etude in A flat (Liszt); Concerto in A Minor for Violin and Pianoforte (Vivaldi); Songs: (a) Sapphische Ode (Brahms), (b) O liebliche Wangen (Brahms), (c) Song (Wagenaar), (d) Dance (Wagenaar), (e) Song (Klerk); Adagio from the Fifth Symphony (Mahler) on Gramophone Records; Cello and Pianoforte Duets: (a) Tempo di minuetto (Basso-Nin), (b) Caprice (Pierne), (c) Serenade (Pierne), (d) Old Dance Song (Busoni); Pianoforte Solos (Debussy): (a) Rellets dans l'eau, (b) Jardins sous la pluie; Trio, Op. 42, for Violin, Cello and Pianoforte (N.W. Gade), 4.40, Programme for Children, 5.40, Talk on Karl Marx, 6.10, Talk arranged by the Department of Buildings and Roads, 6.40, Police Notes, 6.55, News, 7.10, Talk: Camping Out, 7.40, Carillon Recital from Rotterdam Town Hall, 8.40, Talk, 9.10, Organ Recital, 10.10, News, 10.20, Gramophone Concert, 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.25 p.m., Announcements and Gramophone Music, 7.40, See Warsaw, 10.20 (approx.), Dance Music, 11.0, The Letter Box in French.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—8.0 p.m., Time, Weather and News, 8.40, Variety Items, 9.0, Talk in Polish, 9.20, Concert by the Sallion Trio: Norwegian Dance (Grieg); Serenade (Ankarani); Romance (Denza); Serenade triste (Rodine); Valse melancholique (Darsin), 9.50, Talk for Housewives, 10.10, Concert: Overture, Norma (Bellini); Selection from Robert le Diable (Meyerbeer); Waltz, Myrtenblüten (Joh. Strauss); King Lear (Rust); Japanese Bell Dance (Yoshitomo), 11.0 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Programme for Children, 6.50, Programme for Girls, 7.0, Song Recital by Elias Kyander, 7.25, Talk, 7.45, Concert by the Station Orchestra: Revue Overture (Lincke); Waltz from Die Kaiserin (Fall); Air from Fedora (Giordano); Barcarolle (Grüfteld); Selection from The Duchess of Chicago (Kalmán); March Attila (Fucik), 8.45, News in Finnish and Swedish, 9.15, Light Music relayed from the Kappeli Restaurant.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert, conducted by Wolf: Marsch der Landsknechte (Bantian); Overture, Die Irrfahrt ums Glück (Suppé); Petite Suite de concert (Coleridge-Taylor); Märchen (Nicodé); Waltz (Burmester); Selection from La Traviata (Verdi), 12.50 p.m., Weather, Time and News, 1.0, Concert, conducted by Eysoldt; Soloist, Christa Winkelowski (Soprano): Overture, Der Blaubart (Taubert); Music for Two Violins, Cello and Pianoforte (Mausz): (a) Ständchen, (b) Polonaise; Songs: (a) Das Veilchen (Mozart), (b) Die Post (Schubert), (c) Es war ein Tag (Othegegraven), (d) Ich hab' in Pemma einen Liebsen (H. Wolf); Selection from The Sunken Bell (Respighi); Variations on Der Karneval von Venedig (Ritzau); Suite, Tanzbilder (Köhler). In the interval at 2.0, News, 2.30, Sponsored Programme with Gramophone Music, 3.0 to 3.30, Interval, 3.30, Economic Notes and Time, 3.50, Programme for Children, 4.30, Concert by the Station Orchestra, conducted by Buschhöcker; Soloist, Karl Schwamberger (Cello); Concerto (Sieg); Cello Concerto (Klussmann); Handel Suite (Heller), 5.50, Talk for Women, 6.10, German for Germans, 6.30, Italian Lesson, 6.50, Weather, Time, Economic Notes and Sports Report, 7.0, Transmission for all German Stations, relayed from Munich, 8.0, News, 8.10, See Berlin (Witzleben), 9.50, Political Talk, 10.0, News, 10.25, Serenade and Dance Music, conducted by Eysoldt, 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Weather and Time, 12.5 p.m. (approx.), Orchestral Concert, conducted by Alfred Schröter, relayed from the Capitol; Soloist, Erich Neumann (Organ); Jugend marschliert (Ernst Hanfstaengl); Selection from Wenn Liebe erwacht (Künnecke); Waltz Intermezzo (Wenger); Scandinavian Suite (Torjussen); Ländler (Alois Pachernegg); Selection from Die Königskinder (Humperdinck); Liebeserenade (Hans Löhner); Waltz Idyll, Ein Sonntag auf der Alm (Thomas Koschat); Tone Poem, Ein Morgen in Sans-Souci (Kockert); Watten-Suite (Zimmer); March, Prinz Eitel Friedrich (Blankenburg). In the interval at 1.0, News, After the Concert at 2.0 p.m. (approx.), News, 2.10 to 3.0, Interval, 3.0, Recital of the Songs of Erich Herrman by Melanie Hoffmann, accompanied by the Composer: Abendlied; Trost; Der junge Schiffer, 3.20, Talk: Mecklenburg, 3.35, Economic Notes, 4.0, Programme for Young People, 5.50, Exchange, Weather and Time, 6.0, Review of Books, 6.20, Talk on Economics, 6.45, Programme to be announced, 7.0, Transmission for all German Stations, relayed from Munich, 8.0, Topical Talk, 8.20, Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber; Soloist, Raimund Gessner (Tenor): Prelude to Die Zwillinge (Karl Weiss); Minuet and Intermezzo, Op. 115 (Lachner); Songs: (a) An der Weser, (b) Ich bin nur ein armer Wandergesell, (c) Noch sind die Tage der Rosen, (d) Heimatlied; Variations on the Folk Song, Ach wie ist's möglich dann (Raff); Tanzmomente, Op. 14 (Joh. Herbeck); Songs: (a) Es zog ein Bursch' hinaus, (b) Blümlin im Walde, (c) Deutsches Weindied; Waltz, Frauen-Liebe und Leben (Blon); Potpourri of Johann Strauss Operetta Music (Strauss-Schögel), 10.5, News, 10.25 (approx.), See Langenberg, 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.5 metres; 7 kW.—6.0 to 5.3 p.m., Programme in English by the I.B.C. arranged by the International Broadcasting Company of London, Announcer: F. Miklas, c. 5.0, International Broadcasting Club Concert: Why waste your Tears; Night shall be filled with Music; In a Shanty in Oh Shanty Town; This is my Love Song; Silver Hair and Heart of Gold; The Oi Song; She was only a Postmaster's Daughter; Drink up, 6.0, Readings, 6.30, English Music on Gramophone Records, 7.0, Talk: A Voyage to Morocco, 7.30, Literary Talk, 8.0, Talk on Music, 8.30, Vocal Concert, 9.30, Time and News, 9.45, Light Music by the Station Orchestra, 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—7.0 p.m., Gramophone Music, 7.40, Weather, 7.45, Gramophone Records; Pianoforte Concerto in A (Mozart); Les Préludes (Liszt), 8.20, Songs of Luxembourg, 8.30, Talk in Luxembourg Dialect, 8.40, Gramophone Music, 8.50, News in French, 9.15, Gramophone Music, 9.20, Dialogue in German: Furnishing the Modern House, 9.45, News in German, 9.50, Variety Music and Dance Music on Gramophone Records. In the intervals, News and Exchange.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Music, 7.15, Talk on Camping, 7.30, Radio Gazette for Lyons and the South-East, 8.30, Literary Programme, followed by News.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Light Music, 11.40, Radio Chronicle, 12 Midnight, Concert of Popular Music, 12.35 a.m. (Thursday), Talk, 12.40, Light Music, 1.0 (approx.), Close Down.

MADRID

UNION RADIO (EAJZ), 707 kc/s, 424.8 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Radio Journal, Programme for Women and Dance Music, 9.25, News and Political Review, 9.30 to 11.0, Interval, 11.0, Chimes, Time Signal and Political Review, 11.15 (approx.), A Radio Play in Three Acts (Bergua and Malpelo), 12.45 a.m. (Thursday), News and Dance Music, 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.45 p.m., Zither Solos by R. Wagner, 7.0, See Prague, 7.10, See Brno, 8.0, See Prague, 10.15 (approx.), Close Down.

MOTALA.—See Stockholm.

MÜHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 566 metres; and Nürnberg, 1,255 kc/s, 229 metres.—4.5 p.m. (from Nürnberg), Programme for Children, 5.5, Concert, conducted by Erich Kloss: Overture, Yelva (Reissiger); Three Pieces (Reger); (a) Bunter Reigen (b) Maria Wogenlied, (c) Liebeswalzer Selection from Eugen Onegin (Tchaikovsky); Nordische Nacht (Vecsey); Dance Suit (Philipp); Rote Rosen (Königsberger); Polka No. 2, Klein Lieschen (Pfitzinger), 6.5, Talk, 6.25, Talk: Memorable Figures of the Seven Years' War, 6.45, Time, Weather and Agricultural Report, 7.0, Transmission for all German Stations; Symphony Concert by the Station Orchestra, conducted by Prof. Hans Knappertsbusch; Tragic Overture (Brahms); Symphony No. 3 in E flat (the Eroica) (Beethoven), 8.0, Extracts from Early Speeches of Hitler, 8.10, See Berlin (Witzleben), 8.50 (from Nürnberg), Concert by a Nazi Band, 9.40, The Berchtesgaden District—Radio Picture of Hitler's Homeland and Country Seat, the Untersberg, the Watzmann, and the Königs-See—Programme arranged by Wilfrid Feldhütter, 10.20, Time and News, 11.0, Programme from Langenberg, 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Concert of Light Music, relayed from the Grand Hotel, 6.0, French Lesson, 6.30, Programme for Small Boys, 7.0, Advertising Notes, 7.15, Weather and News, 7.30, Song Recital by Reidar Kaas: Song (Lammers); Var og ung (Elling); Morning Hymn (Heuschel); Aria from: (a) Tannhäuser (Wagner), (b) La Gioconda (Ponchielli), (c) Il Trovatore (Verdi), 8.0, Time, 8.1, Talk, 8.10 (approx.), Concert by the Radio Orchestra, conducted by Hugo Krumm: Song from Hunyadi László (Erkel); Symphony, The Queen (Haydn); Suite from

JUNE 21st WEDNESDAY continued

Belshazzar's Feast (Sibelius); Norwegian Dance (Grieg). 8.30, Agricultural Talk. 9.40, Weather Forecast. 9.45, News. 10.0, Topical Talk. 10.15, Talk on the Poems of Jorgen Moe, with Readings. 10.45, Dance Music on Gramophone Records.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time and Announcements. 8.45, Concert: Soloist: R. Alfano (Harp). Selection from Le donne curiose (Wolf-Ferrari); Theme and Variations for Harp (Longo); Ballet Music from Rosamunde (Schubert); Adagio from the String Quartet (Schumann); Harp Solos: (a) Valzerino (Snoer), (b) Sulle vie del mare (Oberlinz); Tocata (Porpora-Gui); Nocturne for String Quartet (Borodin); Waltz (Strauss). Talk in an interval. 10.0 (approx.), Popular Songs. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres), at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Talk on Music and the Theatre. 7.0, Le Journal Parle. 8.30, Symphony Concert by the Station Orchestra, conducted by M. Flament, and the A Camera Vocal Quartet. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music. 7.15, Le Journal Parle. 7.30, Gramophone Music. 8.0, Talk: Parasites. 8.15, Interval. 8.20, La Sauvageonne—Play (Edmond Guirand). 10.30, Dance Music from the Lido. 11.0, News.

PARIS

RADIO PARIS, Call GFR, 174 kc/s, 1,726 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont.). 7.45, Gramophone Music. 12 Noon, Educational Talk. 12.15 p.m., Concert by the Radio Paris Orchestra: Selection from J'adore ca (Christine). 12.30, Organ Recital relayed from the Gaumont Palace: Overture, La princesse jaune (Saint-Saens); Melody (Madrigon); Selection from Maman's Nitouche (Hervy); Ne me parlez plus d'amour (Cremieux); Jacotte (Philips); Ninety in the Shade (Daugherty). 1.0, Exchange, News and Weather. 1.5, Concert by the Radio Paris Orchestra (cont.): Ni venne ni joyeuse (Fauchey); La Baronessina (Bregala); Micheline (Dargel); Melody (Gambler, Jr.). 6.10, Agricultural Talk and Market Prices. 6.40, German Lesson. 7.0, Medical Talk. 7.20, Popular Concert: Viennese Waltz (Hermann and Jaquemont); Russian Dance (Moszkovsky); Two Old Dutch Dances (Heykens); Hananise (Paladilhe); Salsarica (Lacorre); Danse Moldave (Razigade); Jota (Laparra); Ole Man River (Kern). 7.50, Commercial Notes and News. 8.0, Readings. 8.20, Fashion Review. 8.30, Weather and News. 8.40, White Horse Inn—Operetta in Three Acts (Benatzky), relayed from the Mogador Theatre. In the interval at 9.30 and 11.15, Press Review and News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Utility Hall Programme. 7.45, KDKA Home Forum. 8.0 to 8.58, New York Relay. 8.0, Betty and Bob. 8.15, Radio Troubadours. 8.30, Happy Days in Dixie. 8.58, Baseball Scores. 9.0, Southern Symphonies, from New York. 9.30, Business News and Market Reports. 9.45, Riggs and Moke. 9.58, Baseball Scores. 10.0, Rhythm Kings. 10.15, Dick Daring, from New York. 10.30, The Singing Lady. 10.45, Little Orphan Annie, from New York. 11.0, Time Signal and Press News-Recd. 11.5, Essex House Ensemble. 11.15, Weather Report. 11.16, Sport Review. 11.23, One Song. 11.28, Announcement. 11.29, Temperature Report. 11.30, Pittsburgh Spotlights. 11.45 to 3.30 a.m. (Thursday), New York Relay. 11.45, Today's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, Al Mitchell's Orchestra with Baritone Solos by Everett Marshall. 12.30, String Symphony. 1.0, Crime Clues. 1.30, Potash and Perlmuter. 1.45, Phil Cook and the Ingram Showers. 2.0, United States Marine Band. 3.0, Monkey's Paw.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.0 kW.—7.5 p.m., Talk. 7.20, Miscellaneous Items and Announcements. 7.35, Theatre Guide and Programme Announcements. 7.40, See Warsaw. 7.58, Time Signal. 8.0, See Warsaw. 10.0, Time, Sports Review, and Police Notes. 10.15, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.59 p.m., Concert by the Station Orchestra, conducted by Otakar Jeremias. Soloist: Nelly Gaietova (Songs); Overture (Roob); Two Songs (Maslo); Suite from A Comedy of Errors (Ponc); Song Cycle, The Nursery (Mussorg-

sky); Slav Rhapsody in G Minor, Op. 45, No. 2 (Dvorak). 3.55 to 4.0, Exchange. 5.50, Talk, Midsummer Festival Songs. 6.0, Talk on Seaside Resort Building. 6.10, Market Prices. 6.15, Talk for Women. 6.25, News in German. 6.30, German Transmission: Programme for Children and Talk for Workers. 7.0, (Times and News. 7.10, See Brno. 8.0, String Quartet in C, Op. 61 (Dvorak), by the Ondrick Quartet. 8.35, Talk. 8.50, Concert of Music by Christopher Harant, The Prague Chamber Vocal Society, conducted by Bohumil Spidra. Motet for Six Voices; Qui confidunt in Domino; Song for Five Voices; Maria Kron; Missa quinis vocibus for Choir. 9.20, June 21st, 1621—Historical Radio Play. 10.0, Time and News. 10.15, Talk in French for Listeners Abroad. 10.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News. 12.40 (from Lausanne), Sound Film Music on Gramophone Records. 1.0 (from Lausanne), Financial Notes. 1.10 (from Lausanne), Gramophone Music. 2.0 3.28, No Transmission. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Lausanne), Orchestral Concert. 4.30 (from Geneva), Programme for Children. 5.30 to 7.0, No Transmission. 7.0 (from Lausanne), Book Review. 7.25 (from Lausanne), Agricultural Report and Weather. 7.30 (from Lausanne), Talk: Swiss-Danish Polar Expedition. 8.0 (from Lausanne), Baritone Song Recital by Paul Sandoz. 8.20, Concert by the Radio-Suisse Romande Orchestra. 9.20 (from Lausanne), Concert. 9.50, News. 10.0 (from Lausanne), Symphonic Jazz by the Weintrauber Syncopators. 11.15 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.30 p.m., Talk on Bee-keeping. 7.0, Weather. 7.5, The Farm—Popular Latvian Song and Humorous Items. 8.0, News. 8.20, Orchestral Concert of Waltzes and Operetta Music. In an interval at 9.0, Weather and News. 10.0 (approx.), Close Down.

RJKAN.—See Oslo.

ROME

190, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and by 290, 11,810 kc/s, 25.4 metres from 5.30 p.m.—1.0 (approx.) to 2.15 p.m., Orchestra Concert of Variety Music. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange, Report of the Royal Geographical Society and Giornale Radio. 5.30 to 6.15, Orchestral Concert of Light Music. 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 6.57, Report of the Institute of Agriculture (in Italian and English). 7.10, Tourist Report. 7.20, Giornale Radio, in Foreign Languages. 7.40, Giornale Radio. 8.0, Time, Announcements and Gramophone Music. 8.15, Medical Talk. 8.30, Giornale Radio and Sports Notes. 8.45, Programme of Modern Italian Opera: (a) La Veglia—Opera in One Act (Pedrollo). (b) Il finto Arcchino—Comic Opera in One Act (Mali-piero). In the intervals: News in Dialogue Form and Theatre Notes. After the Programme, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.58 metres.—9.0 to 10.0 p.m. (approx.), New York Relay. 9.0, Pop Concert. 9.30, Texas Cowgirl. 9.45 to 10.0, Musical Programme. 12.45 a.m. (Thursday), Stock Reports. 1.0 to 2.30, New York Relay. 1.0, Variety Programme. 1.30, Donald Novis (Tenor). 2.0, Ferde Grofe's Orchestra. 2.15, Musical Programme. 2.30, Popular Programme. 3.0, Variety Programme, from New York. 3.30, Musical Programme, from New York, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory and Weather Forecast. 12 Noon (from Berne), Gramophone Records; Symphony in G Minor (Roussel); Danse macabre (Saint-Saens). 12.30 p.m., Time, Weather and News. 12.40 (from Berne), Light Music on Gramophone Records. 1.25 (from Berne), Exchange, Time and Weather. 5.0 (from Berne), Programme for Children. 5.30 (from Berne), Concert of Light Music. 6.30 (from Zürich), Talk by Dr. Wartenweiler. 7.0 (from Zürich), Time, Weather, and Market Prices. 7.10, Concert by the Station Orchestra, conducted by H. Rotmann. 7.30 (from Zürich), English Lesson. 8.0 (from Zürich), Organ Recital by Max Bösch. 8.30, Physical Culture. 9.0, Weather and News. 9.10 (from Zürich), Orchestral Concert, relayed from the Kurssaal, Baden-Baden. 10.15 (approx.), Close Down.

SEVILLE

UNION RADIO, EAJS, 815 kc/s, 268.1 metres; 1.5 kW.—9.30 to 10.0 a.m., News. 3.0 to 4.0 p.m., Concert by the Station Orchestra: Pasodoble, De Jaen (Tibau); Barcarolle, Mallorca (Albeniz); Selection from The Flying Dutchman (Wagner); Selection from Los Calabreses (Lima); Dance Music. 10.0, News, Exchange, and Weather. 11.0 (approx.), Programme, relayed from Madrid (EAJ7). 1.0 a.m. (Thursday), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Accordion Music. 5.45, Gramophone Music. 6.45, Temperance Talk. 7.15, Weather and News. 7.30 (from Göteborg), Concert of Light Music by Wertheimer's Orchestra. 8.15, Talk. 8.45, Choral Concert, relayed from Malmö, 1,301 kc/s, 231 metres; Conductor: Axel Löfdahl. 9.15, Light Programme. 9.45, Weather and News. 10.0, Dance Music by the Gösta Jonsson Band, relayed from the Savoy. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Variety Music on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Rimsky-Korsakov Concert for the Fiftieth Anniversary of the Composer's Death, Conductor: Maurice de Villers. Three Airs from Sadko; Hymn to the Sun, from The Golden Cockerel; Air from Christmas Eve; Aria from The Czar's Bride; Two Arias from A Night in May; Extracts from Antar. 2.0 to 3.30, Interval. 3.30, Orchestral Concert, relayed from the Casino, Vichy. Conductor: Brouillac. Overture, Light Cavalry (Suppé); Serenade (Mendelssohn); Spring Song (Mendelssohn); First Peer Gynt Suite (Grieg); Prelude to Act III of Les noces Corinthiennes (Büsser); Selection from The Tales of Hoffman (Offenbach); Waltz, Moonlight on the Alster (Férras). 5.0, Talk in French on Electricity. 5.15, Concert of Jazz Music, conducted by Roskam. 6.0, Concert of Variety Music relayed from Lille, 1,120 kc/s, 265.4 metres. 7.0, Legal Talk in French. 7.15, Lottery Results and Announcements. 7.50, Time and News. 7.45, See Paris (Eiffel Tower). 8.15, Press Review in German and Announcements. 8.22, Talk: Eastern Gardens, relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres. 8.50, Symphony Concert, relayed from the Casino, Vichy. Conductor: Paul Paray. Overture, Euryanthe (Weber); Symphony in G Minor (Mozart); Havanaise for Violin and Orchestra (Saint-Saens); Pavane (Ravel); Petite Suite (Debussy). 10.0, Press Review in French. 10.10 (approx.), Orchestral Concert, relayed from the Grand Kléber Tavern. Conductor: Jemine. The Entry of the Gladiators (Fucik); The Skaters' Waltz (Waldteufel); Overture, Light Cavalry (Suppé); Selection from Cavalleria rusticana (Mascagni); Melody for Vibraphone, Parlez-moi d'amour (Lenoir); Selection from Nina Rosa (Romberg); Fantasia, Les airs de Chevalier (Salabert). 11.0, Dance Music from the Savoy. 12 Midnight (approx.), Close Down.

STUTTART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12 Noon, Promenade Concert from the Schlossplatz. Army March, No. 27; Festival Overture (Benning); Selection from Madame Butterfly (Puccini); Operetta Revue (Férras); Duet-etc. Marschchen (Blankenburg). 1. p.m., Gramophone Music. 1.15, Time and News. 1.30, Concert from Langenberg. 2.0 to 2.15, Programme arranged by the Post Office, with Gramophone Music. 3.30, Programme for Children. 4.30, Concert by the Württemberg Symphony Orchestra, conducted by Gustav Gorch. March, Kunst und Natur (Schumann); Hungarian Comedy Overture (Kéler-Béla); Potpourri, Vom Rhein zur Donau (Ghodel); Waltz, Lotus Flowers (Ohlson); Potpourri, Fünf Uhr Tee mit Robert Stolz (Hastal); Intermezzo, Hochzeit über Manonette (Kockert); March, (Old Comrade) (Teike). 5.53, Time and News. 6.0, Musical Parities (on Gramophone Records). 6.25, Talk: Practical Hints for Holiday Photographers. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Talk: The German Gymnastic Festival. 8.10, Programme from Berlin (Witzleben). 8.50, History—and the Ego: The Political Thinker, the Sentimental Thinker, and the Intellectual Leader. 9.10, Old and New Dance Music. 9.40, See Munich. 10.20, Time and News. 10.45, Programme from Langenberg. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m., Concert by the Trieste Lute Quartet: Pastorale (Bocherini-Vizzari); Ochsenmett (Haydn); Mandoline Solos: (a) Serenata lombarda (Alfieri), (b) Love Song (Münier); Trümmerei (Schumann); An den Frühling (Grieg); Mandoline Solos: (a) Raceotto strano (Calace), (b) Mazurka, (c) La capricciosa (Elgar); Festa al villaggio (Canas); Fantasia spagnola (Reclenghieri). 6.0 p.m. till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 p.m., Song Recital. 6.0 to 6.5, Announcements. 6.35, Giornale Radio, Agricultural, and Dopolavoro Notes. 7.0, Time, Tourist Report, and Light Music on Gramophone Records. 7.20, Announcements in Foreign Languages. 7.43, Gramophone Music. 8.0, Giornale Radio, Sports Notes, and Weather. 8.15, Medical Talk. 8.30, A Comedy in Three Acts, followed by Programme of Variety Music. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.25 metres (Evening); 10 kW.—10.0 to 11.15 a.m., Religious Information in Spanish. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—1.0 p.m., Time and News. 1.10 to 2.0, Opera Music on Gramophone Records. 3.0, Time, Weather and Market Prices. 3.20, Talk: The Vienna Postage Stamp Exhibition. 3.50, Talk: The Conquest of the Air—One Hundred and Fifty Years of Balloon Aviation. 3.55, Sound Film Music on Gramophone Records. 4.30, Talk: Imagination and Fantasy. 4.55, Talk: The Austrian Technical Schools. 5.20, Adolf Kirchl Concert. The Quartet and Choir of the Vienna Schubert Society, conducted by Viktor Keldorfer. Soloist: Franz Karl Enhs (Songs); Choir: (a) Es muss ein Wunderbares sein, (b) Es steht ein Lindl; Franz Fuchs; (c) Es zieht herauf die stille Nacht, (d) Vereitelter Plan, (e) Begegnung; Quartet: (a) Geständnis, (b) Unbeständig, (c) Der alte Goethe, Choir: (a) Stilleben, (b) Gefährnis, 6.10, Health Talk. 6.35, Talk for Tourists. 7.0, Talk: The Leiser Mountains. 7.25, Time, Weather and Programme Announcements. 7.35, A Dream of Old Vienna—Variety Concert by Joseph Holzer's Orchestra, the Popt Wihart Quartet, Christ Kern (Soprano), Leuz and Scheinbauer (Duets), and Adalbert Vesely (Zither). 9.5, Talk on Midsummer Day. 9.55, Topical Talk. 10.10, News. 10.25, Talk on the Danube. 10.35, Dance Music from Hübners Kur-salon.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Gramophone Music. 12.25, Polish Press Review. 12.35, Gramophone Music. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.10, Announcements. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.45, Announcements. 4.0, Concert by a Wind Instrument Orchestra, conducted by L. Cymerman. Concert Overture (Hause); Czardas, from Pan Twardowski (Rozycky); Selection from The Swan Lake (Tchaikovsky); Canon (Arensky); Potpourri (Cymerman); March (Bielewicz). 5.0, Topical Talk. 5.15, Popular Concert, relayed from Ciechocinek. 6.15, Sports and Tourist Report. 6.35, Song Recital by Hlęna Weyberg; Aria from Akestes (Glinka); La Zingarella (Paisiello); Il mio bel fuoco (Marelli-Benedetto); Traum durch die Dämmerung (R. Strauss); Night (Wolff); Melody (Szymanowski). 7.5, Gramophone Music. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Reading. 8.0, Humorous Programme. 8.55, Radio Journal. 9.5, Agricultural Correspondence. 9.15, Trio in A Minor, Op. 50, (Tchaikovsky), by Mme. Knita (Violin), J. Przybojewsky (Cello), and G. Lefeld, (Pianoforte). 10.0, Talk in English: The Polish State Railways. 10.15, Gramophone Music. 10.25, Sports Talk. 10.55, Aviation Weather Report and Police Notes. 10.40, Dance Music.

WILNO

533 kc/s, 563 metres; 16 kW.—6.35 p.m., Gramophone Concert for Young People with Introductory Talk. 7.5, Topical Talk. 7.20, Programme Announcements. 7.25, Lithuanian Review. 7.40 till Close Down, See Warsaw.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—8.10 p.m., Announcements. 8.30, Concert. 10.20, News and Weather. 10.40, Dance Music. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW.—Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Stock Exchange Quotations, and Weather Report. 5.0, Programme for Children. 6.45, News. 7.0, French Lesson. 7.15, Talk: Ireland and the Artist. 7.30, Time Signal. 7.31, Pianoforte and Violin Recital by Mr. and Mrs. Neeson. 8.0, Concert by the Commando Grand Orchestra, conducted by Joseph Muscant, relayed from the Comodoro Theatre, Hammersmith. 9.0, Song Recital by J. C. Browner. 9.10, The Station Orchestra. 9.20, Song Recital by J. C. Browner (contd.). 9.30, Violin Solos by L. Hughes. 9.45, Sponsored Programme. 10.45, Time, News, Weather, and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Station Trio. 8.0, Request Gramophone Music. In the interval at 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral, Weather, Exchange, and Market Prices. 10.5, Concert by the Station Orchestra: Military March No. 1 (Schubert); Basque Rhapsody (Gorostiaga) (Anzonetta) (Filipucci). 10.30, Modern Dance Music. 11.0, La Cara de Dios—Musical Play in Three Acts (Chapi). 12 Midnight (in the interval), News. 1.0 a.m. (Friday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—3.0 p.m., Agricultural Notes, Tourist Report and Popolavoro Notes. 8.20, Giornale Radio, Sports Notes, and Weather. 8.30, Time and Announcements. 8.35, Military Band Concert, conducted by Salvatore Rubino: Overture, Il Guarany (Gomez); Selection from La Wally (Catalani); Prelude and Fugue (Mineo); Selection from Boris Godunov (Mussorgsky); Andante from the Second Symphony for Organ (Widor); Toccata from the Fifth Symphony for Organ (Widor); Hymn, Vedette d'Italia (Rubino). In the interval, Talk. 10.30, Gramophone Music. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—5.0 p.m., Gramophone Music. 6.25, Time and Programme Announcements. 6.30, French Lesson. 7.0, Concert by the Station Orchestra. 7.50, Song Recital. 8.30, Programme from Ljubljana, 522 kc/s, 574.7 metres. 10.30, Time and News. 10.35 (approx.), Cigány Music from the Rudnicain Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert of Songs. 2.45, Programme for Children. 3.10, Talk on Plants. 3.30, Weather and Exchange. 3.45, Reading (Wilhelm Busch). 4.0, Concert from Heilsberg. 5.0, Talk for Women: A German Woman in Egypt. 5.25, Topical Talk. 5.35, Song Recital by Nina Litzow; Four Songs (Rudi Stephan): (a) Cythere, (b) Pantierlied, (c) Nachbars Garten, (d) Pappel im Strahl; Three Songs (Otto Besch): (a) Stille im Dunkeln, (b) Dann, (c) Nüchternes Zwiegespräch; Two Songs (Walter Jentsch): (a) Liebe, (b) Liebesflug. 6.0, A Poem. 6.5 (approx.), String Quartet in C Minor, Op. 51, No. 1 (Brahms), by the Dresden String Quartet. 6.30, Old Acquaintances. 7.0, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Epigrams. 8.5 (approx.), Concert by the Berlin Concert Orchestra, conducted by Clemens Schmalstich: Overture, The Barber of Bagdad (Cornelius); Selection from Salome (R. Strauss); Arioso (Fr. Friedl); Second Rhapsody (Liszt); Comedy Overture (Clemens Schmalstich). 9.0, Back to Nature—a Play (Paul Fechter). 10.0, Weather and News. 10.45, Weather for Shipping. 11.0, Programme from Langenberg. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.30 p.m., Variety Concert: Songs, Musical Saw, Mouth Organ and Saxophone Solos. 5.20, Hans-Wilhelm Stein-Saaleck reads from his own Works. 5.40, An Italian Play with Songs for Soloists, Choir and Pianoforte (four hands), Op. 20 (Kurt Boerner and Ludwig Hess-Matrigal); the Composer and Arno Erfurth at the Pianoforte. 6.10, From the Slow Foxtrot to the German Dance—A Dialogue between a Dance Critic and a Dance Instructor. 6.30, Talk: Magdeburg. 6.40, The Witzleben Station informs its Listeners. . . . 7.0, Transmission for all German Stations, relayed from Langenberg. 8.10, Folk Songs. 8.40, Concerto in F for Saxophone and Orchestra (Erwin Dressel) by the Berlin Wireless Orchestra, conducted by Dr. Rudolf von Schmidtseeck. 9.5, Programme of Dance Music, directed by Heinrich Steiner; The Berlin Wireless Orchestra, the Oscar Joost Band, the Berlin Wireless Choir, Eric Helgar (Tenor), and Hans Lorenz (Speaker). In the interval at 9.45 (approx.), Talk: Have you yet heard. . . ? 10.15, News. 10.20, Dance Music (contd.).

THURSDAY

JUNE THE TWENTY-SECOND

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Vocal and instrumental recital.
LONDON REGIONAL White Coons Concert Party.
MIDLAND REGIONAL "Etc. . . . Etc. . . . one inconsequential thing after another," feature programme.
WEST REGIONAL Variety programme.
SCOTTISH REGIONAL "The Royal Scots," a chronicle play by John Gough.
BELFAST Concert by selected prizewinners.

ABROAD

- ATHLONE** 9.30 p.m. Violin solos by L. Hughes.
BARCELONA 7.0 p.m. Concert by the Station Trio.
BARI 8.35 p.m. Military Band concert.
BUCHAREST 5.0 p.m. Romanian music, by the Dinico Orchestra.
COPENHAGEN 10.15 p.m. Music from distant lands.
HAMBURG 10.20 p.m. Concert by the Symphony Orchestra of Unemployed Musicians.
HILVERSUM 11.40 a.m. Concert, conducted by Nico Treep.
PITTSBURGH 8.15 p.m. Radio Troubadours from New York.
TURIN 8.30 p.m. Opera: "Faust," by Gounod.
WARSAW 5.15 p.m. Concert by the Lysenko Ukrainian Choir, conducted by Sologub.

BRUSSELS (No. 1)

590 kc/s, 509 metres; 15 kW.—12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Leemans. 5.0, Concert by the Symphony Orchestra, conducted by Meulemans. Selection from (a) Les Saltimbanques (Ganne), (b) Le Grand Mogol (Audran), (c) Les Mousquetaires au Couvent (Varney), (d) The Drum-Major's Daughter (Offenbach). 5.30, Programme for Children. 6.0, Talk for Workers: Holidays. 6.15, Gramophone Music. 6.30, Concert by the Small Station Orchestra, conducted by Leemans. 7.15, Review for Workers. 7.30, Sports Notes. 8.0, Kettelby Concert by the Radio Orchestra, conducted by Walpot. Soloist: M. Broquet (Tenor); Overture, Chal Romano; The Water Nymph; The Vision of Fuji-San; Algerian Scene; Songs; Gipsy Waltz; Watercolour Sketches. 8.45, Talk: Technical Education and the Young Unemployed. 9.0, Concert by the Symphony Orchestra, conducted by Meulemans, Overture, Phidre (Massenet); Cello Solo: Elegy (Mussenet); Funeral March of a Marionette (Gounod); Meditation on a Prelude of Bach (Gounod); Selection from La Princesse jaune (Saint-Saëns); Dance Macabre (Saint-Saëns); Music from Henry VIII (Saint-Saëns). 10.0, Le Journal Parlé. 10.0, Request Gramophone Records.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish.—12 Noon, Concert by the Small Station Orchestra. Overture, The Merry Wives of Windsor (Nicolai); Selection from I Pagliacci (Leoncavallo); Serenade (De Boeck); Three Songs by Chaliapine on Gramophone Records; Selection from Faust (Gounod). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert. 5.0, Concert by the Radio Orchestra, conducted by Walpot. Soloist: Lombard (Xylophone), K.R.V.O. Strijdlid (Meulemans); Prelude (Rachmaninov); Xylophone Solo: Cloches d'argent (Rimthor); Selection from Show Boat (Kern); Funiculi—Funicula (Denza); When the Guards are on Parade (Sartory). 6.45, Programme for Children. 6.30, Dramatic Programme. 7.10, Catholic Radio Society Notes. 7.15, Religious Address. 7.30, Talk for Women. 8.0, Concert by the Station Symphony Orchestra, conducted by J. Kumps. Soloist: J. J. Sterkens (Tenor). Overture, Benvenuto Cellini (Berlioz); Cortège (Roels); Bacchanale from Samson and Delilah (Saint-Saëns); Two Songs (Schubert); Overture, Oberon (Weber). 8.45, Talk: The Care of Indoor Plants. 9.0, Concert by the Radio Orchestra, conducted by C. Walpot. March, Semper fidelis (Souza); Overture, The Gipsy Baron (Joh. Strauss); Waltz, Donauwallerl (Ivanovic); Two Songs (Schubert); Potpourri (Morena); Selection from White Horse Inn (Benatzky). 9.55, Evening Prayer. 10.0, Journal Parlé. 10.10, Gramophone Concert of Popular Music.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Dinico Orchestra. In an interval at 6.0, Radio Journal. 7.0, Educational Programme. In an interval at 7.20, Gramophone Music. 8.0, Song Recital. 8.20, Beethoven Concert by the Station Orchestra, conducted by Theodore Rogalski. Soloist: Mile. Illy Wechsler (Pianoforte); Overture, Coriolanus, Pianoforte Concerto in E Flat, Symphony No. 4 in B Flat. In an interval at 9.0, Talk. 9.45, Radio Journal. 10.0, Talk in German on Romania.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—Programme also relayed on 840 metres from 8.0 p.m. till Close Down.—7.0 p.m., Gramophone Music. 7.50, Market Prices. 8.0, Talk. 8.30, Puccini Concert for the Seventy-Fifth Anniversary of the Composer's Birth. The Opera House Orchestra, conducted by Otto Berger. Soloists: Margarete Nagy and Julius Torosvi (Songs); Selection from La Rondine; Aria from Manon; Duet and Aria from La Bohème; Two Arias from Tosca; Duet Aria and Prologue to Madame Butterfly; Aria from The Girl of the Golden West; Two Arias from Gianni Schicchi; Selection from Turandot. 10.0, News. 10.45 (approx.), Concert by the Karl Bura (Cigany) Orchestra, relayed from the Ketter Restaurant.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.—Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the Holger Meyer-Oehl String Ensemble, relayed from the Hotel d'Angleterre. 2.0 to 3.0, Interval. 3.0, Concert by the Station Orchestra, conducted by Walter Meyer-Radon; Soloist: Adele Lyngstrup Harlou (Pianoforte); Overture, The Secret Marriage (Cimarosa); Andante from the Inaffner Serenade (Mozart); Military March No. 3 in E Flat (Schubert); Selection from Tosca (Puccini); Valse des fleurs from The Nutcracker Suite (Tchaikovsky); Polonaise from Mignon (Thomas); Pianoforte Solos: (a) Aufschwung (Schumann), (b) Etude in G Flat (Chopin), (c) Impromptu in G Flat (Chopin), (d) Valse caprice in E Flat (Rubinstein); Overture, Si j'étais roi (Adam); Waltz, Die Schönbirner (Lanner); Selection from La vie Parisienne (Offenbach); Ballet Music from Les brigands (Offenbach); Viennese Dance (Gürtner-Friedman); War March (Halvorsen). 5.0, Programme for Boys. 6.25, Exchange and Fish Market Prices. 6.50, Talk: Saving on the Running Expenses of a Car. 6.20, English Lesson. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.30, Talk. 8.0, Time Signal from the Town Hall. 8.2, Programme relayed from the Jerusalem Church. 9.30, A Visit with the Microphone to a Fire Station. 10.0, News. 10.15, Music from Distant Lands; Concert by the Station Orchestra, conducted by Walter Meyer-Radon: Extracts from the Second Indian Suite (MacDowell); Suite, Scenes from the Scottish Highlands (Bantock); Extracts from the Japanese Suite, Op. 33 (Holst); Overture, Turandot (Weber). 11.10 (approx.), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—6.35 p.m., Gramophone Music. 6.50, The Letter Box. 7.5, News. 7.15, Relay of a Traditional Festival from the Market Place. 7.40, see Warsaw. 8.0, Concert. In the interval, News. 10.0, Light Music relayed from the Pavilion Restaurant. In the interval at 10.25, Sports Notes. 11.0, Fanfare from the Tower of St. Mary's Church.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.C.T., T. St. A. Ronald and B. McNabb announcing. 4.30, Concert for Worthing and Littlehampton Listeners: Princess Pat (Herbert); I'll stay with you (Woods); Let's put out the Lights (Berlin); Try a little tenderness (Woods); Horses carry Tails (Redmond); Singing a Song to the Stars (Meyer); Selection from No. No Nanette (Youmans); Always in my Heart; How deep is the Ocean? (Hupfeld); I'll never be the same; Thompson's Old Grey Mule (Pickard); The Wedding of the Birds. 5.15, Concert for Brighton and Hove Listeners: No more love (Friend and Lombardo); Two Duets; Only one Girl in the World for me, Star of the Night; They all do the Rumba (Steingager and Pola); Tell me to-night; In a Cloister Garden (Edgar and Morgan); Manhattan (Alouche); Street of Dreams (Lewis and Young); Waltzing in a Dream (Crushy, Washington, and Young); I wish I was single again (Raymond); Her name is Mary (Sievier); As long as you're there (Monaco). 6.0, Programme in French. 10.0 (approx.), till Close Down, Programme in English by the I.B.C. 10.0 (approx.), Dance Music by the Bicolians; Farewell Blues (Schoebel); Now that you're gone (Kahn); Twelfth Street Rag (Summer); Can't we talk it over? (Washington); You can make my Life a Bed of Roses (Brown); Sing a new song (Wever); Say (Brown); Holding my Hoey's

In an interval from 11.0 to 11.5, Talk: What they are talking about in Berlin. 12 Midnight (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

OSLO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.30 p.m., Radio Journal. 7.40, Talk arranged by the International Labour Bureau. 7.55, Lottery Results and Charades. 8.0, Talk on Wine. 8.15, News. 8.30, Jeunesse—a Comedy in Three Acts (André Picard).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—7.0 p.m., See Prague. 7.10, See Moravská-Ostrava. 10.10, See Prague. 10.25, See Moravská-Ostrava. 11.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW.—Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—2.0 p.m., Time, Weather, News and Exchange. 2.20, Gramophone Concert. 3.0, Agricultural Prices. 3.30, Talk: The New Silesian Lake. 3.40, Book Review. 4.0, See Heilsberg. 5.0, Programme for Children. 5.30, Agricultural Notes. 5.35 (approx.), Song Recital by Ulrich Schmölling (Baritone); Two Songs (Schumann): (a) Frühlingfahrt, (b) An den Sonnenschein; Two Songs (Schubert): (a) Der Musensohn, (b) Die Forelle; Frühlingsspross (Flügel); Frühlingssong (Franz); Mägdlein hab'acht (Stark). 6.0, Talk for Workers. 6.30, Topical Talk. 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Extracts from Tosca—Opera (Puccini), for the Seventy-Fifth Anniversary of the Composer's Birth; Introductory Talk by Dr. Heribert Ringmann. 9.0, News. 9.10, Recital of German Violin Concertos by Franz Schützer and the Silesian Philharmonic Orchestra, conducted by Franz Marszałek; Concerto No. 1 in A Minor (Bach); Concerto in D (Mozart); Fantasia for Violin in C, Op. 131 (Schumann). 10.10, Time, Weather, News, Sports Notes, and Programme Announcements. 10.30, See Berlin (Witzleben). In an interval at 11.1, Talk: What People are talking about in Berlin. 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—7.0 p.m., See Prague. 7.10, See Moravská-Ostrava. 10.10, See Prague. 10.25, See Moravská-Ostrava. 11.15 (approx.), Close Down.

JUNE 22nd

THURSDAY

continued

Hand (Goering); When the Band goes marching by (Sarony); Actions speak louder than Words (Vallee); Watch the Navy (Howell); Home (Van Steeden); Who's your little Who'sis (Hirsch); Happy Darkies (Goefrey); You rascal, you (Theard); The Brooklyn Cake-Walk (Thurban). 11.0, Listeners' Request Half-Hour: Gipsy Moon (Bogdanoff); The Future Mrs. Hawkins (Chewalter); Selection from Carmen (Bizet); Bonnie Lass-a-bon accord (Traditional); Granny's Old Arm Chair (Cronit); Accordion Nights; The Hiker's Song (Longstaffe); Ben Hur March. 11.30, Concert by the Mills: Brothers on Gramophone Records; Bugle Call Rag; Coney Island Washboard; Guitar Solo; Hawaiian Sweetheart of mine (Haugney); The Old Man of the Mountain; Sweet Sue, just you (Young); Song, Siboney (Simons); It don't mean a thing, 12.5 a.m. (Friday). The I.B.C. Late News Bulletin, 12.10, Club Concert for Evesham Listeners: Washboard Blues (Callahan); Song, The Yeomen of England, from Merric England (German); Accordion Solo, Rosa (Vola); Sally in our Alley (Carey); Heat Waves (Nat Leslie); Duet, You fell in love with the Moon; I'm betting the Roll on Roamer; Fairy on the Clock (Myers); Johann Strauss Potpourri (arr. Weber). 1.0, Concert of Light Music: Come out Vienna (Joh. Strauss); A Glass of Golden Bubbles (arr. Levy); Dance pretty Lady, from the Film Waltz Time; In Santa Lucia (Strauss); Rosa Mia (Guizur); The Porter's Love Song (Lombardo); The Windmill Waltz (Rust); The Village Band (Friburg); I lost my Girl from Memphis. 1.30, Vocal and Orchestral Concert: Caledonian Reels (Traditional); Songs: (a) Three Fishers went sailing, (b) Old John Braddlem; Come o'er the Stream, Charlie (Traditional); Songs: (a) On Ikla Moor baht aht, (b) Caller O'u (Gray). (c) Pretty Flowers (Perkins); Strip the Willow (arr. Diack). 2.0, Dance Music by the Deolians; Good Evenin' (Seymour) just a little closer (Meyer); The Kiss Waltz (Burke); I'm telling the World she's mine (Maurice); There's something in your Eyes (Grothe); Mollie (N. H. Browne); The longer that you linger in Virginia (Donaldson); Skippy (Conrad); I'm left with the Blues in my Heart (Mills); The Voodoo (Lopez); Maria my own (Lecouina); As long as you're there (Monaco); Farewell Blues (Shoebel); Arm in Arm (Zimmann); Twelfth Street Rag (Summer); I know you're lying, but I love it (Oppenheim). 2.57, I.B.C. Goodnight Melody. 3.0, Close Down.

FLensburg.—See Hamburg.
FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.0 p.m., Karl Rötger speaks about his book, Das Bireh der Gestirne. 6.25, Talk: The Electro-Acoustical Organ. 6.45, Review of the Day. 6.50, Time and Announcements. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Talk by Manfred Marlo. 8.10, Hans Heiling—Opera in Three Acts and a Prelude (Marschner). In the Interval, Variety Programme. 10.25, Time and News.

FREDRIKSSTAD.—See Oslo.
FREIBURG.—See Stuttgart.
GENEVA.—See Radio-Suisse Romande.
GENOA.—See Turin.
GLEIWITZ.—See Breslau.
GOTEBORG.—See Stockholm.
GRAZ.—See Vienna.
HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW., relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—5.30 p.m., Variety Programme. 6.20, Review of New Books. 6.45, Frankfurt Exchange and Weather. 7.0, Transmission for all German Stations relayed from Langenberg. 8.0, Topical Talk. 8.10, See Berlin (Witzleben). 10.0, Time and News. 10.20 (from Hanover). Concert by the Symphony Orchestra of Unemployed Musicians, conducted by Otto Ebel von Sosen; Overture, Meine Jugend (Lehár); Selection from La Bohème (Puccini); Swedish Rhapsody (Alfvén); Polka (Raff); Noch sind die Tage der Rosen (Baumgartner); Pesther Walzer (Lanner); Selection from Light Cavalry (Suppé); Intermezzo, Wasserspiele (Rusch); Grazer Bummel-Marsch (Stilp).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW., relayed by Danzig, 662 kc/s, 453.2 metres.—1.0 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Overture, Die Felsenmühle (Reissiger); Ballet Suite (Armandola); Waltz Intermezzo, Im Weinrausch (Patzig); Serenatale bruna (Rosati); Slav Rhapsody (Friedemann); Waltz, Rheinländer (Dieker); Selection from Frau Luna (Lincke); Overture, Frau Meisterin (Suppé). In an interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Agricultural Prices and Exchange. 3.30, Programme for

Young People. Dialogue: Political Education for Young Germans. 4.0, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky. Soloist, Ernst Rudolph (Pianoforte). Overture, Oberon (Weber); Orchestral Suite, Sketches, Op. 19 (Grimpe); Pianoforte Concerto (Graener); Second Movement from the Symphony, from the New World (Dvorak); Hungarian Divertimento (Schubert); Waltz, Ma bien aimée (Waldteufel); Russian Sketches (Dreyer). 5.55, Book Review. 6.15, Agricultural Prices. 6.25, Agricultural Talk. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Concert of German Folk Music and Hunting Melodies. The French Horn Quartet of the Königsberg Opera House Orchestra and Fritz Nowack (Trumpet). Was ist des Deutschen Vaterland (Reichard); Das traute deutsche Herz (Otto); Waldandacht (Abt); Die Post im Walde (Schäffer); Waldhornklang (Silcher); Das einsame Rößlein (Hermes); Auf der Wacht (Dierig); Des Jägers Abschied vom Walde (Mendelssohn); Gute Nacht (Abt). 8.35, News. 8.40, Panoptikum—Radio Potpourri (Ernst Jerosch). The Small Station Orchestra, conducted by Eugen Wilcken. 10.0, Weather and News, followed by Report on the East Prussian Gymnastic Display, on Gramophone Records.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Algemeene Vereeniging Radio Omroep. 11.40 a.m., Concert by the Wireless Orchestra, conducted by Nico Treep; Overture, Orpheus in the Underworld (Offenbach); Selection from Aida (Verdi); The Emperor Waltz (Joh. Strauss); Serenade (Haydn); March (Moszkowsky); Gramophone Music; Selection from The Bird Fancier (Zeller); Waltz (Morena); Chromatic Gallop (Liszt); Violin Solo; Canzonetta (d'Ambrosio); Cello Solo; Le Cygne (Saint-Saëns); Gramophone Music; Selection from The Geisha (Jones). 1.55 to 2.10, Interval. 2.10, Concert (contd.). Overture, The Maid of Artois (Ballez); Petite Suite de Concert (Coleridge-Taylor); A Wedding Day on Trollhøgen (Grieg). 2.40, Talk on Fashions. 3.25, Gramophone Music. 3.40, Programme for Hospitals. 4.10, Gramophone Music. 4.40, Programme for Children. 5.20, Concert by the Wireless Orchestra, conducted by Nico Treep; Overture, Rund um die Liebe (O. Strauss); The Dancer of Seville (Grunow); Waltz, Die Kosenden (Lanner); Oriental Suite (Popy); Spring Song (Gounod); Serenade (Drdla); Orientzauber (Dieker); Liberty March (Sousa). 6.10, Sports Talk. 6.40, Concert (contd.). March, Treu und fest (Blon); Waltz from A Waltz Dream (O. Strauss); Morocco Patrol (Jesseb); Shadow Dance, from Dinorah (Meyerbeer); March, Hoch meine Musik (Blankenburg). 7.10, Talk: A Motoring Holiday in the Netherlands. 7.40, Time, Weather and News. 7.45, Gramophone Music. 7.55, Paul Abraham Concert, relayed from the Concertgebouw, Amsterdam. The Concertgebouw Orchestra, conducted by the Composer. Soloists: Maria Elser (Soprano) and Louis Graeyer (Tenor). Prelude to Ball in Savoy. Duet from Ball in Savoy; Soprano Solo from The Flower of Hawaii; Tenor Solo from The Flower of Hawaii; Duet from Viktoria and her Hussar; Soprano Solo from Ball in Savoy; Tenor Solo from The Flower of Hawaii; Soprano Solo from Ball in Savoy; Final of Act 1 of Ball in Savoy; Selection from Viktoria and her Hussar; Tenor Solo from (a) The Flower of Hawaii, (b) Ball in Savoy, (c) Viktoria and her Hussar; Final from The Flower of Hawaii; Soprano Solo from Zigeuner der Nacht; Soprano Solo from Ball in Savoy; Duet from Viktoria and her Hussar. In the interval, Gramophone Music. 10.10, Gramophone Music. 10.40, News. 10.50, Dance Music by The Ramblers, relayed from Hotel Hamdorff, Laren. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—1.40 p.m. till Close Down, Programme of the Christian Radio Society (N.C.R.V.). 1.40 p.m., Handicraft Lesson. 2.40, Symphony No. 4 in F Minor (Tchaikovsky) on Gramophone Records. 3.20, Programme to be announced. 3.40, Programme of Sacred Music and Addresses. 4.40, Concert by the Arnhem Mandoline Quintet; Cavatina (Raff); Grossmütterchen erzählt (Ritter); Sobre las Olas (Rosas); Potpourri of Children's Songs (Clere) on Gramophone Records; March, Sempre avanti (Teessling); Heimgedanken's Wachtparade (Necek); March (Beka). 5.25, Handicraft Lesson for Young People. 5.55, Talk; Dutch Monuments. 6.25, Dress-making Lesson. 6.40, Police Notes. 6.55, Talk; Trade Unionism. 7.10, Topical Review of the Week. 7.40, Potpourri of Puccini Music on Gramophone Records. 7.50, Concert by the Suraua Corda Choir, relayed from a Church in Leiden. Soloists: J. Statijn (Oboe) and Anthen v. d. Horst (Organ). Choir: (a) Psalm 84—Verses 1 and

2 (Cuypers), (b) Improperia (Palestrina); Suite for Organ (Clérambault); Sonata for Oboe and Organ (Telemann); Three English Hymns for Choir: (a) O Worship the King (William Croft), (b) Ere I sleep (Evans), (c) Lead, Kindly Light (John Bacus Dykes); Three Songs for Choir (Max Reger): (a) T'us ist geboren, (b) Lasst uns das Kindlein wiegen, (c) O Herr Got, nimm du von mir; Concertino for Oboe and Organ (Guilland); Choir: (a) Allein zu dir (Lechner), (b) Es müssen sich freuen (F. E. Nielt). 9.25, Talk: Liberty of Conscience. 9.55, News. 10.0, Gramophone Concert. Part I—Weber Music; Part II—Classical and Sacred Music. 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.
KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—6.35 p.m., Choral Concert, 7.5, Sports Talk. 7.20, Announcements and Gramophone Music. 7.40 till Close Down, See Warsaw.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—8.0 p.m., Time, Weather, and News. 8.40, Variety Items. 9.0, Health Talk. 9.20, Trio Concert. 9.50, Sports Talk. 10.0, Talk in Esperanto: The Jews in Lithuania. 10.20, Concert. 11.0 (approx.), Close Down.

KIEL.—See Hamburg.
KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Concert by the Station Orchestra. 7.0, Talk. 7.25, Concert by the Kalliohoi Choir. 8.15, Concert by the Station Orchestra; Waltz, Winterstürme (Fueik); Melody (Halm); Air from Der Bettelstudent (Müllacker). 8.45, News in Finnish and Swedish. 9.15, Light Music, relayed from the Kappeli-Restaurant.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Wolf; Soloist: Tilly Steinkrüger (Soprano); Overture, Der Walfischmüch von Worms (Lortzing); Songs: (a) Liechen ist da (Franz), (b) Schmegeglockchen (Schumann), (c) Er ist's (Schumann), (d) Leise, leise weht ihr Lüfte (Reger); Norwegian Dances (Grieg); Selection from Pole Poppenspäler (Stierlin); Selection from Dalibor (Smetana); Waltz, Die Hydropathen (Gungl); Potpourri, Viennese Folk Music (Komzak). In the interval at 2.0, News. 2.30, Sponsored Programme with Gramophone Music. 3.0, Programme for Children. 3.30, Economic Notes and Time. 4.0, Talk: The Elementary School Teacher. 4.30, Concert, conducted by Eysoldt; Soloist: Terese Sarata-Kuermann (Violin); Rhapsody (Dolmany); Gipsy Music (Pataky); Violin Solos: (a) Hungarian Melodies (Ernst), (b) Drei Reigen (Schmidt-Reinecke); Prelude to the Third Act of Der Pfifertag (Schillings); Prelude to the Suite, Scènes dramatiques (Massenet). 5.50, Talk: Hunting by the Negroes in the Forests of Liberia. 6.10, Topical Talk. 6.20, French Lesson. 6.45, Weather, Time, Economic Notes, and Sports Report. 7.0, Transmission for all German Stations; Annette Droste-Hülshoff—a Memorial Programme by Dr. Friedrich Castelle, relayed from Cologne. 8.0, News. 8.5, Der grosse Kalender Oratorio for Soprano, Baritone, Mixed Choir, and Orchestra (Hermann Reuter) relayed from Dortmund; Conductor: Wilhelm Sieben. 10.0, News and Sports Report. 10.25, Serenade and Dance Music, conducted by Eysoldt. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Gramophone Music. 1.0 p.m., News. 1.15, Gramophone Music, followed by News. 2.10, Film Report. 2.40, Trio in D Minor, Op. 6 (Podehl) by Erich Ethel (Oboe), Emil Gensler (Bassoon) and the Composer (Viola). 3.0, Programme for Children. 3.35, Market Prices. 4.0, Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen. Overture, Il ritorno di Tobia (Haydn); Ballet Music from Anacréon (Cherubini); Divertissement à la hongroise, Op. 54 (Schubert); Elegy (Sieg); Polonaise No. 2 in E (Liszt); Ballet Overture (Kremsner); Talk; Overture, Der Wildschütz (Lortzing); Serenade for Strings (Elgar); Caprice brillant (Glinka). 5.50, Market Prices, Weather and Time. 6.0, Talk: Water, Air and Sun. 6.20, Dialogue on the Voluntary Labour Service for Girls. 6.45, Programme to be announced. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Military Band Concert, conducted by Kurt Giltseh. 9.0, News. 9.10, Radio Sequence (Otto Thiemer). 9.55, Puccini Concert on Gramophone Records; Act Two of Madame Butterfly; Act One of Tosca;

Extract from La Bohème. 10.25, News. 10.30 (approx.), Hermann Grabner Concert. Albrecht Linke (Tenor), Max Kramer, Hellmut Radelow and Eberhard Sauerbier (Violins), and Friedrich Högner (Organ); Concerto in old style for Three Violins; Song Cycle; Heimgedanken am Meer; Prelude, Passacaglia and Fugue for Organ; Media vita in morte sumus. 12 Midnight, Close Down.

LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—German Programme.—7.0 p.m., Gramophone Music. 7.40, Weather. 7.45, Concerto in A Minor for Violin and Cello (Brahms). 8.25, Humorous Talk in German. 8.40, Gramophone Music. 8.50, News in French. 9.15, German Songs. 9.45, News in German. 10.0, Reading in German.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Orchestral Concert. Soloists: Mme. Martha Pomret (Pianoforte), M. Gerin (Flute), and M. Huguebert Ressort (Tenor). After the Concert, News.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Programme from Madrid (EAJ7). After the Programme, Radio Chronicle. 1.0 a.m. (approx.) (Friday), Close Down.

MADRID

UNION RADIO (EAJ7), 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, and Programme for Children. 9.15, News and Political Review. 9.30 to 10.30, Interval. 10.30, English Lesson. 11.0, Chimes, Time Signal, Political Review, and Talk on Educational Films. 11.30 (approx.), Concert by the Station Sextet with Songs. After the Concert, Literary Programme. 12.45 a.m. (Friday) News and Dance Music. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—2.50 p.m., Military Band Concert. 3.55, See Prague. 4.0, Report from the Mining Museum in Moravská-Ostrava. 5.30, Report from the Iron Foundry in Vitkovice. 5.50, Quartet in D Minor, Op. 2 (Milan Balcák). 6.15, Talk for Workers. 6.25, See Prague. 6.30, German Transmission: Legal Talk. 7.0, See Prague. 7.10, Talk on Moravská-Ostrava. 7.25, Introductory Talk to the following Relay. 7.30, Simone Boccanegra—Opera (Verdi), relayed from the National Theatre. 10.10, See Prague. 10.25, Concert by the Station Jazz Band, conducted by J. Plichta. 11.15 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW., relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert, conducted by Erich Kloss. Overture, Preciosa (Weber); Ballad, Tom the Rhymer (Loewe); Polonaise (Svendsen); Selection from Carmen (Bizet); Waltz, A Summer Evening (Waldteufel); Suite Truderinger Bauernhochzeit (Rüdinger); Minuet (Schebek); Elfenreigen und Schmetterling (Plank). 5.45, Talk: Horse-breeding in Bavaria. 6.5, Concert for Soprano, Tenor, Pianoforte and Harp. 6.45, Time, Weather, and Agricultural Report. 7.0, Transmission for all German Stations relayed from Langenberg. 8.5, Madame Butterfly—Opera in Three Acts (Puccini), relayed from the Municipal Theatre, Nürnberg. 10.40, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW., relayed by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 452.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—2.0 to 3.0 p.m., Military Music. 5.15, Song and Violin Recital by Bertha Wang Halvorsen and Harald Eidsmo; Two Songs (Grieg); Violin Solos: (a) Sonata in G (Mozart), (b) Slav Dances (Dvorák-Kreisler), (c) Hungarian Dance, No. 2 (Brahms-Jochheim). 6.0, Literary Talk. 6.30, Divine Service. 7.0, Advertising Notes. 7.15, Weather and News. 7.30, Jazz Music on Gramophone Records. 8.0, Time. 8.1, Agricultural Talk. 8.30, La Voix humaine—Comedy (Cocteau). 9.10, Programme to be announced. 9.20, Advertising Notes. 9.40, Weather. 10.0, Topical Talk. 10.15, Concert by a Male Voice Choir

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Doppolavoro Announcements, Agricultural Report, and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time and

JUNE 22nd THURSDAY continued

News. 8.45, Concert of Operetta Music: Extracts from (a) Fascino azzurro (Bellini), (b) Clo-Clo (Lehár), (c) Addio giovinezza (Pietri), and (d) A Waltz Dream (O. Strauss). In the interval at 9.30, Transfuga—Comedy in One Act (Gherardini). 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,050 metres) at 10.26 a.m. and 11.20 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Talk on the Theatre. 7.0, Le Journal Parlé. 8.30, Gramophone Concert. Part I, Old Music; Part II, Variety Music. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Programme for Children. 7.15, Le Journal Parlé. 7.30, Gramophone Music. 8.0, Talk on Agriculture. 8.15, Interval. 8.30, Sponsored Programme. 9.0, Interval. 9.20, Violin and Pianoforte Recital by M. Stefan Frenkel and M. Maurice Béché. Concert in G Minor (Vivaldi); Sonatine transatlantique (Tansmann-Frenkel); Three Mazurkas (Fitzberg-Frenkel); Canzonetta (Lopatnikov); My Country (Smetana); Perpetuum mobile (Niek-Frenkel). 10.0, A Relay from Mon Paris. 11.0, News.

PARIS

RADIO PARIS, Call GFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Music: Waltz, Estudiantina (Waldteufel); Waltz, The Blue Danube (Joh. Strauss). 8.0, Press Review and Weather. 12 Noon, Protestant Address. 12.30 p.m., Orchestral Concert. Part I: Children's Music: Suite, Mother Goose (Ravel); Gramophone Records: (a) Two Melodies (Fort), (b) Becassine (Baer-Humble), (c) Les malheurs de Sophie (Humble-Montjon). Part II: Operetta and Sound Film Music: Selection from The Three Musketeers (Friml); Three Melodies from An Hour with You (Whiting). Gramophone Records: (a) Rumba, Azor (Gabaroché), (b) Tango, Une nuit Argentine; Trouble-moi (Houli); Selection from Chouletto (Hahn); Extracts from Ta Bouche (Yvain). In the interval at 1.0, Exchange, News and Weather, and at 1.30, Exchange. 6.10, Agricultural Talk and Market Prices. 6.30, Gramophone Music: Melodies from: (a) Rose Marie (Friml-Stothart), (b) No. No, Nannette (Youmans), (c) Funny Face (Gershwin). 6.45, Legal Talk. 7.0, Talk for Women. 7.20, Orchestral Music: Overture, Russian and Ludmilla (Glinka); La Baladine (Gabriel Marie); Ronde des Intins (Xerini); Russian March (Luigini). 7.45, Review of the German Press. 8.0, Poems and Songs of the Eighteenth Century. 8.30, News, Weather and Sports Notes. 8.45, Tourist Talk. 9.0, Concert of Romanian Music, relayed from l'Ecole Normale de Musique, String Quartet (Jora); Sonata in F (Enesco); Sonata for Flute and Pianoforte (Golestan); Melodies (Alessandrescu); Pianoforte Solos: Two Dances (Golestan); Promise (Golestan); Quartet (Enesco). In the intervals at 8.40, Review by M. Bonnard, and at 9.15, Press Review and News.

PITTSBURGH

(KDKA), 920 kc/s, 306 metres; 50 kW. Relay by W3XK on 48.86 metres and 25.27 metres.—7.30 p.m., KDKA Home Forum. 7.55, Care of the Garden by Alfred C. Hottes. 8.0, Betty and Bob, from New York. 8.15, Radio Troubadours, from New York. 8.45, State Federation of Pennsylvania Women. 8.58, Baseball Scores. 9.0, Thursday Special, from New York. 9.30, Business News and Market Reports. 9.45, Riggs and Moke. 9.58, Baseball Scores. 10.0, Rhythm Kings. 10.15, Concert Favourites, from New York. 10.30, Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal and Press News-Reeler. 11.5, Bert Lown and his Park Central Hotel Orchestra. 11.15, Weather Report. 11.16, Sport Review. 11.23, One Song. 11.28, Announcement. 11.29, Temperature Report. 11.30, Pittsburgh Spotlights. 11.39 to 3.50 a.m. (Friday), New York Relay. 11.39, Old Songs of the Church. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15 a.m., Booth Tarkington's Maid and Cousin Bill. 12.30, Variety Programme. 12.45, Merle Thorpe Talks. 1.0, Captain Diamond's Adventures. 1.30, Rin-Tin-Tin Thrillers. 1.45, Floyd Gibbons. 2.0, Death Valley Days. 2.50, Wayne King's Orchestra with Lady Esther. 3.0, Time Signal and Century of Progress Festival Orchestra.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—5.15 p.m., See Warsaw. 7.20, Miscellaneous Items and Announcements. 7.35, Theatre Guide and Programme Announcements. 7.40, See Warsaw. 7.58, Time. 8.0, Pianoforte and Clarinet Recital of Music by Mozart and Brahms. 9.0, Pianoforte and Song Recital of Rimsky-Korsakov Music. In the interval, News from Warsaw. 10.0, Talk. 10.15, Time, Sports Review, and Police Notes. 10.30 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Moravská-Ostrava. 3.55, Exchange. 4.0, See Moravská-Ostrava. 4.25 to 5.30, Interval. 5.30, See Moravská-Ostrava. 6.25, News in German. 6.30, See Moravská-Ostrava. 7.0, Chimes and News. 7.10, See Moravská-Ostrava. 10.0, Time and News. 10.25, See Moravská-Ostrava. 11.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres, 25 kW.; and Geneva, 395 kc/s, 760 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News. 12.40 (from Geneva), Gramophone Music. 12.45 (from Geneva), Fridolin and his Associates. 1.0 (from Lausanne), Financial Notes. 1.10 (from Lausanne), Gramophone Music. 2.0 to 3.28, No transmission. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Geneva), Concert. 4.0 (from Geneva), Talk. 4.20 (from Geneva), Concert (contd.). 5.0 (from Geneva), Readings for Young People. 5.30 to 7.0, No transmission. 7.0 (from Geneva), Talk. 7.30 (from Geneva), A Radio Interview. 8.0 (from Geneva), Concert. 9.50, News. 10.0 (from Geneva), Songs on Gramophone Records. 11.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.0 p.m., Talk on Wireless. 6.30, Talk. 7.0, Weather. 7.5, Symphony Concert, relayed from the Grand Parc de Vermanis. Part I: Latvian Music. Part II: Rimsky-Korsakov Concert. 9.0, News and Weather. 9.15, Relay of Foreign Stations. 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

1RO, 680 kc/s, 441 metres; 50 kW. Relay by Naples, 941 kc/s, 319 metres; and by 2RU, 11,810 kc/s, 25.4 metres.—1.5 to 2.15 p.m., Orchestral Concert. In the interval from 1.50 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30 to 6.30, Concert: Adalberto Simonetti (Violin), Luigi Nominis (Tenor), and Maria Romano (Soprano); Violin Solos: (a) Melody (Gluck), (b) Canto amoroso (Sanmartini); Tenor Solos: (a) Aria from A Masked Ball (Verdi), (b) Aria from Isabella (Mascagni), (c) Povero Pinchinnello (Buzzi-Peccia); Violin Solos: (a) Hindin Song (Rimsky-Korsakov-Kreiser), (b) La Garcia (Chabran-Corti); Soprano Solos: (a) Stormhatter (Respighi), (b) Aria from Fedra (Giordano), (c) Aria from The Force of Destiny (Verdi). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Popolavoro Notes. 7.10, Tourist Report. 7.20, Announcements in Foreign Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Gramophone Music. 8.50, Giornale Radio and Sports Notes. 8.45, Symphony Concert, Giornale Radio after the Programme.

SALZBURG. See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relay at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—12.45 a.m. (Friday), Stock Reports. 1.0 till 3.0, New York Relay. 1.0, Variety Programme. 2.0, Captain Henry's Show Boat. 3.0, Variety Programme Hour from New York, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres, and Bern, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from Basle), Familiar Overtures on Gramophone Records. 12.30 p.m., Time, Weather and News. 12.40 (from Basle), Concert by the Kremo Orchestra. 1.25 (from Basle), Exchange, Time and Weather. 5.0 (from Zurich), Concert by the Small Station Orchestra. 6.0 (from Zurich), Gramophone Music. 6.30 (from Basle), Talk: New French Poetry. 7.0 (from Basle), Time, Weather and Talk for Workers. 7.10 (from Basle), Italian Folk Music on Gramophone Records. 7.45 (from Basle), Italian Lesson. 8.30 (from Basle), Concert, by Basle Boys' School Choirs. 9.0, Weather and News. 9.25 (from Basle), Choral Concert. 10.20 (approx.), Close Down.

SEVILLE

UNION RADIO (EAUS), 815 kc/s, 268.1 metres; 1.5 kW.—9.30 to 10.0 a.m., News. 3.0 to 4.0 p.m., Concert by the Station Orchestra: Schottische, El desahogado (Pedro Palau); Zambra (Granados); Overture, A

Midsommer's Night's Dream (Mendelssohn); Selection from Los cadetes de la reina (Luna); Flamenco Songs. 10.0, Variety Music: Prelude to Jugar con fuego (Barbieri); Andalusian Dance, Entre flores (Pacheco); Romance, Don gil de Alcala (Penella); Serenade, Sierra Morena (Monasterio); Pavane, La mesonera de Tordesillas (Morena Torroba); Foxtrot, If love were all (Coward); Intermezzo, El baile de Luis Alonso (Jimenez); Song from Gianni Schicchi (Puccini); Selection from Los de Arogon (Serrano); Tango, El Grammyo (Camaro); Idyll from Lysistrata (Linke); Selection from Aida (Verdi); Romance (Tchaikovsky); Selection from Mlada (Rimsky-Korsakov); Flamenco Songs. 1.0 a.m. (Friday), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relay by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Studio Service, relayed from Kristinehamn, 1,480 kc/s, 203 metres. 5.50, A Visit with the Microphone. 5.45, Gramophone Music. 6.45, Reading. 7.15, Weather and News. 7.50, Talk, relayed from Örebro, 1,274 kc/s, 235.5 metres. 8.0, Concert by the Station Orchestra: Soloist: Brita Ewert (Songs); Overture, Coriolanus (Beethoven); Ballet Suite (Gluck); Penelope's Aria from Odysseus (Bruch); A Pastorale in Three Scenes (Palmer); Songs: (a) Nur wer die Sehnsucht kennt (Tchaikovsky), (b) Liebesfeier (Winghartner), (c) Über Nacht (Wolf); Swedish Rhapsody, Midsonmarvaka (Alfvén). 7.15, Talk. 7.45, Weather and News. 10.0, Concert by Georg Ender's Orchestra from Bern's Hall: Overture, Maritana (Wallace); Waltz, Frühlingsstimmen (Joh. Strauss); Selection from La Gioconda (Ponchielli); Berceuse (d'Ambrosio); Selection from Countess Maritza (Kálmán); The Phantom Brigade (Myddleton). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Popular Music. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Orchestral Concert of Mihul's Music for the Hundred-and-seventieth Anniversary of the Composer's Birth. Conductor: Maurice de Villers. 2.0, Programme for Children. 3.0 to 4.15, Interval. 4.15, French Elocution Lesson. 4.30, Programme for Children, relayed from Bordeaux-Lafayette. 6.0, Talk in German: Castles on the Rhine—Chambord. 6.15, Talk for Women, in French. 6.30, Louis Aubert Concert, conducted by Maurice de Villers. Soloists: Gygöire (Violin), Annette Brinour (Songs), and Pogoda (Pianoforte). Musical Picture, Dryade; Caprice for Violin and Orchestra; Hebrew Songs: (a) Kol Nidrei, (b) Berceuse, (c) Der Rebell der Gabele; Fantasia for Pianoforte and Orchestra; Four Arab Poems; Prelude; Nocturne; Romance; Old Spanish Song. 7.30, Time and News. 7.45, Gramophone Concert: Alla Spagnola (Glazunov); Etude (Scriabin); Waltz (Chopin); Träumerei (Schumann); Tarantella (Popper); Serenade (Borodin); Mazurka (Lidov). 8.15, Press Review in German, Lottery Results, and Announcements. 8.30, Gramophone Music. 8.45, Concert by the Municipal Orchestra, relayed from the Orangerie, Conductor: Munch. Overture, Rienzi (Wagner); La Fuga degli Amanti, from Scene Veneziana (Mancini); The Nutcracker Suite (Tchaikovsky); Two Intermezzi, from The Jewels of the Madonna (Wolf-Ferrari); Symphonic Entrance from Messidor (Brunct); Prelude to Nais Miconin (Bruneau); Baechanale, from Samson and Delilah (Saint-Saëns). In the interval, Press Review in French. 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relay by Freiburg, 527 kc/s, 570 metres.—4.30, Opera Music by Lortzing, on Gramophone Records. 2.0, Programme arranged by the Post Office, with Gramophone Records. 2.50, Spanish Lesson. 3.0, Elementary English Lesson. 3.30, Programme for Young People. 4.30, See Munich. 5.45, Time and News. 6.0, Talk on Aviation. 6.25, Talk: The Duties of an Academician. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Alois Pachernegg Concert by the Württemberg Symphony Orchestra, conducted by the Composer; Old German Dance Suite; Lustige Jagdmusik; Three Bavarian Dances: (a) Zwiefacher, (b) Polka, (c) Waltz; suite, Erzherzog Johann; Concert Paraphrase, Es liegt eine Krone in tiefen Rhein; Alpine Dances of Austria; Fantasia on Peasant Songs, Die Berge hoch—Old Styrian Dance. 9.0, A Radio Report on Gramophone Records: In the Barracks at Ludwigsburg. 9.30, Music by Ewald Strässer; Lisel Heinrich (Songs), Käthe Volkart-Schlager (Pianoforte) and Prof. Philipp Dreisbach (Clarinet); Three Songs, Op. 20: (a) Wenn ich wüsste,

(b) Nachtgesang, (c) Worte am Abend; Sacred Song, Op. 57, for Voice, Clarinet and Pianoforte; Sonata for Clarinet and Pianoforte, Op. 58. 10.15, Time and News.

BUNDSVALL.—See Stockholm.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m., till Close Down, See Turin.

TRONHEIM.—See Oslo.

TURIN

1,095 kc/s, 273.7 metres; 7 kW. Relay by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 p.m., Concert of Variety Music. 6.0 to 6.5, Announcements. 6.55, Giornale Radio and Agricultural and Popolavoro Notes. 7.0, Time and Tourist Report. 7.20, Announcements in Foreign Languages. 7.40, Gramophone Music. 8.0, Giornale Radio, Sports Notes, Weather, and Gramophone Music. 8.20, Talk on the following Transmission. 8.30, Faust—Opera in Five Acts (Gounod); Conductor: Riccardo Santarelli. In the intervals, Talk on Literature and Art, Monologue, Literary News, and Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in French. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relay by Graz, 852 kc/s, 352.1 metres; Innsbruck, 958 kc/s, 283 metres; Klagenfurt, 662 kc/s, 53.2 metres; Linz, 1,220 kc/s, 245.9 metres, and Salzburg, 1,373 kc/s, 218.5 metres.—1.0 p.m., Time and News. 1.10 Gramophone Music. 2.3 to 3.0 Interval. 3.0, Time, Weather and Market Prices. 3.20, Talk on Refrigerating Installations. 3.30, Programme for Children. 3.55, Gramophone Music. 4.45, Report in Esperanto on Austria. 5.0, Talk: Queer Societies of the Middle Ages. 5.25, Recital by Elfriede Hedmont (Contralto) and Irene Klimmna (Pianoforte); Pianoforte Solos: (a) Meine Freundin (Chopin-Liszt), (b) Etude in F, Op. 25, No. 3 (Chopin), (c) Waltz in C Sharp Minor, Op. 64, No. 2 (Chopin), (d) Three Etudes, Op. 72 (Chopin), (e) Der Erlkönig (Schubert-Liszt); Songs: (a) Meta singer (Stradella), (b) O del mio dolce ardor (Gluck), (c) La violetta (Scarlatti), (d) O mio Fernando from La Favorita (Donizetti). 6.5, Talk: The Board of Trade. 6.50, Talk on the German Language. 6.55, Theatre Talk. 7.5, Johann Schrammel Concert on the Fortieth Anniversary of the Composer's Death: The Wiener Späzen Quartet, Alois Janisch (Songs) and Franz Nowotny and Franz Nestler (Duets); Hans Ritter-Marsch; Der Schwabbe Gruss; Die Danbarkeit; Was Österreich ist; Unser Nachwuchs; Kathelen-Polka; Waltz, Weana Gmüat; Das Herzbinkerl; Der Frieden auf der Welt; Uns machen's nimmer anders; Wiener Künstler-Marsch. 7.50, Time, Weather and Programme Announcements. 8.0, Hans Heilig—Opera in Three Acts (Marschner). In the interval at 9.5 (approx.), News. 10.40, Talk. 10.50, Gramophone Music.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 p.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Gramophone Music. 12.25, Polish Press Review. 12.35, Gramophone Records. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Records. 3.5, News. 3.10, Announcements. 3.15, Gramophone Records. 3.25, Economic Notes. 3.35, Gramophone Records. 3.45, Boy Scouts' Review. 3.50, Gramophone Records. 4.0, Dramatic Programme for Young People. 4.30, Night Music, relayed from Cielochonek. 5.0, Talk. 5.15, Concert by the Lysenko Ukrainian Choir, conducted by Sologub. Soloist: Margaret Kurmatowska. 6.15, Talk: Life and Work on the Bear Island. 6.35, Gramophone Records. 7.20, Miscellaneous Items, 7.35, Programme Announcements. 7.40, Reading. 8.0, Popular Concert, conducted by Namy-slowsky. Soloist: P. Proiak (Soprano). In the interval, Radio Journal and Agricultural Notes. 10.0, Dance Music and Light Music from the Europe Café, Cielochonek. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music Relay (contd.).

WILNO

533 kc/s, 563 metres; 16 kW.—6.35 p.m., Talk: Aviation in Japan. 6.50, Topical Reading. 7.0, Lithuanian Review. 7.5, Miscellaneous Announcements. 7.15, Programme Announcements. 7.20, The Letter Box. 7.40 till Close Down, See Warsaw.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—8.10 p.m., Announcements. 8.30, Programme from Ljubljana. 10.30, News and Weather. 10.40, Dance Music. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

FRIDAY

JUNE THE TWENTY-THIRD

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** "Food for the Gander," a play by Adrian Thomas.
- LONDON REGIONAL** Contemporary concert: organ music and choral programme.
- MIDLAND REGIONAL** String orchestral concert.
- WEST REGIONAL** Choral and instrumental programme.
- SCOTTISH REGIONAL** "A Midsummer Nightmare," play by Allan Mackinnon.
- BELFAST** Harp recital.

ABROAD

- ATHLONE** 7.0 p.m. Gardening talk, by G. O. Sherrard.
- BARI** 8.35 p.m. Concert of opera music.
- BELGRADE** 7.0 p.m. Recital of Yugoslav and Czechoslovak songs.
- BRUSSELS (No. 2)** 5.0 p.m. Dance music from the St. Saviour Palais de Danses.
- POSTE PARISIEN** 8.35 p.m. Concert by the Station Symphony Orchestra.
- ROME** 5.30 p.m. Songs and pianoforte recital, by Luisa Fabri, soprano.
- SCHENEC-TADY** 9.35 p.m. U.S. Marine Band from New York.
- STRASBOURG** 1.5 p.m. Ernest Guirand concert.
- TURIN** 10.0 p.m. Programme of variety music.
- WARSAW** 8.15 p.m. Rimsky-Korsakov concert.

ATHLONE
725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Stock Exchange Quotations, and Weather Report. 6.0, Programme for Children. 6.45, News. 7.0, Gardening Talk by G. O. Sherrard. 7.15, Literary and Dramatic Talk. 7.30, Time Signal. 7.31, Concert by the Station Orchestra, with a Lecture Recital by Dr. Annie Patterson. 8.0, Song Recital by D. Cox. 8.10, Pianoforte Solos by Mae Johnson. 8.30, Songs by D. Cox. 8.40, The Station Orchestra. 9.0, Violin Duets by Mrs. Larchet and Mrs. K. Lange. 9.25, Contralto Solos by Miss N. Finn. 9.45, Sponsored Programme. 10.45, Time, News, Weather, and Close Down.

BARCELONA
EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert: Selection from The Flying Dutchman (Wagner); Réverie (Tchaikovsky); Melody (Leopold); Minuet (Haydn); Romanza (Giordano); Selection from Don Quixote (Massenet). 8.0, Request Gramophone Music. 8.30 (in the interval), Exchange. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral, Weather, Messages to Seamen, Exchange, and Market Prices. 10.10, Orchestral Concert. 11.0, Programme by Pilar Cañete. 11.30, Dance Music from the Casa Llibre. In the interval at 12 Midnight, News. 1.0 a.m. (Saturday), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Report, and Dopolarvo Notes. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35, Concert of Opera Music. Soloists: Milena Barberio (Soprano) and F. Signorile (Tenor). Selection from La battaglia di Legnano (Verdi); Soprano Aria from Fedora (Giordano); Tenor Aria from Don Pasquale (Donizetti); A Sera (Catalani); Soprano Aria from Gloria (Cilea); Tenor Aria from La Bohème (Leoncavallo); Selection from Giovanni Gallurese (Montemezzi); Overture, I Lituani (Ponchielli); Soprano Aria from L'amico Fritz (Mascagni); Tenor Aria from Arlesiana (Cilea); Intermezzo from Act III of Manon Lescaut (Puccini); Soprano Aria, Ave Maria, from Otello (Verdi); Tenor Aria from Luisa Miller (Verdi). In the interval, Talk. 10.30, Dance Music from the Gran Caffè del Levante. 10.55, News.

BASLE—See Schweizerischer Landessender.

BELGRADE
697 kc/s, 430.4 metres; 2.8 kW.—5.0, Physical Culture Lesson. 6.55, Time and Programme Announcements. 7.0, Recital of Yugoslav and Czechoslovak Songs. 7.30, Talk. 8.0, Gramophone Records. 8.30, Trio for Clarinet, Violin and Pianoforte (Mozart). 9.0, Dramatic Programme. 9.30, Concert by the Station Orchestra. 10.30, Time and News. 10.35 (approx.), Cigány Music from the Rumunski Kralj Restaurant.

BERLIN
DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert of Classical Marches. 3.0, Talk on Photography. 3.30, Weather and Exchange. 3.45, Reading (Hans Christoph Kaerzel). 4.0, See Leipzig. 5.0, Educational Talk: The Teaching of Correct Speaking and Writing in German Schools. 5.25, Topical Talk. 5.35, Brahms Pianoforte Recital: Edward-Ballade, Op. 10, Caprice in B Minor, Op. 76, Intermezzo in E Flat Minor, Op. 118; Rhapsody, Op. 119. 6.0, A Poem. 6.5, Talk by Werner Fink. 6.30, Talk for Young People. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Epigrams. 8.5 (approx.), Talk by Kurt G. Sell: What they are talking about in America, relayed from America. 8.15, Song Recital by Karl Erb: Four Songs (Schubert): (a) Auf der Riesenkuppe, (b) Verklärung, (c) Am See, (d) Alinde. Five Songs (Schumann): (a) Was soll ich sagen, (b) Schöne Freude, (c) Loreley, (d) Was macht Dich so krank, (e) Alte Leute; Four Songs (R. Strauss): (a) Die Frauen sind oft fromm, (b) Der Stern, (c) Liebeslyrik, (d) Freundliche Vision. 9.0, Topical Talk. 9.15, See Frankfurt. 10.0, News. 10.45, Weather for Shipping. 11.0, Serenade from Frankfurt. 12 Midnight, Close Down.

BERLIN
WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.10 p.m., Midsummer Day Festival, with Introductory Talk by Gustav Bellin. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Breslau. 8.10, Folk Songs, relayed from the Marktplatz, Quedlinburg. 8.30, Programme from Langenberg. 9.30, Sounds and Noises—a Guessing Competition (Walter Georg Hartmann). 10.0, News. 10.15 (approx.), Orchestral Concert, conducted by Josef Beer-Balay: Overture, Banditenstreichle (Suppé); Waltz, Die Rosenlilie (Lammer); Nichte Lilas (Murg); Three Dances from Swan Lake (Tchaikovsky); Selection from Tosca (Puccini); Thermenwalzer (Jos. Strauss); Selection from The Geisha (Jones); Hungarian Dances Nos. 5,

6 and 7 (Brahms), Gavotte, and Finales from the Film 'Unter der schwarzen Sturmhaube' (Bergau). In the interval at 11.0 (approx.), Talk: What People are talking about in Berlin. 12 Midnight, Close Down.

BERNE—See Schweizerischer Landessender.
BEROMUNSTER—See Schweizerischer Landessender.
BODEN—See Stockholm.
BODO—See Oslo.

BORDEAUX-LAFAYETTE
986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal, relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres. 7.30, News. 7.40, Film Review. 7.55, Lottery Results. 8.0, Spanish Lesson. 8.15, News. 8.30, Symphony Concert.

BRATISLAVA
1,076 kc/s, 279 metres; 14 kW.—6.20 p.m., Sonata in B Minor for Pianoforte (Chopin), by Libuse Svobodová. 6.55, Talk for Housewives. 7.0, See Prague. 7.10, Reading. 7.25, See Prague. 7.55, A Comedy. 9.25, See Prague. 10.15 (approx.), Close Down.

BREMEN—See Hamburg.

BRESLAU
923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.0 p.m., Weather for Farmers, followed by Opera Music on Gramophone Records. 2.0, Time, Weather, News, and Exchange Quotations. 2.20, Gramophone Music. 3.0, Agricultural Notes. 3.30, Programme for Children. 4.0, Concert by the Station Orchestra, conducted by Bruno Janz: Overture, The Bohemian Girl (Balté); Selection from The Daughter of the Regiment (Donizetti); Valse triste (Sibelius); Minuet (Schäfer); Modern Ballet Suite (Armandola); Waltz, Die Königsmaid (Fetras); Intermezzo (Dvorak); Ländler Potpourri, Auf geht's, hau zu (Gulden); Potpourri of tion from The Geisha (Jones); Potpourri of German Battle Songs (Stepani). 5.30, Agricultural Notes, followed by Reading (Oda Schaefer-Alfred Mann). 6.0, Topical Talk. 6.25, Talk: The Rise of Prussia—the Napoleonic Wars. 6.50, Weather, News, and Market Prices. 7.0, Transmission for all German Stations; Johann ohne Land—Play (Gerhard Ritter), with Music by Ernst August Voelkel. 8.0, Concert by the Wireless Military Band, relayed from London. 9.0, News. 9.10, from the Year One—Talk, with Gramophone Illustrations. 10.0, Time, Weather, News, Sports Notes, and Programme Announcements. 10.10, Talk: Early Summer in the Eulen Gebirge. 10.40, Dance Music by the Fritz Woolner Band, relayed from the Vaterland Café. 12 Midnight (approx.), Close Down.

BRNO
878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: News, Sports Notes, and Talk on the Grand Canyon of Arizona. 7.0, See Prague. 7.10, See Bratislava. 7.25 to Close Down, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)
599 kc/s, 509 metres; 15 kW.—12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Leemans. Two-Step (Jimenez); Scene and Waltz from Greina Green (Guirand); Selection from Cocorico (Ganne). Violin Solo: Ronde des Lutins (Bazzini). Serenata (Caecilia); Waltz (Rimberg); Tango, Frasquita (Coppola); Selection, Ein siele Nacht (Stolz). 2.0, Broadcast for Schools. 5.0, Concert by the Symphony Orchestra, conducted by Meuniers. Movement from Antar (Rimsky-Korsakov); Prélude à L'Après-midi d'un Faune (Debussy); Movement from the Pathetic Symphony (Tchaikovsky); Two Elegiac Melodies for Strings (Grieg); Elegy for Violin and Orchestra (Bernart); Jean d'enfants (Bizet). 6.0, Talk: Motor Accidents. 6.15, Gramophone Concert. Octet, Op 166 (Schubert); Two melodies (Duparc). (a) Chanson triste, (b) Soupir, Marche héroïque (Saint-Saëns). 7.15, Talk on Finance. 7.30, Literary Review and Legal Notes. 8.0, Programme for Soldiers and Ex-Servicemen. 8.45, Talk: Accountancy. 9.0, Concert by the Radio Orchestra, conducted by André. Soloist: Mme. Jeanne Naus (Songs). Marche baroque (Goeyens); Potpourri, On with the Show (Nicholls); Moretti Potpourri (Salabert). Songs: Phidyle (Duparc), (b) Tristesse (from a Prelude by Chopin). Padilla Potpourri (Salabert); Wedding Song (Van Oost); Old French Songs (Trenolo); Tempo-tempo (Dostal). 10.0, Le Journal Parlé. 10.10, Programme for Listeners. 10.25, Gramophone Records of Pre-War Dances. Waltz, The Blue Danube (Strauss); The Lancers' Quadrille (Mextra); Polka de minuet (Waldteufel); Waltz, Domauwelen (Ivanovic); Mazurka, La Tzigane (Ganne); Waltz (Transtaten); Schottische, Lena (Mewes); Sobre las Olas (Rosa). 11.0, La Brabançonne.

BRUSSELS (No. 2)
N.I.R., 887 kc/s, 338.2 metres; 15 kW.— Programme in Flemish. 12 Noon, Concert by the Small Station Orchestra, conducted by M. Leemans. Overture, Le Nouveau Seigneur du Village (Boieldieu); Potpourri of Waltzes, Rund um die Volga (Borchert); Spanish Serenade (Glanzou); Selection from Frederica (Léhar); Third Fantasia for Pianoforte (Benoit); Divertissement flamand (Vidal); An den Frühling (Grieg); Potpourri of Eysler Music (Ilrudy). 1.0

p.m., Le Journal Parlé. 1.10, Selection from La Traviata—Opera (Verdi) on Gramophone Records. 2.0, See Brussels No. 1. 5.0, Dance Music from the St. Saviour Palais de Danses. 6.0, Extract from the Cockney Suite (Ketilbey) on Gramophone Records. 6.15, Talk. 6.30, Concert by the Small Station Orchestra, conducted by M. Leemans. March (Tapp); Suite, Contes et fantaisies (Chavarrri); Sérénade (Godard); Danse grotesque (Florent Schmitt); Violin Solo, Méditation (Mars); Burlesque (Poot); Chevauchée fantastique (Brenta). 7.0, Book Review. 7.30, Wireless Review. 8.0, Concert by the Symphony Orchestra, conducted by M. Meuniers. Overture, Carnaval romain (Berlioz); Petite Suite (Debussy); Marche héroïque (Saint-Saëns). 8.30, The Titanic Disaster—Play (Gerhard Schäke). 9.0, Concert (contd.), Richard Strauss Programme. Concerto for Horn and Orchestra. Songs: (a) Wiegenlied, (b) Zueignung, (c) Allersteelen, (d) Melody, Waltz for Der Rosenkavalier; Symphonic Poem, Don Juan. 10.0, Le Journal Parlé. 10.10, Dance Music from the St. Saviour Palais de Danses.

BUCHAREST
761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra. Soloist: D. Teodoru (Violin). Overture, Mignon (A. Thomas); Scènes écossaises (Godard); Waltz No. 5 (Dvorak); Noël pastoral (Aubert); Violin Concerto in D minor (Tartini). In an interval at 6.0, Radio Journal. 7.0, Educational Programme. 7.40, Opera Music on Gramophone Records. In the intervals, Radio Journal.

BUDAPEST
545 kc/s, 550.5 metres; 18.5 kW.—Also relayed on 840 metres from 8.10 p.m. till Close Down.—5.30 p.m., Violin Recital by Tibor Bisztriczky. 6.10, Shortland Lesson. 6.40, Serenades of Various Countries (Béla Bevilacqua Borsoday). 7.40, Market Prices. 7.50, Review of Foreign Politics. 8.10, Cigány Band Concert, relayed from the Café Ostende. 9.30, News. 9.45, Concert by the Opera House Orchestra, conducted by Anton Fleischer: Overture, The Flying Dutchman; Invitation to the Dance (Weber); Suite from Scheherazade (Rimsky-Korsakov). 11.15, Dance Music, relayed from the Hotel Bellevue.

CASSEL—See Frankfurt.

COPENHAGEN
1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the Harald Andersen String Ensemble, relayed from the Bellevue Strandhotel. 2.0 to 3.10, Interval. 3.10, Song Recital by Eteka Schon. 3.30, Orchestral Concert, conducted by Teddy Petersen, relayed from the Wivex Restaurant. 5.0, Reading. 5.35, Exchange and Fish Market Prices. 5.50, Talk. 6.20, German Lesson. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.30, Talk. 8.0, Time Signal from the Town Hall. 8.1, Programme by Per Knutzon. 8.10, The Bottle Imp (R. L. Stevenson), arranged for the Radio by Fritz Mack. 8.45, Midsummer Festival Programme, relayed from the Town Hall; A Wind Instrument Orchestra and the Copenhagen Choir; Choir: (a) Absalon bygged Borg ved Havn (Lembcke), (b) Moderns Navn er en himmelsk Lyd, (c) Som en rejselysten Flaade; Orchestra: Overture, Elisa (Kuhlén); Choir: (a) The Danish Song (Nielsen), (b) Vi elsker vort Land (Lange-Müller); Talk; Byens Sang, for Orchestra, Choir, Lures and Drums (Borresen). 10.0, News. 10.15, Sonata in E Flat, Op. 12, No. 3 (Beethoven), for Violin and Pianoforte. 10.50, Dance Music by Erik Tuzen and his Orchestra and Victor Cornelius, Willy Kjerulf and Henry Willum (Pianofortes). In an interval at 12 Midnight, Time Signal and Chimes from the Town Hall. 1.0 a.m. (Saturday), Close Down.

CORK—See Athlone.

CRACOW
959 kc/s, 312.8 metres; 1.5 kW.—7.10 p.m., Talk on Natural Science. 7.25, News. 7.35, Programme Announcements. 7.40, See Warsaw. 11.0 (approx.), Close Down.

DANZIG—See Heilsberg.

DRESDEN—See Leipzig.

FECAMP
1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0, Programme in English by the I.B.C. T. St. A. Ronald and B. McNabb announcing. 4.30, Concert for Southampton and Winchester Listeners: Waldteufel Memories (arr. Finck); Song, The Old Superb (Stanford); Reconciliation (Drigo); Song, Somebody, Somewhere, Some day (Rapee); Babes in Toyland (Herbert); Violin Solos: (a) Because (d'Hardelet), (b) The Song of Songs (Moya); The Cloek and the Dresden Figures (Ketilbey); Songs: (a) Memories of Devon (Evans), (b) I pitch my lonely Caravan at Night (Coates), (c) The Lute Player (Allison); Pompé Valsante (Poldini). 5.15, Concert of Request Music for Bournemouth and Weymouth Listeners: Overture, Figaro (Mozart); Song, The Sun God (James); Andante Cantabile from Quartet Op. 11 (Tchaikovsky); Song, I am Fate

JUNE 23rd

FRIDAY

continued

(Hamblen); Serenade (Pierné); They all do the Rumba (Pola); Song, If I were (Henry); Glow Worm Idyll (Lincke); Song, Invictus (Hahn); In Santa Lucia (Stravinsky); Selection from Veronique (Messager). 6.0, Programme in French. 10.0 (approx.) till Close Down. Programme in English by the I.B.C. 10.0, (approx.), Dance Music by the Heolians; Heavenly Light (David); Fairy on the Clock (Reaves); There'll never be another Gal like Mary (N. H. Brown); Beyond the Blue Horizon (Whiting); Indiana (Hanley); Was it wrong? (Atm-helm); Blue Jazz (Gifford); I wouldn't change you for the World (Leman-Jones); Paradise (Clifford); Home (Van Steeden); My Extraordinary Gal (Shand); My little Quarrel (Goodhart); I don't mean a thing (Ellington); Oh, you sweet thing (Hines); Rose Room (Hickman); Blue Drag (Hines). 11.0, Tango Band and Mandoline Solos: Clara Mucha, España Cani, Flora Castellana; Mandoline Solo: Capriccio Mazurka, Adios Muchachos, Mia Cara; Mandoline Solo: Mandoline: Luz de Granda. 11.30, Concert of Gramophone Records: Lord you made the Night too long (Lewis); Siboney (Simons); Selection from The Desert Song (Romberg); Seven veils (de Sylva); Tired Hands (Sander-son); Nonchalant Nonsense (Wayne); Selection from The Cat and the Fiddle (Harbach). 12.5 a.m. (Saturday), The I.B.C. News Bulletin. 12.10, Club Concert for Kidderminster Listeners: Selection from Rigoletto (Verdi); O Mistress Mine (Quil-ter); Organ Solo, Cathedral Chimes (Lin-dahl); That's my Song; The Turkish Patrol (Michaels); Duet, Brilia, the bold, bad Bandit (Wheldon); Serenata (Toselli); Chorus, There is a Tavern in a Town (Traditional); Commander of the Legion. 1.0, Concert of Songs and Trios: A Night of Happiness; Will you forget; The Wed-ding in the Ark; Songs: (a) River stay 'way from my Door, (b) Shoo the Hood-oo away; Narcissus; Mia Bella Rosa; Pearl of Mine. 1.30, Variety Concert of American Music: The Railroad Boomer; Hallelujah, I'm a Bum; Duet, Poor Man's Heaven (Robison); Onestep, Stealing on the Robert E. Lee; I don't work for a living; Duet, Don't marry a Widow (Robi-son); Peg Leg Jack (Luther Robison); Steamboat Bill (Leighton). 2.0, Dance Music by the Heolians; I've got the World on a String (Arlen); Wanderer (Flanagan); Harlem Holiday (Koehler-Arlen); The Old Man of the Mountain (Young-Brown); Wild Man Blues (Armstrong-Norton); How deep is the Ocean? (Berlin); Melan-choly (Bloom and Melrose); I'll never have to dream again (Newman-Jones); Love is the sweetest thing (Noble); Ich liebe Dich my dear (Hart Biight); I'll do my best to make you happy (Noble); Just an Echo in the Valley (Woods); One of us was wrong (Goering); Try a little tenderness (Woods); By the Fireside (Noble); Let's put out the Lights (Hupfeld). 2.57, I.B.C. Goodnight Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,229 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.25 p.m., Anecdotes. 6.45, Review of the Day. 6.50, Time and Announcements. 7.0, Transmission for all Ger-man Stations, relayed from Breslau. 8.0, Talk by Dr. Sven Schacht. 8.15, Concert by the Wireless Military Band, relayed from London. 8.40, Dialogue between two soldiers; Before Verdun. 9.15 (from Cassel), Concert of Reger Music. 10.10, Time and News. 10.45, Concert by the Station Orchestra, con-ducted by Reinhold Merlen; Soloist, R. Langs (Pianoforte); Concert Overture, Michel Angelo, Op. 33 (Gade); Pianoforte Concerto in E Flat, Op. 36 (Draeske); Two Marches (Mozart); Triumphant March from Tarpeja (Beethoven); March in B Minor (Schubert); Selection from The Geisha (Jones). 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—5.0 p.m., Variety Programme. 6.45, Frankfurt Exchange. 6.50, Weather. 7.0, Transmission for all Ger-man Stations, relayed from Breslau. 8.0, Concert of Georg Schumann Music, with Introduc-tory Talk by the Composer. The Station Or-chestra, conducted by the Composer. Im Ringen um ein Ideal, Op. 66; Pianoforte Pieces from the Cycle, Dur und Moll; Humor-escape; Gestern Abend war Vetter Michel da, Op. 74. 9.10 (from Flensburg), Instru-mental and Choral Concert of North Slesian Folk Music, relayed from the Deutsches Haus. Conductor: Alfred Ruth. 10.0, News.

10.20, See Berlin (Witzleben). 10.35, Dance Music by the Station Orchestra, conducted by Gerhard Muasz.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Concert by the Small Station Orchestra, con-ducted by Eugen Wilken; Overture, Syl-vium (Weber); Second Jota Aragonesa (Albeniz); Suite, In einem Puppenhaus (Engleman); Selection from Donna Juana (Suppe); Wiener Moment (Häuser); Pro-logie (Hohmann-Weban); Overture, The Black Domino (Auber). In an interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Agricultural Prices and Exchange. 3.30, Programme for Children. 4.0, Talk for Women. 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilken; Overture, Die Irrfahrt ums Glück (Suppe); Waltz, Klänge vom Delaware (Lanner); Pesther Karneval (Liszt); Selection from The Gipsy Princess (Kálmán); Waltz, Lö-rey-Rheinklänge (Joh. Strauss); Overture, Nákiris Holzzeit (Lincke); Selection from Der Mann mit den drei Frauen (Lehár); Overture (Czibulka). In an interval at 5.50 (approx.), Talk. 6.15, Agricultural Prices. 6.25 (from Danzig), Concert of Instrumental Music by Erich Goebel; Trio in A, Op. 17, for Violin, Viola and Cello, Op. 17; Piano-forte Concerto in Old Style, Op. 19. 6.50, Weather. 7.0, Transmission for all Ger-man Stations, relayed from Breslau. 8.0, Talk by Kurt G. Sell; What People are talking about in America, relayed from Washington. 8.15, Concert by the Königsberg Opera House Orchestra, conducted by Erich Seidler. 10.0, News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time and Gram-ophone Music. 12.10, Concert by Kovacs Lajos and his Orchestra. 1.40, Talk. 2.0, Gramophone Music. 2.40, Talk. 3.10, Gram-ophone Music. 3.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 3.40, Organ Recital by M. C. Steyn. 4.40, Pro-gramme for Children. 5.10, Gramophone Music. 6.0, Orchestral Concert conducted by H. de Groot; Liberty (Carstens); Walseg-lüster (Czibulka); Serenade (Braga); Wo die Zitronen blühen (Joh. Strauss); Russian Rhapsody (Michiels). 6.25, Talk. 6.40, Concert (cont'd.); Overture, The Gipsy Baron (Joh. Strauss); Selection from Polenthut (Nedrad); Indian Love Call (Frlind); March (Gilbert); Waltz from Eva (Lehár); Melody (Kálmán); Quadrille from La belle Héloé (Offenbach); Waltz from Die geschiedene Frau (Fall); March from The Merry Widow (Lehár). 7.40 to 10.40, Programme of the Christian Radio Society (V.P.R.O.). 7.40, Talk. 8.10, Song and Pianoforte Recital by Jo Vincent and Betsy Rijkens-Culp. In the interval at 8.40, Talk. 9.40, Religious In-formation. 9.45, News. 9.55, Talk. 10.25, Gramophone Music. 10.40, Organ Recital by J. Jong; Air from Boris Godunov (Mus-sorásky); Selection from Mignon (Thomas); Selection from Werther (Massenet); Selection from Carmen (Bizet); Waltz from Faust (Gounod); Selection from Cavalleria rusti-cana (Mascagni); March from The Prophet (Meyerbeer). 11.10, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW. Programme of the Christian Radio Society (N.C.R.V.).—12.55 p.m., Organ Recital. 1.40, Programme to be announced. 2.10, Reading. 2.40, Talk for the Housewife. 3.10, Song Recital by Cory Blijster (Soprano); Two Songs (Handel): (a) Aria from Siroe, (b) Aria from Rinaldo; Two Songs (Bach): (a) Stoh' ich bei meinem Gott, (b) Jesus, unser Trost und Leben; Prelude and Fugue in B flat for Organ (Bach), on Gramophone Records; Four Songs (Schubert): (a) Totengräbers Heimweh, (b) Dem Unendlichen, (c) Verk-lärung, (d) Im Abendrot; Larghetto for Pianoforte (Henselt-Zadora) on Gramophone Records; Four Sacred Songs (Hugo Wolf). 4.10, Talk for the Amateur Photographer. 4.40, Concert by the Arnhem Trio: Danky Trio, Op. 90 (Dvorák); Trio in G Minor, Op. 3 (Chaussson). 5.40, Agricultural Talk. 6.10, Gardening Talk. 6.40, Police Notes. 6.55, News. 7.10, Literary Talk. 7.40, Military Band Concert: March (Laukien); Overture (Fischer); Aria from The Creation (Haydn); Divertissement from Coppelia (Delibes); Waltz, Enfants du Printemps (Waldteufel); Academic Festival Overture (Rehd). 8.40, Recitations. 9.10, Concert (cont'd.); Overture, Le Pré aux Cleres (Hérold); Fantasia, Souvenir de Chopin (Bekker); Selection from St. Paul (Mendelssohn-Kling). In the interval at 9.40, News. 10.10, Gramophone Con-ert. 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE
734 kc/s, 408 metres; 16 kW.—7.25 p.m., An-nouncements and Gramophone Music. 7.40, See Warsaw. 11.0, The Letter Box, in French.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—8.0 p.m., Time, Weather, and News. 8.40, Variety Items. 9.0, Talk. 9.20, Concert. 9.50, Talk in Yiddish: The Jews in Lithuania. 10.10, Sports Talk. 10.15, Concert. 11.0 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Hel-sinki, 815 kc/s, 368.1 metres.—6.40 p.m. (from Helsinki), Violin Recital. 7.5, Talk. 7.25, Song Recital. 7.45 (from Helsinki), Dance Music by the Ramlers' Band. 8.15 (from Helsinki), Violin Recital of Popular Dance Music. 8.30 (from Helsinki), Dance Music (cont'd.). 8.45, News in Finnish and Swedish. 9.15, Light Music from the Kap-peli Restaurant.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Con-ert, conducted by Wolf; Overture, Lisola disabitata (Haydn); Träumerei (Schumann); Jagdlied (Schumann); Selection from La Favorita (Donizetti); Norwegian Rhapsody (Svendson); Waltz, Wiener Frauen (Strauss). 12.50 p.m., Weather, Time, and Announce-ments. 1.0, Orchestral Concert, conducted by Eysoldt. Soloists: Albert Arenz (Cello) and Ernst Günther (Double Bass). March, Deutschland, mein Deutschland (Döring); Overture, Der vierjährige posten (Schubert); Paraphrase on the Song, Ueber die Heide geht mein Gedanken (Blume-Weingart); Einsame Feldwacht (Graener); Die Glocken von Saint Cyr (Schmalstieg); Andante and Polonaise for Cello and Double Bass (Battesini); suite (Michele); The Witch's Ride, from Hansel and Gretel (Humperdinck); Bacchanale (Glazmov). In an interval at 2.0 (approx.), Announcements. 2.30, Sponsored Programme, with Gramophone Records. 3.30, Economic Notes and Time. 3.50, Programme for Young People. 4.30, Concert by the Station Quintet. 5.50, Talk on Albert Dürer. 6.10, Political Talk. 6.20, English Lesson. 6.45, Weather, Time, Economic Notes, and Sports Notes. 7.0, Transmission for all Ger-man Stations, re-layed from Breslau. 8.0, Talk by Kurt G. Sell; What People are talking about in America, relayed from New York. 8.15, A Summer Dance—Musical and Humorous Pro-gramme. The Large and Small Station Or-chestras, Soloists, a Peasant Orchestra, a Mandoline Society, and a Wind Instrument Orchestra. 9.30, See Berlin (Witzleben). 10.5, Announcements, Educational Notes, and Sports Notes. 10.25, Wireless Notes. 10.35, A Summer Dance (cont'd.). 11.30 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dres-den, 941 kc/s, 319 metres.—12 Noon, Orchestral Concert, conducted by Rudolf Willi Steinbach; Overture, Die vier Menschenalter (Lachner); Eleven Viennese Dances (Beet-hoven); Selection from Preciosa (Weber); May and June from The Seasons (Tchaikov-sky); Selection from Il Trovatore (Verdi); Dance from The Winter's Tale (Humper-dinck); Sizziletta (von Blon); Liebesernde (von Blon); Waltz from Les Cloches de Corneville (Planquette); Selection from Der Vagabund (Zeller); Overture, Der Wahrheitsmund (Platzbecker). In the interval at 1.0 p.m., News. After the Con-ert, News. 2.10, Poetry Reading (Friedrich Kuhn and Alfred Brenschcidt). 2.30, Gramophone Music. 3.0, Interval. 3.15, Talk for the Country Woman. 3.35, Economic Notes. 4.0, Concert by the Sta-tion Orchestra, conducted by Hilmar Weber; Soloist: Anton Rohden (Pianoforte); Tafel-musik in B Flat (Telemann); Pianoforte Concerto in D (Haydn); Ballet Music from Paris and Helena (Gluck); Overture, Fidelio (Beethoven); Selection from Undine (Lort-zing); Waltz, Op. 25 (Fuchs); Selection from Die Folkinger (Kretschmer). In the interval at 5.0, Reading. 5.50, Economic Notes, Weather, and Time. 6.0, Reading (Alfred Hein), with Commentary. 6.40, Review of Wireless Periodicals. 7.0, Transmission for all Ger-man Stations, relayed from Breslau. 8.0, Talk by Kurt G. Sell; What People are talking about in America, relayed from America. 8.15, Songs and Stories from the Erz Gebirge. 9.15, News. 9.25, Mass in E Minor, Op. 87 (von Herzogenberg), by Soloists, the Dresden Chamber Orchestra, conducted by Richard Fricke, and the Röm-lind Choir. 10.40, News. 11.0, Third Act of the Mastersingers—Opera (Wagner). 12 Midnight, Close Down.

LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. Dutch Pro-gramme.—7.0 p.m., Gramophone Music. 7.40 Weather. 7.45, Gramophone Concert: Suite from Alcina (Handel); Le Rouet d'Orléans (Saint-Saëns); Prelude to Lohengrin (Wagner); Overture, The Flying Dutchman (Wagner). 8.30, Talk in Dutch. 8.40, Gram-ophone Music. 8.50, News in French. 9.15, Gramophone Music. 9.45, News in German. 9.55, Dance Music and Variety Music on Gramophone Records. In the intervals, News and Exchange.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.0 p.m., Concert of Opera Music: Selection from Lakmé (Delibes); Aria from Manon (Massenet); Aria from La Bohème (Puc-cini); Selection from Romeo and Juliet (Gounod). 7.15, Musical Programme. 7.30, Radio Gazette for Lyons and the South-East. 8.30, Music Hall Programme; News after the Programme.

MADRID

ARANJUEZ, EAQ, 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Spanish Music. 11.45, Radio Chronicle. 12 Midnight, Selection from The Dollar Princess (Fall). 12.35 a.m. (Saturday), Answers to Correspondence. 12.40, Spanish-South American Talk. 12.45, Light Music. 1.0 (approx.), Close Down.

MADRID

UNION RADIO (EAJ7); 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, Science Talk, and Request Gramophone Records. 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal, and Political Review. 11.15 (approx.), Symphony Concert on Gram-ophone Records; Carnival Overture (Dvorák); Ballet Suite (Rameau); Rhapsody No. 2 (Liszt); First Symphony (Beethoven); Suite from The Fire-Bird (Stravinsky). 12.45 a.m. (Saturday), News, Programme Announce-ments for Listeners Abroad, and Dance Music. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by V. Musil. 3.65, See Prague. 5.45, Zdenek Bar recites his own Poems. 5.55, Gram-ophone Music. 6.5, Talk on English Litera-ture. 6.15, See Prague. 7.10, See Bratislava. 7.25, See Prague. 10.30 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 568 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert by the Palatinate Or-chestra, relayed from Bad Reichenhald; Con-ductor, Florenz Werner. In an interval, Talk on Gold Refining. 5.45, Talk: How to Use the Telephone. 6.5, Talk: The Dignity of the National Culture. 6.35, Song, on Gram-ophone Records; Heinrich Schlusius; O Min-nelied (Brahms); Galli-Curi; The Nightin-gale (Albavie); Marcel Wittrich; O Mäd-chen, mein Mädchen, from Friederich (Lehár). 6.45, Time, Weather and Agricultural Notes. 7.0, Transmission for all Ger-man Stations, relayed from Breslau. 8.0, Talk: What people are talking about in America, re-layed from America. 8.20, Flamme empor.—Midsummer Programme by the Station Choir, conducted by Eduard Zengerle. 8.50, Topical Talk. 9.10, Concert of the State Academy of Music, relayed from the Odessa; The Schmid-Linder Chamber Orchestra; and Soloists; Conductor, August Schmid-Lin-der; Concerto grosso in F for Strings (Handel); The Brandenburg Concerto, No. 5, in G, for Harpsichord, Flute, Violin and String Or-chestra (Bach). 9.55, Topical Report. 10.20, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Concert by the Station Orchestra, conducted by Hugo Kramm; March of the Boyars (Halvorsen); Overture, A Midsum-mer Night's Dream (Mendelssohn); Swedish Rhapsody, Midtsommarvaka (Alfvén); Idyll for Strings, St. John's Eve (Holter); Melody (Paulsen); Piece (Andersen-Wingar); Old Waltz (Monrad-Johansen); Abend im Hoch-gebirge (Grieg); Waltz, Soir d'été (Waldteu-fel); Old Danes (Lsh); 6.30, Literary Talk. 7.0, Advertising Notes. 7.15, Weather and News. 7.30, Talk. 8.0, Time. 8.1, Pro-gramme to be announced. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Variety Programme; Midsummer. 10.45, Dance Music by the Station Dance Orchestra.

OSTERSUND.—See Stockholm.

JUNE 23rd

FRIDAY

continued

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0, Dopolavoro Announcements, Tourist Talk, Agricultural Report, Report of the Royal Geographical Society and Giornale Radio. 8.20, Gramophone Music; In the interval at 8.30, Time and News. 8.45, Concert of Popular Music; In the interval: Talk and Announcements. 10.58, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,645.7 metres; 1 1/2 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Talk on the Theatre. 7.0, Le Journal Parle. 8.30, Literary and Musical Programme for Young People. 9.15, Symphony Concert, conducted by M. Flament: Spanish Suite (Vidal); Selection from Die geschiedene Frau (Fall); Violin Solo, La caravane passe (Loretrey); Turkish March (Mozart). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 80 kW.—7.0 p.m., Gramophone Music. 7.5, Talk. 7.15, Le Journal Parle. 7.30, Gramophone Music. 7.55, Review of the Week. 8.0, Talk on Music. 8.10, Gramophone Music. 8.20, Interval. 8.35, Concert by the Station Symphony Orchestra, conducted by M. Théodore Mathieu: Overture, Grotesque (Guiraud); Le Petit Effe (forme finale) (Schmitt); Valse noble et sentimentale No. 7 (Rayle); Ondros (Laparra); Moroccan Suite from Naouma (Lalo); Petite Suite (Roger Ducasse); Divertissement (Debussy); Song and Dances (d'Indy); March of the Princesses from Cendrillon (Massenet). 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Music. 8.0, Press Review and Weather. 12 Noon, Jewish Programme. 12.30 p.m., Gramophone Concert: Potpourri of Spanish Airs (Oros); Violin Solos: Air from Piccolino (Guiraud); (b) The Londonderry Air (arr. Kreisler); Pianoforte Solo: Waltz from The Gipsy Baron (Strauss-Dohnanyi); Amons-nous (Gounod); Ronde de nuit (Gliucka); Selection from Barbe bleue (Offenbach). 1.0, Exchange, News and Weather. 1.5, Concert of Orchestral and Accordion Music, with Songs by Brainouval. In the interval at 1.30, Market Prices. 2.0, Exchange and Announcements. 3.45, Exchange and Market Prices. 6.10, Talk on Bee-keeping and Market Prices. 6.30, Gramophone Music: L'Anvergnate (Ganne); La classe aux caillies (Paradis); Waltz, Les Sirènes (Waldteufel); Roses d'automne (Sabatier); Gouttes d'eau (Petit); Selection from The Desert Song (Romberg). 6.50, Insurance Societies' Reports. 7.0, Talk on the French Revolution. 7.20, Gramophone Music. 8.0, Reading of Love Letters. 8.30, Market Prices, Weather, Agricultural Report and Exchange. 8.40, Gastronomic Review. 8.45, A la grace de Dieu: Musical Melodrama (Demery). In the interval at 9.15, Press Review and News.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayed by W3XK on 48.86 metres and 25.27 metres.—4.0 to 5.0 p.m., U.S. Marine Band, from New York. 7.30, Utility Hall Programme. 7.45, KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, International Sunday School Lesson by Rev. S. S. Lappin. 8.30, Tenor Solos by John Dunlap. 8.45, Happy Jack, from New York. 8.58, Baseball Scores. 9.0, Vic Schilling and his Cosmopolitan Hotel Orchestra, from New York. 9.30, Riggs and Moke. 9.58, Baseball Scores. 10.0, Rhythm Kings. 10.15, Concert Favorites. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal and Press News-Review. 11.15, Weather Report. 11.16, Sport Review. 11.23, One Song. 11.28, Announcement. 11.29, Temperature Report. 11.30, Pittsburgh Spotlights. 11.45 to 1.0 a.m. (Saturday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, Booth Tarkington's Maud and Cousin Bill. 12.30, Pastoral. 1.0, Programme to be announced. 1.30 to 3.15, New York Relay. 1.30, Potash and Perlmutter. 1.45, Phil Cook and his Ingram Shavers. 2.0, Goldman Band. 2.30, Variety Programme. 3.0, Time Signal and Echoes of the Palisades. PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—7.5 p.m., Gramophone Music. 7.20, Miscellaneous Items and Announcements. 7.35, Theatre Guide and Programme Announcements. 7.40, See Warsaw. 10.15, Time Signal, Sports Review and Police Notes. 10.30, Dance Music from the Café Polonia. 11.50 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Moravská-Ostrava. 3.55 to 4.0, Exchange. 5.45, Talk: Outstanding Religious Figures in Czech History. 5.55, Talk: The Primadonna Marie Pauznerova-Zlamova. 6.5, Market Prices. 6.15, Talk for Workers. 6.25, News

in German. 6.30, German Transmission: Talk on Currency Problems. 7.0, Chimes and News. 7.10, See Bratislava. 7.25, Illustrated Talk: Round the World on Gramophone Records. 7.55, The Prague Exhibition of 1897. 9.25, Violin Recital by Richard Zika: Three Pieces for Violin and Pianoforte, Op. 3 (Novak): (a) Memorial Lines, (b) Scherzo, (c) Elegy; Four Pieces for Violin and Pianoforte (Suk): (a) Quasi ballata, (b) Appassionato, (c) Un poco triste, (d) Burlesca. 10.0, Time and News. 10.15, Russian Report. 10.30, Concert of Contemporary Music by the Station Orchestra, conducted by Jeremias, Soloist: Karel Reiner (Pianoforte); Pianoforte Concerto, Op. 13 (Reiner); Symphony (Vutchkovitch). 11.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW., and Geneva, 395 kc/s, 760 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News. 12.40 (from Lausanne), Orchestral Concert. In the interval at 1.0, Financial Notes. 2.0 to 3.28, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Geneva), Gramophone Music. 4.30 (from Geneva), Talk for Women. 5.30 to 7.0, No Transmission. 7.0 (from Lausanne), Talk on Swimming. 7.25 (from Lausanne), News. 7.30 (from Lausanne), Review of Politics. 8.0 (from Geneva), Concert. 9.50, News. 10.0 (from Geneva), Concert. 10.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.0 p.m., Literary Review. 6.30, Talk. 7.0, Weather. 7.5, The Ligo Festival. Part I: Choral and Orchestral Concert of Latvian Music. Part II (at 8.0): Recital of Popular Latvian Songs. 8.20, Orchestral Concert of Waldteufel Waltzes: La pluie d'or; Toujours on jamaïs; Enfants du printemps; L'Étoile du Nord; Flammeches du ciel; Paysage d'automne; Je t'aime. 9.0, Weather. 9.30, Dance Music. 11.0 (approx.), Close Down. RJUKAN.—See Oslo.

ROME

1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 3,750 kc/s, 80metres. 1.0 (approx) to 2.15 p.m., Orchestral Concert of Light Music. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30, Song and Pianoforte Recital by Luisa Fabbri (Soprano), Adolfo Antonelli (Bass), and Gigliola Galli (Pianoforte); Music by Paganini, Liszt, Reger, and Albaniz. 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 6.57, Report of the International Institute of Agriculture (in Spanish, German and French). 7.10, Tourist Report. 7.20, Announcements in Foreign Languages. 7.30, Sports Notes. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Sponsored Music on Gramophone Records. 8.30, Giornale Radio and Sports Notes. 8.45, Concert: Soloist, Ugo Ayello (Cello) and Emilio Livi (Tenor); Overture, Tancred (Rossini); Cello Solos: (a) In Autumn (Tchaikovsky), (b) Pavane pour une Infante défunte (Ravel), (c) Minnet (Becker); Songs for Tenor; Cello Solos: (a) The Broken Melody (Biene), (b) Tarantella (Florino). 9.30, Bianca e Maria—Comedy in One Act (Washington Borg). 10.0 (approx.), Variety Programme. 10.55, Giornale Radio. SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 p.m., Biblical Drama. 9.15, Popular Programme from New York. 9.30, Talk: The Mind Age. 9.35, U.S. Marine Band, from New York. 9.45 to 10.0 (approx.), Stock Reports and Police Notices. 12.45 a.m. (Saturday), Stock Reports. 1.0, Cities Service Concert, from New York. 1.30, Popular Programme. 2.0 till 3.30, New York Relay. 2.0, Musical Country Store. 2.30, Popular Programme. 3.0, Variety Programme. 3.30, Popular Programme from New York, followed by Programme Résumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Bern, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from Zurich), Light Music by the Station Orchestra. 12.30 p.m., Time, Weather, and News. 12.40 (from Zurich), Light Orchestral Concert (contd.). 1.25 (from Zurich), Exchange, Time, and Weather. 5.0 (from Basle), New Gramophone Records. 6.30 (from Bern), Talk: Strange Facts about Fish. 7.0 (from Bern), Time, Weather, Market Report, Tourist Talk, and Sports Notes. 7.20, Light Music by the Station Orchestra. 7.45 (from Bern), Der Müstersprung—Radio Play (Otto Rombach). 9.15 (approx.), Weather

and News. 9.25 (approx.) (from Bern), Popular Programme. 10.35 (approx.), Close Down.

SEVILLE

UNION RADIO; EAJ5; 815 kc/s, 368.1 metres; 1.5 kW.—9.30 a.m., News. 10.0, Interval. 3.0 p.m., Concert by the Station Orchestra: Two-Step, Mary-Rosa (Jardi); Intermzzo, El baile de Luis Alonso (Jimenez); Selection from La Marsellesa (Caballero); Selection from El Principe Carnaval (Serrano); Dance Music. 10.0, Variety Concert: Intermzzo from Alma de Dios (Serrano); Waltz (Fred-Brown); Chinese Serenade (Siede); Room for the Factotum, from The Barber of Seville (Rossini); Dances of the Eighteenth Century (Haydn); Liebes-freud (Kreisler); Selection from Los cadetes de la reina (Luna); Tango, Poema (Blanco-Melny); La Villana (Vives); Spanish Serenade (Glazunov); Selection from The Merry Widow (Lelhar); Overture, The Force of Destiny (Verdi); Dance Music. In the interval, News, Exchange, and Weather. SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.0 p.m., Orchestral Concert; Soloist, Oscar Tiernberg (Songs); Overture, Die Fledermaus (Joh. Strauss); Rhapsody (Westberg); Four Songs; Selection from Der Teufelsreiter (Kálmán). 5.5, Programme for Children. 6.30, Gramophone Music. 6.30, Midsummer Festival Programme, relayed from Örebro, 1,274 kc/s, 235.5 metres. 7.15, Weather and News. 7.30, Midsummer Dance Music by the Örebro Folk Music Society, relayed from Örebro. 8.0, Talk: Midsummer at Skansen. 8.45, See Copenhagen. 9.45, Weather Report. 9.50, Dance Music. 12 Midnight (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Classical Music on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Ernest Guiraud (Concert for the Sixty-sixth Anniversary of his Birth); Conductor: Maurice de Villers; Soloist: Grégoire (Violin); Dance Persane; Selection from Piccolino; Second Orchestral Suite; Violin Solo: Caprice; Scene and Waltz from Gretchen Green; Carnaval. 2.0 to 3.30, Interval. 3.30, Orchestral Concert, relayed from the Casino, Vichy; Conductor: Brouilhat; Overture, The Magic Flute (Mozart); Waltz Suite from Der Rosenkavalier (R. Strauss); Suite breve (Anbert); Andante from the Spanish Symphony (Lalo); Cello Solo: Sur le lac (Godard); Selection from Samson and Delilah (Saint-Saëns); Invitation to the Waltz (Weber-Berlioz). 5.0, Literary Talk in French. 5.15, Concert of Jazz Music, conducted by Roskam. 6.0, Trio Concert, relayed from Lille, 130 kc/s, 265.4 metres. 7.0, Topical Talk in German. 7.15, Talk in German: The Skilled Trades. 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.15, Press Review in German, Lottery Results and Announcements. 8.30, Gala Concert, relayed from the Casino, Vichy; Conductor: Paul Paray; Overture, Fingal's Cave (Mendelssohn); The Unfinished Symphony (Schubert); Symphonic Entrance from Messidor (Brucan); Symphonic Poem; Phœton (Saint-Saëns); Polovisian Dances from Prince Igor (Borodin). After the Concert, Press Review in French.

STUTTGART

MUHLACKER; 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—1.30 p.m., Organ Recital from the Palast Cinema: March, Germaniaentreue (Siede); Waltz Intermzzo, Iris (Marriot); Serenade (Hoykens); Ballet Scene, Piazza del Popolo (Friedriksen); American Patrol (Moacham). 2.0, Programme arranged by the Post Office, with Gramophone Records. 2.30 to 3.0, Advanced English Lesson. 4.15, Talk: Sunday Excursions. 4.30, Orchestral Concert from Bad Reichenhall. 5.45, Time and News. 6.0, Talk: The Dying Out of the Old Races. 6.25, Legal Talk. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Talk by Kurt G. Sell: What they are talking about in America, relayed from America. 8.15, Concert by the Wireless Military Band, conducted by B. Walton O'Donnell, relayed from London. 9.0, Zither and Guitar Recital: Parade March (Rossini); Old Bavarian Tattoo (Scheger); Unterm Raupenhelm (Prell); Idylle passionelle (Razigade); In der Vorderries (Prell); Erzherzog Johann Jodler's Leherli von Herndls (Ascher); Wachtparade (Eilenberg); York-Marsch. 9.40, Josef Ponten reads from his own Works. 10.10, Time and News. 10.30, Pianoforte Recital by Rut von Haldenwang: Preludes, Op. 28 (Chopin); Au bord d'une source (Liszt); Frühlingsklänge (Schubert-Liszt); Polish Song (Chopin-Liszt). 10.55, Concert from Frankfurt. 12 Midnight (approx.), Close Down. SUNDSVALL.—See Stockholm.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 p.m. till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 953 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.0 p.m., Recital of Chamber Music by Virgilio Brum (Violin) and Alfredo Tazzoli (Pianoforte). 6.0 to 6.5, Announcements. 6.35, Giornale Radio and Agricultural and Dopolavoro Notes. 7.0, Time, Report of the Royal Geographical Society, and Gramophone Records of Italian Folk Music. 7.20, Announcements in Foreign Languages. 8.0, Giornale Radio, Sports, Notes, and Weather. 8.15, Sponsored Gramophone Music. 8.30, Symphony Concert, conducted by Gianandrea Gavazzeni. Talk in the interval. 10.0, Programme of Variety Music. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in German. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—1.0 p.m., Time and News. 1.10, Gramophone Concert of Classical Music. 2.0 to 3.0, Interval. 3.0, Time, Weather, and Exchange. 3.20, Talk: The Development of the Game of Hand-Ball. 3.30, Programme for Young People. 3.55, Variety Music on Gramophone Records. 4.25, Talk for Women. 4.50, Talk on Caves. 5.10, Instrumental Concert of Contemporary Austrian Music: Pianoforte Quartet in A Minor (Frank); Sonata for Violin and Pianoforte (Kern). 5.55, Tourist Report. 6.10, Talk on the Vienna International Regatta. 6.25, Talk on Wireless. 6.50, Sports Notes. 7.0, Concert by the Vienna Philharmonic Orchestra, conducted by Robert Heger: Overture, The Barber of Seville (Rossini); Verdi Variations, Op. 23 (Heger); Symphony No. 6 in B Minor—the Pathetic (Tchaikovsky). In an interval at 7.30 (approx.), Time, Weather, and Programme Announcements. 8.25, The Oil Rush—An American Comedy in Three Acts (Larrie), translated and arranged for radio by Heinrich B. Kranz. 10.0, News. 10.15, Schrammel Trio Concert, relayed from the Krantz-Ambassador Hotel.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Gramophone Records. 12.55, Polish Press Review. 12.55, Gramophone Records. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.10, Announcements. 3.15, Gramophone Records. 3.25, Economic Notes. 3.35, Gramophone Records. 3.45, Aviation Report and Anti-Gas Drill. 3.50, Gramophone Records. 3.55, Naval and Colonial Report. 4.0, Popular Music, relayed from Cichocinok. 4.55, Talk: Holidays. 5.0, Book Review. 5.15, Recital by Eugene Narozny (Songs) and T. Michalowicz (Cello); Cello Solos: (a) Prelude (Bach), (b) Sonata in E (Valentini); Arias from (a) Eugene Onegin (Tchaikovsky), (b) L'Africaine (Meyerbeer), (c) Verbum Nobile (Moniuszko); Cello Solos: (a) Oriental Dance (Rachmaninov), (b) Serenade (Popper), (c) Polonaise in F (Popper); Three Songs. 6.15, Talk: Massage as a Profession for the Blind. 6.35, Pianoforte and Violin Recital of Dance Music. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Topical Talk. 8.0, Introductory Talk to the Following Transmission. 8.15, Rimsky-Korsakov Concert for the Twenty-fifth Anniversary of the Composer's Death; The Station Symphony Orchestra, conducted by Dolzycki; Soloist: Mme. M. Wilkomirska (Pianoforte); Overture, A Night in May; Introduction to The Golden Cockerel; Pianoforte Concerto; Easter Overture; Selection from Sadko; Spanish Caprice. In the interval, Radio Journal. 10.0, Dance Music. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music.

WILNO

533 kc/s, 563 metres; 16 kW.—6.35 p.m., Concert of French Folk Songs on Gramophone Records, with Introductory Talk. 7.5, Miscellaneous Announcements. 7.10, Agricultural Press Review. 7.20, Programme Announcements. 7.25, Talk for Poles in Lithuania. 7.40 till Close Down, See Warsaw.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—7.55 p.m., Sports Talk. 8.10, Announcements. 8.30, See Belgrade. 10.30, News and Weather. 10.40, Dance Music. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Stock Exchange Quotations, and Weather Report. 6.0, Gramophone Concert. 6.45, News. 7.0, Recitation by May Pitchford. 7.15, Gaelic Talk. 7.30, Time Signal. 7.31, The Station Orchestra. 8.0, Song and Duet Recital by Mr. and Mrs. P. J. Duffy. 8.15, The Station Orchestra. 8.30, Song and Duet Recital (contd.). 9.45, Programme by the Emer Comedy Company. 9.15, Tenor Solos by J. O'Neill. 9.25, Orchestral Music. 9.35, Tenor Solos (contd.). 9.45, Sponsored Programme. 10.45, Time, News, Weather, and Close Down.

BARCELONA

EAJI, 860 kc/s, 348.8 metres; 8 kW.—6.30 p.m., Programme for Children. 8.0, Request Gramophone Records. 8.30, Exchange and Catalan Grammar Lesson. 9.0, Gramophone Music and News. 9.15, Talk: "No more War!" 10.0, Chimes from the Cathedral, Weather, Exchange and Market Prices. 10.5, Orchestral Concert: March, The Derby Winner (Peeking); Selection from A Waltz Dream (O. Strauss); Bajo los naranjos (Turina); Capriccio zingaro (Fiorini); Melody (Faure); Persian Scene (Rust). 11.0, Soprano Song Recital by Carmen Gombau: Aria from Figaro (Mozart); Nell (Faure); El majó discreto (Granados); Jota (Falla). 11.30, Dance Music from the Casa Llibre; In the Interval at 12 Midnight, News. 1.0 a.m. (Sunday) Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Report, and Dopplavoro Notes. 8.20, Giornale Radio, Weather, and Sports Notes. 8.30, Time and Announcements. 8.35, Fedora—Opera in Three Acts (Giordano), on Gramophone Records. In the interval, Reading. After the Opera, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.55 p.m., Time Signal and Programme Announcements. 7.0, Talk. 7.30, Gramophone Music. 8.0, Talk. 8.30, Programme from Zagreb, 977 kc/s, 307 metres. 10.30, Time and News. 10.35 (approx.), Cigany Music from the Potrosacka Zadruga Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Potpourri on Gramophone Records. 2.45, Handwork for Children. 3.10, Talk: Joy—One of Life's Duties. 3.30, Weather and Exchange. 3.45, Reading (Hans Grimm). 4.0, See Hamburg. 5.0, Weekly Review. 5.30, Baritone Song Recital by Karl Oskar Dittmer. Begegnung (Grauer); Maria auf der Wiese (Grauer); Wolfsaugen (Kaun); Der letzte Pfalzgraf (Kaun); Versammlis; Slovak Love Song (Wickemauer); Heimatlied (Kaun). 6.0, Poetry Reading. 6.5, Piano-forte Trio in G (Mozart), by R. Kerschbammer (Violin), Paul Conen (Cello), and Werner Kirehhoff (Pianoforte). 6.30, Talk: Local Administration in Italy. 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, Epigrams. 8.5 (approx.), A Variety Programme. 10.0, News. 10.45, Weather Report for Shipping. 11.0, Report of the Midsummer Festival of the Young Hitlerites in Hohenschöpping. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.0 p.m., Pianoforte Concerto in D Minor (Mozart), by Albrecht Luer and the Station Orchestra, conducted by Dr. Rudolf von Schmidtseeck. 4.30, Concert of German Music by the Station Orchestra, conducted by Dr. Rudolf von Schmidtseeck. Prelude to Duke Philip's Bridal Journey (Reuss); Musikalische Dorfgeschichten (Kretschmer); Military March, Op. 101 (Kaun); Overture, Die schöne Galathee (Suppe); Waltz, Waldnaixen (Ertl); March, Hoeh Heidecksburg (Herzer). In the interval at 4.55 (approx.), Sports Notes. 5.35, A Visit to the Home of General von Zieten at Wustrau—Literary and Musical Programme. 6.0, Concerto No. 2 in G for Flute and Strings (Frederick the Great), by Georg Müller and the Station Orchestra, conducted by Heinz Karl Weigel. 6.20, Talk: On Foot through the Sudan. 6.40, The Witzleben Station informs its listeners. . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.10, Humorous Stories. 8.20, Programme from Munich. In the interval at 9.15 (approx.), Report on the Festival of the Provincial Choral Society from Schneidemühl. 10.0, News. 10.15 (approx.), Dance Music. In the interval at 11.0 (approx.), Talk: What People are talking about in Berlin. 1.0 a.m. (Sunday), Close Down.

BERNE.—See Schweizerischer Landessender. BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

SATURDAY

JUNE THE TWENTY-FOURTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Eye-witness accounts of Test Match, England v. West Indies, and of Amateur Golf Championship.

LONDON REGIONAL "Fool for the Gander," play by Adrian Thomas; The Arcadian Follies, relayed from Blackpool.

MIDLAND REGIONAL From the musical comedies; orchestral programme.

NORTH REGIONAL The Arcadian Follies, vaudeville programme from Blackpool.

WEST REGIONAL Bangor Diocesan Musical Festival.

SCOTTISH REGIONAL Excerpt from "Sunny Days," relayed from Largs.

BELFAST A Zoological orchestral concert.

ABROAD

ATHLONE 8.45 p.m. Programme of the Emer Comedy Company.

BARCELONA 10.5 p.m. Orchestral concert.

BELGRADE 10.35 p.m. Cigany music from the Potrosacka Zadruga Restaurant.

COPENHAGEN 8.30 p.m. Radio Ball for the older generation.

HAMBURG 4.0 p.m. Concert, relayed from the liner "Europa."

MADRID 7.0 p.m. Programme of light music.

PALERMO 8.45 p.m. Operetta: "Fior di Siviglia," by Cusina.

POZNAN 10.15 p.m. Dance music from the Café Esplanade.

STUTTGART 12.20 p.m. Mouth-organ concert.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.30 p.m., Radio Journal. 7.40, Sports Notes. 7.45, Gramophone Music. 8.0, News. 8.5, English Lesson. 8.20, News. 8.30, Gramophone Concert. 9.0, Harmonie—Comedy in Two Acts (H. Duvernois).

BRATISLAVA

1,078 kc/s, 279 metres; 14 kW.—5.55 p.m., Janosik's Treasure—a Marionette Play (F. Urbánek). 6.55, Talk for Housewives. 7.0, See Prague. 7.25, Choral Concert. 7.55, Popular Concert relayed from Brno. 8.20, See Prague. 8.45, Dolly—Operetta in Two Acts (Anatol Provaznik). 10.0, See Prague. 10.15, See Moravská-Ostrava. 11.30 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.0 p.m., Gramophone Concert. 2.0, Time and News. 2.20, Gramophone Concert. 3.0, Agricultural Prices. 3.30, Talk on Industry. 4.0 (from Gleiwitz), Concert by the Hindenburg Orchestra, conducted by Albert Ziehr. Hindenburg March (Bittner); Waltz, Blonde or Brimette (Waldteufel); Selection from Faust (Gounod); Die kleine Marzipan-Armee (Rebner-Perak); Die Spieluhr (Blaauw); Herzen und Blumen (Czibulka); Waltz, Die Hydropathen (Gungl); March (Rivelli). 5.0, Film Review. 5.20, Concert by the Station Orchestra, conducted by Bruno Janz. March, Heil Europa (Blon); Waltz, Paysage d'autonne (Waldteufel); Suite from Esmeralda (Drigo); Overture, La dame blanche (Boieldieu); Potpourri, Dividenden (Morena). 6.15, Programme to be announced. 6.40, Programme Announcements. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, See Berlin (Deutschlandsender). 10.0, Time and News. 10.30, Dance Music from Berlin (Witzleben). In an interval at 11.0, Talk: What People are talking about in Berlin. 12 Midnight (approx.). Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission, News, and Pianoforte Duets: (a) Fantasia in F Minor, Op. 130 (Schubert). (b) Legends, Album II—Nos. 678 and 9 (Dvorák). 7.0, See Prague. 7.10, Dialogue: The Folk Tradition in Czech Poetry. 7.25, Popular Band Concert. 8.20, Balalaika Solos by Ivan Zadorin. 8.45, See Bratislava. 10.0, See Prague. 10.15, See Moravská-Ostrava. 11.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans: Overture (Raimann); Melody (Lindov); Baccanale (Glazunov); Selection from Figaro (Mozart); Almbblatt (Wagner); Flute Solo, Orientale (Gaubert); Ballet Music from Rome and Juliet (Gounod). 7.15, Literary Talk. 7.30, Film Review. 8.0, Concert by the Station Orchestra, conducted by M. Frauz Andre; Soloist, Mme. Cambien (Songs). M. Bohune (Violin) and the Station Vocal Quartet; Scottish March; Songs for Vocal Quartet; Dances from Tom Jones (Edward German); Cadiz (Albeniz). 8.30, A Radio Sketch (Felix van Zyll). 9.0, Concert (contd.): Melody (Granados); March (Kreisler); Songs; Saxophone Solo; Waltz (Brahms); The Fourteenth Rhapsody (Liszt); Songs; Rondo capriccioso for Violin (Saint-Saens); Rhapsody in Blue (Gershwin). 10.0, Le Journal Parlé. 10.10, Dance Music from the St. Sauveur Palais de Danse. 11.30, Light Music and Dance Music on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Silveano Orchestra. In an interval at 6.0, Radio Journal. 7.0, Educational Programme. In an interval at 7.20, Gramophone Music. 8.0, Choral Concert. 8.30, Variety Items. 8.45, Concert by the Station Orchestra. Soloist, D. Teodori (Violin). Intermezzo from Tiefer (d'Albert); Lyric Suite (Grieg); Romance in F for Violin (Beethoven); Third Movement from the Pathetic Symphony (Tchaikovsky); Chickens emerging from their Shells (Mussorgsky). 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 8.45 p.m. (approx.), till Close Down.—5.0 p.m., Recital of Hungarian Songs. 5.30, Talk. 6.0, Orchestra Concert, relayed from the Municipal Gardens. 8.0, Market Prices. 8.10, The Letter Box. 8.45, Hunter Abend. 10.45, News, followed by Gramophone Music.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.—Relayed by Kalundborg, 260 kc/s, 1,153 metres.—1.00 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the Holger Meyer-Obel String Ensemble, relayed from the Hotel d'Angleterre. 2.0-2.30, Interval. 2.30, Programme for Children. 3.0, Concert by the Mogens Hansen's Instrument Ensemble. Entrance March of the Boyards (G. Halvorsen); Selection from Barbe bleue (Offenbach); Gavotte Musette from the Suite, Aus Holbergs Zeit (Grieg); Piece in the Form of a Habanera (Ravel); Waltz from Coppella (Delibes); Latvian Folk Songs (Witholt); Selection from The Little Dutch Girl (Kalmán); Old English Folk Melody, Cherry Ripe (Scott); Slav Dance in E Minor (Dvorak); Humoresque (Dvorak); Russian Dance (Tchaikovsky); Persian March (Joh. Strauss). In an interval at 3.45, Reading. 5.0, Gramophone Concert; Tommaso Alcaide; Werther's Aria from Act III of Werther (Massenet); Claire Dux; Ava Maria (Schubert); Heinrich Schuster; Ein rheinisches Mädchen (Hoppe-Merten); Bonifantino Gigi and Kzio Pinza; Duet from Act IV of Lucia di Lammermoor (Donizetti); Tossy Spiwakowsky (Violin); Valse mignonne (Joun); Arva (Joun); Gitta Alpar and Herbert Ernst Grol; Duet from The Dubarry (Mittler-Mackeben); Sven-Olof Sandberg; Melody (Sylvain); Eric Bertner, Sweetheart (Miller and Clarke); The Boswell Sisters. Put that Sun Back in the Sky (Kalmán and Meyer). 5.35, Exchange and Fish Market Prices. 6.20, French Lesson. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.30, Talk. 8.0, Time Signal from the Town Hall. 8.1, Reading. 8.30-12 Midnight, Radio Ball for the Older Generation; The Station Orchestra, conducted by Lanny Grandahl; Soloist, Aase Wallenström (Songs). 8.30, Battle March and Augusta Waltz (Müller); Sophus Polka and Philippa Mazurka (Jensen); Swedish Masquerade Tripevald (Nielsen). 9.0, Folk Songs. 9.15, Waltz, Morgenblatter (Joh. Strauss); Mazurka (Klawnsort); The Lancers (Mikol); Waltz, Children of Spring (Waldteufel); Polka, March, The Washington Post (Sotsa). 9.55, Old Danish Songs. 10.10, Folk Dances for Clarinet and Strings. 10.50, News. 11.5, Pianoforte Solos. 11.20, March, Wienrkaustler (Schrammer); Petit Tonkinoise (Scott); Waltz, Baccarolle (Waldteufel); Melody, Nyheder, Polka (Jespersen); Helga Mazurka (Lumbye); Champagne Gallop (Lumbye). 12 Midnight, Time Signal and Chimes from the Town Hall.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—6.45 p.m., Pianoforte Recital of Music by Brahms, Liszt, Faure and Ravel. 7.20, News. 7.35, Programme Announcements. 7.40, See Warsaw. 10.40, Light Music, relayed from the Pavillon Restaurant. In the interval at 11.30 (approx.), News from Members of the Polish Polar Expedition. 12 Midnight, Fanfare from the Tower of St. Mary's Church.

DANZIG.—See Leipzig.

DRESDEN.—See Heilsberg.

tra, conducted by Leemans; Soloist, C. Colbert-Martin (Songs); Overture, A May Day (Wood); Orchestral Suite (Guiraud); Serenata di Baci (de Micheli); Aria from Cendrillon (Massenet); Selection from Lakmé (Delibes); Aria from La Traviata (Verdi); Waltz, Gold and Silver (Lehár); Foxtrot (Scott). 1.0 p.m., Journal Parlé. 1.10, Gramophone Concert: Christmas Overture (Coleridge-Taylor); Parlez-moi d'amour (Lenoir-Sievier); Sérénade mélancolique (Tchaikovsky); Rapsodia (arr. Debroy-Somers); Serenade (Metra); Selection from The Land of Smiles (Lehár); Un mois de vacances (Mireille); Military March (Schubert). 4.45, Talk on the Work of the League of Nations. 5.0, Concert by the Radio Orchestra, conducted by Franz André; March (Armandola); Chiffon (Byfard); Melody (Caludi); Scènes pittoresques (Massenet); Danse villageoise (Cools); Dernier sommeil (Delmas); Javanese Song (de Sévergne); Fantasia on a German Theme (Oels); Scène de chasse (Fauchey); Escapes (Oels); Danse humoresque (Palmingren). 6.0, Talk on Modern Physics. 6.15, Pianoforte Recital by Irma Liszlo; Gavotte and Variations (Rameau); Impromptu, Op. 36, No. 2 (Chopin); Capriccio, Op. 50, No. 3 (Mozzkovsky); Prelude in A Minor (Debussy); Capricce bohémien (Smetana); Concert Etude in F Minor (Dolmazy). 6.45, Retour de vacances—Sketch (Lauville). 7.0, Gramophone Music: Melody (Benedict); Air from Prince Igor (Borodin). 7.15, Talk on Ostend. 7.30, Journal Parlé. 8.0, Cello Recital by Elisabeth Sanglier; Prelude and Polonaise (Goeyens); Oriental Dance (Rachmaninov); Dance (Cassado); Dance of the Elves (Popper). 8.20, The Typhoon—Play in Four Acts (Lengyel), translated by André Duboscq. 10.0, Journal Parlé. 10.0, Concert of Jazz Music by Robert de Kers and his Cabaret Kings, relayed from the Century Hotel, Antwerp.

BRUSSELS (No. 2)

N.I.R., 587 kc/s, 338.2 metres; 15 kW. Programmes in Flemish.—12 Noon, Gramophone Concert of Light Music. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by M. Leemans: Marche militaire (Schubert); Waltz from The Rose of Stamboul (Fall); Intermezzo from Le Pavillon d'Armide (Tcherepniu); Three Songs; Selection from Miss Helyett (Andran); Violin Solo, Capricce viennois (Kreisler); Suite, Scènes napolitaines (Massenet); Two Italian Songs (Volpatti). 4.45, Book Review. 5.0, Concert by the Belgian Wind Instrument Quintet: Quintet for Wind Instruments and Pianoforte (Taffanel); Second Quintet for Wind Instruments (Montemans); Scherzo for Wind Instruments and Pianoforte (de Boisdeffre). 5.45, Gramophone Music: Two Pieces (Maurice Donnay): (a) Réverie, (b) Valse mélancolique; In stiller Nacht (Brahms); Algerian Suite (Saint-Saens). 6.15, Talk: Swiss Towns.

JUNE 24th

SATURDAY

continued

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. T. St. A. Ronald and B. McNabb announcing. 4.30, Concert for Tunbridge Wells and Isle of Thanet Listeners. The Clock is playing (Hewitt); Goin' Home (Dvorak); Waiting at the end of the Road (Berlin); The Bing Boys are here (Grey); The Toy Town Admiral (Godfrey); Lady Divine (Kountz); A Fond Kiss (Traditional); There was a Poor Musician; My Coquette (Andrew); You along o me (Sunderson); When the Kye comes Home (Traditional); Childhood Memories Medley (Soulers). 5.15, Military Band Concert for Dover and Folkestone Listeners. A Selection of Regimental Marches; Amorettenlianze (Gungl); The Wedding of the Rose (Jessel); Valse des Alouettes (Drigo); Cornet Solo, Carnival of Venice (Briccialdi); Praeludium (Jarnefeld); Ca c'est Paris (Padilla); Cornet Solo, Il Bacio (Arditi); Loin du Bal (Gillet); Selection from Cavaleade (Coward); The Gladiator March (Sousa). 6.0, Programme in French. 11.0 till Close Down, Programme in English by the I.B.C. 11.0, Rhythm Band; Wild Waves; Old Vazoo; White Lightning; Rhythm Spasm; Kumi Tum Rhythm (Aitch); Tiger Rag (La Rocca); Hot and Anxious (Redman); Play it hot (McKnight). 11.30, The Studio Chorus in Gems from Opera; Nibelungen March (Wagner); Anvil Chorus from Il Trovatore (Verdi); Tamburino March (Wagner); Selection from I Pagliacci (Leoncavallo); Soldiers Chorus from Faust (Gomoll); The Swan Chorus from Lohengrin (Wagner); Selection from Rigoletto (Verdi). 12.5 a.m. (Sunday), The I.B.C. Late News Bulletin. 12.10, Club Concert for Worcester Listeners. Raymond (Thomas); Song, P.C. Brown (Longstaffe); Popular Melodies for Pianoforte; Song, Around the Corner (Kassel); Strawberries and Cream; Song of my Heart; Organ Solo, Schön Rosmarin (Kreisler); Songs: (a) Give me my Heart, (b) Just an old Rhymer; Light of foot (Latam); 1.0, Vocal and Orchestral Concert: Beautiful Lady (Caryl); Songs: (a) My Old Shako (Trotter), (b) Bless this house (Taylor), (c) Violets (Wright); Alice Blue Gown (Tierney); Tell me to-night; Violin Solo, Spanish Dance (Falla); After the Ball (Harris). 1.30, The Studio Chorus, Orchestra, Scarf Dance; Swing Along; Who is Sylvia?; Long ago in Alaska; The Beggar's Song; Orchestra; Artist's Life; Believe me if all those chattering young charms; Bendemeer's Stream; The Dear Little Shamrock. 2.0, Dance Music by the Hooligans. Night shall be filled with Music (Collins); Love me to-night (Hart); We've got the Moon and Sixpence (Grey); The Night when Love was born (Young); Sing a Cloud will soon roll by (Woods); A Bedtime Story (Nicholls); I can't believe it's True (Newman); Ain't cha coming out to-night? (Murray); Moon (Miles); Big Ben's saying Goodnight; Dixiana (Caldwell); If you are faithless (Benatsky); Mr. and Mrs. Sipp (Caldwell); Marching Song (Benatsky). 2.57, I.B.C. Goodnight Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.0 p.m., Thor Groote reads from his own works. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, Talk by Dr. Paul Laven. 8.10, See Munich. 10.20, Time and News. 11.0, Serenade from Munich. 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse). 806 kc/s, 372 metres; 1.5 kW. Relayd by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—4.0 p.m. (from Bremen), Concert relayed from the Europa Liner; Conductor: E. Schlier; Victory March, Umsblau Band (Schunim); Ich hatte einst ein schönes Vaterland (Lassen); Waltz, Was die Scheide rauscht (Dietrich); Venetian Barcarolle (Leoncavallo); Melody (Aoshitomo); Im Hafen (Niemann); Waltz, Wellen und Wogen (Joh. Strauss); March, Unter der Handelsflagge (Seidl). 5.0, Talk by Dr. Holzmann; Practical Conclusions from the Lessons of Eugenics. 5.30, A Midsummer Festival, relayed from Bad Grund. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, See Munich. 10.0, News. 10.20, Radio Report on the Hanover Regatta. 10.35, Dance Music, relayed from Berlin (Witzleben). HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayd by Danzig, 662 kc/s, 453.2 metres.—11.30 a.m., Concert by the Small Station Orchestra, conducted by Eugen Wieklen. Casaren-Marsch (Heinecke); Waltz, Mein Balou (Kozzak); Overture to an Operetta (Lincke); Die Spieluhr der Pompanour (Noack); Immer bin ich Dein, Anita (Meisel); Selection from Frasquita (Lohár); Suite, Goliardica (Armadori); Waltz, Frühlingsbotschaft (Fueik); Winter (Blume-Weninger); Frühlung (Blume-Weninger); Overture, The Princess in the Golden Slippers (Rust). 1.5, Gramophone Concert. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office with Gramophone Records. 3.5, Agricultural Prices and Exchange. 3.30 (from Danzig), Handwork for Children. 4.0, Concert by the Königsberg Opera House Orchestra, relayed from the Zoological Gardens. Conductor: Ludwig Lesechitzky. Prelude to Si j'étais roi (Adam); Waltz, España (Waldteufel); Selection from The Count of Luxembourg (Lohár); Waltz, Tales from the Vienna Woods (Joh. Strauss); Carnaval à Paris (Svendsen); First Suite from L'Arlesienne (Bizet); Hungarian Dances Nos. 4 and 6 (Brahms). In an interval at 4.50, Traffic Report. 5.40, Talk: Local Government in East Prussia. 6.5, Programme Announcements. 6.15, Market Prices. 6.25, Talk on Physical Culture. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, See Munich. 8.55, News. 9.0, East German Military Programme. 10.0, Weather and News. 10.15 (approx.), Dance Music from Berlin (Witzleben). In an interval at 11.0, Talk: What Berlin is Talking about. 12.30 a.m. (Sunday), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW up to 4.40 p.m.).—11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). 11.40 a.m., Concert by the Small V.A.R.A. Orchestra, conducted by H. de Groot. Kleiner Wienermarsch (Kreisler); Tambourin Chinois (Kreisler); Patrouille lorraine (Gillet); Ein Tag in Wienerwald (Krengelberger); Romance (Haydn); Russian Rhapsody (Marie); Melody (Aezzo); Das Zuberlied (Meyer-Helmann); Wiener Bürger (Ziebler); Polospiele (Petras). 12.25 p.m., Organ Recital by J. Jong. Overture, The Bohemian Girl (Balle); Melody (Aezzo); Die Liebchen (Grothe); Melody (Dhanez). 12.55, Orchestral Concert (contd.). The Wedding of the Rose (Jessel); Gschichte aus Desterreich (Mader); Gavotte célèbre (Lully); Minnet (Mozart); Mazurka (Dvorak); Serenade (Eilenberg); Souvenir (Droll); Tosti Song (Medley (Godfrey). 1.40 to 1.55, Interval. 1.55, Gramophone Music. 2.30, Talk on Music with Gramophone Illustrations. 3.10, Concert of Light Music by De Notenkrakers, conducted by D. Whis. 4.20, Literary Talk. 4.40, Concert by De Wielewale Young People's Choir, conducted by P. Tiggers. 5.10, Concert by the Amsterdam Chamber Orchestra, conducted by D. Klekens. Overture, Così fan tutte (Mozart); Minnet in G (Beethoven); Hungarian Dances Nos. 5 and 6 (Brahms); Mazurka (Debussy); Indian Ballet from Lakmé (Delibes). 5.40, Programme for Children. 6.40, Concert (contd.). Waltz, Les Sirènes (Waldteufel); Selection from Rigoletto (Verdi-Tavan); Turkish March (Mozart). 7.10, Bass Solos by J. Laumen and Recitations by A. Hillebrecht. 7.39, S.O.S. Messages. 7.40, Musical and Dramatic Programme, relayed from the Ons Gebouw. The V.A.R.A. Orchestra, conducted by H. de Groot. De Pierefluiters, conducted by J. van de Horst, the Shamat Hindia Orchestra, conducted by D. Doermakeswara, the Patriotiekas Quartet and Soloists. 9.10, Press Review and Announcements. 9.25, Potpourri from A to Z (Geiger), by J. Jong (Organ). 9.40, Musical and Dramatic Programme (contd.). 11.10, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—Programme of the Catholic Radio Society (K.R.O.).—12.10 p.m., Sextet Concert. Amsterdam vooruit (Stabel); Air from Werther (Massenet); Schwert und Leier (Strass); Ständchen (Schubert); Selection from La Bohème (Puccini); Ballzauber (Lincke); Gramophone Music; Petite Marche (Kreisler); Selection from Les Cloches de Corneville (Planquette); Hestiny (Baynes); Sevillie (Abraham). 1.25, Interval. 1.40, Programme for Children. 2.0, Report of the T.T. Races at Assen. 2.40, Programme for Missionaries—Addresses and Music. 3.40, Programme for Children. In the interval at 4.5, Report of the T.T. Races at Assen. 5.25, Gramophone Music. 5.35, Sports Talk. 5.55, Gramophone Music. 6.0, Press Review. 6.20, Gramophone Music. 6.40, Police Announcements. 6.55, Talk on Horticulture. 7.15, Gramophone Music. 7.25, Talk. 7.40, Orchestral Concert, conducted by J.

Gerritsen. Overture, William Tell (Rossini); Lyric Suite (Grieg); Schweizer Schützengilde (Zimmer). 8.10, News. 8.15, Songs by M. H. Ernst. 8.25, Concert (contd.): Potpourri (Zimmer); Overture, Raymond (Thomas); Extase (Ganne); Serenade (Pierné). 8.40, Recitations. 8.55, Songs by M. H. Ernst. 9.5, Talk and Orchestral Music. 9.40, Songs by M. H. Ernst. 9.50, Concert (contd.): Selection from The Dollar Princess (Fall); Zurich March (Heuser). 10.10, News. 10.15, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna. KALUNDBORG.—See Copenhagen.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—12 Noon, Time, Weather, and News. 7.30 p.m., Rifle Club Report. 8.0, Time, Weather and News. 8.40, Concert. 9.10, Provincial Programme. 9.30, Variety Items. 9.50, Sports Report. 10.0, Dance Music. 11.0 (approx.), Close Down.

KIEL.—See Hamburg. KLAGENFURT.—See Vienna. KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW. 1.0 p.m., Orchestral Concert, conducted by Eysoldt. Soloist, Hélène Guernanova (Contralto). March, Jederzeit bereit (Horbach); Overture, Con salvo (Azzoni); Songs: (a) Ravenna (Sehocke), (b) Frühlingssonne (Trunk), (c) Storchensbotschaft (Wolt), (d) Rastlose Liebe (Schubert); Lyric Suite (Mausz); Serenade (Rachmaninov); Melody (Michele); Kleiner Walzer mit Dämpfer (Ackermanns); Scenes from I Pagliacci (Leoncavallo); Der Schmettelfling (Neuhof-von-Hadeln). In an interval at 2.0 (approx.), Announcements. 2.30, Gramophone Concert. 3.0, Programme for Children. 3.30, Economic Notes and Time Signal. 3.45, Talk: Walks in the Rhineland and Westphalia—Around the Lacher See. 4.10, Talk for Women. 4.30, Instrumental Concert: March (Haass); Du, du liegst mir im Herzen; Two Children's Poems; Songs: (a) Es tanzt ein Bi-Ba-Butzemann, (b) Was streich der Kater seinen Bart? Minnet (Küner); Rondo for Violin and Guitar (Küner); In die Fremde; Two Short Poems; Ländler (Spies); Song, Das Lamm auf der Weide ist fröhlich und froh; Die Grenadiere (Pütz); Trio for Flute, Violin, and Guitar (Weber); Song, Eine kleine Geige; Two Short Poems; Nun bricht aus allen Zweigen; Wer recht in Freuden wandern will; Echo, from Hansel and Gretel (Humperdinck); Andantino for Violin and Guitar (Guliani); Two Short Poems; Die Nacht (Schubert); Prayer from Hansel and Gretel (Humperdinck); Scherzo from the Serenade (Kalewa); In Meters Stübli. 5.50, Talk: Henting by Elctricity. 6.10, Reading of Old Westphalian Legends. 6.20, Reading in English. 6.40, Weather, Time, Economic Notes, and Sports Notes. 6.45, Talk: Famous Derby Races. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, Announcements by the 8.5, Topical Talk. 8.15, Dance Music by the Small Station Orchestra, conducted by Eysoldt. 9.30, Midsummer Festival Programme by the Ravensburg Historical Society. 10.5, Announcements. 10.30, Solstice Festival Programme by Young People of the Rhineland. 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Gramophone Music. 1.0 p.m., News. 1.15, Folk Songs on Gramophone Records. 2.0, News. 2.10, Wireless Notes. 2.20, Gramophone Music. 2.45, Programme for Children. 3.30, Labour Market Report. 3.45, Economic Notes. 4.0, Talk for Boys: Among the Peasants of the German Frontier Towns. 4.30, Concert, relayed from Berlin (Witzleben). In the interval, from 5.0 to 5.10, Music Notes. 6.0, German for Germans. 6.20, Topical Talk. 6.30, Talk: The Transatlantic Air Traffic. 7.0, Transmission for all German Stations; Concert, relayed from the Zwingler, Dresden. The Dresden Philharmonic Orchestra, conducted by Eugen Gottlieb-Hellmesberger. Soloists: Lotte Erben-Groll (Harpischord); Johannes König (Oboe); Fritz Diettrich (Tenor). Music of 1719 (arr. Flath); Overture and Ballet Music from Piramo e Tisbe (J. A. Hasse); Concerto in F Minor for Oboe, Strings, and Harpsichord (Telemann-Stein); Twelve Short Pieces from Water Music (Handel); Two Arias from L'inganno fedele (Keiser); Pieces (Hasse); (a) Peasant Dance from Numa. (b) Gavotte from Piramo e Tisbe, (c) March from Artaserse. 8.0, See Munich. 10.5, News. 10.15 (approx.), Dance Music, relayed from Berlin (Witzleben). 12 Midnight, Flamme empör—Radio Report of the Midsummer Celebrations in Plauen. LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—French Programme.—7.0 p.m., Gramophone Music. 7.40, Weather. 7.45, Gramophone Concert:

Symphonic fantastique (Berlioz); Prélude à l'après-midi d'un faune (Debussy); Joyeuse marche (Chabrier). 8.15, Reading in French. 8.25, French Songs. 9.20, Humorous Programme in French. 9.45, News in German. 9.55, Dance Music and Variety Music on Gramophone Records. In the intervals, News and Exchange.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Operetta Programme relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres. After the Relay, News.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—7.0 to 9.0 p.m., Programme for Listeners in the Canary Islands, Guinea and America. 7.0, Concert of Light Music. 8.15, Talk. 8.30, Light Music. 9.0 to 11.30, Interval. 11.30, Programme from Madrid (EAJ7). After the Programme, Radio Chronicle. 1.0 a.m. (approx.) (Sunday), Close Down.

MADRID

UNION RADIO (EAJ7); 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, Medical Talk, Request Gramophone Records, and Talk on Educational Films. 9.15, News. 9.30 to 10.30, Interval. 10.30, English Lesson. 11.0, Chimes and Time Signal. 11.5 (approx.), Falstaff—Opera (Verdi) on Gramophone Records. In an interval at 12.45 a.m. (Sunday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., Concert by the Krizkovsky Choir. 7.0, See Prague. 7.25, See Brno. 8.20, See Prague. 8.45, See Bratislava. 10.0, See Prague. 10.15, Concert of Music from Sound Films by Members of the National Theatre and the Station Orchestra. Conductor: J. Plichta. 11.20 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—9.55 a.m., Relay from a Theatre. 2.15, Literary and Art Notes. 2.45, Weather Report. 3.0, Concert. Songs of the Hebrides (Kennedy-Frazier); Irish and Scottish Songs (Beethoven); Songs (Somervell); Trio (Scott). 4.0, Talk on Plants. 4.30, Readings from Plays. 5.30, Literary and Musical Programme for Young People. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5 Review of the Pravda.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayd by Augsburg and Kaiserlautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 225 metres. 4.30 p.m. (from Nürnberg), Concert by the Nürnberg Concert Society, conducted by Philipp Wiener; Prelude and Act II of Der Evangelium (Kienzl); Erotica (Grieg); Ich liebe dich (Grieg); Waltz, Mon rêve (Waldteufel); Potpourri, Besuch bei Mitlöcker (Morena); Das Zuberlied (Meyer-Helmann); Overture, Raymond (Thomas). 5.45, Programme for Girls. 6.15, Von Liebe und Heimat—Song Recital by Emilie Rottenkolber-Berneck (Soprano); In meiner Heimat (Hillich); Vergebliches Ständchen (Brahms); Der Rhein (Humperdinck). 6.25, Talk by Dr. Ludwig Waagen. 6.45, Wireless Notes. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, Bunter Abend. Part I: Humorous Musical Programme. Part II: Adolar and Elvira—Opera, relayed from the Municipal Opera House, Niederwimmlhausen. Introductory Talk by Dr. Stentor. 10.0, Dance Music by the Small Station Orchestra, conducted by Erich Kloss. 10.20, Time and News. 11.0, Serenade, conducted by Erich Kloss. 12 Midnight (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayd by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.15 p.m., Light Music, relayed from the Restaurant Lyle. 5.15, Programme for Children. 6.15, National Music. 6.45, Talk on Economics. 7.0, Advertising Notes. 7.15, Weather and News. 7.30, Talk. 8.0, Time Signal. 8.1, Concert by the Radio Orchestra; Soloists: M. Fridtjof (Recitations) and Bias Bernhoft (Songs); Overture, Casanova (Lincke); Swedish Songs and Dances (Eysoldt); The Eagle (Maedowell); Moon Pictures (Maedowell); Cavatine (Raff); Malagena (Razigade); Donauwellen (Vancovic); March, El Capitán (Sousa). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Old Dance Music. 10.45, Dance Music on Gramophone Records.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements, Tourist Talk, Agricultural Report, and Giornale Radio. 8.20, Sports Notes and Gramophone Music. In the interval at 8.30, Time and News. 8.45, Fior di Siviglia—Operetta in Three Acts (Cusina). In the intervals, Book Review and Announcements. After the Operetta, News.

PARIS

EIFFEL TOWER, Call FLE. 207.5 kc/s, 1,445.7 metres; 13 kW. Time signals on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Talk on Music and the Theatre. 7.3, Le Journal Parle. 8.30, Pianoforte Recital, with Commentary. 9.0, Concert by the Finian Touche Quartet. 10.3 (approx.). Close Down.

PARIS

POSTE PARISIEN; 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music. 7.15, Le Journal Parle. 7.35, Gramophone Music. 7.50, Report: Events of the Week. 8.0, The Letter Box. 8.5, Gramophone Music. 8.15, Interval. 8.30, Chamber Music by Marguerite Canal. M. Louis Aronolt (Songs), M. Saury (Violin), with the Composer at the Pianoforte. Pieces romantiques—for Pianoforte. Songs to Poems by Verlaine: (a) Je suis venue pauvre orphelin, (b) Je ne sais pourquoi, (c) Ecoutez la chanson bien douce. Sonata in B Minor for Violin and Pianoforte. 9.0, Interval. 9.15, Dance Music. 11.0, News.

PARIS

RADIO PARIS; Call CFR; 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Music. 8.0, Press Review and Weather. 12 Noon, Concert by the Radio Paris Orchestra: La Muezzin (Colomb); Habill d'oiseaux (Delmas); Aubade sentimentale (Ganne); Le Reveil des fleurs (Flament); Morning Song (Cools); Sous bois (Erlanger); Babillages d'amoureux (Gervasio); Reverie au roudet (Diries); Promenade à l'étang (F. Schmitt); Reverie (Schumann); Au erpenseule (Chaudou); Le chanson des airs (Sauvrezis); Berceuse (Ravel); Serenade (Samazeuilh); Entrée des Fétards (Fevrier); Au Champagne (Gillet); Souvenir d'un Bal (Gonod); Paysage (Razigade); Cloches du soir (Ropartz); Dream (Scott); Ronde de nuit (Saint-Saëns). 3.0, Programme for Children. 6.10, Agricultural Talk. 6.30, Light Orchestral Music. 7.0, Talk on Science. 7.20, Light Orchestral Concert (contd.). 7.45, Review of the Latin Press, Commercial Prices, and News. 8.30, Humorous Programme. 8.30, News, Weather, Sports Notes, Review by Paul Reboux. 8.45, Programme of Waltzes. 9.15, Press Review and News. 9.30, Aux Assises—Play (Lespine).

from New York. 9.30, Concert Favourites. from New York. 9.55, Baseball Scores. 10.0, Rhythm Kings. 10.15, Maurice Sherman and his Sherman Hotel Orchestra. from New York. 10.30, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie. from New York. 11.0, Time Signal and Press News-Reader. 11.5, Don Bestor and his Hotel Lexington Orchestra. 11.15, Weather Report. 11.16, Sport Review. 11.22, Press News-Reader. 11.29, Temperature Report. 11.30, A Récroco by Bill and Alex of the Downtown Y.M.C.A. 11.45, Jack Pettis and his Orchestra. 11.59, Time Signal. 12 Midnight, American Tax Payers' League. from New York. 12.15 a.m. (Sunday), Al Mitchell's Orchestra, with Baritone Solos by Everette Marshall. 12.30, Songs of Melody. 12.45 to 3.30, New York Relay. 12.45, Irene Bordoni and Emil Coleman. 1.0, Jack Benny and his Orchestra. 1.15, The Leaders. 1.30, Kaltenmeyer's Kindergarten. 2.0, Gilbert and Sullivan Gens. 3.0, Time Signal and Century of Progress Festival Orchestra.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—6.35 p.m., Song Recital. 7.20, Miscellaneous Items and Announcements. 7.35, Theatre Guide and Programme Announcements. 7.40, Talk. 7.58, Time. 8.0, See Warsaw. 9.25, Time and Announcements. 9.30, See Warsaw. 10.0, Announcements. 10.15, Dance Music from the Café Esplanade. 11.50 (approx.). Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—6.25 p.m., News in German. 6.30, German Transmis-

JUNE 24th

SATURDAY

continued

sion: Joseph Hofbauer reads from his own works. 7.0, Chimes and News. 7.10, Talk on the Czech Language. 7.25, See Brno. 8.20, Pianoforte Solos by Jiri Voldán. 8.45, See Bratislava. 10.3, Time and News. 10.15, See Moravska-Ostrava. 11.20 (approx.). Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.50, News. 12.40 (from Lausanne), Operetta Music on Gramophone Records. 1.0 (from Lausanne), Financial Notes. 1.10 (from Lausanne), Gramophone Music. 2.0 to 3.28, No Transmission. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Geneva), Concert. 5.20 to 7.0, No Transmission. 7.3, Talk. 7.30 (from Geneva), A Radio Interview. 8.9 (from Geneva), Concert. 9.50, News. 10.0 (from Geneva), Dance Music by the Broadcasting Serenaders. 11.30 (approx.). Close Down. RJUKAN.—See Oslo.

ROME

Call 1R0, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2R0, 11,860 kc/s, 25.4 metres, from 5.30 p.m.—1.0 to 2.15 p.m., Orchestral Concert of Light Music. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.30, Children's Radio Review. 4.45, Report of the Royal Geographical Society and Giornale Radio. 5.5, Exchange and Announcements. 5.15, Reading. 5.30 to 6.15, Orchestral Concert: Per to Rio Rita (Santengini); Lido (Marchionni); Carovana al tramonto (Hens); Gigie (Martucci); Selection from Turandot (Puccini); Ballade in G for Pianoforte (Chopin); Pamplona (Calmanti). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 7.0, Tourist Report. 7.10, Lesson in Morse. 7.20, Announcements in Foreign Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Gramophone Music. 8.30, Giornale Radio and Sports Notes. 8.45, Faust—Opera in Five Acts (Gonod). In the intervals: Talk, Theatre Notes, and Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—12.45 a.m. (Sunday), Stock Reports. 1.0 to 4.0, New York Relay. 1.0, Soloist. 1.30, The Economic World Today. 2.0, Ferde Grofé's Orchestra. 2.15, Zora Layman and her soloists. 2.30, K. T. Secret Service spy story. 3.0, B. A. Rolfo and his Orchestra. 1, Programme Résumé.

CHWEIZERISCHER

LANDESSENDER

EROMUNSTER, 653 kc/s, 459 metres; 60 kW; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory and Weather Forecast. 12 Noon (from Berne), Liszt Concert on Gramophone Records. 12.30 p.m., Time, Weather and News. 12.40 (from Berne), Operetta Music and Popular Songs on Gramophone Records. 1.25 (from Berne), Exchange, Time and Weather. 1.30 (from Zurich), The Listeners' Quarter of an Hour. 1.45 (from Zurich), Book Review. 2.15 (from Zurich), Gramophone Concert. 2.45 (from Zurich), Talk for Alpinists. 3.30 to 5.0, Interval. 5.0, (from Zurich), Musical Programme with Songs. 6.0 (from Zurich), Talk on Insect Pests. 7.0, Chimes from Zurich Churches. 7.15 (from Zurich), Time, Weather and Market Prices. 7.20 (from Zurich), Gramophone Concert. 7.55 (from Basle), Talk: The Opening of the Richard Wagner Museum in Lucerne. 8.15, Musical Competition, relayed from the Conservatoire. 9.0 (approx.), Weather and News. 9.10 (approx.), Relay from the Conservatoire (contd.). 10.0 (from Basle), Dance Music on Gramophone Records. 11.0 (approx.). Close Down. SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Choral Concert, relayed from Västervik. 6.0, Reading. 6.30, Instrumental and Vocal Concert. 7.15, Weather and News. 7.30, Military Band Concert, with an Introductory Talk, relayed

from Orebro, 1,274 kc/s, 235.5 metres. 8.30, The Bells of Rönneberga—Play (Hertha Odemann). 9.45, Weather and News. 10.0, Dance Music. 12 Midnight (approx.). Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Classical Music on Gramophone Records. 12.45 p.m., News. 1.0, Time Signal. 1.1, Orchestral Concert, conducted by Maurice de Villers. 2.0, Legal Talk in German. 2.15, Variety Music on Gramophone Records. 2.45, Talk in French on Claude Debussy. 3.0 to 3.30, Interval. 3.50, Gala Concert, relayed from the Casino, Vichy. Conductor, Broullier. Overture, Chérubin (Massenet); Rhapsody on Airs from the South of the Loire (Lacombe); Orchestral Suite, Gitanyes (Razigade); Canzonetta (Bastide); Les lacs des Fées (Bastide); Symphonie Suite from The Pearl Fishers (Bizet); Waltz, Gold and Silver (Lehar). 5.0, Gardening Talk in German. 5.15, Orchestral Concert, conducted by Roskan: Andalusian March (Krier); Dreams on the Ocean (Gungl); Overture, Lysistrata (Lincke); Selection from Le postillon de Longjumeau (Adam); Suite ovatique (Delius-Popy); March, Apollo (Gauwin). 6.0, Tourist Talk in French. 6.15, French Elocution Lesson. 6.30, Festival Programme on the Seventeenth Anniversary of the Victory of Verdun, relayed from Verdun. Arrival of the Ex-Service Men's Delegations, with their Regimental Colours, at the Hôtel de Ville, Chimes and Firing of Cannon. Arrival of General Braunon, Governor of Verdun, and his Staff, Saluting the Colours. The Marseillaise. Presentation of the Colours by the Governor to the Mayor of Verdun. Regimental Music. Address by the Mayor in the Town Hall, followed by a Visit to and Talk on the War Museum. 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.15, Press Review in German, Lottery Results, and Announcements. 8.30, Alsatian Programme: Johannes-Owe—Play in Dialect (Baumann and Bergmiller). 10.15, Press Review in French, and Gramophone Music. 10.30, Dance Music from the Savoy. 12 Midnight (approx.). Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12.20 p.m., Mouth Organ Concert: Largo (Handel); The Death of Anse (Grieg); Deutscher Spruch; Swabian Shepherd's Song; Pöppelmaierchen; Ueber den Sternen (Flemming); Ave Maria zart; Es ist ein Schmitter Tod; Volkslieder und Märchen (Komzak); Verlassen bin i (Koschat). 1.0, New Gramophone Records. 2.30, Time and News. 2.45, Radio Pictures of Stuttgart. 3.30, Programme for Young People. 4.30, Concert by the Württemberg Symphony Orchestra, conducted by Otto Seyfert: Soloists: Gerda Hansi (Soprano) and K. Jantz (Tenor); Overture, La dame blanche (Boieldieu); Aria (Boieldieu); Overture and Soprano Solo from Fra Diavolo (Auber); Suite from Der Rosenkavalier (R. Strauss); Two Marches (Schubert): (a) Hungarian March, (b) Reitermarsch; Selection from Hansel and Gretel (Humperdinck). 5.45, Time and Sports Notes. 6.0, Talk: Adolf Hitler's Religious Mission. 6.25 (from Freiburg), Talk. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, See Munich. 10.10 (approx.), Time, News, and Gramophone Music. 10.45, Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—6.35 p.m. till Close Down, Programme from Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—6.35 p.m., Giornale Radio and Agricultural and Dopolavoro Notes. 7.0, Time, Tourist Report, and Dance Music on Gramophone Records. 7.20, Announcements in Foreign Languages. 7.40, Gramophone Music. 8.0, Giornale Radio, Sports Report, Weather, and Gramophone Music. 8.30, Talk: Events and Problems. 8.40, An Operetta in Three Acts. In the intervals: Review of New Books, and News. Giornale Radio after the Operetta.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Announcements in Different Languages. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—6.45 p.m., Sonata in E Flat, Op. 18 (R. Strauss), for Violin and Pianoforte. 4.35, Reading of Humorous Anecdotes. 5.0, Military Band Concert, relayed from Walden. March, Medea (Hüttsch); Waltz, Bei uns z'haus (Joh. Strauss); Overture, Das Nachtlager von Granada (Kreutzer); Polpourri, Rendez-vous bei Lehar (Hruy); Selection from The Bird Fancier (Zeller); Polpourri, Jedem das Seine (Schubert); March, Aller Ehren ist Osterreich voll (Nowotny). 6.15, Choral Concert, conducted by Viktor Paul Heinrich. Soloists: Homa Schiller (Soprano) and Rudolf Gruber (Baritone). Cantata, Die Seele des Wealls (Mozart) for Mixed Choir and Soprano. Six Old German May Songs for Three Part Women's Choir and Soprano (arr. Weinrich); Three Russian Folk Songs (Musorgsky-Gutmann); Two Songs from Du and die Arbeit (Human), for Mixed Choir; Soprano and Baritone. 7.0, Final of the Vienna Hand-Ball Tournament, relayed from the Frater. 7.30, Typical Talk. 7.40, Time and News. 7.50, Epigrams. 7.55, Violin Duet Recital by Christa Richter-Steiner and Gust Steiner. Sonata in B Flat for Two Violins and Pianoforte (Bach). Largo ette (Spohr); Small Suite, Op. 3, for Two Violins and Pianoforte, Op. 9 (Kriekka); Passaglia for Two Violins (Händel). 8.30 (from Linz), Concert by a Military Band and the Christlich-Deutscher Song Society for the Fifth Anniversary of the Linz Station. Festival Fanfare (Dambberger); Prelude to Der Heilige Augustinus (Müller); Aus der Heimat (Neuhöfer); Resurrexeris (Bernauer); Choir: Abend ist's (Neuhöfer); Dance Melody, Im Rosenham (Dambberger); Intermezzo (Kinzl); Recitations; Der Einsiedler (Daxspurger); Gute Nacht Artillerie; Choir: Der Wächter (Daxspurger); Overture, Vom Regen in die Traure (Bernauer); Dances from Das est Talent (Kinzl); Ländler aus Oberösterreich (Bernauer); Recitations; Im Maien (Amler); Mein Herz ist ein Mühlrad (Müller); Bäber, Häut di (Müller); Choir: S'hoamatzaungl (Schnopfluger-Ruter); Hubertusmarsch (Kinzl); Pesant Dances (Pachernegg); Hessian March (Perndau). In the intervals at 9.30, Radio Report: St. John's Night Beacons in the Austrian Alps, and at 9.40, News. 10.45, Dance Music by Gustav Rohm and his Orchestra, relayed from the Café Palmhof.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.5 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Gramophone Records. 12.25, Polish Press Review. 12.35, Gramophone Records. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Records. 3.5, News. 3.5, Announcements. 3.15, Gramophone Records. 3.25, Economic Notes. 3.35, Gramophone Records. 4.0, Programme for Invalids, relayed from Lwow, 788 kc/s, 381 metres. 4.30, Johann Strauss Concert by the Station Orchestra, conducted by Oziminski. Overture, Die Fledermaus; Waltz, Wine, Women and Song; Selection from The Gipsy Baron. 5.0, Typical Talk. 5.15, Popular Concert, relayed from Cichocinek. 6.15, Talk: The Lakes and Rivers of Pomerania. 6.35, Pianoforte Recital, relayed from Cracow, 905 kc/s, 312.8 metres. Variations and Fugue on a Theme of Händel (Brahms); Liebestraum (Liszt); Au bord d'une Source (Liszt); Impromptu (Faure); Two Pieces (Ravel): (a) Forlane, (b) Toccata. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Recitations. 8.0, Concert of Light Music by the Station Orchestra, conducted by Navrot. Soloist: J. Gorbez (Songs) Ballad Music from Sylvia (Delibes); Songs: (a) Estrollita (Ponce), (b) Jurame (Grever), (c) Romanza (Guerrero); Waltz, Estimajenta (Waldteufel); Tango from Der Teufelsreiter (Kálmán); Three Songs; Slow Foxtrot from Der Teufelsreiter (Kálmán); Waltz from Polentul (Nedbal); Mazurka in B Flat (Starzewsky); March (Lewandowski). 9.5, Radio Journal. 9.15, Agricultural Notes. 9.30, Chopin Pianoforte Recital by J. Siodowicz. Prelude No. 25 in C Sharp Minor; Ballad in A Flat, Op. 47, No. 5; Polonaise in B Flat, Op. 71, No. 2; Scherzo in E, Op. 54, No. 4. 10.0, Dance Music. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Gramophone Records with Commentary. In the interval at 11.30, News for members of the Polish Polar Expedition.

WILNO

533 kc/s, 563 metres; 16 kW.—5.0 p.m., See Warsaw. 7.20, Programme Announcements. 7.25, Weekly Lithuanian Review. 7.30, Recitations. 8.0, Concert of Request Gramophone Music. 9.5 till Close Down, See Warsaw.

ZURICH.—See Schweizerischer Landessender.

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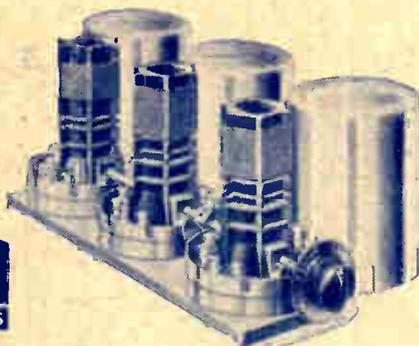
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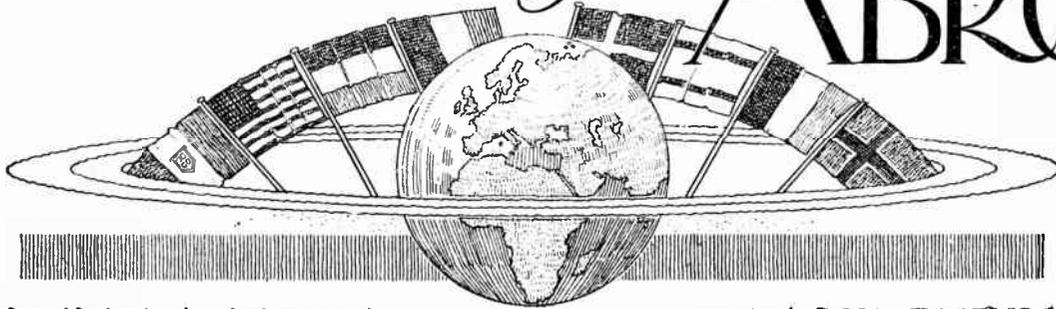
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The Wireless World PROGRAMMES from A BROAD



BROADCASTING STATIONS
ARRANGED IN ORDER
OF WAVELENGTH

TIMES AND DETAILS OF
FULL WEEK'S FOREIGN
TRANSMISSIONS

Metres.	kc's.	kW.	Station.	Tuning Positions.	Metres.	kc's.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania)		453.2	662	7	Milan (<i>Experimental Relays Rome</i>)	
1875	160	8.5	Huizen (Holland)		450.3	666	20	Madona (Latvia). (<i>Relays Riga</i>)	
1796	167	40	Lahti (Finland)		447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Bjukan (0.15 kW.), Notodden (0.08 kW.) Aalesund (0.35 kW.) (Norway) (<i>relays Oslo</i>).	
1725	174	75	Radio Paris, C.F.R.						
1635	183.5	60	Berlin (Deutschlandsender) (Germany). (S.-W. Stn. DJA on 31.38 m., DJB on 19.73 m., DJC on 49.83 m., DJD on 25.51 m., DJE on 16.89 m.)		441.2	680	50	Rome, IRO. (S.-W. Station, 2 RO on 25.4 m.)	
1554.4	193	30	Daventry National		435.4	689	55	Stockholm, SANA (Sweden)	
1538	195	7	Ankara (Angora) (Turkey)		430.4	697	2.5	Belgrade (Yugoslavia)	
1481	202.5	100	Moscow, RVI (Old Komintern) (Russia)		424.3	707	2	Madrid, EAJ7 (Union Radio). (<i>After 7.0 p.m.</i>)	
1448	207.5	13	Eiffel Tower, FL, Paris		424.3	707	100	Moscow, Imini Stalina (Russia)	
1412	212.5	120	Warsaw I (Poland)		419.5	715	1.5	Berlin, Witzleben (Germany)	
1380	217.5	100	Novosibirsk, RV6 (Russia)		416.4	720.5	5	Rabat (Morocco)	
1354.4	221.5	30	Motala (Sweden). (<i>Relays Stockholm</i>)		413	725	60	Athlone (Irish Free State)	
1304	230	500	Moscow, WZSPS (Trade Union) (Russia)		408.7	734	16	Katowitz (Poland)	
1275	235	0.5	Tunis-Kasbah (Tunisia)		403.8	743	25	Sottens (Radio Suisse Romande) (<i>Switzerland</i>)	
1230	244	0.6	Boden (Sweden). (<i>Relays Stockholm</i>)		398.9	752	25	Midland Regional. (Daventry)	
1200	250	5	Stamboul (Turkey)		394.2	761	12	Bucharest (Roumania)	
1200	250	21	Reykjavik (Iceland)		389.6	770	120	Leipzig (Germany)	
1190	252	200	Luxembourg (<i>Testing</i>)		385.1	779	8	Toulouse (Radiophonie du Midi) (France)	
1170	256	25	Tashkent, RV11 (Russia)		385.1	779	10	Stalino, RV26 (Russia)	
1154	260	7.5	Kalundborg (Denmark). (<i>Relays Copenhagen</i>)		381	788	16	Lwow (Lemberg) (Poland)	
1117	268.5	40	Moscow, Popoff RV58 (Russia)		376.4	797	50	Scottish Regional (Falkirk)	
1083	277	60	Oslo (Norway)		372.2	806	1.5	Hamburg (Germany)	
1071	280	35	Tiflis, RV7 (Russia)		370.1	810.5	0.8	Radio, LL, Paris	
1035	290	36	Kiev, RV9 (Russia)		368.1	815		Seville, EAJ5 (Union Radio) (1.0 kW.); Galicia EAJ1 (0.2 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Helsinki (10 kW.) (Fin- land) (<i>relays Lahti</i>); Kharkov, RV20 (10 kW.) (Russia).	
1000	300	100	Moscow (Russia) (S.-W. Stn. on 50 m.)		365.8	820	0.7	Fredriksstad (Norway). (<i>Relays Oslo</i>)	
938	320	20	Kharkov, RV4 (Russia)		364.1	824	1	Bergen (Norway)	
857	350	100	Leningrad (Russia)		363.6	825	13	Algiers (Algeria)	
840	357	18.5	Budapest (Hungary)		360.6	832	60	Mühlacker (Stuttgart) (Germany)	
825	363.6	50	Sverdlovsk, RV5 (Russia)		355.9	843	50	London Regional (Brookmans Park)	
760	395	1.3	Geneva (Switzerland). (<i>Relays Sottens</i>)		352.1	852	7	Graz (Austria). (<i>Relays Vienna</i>)	
720	416.6	15	Monte Ceneri (Switzerland). (<i>Testing</i>)		348.8	860	7.8	Barcelona, EAJ1 (Spain)	
720	416.6	20	Moscow, RV2 (Experimental) (Russia)		348.8	860	10	Leningrad, RV70 (Russia)	
690	434.6	1.5	Oulu (Uleaborg) (Finland)		345.2	869	11.5	Strasbourg, PTT (France)	
680	441.2	0.6	Lausanne (Switzerland). (<i>Relays Sottens</i>)		341.7	878	35	Brno (Brunn) (Czechoslovakia)	
574.7	522	7	Ljubljana (Yugoslavia)		338.2	887	15	Brussels II, Velthem (Belgium). (<i>In Flemish</i>)	
569	527	0.25	Freiburg-im-Breisgau (Germany). (<i>Relay Stn.</i>)		335	896	5	Cadiz (Spain)	
568.1	528	2	Grenoble (France)		334.4	897	1.9	Poznan (Poland)	
566	530	0.25	Hanover (Germany). (<i>Relays Hamburg</i>)		331.5	905	50	Milan (Italy). (<i>Relays Turin</i>)	
563	533	16	Wilno (Poland). (<i>Relay Station</i>)		328.2	914	60	Poste Parisien (France)	
560	536	0.25	Augsburg (Germany). (<i>Relays Munich</i>)		325	923	60	Breslau (Germany)	
550	536	1.5	Kaiserslautern (Germany). (<i>Relays Munich</i>)		321.9	932	10	Göteborg (Sweden). (<i>Relays Stockholm</i>)	
550	545	18.5	Budapest No. 1 Lakihegy (Hungary)		318.8	941	0.25	Dresden (Germany). (<i>Relays Leipzig</i>)	
542	554	10	Sundsvall (Sweden). (<i>Relays Stockholm</i>)		318.8	941	1.5	Naples, INA (Italy). (<i>Relays Rome</i>)	
537.6	558	3	Palermo (Italy)		315.8	950	1.6	Marseilles, PTT (France)	
533	563	60	Munich (Germany)		312.8	959	0.7	Radio Vitis (Paris). (S.-W. Stn. on 43.75 m.)	
525	571	15	Riga (Latvia)		312.8	959	1.7	Cracow (Poland)	
518	579	100	Vienna (Bisamberg) (Austria)		312.8	959	10	Genoa, IGE (Italy). (<i>Relays Turin</i>)	
509	589	15	Brussels No. 1, Velthem (Belgium). (<i>In French</i>)		309.9	968	1	Cardiff	
500.8	599	20	Florence, IF1 (Italy). (<i>Relays Turin</i>)		307	977	0.75	West Regional (Washford Cross)	
495.8	605	1.2	Trondheim (Norway)		304	986	13	Zagreb (Yugoslavia)	
488.6	614	120	Prague, No. 1 (Czechoslovakia)		301.5	995	50	Bordeaux Lafayette, PTT (France)	
480	625	50	North Regional (Manchester)		298.8	1004	11	North National (Manchester)	
472.4	635	60	Langenberg (Germany)		298.1	1013	20	Tallinn (Estonia)	
465.8	644	1.5	Lyons la Doua, PTT (France)		293.5	1022	0.7	Hilversum (Holland). (7 kW. before 4.40 p.m.)	
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland)		293.5	1022	2.6	Limoges, PTT (France)	
453.2	662		San Sebastian, EAJ8 (0.6 kW.); Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (<i>relays Heilsberg</i>); Klagenfurt (0.5 kW.) (Austria) (<i>relays Vienna</i>); Porsgrund (0.7 kW.) (<i>relays Oslo</i>); Tromsø (0.1 kW.) Bodø (0.5 kW.) (Norway); Uppsala (0.15 kW.) (Sweden) (<i>relays Stockholm</i>).		291	1031	13.2	Kosice (Czechoslovakia)	
453.2	662	0.25	Agen (France)		288.3	1040	50	Viipuri (Viborg) (Finland). (<i>Relays Helsinki</i>)	
					288.3	1040	1	Scottish National (Falkirk)	
					286	1049	0.8	Bournemouth (<i>Relay Station</i>)	
								Montpellier (France)	

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Table with columns: Metres, kc/s, kW, Station, Tuning Positions, Metres, kc/s, kW, Station, Tuning Positions. Lists various international broadcasting stations and their technical specifications.

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent B.S.T.)

Table with columns: Metres, kc/s, Call Sign, Station, Tuning Positions, Metres, kc/s, Call Sign, Station, Tuning Positions. Lists principal short-wave stations with their call signs and transmission times.

FOREIGN SUNDAY PROGRAMMES

JUNE THE TWENTY-FIFTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** A Religious Service, conducted by Rev. J. Scott Lidgett, from a studio.
- LONDON REGIONAL** Orchestral and choral concert.
- MIDLAND REGIONAL** Military Band programme.
- WEST REGIONAL** Religious Service, relayed from Exeter Cathedral.
- NORTH REGIONAL** Sheffield Civic Service, relayed from the City Hall, Sheffield.

ABROAD

- HAMBURG** 8.0 p.m. Concert of opera music by the Philharmonic Orchestra and soloists.
- HEILSBURG** 12.0 noon. Concert by the Königsberg Opera House Orchestra, conducted by Erich Börschel.
- HILVERSUM** 7.55 p.m. Concert by the Hague Orchestra, relayed from Scheveningen.
- HUIZEN** 7.55 p.m. Concert by the K.R.O. Orchestra and Choir.
- LEIPZIG** 8.30 p.m. Women's Wiles—concert by the Leipzig Symphony Orchestra.
- MADRID** 8.15 p.m. Concert by a Guitar Orchestra, conducted by Juan Sanchez.
- RADIO PARIS** 12.20 p.m. Sacred music.
- STRASBOURG** 8.30 p.m. Concert by a Virtuoso Septet, relayed from the Casino. Vichy.
- TURIN** 8.30 p.m. Opera: "Dafni," by Mulé.
- VIENNA** 7.10 p.m. The earlier music of Schumann, arranged by Dr. Karl Geiringer.

ATHLONE
725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Sponsored Programme. 8.10, Concert by St. Joseph's Prize Brass and Reed Band. In the intervals, Banjo Solos by Jack MacGarvey and Bass-Baritone Solos by M. O'Conne. 11.0, Time, News, Weather, Sports Talk and Close Down.

BARCELONA
EAJI, 860 kc/s, 348.8 metres; 8 kW.—7.0, Concert by the Station Orchestra, 7.40, Song Recital by Pepita Paulet. 8.0, Concert by the Station Orchestra and Ramon Abiaga (Banjo). 9.0, Dance Music relayed from Hollywood Bar. 10.0, An Opera on Gramophone Records. 11.45, Chess Lesson. 12 Midnight (approx.), Close Down.

BASLE.—See Schweizerischer Landessender.

BELGRADE
697 kc/s, 430.4 metres; 2.8 kW.—4.30 p.m., Little Floramye—Operetta (Tijardovic), on Gramophone Records. 6.55, Time and Programme Announcements. 7.0, Talk. 7.30, Recital of Arias (Rimsky-Korsakov). 8.0, Gramophone Music. 8.30, Recital of Yugoslav National Songs. 9.20, Sports Notes. 9.45, Concert by the Station Orchestra. 10.15, News, followed by Dance Music on Gramophone Records.

BERLIN
DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—11.30 a.m., See Leipzig. 12 Noon, Concert from Leipzig. In the interval at 12.55 p.m., Time Signal. 2.0, See Hamburg. 3.0, Travel Talk. 3.30, Gramophone Music. 4.0, H. W. Stein-Saaleck reads from his own Works. 4.25, Harpsichord Recital: Suite in E (Bach); Sonata napolitana (P. D. Paradisi); Allegro, Andantino and Allegro (Cimarosa); Les ombres errantes (Couperin); La gabielle (Couperin); Le rossignol en amour (Couperin). 4.55, Second Half of the International Football Match, Germany v. Austria, relayed from Frankfurt. 5.40, Zither and Yodeling Concert of Folk Music. 6.10, Lovers and Fools in the Works of Shakespeare (arr. Hans Rothe, with Old English Music). 7.25, Gramophone Report of the German Derby at Hamburg. 8.0, Franz von Blon Concert by the German Symphony Orchestra, conducted by the Composer: Dramatic Overture, Blumengestüßter; Triumph der Schönheit; Dance Suite. 9.0, The German Garden in Literature and Song—a Radio Sequence (Martin Raschke). 10.0, Weather and News. 10.20 (approx.), See Langenberg. 10.45, Weather Report. 11.0, Programme from Berlin (Witzleben). 12 Midnight, Close Down.

BERLIN
WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—11.30 a.m., See Leipzig. 12 Noon, See Breslau. 1.30 p.m., Between Town and Country—Music by the Rülchenstahl Village School Orchestra. 2.0 to 3.0, Talks for Garden City Dwellers. 3.30, Mandoline Concert. 4.0, Discussion between a Peasant, a Farmer's Wife, and a Village Innkeeper—Will Village Culture have a new Lease of Life? 4.30, Military Band Concert from the Treptow Spreegarten. In the interval from 4.55 to 5.40, Commentary on the Football Match, Germany v. Austria—Second Half-time, relayed from Frankfurt. 5.45, Choral Concert, relayed from Magdeburg. 6.0, Report of the German Derby, relayed from Hamburg (on Gramophone Records). 7.0, The Lakes of the Mark District. 7.50, Sports Notes. 8.5, Summer from the Oratorio The Seasons (Haydn), by the Berlin Wireless Orchestra, conducted by Johannes Steinhilber, and Soloists. 8.45, Concert by the Berlin Wireless Orchestra, conducted by Dr. Rudolf von Schmidtseck: Overture, Fatinitza (Suppé); Selection from Der Juxbaron (Kollo); Waltz, Natursänger (Zielner); Harlekinstreiche (Carl Schröder); Selection from Der Bettelstudent (Millocker); Masquerade (Sullivan); Waltz, Fideles Wien (Komzak). 10.0, News. 10.20, See Langenberg. 10.30 (approx.), Dance Music from the Roof Garden of the Eden Hotel. In the interval from 11.10 to 11.30, Talk for Germans Abroad. 1.0 a.m. (Monday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE
986 kc/s, 304 metres; 13 kW.—6.30 p.m., Radio Journal. 7.45, Sports Notes. 8.0, Programme for Soldiers. 8.15, Lottery Results. 8.30, Gramophone Music. 9.0, Gramophone Music.

BRATISLAVA
1,076 kc/s, 279 metres; 14 kW.—10.0, Military Band Concert, relayed from a Park; Sokol March (Suk); Overture, Marinarella (Fucik); Slav Dance No. 15 (Dvorák); Selection from

the St. Sauveur Palais de Danse. 5.30, Football Results. 6.0, Pianoforte Recital by Yvonne Bartolyns: Prelude and Fugue in C (Bach); Fantaisie-Improvisé (Chopin); Prelude No. 17 in C Minor (Chopin); The Flight of the Bumble Bee (Rimsky-Korsakov); Toccata (Ravel). 6.30, Programme for Children. 7.0, Gramophone Music: Prelude to Act Two and Aria from Le roi d'Ys (Lalo); Judex from Mors et Vita (Gounod); Cantate Domino (Alain). 7.15, Religious Address. 7.30, Wireless Notes and Music Review. 8.0, Concert by the Radio Orchestra, conducted by Walpot. In the interval at 8.45, La Muse d'Espouillat—Comedy in One Act (Charles Foley). 10.0, Le Journal Parlé. 10.10, Dance Music by Robert de Kers and his Cabaret Kings, relayed from the Century Hotel, Antwerp.

BREMEN.—See Hamburg.

BRESLAU
923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—10.3 a.m., Catholic Service. 11.0, Reading from the Letters and Diaries of Schopenhauer. 11.30, See Leipzig. 12 Noon, Concert by the Station Orchestra, conducted by Ernest Prade. 2.0, News. 2.10, Talk on Horse-breeding. 2.25, Talk on the Tercentenary of the Trial of Galileo. 2.50, Programme for Children. 3.20 (from Gleiwitz), Concert by a Beuthen Boys' Choir. 4.0, Concert by the Municipal Orchestra, relayed from Bad Landeck. In an interval at 4.55, Football Report from Frankfurt. 6.0 (from Gleiwitz), Beautiful Carlsruhe—a Radio Report. 6.25, Pianoforte Recital by Gertraud Dirrigl. 7.0, Weather Forecast and Radio Report of the German Derby (on Gramophone Records). 7.30, Humorous Programme. 8.0, German Evening; Eulenspiegel greift ein—a Play of Youth and Age (Heinz Stegowitz); The Station Orchestra and Station Choir, conducted by Ernest Prade. 10.0, Time, Weather, and News. 10.30, Dance Music from Berlin (Witzleben).

BRNO
878 kc/s, 342 metres; 35 kW.—11.0 a.m., Promenade Concert by the Municipal Orchestra, relayed from Luhacovic. 12 Noon, (Chimes from Prague. 12.45 p.m., See Moravská-Ostrava. 1.30 to 1.45, See Prague. 4.0, See Prague. 5.50, Recital of Folk Songs and Dances. 5.50, Gramophone Music. 6.0, German Transmission: Musical Play (Dr. J. Peschek). 7.0, See Moravská-Ostrava. 7.45, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)
1.N.R., 590 kc/s, 509 metres; 15 kW.—1.10 p.m., Concert by the Radio Orchestra, conducted by Charles Walpot. Soloists: Mme. Nini de Boël (Songs) and Harry Collin (Tenor). In the interval at 1.30, Un drame romantique: Sketch (Blandin). 5.0, Dance Music relayed from

the St. Sauveur Palais de Danse. 5.30, Football Results. 6.0, Pianoforte Recital by Yvonne Bartolyns: Prelude and Fugue in C (Bach); Fantaisie-Improvisé (Chopin); Prelude No. 17 in C Minor (Chopin); The Flight of the Bumble Bee (Rimsky-Korsakov); Toccata (Ravel). 6.30, Programme for Children. 7.0, Gramophone Music: Prelude to Act Two and Aria from Le roi d'Ys (Lalo); Judex from Mors et Vita (Gounod); Cantate Domino (Alain). 7.15, Religious Address. 7.30, Wireless Notes and Music Review. 8.0, Concert by the Radio Orchestra, conducted by Walpot. In the interval at 8.45, La Muse d'Espouillat—Comedy in One Act (Charles Foley). 10.0, Le Journal Parlé. 10.10, Dance Music by Robert de Kers and his Cabaret Kings, relayed from the Century Hotel, Antwerp.

BRUSSELS (No. 2)
N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—1.0 p.m., Le Journal Parlé. 1.10, Concert, relayed from the Grand Hotel, Antwerp. 5.0, Dance Music from the Century Hotel, Antwerp. 5.30, Sports Results. 6.0, Gramophone Music. 6.30, Song Recital by M. Toulenel. 7.0, Trio No. 3 (Mozart) on Gramophone Records. 7.15, Religious Talk. 7.30, Music Review. 8.0, Concert by the Station Symphony Orchestra, conducted by M. Meulemans; Overture, Aeneis (Pytchen-hove); Fantaisie canadienne (Gilson); Fantasia No. 3 (Benoit-Broeck); Selection from Bluebirds uit 'n tuintje (Alpaerts); Dance from A Midsummer Night's Dream (De Boeck). 8.45, De Anarchist en de erantante—Play (Jeppe Van den Berg). 9.0, The Fourth and Fifth Acts of Gudrun—Musical Play (Ernest Brongier). 10.0, Le Journal Parlé. 10.10, Dance Music, relayed from the St. Sauveur Palais de Danse. 11.30, Gramophone Music.

BUCHAREST
761 kc/s, 394 metres; 12 kW.—4.0 p.m., Programme for Peasants. 5.0, Light Music and Romanian Music by the Marco Orchestra. In an interval at 6.0, Radio Journal. 7.0, Educational Talks. 7.40, News. 8.0, The Pearl Fishers—Opera (Bizet). In the intervals, Reading and Radio Journal.

BUDAPEST
545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 8.15 p.m., till Close Down.—9.15 a.m., News. 10.0, Divine Service. 11.0, Divine Service Relay, followed by Concert by the Opera House Orchestra. 2.0, Gramophone Music. 3.0, Agricultural Report. 3.45, Talk. 4.15, News. 4.20 (approx.), Concert by

the Hungarian Workers' Choral Society. 5.0, A Hunting Story. 5.30, Orchestral Concert relayed from the Markus Restaurant. 6.45, Reading from a Travel Diary. 7.15, Concert by a Gypsy Band. 8.15, Student Life in Heidelberg—Radio Play (Wilhelm Mayer Forster). After the Play: News. 10.30, Dance Music Relay.

CASSEL.—See Frankfurt.

COPENHAGEN
1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., Concert by Mogens Hansen's Instrumental Ensemble. 1.0, Talk in English: The Grand Tour of England. 1.20, Talk in German: Summer in the Central European Countries. 1.40, Talk in French: Provence. 2.0, Divine Service, relayed from Holmens Kirke. 3.30, Concert by the Girls' Choir of Holsteinsgade School, conducted by Hans J. Larsen. 4.0, Concert by a Wind Instrument Orchestra, relayed from a Park; Conductor: F. Hemme. 5.50, Programme for Children. 6.20, Talk. 6.50, Weather. 7.0, News and Sports Results. 7.15, Time Signal. 7.30, Talk: Napoleon and the East. 8.0, Time Signal from the Town Hall. 8.1, Fantasia in C for Violin and Piano, Op. 59 (Schubert). 8.25, Reading. 8.35, Talk on the following Transmission. 8.40, The Apollo Revue, 1933, relayed from the Apollo Theatre. 9.10, Concert by the Venetian Trio. 9.35, Introduction to the following Transmission. 9.45, The Apollo Revue (cont'd.). 10.50, News. 11.0, Dance Music from the Wives Restaurant. In an interval at 12 Midnight, Time Signal and Chimes from the Town Hall. 12.30 a.m. (Monday), Close Down.

CORK.—See Athlons.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP
1,328 kc/s, 225.9 metres; 10 kW.—2.0 to 8.0 p.m., Programme in English by the I.B.C. Announcers. T. St. A. Ronald and B. Mc-Nabb. 2.0 to 4.0, Special Programme for South Coast Listeners. 2.0, Light Orchestral Concert: Intermezzo, In Pierette's Garden (Clifton Brooks); Song: The Blackbird in the Apple Tree (Lubbock); Cello Solo: The Broken Melody (Beine); The Bumble Bee's Wedding (Clare); Song: Fairy Tales of Ireland (Coates); Violin Solo: Caprice Basque (Sarasate); Selection from Die Fledermaus (R. Strauss). 2.30, Octets and Songs: Octet: Spring Song (Mendelssohn); Song: The Sweetest Flower that blows (Hawley); Octet: Ave Marie (Schubert); Song: Because (Hardelot); Octet: Toreador et Andalousie (Rubinstein); Song: The Second Minute (Bosley); Octet: (a) Hungarian Dance in A Minor (Brahms), (b) Romance (Rubinstein). 3.0, (celebrity) Concert of Gramophone Records: Marek Weber and his Orchestra: Mon neveu (Waldteufel); The Mills Brothers: Git along (Astin); Noah Beery: One little Drink (Clarke-Akst); Greta Keller: Love me Tonight (Young); Lawrence Tibbett: Room for the Facotum, from The Barber of Seville (Rossini); Noah Beery: The Whip (Harbach); Billy Mayerl: Selection from The Desert Song (Romburg); Marek Weber and his Orchestra: Les Sirènes (Waldteufel). 3.30, Orchestral Music: The Moon is Low; Xylophone Solo: Dance of the Marionettes; Banjo Solo: In the Moonlight (McHugh); Accordion Solo: Comedy Overture (Keller Béla); What's the use; Xylophone Solo: Danse d'Hetsain (Abbey); Banjo Solo: St. Louis Blues (Hardy); The Japanese Sandman. 4.0, Programme for Children. 5.0, Popular Melodies: Colonel Bogey (Alford); Waltz, The Blue Danube (Joh. Strauss); Seldensamkeit (Brahms); When the Circus comes to Town; Liebestraum (Liszt); The Punch and Judy Show; by Grace Fields; Good Old-Time Song (arr. Pecorini); Good-night, Sweetheart (Noble). 5.30, I.B.C. Members' Request Half Hour: Farewell to Arms (Wrubel); Hiawatha's Lullaby (Donaldson); My Darling (Heymann); I can't remember (Berlin); Butterflies in the Rain (Myers); Put a little Springtime in the Winter of their Lives (Pickard); The Storm (Shaw). 6.0, Club Concert for Norwich Listeners: Charming Episode (Ormandy); Tiger Rag (La Rocca); Brother, can you spare a Dime? (Harburg); Selection from Chu Chin Chow (Norton); Guitar Solo: Feeling my Way (Lang Kress); You're still in my Heart (Dougherty); Humoresque (Dvorák); Organ Solo: Love's Old Sweet Song (Molloy); Just an Echo in the Valley (Woods); Organ Solo: Wandering by an Old Cathedral Garden (Gilbert); Extracts from Naïla (Delibes); Paradise (Brown); Swanee Lullaby (White). 7.0, Gramophone Concert: Maurice Chevalier: Paris, Stay the same; Grace Fields: Down at our Charity Bazaar; Tom Burke: Serenata (Toselli); Sketch: The Verdict; Sir Harry Lauder: Tormoberry; The Boswell Sisters: Stop the Sun, stop the Moon (Robinson); Paul Robeson: Folks I used to know; Cab Calloway and his Orchestra: Hot Toddy (Carter). 7.30, Military Baud Concert: Wee

JUNE 25th

SUNDAY

continued

HAMBURG

Macgregor Patrol (Amers); The Wedding of the Rose (Jessel); Cornet Solo: Carnival of Venice (Bricciardi); Victoria March (von Blon); Accordion Solo: Festival March; Bells of Somerset; Loin du Bal (Gillet); Naval Patrol (Williams). 8.0, Concert of Opera and Operetta Music. 9.0, Close Down. Programme in English by the I.B.C. 9.0, Concert: Sextet: Kashmiri Love Song (Woodforde-Finden); Song: In Sheltered Vale (Clarke); Violin Solo: Poem (Fibich); Sextets: (a) Someday I'll find you (Coward), (b) Le Cygne (Saint-Saëns); Song: The English Rose (German); Violin Solo: Valse Bluette (Drigo); Serenade. 9.30, Concert of Light Music: Selection from Lilac Time (Schubert-Berté); Nirvana (Adams); Ay, ay, ay (Freire); Chorus: Come where my Love lies dreaming (Foster); Xylophone Solo: Fiddlesticks (Leslie Jones); Poor man's Garden (Russell); Ampuato Tango (Cramer). 10.0, I.B.C. Members' Request Half Hour: Waltz, The Blue Danube (Joh. Strauss); Tell me To-night (Eytou); The Grasshopper's Dance (Bucalossi); Selection from The Maid of the Mountains (Fraser-Simson); Just an Echo in the Valley (Woods); Can't we meet again (Connelly); Regimental Marches (arr. Peary). 10.30, Popular Music: Shuffle off to Buffalo (Dubin-Warren); Piccinny (Goldberg); When my Little Pomeranian met your Little Pekinese (Little); Stormy Weather (Koehler); You've got me crying again (Newman); Maybe I love you too much (Berlin); I wake up smiling (Ahlert); Selection from Music in the Air. 11.0, Popular Music: Selection from The Flower of Hawaii (Abraham); Song: Over the still dark silence (Rizza); Chorus: Minstrel Memories; Midnight (Spoliansky); Song: Tired Hands (Sanderson); Violin Solo: Indian Love Call (Friml); Selection from The Flower of Hawaii (Abraham). 11.30, Music by a Tango Band: Espana Cani; Flora Castellana; Song: In Old Madrid (arr. Cardew); Adios Muchachos; Medio Luz; Luz de Granda; Song: Cuban Love Song (Fields); Tierra Hispana. 12.5 a.m. (Monday), I.B.C. Late News Bulletin. 12.10, Club Concert for Norwich Listeners: Charming Episode (Ormandy); Tiger Rag (La Rocca); Brother, can you spare a Dime (Hamburg); Selection from Chin Chin Chow (Norton); Guitar Solo: Feeling my Way (Lang-Krass); You're still in my Heart (Dougherty); Humoresque (Dvorak); Organ Solo: Love's Old Sweet Song (Molloy); Just an Echo in the Valley (Woods); Organ Solo: Wandering by an Old Cathedral Garden (Gilbert); Selection from Nala (Delibes); Paradise (Brown); Swanee Lullaby (White). 1.0, Light Music: He's my Secret Passion (Young); Petit Jean (Cavelier); Here comes the Band; Song: Every little kindness; My Heart is where the Molawak flows (Robinson); International Melley; Song: Dark Red Roses; Let us Waltz through the night (Miller). 1.30, The Studio Chorus: Morning, Noon and Night (Suppé); Good News, Chariot's coming; Quartet: Comrades in Arms; Orchestra: Mignonne (Friml); Selection from Cavalcade (Coward); Who is Sylvia? (Schubert); Orchestra: Roses from the South (Strauss). 2.0, Dance Music by the Theolians The Sun has got his hat on (Gay); When the Band goes marching by; Singing in the Moonlight (Pola); It's that extra little something (Mackenzie); Paradise (Clifford); Let me be your Carmen for To-night (Hollander); Strangers (Coates); Let that be a Lesson to you (Jones); I've gone and lost my little Yo-Yo (Shuff); The Old Kitchen Kettle (Connelly); The Gag Song (Kennedy); At Eventide; Speedway Sam (Erwin); Same Old Moon (Baskette); Dance of the Cuckoos (Stenberg); Through that Open Window (Nichols). 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres, and Trier, 1,157 kc/s, 259.3 metres.—11.30 a.m., See Leipzig. 12 Noon, See Munich. 1.0 p.m., See Langenberg. 2.0, Talks arranged by the Wiesbaden Board of Agriculture. 2.10, Rural Programme—Two Talks. 3.0, Programme for Young People. 4.0, Commentary on the International Football Match, Germany v. Austria—First Half-time. 4.0 to 4.45, Second Half-time. 4.55 to 5.40. 5.45, Mandoline Concert from Geislautern. 6.20, Old Dance Music by the Station Orchestra, conducted by Walter Caspar. 6.50, Sports Notes and Report on the German Derby. 7.0, Hab' mein Wage vollglade—a Radio Sequence on Old German Themes (Otto Thiemer). 8.0, Programme to be announced. 8.10, Concert by the Station Orchestra, conducted by Hans Rosband. Soloists: Ludwig Willner (Recitations), Part I, Symphonic Poem, Hamlet (Liszt); Das Hexendie (Max von Schillings), Part II, Programme of Light Music. 10.20, See Langenberg. 10.35, Time and News. 11.0 (approx.), See Munich. 12 Midnight, Close Down.

FREDRIKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GTEBOURG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

Call ha (in Morse). 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hannover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Concert from Breslau. 12.55 p.m., Time and Weather. 2.0 (from Hannover), Programme for Young Hitlerites: Henry the Lion—Literary and Musical Programme. 3.0, Programme to be announced. 4.0, Song Recital. 4.30, Radio Report of the German Derby at Horn. 5.0, Part Relay of the Football Match, Germany v. Austria, from Frankfurt. 5.40 (from Hannover), Concert by the Station Orchestra. 7.0 (from Bremen), Cello Recital by Alexander Beck. 7.30 (from Kiel), Talk: Schleswig-Holstein. The place for Water Excursions. 7.40, Sports Notes. 7.55, Weather. 8.0, Concert of Opera Music by the Philharmonic Orchestra and Soloists. 10.0, News. 10.20, See Langenberg. 10.35, Light Music from Berlin (Witzleben). 11.0, A Review of the Week's Events in the Hanseatic Towns.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—9.0 a.m., Divine Service, relayed from the Schloss-Kirche. 11.0, Reading (Clemens Brentano). 11.30, See Leipzig. 12 Noon, Concert by the Königsberg Opera House Orchestra. 2.0, Talk for Young People: The Young Hitlerites. 2.30, Talk on Klaipeida (Memel). 3.0, Concert by a Trombone Quartet. 3.25, Talk: East Prussian Humour. 3.55, Concert by the Kaunas Mandoline and Guitar Society. 4.45, Horse Racing Notes. 4.55, Sports Report from Frankfurt. 5.40, Lincke Concert by the Small Station Orchestra, conducted by Eugen Wilken; Overture, Casanova; Lieder der Liebesnacht; Anna; Siamesische Wachtparade; Selection from Lysistrata; Ballet Music from Fran Luza; Overture, Gri-Gri. 6.40, Reading of German Literature of the Baltic Lands. 7.5, Gramophone Music. 7.50, Sports Report. 8.0, See Breslau. 10.0, News. 10.15 (approx.), Report on the East Prussian Horse Riding Tournaments (on Gramophone Records), followed by Programme from Berlin (Witzleben). 12 Midnight, Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.41 a.m. to 4.10 p.m., Programme of the Algenievereining Radio Group (A.V.R.O.). 11.41, Concert by the Station Orchestra, conducted by Nico Treep. In an interval, Talk by J. E. Rutherford: The Stabilisation of the World. 1.40 p.m., Book Review. 2.10, Concert by a Male Voice Choir, conducted by Lieven Duvosel. 2.40, Concert relayed from the Kurhaus, Scheveningen. In an interval, Sports Notes. 4.10, Interval. 4.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 4.40, Concert by a Mandoline Orchestra, conducted by Vorpahl Preus. 5.40, Concert by the V.A.R.A. Children's Choir, conducted by Leida Hulscher, and Gramophone Music. 6.20, Reading. 6.40, Concert by the De Fliedruiters Orchestra, conducted by J. v.d. Horst. 7.40 till Close Down. Programme of the A.V.R.O. 8.40, Time and News. 7.55, Concert by Albert van Raalte, relayed from the Kurhaus, Scheveningen. Soloist: J. Vincent (Soprano), Chaconne in G minor (Purcell); Aria from Il re pastore (Mozart); Halleluia from the Exultate jubilate (Mozart); The Unfinished Symphony (Schubert). 8.55, Radio Play. 9.25, Concert of Light Music by the Kovacs Lajos Orchestra. Soloist: Bob Scholte (Songs). 10.50, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—12.10 to 4.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 12.10, Talk. 12.25, Concert by the K.R.O. Boys, conducted by P. Lustenhouwer. Soloist: J. Mossel (Songs). In an interval at 1.10, Talk on Modern Art. 1.50, Literary Talk. 2.10, Gramophone Music. 4.10, Programme for Invalids. 4.40 to 7.25, Programme of the Christian Radio Society (N.C.R.V.). 4.40, Divine Service, relayed from the Grote Kerk, Vlaardingen. 6.25, Sacred Music on Gramophone Records. 6.25, Studio Service. 7.25 till Close Down. K.R.O. Programme. 7.25, Talk. 7.50, Football Results. 7.55, Concert by the K.R.O. Orchestra, conducted by J. Gerritsen, and the K.R.O. Choir, conducted by G. Vermeulen. Dutch Dances (Röntgen); Ave Maria (Arenaldt); Hallelujah (Handel); Im Himmelreich ein Haus steht (Reger); Lieblich hat sich gesellet (Reger); Wiegenlied (Brahms); Gramophone Music: Landerkennung (Grieg); Rakoczy Overture (Köler Bela); Serenade (Widor); Vlaasche Kermis (Wierls); Gramophone Music: Selection from The Czarevitch (Lohár); In a Monastery Garden (Kötter); In a Chinese Temple Garden (Kötter); Waltz, The Blue Danube (Joh. Strauss). In the intervals

at 8.30 and at 9.55, News. 10.20, Epilogue by the Small Choir, conducted by J. Rickkers. 10.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide and Sports Notes. 8.15, Press Review. 8.30, Radio Concert. 9.0, News. 9.15, Concert of Giny Music. 10.30 to 1.30 a.m. (Monday), Programme in English by the I.B.C. Miss L. Baillet announcing. 10.30, Gramophone Concert of Orchestral Music and Songs by Peter Dawson. The Bells of St. Mary's (Strauss). Songs: (a) Hills of Devon (Jalowiec), (b) With a Song (Valerie May). Jollity on the Mountains (Petras). Song, Devil may care (Valerie May). Pianoforte Solo, The Fairies' Gavotte (Kohn). Songs: (a) Old Father Thames (Wallace and Hogan), (b) A Summer Evening (Strauss). 11.0, Music Hall Memories. Music Hall Favorites, Part 1. Only a Bird in a Gilded Cage (von Tilzey). After the Ball (Harris). Two Little Girls in Blue (Graham). Melodious Memories (arr. Finck). Daisy Bell (Dacre). Won't you buy my Pretty Flowers? (Percy). Music Hall Favorites, Part 2. 11.30, Billy Arnold's Dance Band, relayed from The Hollywood Cabaret. 12 Midnight, Concert of Light Music. Vivienne (Finck). Negro Nothings (Bennett). If I am dreaming from The Dubarry (Millbaker-Mackeben). Uncle Pete (Burnley Jones). The Little Irish Girl (Löhr) Accordion Nights. Somebody loves you (Tobias and de Rose). Jollification (Reeves). 12.30 a.m. (Monday), Old England Programme. Country Dance from Nell Gwynn Suite (German). Landlord fill the Flowing Bowl (Traditional). Old John Braddlem (Traditional). Ben Bolt (arr. Collingwood). Shepherd's Hey (Grainger). The Yeoman of England (German). Ho Jolly Jenkin (Sullivan). March, Pomp and Circumstance (Elgar). 1.0, Dance Music. Three Foxtrots: (a) Young and Healthy, (b) Look what you've done, (c) A Letter to my Mother. Waltz, When you've fallen in Love. Three Foxtrots: (a) Standing on the Corner, (b) My Heart's to let, (c) I'm playing with Fire. Waltz, A Boy and Girl were dancing. 1.27, I.B.C. Goodnight Melody. 1.30 (approx.) (Close down).

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12.55 p.m., Talk: Spring in the Austrian Tyrol. 12.35, Reading (Paul Ernst). 1.0, Orchestral Concert, conducted by Eysoldt. Soloist: Henry Schulte-Schmitz (Contralto). 2.30, Interval. 2.45, Chess Lesson. 3.5, Agricultural Talk. 3.30, Radio Report of the Fifth Centenary Celebrations of the Brilon Shooting Club, relayed from Brilon. 4.0, Into the Blue—Talk, with Gramophone Records. 4.30, See Hamburg. 5.0, Programme from Frankfurt. 5.40, Talk, with Gramophone Records. 5.20, Reading in Dialect. 6.40, Talk Rhenish and Westphalian Towns—The Egge-Gebirg Festival in Warburg. 7.10, Variety Programme. 7.54, Sports Notes. 8.0, The Brown Shirts on the March—a Nazi Radio Sequence (arr. Hans Richter). 9.0, Talk in Connection with Nordic Week—Nordic Law. 9.15, Gramophone Music. 10.0, Announcements and Sports Notes. 10.20, Report on the German Heavyweight Championship, on Gramophone Records. 10.35, Brilon Shooting Club Festival Ball, relayed from Brilon. 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—11.30 a.m., Transmission for all German Stations. Es ist dir gesagt, Mensch, was gut ist—Cantata (Bach), by the Municipal and Gewandhaus Orchestra, the Choir of St. Thomas and Soloists. 12 Noon, Concert by the Leipzig Symphony Orchestra, conducted by Herbert Albert. 2.0 p.m., Weather and Time. 2.5, Programme Announcements. 2.25, Agricultural Notes. 2.35, Programme for Young People. 3.30, Heinrich Lilienfein reads from his own Works. 4.0, Song Recital by a Male Voice Quartet. 4.30, See Hamburg. 5.0, Concert of Old Dances by the Halle concert Orchestra. 6.15, Protection from Aerial Attack—Radio Report from the Dresden Air Pageant and the Military Manoeuvres at Meiningen. 7.15, Pianoforte Recital by Karl Weiss. Three Idylls, Op. 43 (Jensen); Tarantella, Op. 85, No. 2 (Heller); Six Descriptive Pieces (Karg-Elert). 7.45, Topical Talk. 8.30, Women's Wiles—Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber. 10.5, News. 10.15, Light Music and Dance Music by the Pletzsch-Marko Orchestra. 12 Midnight, Close Down.

LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. English Programme.—7.0 p.m., Gramophone Music. 7.40, Weather Report. 7.50 to 8.50, Programme in English by the I.B.C. 7.50, Gramophone Concert: Waltz (Joh. Strauss), by Marek Weber's Orchestra: Living in Clover (Tosford), by Jack Buchanan; Rhythmic arrangement of the Blue Danube Waltz (Joh. Strauss), by the New Mayfair Orchestra; Waltz, I'll always be True (Bnatzky), by Gracie Fields; Du und Du, from Die Fledermaus (Joh. Strauss), by Marek Weber's Orchestra; Home (Steeden), by Mildred Bailey; My Mother (Marsden), by Joseph Bishop; Rhythmic arrangement of Kashmiri Song (Amy Woodforde-Finden), by the New Mayfair Orchestra. 8.20, Dance Music: Three Foxtrots: (a) What more can I ask? (Noble), (b) Everyone says I Love You (Kalmár), (c) As you desire me (Wrubel); Tango, When anybody Plays and Sings (O. Strans); Foxtrot, A Million Dreams (Kahn); Quickstep, Brighter than the Sun (Noble); Waltz, I'll never have to dream again (Jones); Slow Foxtrot, Every woman thinks she wants to wander (O. Strans). 8.50, News in French. 9.15, Gramophone Music. 9.45, News in German. 9.55, Dance Music and Variety Music on Gramophone Records. In the intervals, Exchange and News.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—4.0 p.m. (approx.). Report on the Air Pageant at Bouthéon. After the Report, Programme relayed from Paris (Ecole Supérieure), 671 kc/s (447.1 metres). 10.0 (approx.). Speeches relayed from the Grand Hotel, St. Etienne, followed by News.

MADRID

(EAJ7), 707 kc/s, 424.3 metres; 2 kW.—9.0 to 10.0 a.m., Topical Review. 12.30 p.m., Municipal Band Concert, relayed from the Retiro. 3.0, Chimes, Time, Theatre Notes and Concert of Popular Music. 5.0 to 8.0, Interval. 8.0, Chimes and Radio Journal. 8.15 (approx.), Concert by a Guitar Orchestra, conducted by Juan Sanchez. After the Concert, Dance Music. 9.30 to 11.0, Interval. 11.0, Chimes, Time and Scientific Talk. 11.15 (approx.), Song Recital by Soledad and Margarita Soler, Guitar Solos by Trinidad Garcia Aguado and Dance Music. 1.30 a.m. (Monday), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—12.5 p.m., Concert by the Station Orchestra, conducted by Plichta. 1.30, See Prague. 1.55, Report from the Masuryk State School of Agriculture, relayed from Opava. 2.30 to 4.0, Interval. 4.0, See Prague. 7.0, Concert of Light Music by the Station Orchestra, conducted by Plichta. 7.45, See Prague. 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres, 100 kW.—2.15 p.m., Part Relay of Figaro Opera (Mozart). 2.45, Weather Report. 3.0, Talk: The Development of U.S.S.R. 4.0, Talk: Harvesting. 4.30, Reading from Klim Samgin (Gorky). 5.30, Program Announcements. 5.45, Talk: New Soviet Lymphatics. 6.30, Concert, relayed from the Conservatoire. 9.0, News. 9.30, Program Announcements. 9.55, Chimes from the Red Square. 10.5 Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—11.30 a.m., See Leipzig. 12 Noon, Concert by the Station Orchestra, conducted by Hans Winter; Soloist: Josef Köhler (Cello). 1.0 p.m., Time, Weather and Programme Announcements. 1.10, Agricultural Talk. 1.30, Gramophone Concert. 2.30, Talk: The National Revolution. 2.50, Programme for Children. 3.10, Concert, conducted by Erich Kloss. 4.10, Sports Report, relayed from the Stadium at Nürnberg. 4.55, See Frankfurt. 5.50, Recital of Music for Two Pianofortes. 6.25, Reading. 6.45, Travellers' Tales—Humorous Radio Sequence. 7.35, Talk: Schools and Education under the National Socialist Government. 7.55, Weather and Sports Notes. 8.10, See Frankfurt. 10.20, Time, Weather and News. 11.0 (from Nürnberg), Serenade, conducted by Willy Böhm. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.30 p.m., Light Music on Gramophone Records. 6.30, Readings. 7.0, Parliamentary Notes. 7.15, Weather and News. 7.30, Song Recital by Mme. Monrad. 8.0, Time. 8.1, Talk. 8.30, Concert by the Station Orchestra, conducted by Hugo Kramm. 9.38, News. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Accordion Quartet Concert. 08TERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—10.20 a.m., Religious Address. 10.40, Sacred Music. 11.5, Talk on the Orange Trade. 12.45 p.m., Giornale Radio. 1.0 to 2.0, Concert of Light Music. In the interval at 1.30, Time and Announcements. 5.30 to 6.30, Gramophone Music. 8.0, Dopolavoro Announcements and Giornale Radio. 8.20, Sports Notes and Gramophone Music. In the interval at 8.30, Time and Announcements. 8.45, Symphony Concert, conducted by A. La Rosa Parodi. In the interval, Talk: The Works of G. Pascoli, Poet and Scholar. After the Concert, Gramophone Music. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—1.0 p.m., News. 1.15, Weather. 1.30, Concert by Jean Ibos and his Orchestra: Waldessänger (Fahrbach); Popular Russian Melodies; Austria-Hungary (Kéler-Béla); Hungarian Dance (Brahms); Mimet (Bolzoni); Aubade from Le Roi d'Ys (Lalo); Selection from The Barber of Seville (Rossini); Ballet Music from Hérodiade (Massenet). 3.45, Running Commentary on the Grand Prix, relayed from Longchamps. 5.45 to 6.45, Interval. 6.45, Le Journal Parlé. 8.30, Gramophone Music. 10.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—10.0 a.m., Flourish of Trumpets and Roll of Drums. 10.20, Press Review. 10.30, Gramophone Music. 11.0, Sponsored Concert. 11.30, Gramophone Music. 12 Noon, Interval. 12.15 p.m., Sponsored Programme of Music from Sound Films. 12.50, Half-an-Hour of Fantasy by Paul Weill. 3.45 (approx.), Radio Report on the Race for the Grand Prix de Paris at Longchamps. 7.0, Journal Parlé. 7.5, Sports Notes. 7.15, Gramophone Music. 7.30, Catholic Review. 8.0, Gramophone Music. 8.15, Interval. 8.30, Brahms Pianoforte Recital by Janine Weill. 9.0, Interval. 9.15, Readings from Poetry of the School of Parnasse. 9.45, Dance Music on Gramophone Records. 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—7.45 a.m., Gramophone Music. 8.0, News. 8.30, Physical Culture. 10.0, Elementary Book-keeping Lesson. 10.20, Advanced Book-keeping Lesson. 10.40, Spanish Lesson. 12 Noon, Religious Address by the Reverend Father Lhaude. 12.20 p.m., Sacred Music: Andante and Allegro (Emanuel); Ave Maria (Arcadelt); Lord, hear my Prayer (Archangelsky). 12.30, Bilho-

quet. 12.45, News. 1.0, Gramophone Concert: Overture, Si j'étais roi (Adam); Song from Bitter Sweet (Coward); Petite Suite (Debussy); Selection from Rip van Winkle (Planquette); Stéphanie Gavotte (Czibulka); La chanson du marin (Tiersot); L'Heureuse (Chabrier); Waltz, Gold and Silver (Lohár); Waltz from The Desert Song (Romberg); Suite algérienne (Saint-Saëns). 5.30 to 6.0, Programme in English by the I.B.C. W. Brown Constable announcing. Gramophone Records: Autour du Moulin (Feret); Blonde Amie (Carcen); Ronde Nocturne (Dan); Pluie de Roses (Avignon); Je sais que vous êtes jolie (Christine); Paysage (Hahn), sung by Ninon Vallon; Le Bal de la Reine (Paradis); Les Heureux (Szule); by Sidonie Panache. 6.0, Popular Concert. 7.0, Variety Concert. 8.0, Radio Paris Music Hall. In the intervals at 8.30 and at 9.15, News. 10.30 to 11.0, Programme in English by the I.B.C. Orchestral Concert: March from Boccaccio (Suppé); Selection from The Pirates of Penzance (Sullivan); One Step from No No Nanette (Youmans); Selection from A Country Girl (Monckton); Intermezzo from The Merry Widow (Lehár); Selection, Passing Show of 1914 (Finck). 11.0 (approx.). Close Down.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayd by W8XK on 48.86 metres and 25.27 metres.—5.15 to 6.15 p.m., Radio City Concert, from New York. 7.0, Summer Idyll, from New York. 7.15, The Boys of Wymorecastle. 7.30, Jan Garber and his Orchestra, from New York. 8.0, National Opera Concert, from New York. 9.0, Programme to be announced. 9.30, Vesper Services from Shadyside Presbyterian Church. 10.30, Pages of Romance, from New York. 11.0, Time Signal and Press News Reeler. 11.15, Weather Report. 11.16, Sport Review. 11.23, I Bring a Song. 11.28, Announcement. 11.29, Temperature Report. 11.30, L'Heure Exquise, from New York. 12 Midnight, Time Signal and Jack Pettis and his Orchestra. 12.30 to 3.15 a.m. (Monday), New York Relay. 12.30, Great Moments in History. 1.0, Biesenfeld's Viennese Programme. 1.45, Floyd Gibbons. 2.0, Gulf Headliners and Will Rogers and Orchestra. 2.30, Goldman Band. 3.0, Time Signal and Don Hall Trio.

PORSCRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—4.30 p.m., Song and Cello Recital by K. Kielczewsky

(Tenor) and Edwards Sienkiewicz (Cello): Tenor Solos: Arias from: (a) Janek (Zelen-sky); (b) Halka (Ikoniuszko); (c) The Pearl Fishers (Bizet); and (d) La Bohème (Puccini); Cello Solos: (a) Rocco Variations (Tchaikovsky); (b) Le Cygne (Saint-Saëns). 5.15, Report from a Boy Scouts' Camp at Puszczykowa. 6.15, Concert. 6.35, Theatre Notes and Announcements. 6.40, Miscellaneous Items. 7.0, See Warsaw. 7.40, Literary Talk. 7.58, Time. 8.0, See Warsaw. 10.25, Sports Notes. 10.40, Time Signal, Sports, and Police Notes. 10.55, Dance Music, relayed from the Esplanade Café. 11.53 (approx.). Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—10.0 a.m., See Bratislava. 11.0, See Brno. 12 Noon, Chimes from St. Ludmilla's Church. 1.30 p.m., Agricultural Talk. 1.45 to 1.55, Announcements. 4.0, Military Band Concert, relayed from Kralovska Ohoza. 5.30, Talk on Sea Serpents. 5.45, Gramophone Music. 6.0, German Transmission: Programme Announcements and Concert Version of a Comic Opera (Flotow), followed by News in German. 7.0, See Moravská-Ostrava. 7.45, The Little Street of our Youth, Reminiscences in Song and Prose. 9.0, Time Signal. 9.2, Orchestral Concert, conducted by Otakar Jeremias; Soloist, Prof. H. Gselhofer (Pianoforte); Pianoforte Concerto No. 3 in C Minor, Op. 37 (Beethoven); Suite (Krejci); Overture (Ridky). 10.0, Time and News. 10.20, Popular Czech Dance Music on Two Pianofortes. 11.0 (approx.). Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—9.55 a.m., Chimes. 10.0 (from Geneva), Protestant Service, relayed from the Victoria Hall. 11.0 (from Geneva), Gramophone Concert. 12.30 p.m., News. 12.40 (from Geneva); Gramophone Concert (contd.). 2.0 to 3.30, Interval. 3.30, Concert or Radio Report. 7.0 (from Geneva), Religious Address. 7.30 (from Geneva), Radio Interview. 8.0 (from Geneva), Pianoforte Recital by Lily Curraud and Georges Pilleur. 8.20 (from Geneva), Vaudeville Programme: (a) Madame Bigarreau n'y tient pas—Play in One Act (Doequois and Creffon); (b) Un beau mariage—Play in One Act (Timory and Mamonov). 9.0, Concert by the Radio Suisse Romande Orchestra. In the interval at 9.50, News. 10.30 (approx.). Close Down.

RJUKAN.—See Oslo.

ROME

Call 1R0, 680 kc/s, 441 metres; 50 kW. Relayd by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres from 5.30 p.m.—10.10 a.m., News, Sports Notes and Amusement Guide. 10.30, Agricultural Notes. 10.45, Bible Reading. 11.0 to 12 Noon, See Turin. 12.30 p.m., Orchestral Concert. 1.30 to 2.15, See Turin. In the interval at 2.0, Time and Announcements. 2.30 to 3.45, No Transmission. 3.45 (Naples), Programme for Children. Weather and Sports Notes. 4.0, Orchestral Concert. 4.45, Sports Notes. 5.0, Concert of Songs and Instrumental Music. 6.15, Weather Forecast. 7.30, Sports Notes, Dopolavoro Announcements and News. 8.0, Time and Announcements. 8.30, Sports Notes. 8.45, Non amarmi lost—Comedy in Three Acts (Fraccaroli). After the Comedy, Gramophone Music. 10.55, Giornale radio. SALZBURG.—See Vienna.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—10.0 a.m., Catholic Address. 10.45 (from Berne), Chamber Music Concert. 11.30 (from Berne), Reading. 12 Noon (from Berne), Gramophone Music. 12.30 p.m., Time and News. 12.40, Concert by the Swiss Radio Orchestra. 1.30 (from Berne), Concert by the Vetendorf Harp Club. 2.0 (from Berne), Talk: Swiss Peasants in America. 2.30 to 5.0, Interval. 5.0 (from Berne), Concert by the Bümpliz Sacred Music Society. 6.0 (from Berne), Chess Lesson. 6.30 (from Berne), Literary Review. 7.0 (from Berne), Time and News. 7.10 (from Berne), Gramophone Music. 8.0 (from Berne), Talk: Mendelssohn in Switzerland. 8.30 (from Berne), Organ Recital. 9.0, News. 9.10 (from Berne), Programme to be announced. 10.15 (from Berne), Sports Notes. 10.20 (approx.). Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayd by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—11.0 a.m., Divine Service Relay. 12.45 p.m., Weather. 3.0 (from Göteborg), Concert of Light Music, conducted by Karl Bonfors. 4.0, Programme for Children. 4.30, Cello Recital by Roman Dukstulsky. 6.0, Evensong. 7.15, Weather and News. 7.35, Concert by the Station Orchestra. Soloists: Greta Soderman and Simon Edvardsen (Songs). 9.15, Reading (Berit Spang), relayed from Örebro, 1,266 kc/s, 237.2 metres. 9.45, Weather and News. 10.0, Con-

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Letter No. 378.

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cert of Light Music, relayed from Malmö, 1,391 kc/s, 231 metres. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—9.30 a.m., Orchestral Concert, conducted by Maurice de Villers. 10.45, Protestant Service in French. 11.30, Catholic Service in German. 12 Noon, Gramophone Concert of Classical Music. 12.45 p.m., News. 1.0, Time Signal. 1.1, Recital of Opera Arias by Anseau Ferdinand (Tenor), on Gramophone Records. 1.30, Talk on the Museum, La Princerie, relayed from Verdun. 1.45, Relay of Speeches from an Official Banquet at Verdun. 2.30, Popular Music on Gramophone Music. 3.15 to 3.45, Interval. 3.45, Running Commentary on the Grand Prix de Paris, relayed from the Hippodrome, Longchamps. 5.15, Concert of Jazz Music, conducted by Roskam. 6.0, Medical Talk on Cancer. 6.15, Sports Talk in French. 6.30, Orchestral Concert, conducted by Maurice de Villers: La fête chez Thérèse (Hahn); Ballet Selection from La boîte à jous (Debussy); Melody (Klein); L'enfant prodige (Wormser). 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.15, Press Review in German. Lottery Results, and Announcements. 8.30, Concert by a Virtuoso Septet, relayed from the Casino, Vichy. 10.0, Orchestral Concert, conducted by Jemine, relayed from the Grand Kléber Tavern: March, Coliseum (Kalkman); Waltz, España (Waldteufel); Fantasia, A travers le monde (Baillon); Marriage of the Frogs (Bell); Fantasia, Kompott-pourri (Dostal); Vibraphone Solo: O sole mio (di Capua); Selection from Carmen (Bizet); Musikalische Telegramme (Urbach). 11.0, Dance Music from the Savoy. 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—11.30 a.m., See Leipzig. 12.5 p.m., Concert by the Freiburg Concert Orchestra, relayed from Glotterbad. 1.0, Topical Talk. 1.15, Variety Music on Gramophone Records. 1.50, Agricultural Talk. 2.15, Concert by the Mixed Choir of the Württemberg Blind Society, conducted by A. Hüttenlocher: Soloists: A. Spang (Bass), B. Bollner (Soprano), and K. Schwilke (Pianoforte). In the interval, Talk on the Work of the Blind. 3.0, Programme for Children. 4.0, Concert by the Weissach Choir, conducted by Hermann Renz. 4.30, See Hamburg. 5.0, Programme from Frankfurt. 5.40, Guitar Recital by Arthur Faiss: Pavane (Milan); Madrigal; Sarabande (Reusner); Minuet (Fischer); Melodies (Bach): (a) Prelude, (b)

JUNE 25th **SUNDAY** continued

Sarabande, (c) Prelude, (d) Sarabande and Minuet; Melodies (Sor): (a) Etude, (b) Andante, (c) Minuet. 6.10, Die Fanfare—Recitation of New Nazi Poems (Heinrich Anacker). 6.30, Sports Notes. 7.0, Report on the Austro-German Water Polo Championship (on Gramophone Records), relayed from Ludwigsburg. 7.20, Concert of Chamber Music: Rhoda von Glehn (Soprano), Max Zimolung (French Horn), and Otto Seyfert (Pianoforte): Songs for Soprano, Horn, and Pianoforte: (a) Waldvöglein (Lachner), (b) Auf dem Strom (Schubert), (c) Abendständchen (Reissiger); Sonata for Horn and Pianoforte (Beethoven). 8.0, Spielmann, Spiel auf!—Concert of Swabian Peasant Music by the Station Orchestra. 8.45, Concert from Frankfurt. 10.20, See Langenberg. 10.35, Time and News. 11.0, Dance Music from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—Transmissions uncertain owing to recent fire.—12.15 p.m., News. 12.30, Catholic Service. 1.0, Amusement Guide and Market Prices. 1.5, Orchestral Music. 1.15, Opera Music. 1.30, Violin Solos. 1.45, Protestant Service. 2.15, News. 2.20, Orchestral Music. 2.45, Agricultural Report. 3.0, Popular Songs. 3.15, News and Racing Results. 3.20, Music by a Viennese Orchestra. 3.45, Selection from La petite Dame du Train bleu (Pares van Parys), and Tip Toes (Gershwin). 4.0, Accordion Music. 4.15, News. 4.20, Military Music. 4.30, Dance Music. 5.0, Songs. 5.15, News and Racing Results. 5.20, Hawaiian Guitar Solos. 5.30, Opera Music: Church Scene from Faust (Gounod); Duet from I Pagliacci (Leoncavallo). 5.45, Cello Solos. 6.0, News. 6.15, Operetta Music: Selection from The Bayadere (Kalmann) and Les Noes de Jeannette (Mussé). 6.30 to 7.0, Programme in English by the I.B.C.: Concert of Dance Music. 7.0, Argentine Music. 7.15, News and Racing Results. 7.25, Local News. 7.30, Popular Songs. 7.45, Popular Concert. 8.0, Hunting Horn Music. 8.15, Opera Music: Arias from Carmen (Bizet), Manon (Massenet) and Thérèse (Massenet). 8.30, Instrumental Music. 8.45, Airs from Opera. 9.0, Selection from Le Chemin du Paradis. Sound Film (Heymann), followed by Viennese

Music, and Russian Songs and Music by a Balalaika Orchestra. 10.0, Popular Songs. 10.15, North-African News. 10.30 to 12 Midnight, Programme in English by the I.B.C. 10.30, Fulford Concert. 11.0, Dance Music. 12 Midnight, News, Weather and Announcements. 12.5 a.m. (Monday), Sound Film Music. 12.15, Accordion Solos. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—9.40 a.m., See Turin. 9.55, Mass from the Church of San Giusto. 10.40, See Turin. 11.0, Religious Address. 11.20 to 11.40, Agricultural Notes. 12 Noon till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—9.40 a.m. to 9.55, Giornale Radio. 10.40, Agricultural Report. 11.0, Mass from the Church of the Annunciation, Florence. 12 Noon, Bible Reading. 12.30 p.m., Variety Concert. In the interval at 1.0, Time and Announcements. 1.30, Sponsored Music. 1.45 to 2.30, Gramophone Music. 4.30, Variety Concert, Sports Notes in the interval. 6.15 to 6.30, News. 7.0, Time and Announcements. 7.10, Gramophone Music. 8.0, Announcements. 8.20, Talk on the following Transmission. 8.30, Dafni Opera in Three Acts (Mule). In the intervals, Talk and Theatre Notes. After the Opera, Giornale Radio.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—11.30 a.m., Concert by the Vienna Symphony Orchestra, conducted by Hugo Gottesmann; Soloist, Friedrich Buxbaum (Cello): Eine kleine Nachtmusik in G (Mozart); Cello Concerto in A Minor, Op. 13 (Chajes); The Harp Symphony, Op. 48 (Schubert). 12.45 p.m., Concert by Wilhelm Waack's Orchestra. 2.0 to 2.20, Report from the International Postage Stamp Exhibition at the Künstlerhaus. 3.0, Time and Announcements. 3.5, Book Review. 3.30, Haydn Concert by the Sedlak-Winkler Quartet; String

Quartet in D Minor, Op. 42; String Quartet in F, Op. 74, No. 2. 4.20, Talk: Streets in Vienna—the Kärtner Strasse. 4.50, Concert by Johann Wilhelm Ganglbauer's Orchestra. 6.20, Reading (Scheyer). 6.40, The Earlier Music of Schumann (arranged by Dr. Karl Geiringer) Recital by Erika Rokytka (Soprano), Nana Krieger, and Franz Mittler (Pianoforte); Introductory Talk by Dr. Karl Geiringer; Eight Polonaises; Six Songs: (a) An Anna, (b) Die Wieden, (c) Erinnerung, (d) Kurzes Erwachen, (e) Gedanges Erwachen, (f) Sehnsucht. 7.20, Radio Report of the International Football Match, Germany v. Austria (on Gramophone Records). 7.50, Time, Sports Notes, and Programme Announcements. 8.0, Drei arme Teufel—Operetta in Three Acts (Weinberger). In the interval at 9.35 (approx.), News. 10.15, Music from Paper. 10.45, Dance Music relayed from Hübners Park Hotel.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Weather Report. 12.15, Concert by the Station Symphony Orchestra, conducted by J. Oziminski; Soloist, E. Pankiewicz (Mezzo-Soprano). 2.0, Agricultural Talk. 2.15, Weather for Farmers. 2.20, Choral Concert. 2.25, Talk: Agricultural Training in Slav Countries. 3.5, Light Music on Gramophone Records. In the interval, News. 4.0, Programme for Young People. 4.30, Song Recital by E. Zwidyryn: Aria from Il Seraglio (Mozart); Rosina's Aria from The Barber of Seville (Rossini); Aria from The Bartered Bride (Smetana); Aria from Verbum Nobile (Moniuszko); Two Songs (Wielgorski); Prelude (Maklakiewicz); The Little Bird (Taubert). 5.0, Talk: Art and the Working Classes. 5.15, Music relayed from Cichocinek. 6.0, Talk on the Polish Language. 6.15, Light Gramophone Music. 6.35, Programme Announcements. 6.40, Miscellaneous Items. 7.0, Dramatic Programme. 7.40, Answers to Technical Correspondence. 8.0, Concert by the Station Orchestra. In the interval, Radio Journal. 9.30, Soprano Solos (Stern). 9.30, Soprano Solos by J. Ziolkowska: Aria from La Wally (Catalani); Aria from The Countess (Moniuszko); Prayer from Tosca (Puccini); Le temps des Lilas (Chanson); Bescheidene Liebe (Wolf); Melody (Zelenski); Melody (Karlowski). 10.0, Dance Music. 10.25, Sports Notes. 10.40, Aviation Weather Report and Police Notes. 10.45, Dance Music.

ZURICH.—See Schweizerischer Landessender.

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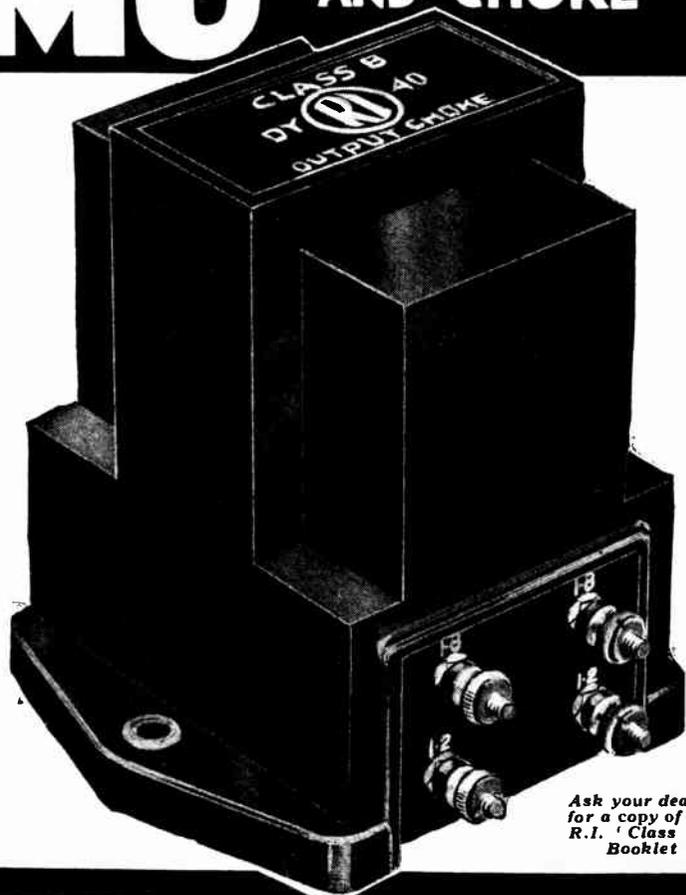
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MONDAY

JUNE THE TWENTY-SIXTH

PRINCIPAL EVENTS OF THE DAY:

ATHLONE
725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Stock Exchange Quotations and Weather Report. 6.0, Programme for Children. 6.45, News Bulletin. 7.0, Gaelic Talk. 7.15, Talk: Old Dublin Theatres. 7.30, Time Signal. 7.31, The Station Orchestra. 8.0, Soprano Solos by Nuala M. Cameron. 8.10, Cello Solos by K. A. Pollaky. 8.30, Variety Concert by T. Maddon and Company. 9.0, Concert by the Colmille Cellide Band. 9.30, Talk: Marketing of Eggs and Poultry. 9.45, Sponsored Programme. 10.45, Time, News, Weather and Close Down.

BARCELONA
(EAJ1), 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert: Overture, The Caliph of Buzand (Boieldieu); Selection from Samson and Delilah (Saint-Saëns); Romance (Schmalstich); The Moonlight Sonata (Beethoven); Fantasia zingara (Scuotto); Selection from Il Trovatore (Verdi). 8.0, Request Gramophone Records. 8.20, Sports Notes. 8.30, Exchange Quotations and Talk in Catalan. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral, Weather, Exchange and Market Prices. 10.5, Humorous Review of the Week in Verse. 10.15, Concert of Sardanas. 11.0, Concert by the Station Orchestra. 12 Midnight, Dance Music relayed from Casa Llibre. 1.0 a.m. (Tuesday), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk and Dopolavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), The Resurrection of Christ—Oratorio (Perosi), by the Station Symphony Orchestra, a Choir and Soloists. Conductor: Ugo Tansini. In the interval, Talk. After the Oratorio, Gramophone Music. 10.55, News.

BASLE.—See Schweizerischer Landessender.
BELGRADE
697 kc/s, 430.4 metres; 2.8 kW.—5.0 p.m., German Lesson. 6.55, Time and Programme Announcements. 7.0, Concert by the Station Orchestra. 8.0, Talk. 8.30, Programme relayed from Zagreb, 977 kc/s (307 metres). 10.30, Time and News, followed by Cigany Music from the Rumunski Kralj Restaurant.

BERLIN
DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Gramophone Concert. Part I: Concert Version of Martha—Opera (Flotow). Part II: Recital by the Don Cossack Choir. 3.0, Talk for Women. 3.30, Weather and Exchange. 3.45, Book Review. 4.0, See Breslau. 5.0, Talk on Geography. 5.35, Suite, Op. 52, for Flute, Oboe, Clarinet, Bassoon, Horn and Piano (Cordes). 6.0, A Poem. 6.5, Brahms Recital by the Station Choir, conducted by Hans Georg Görner. Walds- und Teufelsnacht: Es geht ein Weibchen durch den Wald; In stiller Nacht; Dein Herzlein mild; All meine Herzensdanken; Von alten Liebesliedern. 6.25, Talk: The German Press and Sensationalism. 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Epigrams. 8.5, Gramophone Concert with Commentary. 9.0, Hans Pfitzner Concert by Gisela Derpsch (Songs) and Georg Wille (Cello), with the Composer at the Piano. Songs: (a) Abendlied, (b) Mir bist du tot, (c) Nun da so warm der Sonnenschein, (d) Das verlassene Mädchen, (e) Kuriose Geschichte; Sonata in F Sharp Minor, Op. 1, for Cello and Piano; Songs, Op. 40: (a) Leuchtende Tage, (b) Wenn sich Liebe von dir lösen will, (c) Sehnsucht, (d) Herbstgefühl, (e) Wanderers' Nachtlied, (f) Weckerlied. 10.0, News. 10.45, Weather Report for Shipping. 11.0, Concert from Leipzig. 12 Midnight, Close Down.

BERLIN
WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.0 p.m., Recital of Songs by Margarete Ahler (Soprano): The Kiss (Beethoven); Ich wollt, ich wär ein Fisch (Schubert); Der Jäger (Brahms); Two Songs (Peter Cornelius): (a) Music Morgenröte Lied, (b) Morgenwind; Zur Johannishochzeit (Grieg). 4.15, Talk: The Best Methods of Sight Seeing in Towns. 4.30, Concert from the Zoological Gardens. 5.30, Discussion between three University Students. 5.50, Talk on Music: The March. 6.0, Recital of Old German Harpsichord Music: Sonatina in D Minor and Suite in F Sharp Minor (Christian Ritter); Four Pieces (Gobanu Philipp Kirnberger); Fantasia in C Minor (Bach). 6.20, Ernst Jünger talks about the new Edition of his War Book: In Stahlgewittern. 6.40, The Witzleben Station informs its Listeners... 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.10, Beethoven's Pastoral Symphony in F, Op. 68 (Beethoven), by the Berlin Philharmonic Orchestra, conducted by Eugen Jochnum. 9.0, Topical Talk. 9.10, The Fatherland beyond the Frontiers—a Journey through lost German Territory (Gustav Adolf Litteck). 10.0, News, followed by Dance Music from the Zoological Gardens. In the interval from 11.0 to 11.5, Talk: What they are talking about in Berlin. 12 Midnight, Close Down.

NATIONAL An eye-witness account of the first Test Match, England v. the West Indies.
LONDON REGIONAL Light operative programme of gramophone records. Organ recital.
MIDLAND REGIONAL The Regional Revellers Concert Party.
NORTH REGIONAL The Super-Optimists, a concert party programme, relayed from the Floral Pavilion, New Brighton.
SCOTTISH REGIONAL Mr. H. Mortimer Batten: How to see Scotland's Wild Life.
ABROAD
BRUSSELS (No. 1) 8.0 p.m. Concert by the Symphony Orchestra.
BUDAPEST 10.30 p.m. Concert by the Opera House Orchestra, conducted by Ernst Dohnányi and Imre Stefaniai.
COPENHAGEN 9.0 p.m. Rossini and Verdi concert, by the Station Orchestra.
HUIZEN 9.10 p.m. Concert by the Amsterdam Symphony Orchestra.
LEIPZIG 9.20 p.m. Concert of German-Finnish music, by the Leipzig Symphony Orchestra.
OSLO 8.1 p.m. Opera: "La Bohème," by Puccini, relayed from the National Theatre.
ROME 8.45 p.m. Opera: "Faust," by Gounod.
STRASBOURG 6.30 p.m. Concert of chamber music.
WARSAW 8.0 p.m. Opera: "Halka," by Moniuszko.

BERNE.—See Schweizerischer Landessender.
BEROMÜNSTER.—See Schweizerischer Landessender.
BODEN.—See Stockholm.
BODO.—See Oslo.
BORDEAUX-LAFAYETTE
986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.15, News, Exchange, Market Prices and Lottery Results. 7.30, Talk: Bordeaux a Century Ago. 7.45, Report on the Cycling Tour of France. 8.5, Programme for Children. 8.20, News. 8.30, Concert of Classical and Modern Music, M. Raoul Laume (Baritone), M. Beaudouin (Clarinet), M. Chaupeil (Violin), M. Barouk (Cello), and M. Grange (Piano).

BRATISLAVA
1,076 kc/s, 279 metres; 11 kW.—6.25 p.m., Concert by the Station Violin Trio: Serenade for Three Violins, Op. 29 (Tschai); Violin Trio No. 3, Op. 31 (V. Rihovsky). 6.55, Talk for Housewives. 7.0, See Prague. 7.10, See Brno. 8.10, Programme in Esperanto. 8.25, See Prague. 8.55, Esperanto Programme (contd.). 9.10, See Moravská-Ostrava. 10.0, See Prague. 10.15 (approx.), Close Down.
BREMEN.—See Hamburg.
BRESLAU
523 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.0 p.m., Gramophone Concert. 2.0, Time and News. 2.20, Gramophone Concert. 3.0, Market Prices. 3.40, Reading (Hans Grosper). 4.0, Concert by the Station Orchestra, conducted by Bruno Janz: Mozartiana (Tchajkovsky); Overture (Flotow); Selection from Das Dorf ohne Glocke (Künneke); Two Gipsy Dances (Heidingsfeld). 5.0, Talk on German Culture. 5.15, Market Prices. 5.20, Concert by the Station Orchestra (contd.): Selection from Ihre Heilheit die Tänzerin (Götz); Tango from The Czarevitch (Lehar); Serenade, Ein Frühlingsgruß (Schlicke); Clog Dance (Petras); Ständchen (Hrnbj); Regimental March (Jurek). 5.45, Talk: Military Training in Italy and America. 6.5, Zither Recital. 6.30, Talk: Can Tuberculosis be guarded against? 6.50, Weather, News and Market Prices. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Programme to be announced. 8.30, Military and Choral Music by a Miners' Orchestra and Choir. 10.0, Time, Weather and News. 10.20, Technical Wireless Hints. 10.30, Talk: Actors who act for Art's Sake. 10.50 (approx.), Close Down.
BRNO
878 kc/s, 342 metres; 35 kW.—5.25 p.m., German Transmission: News, Elementary French Lesson and Reading. 7.0, See Prague. 7.10, Variety Programme. 8.10, See Prague. 8.55, Fire—Radio Scene

(Zeman). 9.10, See Moravská-Ostrava. 10.10, See Prague. 10.30 (approx.), Close Down.
BRUSSELS (No. 1)
1,183 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time and Chimes from the Town Hall. 12.2, Music by a String Ensemble relayed from the Hotel Angletterre. 1.30, Relay from the Rigsdag of a Debate on the World Power Conference. 2.50, Gramophone Concert: Ria Günter: Two Songs (Schubert); (a) Soligkeit, (b) Rastlose Liebe; Heinrich Schlimms: Loreley (Silcher); Joseph Hilop: Indian Love Call from Rose Marie (Friml); Paul Robeson: Take me away from the River (Parker); Yvonne Curli (Violin): Zardas (Monti); Hilmar Borgeling: Melody (Bannmann); Kate Smith: My Queen of Lullaby Land (Coslow and Johnstone); George Formby: Running round the Fountains in Trafalgar Square (Cottrell); Mills Brothers: How am I doing? Hey-Hey (Branch and Redman). 3.20, Talk for Housewives. 3.30, Concert by the Radio Orchestra, conducted by Walter Meyer-Radon; Intermezzo from Nala (Delibes). In the interval at 4.15, Reading. 5.35, Exchange and Fish Market Prices. 5.50, Talk from the Esbjerg Studio. 6.20, English Lesson. 6.50, Weather. 7.0, News. 7.15, Time. 7.30, Talk. 8.0, Time. 8.1, Danish Workers' Festival—Orchestral and Choral Concert relayed from the Town Hall. The Royal Life Guards Orchestra, conducted by T. Dyring. In the interval: Talk. 9.0, Rossini and Verdi Concert by the Station Orchestra, conducted by Walter Meyer-Radon. Part I: Music by Rossini: Overture, The Barber of Seville; Ballet Music from William Tell; Overture, La Cenerentola. Part II: Music by Verdi: Ballet Music from Aida; Overture, The Force of Destiny. 9.45, Song Recital of the Music of Rik-Magnussen. 10.0, News. 10.15, Concert of French Music by the Radio Orchestra. Conductor: Walter Meyer-Radon. Norwegian Rhapsody No. 3 (Svendsen); Russian Folk Songs (Ljadov); Swedish Dance (Bruch); Dutch Rhapsody, Piet Hein (Anroy). 11.0 (approx.), Close Down.
CORK.—See Athlone.
DANZIG.—See Heilsberg.
DRESDEN.—See Leipzig.
FECAMP
1,323 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Ronald and B. McNabb. 4.30, Concert for Chichester and Bognor Listeners: Selection from He wanted Adventure (Wallor and Tunbridge); Song: My Old Shako (Trotter); A Cottage for Sale; Songs: (a) The Vagabond (Vaughan Williams); (b) I want your Heart (Haydn Wood); Southern Rhapsody (Holmes); Song: Wine, Women and Song (Strauss); Violin Solo: Bohemian Song (Baldy); Songs: (a) The Doll's Song from The Tales of Hoffmann (Offenbach), (b) Serenata (Toselli); Ballet Egyptian (Luigini). 5.15, Concert for Hastings and Eastbourne Listeners: Octet: Moeck (Grainger); Violin Solo: Caprice Basque (Sarasate); Song: Down in the Forest (Landon Ronald); Cello Solo: Bartiniquade (Squire); Octet: Wiegenlied (Grieg); Violin Solo: An Old Viennese Dance (Vogelin); Song: Love, come to my Aid, from Samson and Delilah (Saint-Saëns); Slav Dance (Dvorak); Violin Solo: Au mois d'avril (Adlington); Cello Solo: Abendlied (Schumann); Octet: The Goliwog's Cake Walk (Debussy). 6.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Ibcolians: What have I got to lose? (Kahn); Moon Song (Coslow); Hyde Park Corner (Hargreaves); Twenty Million People; If I ever get a Job again; What did I get in return?; The Girl in the Little Green Hat; Hold up your Hands (Robinson); Sweetheart; Rosa Mia; Can't we meet again?; Let me explain; Rock your Cares away?; The London Fire Brigade; Nightfall; A Bedtime Story.

BRUSSELS (No. 2)
N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, The Bohemian Girl (Balte); Seguidilla campestra (Amadei); The Musical Box (Antiga); Potpourri, Contrasts (Robrecht); Violin Solo: Zardas (Monti); Dream of Love after the Ball (Zimbalist); Piccolo Solo: Le Moineau du Luxembourg (Balleron); Two-step, Manuel del Rio (Lucchesi). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Music: Overture, Ray Blas (Mendelssohn); Selection from The Mastersingers (Wagner); Valse caprice (Rubinstein); Selection from Carmen (Bizet); Gavotte (Gluck-Brahms); Selection from Blue Roses (Carter); The Musical Snuff-Box (Friedman); Selection from Lakmé (Delibes-Tavan). 5.0, Concert by the Radio Orchestra, conducted by Franz André: The Village Fair (Filipine); Le Rouet d'Omphale (Saint-Saëns); Scènes brabançaises (Sarly); En sonatine (Crabbé); Fantastic Dances (Turina); Divertissement flamand (Vidal); Dance Suite (Zimbalist). 5.45, Programme for Children. 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans: Marche des communiers brugeois (Dubois); Four

Lyric Pieces (Debriez); Violin Solo: Caprice in Fox Trot Time (Wigy); Medley of Popular Songs (Leeman); Pianoforte Fantasia (Candrel); Phrygian Suite (Brusselmans). 7.15, Talk. 7.30, Le Journal Parlé. 8.0 to 10.0, Flemish Programme by the Weteren Music Society and A Dramatic Society. 8.0, An Operetta (Savonie). 8.45, Talk by the President: Young Members of the Society. 9.0, Orchestral Concert with Songs. 10.0, Le Journal Parlé. 10.0, Gramophone Music.

BUCHAREST
761 kc/s, 394 metres; 12 kW.—5.0 p.m., Dance Music by the Oiscan bleu Jazz Band. In an interval at 6.0, Radio Journal. 7.0, Educational Talks. In an interval at 7.0, Gramophone Music. 8.0, Pianoforte Quartet (Chausson). 8.30, Recital on Two Pianos: Gavotte (Gluck-Keinecke); Waltz (Saint-Saëns); Prelude in G (Macry). 9.0, Talk. 9.15, Concert by the Panica Luca Orchestra, relayed from a Restaurant.

BUDAPEST
545 kc/s, 550.5 metres; 18.5 kW.—Also relayed on 840 metres from 6.40 p.m. till Close Down. 4.0 p.m., Talk for Women. 5.0, Reading. 5.30, Orchestral Concert from the Luna Park. 6.40, Recitation. 7.15, Song Recital by Ilonka Tutsek. 7.50, Exchange Quotations. 8.0, Concert by the Arpad Toll Cigany Band. 9.0, Gramophone Music. 10.15, News. 10.30, Concert by the Opera House Orchestra, conducted by Ernst Dohnányi.

CASSEL.—See Frankfurt.
COPENHAGEN
1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time and Chimes from the Town Hall. 12.2, Music by a String Ensemble relayed from the Hotel Angletterre. 1.30, Relay from the Rigsdag of a Debate on the World Power Conference. 2.50, Gramophone Concert: Ria Günter: Two Songs (Schubert); (a) Soligkeit, (b) Rastlose Liebe; Heinrich Schlimms: Loreley (Silcher); Joseph Hilop: Indian Love Call from Rose Marie (Friml); Paul Robeson: Take me away from the River (Parker); Yvonne Curli (Violin): Zardas (Monti); Hilmar Borgeling: Melody (Bannmann); Kate Smith: My Queen of Lullaby Land (Coslow and Johnstone); George Formby: Running round the Fountains in Trafalgar Square (Cottrell); Mills Brothers: How am I doing? Hey-Hey (Branch and Redman). 3.20, Talk for Housewives. 3.30, Concert by the Radio Orchestra, conducted by Walter Meyer-Radon; Intermezzo from Nala (Delibes). In the interval at 4.15, Reading. 5.35, Exchange and Fish Market Prices. 5.50, Talk from the Esbjerg Studio. 6.20, English Lesson. 6.50, Weather. 7.0, News. 7.15, Time. 7.30, Talk. 8.0, Time. 8.1, Danish Workers' Festival—Orchestral and Choral Concert relayed from the Town Hall. The Royal Life Guards Orchestra, conducted by T. Dyring. In the interval: Talk. 9.0, Rossini and Verdi Concert by the Station Orchestra, conducted by Walter Meyer-Radon. Part I: Music by Rossini: Overture, The Barber of Seville; Ballet Music from William Tell; Overture, La Cenerentola. Part II: Music by Verdi: Ballet Music from Aida; Overture, The Force of Destiny. 9.45, Song Recital of the Music of Rik-Magnussen. 10.0, News. 10.15, Concert of French Music by the Radio Orchestra. Conductor: Walter Meyer-Radon. Norwegian Rhapsody No. 3 (Svendsen); Russian Folk Songs (Ljadov); Swedish Dance (Bruch); Dutch Rhapsody, Piet Hein (Anroy). 11.0 (approx.), Close Down.

CORK.—See Athlone.
DANZIG.—See Heilsberg.
DRESDEN.—See Leipzig.
FECAMP
1,323 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Ronald and B. McNabb. 4.30, Concert for Chichester and Bognor Listeners: Selection from He wanted Adventure (Wallor and Tunbridge); Song: My Old Shako (Trotter); A Cottage for Sale; Songs: (a) The Vagabond (Vaughan Williams); (b) I want your Heart (Haydn Wood); Southern Rhapsody (Holmes); Song: Wine, Women and Song (Strauss); Violin Solo: Bohemian Song (Baldy); Songs: (a) The Doll's Song from The Tales of Hoffmann (Offenbach), (b) Serenata (Toselli); Ballet Egyptian (Luigini). 5.15, Concert for Hastings and Eastbourne Listeners: Octet: Moeck (Grainger); Violin Solo: Caprice Basque (Sarasate); Song: Down in the Forest (Landon Ronald); Cello Solo: Bartiniquade (Squire); Octet: Wiegenlied (Grieg); Violin Solo: An Old Viennese Dance (Vogelin); Song: Love, come to my Aid, from Samson and Delilah (Saint-Saëns); Slav Dance (Dvorak); Violin Solo: Au mois d'avril (Adlington); Cello Solo: Abendlied (Schumann); Octet: The Goliwog's Cake Walk (Debussy). 6.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Ibcolians: What have I got to lose? (Kahn); Moon Song (Coslow); Hyde Park Corner (Hargreaves); Twenty Million People; If I ever get a Job again; What did I get in return?; The Girl in the Little Green Hat; Hold up your Hands (Robinson); Sweetheart; Rosa Mia; Can't we meet again?; Let me explain; Rock your Cares away?; The London Fire Brigade; Nightfall; A Bedtime Story.

JUNE 26th

MONDAY

continued

11.0, Club Concert for Fakenham and Wells Listeners: March from Sylvia (Delibes); Song: The Last Rose of Summer (Moore); Violin Solo: Souvenir (Drdla); Monastery Bells (Wely); Selection from The Merry Widow (Lehar); Selection from Sari (Kalmán); Piccolo Solo: Deep Blue Sea (Brewer); Song: Ave Maria (Schubert); Babes in Toyland (Herbert); Violin Solo: Serenade to Nicolette; Charming Episode (Ormandy); Chorus: Swing Along; Waltz, Soldatendelieder (Gungl). 12.5 a.m. (Tuesday), I.B.C. Late News Bulletin. 12.10 (approx.). Dance Music: Paradise (Clifford); Blue (Weidling); My Extraordinary Gal (Schaud); Clarinet Solo: Clarinetitis (Goodman); Down the Old Back Road (Hupfeld); Haunting Blues (Hirsch-Busse); Goopy Geer (Hupfeld); Saxophone Solo: Valse Marguerite; Where is this Lady? (Lehar); Same Old Moon (Baskette); Nylophone Solo: Snappy Sticks (Robbins); Tell me To-night (Spoliansky). 1.0, Gramophone Concert: Jimmy Rogers: Everybody does it in Hawaii; Grace Fields: It's nothing to do with you; Joseph Bishop: Bonnie Banks o' Loch Lomond; Coram and Jerry: Jerry in the Army; Jack and Claude Hulbert: It always starts to rain; Wsu Wynne: Bluebird; Raie du Costa; Butterflies in the Rain. 1.30, Instrumental Solos; Mandoline Band: Loin du Bal (Gillet); Glockenspiel Solo: The Black Forest Chiming Clock (Doppler); Mandoline (Thomé); Vocal Duet: When Everyone else has passed you by (Wheldon); Harmonica Duet: Polly (Zamcenik); Vocal Duet: Bella, the Bold Bad Bandit (Wheldon); Nylophone Solo: Gold Fishes (Kroeger); Mandoline Band: La Czarine (Ganne). 2.0, Dance Music by the Ibeolians: Who's your little who'sis? (Hirsch); Actions speak louder than Words (Vallee); You Escal on (Theard); Holding my Honey's Hand (Goering); You can make my Life a Bed of Roses (Brown); Now that you're gone (Khan); Say (Brown); Can't we talk it over? (Washington); How'm I doing? (Flower); Pagan Moon (Dubin); Try getting a good Night's sleep (Pinkard); If you were only mine (Newman); Moon (Cadeo); Sing a New Song (Ager) Same Old Moon (Baskette); You've got me in the Palm of your Hands (Friend). 2.57, I.B.C. Goodnight Melody. 3.0 (approx.). Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres, and Trier, 1,157 kc/s, 259.3 metres.—12 Noon, Concert by the Station Orchestra, conducted by Reinhold Merten. Soloist: Philipp Saffert (Accordion); Selection from Der Tenor der Herzogin (Künnecke); Intermezzo, Reiz der Launen (Fresco); Two Pieces (Sanders); (a) Falling Rose Leaves, (b) Dreaming; Two Melodies (MacDowell); Maikäfer-Marsch (Becker); Max and Moritz (Karl Zimmer); Gavotte, Goldene Myrthe (Ziehrer); Quick Polka, Elekrischer (Ziehrer); Theresen-Walzer (Karl Faust); The First Letter (Reggow); Gavotte, Frauenlist (Czibulka); Mondnachtzauber und Morgenrot (Liding); Two Regimental Marches; Potpourri of Waldteufel Waltzes. 1.15, News and Weather. 1.30, Concert from Langenberg. 2.0, News. 2.30, Topical Talk. 3.0, Weather Report. 3.10, Time and Exchange. 3.20, A Musical Entertainment. 4.25, Economic Notes. 4.30, See Stuttgart. 5.45, Exchange. 6.0, A German Almanac. 6.15, Italian Lesson. 6.45, Review of the Day. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Special Transmission. 8.10, Concert of Marches by the Station Orchestra, conducted by Dr. Reinhold Merten. 8.45, The Reichswehr Soldier—a Radio Sequence. 9.30, Concert of Unfamiliar Loewe Ballads by Johannes Willy (Bartone) and Hans Rosblad (Pianoforte); General Scherwin; Die verfallenen Mühle; Der letzte Ritter—Three Historical Ballads; (a) Max in Augsburg, (b) Max and Dürer (c) Max's Abschied von Augsburg; Wanderers' Nachtlied; Trommelständer; Landgraf Philipp der Grossmütige. 10.15, Time and News. 11.0 (approx.). See Munich. 12 Midnight, Close Down.

FREDEKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENOVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 806 kc/s, 372 metres; 15 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Programme in Memory of Paul Warneke. Introductory Talk by Franz Fromme. Recitations by Trude Meinz and Karl Pündter, and Organ Solos (Reger) by Gerhard Gregor. 6.30, Talk: Hermann Löns, Naturalist. 6.45, Frankfurt Exchange. 6.50, Weather. 7.0, Transmission for all German Stations: The Dogger Bank. 8.5, See Langenberg. In the interval, News. 10.50, Time and News. 11.0, Topical Talk. 11.10 (from Kiel), Concert by the Kiel Orchestra of Unemployed Musicians, con-

ducted by Hans Döring: March, Freiheitsruf (Prigge); Overture, Zampa (Herold); Erinnerung an Luzern (Blon); Selection from Das Nachtlager in Granada (Kreutzer); Intermezzo, Sizziletta (Blon); Polka, Die Alpenpost (Eilenberg); March (Ertl)

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilken. In the interval at 1.20, News. 2.30 to 3.0, Interval. 3.0, Agricultural Prices and Exchange. 3.30, Programme for Children. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilken: Overture, The Daughter of the Regiment (Donizetti); Miniature Carnival Suite (Kästel); Waltz, Schwert und Leier (Jos. Strauss); Selection from Der Evangelinam (Kienzl); Hungarian Caprice (A. Ferraris); Oase (Wisnar); Polonaise No. 2 (Liszt); Entracte and Polonaise from Der Freude (Kann); Paris Street Singers' Waltz (Ohlson). In the interval at 4.50 (approx.), Book Review. 5.45, Talk: The Austrian Poet, Peter Rosegger on the Fiftieth Anniversary of his Death. 6.0, Technical Talk. 6.15, Agricultural Prices. 6.25 (from Danzig), An Evening in St. Mary's Church. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, News. 8.5, Millöcker Programme; Extracts from (a) Apajune, and (b) Die Sieben Schwaben; Die Königsberg Opera House Orchestra, conducted by Karl Hrubetz, the Station Male Voice Choir, and Soloists, Liselotte Gross, Ruth Norden, Alfred Bartolitus, and Hans Koesling. 9.40, News. 9.45, English Lesson for Beginners. 10.15, News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.) Programme of the Workers' Radio Society (V.A.R.A.).—11.4 a.m., Concert by the Small V.A.R.A. Orchestra, conducted by de Groot: Marche des gamins de Paris (Berger); Waltz from The Dollar Princess (Fall); Noveletta (d'Ambrósio); In a Japanese Garden (Higgs); Polish Dance (Seharssewka); Gramophone Music; Rose-mousse (Bose); Four Ballet Airs (Drigo); Russian Melody (Naprownik); Offenbachiana (Conradi); Gramophone Music; Ballgöfister (Meyer-Helmuth); Crazy Dance (Haines); Baumhochzeit (Jessel); Egyptian Serenade, Amina (Lincke); Waltz, Mon rêve (Waldteufel). 1.40, Interval. 2.30, Concert by the Amsterdam Chamber Orchestra, conducted by D. Kiekens: Romantic Overture (Kéler Béla); Waltz, Eyre or Sever (Waldteufel); The Forge in the Forest (Michaelis); Melody (Tchaikovsky); Selection from Les cloches de Corneville (Planquette); The Clock and the Dresden Figure (Kettelhey); Spanish Gipsy Dance (Marquina). 2.55, Recitations. 3.0, Orchestral Concert (cont'd.); Offenbach Potpourri (Urbach); Donauhilder (Ertl); Adagio (Gounod); Czardas (Monti); Selection from La Traviata (Verdi-Tavan). 4.10, Recitations. 4.40, Concert of Light Music by De Flierfluiters Orchestra. 5.40, Gramophone Music. 6.0, Recitations. 6.40, Organ Recital by J. Jong. 7.0, Concert by the V.A.R.A. Orchestra, conducted by de Groot: Mississippi Suite (Grofé); Jazz Poem (Groop); Ballade de Hadewijn (Verhaer); Rhapsody in Blue (Gershwin). 7.39, S.O.S. Announcements. 7.40, News. 7.55, Concert by the V.A.R.A. Orchestra and Soloists, Conductor, P. Tiggers: Overture, The Force of Destiny (Verdi); Duet from Madame Butterfly (Puccini); Selection from I Pagliacci (Leoncavallo); Trio from Quentin Durward (Gevaert); Duet from Carmen (Bizet); Suite from Czar Sultan (Rimsky-Korsakov); Overture and Quartet from Faust (Gounod); Selection from Il Trovatore (Verdi); Quartet from Rigoletto (Verdi); Selection from Fedora (Giordano); Trio from Jerusalem (Verdi); Selection from Lohengrin (Wagner); Selection from The Mastersingers (Wagner). In the interval at 8.40, Talk, and at 9.40, Radio Play. 10.55, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW. Programme of the Christian Radio Society (N.C.R.V.). 11.40, Police Notes. 11.55, Gramophone Concert of Sacred Music. 12.10 p.m., Organ Recital by Nelis Brouwer, relayed from a Lutheran Church in Amsterdam. 1.40, Pianoforte Concerto No. 1 in B Flat Minor, Op. 23 (Tchaikovsky). 2.15, Talk: The Pruning of Fruit Trees. 2.55, Dress-making Lesson. 3.25, Programme Announcements. 3.40, Bible Reading, followed by Baritone Recital by J. H. Smit. 4.40, Concert by a Saxophone Quartet, with Organ Solos. Treuer Heiland, wir sind hier (Koehler); Auf, Christen, stimmt ein Loblied an; Danket dem Herrn (Schmiz); Organ Solo; Paraphrase on Sacred Songs; Largo (Händel); Romance (Mendelssohn); Choral Music with Organ Accompaniment: (a) I will praise my Maker (Monmouth). (b) And can it be (Sagina); Andante religioso and Tarentella (Klemann); Andante and Minuet (Rugers); Organ Solo; Serenade (Widor);

Romnee (Warlamow). 6.10, Answers to Correspondents. 6.40, Police Report. 6.55, Press Review. 7.40, Concert by the Excelsior Mixed Choir, conducted by Appeldorn. 8.40, Talk. 9.10, Concert by the Amsterdam Symphony Orchestra, conducted by Johan Smit: March, Die Friedens-Taube (Blenkenburg); Dynamiden (Jos. Strauss); Overture, The Italian Girl in Algiers (Rossini); In a Monastery Garden (Kettelhey); Selection from Der Freischütz (Weber, arr. Rhode); Romance in F (Kahn); Potpourri, Quintessenzen (Morena); Hydropathen (Gungl); Egyptian Serenade, Amina (Lincke); March. In an interval at 9.40, Press Review. 10.40, Gramophone Concert. 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,795 metres; 40 kW; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Agricultural Report. 6.25, Accordion Recital. 6.45, Talk. 7.10, Duet Recital. Duet from The Queen of Spades (Tchaikovsky); Duet from Madame Butterfly (Puccini); Le Crucifix (Faure); Ole Inonani siloin (Tuuri); Hungarian Song. 7.30, Recitations. 7.50, Concert by the Station Orchestra. Soloists: Taamo Korhonen (Cello), Erik Cronvall (Violin); Overture, La Princesse jeune (Saint-Saëns); Violin Solo, Le Cygne (Saint-Saëns); Ssaatistolaislauluja (arr. Kauppi); Eleyk (Sohlström); Canzonetta for Violin from The Queen of Spades (Tchaikovsky); Hymn to the Sun (Rimsky-Korsakov). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music, relayed from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Orchestral Concert, conducted by Wolf. Soloist: Otto Enke (Pianoforte). In an interval at 2.0 (approx.), Announcements. 2.30, Market Prices. 3.30, Economic Notes and Time Signal. 3.50, Programme for Young People. 4.30, Orchestral Concert, conducted by Eysoldt: Homage March (Liszt); Spanish Caprice (Rimsky-Korsakov); Four Indian Love Lyrics (Woodford-Finden); Suite an die Freude (Scheipling); Scenes from Oberon (Weber). In the interval, Topical Talk. 5.50, Talk for Women. 6.10, Reading in Saar Dialect. 6.20, Talk for Parents. 6.45, Weather, Time, Economic Notes and Sports Notes. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Announcements. 8.5, The Gipsy Baron—Operetta in Three Acts (Joh. Strauss). In the interval at 9.30 (approx.), Talk in Connection with Nordic Week.—The Nordic Influence in Gothic Art. 10.50, Announcements and Sports Notes. 11.15, Serenade and Dance Music, conducted by Eysoldt. 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—4.20 p.m., Concert by the Station Orchestra, conducted by Willy Steffen: Overture, Queen for a Day (Adam); Selection from Turandot (Puccini); Waldmärenchen, Op. 8 (Mello); Serenade in D, Op. 53 (Fuchs); Waltz Intermezzo, Ballzauber (Lincke); March, Perpetuum mobile (Blon). 5.50, Economic Notes, Weather, and Time. 6.0, Educational Talk. 6.25, Talk: Land Settlements in the New Germany. 6.45, Programme to be announced. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Government Notices. 8.5, Concert of Folk Music by the Hoffmann Zither Society, the Sinfonia Mandoline Double Quartet, a Leipzig Mandoline and Guitar Society, and Walter Kretschmar (Songs to the Lute). 8.45, Dr. Goebbels' First Speech before the Microphone (on Gramophone Records); National Character as the Foundation of National Culture. 9.20, Concert of German-Finnish Music by the Leipzig Symphony Orchestra, conducted by Dr. Helmuth Thierfelder: Symphony in F (Dracsceke); Waltz from Cinderella (Palmgren); Finnish Folk Song (Kuula); Karelian Rhapsody, Op. 15 (Klami). 10.20, News. 10.30 (approx.), Concert by the Endé Orchestra: March (Lossner); Overture, The Land of Smiles (Lehar); Waltz, The Good Old Times (Jos. Strauss); Song, Ob du mich liebst (Lincke); Vibraphone Waltz (Löhry); Potpourri (Noack); Spanish Dances Nos. 2 and 5 (Moszkovsky); Selection from Das Dorf ohne Glocke (Künneke); Manchurian Sketches (Glan); Waltz, Der Himmel voller Geigen (Ziehrer); Intermezzo (Morel); March, Hand in Hand (Blon). 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.30 p.m., Concert by the Station Orchestra. 7.30,

Slav Song Recital followed by Esperanto Lesson. 8.0, Cello Recital. 8.45, Concert by the Station Orchestra. 9.30, Weather and News. 9.45, Dance Music. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. Austrian Programme.—7.0 p.m., Concert of Viennese Waltzes. 7.30, Talk in German: Anton Bruckner, the Composer. 7.40, Weather Report. 7.45, Symphony (Concert of Viennese Music on Gramophone Records). Overture, The Magic Flute (Mozart); The Unfinished Symphony (Schubert); Scherzo from the Symphony in E (Bruckner). 8.25, Gramophone Records of Feuermann, Rosenthal, and Kreisler. In an interval at 8.50, News in French. 9.15, Selection from Der Bettelstudent (Müllbacher). 9.55, News in German. 10.5, Recitations and Viennese Songs by Karl Bruck.

LWOW

788 kc/s, 381 metres; 16 kW.—6.35 p.m., Military Band Concert. 7.20, Miscellaneous Items. 8.70 till Close Down, See Warsaw. In an interval, Talk.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Talk on Dramatic Art. 8.45, Concert relayed from the Casino, Vichy. (For details see Strasbourg.) After the Concert, News.

MADRID

EAJ7; 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, and Radio Journal. 8.15 (approx.), Song Recital by Conchita Gimeno (Soprano). 9.15, News. 9.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—2.50 p.m., Popular Concert by the Station Orchestra, conducted by Plichta. 3.55, See Prague. 4.0, Interval. 5.35, Educational Talk. 5.45, See Prague. 5.55, Talk. 6.5, Reading. 6.15, See Prague. 6.30, German Transmission: Dialogue: A Silesian Girl in America. 7.0, See Prague. 7.10, See Brno. 8.10, See Prague. 8.55, Talk: Our Village. 9.10, Mozart Double Concertos. Concerto in C for Flute and Harp; Concerto in E Flat for Violin and Viola. 10.0, See Prague. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—2.45 p.m., Weather Report. 3.0, Concert. 4.0, Talk: Cattle Breeding. 4.30, Dramatic Programme. 5.30, Variety Programme. 6.30, Concert relayed from the Radio Theatre. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., See Stuttgart. 5.45, Talk for the Younger Generation. 6.5, Book Review. 6.25, Pianoforte Recital of Romantic Music, by Theresia Diem-Glotko; Romance (Schumann); Papillons (Schumann); Three Dream Pictures (Ansorge). 6.45, Time, Weather, and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Songs for Everyman—Musical Sequence by the Small Station Orchestra and Soloists. 8.40, Bavarian Soldiers' Songs and Marches Musical and Literary Programme arranged by Josef Waminger and Wilfrid Feldbitter. 9.40, The Tront Quintet, Op. 114 (Schubert); Richard Staub (Pianoforte), Willy Stuhlfisch (Violin), Adalbert Huber (Viola), Josef Köhler (Cello), and Josef Patta (Double Bass). 10.20, Time, Weather, and News. 11.0, Serenade by the Radio Schrammel Ensemble and Ludwig Kuschel and Ludwig Schmidmeier (Two Pianofortes). 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.7 metres; Porsgrund, 662 kc/s, 553.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Concert by the Radio Ensemble. 6.0, Talk on Puccini's Opera, La Bohème. 6.30, Song Recital by Mme. Hänniläinen. 7.0, Advertising Notes. 7.15, Weather and News. 7.30, Agricultural Talk. 8.0, Time. 8.1, La Bohème—Opera (Puccini), relayed from the National Theatre.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopo-lavoro Announcements, Tourist Talk, Agri-

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MONDAY

continued

cultural Notes, Report of the Royal Geographical Society, and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time and News. 8.45, Concert of Chamber Music. Nini Misiti (Pianoforte), Esmeralda Corbi (Soprano), M. Diamante (Flute). Fantasia for Pianoforte (Bach); Songs (Tirindelli): (a) O Primavera, (b) Amore, amor; Sonata for Flute and Pianoforte (Purcell); Songs: (a) Vieni (Denza), (b) Stornello toscano (Gordigliani); Flute Solos: (a) Le Cygne (Saint-Saëns), (b) Caprice (Kuber), (c) Waltz Caprice (Andersen); Pianoforte Solos: (a) Nocturne (Chopin), (b) Waltz (Chopin), (c) Ricordanza (Liszt). After the Concert, Gramophone Music. 10.55, News.

PARIS

EIFEL TOWER, call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals). 6.45 p.m., Talk on the Theatre. 7.0, Le Journal Parlé. 8.45, Symphony Concert, relayed from the Casino Vichy. (For details see Strasbourg.) 11.15 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music. 7.15, Journal Parlé. 7.30, Hot Jazz on Gramophone Records. 8.0, Scientific Talk. 8.5, Talk on Aviation. 8.15, Interval. 8.30, Post Parisien Revue by Max Régner and his Company. 9.0, Interval. 9.15, Sponsored Concerts. 10.45, News.

PARIS

RADIO PARIS, call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd). 7.45, Gramophone Music. 8.0, News. 12 Noon, Concert of Opera and Ballet Music by the Radio Paris Orchestra: Overture, The Siege of Corinth (Rossini); Selection from La Juive (Halévy); Two Songs from Samson and Delilah (Saint-Saëns) on Gramophone Records; La Fête dans les Jardins du Roi and L'Auberge de Capri, from L'Arlequin (d'Ollone); Selection from Bellagor (Respighi); Ballet from Izell (Pierne); Gramophone Records of Songs from Prince Igor by Chaliapin and Borodin (Borodin); Selection from Antar (Dupont); Suite No. 2 from La Fête chez Thérèse (Hahn). In the intervals at 4.0 p.m., Exchange and News, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange. 6.10, Agricultural Talk. 6.30, Gramophone Records: Selection from Les Ving huit Jours de Clairette (Roger-Tavian); Duet and Song from La Mascotte (Audran); Song from Véronique (Messager). 6.50, Film Review. 7.0, Book Review. 7.20, Concert by the Radio Paris Orchestra: Piece (Hirschmann); Minuet (Paderewsky); Chanson russe (Paladilhe); Valse romantique (Debussy); Overture, Une éducation manquée (Chabrier). 7.45, Commercial Prices and News. 8.0, Paganini—Opera (Lehar). In the intervals at 8.30, News, at 8.40, Review by Reboux, and at 9.15, News.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relay by W6XK on 48.86 metres and 25.27 metres.—7.30 p.m., KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Monday Matinee, from New York. 8.45, Human Values. 8.58, Baseball Scores. 9.0, Radio Guild—Drama, from New York. 10.0, Rhythm Kings. 10.15, Organ Recital by Larry Larson. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal and Press News-Recap. 11.5, Sam Robbins and his Hotel McAlpin Orchestra. 11.15, Weather Report. 11.16, Sport Review. 11.23, I Bring a Song. 11.28, Announcement. 11.29, Temperature Report. 11.30, Pittsburgh Spotlights. 11.45 to 1.30 a.m. (Tuesday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, Al Mitchell's Orchestra, with Baritone Solos by Everett Marshall. 12.30, Johnny Johnson and his Orchestra. 1.0, Cluquet Club Eskimos. 1.30, Hill Billy Heart Throbs. 1.45 to 4.0, New York Relay. 1.45, Phil Cook and the Ingram Shavers. 2.0, Sinclair Minstrels. 2.30, Jack Frost Melody Moments. 3.0, Time Signal and the Hour Glass.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—6.35 p.m., Programme for Soldiers. 7.15, Gramophone Music. 7.20, Miscellaneous Items and Announcements. 7.35, Theatre Notes and Announcements. 7.40, See Warsaw. In the intervals, News and Agricultural Talk. 11.0, Time Signal, Sports and Police Notes. 11.15 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Moravská-Ostrava. 3.55 to 4.0, Exchange Quotations. 5.35, Talk. 5.45, Educational Notes. 5.55, Talk. 6.5, Agricultural Report. 6.10, Gramophone Music. 6.15, Talk on Technology. 6.25, News in German. 6.30, German Transmission: Hints for Mothers and Political Talk. 7.0, Chimes from St. Ludmila's Church. 7.5, News. 7.30, See Brno. 8.10, Talk: How to cure Sciatica. 8.25, Children's Songs by

Jaroslav Krieka, with the Composer at the Pianoforte. 8.55, Saxophone Solos by V. Fleischhans. 9.10, See Moravská-Ostrava. 10.0, Time and News. 10.15, News in German. 10.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW; and Geneva, 395 kc/s, 760 metres.—6.15 to 6.30 a.m., Gymnastics. 12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30 (from Geneva), Gramophone Concert. In the interval at 1.0 (from Geneva), Exchange. 2.0, to 3.28, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Lausanne), Concert by the Radio Lausanne Orchestra, conducted by M. Mader. 4.0 (from Lausanne), Talk. 4.15, (from Lausanne), Concert (cont'd). 5.0 (from Lausanne), Programme for Children. 5.30 to 7.0, Interval. 7.0 (from Lausanne), Talk on Journalism. 7.30 (from Lausanne), News. 7.35 (from Lausanne), Answers to Correspondence. 8.0 (from Lausanne), Yvette—Pianoforte Suite (Stierlin-Vallon), played by the Composer: (a) La salute et son reflet, (b) Vieux palais sur le Canale grande, (c) Saint-Marc, (d) Gondoles, (e) Le retour du Chioggia, (f) Dimanche matin, (g) Les plombs de la Pont des Soupirs, (h) Clapotis, (i) La Bora sous le Rialto. 8.20 (from Lausanne), Song Recital by Dolores de Silveira. 9.0 (from Lausanne), Variety Music. 9.20, News. 9.30 (from Geneva), Talk on the following Transmission. 9.40 (from Geneva), Act II of La Traviata—Opera (Verdi), from the Kursaal. 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO, 680 kc/s, 441 metres; 50 kW. Relay by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Gramophone Concert. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Weather Forecast. 5.15, Exchange and Giornale radio. 5.30, Concert. Emilio Berengo Gardin (Violin), Adolfo Antonelli (Bass), Virginia Brunetti (Soprano), and Arturo Damonte (Bass). Violin Solos: (a) Elégie (Faure), (b) Gigue from the Viola Concerto in E Minor (Handel). Bass Solos: (a) Il lacerato spirito from Simon Boccanegra (Verdi), (b) Aria from La Juive (Halévy); Mephisto (Carli); Soprano Aria from Dinorah (Meyerbeer); Violin Solo, Theme with Variations (Winkler); Soprano and Bass Duet from La serva padrona (Pericoli) and from L'Elisir d'amore (Donizetti). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 7.10, Tourist Talk. 7.20, News in Foreign Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.5, Gramophone Music. 8.30, Giornale Radio and Sports Notes. 8.45, Talk on the following Transmission. 8.45, Faust—Opera in Five Acts (Gounod). In the intervals, Talk, Miscellaneous Notes, and Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 790 kc/s, 379.5 metres; 50 kW. Relay at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—9.0 p.m., Book News by Levere Fuller. 9.15 to 10.0 (approx.), New York Relay. 9.15, Winters and Weber (Organists). 9.30, Soloist. 9.45, Lady Next Door. 12.45 a.m. (Tuesday), Stock Reports. 1.0, Soconylund Sketch from New York. 1.30, Dramatised Penny. 1.45, Ferdie Grofe's Orchestra, from New York. 2.0, A. and P. Gipsies, from New York. 2.30, Musical Programme. 3.0, Contented Programme from New York. 3.30, Ship of Joy, from New York, followed by Programme Resume.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres, 60 kW.; Basle, 1,220 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—6.15 a.m., Gymnastics. 6.36 to 11.59, Interval. 11.59, Time Signal from Neuchâtel Observatory. 12 Noon (from Berne), Gramophone Concert. 12.30 p.m., Time and News. 12.40 (from Berne), Gramophone Concert (cont'd). 1.25 (from Berne), Exchange, Time and Weather. 1.35 (approx.) to 5.0, Interval. 5.0 (from Berne), Programme for Women. 5.30 (from Berne), Gramophone Music. 6.30 (from Zürich), Reading. 7.0, Time and Weather. 7.5 (from Zürich), Old Operetta Music. 7.30 (from Zürich), English Lesson. 8.0 (from Zürich), Concert by the Swiss Radio Orchestra. 9.0, News. 9.10 (from Zürich), Motherland—Radio Play (Stebler). 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relay by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Notala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Accor-

dion Music, relayed from Gävle, 1,470 kc/s, 204 metres. 5.25 (from Sundsvall), Talk by Captain C. E. Hammarberg: Chicago Fifty Years Ago. 5.50, Concert of Light Music by Great's Hawaiian Band. 6.15, Gramophone Music. 7.15, Weather and News. 7.30, Talk, relayed from Örebro, 1,265 kc/s, 237.2 metres. 8.0, Recital of Popular Songs by Ulla Billquist. 8.20, Parliamentary Report. 8.45, Concert by St. Nicholas' Church Choir, relayed from Örebro; Conductor, Gunnar Marcusson; Soloists: Fredrik Möller (Violin) and Gunnar Marcusson (Organ); Organ Solo, Prelude in B Minor (Bach); Three Hymns (Bach); Violin Solos (Rheinberger): (a) Elegy, (b) Abendlied; Three Hymns (Stein); Organ Sonata in C Minor (Guilmant). 9.45, Weather and News. 10.0, Concert of Light Music by Georg Enders Orchestra, relayed from Bern's Hall: Overture, Die Felsenmühle (Reisiger); Waltz, Sphärenklänge (Joh. Strauss); Selection from Cavalleria rusticana (Mascagni); Intermezzo, Loin du bal (Gillet); Selection from Gipsy Love (Lehar); I sjunde himlen (Enders); By the Blue Hawaiian Waters (Ketelbey). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Popular Music. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Orchestral Concert, conducted by Maurice de Villers. 2.0 to 3.30, Interval. 3.30, Concert by the Casino Orchestra, relayed from the Casino, Vichy. 5.0, Gramophone Music. 5.15, Orchestral Concert, conducted by Roskam; Ballet Music from Rosamund (Schubert); Träumerei (Schumann); Abendlied (Schumann); Overture, Athalie (Mendelssohn); Krotica (Grieg); Ich liebe dich (Grieg); Violin Solo, Meditation from Thaïs (Masseenet); Suite (Kalkbrenner); March, Tout Strasbourg (Schneider). 6.0, Literary Review, in French. 6.15, Talk on Alsatian Literature, in German. 6.30, Concert of Chamber Music: Quartet for Flute, Violin, Viola, and Cello (Mozart); Féeerie for Harp and String Quartet (Tournier); Sonata for Harp, Viola, and Flute (Debussy); Trio for Strings (Beethoven). 7.30, Time and News. 7.45, Report of the Cycling Tour of France, relayed from Paris. 8.5, Gramophone Music. 8.15, Press Review in German, Lottery Results, and Announcements. 8.30, Gramophone Music. 8.45, Orchestral Concert, conducted by Paul Paray, relayed from the Casino, Vichy: Symphony in D Minor (Franck); Prélude à l'après-midi d'un Faune (Debussy); Double Concerto (Brahms); Suite from Pelléas et Mélisande (Faure); Spanish Caprice (Rimsky-Korsakov). After the Concert, Press Review in French.

STUTTGART

MUHLACKER, 832 kc/s, 36.5 metres; 60 kW. Relay by Freiburg, 527 kc/s, 570 metres.—12 Noon, Concert by the Municipal Orchestra, relayed from Baden-Baden. Conductor: Karl Assmus. Military March in D (Schubert); Overture, Der Wildschütz (Lortzing); Wiegenlied (Schubert); Ständchen (Schubert); Selection from Tosca (Puccini); Symphonic Sketch, In the Steppes of Central Asia (Borodin); Waltz, Frühlingsstimmen (Joh. Strauss). 1.15 p.m., Time and News. 1.30, Concert from Langenberg. 2.0, Programme arranged by the Post Office. 2.30, Spanish Lesson. 3.0, Elementary English Lesson. 4.30, Concert by the Station Orchestra, conducted by Gustav Görlich: Overture, Nordische Seinfahrt (Gade); Lyric Suite (Grieg); Pizzicato (Morena); Overture, Flotte Bursche (Suppé); Waltz (Lehar); Selection from The Mikado (Sullivan); March (Meissner). 5.45, Talk on Wilhelm Murr and his Supporters. 6.15, See Frankfurt. 6.45, Time and News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Talk: What Everyone should know. 8.20, Concert by the Württemberg Symphony Orchestra, conducted by Ferdinand Drost. Soloist: Max Zimolong (Horn); French Horn Concerto (Mozart); Scherzade, Op. 35 (Rimsky-Korsakov). 9.30, The German Soldier's Life—a Radio Report from the Barracks of the Ludwigsburg Garrison (on Gramophone Records). 10.0, Time and News. 10.30, Talk: The Fifteenth Athletic Tournament. 11.0, See Munich. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—Transmissions uncertain owing to recent fire.—6.0 p.m., News. 6.15, Opera Music. Arias from: (a) L'Africaine (Meyerbeer), (b) La Juive (Halévy), (c) The Valkyries (Wagner), (d) Samson and Delilah (Saint-Saëns). 6.30, Spanish Caprice (Rimsky-Korsakov). 6.45, Chansonnettes. 7.0, Music by an Argentine Orchestra. 7.15, Racing Results, Market Prices and News. 7.25, Local News Bulletin. 7.30, Chamber Music. 7.45, Extracts from Operas: (a) Philemon et Baucis (Gounod), (b) I Pagliacci (Leoncavallo), (c) Tosca (Puccini). 8.0, Concert by a Viennese Orchestra: Liebesfreud (Kreutzer); Selection from The Bird Fancier (Zeller); Serenade (Moszkovsky); Melodies from The Arabian

Nights (Strauss); Midnight Waltz (Amodio); Waltz Dream (Locatelli). 8.30, Songs from Sound Films. 8.45, Violin Solos. 9.0, Extracts from Aida—Opera (Verdi). 9.30, Concert by a Symphony Orchestra: Norwegian Dance (Grieg); Minuet in G (Beethoven); Overture, Idomeneo (Mozart); Schwanda the Piper (Weinberger); Minuet (Schubert). 10.0, Light Orchestral Concert. 10.15, North-African News. 10.30, Concert for Listeners in Morocco. Selection from The Duchess of Chicago (Kálmán); Melody from Pelléas et Mélisande (Debussy); Czardas (Monti); Serenade (Toselli); The Musketeers (Rosenfeld). 11.0, Popular Music. 11.30 to 12 Midnight, Programme in English by the I.B.C. 11.30, Concert of Light Music. 11.57, I.B.C. Goodnight Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Tuesday), Dance Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m. till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relay by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 p.m., Variety Music. 6.0 to 6.5, Weather Report. 6.35, Giornale Radio and Announcements. 7.0, Time and Announcements. 7.5, Gramophone Records: Song (Mendes-Sehor); Cicala (Mar-Borella); Piccola vagabonda (Brucchi); Rubita (Papani-Borella). 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News. 8.30, Gramophone Music. 9.30, One-act Comedy. 10.0, Chamber Music; Soloists: Bufaletti (Pianoforte) and Nilde Trattini (Soprano). 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Italian. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relay by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,068 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,173 kc/s, 218.5 metres.—1.10 p.m., Gramophone Concert. 2.0 to 3.0, Interval. 3.0, Time and News. 3.20, Talk: Prevention of Swimming Accidents. 3.35, Programme for Children. 3.55, Sound Film Music on Gramophone Records. 4.35, Talk: With the Austrian Legion in Mexico. 5.0, Music Talk: From Beethoven to the Present Time. 5.25, Music of the Time of Prince Eugene—Concert by the Society for Old Music. Jella Pessl (Harpischor), Edith Steinbauer (Violin), Frida Krause (Viola da Gamba), Franz Musil (Baritone), and Alexander Wunderer (Oboe). Sonata for Violin, Viola da Gamba and Harpsichord (Erlebach); Suite in G Minor for Harpsichord (Muffat); Sonata for Oboe and Violin (Loeillet); Baritone Solos (Von Eisenach): (a) Schönste Dorile, (b) Geld ist überall zu finden; Baritone Songs (Erlebach): (a) Es liegt nicht allzeit am Gescheh, (b) Freut ihr Brüder, freut euch jetzt. 6.5, Talk: Viennese Streets—Mariahilferstrasse. 6.30, English Lesson. 7.0, Military Concert. 7.35, Time and News. 7.40, Military Concert (cont'd). 8.45, Topical Talk. 9.0, Serenade relayed from the Josefplatz. In the interval at 10.0 (approx.), News. 10.40, Talk on Turkish Music. 11.0, Gramophone Concert. Waltz Potpourri (Robrecht); Foxtrot (Trambauer); Roumanian Song; Ja, der Himmel über Wien (Fall); Tango (Flemming); Foxtrot, Have you ever been lonely (De Rose-Brown); Waltz, Abendsterne (Lanner).

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Light Music, relayed from Ciechocinsk. In an interval at 12.25, Polish Press Review. 12.55, Radio Journal. 1.0, Interval. 2.55, Gramophone Records. 3.5, News. 3.10, Announcements. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.45, Traffic Report. 3.50, Gramophone Music, followed by relay from Ciechocinek. 5.0, Talk in French. 5.15, Pianoforte and Violin Recital, by Mme. L. Nowacka-Iska and J. Oziminski. Pianoforte Solos: Two Preludes (Rachmaninov): (a) In B Flat, (b) in E Flat; Violin Solos: (a) Melody (Paderewski-Sopart), (b) Rigauldon (Poplawski), (c) Mazurka-Fantasia (Noskowski); Pianoforte Solos: (a) Légende de St. François d'Assise (Liszt), (b) Serenade (Taubert-Liszt); Violin Solos: (a) Song (Szymanowski-Kochanski), (b) Butterfly (Hubay), (c) Czardas (Hubay). 6.15, Talk: The World Monetary and Economic Conference. 6.35, Gramophone Music. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Talk on Literature. 8.0, Haika—Opera (Moniuszko). In the intervals, Radio Journal, Agricultural Notes, Sports Notes, Aviation Weather Report, and Police Notes.

ZURICH.—See Schweizerischer Landessender.

TUESDAY

JUNE THE TWENTY-SEVENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** The Ryder Cup: an eye-witness account of the International Golf Cup Match, Great Britain v. America.
- LONDON REGIONAL** "Voyage to Lilliput" (Dean Swift), a play by Lance Sieveking.
- WEST REGIONAL** "The Prince," a play of Czarist Russia, by Dostoevsky, adapted for radio by Edward Lewis.
- NORTH REGIONAL** Running commentary on the All-England Lawn Tennis Club Championship Meeting from Wimbledon.
- BELFAST** "Coming Events," a play by Irene McAleery.

ABROAD

- BRUSSELS (No. 1)** 8.0 p.m. Rossini concert, by the Radio Orchestra.
- COPENHAGEN** 10.10 p.m. String Quartet in E flat, Opus 12—Mendelssohn.
- HEILSBERG** 9.20 p.m. Song and violoncello recital, by Alfons Eccarius and Otto Uraek.
- HILVERSUM** 8.55 p.m. Concert by the Wireless Orchestra.
- PARIS (Poste Parisien)** 8.30 p.m. Meyerbeer concert, by the Station Symphony Orchestra.
- PRAGUE** 7.30 p.m. Opera: "The Devil's Wall," by Smetana, relayed from the National Theatre.
- STOCKHOLM** 5.30 p.m. Pianoforte recital, by Walter Meyer-Radon, relayed from Malmö.
- STRASBOURG** 8.30 p.m. Concert by the Metz Municipal Orchestra, relayed from Metz.
- WARSAW** 8.0 p.m. Concert by the Station Orchestra.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.0 p.m., Gramophone Concert. 2.0, Time and News. 2.20, Operetta Music on Gramophone Records. 3.0, Market Prices. 3.30, Talk: The Study of Heredity and Race Origins. 4.0, Musical Programme for Children. 4.30, Concert by the Station Orchestra, conducted by Bruno Janz. Soloist: Paul Maier (Tenor). Lortzing Fantasia (Rosenkranz); Winterstürme wichen dem Wonnemond (Wagner); Am stillen Herd (Wagner); Canzonetta (Bocherini); Potpourri, Selige Wiener Zeiten (Morena); Tenor Solos: (a) Song from Der Bettelstudent (Müllöcker); (b) Song from Der Feldprediger (Müllöcker); Volga Song from The Zarevitch (Lehar); Overture, II Guarany (Góncz). In the interval at 5.0, Reading from the Works of Young Authors. 5.55, Book Review. 6.10, Programme to be announced. 6.30, Talk: The German Population in the Lost German Provinces. 6.50, Weather, News and Market Prices. 7.0, Transmission for all German Stations relayed from Berlin (Deutschlandsender). 8.0, Concert of Operetta Music by the Silesian Philharmonic Orchestra, conducted by Wolfgang Friebe. Soloist: Berta Eber-Oswald (Soprano). Overture, Banditenstreiche (Suppé); Waltz from Die geschiedene Frau (Fall); Melodies from Die Kaiserin (Fall); Waltz from The Gipsy Baron (Joh. Strauss); Gallop from Der arme Jonathan (Müllöcker). 8.50, Political Press Review. 9.15, Concert by the Silesian Philharmonic Orchestra, conducted by Heinz Borgartz. Overture, Medea (Cherubini); Concerto for Orchestra (Th. E. Bach); Symphony No. 3 in F, Op. 90 (Brahms). 10.15, Time and News. 10.45, Reading (Albrecht von Haugwitz). 11.0 (from Gleiwitz), Dance Music by Fritz Kuhnert and his Band, relayed from the Haus Oberschlesien. 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by Janota. 3.55 to 4.0, See Prague. 4.50, Educational Programme. 5.0, Reading. 5.10, Gramophone Music. 5.35, Talk for Boy Scouts. 5.45, Gramophone Music. 6.0, Music Review. 6.15, Talk for Workers. 6.25, German Transmission. News, Talk for Parents, and Agricultural Report. 6.55, See Prague. 7.5, See Moravská-Ostrava. 7.20 till Close Down, See Prague.

BRUSSELS (No. 1)

1.1.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Pierné Concert on Gramophone Records. 12.30 p.m., Schubert Song Recital by Mme. Boursault. Gretchen am Spinnrad; Der Erlkönig; Geliebtes; Die junge Nonne. 12.45, Falla Concert on Gramophone Records.

1.0, Le Journal Parlé. 1.10, Gomod Concert by the Small Station Orchestra, conducted by Leemans. Extracts from Faust: (a) Soldiers' Chorus, (b) Church Scene, (c) Waltz and Final Trio; Ave Maria; Canticum; Funeral March of a Marionette. 5.40, Schubert Music. German Dances; Moment musical; Litany; Military March. 5.0, Haydn Concert by the Symphony Orchestra, conducted by Meulmans. Military Symphony; Serenade. 5.30, Programme for Children. 6.5, Literary Notes. 6.15, Gramophone Records of Enrico Caruso. 6.30, Frank Music by the Small Station Orchestra, conducted by Leemans. Prologue to Les Béatitudes; Two Christmas Carols; Danse lente; Le Mariage des Roses. 6.45, Concert of Sacred Music. Mme. Carmen Morello (Soprano), V. Reynaers (Violin), A. Rops (Cello) and R. Plum (Pianoforte). Songs (Plum): (a) Salutation angélique, (b) La Vierge dans la dune, (c) Noël; Song, Neapolitan Lament. Air for Cello and Pianoforte (Plum); Partita sentita for Violin; Cello and Pianoforte (Plum). Songs: (a) Two Arias from Les Béatitudes (Frank), (b) Aria from The Messiah (Handel). 7.15, Review of the Week and Film Notes. 7.30, Art Notes and Review for Women. 8.0, Rossini Concert by the Radio Orchestra, conducted by Walpot. Overture, The Italian Girl in Algiers; Ballet Music from William Tell; Selection from Semiramis; Selection from La boutique fantasque; Overture, The Thieving Magpie. 8.45, Talk: The Law against Religious Teaching in Spain. 9.0, Mozart Concert by the Symphony Orchestra, conducted by Meulmans. Soloists: Mlle. Berthe Serwir (Songs), Mlle. Montulet (Mezzo-soprano) and M. Pietro (Clarinet). Overture, Così fan tutte; Duet and Aria from the Mass in C; Concerto for Clarinet and Orchestra; Aria from Figaro. Songs with Harpsichord Accompaniment: (a) Veilchen, (b) To Chlor, (c) Cradle Song, (d) Alleluia. Overture, Don Giovanni. 10.0, Le Journal Parlé. 10.10, Request Gramophone Music. 10.30, Capriccio for Pianoforte and Orchestra (Stravinsky) on Gramophone Records. 10.55, Christus Vincit (Liszt).

BRUSSELS (No. 2)

1.1.N.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish. 12 Noon, Concert by the Small Station Orchestra, conducted by Pierre Leemans. Overture, Peter Schmitt (Weber); Sérénade carnavalesque (Erlanger); Mosaic on the Works of Weber (Tavari). Gramophone Record: La partita (Alvarez). Selection from Robert the Pirate (Romberg); Spanish Caprice, Moraima (Espinosa). Gramophone Records: Alma de Dios (Serrano), Tanzszenen (Richter). 1.0 p.m., Journal Parlé. 1.10, Gramophone Concert. 5.0, Concert by the Radio Orchestra, conducted by C. Walpot. Marche de l'Olympiade (Demacé); Waltz (Ackermans); La

ATHLONE
725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Stock Exchange Quotations and Weather Report, change Quotations for Children. 6.40, News Bulletin. 7.0, Gaelic Reading. 7.15, Talk for Owner-Drivers by A. D. Whelan. 7.30, Time Signal. 7.31, The Station Orchestra. 7.50, Tenor Solos by R. Harrison. 8.5, Violin Recital by Bay Jellett. 8.25, Dramatic Recital by Rev. A. H. Macpherson. 8.45, Vocal Duets by B. Byrne and Andy Dunne. 9.0, The Station Orchestra. 9.15, Vocal Duets (contd.). 9.30, Traditional Fiddle Solos by P. O'Higgins. 9.45, Sponsored Programme. 10.45, Time, News, Weather and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 7.45, Talk in Catalan. 8.0, Request Gramophone Records. 8.15, Catalan Grammar Lesson. 8.45, Exchange Quotations and Talk on Art. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral, Weather Forecast, Messages to Seamen, Exchange and Market Prices. 10.5, Sponsored Programme. 10.30, New Dance Music. 11.15, Concert by the Station Orchestra and Concepcion Caldao (Songs). In the interval at 12 Midnight, News. After the Concert Gramophone Music. 1.0 a.m. (Wednesday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk and Popolavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), Choral Concert of Popular Armenian Music. Soloist: Dora Colanussi (Soprano). 9.30, Concert by the Radio Quintet. Ballet Music (Rat); Invocazione (Manno); Selection from Iris (Mascagni); Lyric Intermezzo (Beccati); Magliolata (Culotta); Oriental Piece (Rust); Selection from Le Maschere (Mascagni). In the interval: Talk. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—5.0 p.m., Talk. 6.55, Time and Programme Announcements. 7.0, Recital of Yugoslav National Songs. 7.30, Sinfonie concertata in E Flat for Violin, Viola and Pianoforte (Mozart). 8.30, Talk. 8.40, Mandoline Recital by J. Chartoffax. 9.20, Gramophone Music. 9.40, Concert by the Station Orchestra. In an interval, News. 10.40, Cigány Music from the Potrosuka Zadruha Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Gramophone Music. 3.0, Handwork for Young People. 3.30, Weather and Exchange. 3.45, Reading: Amel (Ruth Schumann). 4.0, See Leipzig. 5.0, Talk for the Country Woman. 5.25, Topical Talk. 5.35, Song Recital by Ly Betzou. 6.0, A Poem. 6.5, Talk on Eugenic. 6.30, Political Press Review. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations. Orchestral Concert, conducted by Edwin Lindner. Overture, Der Bärenhäuter (S. Wagner); Suite from Sehlagobers (R. Strauss); Overture, Befreites Deutschland (Reznicek). 8.0, Die Gflickeritter—Radio Play (Günter Eich, after the Short Story by Joseph von Eichendorff), with Incidental Music by Hansmaria Dombrowski. 9.5, Programme for Girls. 9.30, A Radio Picture from a University Students' Holiday Camp. 10.0, News. 10.45, Weather Report for Shipping. 11.0, Concert from Hamburg. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.15 p.m., Versailles—A Political Book Review with Readings. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.6, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.10, Folk Song Recital. 8.45, The First Day—A Radio Play on Prussia's History (Hans Rehberg). 10.0, News. 10.30, See Hamburg. In an interval at 11.0 (approx.), Talk: What they are talking about in Berlin. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMÜNSTER. — See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.15, News, Exchange and Lottery Results. 7.30, Talk for Women. 7.45, Report of the Cycling Tour of France. 8.5, Talk on Wines. 8.20, News. 8.30, Gramophone Music.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.25 p.m., Violin Recital. 6.50, Talk for Housewives. 6.55, See Prague. 7.5, See Moravská-Ostrava. 7.20 till Close Down, See Prague.

BREMEN.—See Hamburg.

paloma (Yradier-Weininger); Marche tragique (Brusselmans). Gramophone Records: (a) Mazurka (Chopin), (b) Wohltauf nach getrunken (Schumann), Humoresque (Wandbach); Valse scherzo (Tchaikovsky); March Quand Malselon (Bouquet-Robert). 5.45, Programme for Children. 6.30, Gramophone Concert. 7.15, Talk on International Politics. 7.30, An Interview with Jules Somers in Connection with Public Works in Antwerp and District. 8.0, Concert by the Station Symphony Orchestra, conducted by Meulmans. Soloists: Marguerite Lamun (Songs) and P. Feigenblum (Baritone). March from Judas Macabaeus (Handel); Prelude (Lachmaninov); Three Songs (Mortelmans); Selection from Mozart (Hahn). Songs (Schubert): (a) Rosamund, (b) Der Doppelgänger, (c) Die Stadt, Melody (Brenta). After the Concert, Variety Programme. 9.15, Concert by the Radio Orchestra, conducted by Walpot. Radezky March (Joh. Strauss); Waltz, Frühlingsstimmen (Joh. Strauss); Overture, The Gipsy Baron (Joh. Strauss); La serenata (Tosti); Marechiaro (Tosti); Lolita (Buzzi-Pecora); Selection from The Thieving Magpie Rossini. 10.0, Journal Parlé. 10.10, Dance Music on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Moti Orchestra. In an interval at 6.0, Radio Journal. 7.0, Educational Talks. In an interval at 7.20, Gramophone Music. 8.0, Song Recital. 8.20, Concert by the Station Orchestra. In an interval at 9.0, Talk. 9.4, Radio Journal. 10.0, Talk in French on Romania.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 8.30 p.m. till Close Down.—6.30 p.m., Pianoforte and Violin Recital. 7.30, Exchange. 8.15, Sports Notes and Racing Report. 8.30, Radio Sketch. 10.3, Weather. 10.35 (approx.), Talk in Italian: The Plattense. 10.45, Concert conducted by Otto Berg: Overture, Light Cavalry (Suppé); Waltz, Roses from the South (Joh. Strauss); Kálmán Potpourri, Fortissimo (Feigel); Three Melodies (Pecsi); Waltz (Lehar); Potpourri of Marches (Kozmák).

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time Signal and Chimes from the Tøva Fall. 12.2 p.m., Concert by the Harald Andersen String Ensemble, relayed from the Bellevue Strandhotel. 2.0 to 3.0, Interval. 3.0, Concert by the Station Orchestra, conducted by Launy Grøndahl. Soloist: Ellen Palle Andersen. Songs. 5.0, Programme for Children. 5.35, Exchange and Fish Market Prices. 5.50, Talk in French: The Influence of Jules Romains on the Modern Theatre. 6.20, German Lesson. 6.53, Weather. 7.0, News. 7.15, Time Signal. 7.30, Talk. 8.1, Time Signal from the Town Hall. 8.1, The fattiges Dyrehave—Vaudeville in One Act (Henrik Hertz). 9.15, Allegro spiritoso from the Oboe Concerto in C (Haydn). 9.30, Reading. 9.55, News. 10.0, String Quartet in A Minor, Op. 41, No. 1 (Schumann). 10.4, Dance Music by the Kai Julian Band, relayed from the National Scala. In an interval at 12 Midnight, Time Signal and Chimes from the Town Hall. 12.30 a.m. (Wednesday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. Announces: T. St. A. Rondal and E. McNabb. 4.0, Concert for Torquay and Exeter Listeners. It seems to me, Pianoforte Solo: Just humming along (Ewing). Quintet: Butterflies in the Rain (Myers). Song: I'll stay with you (Woods). Aphrodite. Song: Try a little Tenderness (Woods). Pianoforte Duet: Selection from The Cat and the Fiddle (Kern); Charming Episode (Ormandy). Song: Let's put out the Lights (Berlin). Quintet: The Song of the Nightingale (Albouth). Song: How deep is the Ocean? (Hupfeld). Humoresque (Dvorak). 5.15, Concert for Plymouth and Devonport Listeners. Dance Bagatelle (Bourdon). Song: Love's Pleading (Dent). Piccolo Solo: Scherzo from Sylvia (Delibes). Ginger Snaps (Bourdon). Xylophone Solo: Gipsy Rondo (Haydn). Midnight Waltz (Spoulsky). Song: You are my Heart's Delight (Lehar). Xylophone Solo: Aeroplane Polka. Moonlight at Sans-souci (Rotter). Song: (a) Trees (Rasbach), (b) Two Eyes of Grey (McGeough). Hawaiian Memories (Armadola). 6.0, Programme in French. 10.0, till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Iboellians. Dreaming; Under my Umbrella (O'Flynn); Yes, Mr. Brown; And so I married the girl (Magidson) Firewell to Arms (Wynbel). The World is so small (Nesbit); Her name is Mary (Sievier); Mediterranean Madness (Nesbit); You're getting to be a habit with me (Dubin); Body and Soul (Green); You're beautiful tonight, my Dear (Lombardo); Chansonnette (Friml); Sylvia (Scollard); I may never

JUNE 27th

TUESDAY

continued

pass your way again (Dubin); I wake up smiling (Ahler); A Boy and Girl were dancing (Revel). 11.0, Club Concert for 'Crooner Listeners'; Selection from The Flower of Hawaii (Abraham); The Old Rustic Bridge by the Mill, Song: Tommy Lad (Margetson). Duet: Dear Love of Mine (Goring Thomas). Cello Solo: The Garden of Sleep (de Lara). Waltz: Wine, Women and Song (Strauss). Songs: (a) Clothes Props (Charles); (b) Live for to-day (Tate). My Hero, from the Chocolate Soldier (O. Straus). Song: Lily of Laguna (Leslie Stuart). Duets: (a) The Keys of Heaven (Broadwood). (b) Give me thy Hand, O Fairest, from Monsieur Beaucaire. Until we meet again, Sweetheart. 12.5 a.m. (Wednesday), The I.B.C. Late News Bulletin. 12.10 (approx.). Dance Music. Get Cannibal (Weems); I got Rhythm (Gershwin); You Rascal, you (Theard). The Boswell Sisters: Stop the Sun, Stop the Moon (Cook); Run Tum Rhythm (Aitch); White Lightning (Perkins). Bing Crosby: Brother can you spare a Dime? (Harburg). Hot Toddy (Carter); Cabin in the Cotton (Parish); Swanee Lullaby (Koehler). The Mills Brothers: Bugle Call Rag (Pettis). Sloppy Joe (Bigard); The Seat Song (Parish). 1.0, Military Band Concert. Regimental Marches; Prædium (Jarnfeld); General Mulcahy (Brace); Victoria March (von Blon); Birthday Serenade; In a Persian Market (Ketbey); Morning, Noon and Night (Suppé). 1.30, Variety Music. The Ghost Walk; Just a Crazy Song; Old King Cole; Yodelling Mad. Sketch: The Tram Conductor. Was Nero a Hero?; Rhapsody in Blue. 2.0, Dance Music by the Heilsons. Is I in love, I is (Robinson); Clarinet Marmalade (Shields); Hummin' to Myself (Maxidson); Sweet Sue, just you (Harris); We just couldn't say Goodbye (Woods); Sharing (Lombardo); I'll never be the Same (Kohn); With Summer coming on (Ahler); Night shall be filled with Music (Collings); Love me To-night (Rodgers); Just another Dream of you (Burke); Isn't it romantic? (Rodgers); For you, just you, my Baby (Connelly); If you were only mine (Newman); In Sunny Monterey (Nichols); My Silent Love (Snesse). 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLensburg.—See Hamburg.

Florence.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., Concert by the Station Orchestra. Part I. Conductor: Dr. Reinhold Merten. Soloist: Fritz Malata (Pianoforte). Overture, The Secret Marriage (Cimarosa); Pianoforte Concerto in C Minor (C. P. E. Bach); Symphony in C Minor for Strings and Pianoforte (Richter). Part II.—Old Dances. Conductor: W. Caspar. Soloist: Fritz Stummpp (Baritone). 5.45, Economic Notes. 6.0 (from Cassel). Reading (Rudolf Gläser). 6.15, Talk: Films and Everyday Life. 6.25, Talk: Woman's Place in the New Germany. 6.45, Topical Talk. 6.50, Time, Programme Announcements. Weather and Economic Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Special Transmission. 8.10, Programme to be announced. 8.30, See Langenberg. 8.55, An Upper Hessian Country Festival Programme. 9.25, Concert by the Station Orchestra, conducted by Reinhold Merten. Soloist: Annie Hellmuth (Soprano). 10.25, Time and News. 10.45, See Stuttgart. 12 Midnight (approx.), Close Down.

Fredriksstad.—See Oslo.

Freiburg.—See Stuttgart.

Geneva.—See Radio-Suisse Romande.

Genoa.—See Turin.

Gleiwitz.—See Breslau.

Goteborg.—See Stockholm.

Graz.—See Vienna.

Hamar.—See Oslo.

HAMBURG

Gail ha (in Morse). 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.20 p.m., Book Review: Important National-Socialist Writings. 6.45, Frankfurt Exchange and Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0 (from Kiel). Concert by a Nazi Band. 9.0, News. 9.10 (from Hanover), Silcher Concert, on the Anniversary of his Birthday, June 27th, 1789; The Station Orchestra and the Silcher Society Double Quartet; Soloist, Hermann Munk (Songs to the Lute); Festival Overture on the Song, Ueb immer Treu und Redlichkeit (Hartung); Werbung; s'Blumeli; German Folk-songs: (a) Nun leb' wohl du kleine Gasse, (b) Der Soldat; Liebesball; Ade; Waltz, Bei uns zu Haus (Strauss); Juchhei, dich muss ich haben; Juchhei, Blümelein; Die Anserwähnde; Abreise; March, Ins blühende Land (Schmidt-Hagen). 10.0, Time and News. 10.20, Topical Talk. 10.30, Concert by the Philharmonic Orchestra, conducted by Gerhard Maasz: Overture, Alfonso and Estrella (Schubert); Poetischer Spaziergang (Brandts-Buys), Three Dances from

Henry VIII (German); On Hearing the First Cuckoo in Spring (Delius); Summer Night on the River (Delius); Masquerade from The Merchant of Venice (Sullivan); Polka, Trübsch-Tratsch (Joh. Strauss); Waltz, Transaktion (Jos. Strauss); March, Columbus (Ziehrer).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—11.30 a.m., Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky: Prelude to Così fan tutte (Mozart); Overture, Des Falkners Braut (Marschner); Old Norwegian Romance, Op. 51 (Grieg); Second Movement from the Symphonie fantastique (Berlioz); Allegretto from the Military Symphony (Haydn); Selection from Lilar Time (Schubert-Berté); Rhapsody, Op. 45, No. 3 (Dvorak); Prelude to Giulietta e Romeo (Zingarelli). 1.5 p.m., Gramophone Music. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office with Gramophone Records. 3.0, Agricultural Prices and Exchange Rates. 3.30, Eurythmics for Children. 4.0, Concert by the Königsberg Opera House Orchestra, conducted by Karl Hubertz. 5.25, Talk: Modern Air Traffic. 5.45, Talk with Gramophone Illustrations: Singers as Composers. 6.15, Agricultural Prices. 6.25, A Dialogue: The Work of a Königsberg Civil Servant. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, News. 8.5, Talk: Wilhelm Busch, the Laughing Philosopher. 8.30, Conversations from the Ballroom, the Telephone Box, and so on. 9.20, Song and Cello Recital by Alfons Eccarius and Otto Frack: Sonata in A (Pasqualini); Songs (Schumann); (a) Die Hütte, (b) An den Somsenschein, (c) Hidalgo; Pieces (Grieg-Track); (a) Arietta (b) Waltz, (c) Albumblatt; Songs (H. Wolf); (a) Gesang Weylas, (b) Heimweh; Songs (R. Strauss); (a) Morgen, (b) Aller-seelen, (c) Wie sollten wir sie geheimhalten; Träumerei (Schumann-Track); Folk Song (arr. Track). 10.0, News. 10.20, Talk with Gramophone Illustrations: The Cry of the Steppes.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—12.10 p.m., Concert relayed from the Kurhaus; Pierre Palla (Organ), F. v.d. Schalle (Songs) and Boris Lensky (Violin). 1.40, Gramophone Music. 1.55, Interval. 2.10, Gramophone Music. 2.40, Dress-making Lesson. 3.40, Pianoforte Recital by Susy v.d. Chjis. 4.10, Concert by a Children's Choir, conducted by Jacob Hamel. 4.40, Programme for Children. 5.10, Concert by the Wireless Orchestra, conducted by Nico Treep: Overture, Die Felsenmühle (Reissiger); Waltz, La Barcarolle (Waldteufel); Czardas from Der Geist des Wojewoden (Grossmann); Leb'ar Potpourri (Geiger); Kwang Hsi (Linke); Melody (Perey); Smoky Mokes (Holzmann). 6.10, Talk. 6.40, Gramophone Music. 6.50, Talk. 7.10, Talk on Switzerland. 7.40, Time and News. 7.45, Concert of Light Music by Kovacs Lajos and his Orchestra; Soloist: Bob Scholte (Songs). 8.40, Radio Play. 8.55, Concert by the Wireless Orchestra, conducted by Nico Gerharz; Soloist: Geard Hengeveld (Pianoforte); Overture, Amoretton (Cherubini); Pianoforte Concerto in D (Haydn); Selection from Die Liebesprobe (Mozart). 9.40, Concert by a Women's Choir. 10.0, Orchestral Concert (contd.): March, Unter freiem Himmel (Morena); Overture, Die schöne Galathee (Suppé); Waldtraufreigen (Weininger); Two Intermezzi (Gangberger); (a) Kommt zu mir, (b) Glockenblumen; Selection of Marches (Robrecht). 10.40, News. 10.50, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.55 a.m. till Close Down, Programme of the Cathoë Radio Society (K.R.O.).—11.55, Concert by the K.R.O. Sextet; Turkish March (Mozart); Serenade (Haydn); Potpourri, Zurück zum Walzer (Freudenthal); Hören Sie zu (Borchert); Sotto al Verone (de Micheli); Gramophone Music; Selection from Show Boat (Kern); The Troubadour's Serenade (Amadei); Erica (Lincke); Melody (Rubinstein); March, Stars and Stripes (Sonsa). 1.25, Interval. 1.40, Programme for Women. 2.40, Concert. Els Berentzen (Violin). Fauny Gelbart (Pianoforte), and Anny Bonarius (Songs). Violin Solos: Andante and Allegro from the Spanish Symphony (Lalo); Gramophone Music; Songs: (a) Vittoria, Vittoria, mio core (Carissimi), (b) Gebet an den Sonntag (Andriessen), (c) Onder de Linde (Wagenaar), (d) Ligna Salvarum (Zagwijn), (e) 't Meezekin (Zagwijn), (f) Oud Lieken (Rennes); Violin Solo: (a) Polonaise brillante No. 2 (Wieniawsky); Gramophone Music;

Songs: (a) Soupir (Duparc), (b) Invitation au voyage (Duparc), (c) Les cloches (Debussy), (d) Chanson espagnole (Ravel), (e) Anore (Fauré), (f) Les présents (Fauré). 4.40, (concert by the K.R.O. Boys, conducted by P. Lustenhouwer. Soloist: J. Mossel (Songs). Oh, Mr. Brown (Abraham); Selection from Gipsy Love (Lehar); Ich habe in der Liebe ein Prinzip (Engelberger); Bizet Potpourri (Urbach); Melody (Fresco); Schön war es (May); Hoppla, jetzt komm ich (Heymann); In Paris (Haubert); Comedy Overture (Kéler-Béla); Old Father Thames (Wallace); Im Zeichen Suppés (Urbach); Selection from Moral and Liebe (Grothe); Melody (Gray). In an interval at 5.25, Talk. 6.40, Police Notes. 6.55, Talk. 7.15, Gramophone Music. 7.25, Talk. 7.40, Concert by the K.R.O. Orchestra conducted by J. Jerritsen. Soloist: Alice Hekking (Pianoforte). Overture, Il Seraglio (Mozart); Symphony No. 101 in D (Haydn); Pianoforte Concerto in E flat (Liszt); Two Old Pieces (Antonio Soler); Overture, Le baruffe chiozzote (Sinigaglia); Selection from La Bohème (Puccini); Nostalgie (Paray); Sonatina (Ravel). In the intervals at 8.10, News, and at 8.40, Talk. 9.40, The Latest News—Radio Play in Five Scenes (Manfred Georg). 10.25, News. 10.30 (approx.), Orchestral Concert (contd.): Selection from Les cloches de Corneville (Planquette). 10.40, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBERG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Talk. 7.0, Recitations. 7.25, Cello Recital. 7.50, Talk. 8.10, Concert by the Station Orchestra. Waltz, Künstlerleben (Joh. Strauss); Melody from the Tales of Hoffmann (Offenbach); Overture, Orpheus in the Underworld (Offenbach). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music, relayed from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Orchestral Concert, conducted by Wolf: March, Durch Sturm und Not (Blankenburg); Waltz, An Evening in Seville (Ohlsen); Festival Overture (Zimmer); Symphonic Poem, Raskolnikov (Leuschner); Canserie (Gillet); Dance of the Insects (Svendsen); Grisse aus Alt-Wien (Gschwandtner). 12.50 p.m., Weather, Time, and Announcements. 1.0, Concert by the Station Quintet. In an interval, Songs on Gramophone Records. In the interval at 2.0 (approx.), Announcements. 3.0, Programme for Children. 3.30, Economic Notes and Time. 4.0, Talk on National Education, relayed from Wörsdorf in the Tannus. 4.30, Concert of National Music and Folk Dances, conducted by Eysoldt; German Dances (Schubert); Slav Dances Nos. 1 and 3 (Dvorak); English Folk Dance, Mock Morris (Grainger); Hungarian Shepherd's Dance (Gungl); Spanish Dance No. 8 (Sarasate); Styrian Dance (Lanner); Bohemian Dances (Smetana); Alsatian Peasant Dances (Merkl); Sicilian Tarantella (Mercier); Czardas (Monti); Cossack Dance, Hopak (Telai-kovsky). 5.50, Talk: The Experiences of a Point-man. 6.10, Book Review. 6.20, Italian Lesson. 6.45, Weather, Time, Economic and Sports Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Announcements. 8.5, Reading (Friedrich Griese). 8.30, Concert of Seventeenth and Eighteenth Century German Dance Music by the Cologne Viol Society; Suite No. 7 in A Minor for Five Viols from Baueheto musicale (Schein); Suite No. 1 in A Minor for Four Viols, with Harpsichord Accompaniment (Telemann). 8.55, Talk in Connection with Nordic Week—German Education. 9.10, König Sporek—Radio Play (Friedrich Griese). 10.10, Announcements and Sports Notes.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW., and Dresden, 941 kc/s, 319 metres.—4.0 p.m., Concert by the Orchestra of the Friedrich Theatre in Dessau: Overture, Ein Frühlingssturm (Heysse); Symphonic Poem, Spring (Reitner); Concert Waltz, Op. 47 (Glazunov); Selection from Der Stier von Olivera (d'Albert); Ballet Music from Ritter Pasman (Strauss); Polonaise in E (Liszt); Waltz from Der dumme August (Galller). In an interval, Dialect Reading. 5.50, Economic Notes, News and Time. 6.0, Talk on Wagner's Opera, The Mastersingers: The Orchestration. 6.45, Talk on the Tenth Anniversary of the Death of Paul Schreckenhach. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.5, Political Talk: Building up the State. 8.25, Schneider Fips—Comic Opera in One Act (Hans Stadler).

9.20, News. 9.30, Talk with Illustrations: Our Musical Instruments. 10.30, News. 10.45, Concert of Music from Sound Films on Gramophone Records.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.30 p.m., Concert by the Station Orchestra. 7.30, Village Programme. 8.0, Duets. 8.45, Country Programme. 9.30, Weather and News. 9.45, (concert by the Station Orchestra. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—Belgian Programme. 7.0 p.m., Gramophone Music. 7.40, Weather Report. 7.45, César Franck Organ Recital. 8.0, Gramophone Records; Symphonic Variations (César Franck), played by Cortot. 8.20, Recital of Belgian Songs. 8.40, Gramophone Music. In an interval at 8.50, News in French. 9.20, Talk in French, The Centenary of the Birth of Félix Rops, Etcher and Painter. 9.45, News in German. 9.55, Dance Music and Variety Music on Gramophone Records. In the intervals, Exchange and News.

LWOW

788 kc/s, 381 metres; 16 kW.—6.35 p.m., Zither Recital. 7.0, Sports Talk. 7.15, News. 7.20, Miscellaneous Items. 7.40 till Close Down, See Warsaw. In the intervals, News.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Programme relayed from Paris (Ecole Supérieure), 671 kc/s (447.1 metres). After the Relay, News.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, Talk on the Stone Age, and Request Gramophone Records. 8.30, Two Talks. 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time and Political Review. 11.30, Relay from a Theatre in Madrid. 1.15 a.m. (Wednesday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.15 p.m., See Brno. 6.55, See Prague. 7.5, Talk: The Radhost District, followed by Silesian Songs. 7.20 till Close Down, See Prague.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—2.45 p.m., Weather Report. 3.0, Mozart Concert. 4.0, Agricultural Talk. 4.30, Literary Programme. In the interval, Music. 5.30, Programme Announcements. 5.45, Talk. 6.30, Dance Music. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres, and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., See Frankfurt. 5.45, Talk: Waldmünchen, the Thousand-Year-Old Observatory on the East Bavarian Frontier. 6.5, Song Recital by Carola Willeitner (Soprano) and Karl Brandes (Baritone). Songs (Schubert): (a) Willkommen and Abschied, (b) Sei mir gegrüsst, (c) Ade, du müd'ere; Songs (H. Wolf): (a) In ein freundliches Städtchen, (b) Seemanns Abschied, (c) Der Freund, (d) Abschied; Sei willkommen (Brahms). 6.25, Talk on Versailles. 6.45, Time, Weather and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Der Alpenkönig und der Menschenfeind—Fairy Play in Two Acts (Raimund), with Incidental Music by Weizel Müller. 9.30 (from Nürnberg), Orchestral Concert, conducted by Michael Beyer, Overture, Edelweiss (Komzak); Waltz, Meerluchten (Ziehrer); Rhapsody, Zigeunerfest (Heykens); Spring Suite (Nevin); Potpourri, Musikalische Trümpfe (Nowak); March, Unter der Admiralflagge (Fucik). 10.20, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—2.0 to 3.0 p.m., Wind Instrument Music. 5.0, Concert by the Trygve Christiansen Orchestra. 6.0, Programme for Women. 6.45, Saxophone Solos. 7.0, Advertising Notes. 7.15, Weather and News. 7.30, Talk on Politics. 8.0, Time. 8.1, Sonata in B flat (Irgens-Jensen) by Helga Lökke (Violin) and Robert Rießling (Pianoforte). 8.35, Vinje Programme—Talk

JUNE 27th

TUESDAY

continued

by Rolf Thesen, Recitations by Haas Jacob Nielsen, and Songs by Johan Strangstad. 9.25, Talk. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Concert by the Station Orchestra, conducted by Hugo Kramm: Overture, Morning, Noon, and Night (Suppé); Meditation from Thaïs (Massenet); Pierrette (Basse); Italian Serenade (Halvorsen); Air (Weininger); Seherzino (Lund); Stéphanie Gavotte (Czibulka); Potpourri (Sandell).

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time and Announcements. 8.45, Othello—Opera in Four Acts (Verdi). In the intervals, Talk and Announcements. After the Opera, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Talk on the Theatre. 7.0, Le Journal Parlé. 8.30, Concert of Szale and Gabroche Operetta Music; Extracts from Flossie, Quand on est trois, Mannequins and Enlevez-moi. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music. 7.15, Journal Parlé. 7.30, Sponsored Concert with Gramophone Records. 8.0, Film Review. 8.5, Legal Talk. 8.15, Interval. 8.30, Meyerbeer Concert by the Station Symphony Orchestra, conducted by Théodore Mathieu. Selection from (a) L'Africaine, (b) The Huguenots, (c) The Prophet. 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Music. 8.0, News. 12 Noon, Concert by the Kretzky Orchestra. Eine kleine Nachtmusik (Mozart); Two Inventions (Bach-Rosouk); Adagio from the First Symphony (Beethoven); Quartet in A for Flute and Strings (Mozart); An Egyptian Dancer (Gravina); The Eagle (Macdowell); Piedmontese Dance (Sinigaglia); Chanson enfantine (Konstantinov); Symphonie Prelude (Huguet); Dance (Reinecke); Variations sur un air du pays d'oc (Calmeze); Pièces Berriehonnes (Stoek); Suite des chants bretons (Huré). In the intervals at 1.0, Exchange and News and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange. 6.10, Agricultural Talk. 6.30, Advanced English Lesson. 6.50, Theatre Review. 7.5, Art Review. 7.20, Concert by the Kretzky Orchestra. Complainte (Déquint); Sérénade (Defosse); Réverie (Vallauray); Pièce (Liszt); An Invitation to the Waltz (Weber). 7.45, Review of the English Press. 8.0, Variety Programme arranged by Paul Weill. 8.30, News. 8.40, Review by Pierre Seize. 8.45, Programme by Artists of the Comédie Française. Part I: Songs by Marthe Lebasque. Part II: Poems. Part III: The Romance of an Hour—One-Act Comedy (Hoffmann). In the interval at 9.15, News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.85 metres and 25.27 metres.—7.30 p.m., KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Radio Troubadours, from New York. 8.45, Congress of Clubs Period: Talk by Dr. George Mohr, of Falk Clinic. 8.58, Baseball Scores. 9.0, Meredith Wilson's Orchestra, from New York. 9.15, Jack Walton and his Casanova Orchestra, from New York. 9.30, Market Reports. 9.45, Sketch from New York. 9.58, Baseball Scores. 10.0, Rhythm Kings. 10.15, Concert Favorites, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal and Press News-Recder. 11.15, Weather Report. 11.16, Sport Review. 11.23, I Bring a Song. 11.28, Announcement. 11.29, Temperature Report. 11.30, Pittsburgh Spotlights. 11.45 to 1.45 a.m. (Wednesday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, National Advisory Council on Radio in Education, The Legislative Product of 1933. 12.45, Baritone Solos by Ray Heatherstone. 1.0, Crime Clues. 1.30, Adventures in Health. 1.45, Programme to be announced. 2.0, Goldman Band, from New York. 2.59, Time Signal. 3.0, Household Musical Memories, from New York.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.0 kW.—6.50 p.m., Book Review. 7.5, Gramophone Music. 7.20, Miscellaneous Items and Announcements. 7.35, Theatre Notes and Announcements. 7.40, See Warsaw. 7.58, Time. 8.0, Popular Orchestral Concert. 8.50, News, relayed from Warsaw. 9.0, Song Recital by Mme. Manczakowa (Soprano), Mme. Langerowna-Sobierajska (Soprano) and Edmund Pivkowsky (Tenor). Soprano Arias from: (a) Carmen (Bizet), (b) an Opera (d'Albert); Tenor Solos. Songs for

Soprano (Zelensky, Gall and Dvorak). 10.0, Time Signal, Sports and Police Notes. 10.15, Dance Music, relayed from the Café Esplanade. 11.50 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Brno. 3.55 to 4.0, Exchange Quotations. 5.45, Reading. 5.55, Talk on Commerce. 6.5, Agricultural Report. 6.15, Talk on Russia. 6.25, News in German. 6.30, German Transmission: A Journey to Heaven—A Musical Programme for Young People, by Prof. L. Stuchlik-Dentelmoser and Emma Saxl (Pianoforte). 6.55, News. 7.5, See Moravská-Ostrava. 7.20, Introductory Talk to the following Transmission. 7.30, The Devil's Wall—Opera in Three Acts (Smetana), relayed from the National Theatre. 10.0, Time and News. 10.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—3.30 p.m. (from Lausanne), Concert by the Radio Lausanne Orchestra, conducted by M. Moser. 5.0 (from Lausanne), Programme for Women. 5.30 to 7.0, Interval. 7.0 (from Geneva), Newly-released Gramophone Records. 7.30 (from Geneva), News. 7.35 (from Geneva), Radio Interviews and Answers to Correspondence. 8.0 (from Geneva), Prose and Music of the Eighteenth Century—Programme by Lily Pommier and Mme. Andréossi (Songs) and C. Kohler (Harpisichord). 8.45 (from Geneva), Variety Programme. 9.50, News. 10.10 (from Geneva), Talk: The Work of the League of Nations. 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Variety Concert. In the interval at 2.0, Time and Announcements. 4.45, Programme for Girls. 5.10, Weather Report. 5.15, Exchange and Giornale Radio. 5.30, Orchestral Concert: Consuelita (Firpo); Notti viennesi (Borsatto); Musmé (Manno); Melody (Ralton); Selection from Gianni Schicchi (Puccini); Wilma (Montagnini); Notti giapponesi (Anepeta); Culla e palpiti (Albergoni); San Francisco (Moretti). 6.40 (from Naples), Shipping and Sports Notes. 6.50, Agricultural Report and Dopplavoro Announcements. 7.0, Tourist Talk. 7.10, Atmospheric Signals. 7.20, News in Foreign Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.2, Talk. 8.15, Sponsored Music. 8.30, Sports Notes. 8.45, Giovinazza—Comedy in One Act (Feline). 9.15, Concert of Light Music: Two Step, Tago (Ginecco); Parlano le rose (Sammicandro); Ninnoli d'amore (Stocchetti); Melody (Stolz); Tu ca me guarde (Luadi); Potpourri, Bixiana (Bixio); Portami via con te (Alferi); Tormento (Bixio); Carcondiere (D'Anzi); Ombra d'amore (Figarola); Foxrot, Uno strano modello (Escobar); Campagnola (Nevi); Scusi, signora (Simi); Ventana andalusa (Varinosa); Mon cher hiberon (Di Lazzaro); Foxrot, Wleczy Anna (Sarony). In the interval, Talk: The Legend of San Paolino. 10.55, Giornale Radio. 11.0, Dance Music. 11.30 (approx.), Close Down.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD, on 19.56 metres.—12.45 a.m. (Wednesday), Stock Reports. 1.0 to 3.30, New York Relay. 1.0, Blackstone Plantation. 1.30, Wayne King's Orchestra. 2.0, Bernie's Orchestra. 2.30, Ed Wynn and the Fire Chief Band. 3.0, Lives at Stake. 3.30, National Radio Forum, from New York, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—6.15 to 6.35 a.m. (from Berne), Gymnastics. 11.59, Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from Zürich), Orchestral Concert. 12.20 p.m. Time and News. 12.40 (from Zürich), Concert (contd.). 1.25 (from Zürich), Exchange and News. 5.0 (from Zürich), Concert by the Little Swiss Radio Orchestra. 5.30 (from Zürich), Gramophone Music. 6.30 (from Berne), Programme for Children. 7.0 (from Berne), Time and Notes in the Broadcasts for schools. 7.40 (from Berne), Programme to be announced. 7.50 (from Berne), Radio Report from the Tuberculosis Museum at Zermatt. 8.20 (from Berne), Concert by the Budapest Trio. 9.0; News. 9.10 (from Berne), Songs and Duets. 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Osterson, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Programme for Children. 5.30, Pianoforte Recital by Walter Meyer-Radon, relayed from Malmö, 1,301 kc/s, 231 metres: Two Sonatas in D (Scarlati); Gavotte in A Minor (Rameau); Fantasia in D (Mozart); Fantasia in C Minor (Mozart); Variations in F Minor (Haydn). 6.0, A Visit with the Microphone. 6.15, Gramophone Music. 7.15, Weather and News. 7.30, Talk, relayed from Örebro, 1,265 kc/s, 237.2 metres. 8.0, Symphony Concert from the Town Hall; Conductor: John Kahrman: Overture, Tutti in Maschera (Pédrotti); Selection from The Bird Fancier (Zeller); Extracts from the Suite, La Feria (Lacôme); Swedish Melodies (Sandell); Länderkenning (Grieg); March, A l'Étrier (Kahrman). 9.0, Literary Review. 9.30, Gramophone Music. 9.45, Weather and News. 10.0, Serenade Concert, conducted by Eric Ericsson-Ribbe, relayed from Örebro. 11.30 (approx.), Close Down.

STRASBOURG

859 kc/s, 345 metres; 11.5 kW.—7.45 a.m., Report on the First Stage of the Cycle Tour of France, relayed from Vésinet. 8.0 to 11.30, Interval. 11.30, Popular Music on Gramophone Records. 12 Noon, Orchestral Concert, conducted by Maurice de Villers. In an interval at 12.15 p.m., Report on the Cycle Tour of France. 12.45, News. 1.0, Time and Exchange. 1.5, Orchestral Concert (contd.). 2.0 to 3.30, Interval. 3.30 (approx.), Report on the Cycle Tour of France, relayed from Lille. 5.0, Talk in French: French Colonies in Africa. 5.15, Concert of Jazz Music, conducted by Roskam. 6.0, History Talk in French. 6.15, Topical Talk in French. 6.30, Gramophone Concert of Popular Music. 7.30, Time and News. 7.45, Report on the Cycle Tour of France. 8.5, Gramophone Music. 8.15, Press Review in German, Lottery Results, and Announcements. 8.30, Concert by the Metz Municipal Orchestra, relayed from Metz. Conductor, Louis Narbonne: Le Pont d'Avignon (Wiltman-Evotte); La Fête au village voisin (Boildien); Entr'acte from Messidor (Brauneau); Suite of Waltzes, Pomona (Waldteufel); Selection from Werther (Massenet); Segovia (Lacôme); Farandole from L'Arlesienne (Bizet); Oboe Solo, Echoes of the Marine (Collin); Siamesische Wacht-parade (Linke); Intermezzo from Cavalleria rusticana (Mascagni); Ballet Music, Le Carnaval d'Athènes (Boursault); Marche de concours (Blémant). In the interval, Press Review in French. 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 627 kc/s, 670 metres.—12 Noon, Concert by a Nazi Band, relayed from the Schlossplatz. Conductor: W. Franz. Festival March from the Concerto in E Flat (Beethoven-Wieprecht); Overture, Die vier Menschenalter (Lachner); Waltz, Les sirènes (Waldteufel); Gallop, Petersburger Schlittenfahrt (Eilenberg); Swabian Song Potpourri, Aellerhand aus'm Schwobaland (Schneider); March, Alte Kameraden (Teike). 1.0 p.m., Gramophone Music. 1.15, Time and News. 1.30, Songs on Gramophone Records. 2.0, Programme arranged by the Post Office. 2.30, Advanced English Lesson. 3.0 to 3.30, Interval. 3.30, Talk on Flowers. 4.0, Talk for Women. 4.30, See Frankfurt. 5.45, Talk on Anna Sutter, Peter Müller and Gertrud Bindernagel, with Gramophone Illustrations. 6.10, Talk on the German Language. 6.35, Time, Weather, Agricultural Notes and Announcements. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, See Munich. 10.0, Time and News. 10.45, Serenade by the Ferracelli Orchestra of Milan, relayed from the Wilhelmshau. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions uncertain owing to recent fire.—6.0 p.m., News. 6.15, Popular Melodies. 6.30, Concerto in C Minor (de Renie). 6.45, Opera Music. 7.0, Accordion Music. 7.15, Racing Results, Market Prices, and News. 7.25, Local News. 7.30, Sound Film Music. 7.45, Concert by a Symphony Orchestra. 8.15, Chansonnettes. 8.30, Military Music. 8.45, Opera Music: Arias from: (a) Hamlet (Thomas), (b) Lakmé (Delibes), (c) Carmen (Bizet). 9.0, Concert by the Toulouse Symphony Orchestra, conducted by M. Tartanauc. In the interval, Popular Melodies. 10.15, North-African News. 10.30, Concert for Listeners in Morocco. 11.0, Music by an Argentine Orchestra. 11.15, Light Music. 11.30 to 12 Midnight, Programme in English by the I.B.C. 11.30, Military Band Concert. 11.57, I.B.C. Goodnight Melody. 12 Midnight, Weather and Announcements. 12.5 a.m.

(Wednesday), Extracts from The Geisha (Sidney Jones). 12.15, Accordion Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.15 p.m., till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.15 p.m., Dance Music Relay. 6.0, Press Review. 6.35, Giornale Radio and Announcements. 7.0, Time and Announcements. 7.5, Gramophone Records: Aranci (Marf-Mariotti); Mascerade (Ioeb); Tre cuori (Corsani-Mazzanti); Still let me dream (Grey). 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News. 8.15, Sponsored Musical Programme. 8.30, Variety Concert. Talk in the interval. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning); and 5,969 kc/s, 60.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in English. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 216.5 metres.—1.10 p.m., Gramophone Concert of Operetta Music. 2.0 to 3.0, Interval. 3.0, Time and News. 3.20, Talk: Mountain Climbing as a Popular Sport. 3.30, Programme for Children—Concert by the Vienna Guitar Trio. 3.55, Song Recital by Greta Niedermayr (Soprano) and Karl Halaschnek (Baritone); Songs (R. Strauss): (a) Wie sollten wir gehen sie halten, (b) Ich trage meine Minne, (c) Traun durch die Dämmerung, (d) Breit über mein Haupt, (e) Ach Lieb, ich muss mich scheiden. Mannon's Farewell and Gavotte from Mannon (Massenet); Song from Dinorah (Meyerbeer); Amor mio (Ricciardi); Song from Herodiade (Massenet); Serenade from Falstaff (Verdi); Pierrot's Song from Die tote Stadt (Korngold); Champagne Aria from Don Giovanni (Mozart). 4.35, Talk: Building an Ocean Steamer. 5.5, Talk: Foreign Goods and Foreign Travel. 5.25, Concert of Music by Austrian Composers. Conductor: Dr. Hans Pless: The New Vienna Madrigal Society, and Soloists: Friedrich Wildgans (Clarinet), Dr. Paul Köstler (Pianoforte), Herbst (Brecht). So nimm denn meine Hände (Jokl); Mariata Färbte (Lechtern); Entflieht an leichten Kühen (Webern); Wie heissen euch hollen (Pless); Geh's, wie's geh' (Pless); Ein Wieselchen nachtlich zu singen (Sieg); Wanderer nachtlich (Pahlen); Vigilie (Pahlen); An den Mond (Pahlen); German Sacred Chorus (Lafite); (a) Italienische Madama, (b) Weihnachtslied. 6.5, Agricultural Talk. 6.30, French Lesson. 7.0, Talk: The Turks in Austria. 7.30, Time and News. 7.35, Faust—Opera in Five Acts (Goethe), on Gramophone Records. In the interval at 9.10 (approx.), News. 10.35, Talk in Dutch: Art and Scenery in Austria. 10.50, Dance Music by the Blue Boys from the Grabencafé.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Gramophone Music. 12.25, Polish Press Review. 12.35, Gramophone Music. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.10, Announcements. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.45, Aviation Report and Anti-Gas Drill. 3.50, Gramophone Music. 3.55, Announcements. 4.0, Song, Pianoforte, and Viola Recital: Viola Solos: (a) Gavotte (Gluck), (b) Dance (Lully), (c) Romance (Campagnoli); Martha's Aria from The Czar's Bride (Rimsky-Korsakov); Song (Greehaninov); Song (Czerepin); Viola Solos: (a) Celtic Song (Forsyth), (b) Carte d'Album (De Boeck), (c) Habanera (Frezin), (d) Berceuse (Rimsky-Korsakov), (e) Spanish Serenade (Glazunov); Three Songs. 5.0, Answers to Correspondence. 5.15, Popular Concert, relayed from Ciechocinek. 6.15, Talk: The Polish Expedition to Mont Pelée, in Martinique. 6.35, Gramophone Music. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Topical Talk. 8.0, Concert by the Station Orchestra, conducted by J. Oziminski: Soloist, Mnie. H. Cywinska (Pianoforte); Overture, Der Freischütz (Weber); Scherzo from A Midsummer Night's Dream (Mendelssohn); Ballet Music from Rosamund (Schubert); Concertino (Weber); Suite, Scènes hongroises (Massenet); Pianoforte Solos: (a) The Musical Snuff-Box (Ljadov), (b) Prelude in G Sharp Minor (Rachmaninov), (c) Poem, Op. 32 (Scriabin), (d) La Soirée dans Grenade (Debussy); Toréador et Andalouse (Rubinstein); March from Sigurd Jorsalfar (Grieg). In the interval, Radio Journal and Agricultural Notes. 10.0, Dance Music relayed from the Café Europe, Ciechocinek. 10.25, Sports Notes. 10.35, Weather Report and Police Notes. 10.40, Dance Music (contd.).

ZURICH.—See Schweizerischer Landessender.



To all users of battery
—operated radio sets.

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YOU**

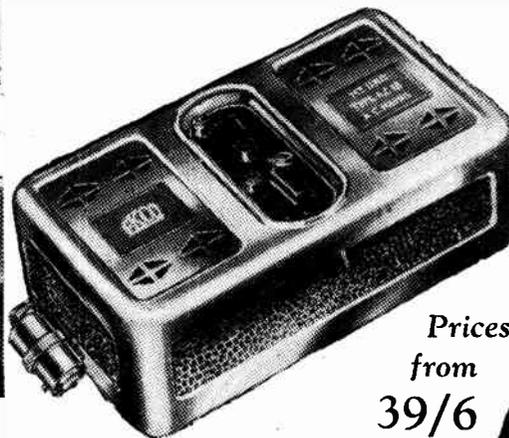
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The Wireless World

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23rd Year of Publication

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As many of the circuits and apparatus described in these pages are covered by patents, readers are advised, before making use of them, to satisfy themselves that they would not be infringing patents.

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EDITORIAL COMMENT

Wireless and Thunderstorms

A Negligible Risk

EVERY year as the season of thunderstorms comes round the lay Press appears to delight in headlines of a sensational character associating storm damage to buildings with wireless receivers, and it is curious to note to what an extent an early impression of wireless can persist and crop up year after year in this way. If we trace the history of this association of the wireless set with thunderstorms, we find that it all originates with the early wireless stations, especially transmitting stations, where a site was invariably chosen on high ground as remote as possible from any tall buildings or other obstacles which might impede the progress of the radiated waves. Aerials were elevated as high as possible and frequently supported between masts of metal construction. It was not unusual, as might readily be expected, for wireless stations of this character to provide a path for lightning discharges, and the designers of such stations took every possible precaution to meet this kind of risk.

Quite naturally, therefore, a wireless station came to be regarded in the lay mind as a sort of "trap" for lightning, but the position with broadcast receiving stations is entirely different and, except in such cases where these stations may be in isolated and elevated locations, there is very little reason to imagine that the addition of an aerial connection to a set enhances risks from lightning in any way. If a house is struck by lightning it may be expected that a considerable proportion of the discharge will travel down the aerial to earth as being a convenient path, but there is little evidence to

show that the presence of an aerial has ever been directly responsible for a house being struck. In fact, in such cases, much greater damage might have been done if there had been no aerial present to assist in the passage of the discharge to earth.

The only precaution which we feel would be justified is to avoid using the set or sitting in the immediate vicinity of the down lead whilst a storm is active overhead.

There still seems to be a need to get out of the heads of non-technical people the idea that wireless attracts lightning; it does nothing of the kind. It is unfortunate that this type of scare should still be seized upon by the lay Press as sensational news, and still more is it to be regretted that manufacturers of aerial equipment should make use of sensational newspaper quotations associating wireless with storm damage as a means of advertising their wares.

Subdivision

The New Trend in Portables

COMPACT as it is, the average portable set can seldom be stowed away comfortably in car, yacht, motor-boat, caravan, or, indeed, any other normal kind of conveyance. How true it is, though, that two small articles can be accommodated more easily than one of the same cubic content; it is this truth which has inspired the design of the "Two Unit Portable" described in this issue.

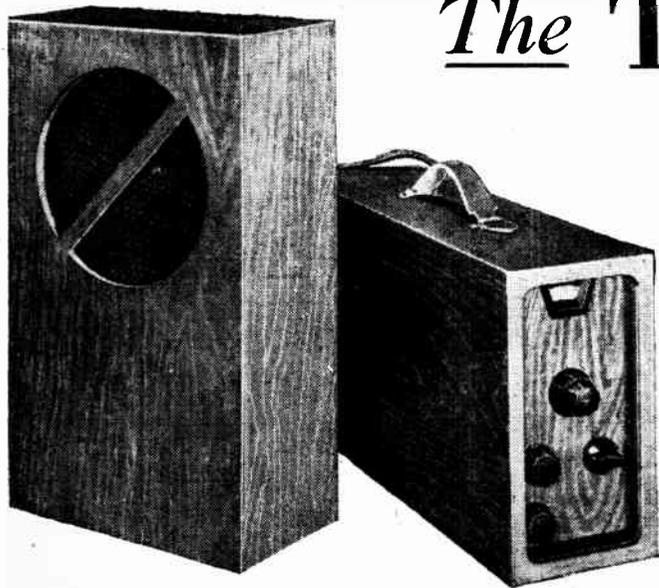
The two-unit principle removes various constructional difficulties, and simplifies the introduction of a moving-coil speaker which in this case is fed by a Class "B" amplifier.

In other details the set is well abreast of modern receiver design; it includes a short-base H.F. valve and new types of iron-cored tuning coils.

The Two-Unit Portable

Latest Technique Ensures Exceptional Quality, Volume, and Range

By H. F. SMITH



SOONER or later occasion always seems to arise for carrying a portable set in a car; in spite of the compactness and lightness of the average present-day receiver of this type, it is surprisingly difficult to find room for it comfortably, especially in a "baby" or medium-powered vehicle. The average set is just too big to be stowed away without sacrificing a passenger's seat, or, alternatively, it occupies space in the luggage locker which is probably required for other purposes.

In a caravan, similar objections apply, but perhaps with less force; it is also rather difficult to find a place where the set can be mounted as a semi-permanent fitting.

On board small yachts and motor boats, again, it is generally found that the ordinary type of portable gets in the way, and, moreover, its frame aerial is anything but a blessing, due partly to the fact that enough space for swinging the set is seldom available.

This brings us to the question of aerials, and partly explains why in an all-purpose design it has been considered better to

A SELF-CONTAINED set in which extreme portability and easy stowage have been secured, not by sacrificing performance but by dividing the weight and bulk into separate units, which may be interconnected in a moment. One of the containers accommodates the receiver proper and the L.T. battery, while in the other is mounted a permanent-magnet moving-coil loud speaker and H.T. battery. The set is especially intended for transport in cars, caravans, motor boats, and yachts, and is proved to be much more convenient than the ordinary portable.

avoid a frame and, instead, to make provision for a short "open" aerial. On the score of sensitivity there will, more often than not, be an actual gain by adopting this course; as for selectivity, the new high-efficiency coils, with iron-powder cores, help very considerably towards a satisfactory solution of the problem.

To revert to the advantages of the two-unit principle of construction, it will be obvious that each of the units can be made considerably smaller and lighter than a complete "one-piece" set with anything

approaching the same performance. Admittedly, the total cubic content and weight is quite as high, but, on balance, the gain is considerable. For instance, in a small car where it was found to be quite impossible to accommodate a conventional portable when four passengers were carried, the present set was easily packed away. One unit was used as an arm-rest between the occupants of the rear seats, while the other was stowed on the floor under the knees of the front passenger.

Latest Circuit Features

It will be seen from the circuit diagram reproduced in Fig. 1 that two tuned circuits only are employed, and that, instead of a band-pass input filter, the aerial circuit is of the single-tuned variety. This plan would be open to adverse criticism in a "fixed" receiver intended for operation with a full-sized aerial, but, as already indicated, the selectivity of the present arrangement is quite sufficient when the set is connected to a short and more or less improvised aerial. The types of aerial that the designer had in view were, for a motor car, an arrangement of parallel wires or wire netting in the roof; a gauze disc under the spare-wheel cover also makes a surprisingly effective collector. As for the caravan, similar arrangements can be devised, but even more easily, and on board the small yacht one of the wire-rope shrouds is generally satisfactory. The set is sensitive enough to work with very inefficient aerials, and

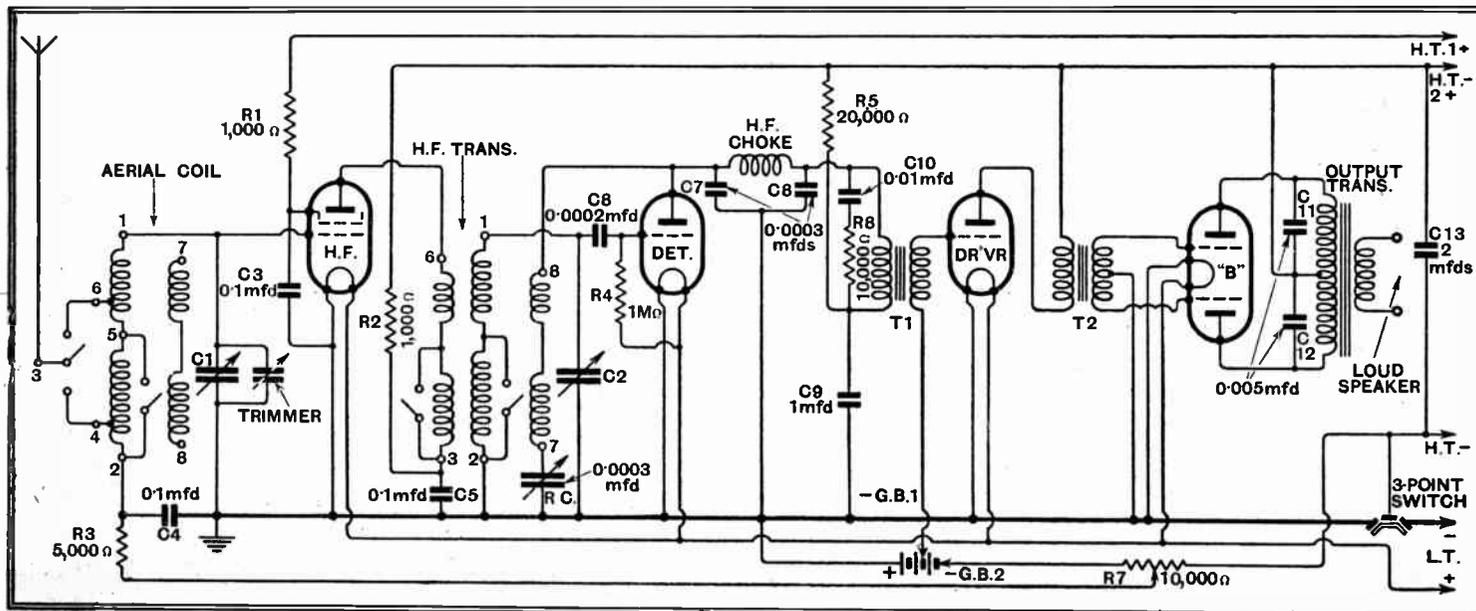


Fig. 1.—Complete circuit diagram, with values of components. The three-point on-off switch is combined with the volume-control potentiometer.

HOW TO WIRE THE TWO UNITS

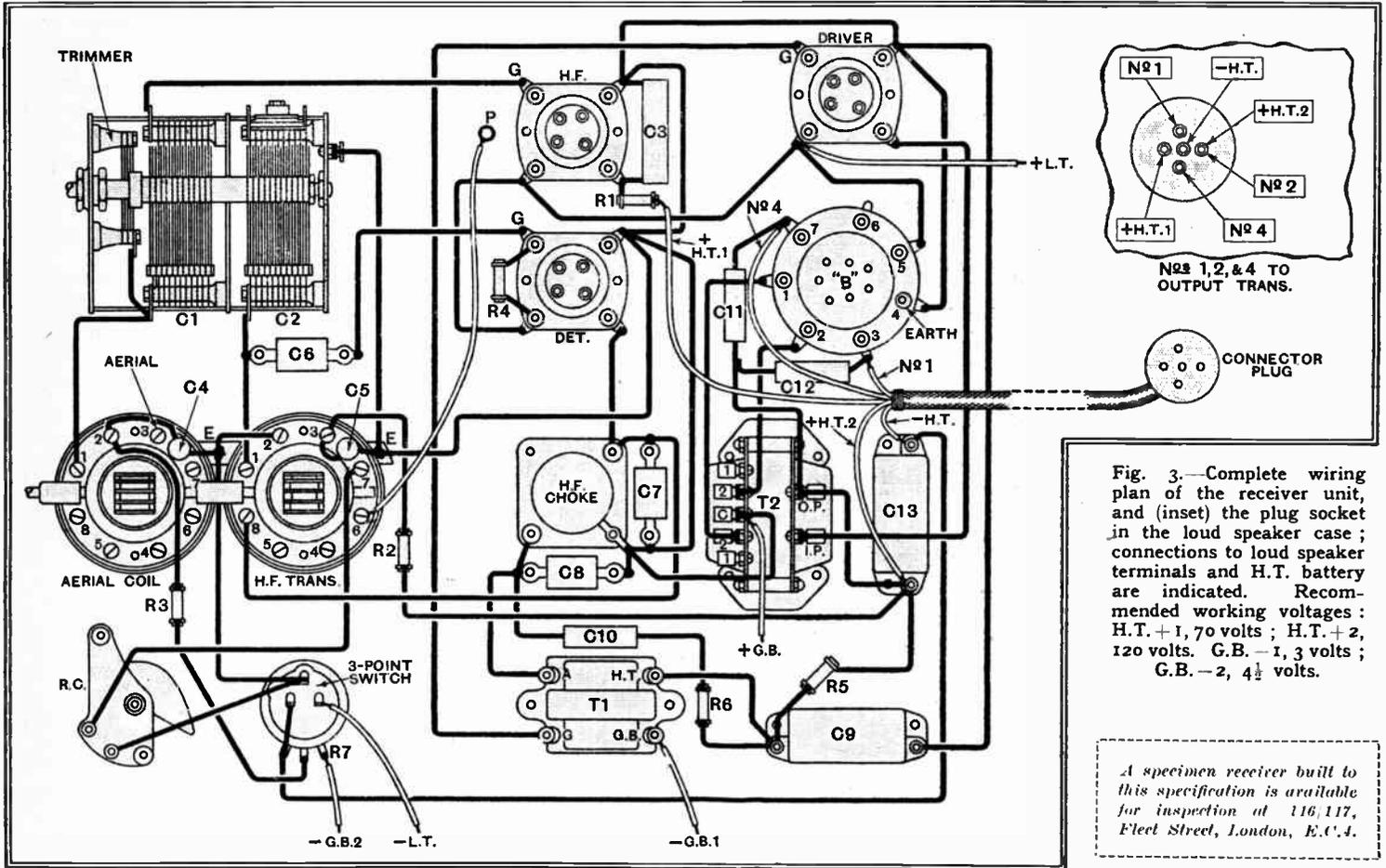


Fig. 3.—Complete wiring plan of the receiver unit, and (inset) the plug socket in the loud speaker case; connections to loud speaker terminals and H.T. battery are indicated. Recommended working voltages: H.T. +1, 70 volts; H.T. +2, 120 volts. G.B. —1, 3 volts; G.B. —2, 4½ volts.

A specimen receiver built to this specification is available for inspection at 116, 117, Fleet Street, London, E.C.4.

etc., the front panel must be temporarily removed, and also that the condenser should be mounted first, as it is secured in position by screws passing up through the platform; the heads of these screws will later be covered by the tuning coils. In mounting these coils, reasonable

care should be taken in aligning the switch-operating rods, and the insulated connecting link should be reduced in length so that two screening covers may be mounted close to each other. An earthing strip of copper or other metal is placed between the coils and the platform, and

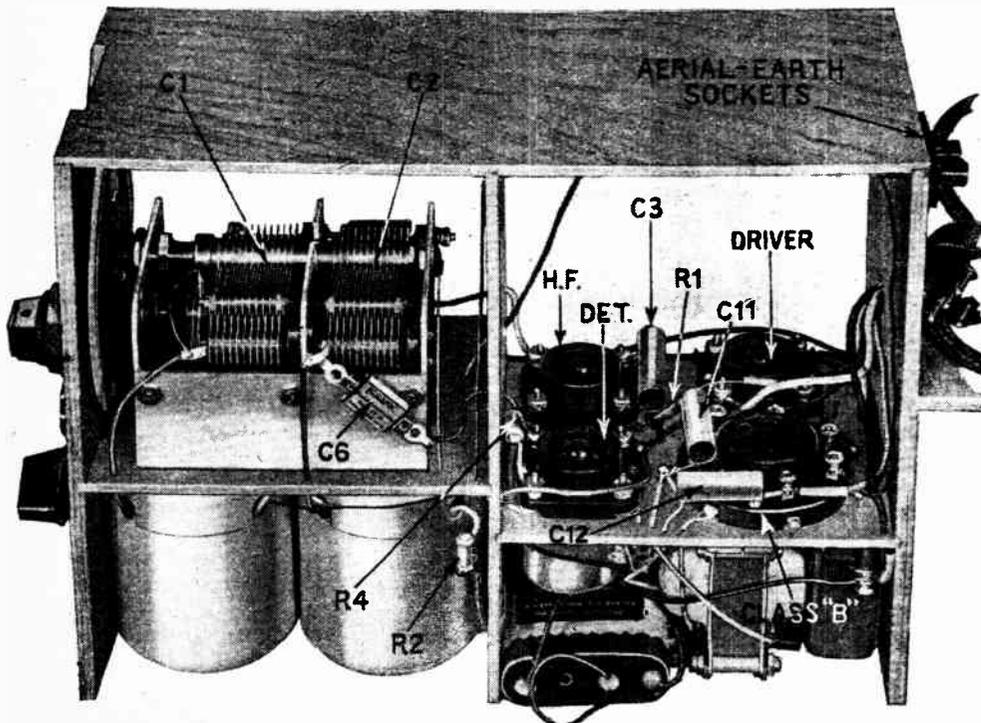


Fig. 4.—Here the framework is removed to show disposition of components in the upper compartments. Positions of the four valves are indicated.

LIST OF PARTS

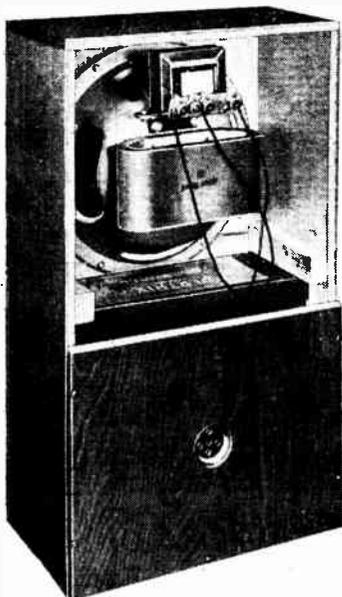
- 1 2-gang condenser, 0.0005 mfd., with air-dielectric trimmer C1, C2 (Utility Type W.312)
- 1 Set of 2 coils (aerial and H.F. transformer) (Varley "Nicore")
- 3 4-pin valve holders, anti-microphonic (Benjamin "Vibrolder")
- 1 7-pin valve holder, Class "B" (Benjamin)
- 1 Variable condenser, bakelite dielectric, 0.0003 mfd., R.C. (Burton)
- 1 Fixed condenser, 2 mfd. C13 (Igranic No. 2231/70)
- 1 Fixed condenser, 1 mfd. C9 (Igranic No. 2231/69)
- 1 Fixed condenser, 0.01 mfd., tubular, C10 (British Radiophone)
- 3 Fixed condensers, 0.1 mfd., tubular, C3, C4, C5 (British Radiophone)
- 2 Fixed condensers, 0.005 mfd., tubular, C11, C12 (British Radiophone)
- 1 Fixed condenser, 0.0002 mfd., tag type, C6 (Igranic)
- 2 Fixed condensers, 0.0003 mfd., tag type, C7, C8 (Igranic)
- 1 Potentiometer, 10,000 ohms, with 3-point switch, R7 (British Radiophone Type No. 484)
- 1 L.F. transformer, 3:1, T1 (Ormond Type 531)
- 1 L.F. transformer, Class "B," T2 (Wearite)
- 1 H.F. choke, screened (Graham Farish Type H.M.S.)
- 1 Fixed resistor, 1 megohm ½ watt, R4 (Erie)
- 2 Fixed resistors, 1,000 ohms ½ watt, R1, R2 (Erie)
- 1 Fixed resistor, 5,000 ohms ½ watt, R3 (Erie)
- 1 Fixed resistor, 10,000 ohms ½ watt, R6 (Erie)
- 1 Fixed resistor, 20,000 ohms ½ watt, R5 (Erie)
- 2 yd. 5-way cable (Coltone No. R.39/5 MR)
- 2 Cases and frame ("Camco")
- 1 5-pin adaptor plug (Bulgin Type P.3)
- 1 Valve holder, 5-pin, chassis mounting type (Clix)
- 2 Plugs (Clix No. 10)
- 2 Insulated sockets (Clix No. 11)
- 2 ozs. No. 20 linned copper wire, 6 lengths Systoflex, etc.
- Screws: 24 ¼ in. No. 4 R/h.d.; 4 ½ in. No. 4 R/h.d.; 4 ¾ in. No. 4 R/h.d.; 6 ¾ in. No. 6 R/h.d.
- 1 L.T. accumulator cell, unspillable (Oldham P2V3)
- 1 H.T. battery, 130 volts (Pertrix No. 312)
- 1 Bias battery, 4½ volts (Siemens Size G.1)
- 1 Loud speaker, permanent magnet, Class "B" type (Blue Spot No. 29 P.M.)
- Valves: Mullard PM12M, metallised, Mullard PM1HL, Mazda L2, Mazda PD220.

The Two-Unit Portable—

serves as a point of attachment for various earth leads.

With regard to the second case, which accommodates the loud speaker and H.T. battery, it is wise to fit wooden battens to prevent movement of the battery. Incidentally, the consumption of the set is quite low enough to make it possible to use the standard-capacity 120-volt battery, but as there is sufficient room, a somewhat larger battery, with a small reserve of voltage, was fitted in the original receiver. A five-pin valve socket is mounted on this unit, and through it the output from the valve in the receiver unit is passed to the loud speaker; H.T. current for the valves is fed to the set through the remaining connections.

A practical wiring plan is given in Fig. 3; here the components are arranged as nearly as possible in their relative positions, and, with the help of the layout diagrams, no difficulty should be experienced in wiring the set. It should be observed that the same reference lettering for the components is adhered to in all diagrams, and also in the List of Parts.



Details of the H.T. battery-loud speaker container.

a short-circuit across the H.T. battery.

The multiple interconnecting cable may be of any reasonable length, although it will seldom be necessary to make it longer than a yard or two, except when it is desired to mount the two units at a considerable distance from each other. It might prove convenient to do this, for instance, on board a yacht, where the receiver unit would be mounted flat against the cabin bulkhead, in such a position that the controls are get-at-able.

To economise in space, the three-point switch which interrupts both the L.T. and G.B. battery circuits is combined with the volume-control potentiometer. For maximum sensitivity this control must be rotated fully in a clockwise direction.

Preliminary adjustments are simple, and the writer has never encountered a more docile and manageable set; from the start, instability of any kind was totally absent, and, indeed, it was found difficult to provoke it artificially. The operation of ganging is carried out by first setting the air-dielectric trimmer to half-capacity, and then adjusting the semi-variable condenser across C2 for maximum re-

It is, for instance, almost a shock to come across a Swiss station at work on the long waves. The other day I was very puzzled at hearing speech in German almost on the Eiffel Tower's wavelength. The station turned out to be Beromünster. Both Beromünster and Monte Ceneri have been conducting tests, usually outside programme hours, on wavelengths well above 1,000 metres. I understand that the results of these tests showed that in Switzerland's mountainous country the use of a long wave enormously increased the service area. Beromünster's strength was certainly magnificent when I picked up its transmission.

Both Vienna and Hilversum are using much greater power in the evenings than they do during the daytime. Hilversum goes up from 7 to 20 kilowatts at 4.40 p.m., while Bisamberg is not able to use very high power in the daytime, since workmen are still engaged on the aerial. This station, by the way, does not seem yet to be radiating at full power even after dusk on most days of the week. I mentioned recently that Saturday had been its best night for some little time, and this still seems to be the case.

Amazing Kilowatts

I cannot believe that Hamburg has been using for the last fortnight no more than the 1.5 kilowatts shown in the lists. The new dispensation in Germany is making a great deal of use of the broadcasting stations, and it seems probable that steps are being taken to effect temporarily an increase in Hamburg's power until the new transmitter comes into operation. In any case, Hamburg is now as strongly and as easily received as Langenberg, whose official rating is forty times as great!

There is still no official news concerning Lyons Doua, another alleged 1.5-kilowatt station, to whose amazing performances I have referred before. In winter, when reception conditions were at their best, Lyons was rarely heard at any great strength. Now, at the height of summer, Lyons is amongst the most strongly received of Continental stations. If their number really is only 1.5 they must be astonishing kilowatts!

American stations, particularly the South American, have been wonderfully well heard on certain nights of late. The chief reason probably why more has not been heard of transatlantic reception this summer is that the best time for listening is between three and four o'clock in the morning, when few of us are able (or willing) to be at the control knobs of the receiving set. Any enthusiast who happens to be up and about between those hours may find it well worth while to try the small band between 200 and 250 metres, which is the most fruitful of results just now.

Daylight reception on the medium band, though not quite so good at the moment as it was a week or so ago, is still rather remarkable. Langenberg is nearly always to be received, whilst Trieste, Turin, Brussels No. 2, Hilversum (a pity that the 20-kilowatt plant cannot come into operation earlier), Nürnberg, and Fécamp are generally to be found when required.

Besides those mentioned, the best medium-wave stations from about 8 p.m. onwards are Rome, Leipzig, Strasbourg, the Poste Parisien, Breslau, Gleiwitz, Heilsberg, Bordeaux, Göteborg, Milan, and Florence. I would include Prague, but that this transmission is given to occasional periods of signal weakness at the present time.

D. EXER.

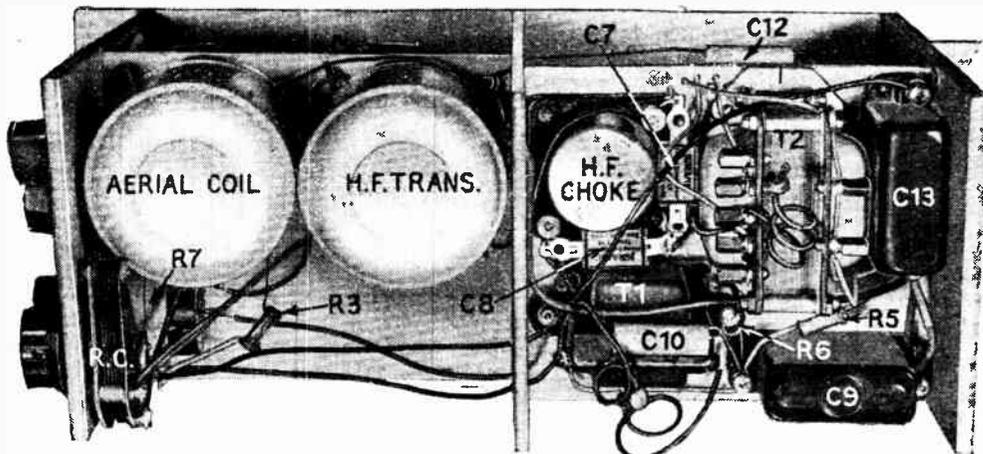


Fig. 5.—How components are arranged below the horizontal platforms.

It will be observed that, in the practical wiring plan, external connections to aerial and earth are indicated, but unless the set is to be used with a permanent aerial, it will be preferable to wire these points to a pair of sockets which may be mounted in the compartment which serves to house the connector cable and plug, and also the aerial and earth wires. For this purpose a pair of Clix sockets or a Belling-Lee double socket connector strip is convenient, and they may be fitted as shown in the illustration on page 441.

In wiring the receiver, it is as well to make sure that the moving vanes of the reaction condenser are earthed, and thus to avoid the risk of introducing

sponse to a signal of short wavelength. Any subsequent adjustment that may be necessary is carried out by rotating the concentric air-trimmer control knob.

DISTANT RECEPTION NOTES.

LONG-DISTANCE listening is full of surprises at the moment, for you may come across at various times stations conducting transmissions on wavelengths very far from those assigned to them in the current lists. These transmissions are chiefly tests made with a view to ascertaining the effects of adopting the alterations suggested at the Lucerne Conference.

UNBIASED

BY FREE GRID



Plays both sides of the record.

Looking-in on the Radiogram

I SEE a radio savant writing in one of our popular evening papers wants the B.B.C. to save all the money they spend on radio drama and use it for television research. So far as I can gather, he makes this appeal simply because he finds listening to plays rather a bore. Possibly he lacks sufficient visual imagination.

While admitting that there is room for improvement in radio drama, I frankly cannot see why your hard-earned money and mine should be wilfully wasted in the manner suggested.

Since it has been demonstrated that television can be recorded on gramophone discs, I suggest that the play first be enacted before a suitable recording apparatus and the television discs sold at a high price to unimaginative people, who would, of course, have to supply their own turntable, screen and optical apparatus, and, incidentally, do their own synchronising by hand-adjustment of the speed of the gramophone turntable. But it would serve them right.

Perhaps, after all, it would be best to supply them with a complete talkie film of the play, and then they needn't bother to listen in at all.

For the Poor Man

I WONDER if the powers-that-be in the radiogramophone world are going to give us any improvement in automatic record changers at this year's exhibition? Judging by what I have seen already I rather think not, but it may just be possible that the manufacturers have something up their sleeves which has so far escaped me.

It is, of course, quite hopeless to expect them to give us anything in the nature of an instrument which plays both sides of the record, for, as I have already mentioned in these columns, they have turned a deaf ear to all my appeals. There is, however, one little improvement which we might expect from them, and it is one concerning which I have had several moans from readers who already own automatic record changers.

The moan is that when setting the lever

provided for throwing the automatic mechanism "out of circuit" so that the gramophone can be used in the ordinary manner for hand-playing, users are deprived of an automatic stop. It may well be asked what is the object of such a stop, since if a person desires to play one record only and wishes the machine to switch itself off afterwards he can use the automatic record changer, which will deal with one record as well as with eight.

This is all very well for the plutocrats who confine themselves to standard twelve- and ten-inch records, but many of my readers are not very far from the bread line, having spent nearly all that they had in acquiring the machine, and so they are forced to go in for the cheap eight-inch records at the sixpenny stores. Of course, the record changer will not accept these.

There are those even poorer who cannot even afford the luxury of an eight-inch record, and have perforce to buy a home recorder and make their own. I trust that this appeal will catch the eye of one of our big manufacturers and cause a suitable contusion.

Flying Low in Scotland

STRANGE things are happening in the lonely wastes of Scotland, according to a correspondent of mine in that area. It appears that our old friend the Post Office van is actively engaged up there in the thankless task of chasing the hardy Scots to their lairs amid Killarney's lakes and fells, as the song has it, and, incidentally, attempting to separate them from their money.

The officials have been seriously obstructed in their work, however, by mysterious aeroplanes fitted with what my correspondent calls "powerful unlicensed transmitters." I feel, however, that no words of mine would be adequate to describe the strange deeds that are going on up there, and I must, therefore, fall back on my friend's own words.

"So powerful are these transmitters that as the aeroplanes fly in the vicinity of a van the frame aerial on its roof is caught up by the magnetic component of the transmitted wave, and, despite the efforts of the P.O. engineers to hold it steady, it is wrenched round until it is in alignment with the wireless transmitter on the aeroplane, and all efforts at detecting unlicensed receivers are thus set at naught. In some cases where aeroplanes have flown rather low the strength of the magnetic field has been so strong that the frame aerial has been torn off the roof of the van."

I feel that comment would not serve any useful purpose, and I will, therefore, content myself with remarking that the above extract is given exactly as it was in the

original, except, of course, that I have been compelled, for the benefit of my southern readers, to deal drastically with one or two idiomatic phrases.

Me and My Midget

I HAVE often railed against the mellow bellow which is the hallmark of certain types of American receivers, and which the more ignorant of our manufacturers strive very successfully to copy under the mistaken impression that it constitutes good quality.

Its truly devastating effects were strikingly brought home to me the other day when I dropped into a London store to listen to an important outside broadcast, the exact nature of which the Editor tells me I must not disclose.

Having elbowed my way successfully through the crowd, I found myself confronted by one of the most notorious of American bass resonators. I endured the terrible racket almost up to the "off," when, unable to stand it any longer, I hastily donned the 'phones of my vest-pocket midget and prepared to enjoy the race in comfort.

Owing to the necessity of haste in tuning I unfortunately made one or two "tweets," which were reflected in the black looks given me by the crowd. Reception was none too clear, and, thinking that this was caused by my pressing reaction too closely, I at once proceeded to mend matters.

I can only explain subsequent kaleidoscopic happenings by supposing that, owing to my cramped surroundings, my elbow must have been joggled by some ill-mannered lout in the mob, so causing me to turn the vital knob the wrong way at a critical moment in the race; at any rate, I was suddenly seized from behind and violently propelled out of the crowd, with my portable flung after me.



Me and my midget.

I was rescued from my undignified position by the departmental manager, who made it quite clear that I was no longer *persona grata* so far as he was concerned, as in the disturbance two or three members of the audience had got away with models of American midget sets.

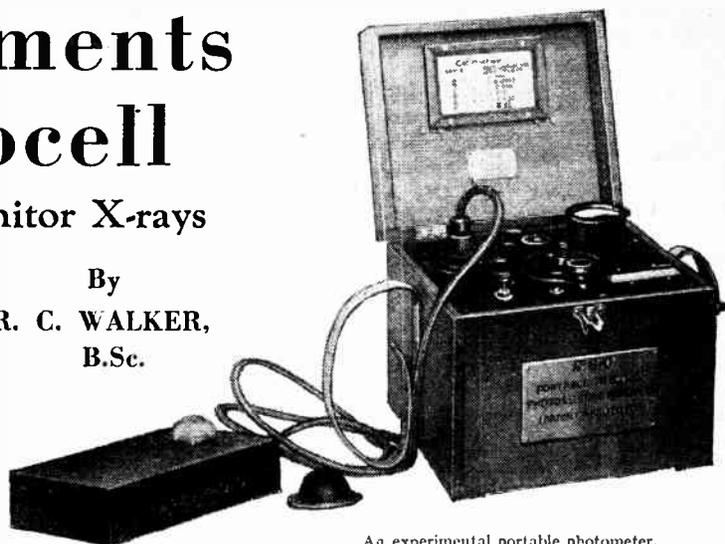
May static be their portion!

Making Measurements with the Photocell

How the Electrometer Triode can Monitor X-rays

TO achieve anything approaching accuracy in the measurement of light calls for something more elaborate than the ordinary photocell arrangement for detecting light rays. This article outlines the circuits used in colorimeters, optical density meters and similar devices, and describes the Electrometer Triode—a unique and interesting valve specially designed for the measurement of feeble currents.

By
R. C. WALKER,
B.Sc.



An experimental portable photometer.

THE use of the photocell for quantitative measurements is not as simple as mere detection of light or darkness, where it is simply required to actuate a relay to switch in or out some external mechanism with pronounced changes in light intensity. Simple circuits involving trigger action, which are so useful in such cases, can be modified in certain instances for the purpose of making rough measurements, but considerable elaboration is necessary if a high degree of accuracy is demanded, and

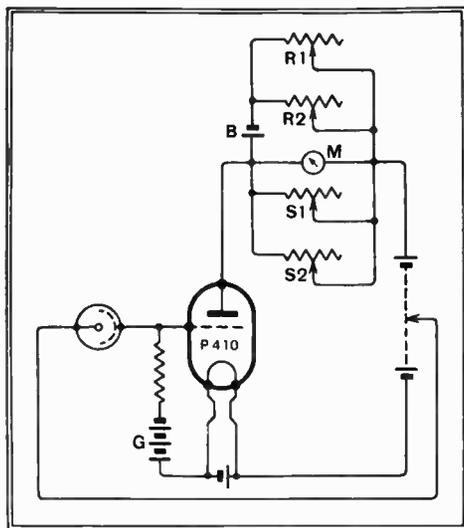


Fig. 1.—A simple photocell circuit used for colour measurements in industrial processes.

in their simplest form such circuits are often unstable. There are numerous reasons for this, and the purpose of this article will be to enumerate the methods which have been successfully used in overcoming these difficulties.

Provided that sufficient light is available, the straightforward circuit, in which the photocell is connected directly in series with a battery and galvanometer, is often the best, since the relation between light and photoelectric current is linear and a measurable deflection can be obtained with a high-grade instrument for very small currents. The obvious objection is the use of an essentially delicate indicating instrument, which, of course, limits the application of the method. If

a robust instrument is substituted the employment of some form of amplification becomes necessary.

The circuit of Fig. 1 has been applied to various forms of colorimeters and optical density meters, and while it is capable of no great accuracy it has been found sufficiently good to warrant its use in industry. The range over which the relation between light and current in the valve anode circuit is linear is comparatively small, though that range is adjustable by varying the components of the circuit. The photocell is the Osram type K.M.V.6, and has an appreciable response throughout the whole of the visible spectrum, and although it has lower sensitivity to white light than the caesium type of cell it is also free from the comparatively large dark current which is frequently found in the latter type. The valve in Fig. 1 may conveniently be of the P.410 or L.P.2 type, carefully aged and tested for low grid current and high insulation resistance. M is a Ferranti 0.1 millimeter with 200-ohm adjustable shunt S1 and 25-ohm vernier shunt S2, capable of permitting readings to be taken over a comparatively wide range. By means of the grid bias battery G the anode current should be reduced to a low value when the photocell is dark, and the milliammeter reading then reduced to zero by adjusting the resistance R1, and the vernier resistance R2 in the circuit of the auxiliary battery B. It is convenient to test the scale relation of the meter for light incident on the cell by arranging the meter to read 100 at full illumination and then interposing screens of known absorption at two or three parts of the scale. No attempt should, of course, be made to operate the circuit from supply mains.

Avoiding Insulation Leakage

It must be remembered that the current amplification is high, and, consequently, it is obvious that, unless special precautions are taken to avoid insulation leakage, small changes in valve characteristics may take place and difficulty will be experienced in repeating observations to within 5 per cent. Resistance coupling of several stages can be

used as an alternative, but this necessitates a means of interrupting the light on the photocell at a frequency suitable for amplification in order to produce A.C. pulses on the input grid.

Thoriated Tungsten Filaments

Considerable improvement on the circuit shown in Fig. 1 can be obtained by what is termed a "null deflection method," using two valves connected in a bridge circuit as illustrated in Fig. 2. This arrangement is useful in cases where the photoelectric current is small compared with the backlash of the valve. In order to avoid extraneous disturbances the entire circuit, including batteries, should be housed in an earthed metal case, and the batteries kept permanently in circuit so that the valve may settle down to a steady state. Valves with thoriated tungsten filaments of the type

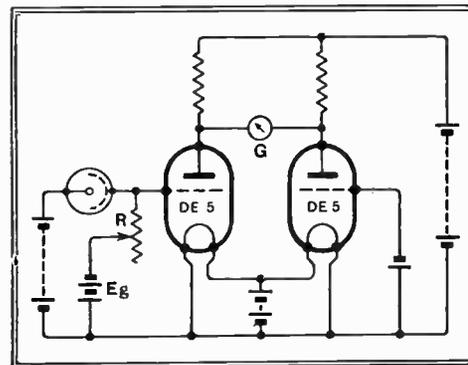


Fig. 2.—An improved arrangement in which two valves are connected in a bridge circuit.

D.E.5 are most suitable. In using this circuit it is best to employ a plain indicator G and balance its reading to zero by adjusting the grid bias Eg. A change in this grid bias Eg corresponds to a change in photoelectric current equal to

$$\frac{E_g}{R}$$

so that if the cell has a linear relation between light and photoelectric current, the adjustable resistance, which should not be greater than 10 megohms, may be calibrated to read directly. Elaborations of

Making Measurements with the Photocell—

this circuit have been used in the measurement of colour temperature and light output of electric lamps, and have been standardised for precision measurements of this kind. A portable photometer of an experimental type, involving an arrangement on the lines of that shown in Fig. 2, is illustrated at the head of the article.

It may be interesting to consider more closely the reasons for lack of uniformity in valve circuits for making direct measurements. Poor insulation and grid current are the chief factors. The contributory causes of grid current are: (1) *Positive ions from the filament, from the anode, or from the residual gas produced by electronic bombardment.* Positive ions from the filament are avoided by the use of a low-temperature filament of the oxide-coated type, and from the residual gas by a low plate voltage, i.e., less than the ionising potential of the gas. The latter condition also eliminates the possibility of positive ions from the anode. (2) *Electrons reaching the grid from the filament.* This trouble can be reduced by operating the grid at a sufficiently high negative potential. (3) *Photoelectric emission from the grid itself.* The use of a dull emitting filament and operating in complete darkness will eliminate this factor. Poor insulation may give rise to surface leakage over the internal or external surface of the glass, and the presence of "getter" on the "pinch" of the valve will provide a further contributory cause of grid current. It is clear, therefore, that grid current may be in either direction, according to the magnitude of the factors mentioned, and the uncertainty of the value of this current is a great inconvenience in the measurement of small currents.

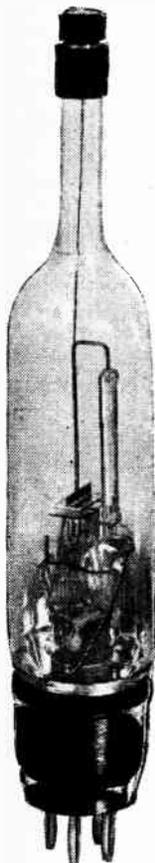


Fig. 3.—The electrometer triode, developed by the General Electric Co., Ltd., for measuring feeble currents.

In order to facilitate the measurement of feeble currents, a valve of special design has been developed, and is known as the electrometer triode. Incidentally, this valve is suitable in nearly all cases as a substitute for an electrometer, i.e., for measurement of hydrogen ion concentration, X-rays, α particles, etc., and therefore offers a wide field of application in applied physics and electromedical investigations. Fig. 3 shows the external appearance of the type made by the General Electric Co., Ltd., and Fig. 4 the electrode assembly, the arrangement

of which is unusual. The anode consists of a nickel plate mounted horizontally above the pinch, and supported by two nickel wires, one of which forms the lead-in. The filament is of the single V type and mounted horizontally above the anode. The grid is supported parallel to and above the anode by a nickel wire insulated from the pinch support wire by an elongated bead of hard glass. The valve is fitted with a standard base, the filament and anode being brought out to the pins, to which they are connected in a normal triode, while the lead from the nickel band on the pinch which forms an internal guard ring is brought out to what is usually the grid pin. A number of turns of tinned copper wire are wrapped round the wall of the valve immediately above the base, and are fixed in position with solder. One end of this coil, which forms the external guard ring, is connected to the same pin as the internal guard ring. The grid of the triode is taken out at the opposite end of the bulb, which has an extended neck and is fitted with a screw cap. The following are the characteristics of the Osram type:—

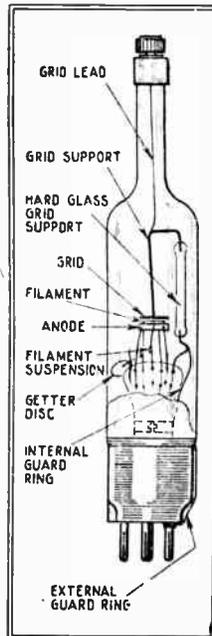


Fig. 4.—The electrode assembly in the electrometer triode.

- Filament 1.0 volts, 0.1 amp.
- Anode 4-10 volts.
- Mutual conductance .. with grid -1.5 volts and anode 2 volts = 0.04 mA./volt.
- Mutual conductance .. with grid -1.5 volts and anode 10 volts = 0.16 mA./volt.
- Insulation between grid and other electrodes 10^{15} ohms. ..
- Interelectrode capacity 1.6 $\mu\mu\text{f}$.
- Grid potential should be greater than -1.0 volt, with respect to negative end of filament.

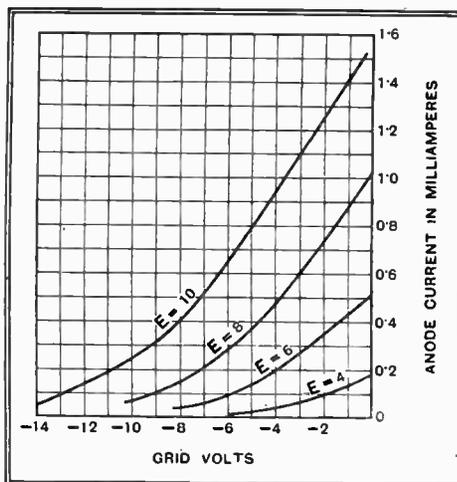


Fig. 5.—A series of characteristic curves obtained with the electrometer triode under varying conditions of anode voltage.

The surface of the bulb should be kept clean and dry, and the triode may with advantage be kept in an enclosure with a suitable dehydrating agent such as calcium chloride.

Fig. 5 shows a series of characteristic curves taken under varying conditions of anode voltage, and Fig. 6 a typical amplifier circuit. One of the most recent de-

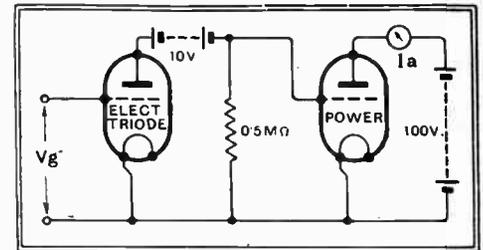


Fig. 6.—A typical amplifier circuit.

velopments in the use of this triode consists of the combination of this valve and a photocell together in a third exhausted envelope, an arrangement which will probably go a long way towards overcoming the inherent difficulties of highly accurate amplifier circuits. The idea is not entirely new, since considerable work has been done on the development of phototubes in America, these units consisting of a photocell and thermionic electrodes in one and the same evacuated bulb. The method of combining the photocell and electrometer triode appears to have great possibilities for the future in the field of quantitative measurements.

FOREIGN BROADCAST GUIDE

BERLIN-WITZLEBEN

(Germany).

Geographical position : 52° 32' N.; 13° 25' E.
 Approximate air line from London : 583 miles.
Wavelength : 419.5 m. Frequency : 715.5 kc/s.
Power : 1.5 kW.
 Standard time : Central European (coincides with B.S.T.)

Standard Daily Transmissions.

06.15 B.S.T., Physical exercises ; talk ; morning concert ;
 08.15, physical exercises ; 08.55, sacred service (Sundays), then continuous broadcast until 18.00, concert, talks ; 19.00, National transmission relayed to all German stations.

Announcers : Male.

Call : *Achtung ! Achtung ! Hier Berlin* (followed by the names of other stations taking same programme).
 When National transmission is given : *Hier Stunde der Nation*.

Official time signal : 12.55.

Interval signal : Musical-box melody (Marching Song).



Closes down with the usual German good-night greetings : *Gute nacht meine Damen und Herren*, and the *Horst-Wessel Lied* of which the first few notes are here given



followed by the German National Anthem (*Deutschland ueber Alles*), played to the melody of Haydn's Hymn (Austria).

Relays : Berlin, Stettin, Magdeburg, 283 m. (1,058 kc/s) ;
 Koenigswusterhausen, 1,635 m (183.5 kc/s) and
 Zeesen, occasionally, on 31.38 m. (9,560 kc/s) and 49.83 m. (6,020 kc/s).

Practical HINTS and TIPS

WAVE-RANGE switches are often fitted with control knobs which bear no indication of the appropriate positions for medium or long wavebands. When handling a set with which one is unfamiliar, and which is not fitted with a marked switch, it may be remembered that, nine times out of ten, an appreciable resistance to rotation is encountered when turning the switch to the medium-wave position. The reason for this is that, almost invariably, the switch blades must be forced into contact in order to impose a short-circuit across the long-wave coils, and so permit of reception being carried out on the medium band.

The Right Direction

THE average D.C. mains receiver includes a condenser in the earth lead, which is intended to prevent a "double earth," or, where the positive side of the mains is earthed, to obviate a more or less direct short-circuit. Sets operated with a D.C. eliminator also embody what amounts to the same thing; it is generally arranged that the set shall be earthed through a condenser which is actually built into the eliminator unit.

D.C. Mains Short-circuits

When this type of protective device is employed it should be remembered that an accidental reversal of the aerial and earth connections to the set may be harmful, as, in the absence of a series aerial condenser, the earth condenser will be virtually short-circuited by the aerial coil. If the mains happen to be positively earthed, as shown in Fig. 1, they will be short-circuited through earth by making the connection shown in dotted lines.

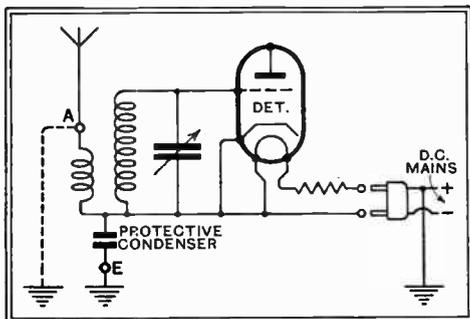
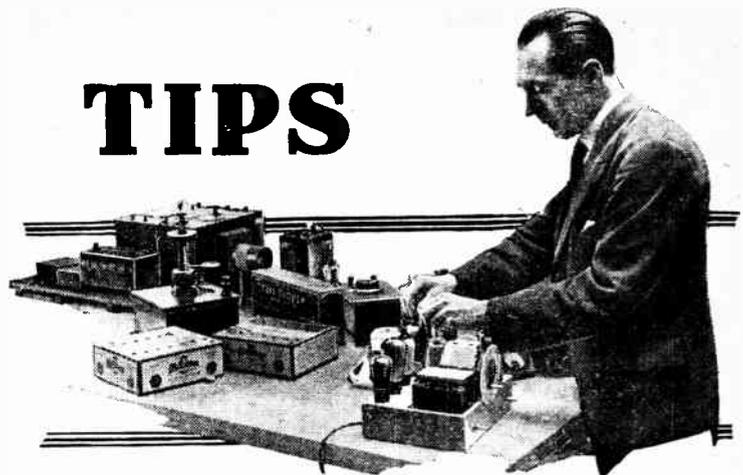


Fig. 1.—Skeleton diagram showing the need for complete isolation of the aerial-earth circuit in a D.C. set.

Even where negatively earthed mains are employed trouble may occur if it happens that the mains plug is accidentally reversed at the same time as the aerial-earth connections. Although the possibility of two reversals taking place simultaneously would appear to be remote, a correspondent, whose business activities are connected with insurance,

AIDS TO BETTER RECEPTION



tells us that such occurrences are by no means unknown.

The moral of this is that, in a D.C. set, the external aerial-earth circuit (and not only the earth connection) should be metallically isolated from any part of the wiring which is connected to the mains. This isolation is usually afforded by condensers, but a completely separate aerial winding on the input tuning coil serves the same purpose.

WHEN working on short—and particularly on ultra-short—wavelengths, it is often found that noises which are akin to those caused by atmospheric, electrical interference, or by a loose internal connection, may be produced in a way that is seldom suspected by the average user. Severe interference can be set up by loose metal objects in contact, such as tools, etc., in the immediate vicinity of the receiver.

Noisy Short-wave Sets

This trouble, in a particularly aggravated form, was recently traced to the fact that a drawer under the table on which a newly built set was being tested was used for storing tools and various pieces of metal; on removing the drawer to a distance the interference ceased entirely.

THE absolute inter-dependence of voltage, current and resistance in an electrical circuit should always be borne in mind. With a fair working knowledge of the relationship existing between these quantities, satisfactory test can be made with fewer measuring instruments than would otherwise be needed.

Volts and Amps.

The natural thing to do when testing a receiver is to attempt to measure the voltage of the various sources of supply on which its operation depends; this is because voltage is, so to speak, the primary effect which causes current to flow through a resistance. But when a voltmeter is not available it is quite possible that an ammeter or milliammeter, which measures current instead of pressure, will give equally informative results. Take the simple circuit of Fig. 2 (a), which represents a battery in series with a resistance; to ascertain the condition of the

battery, a voltmeter would generally be connected across it. Instead of relying on a voltage measurement, however, we can be fairly confident that the battery is in order if an ammeter connected in series with it and the load resistance shows a normal reading. In this simple case, it would only be possible to be misled if the resistance, for some unknown reason, had undergone a change in value.

In other words, if current is right, we have strong presumptive evidence that the voltage which gives rise to that current is also right.

All this is applicable, of course, to a wireless receiver, and the more familiar circuit of Fig. 2 (b) represents what is basically the same, from the point of view of current and voltage measurement, as the circuit of diagram (a). If either the H.T. voltage or anode current of a valve are found to be normal, it is extremely unlikely in practice that there will be anything wrong with the particular circuit in which operating conditions are being measured.

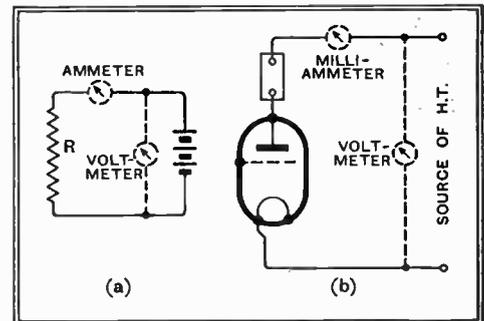


Fig. 2.—If current is normal, battery voltage must also be normal unless the resistance R in diagram (a) has undergone a change. The same reasoning may be applied to the valve circuit (b).

It is often advised that the anode currents of all the valves of a new receiver should be measured and recorded, in order that defects and failures in valve emission may be traced more easily. This is excellent advice, but it may be supplemented by saying that readings of voltage are rather more easily taken, and are in many cases almost equally informative. When a valve begins to lose emission the voltage on its anode will rise, due to the reduced voltage drop across the various resistances included in the anode circuit.

How the Superhet Works. 5.

THE FIRST DETECTOR

Choosing a Square-Law Valve

By W. T. COCKING

IN this article, which is the fifth of the series, the first detector is discussed. It is probably not generally realised how widely this detector differs in its action from the type used in a straight set. As the input consists of both the signal and oscillator voltages the principle of demodulation arises and plays an important part.

THE chief operating principles of the superheterodyne will now be apparent, and we can turn our attention to the details of design upon which so much depends. Let us return first to the frequency changer. The necessity for using a diode or power grid detector for high-quality reproduction has been so often stressed in the pages of this journal that a lack of confidence in the ability of the superheterodyne to deliver an output free from distortion is often expressed, since anode bend rectification is almost invariably used for the first detector. It is not generally realised, however, that the operating conditions of the first and second detectors are in no way parallel. So far from an anode bend first detector introducing distortion, it is probably the only rectifier which will permit distortionless frequency changing.

The ordinary detector is usually considered to have an input from the desired station, that is, a single modulated carrier, and no account is taken of interference.

In this case, a linear rectifier is essential if the modulation is not to suffer amplitude distortion. A rectification characteristic which is linear for a single applied voltage, however, is not necessarily linear when two or more voltages of different frequency are simultaneously applied to the rectifier. It has, in fact, been pointed out by F. M. Colebrook¹ that when two signals are applied to a linear detector the effective rectification characteristic is profoundly modified; the characteristic becomes non-linear. If the two signals are

of different amplitudes, the rectification characteristic for the weaker of the two departs considerably from the original straight line and the efficiency of rectification is greatly reduced. As far as the stronger signal is concerned, the characteristic is much less affected, and the efficiency and linearity are only slightly reduced.

The effect is, perhaps, best illustrated by the curves of Fig. 1, in which curve A shows the rectification characteristic, that is, the detector output plotted against the input, for a perfect rectifier operating with a single input voltage. When two different inputs are simultaneously applied, the characteristic is modified, and takes the form shown by curves B and C. If one signal be much stronger than the other, the characteristic for the strong signal is very little affected by the presence of the weaker, and is similar to curve B. The response of the detector to a weak signal in the presence of a stronger, however, is shown by curve C, and it is evident that

the characteristic has been very greatly modified. The slope of the curve is greatly reduced, indicating poor efficiency, and it is far from the ideal straight line. The effect is the well-known apparent demodulation of a weak signal by a strong.

Now the first detector of a superheterodyne never operates on a single input, the ideal case for the second detector, for there is always one voltage due to the signal and another from the local oscillator. Under normal conditions the voltage from the oscillator is stronger than that caused by the incoming signal. If we use a linear first detector, therefore, the



The first detector (B) is here shown mounted between the H.F. valve (A) and the oscillator (C).

effective rectification characteristic to the signal will be similar to curve C of Fig. 1; it will be very far from linear. The process of frequency changing, therefore, will not only be inefficient, but it will introduce distortion and may also be responsible for whistle interference.

Suppose, however, that instead of using a linear detector we employ one of the square-law type. For a single input the characteristic will then be a curve such as A of Fig. 2, and at first sight it appears to be quite unsuitable. In the presence of the local oscillator, however, it takes a different form. Just as the characteristic of a linear detector becomes non-linear in the presence of the oscillator, so the response of a square-law detector becomes linear to the weaker of two simultaneously applied voltages, as shown by curve B.

Detector Overload

In practice, valve curves do not follow a square law over the whole of their range, and, as the input voltage increases, they approach more closely to a straight line. This is shown by curve A of Fig. 2, which follows a square law only for small input voltages. As a result, the effective rectification characteristic of a practical first detector is only linear as long as the input does not exceed a certain value. For large inputs, when the valve curve is approaching linearity, the effective characteristic begins to droop and becomes non-linear. This is brought out by the bend in curve B of Fig. 2.

In designing a superheterodyne, therefore, we must always keep the first detector input below the value at which non-linearity commences. Quite a large lati-

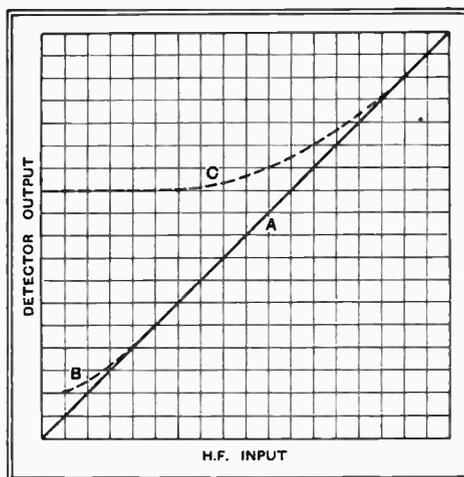


Fig. 1.—Rectification characteristics (A) for a perfect detector with a single input voltage, (B) for the same detector to the stronger of two simultaneously applied voltages, and (C) to the weaker of two applied voltages. The large change in the last case should be noted.

¹ "A Little Known Fact about Interference," *The Wireless World*, May 27th, 1931.

How the Superhet Works—

tude is permissible, and in a receiver of the type which we are discussing the second detector will normally overload long before the first detector approaches non-linearity.

The conditions which we have discussed, however, are only those of the reception of a single station with the sensitivity of the set adjusted appropriately to its strength by the volume control. Practical conditions will often be much more severe, and the first detector input will certainly not be confined to voltages from two sources only—the desired station and the local oscillator. Suppose that we are trying to receive a weak signal spaced by only 20 kc/s from a powerful local, and for the reception of this weak signal the set must be working at its maximum sensitivity. With an efficient aerial the local station may set up as much as 7 volts peak across the aerial tuning condenser (see Cr, Fig. 1, in the first article of this series) when this circuit is tuned to resonance. Even if the aerial tuned circuit be efficient, there is unlikely to be less than 1 volt peak applied to the grid of the H.F. valve when this circuit is mistuned from the local by only 20 kc/s.

Volts from the Local Station

If the intervalve tuned circuit is of similar efficiency, and the stage gain at resonance be 100 times, the amplification of the local station will be 15 times, so that there will be 15 volts peak due to the local applied to the first detector grid in addition to the minute potential from the wanted station and the oscillator voltage. During deep modulation the peak voltage from the local station may rise to nearly double this value. The oscillator voltage should always be stronger than any other potential applied to the first detector, so

overload distortion are to be avoided. This condition, of course, is absurd, for it would necessitate the use of a large output valve for the first detector. This is impracticable, but it would theoretically be necessary under the conditions laid down. These conditions, however, are unnecessarily severe, for if the wanted signal were so weak that the full amplification of the set were necessary with a good aerial it would be weaker than the generally prevailing level of background noise due to atmospherics, and so be of little use. In general, the wanted signal will be much stronger, so that the full amplification is not needed with a good aerial.

Suppose that the station has a strength such that an amplification of only 25 times is needed from the H.F. valve, or only one-quarter of the maximum value. The maximum peak input to the first detector on deep modulation from the local station will then be no more than 7½ volts, and the bias can be some 15 volts only. This is quite a possible case, but not one which is often encountered in these days of powerful transmitters, for a bias of some 6 to 10 volts is usually sufficient. These examples, however, show the need for care in selecting the operating conditions of the first detector, and it is evident that this valve should be operated with as small a signal input as possible. We have the question of background hiss to consider, however.

It is well known that a hissing sound is evident when an ordinary reacting detector is oscillating, and the same effect sometimes occurs in a superheterodyne. The output of an oscillator is not a pure H.F. current, for it carries a slight modulation due to imperfections in the circuit and valve. The amount of such modulation is very small, and very high amplification is necessary before it becomes audible. Nevertheless, it places a definite limit to the amount of useful amplification which can be used following the first detector of a superheterodyne. A slight hiss during pauses in the wanted modulation may be unobjectionable, but when it is evident at a strength comparable with that of the programme it is intolerable.

The amount of I.F. amplification which can be usefully employed is at present open to doubt. It depends largely upon the purity of the oscillator output as regards the unwanted hiss modulation, but also upon

the amount of L.F. amplification used, the volume level desired, and the degree to which high-audible frequencies are retained. In general, more than a single I.F. valve leads to excessive background, but if the L.F. amplification and the maximum volume be moderate, two I.F. stages may be permissible. This applies, of course, to stages used to provide their maximum amplification, for two low-efficiency I.F. stages may lead to no more hiss than a single high-efficiency stage.

Since the I.F. amplification is limited, the sensitivity also is limited, unless H.F. amplification be employed. It will be seen, therefore, that the H.F. stage of a modern superheterodyne is used largely to obtain freedom from background hiss while keeping the sensitivity at a high level. If it were not for background hiss it would be simpler to provide the requisite amplification at the intermediate frequency.

The use of an H.F. stage is by no means universal, however, and very many sets without it are to be found. In general, a superheterodyne without an H.F. stage is less sensitive than one employing signal-frequency amplification, and in the reception of any given station it will tend to give more background hiss. This does not necessarily mean that the hiss will be audible, however, for that depends on the signal strength and upon the aerial employed. With a good aerial it is quite possible to obtain hiss-free reception of the stronger distant stations without using an H.F. stage, but a set which does include such a stage will permit better reception of weaker stations, or as good reception of the same stations with a poorer aerial.

Reducing Input

We must now leave the first detector for the time being, but before doing so it is as well to emphasise that this valve must always be operated in a linear condition. As a result, either the valve must be of a type which will accept a large bias and still have a square-law characteristic, so that grid current does not flow when receiving a station nearby the local, or some means must be provided for reducing the input from the local station below the value which has so far been assumed to be a minimum in this article.

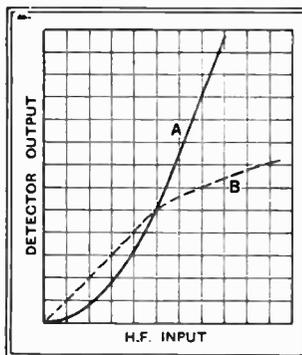
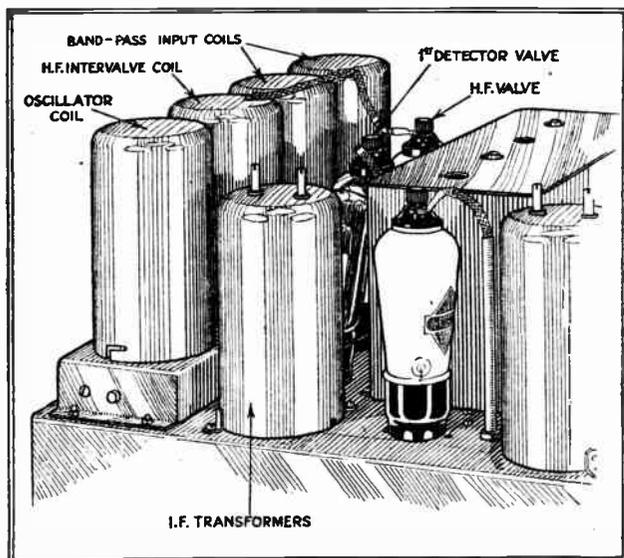


Fig. 2.—The square-law detector has a curve such as (A) for a single applied voltage, but to the weaker of two simultaneously applied voltages it takes the form of (B). Under the correct condition, the first detector is thus linear.



Typical arrangement of components associated with the signal frequency and oscillator voltages, which together must be applied to the first detector.

that for this condition the first detector should be biased to not less than 60 volts negative, if grid current and consequent damping of the tuned circuit and

Previous articles of this series have dealt with the following stages of the superheterodyne receiver:—(1) The signal frequency stage; (2) the H.F. stage and the oscillator; (3) the frequency changer and the I.F. amplifier; (4) the second detector.

The New Wavelengths

Lucerne Plan Accepted

TWENTY-SEVEN countries signed the "Plan de Lucerne" on Monday last, while seven delayed their decision, these being Holland, Sweden, Finland, Poland, Luxembourg, Lithuania, and Greece, all of which have an opportunity to sign before January 15th, 1934, when, at one minute past midnight (G.M.T.), the "Plan" comes into force. By special arrangement, we are able to print this "Plan Définitif" in full, incorporating last-minute alterations, telephoned before the delegates' signatures were dry.

The "Plan" is based on theory rather than on practice. In most cases the 9 kc/s separation continues; where the "Plan" differs from its predecessors is in the widespread sharing of wavelengths, the choice being based on questions of power, distance, and area of country covered.

The power of stations working on waves greater than 1,000 metres will be limited to 150 kW., with the exception of Moscow No. 1. For stations working between 549.4 and 272.7 metres the power will be limited to 100 kW., with the exception of Budapest, Leipzig, Prague I, Rennes PTT, Toulouse PTT, and Vienna, each of which is allowed 120 kW. Between 272.7 and 240 metres the power of 60 kW. must not be exceeded, while between 240 and 200 metres the maximum permissible is 30 kW. Stations working on international common waves (non-synchronised) are limited to 0.2 kW.; those on international common waves (synchronised) are permitted 2 kW.; those on national common waves (synchronised) may use 5 kW.

Metres	Stations
1875	Brasov, Roumania
1796.4	Radio-Paris, Syria
1714.3	Moscow I, URSS
1639.3	Madrid I, Ankara, Kaunas, Reykjavik
1570.7	Zeesen
1500	Daventry
1442.3	Minsk, URSS
1388.9	Motala
1345.3	Helsinki, Kharkov
1304.3	Warsaw
1260.5	Kalundborg, Portugal Nord (I)
1224.5	Leningrad
1185.8	Oslo*
1145	Lahti†
1107	Moscow II
845	Rostov s/ Don URSS, Finmark, Finland
824.2	Smolensk
65.3	Slovaquie, Ostersond
748.1	Moscow III, Genève**
725.5	Voronej, Boden
696	Osni†
578	Hamar, Innsbruck
569.2	Ljubljana, Tampere, N.C.W. Finland
550.7	Wilno, Bolzano
549.4	Budapest
539.6	Beromünster
531	Athlone, Palermo, N.C.W. Sicily
522.6	Mühlacker
514.6	Madona (Latvia), Tunis
506.7	Vienna
499.2	Sundsvall, Athens, Radio-Maroc
491.8	Florence, Mourmansk
483.9	Brussels I, Cairo
478.9	Trondheim, Lisbon, Skopje (S. Serbia)
470.2	Prague I
463	Lyons PTT, Petrozavodsk

Metres	Stations
455.9	Langenberg
449.1	North Regional, Jerusalem
443.1	Sottens
437.3	Beograd
431.7	Paris PTT
426.1	Stockholm
420.8	Rome
415.5	Kiev
410.4	Tallinn, Seville
405.4	Munich
400.5	Marseilles PTT, Viipuri (Finland)
395.8	Katowice
391.1	Midland Regional (later Scottish Regional)
386.6	Toulouse PTT, Stalino
382.2	Leipzig
377.4	Lwow, Coruna (Santiago, Spain)
373.1	Scottish Regional (later West Reg.) Salonica
368.6	Milan
364.5	Roumania
360.6	Moscow IV
356.7	Berlin
352.9	Bergen, N.C.W. Norway, Sofia, Valencia
349.2	Strasbourg, Simferopol
345.6	Poznan, Marakesch
342.1	London Regional
338.6	Graz
335.2	Helsinki, France (Pyréné Sud)
331.9	Hamburg, Maroc Espagnol (Dir. Aer.)
328.6	Limoges PTT, Dnepropetrovsk
325.4	Brno
321.9	Brussels
318.8	Algieria, Göteborg
315.8	Breslau
312.8	France (Paris), Gomet
309.9	Vimitsa, Grenoble
307.1	West Regional (later North Ire-

Metres	Stations
304.3	land Reg.) Haifa
301.5	Genoa, Torun or Cracow
298.8	Hilversum
296.2	Bratislava
291	North National (later Midland Reg.) Tchernigov
288.6	Madrid II
286.6	Hellsberg, Portugal du Sud
285.7	Rennes PTT, Syria, Leningrad II
285.7	Scottish National, Bournemouth (later North-East Reg.) and Krasnodar
283.3	Bari
280.9	Tiraspol
278.6	Bordeaux PTT
276.2	Zagreb, Falun
274	Venice, Barcelona
271.7	Naples, Kuldiga
269.5	Kosice, Oran
267.4	Belfast (later North Scotch Regional), Alexandria
265.3	Hürby (Dir. Aer. if over 60 kW.)
263.2	Turin
261.1	London National, West National (later Scot. Nat.), Turkey
259.1	Moravská-Ostrava
257.1	Monte Genéri
255.1	Copenhagen and Malta
254.2	Nice-Corse, PTT, Kharkov II
251	Frankfurt a. Germ., N.C.W.
249.2	Prague II, N.C.W., Czechoslovakia
247.3	Lille PTT
245.5	Trieste
243.7	Gleiwitz, Germ. N.C.W.
241.9	Yugoslavia
240.2	Luxembourg
238.5	San Sebastian, Riga, Roma II
236.8	German National Common Wave
235.1	Norw. N.C.W. and Varna (Bulgaria)
233.5	Belgium, South Greece

Metres	Stations
231.8	Linz, Salzburg
230.2	Danzig, Sombor (Yugoslavia), Swedish N.C.W.
228.7	Budapest II
225.6	North German N.C.W.
224	Pinsk (Poland), N.C.W. Poland, Montpellier PTT
222.6	I.N. Common Wave, 10 cycles exact; 13 stations, Aberdeen, Königsberg, Dublin, etc.
221.1	Norwegian N.C.W., Italian N.C.W.
219.6	Krakov or Torun
218.2	Swiss N.C.W.
216.8	Warsaw II, Albania
215.4	France (Centre), and French N.C.W.
214	Swedish N.C.W., and Bulgaria
212.6	Roumanian N.C.W. and N.C.W. of Portugal
211.3	Finnish and Yugoslav N.C.W.
209.9	International C.W., 10 cycles exact; 9 stations, Newcastle, Cork, Klagenfurt, etc.
208.6	Hungarian N.C.W., 4 stations
207.3	Spanish N.C.W. and Svalbard, Lithuania
206	French N.C.W.
204.8	German N.C.W.
203.5	British N.C.W. wave and Plymouth
202.3	URSS N.C.W.
201.1	International C.W., 50 cycles exact
200	International C.W., 50 cycles exact

N.C.W. = National Common Wave, Nationale Gleichwelle.
 *Directional Aerial.
 †Power Reduction one hour after Sun-down or Directional Aerial.
 **It does not interfere with public services.

Dissecting the New Plan

Shared Wavelengths for Many Stations

By Our Lucerne Representative

THE wavelength plan coming into operation on January 15th, 1934, will have an effective life of two years, for on January 15th, 1936, a new Conference is to be called using the new Lucerne Plan as a theoretical basis for a more practical scheme.

The Plan covers the "European zone," which comprises the whole of Europe as we know it from our geography lessons, plus Russia to the 40th meridian east of Greenwich, plus the following countries situated on the shores of the Mediterranean belonging geographically to Asia, but whose radio services are susceptible to interference of European stations. These countries are:—Turkey, Tunisia, Syria, Egypt, Spanish Morocco, Morocco, Palestine, and the Italian colonies, Tripoli and Cyrenaïque.

And what does the "Plan de Lucerne" mean to the ordinary man? Primarily, he may look upon it as a plan for the local listener. It is primarily designed to enable him to pick up his national transmitters; if, having achieved that, he spares time to listen to foreigners, he may find certain clashes which did not trouble him before.

The Plan provides for eleven long-wave channels, divided among no fewer than seventeen stations, four of which have to work on one wavelength and six of which share a wavelength with another transmitter. There are also four channels which are shared with certain non-public services. Where broadcasting shares a wavelength with ship-

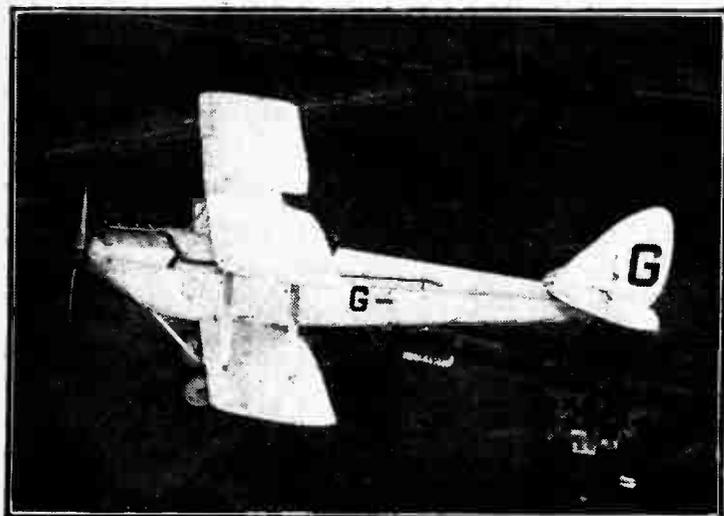
ping the latter is the prime owner, and can have any interfering broadcasting station removed. There are six such channels used by ten stations, all of which are Russian.

In the medium band there are 173 stations using 105 channels, plus twenty-two stations on four international common waves. Above 300 metres there are fifty-three channels used by eighty-six countries; below 300 metres there are eighty-seven countries (i.e., stations) on fifty-three channels. If one adds up the actual exclusive waves one finds seven long waves exclusively devoted to broadcasting, two used for shipping and four for non-public services. There are thirty-seven medium exclusive waves, in addition to which are the fifteen exclusive waves listed as national common waves.

The following countries have exclusive waves:—Russia, four long waves, four medium waves; France, four medium waves; Germany, one long wave, eleven medium waves; Italy, four medium waves; Great Britain, one long wave, two medium waves, and one exclusive national common wave.

At the request of one or more Governments a new European Wavelength Conference may be called if at least a third of the signatories to the "Plan de Lucerne" are agreeable.

Any proposed changes in wavelength or power have to be notified to all administrations concerned. If no protest is lodged within six weeks from the date of reception of the notification the change may be made.



5-METRE 'PLANE TESTS. A Puss-Moth machine of the type to be used for G6SM's experiment on Sunday. The aerial will be slung in the manner shown.

The Five-Metre 'Plane Tests



G6SM's National Effort on Sunday Next

AT THE RECEIVING END. A good vantage point for reception over optical ranges. The set in use is *The Wireless World* Ultra Short-wave Two described in our last issue.

G6SM and the 'plane's registration letters, G-ACCY, will be radiated in Morse.

On the return journey which, weather permitting, will include the Hull area, the approximate localities and times should be as follows:—

Liverpool ..	3.0 p.m.
Manchester ..	3.30 p.m.
Leeds ..	3.50 p.m.
Hull ..	4.30 p.m.
Lincoln ..	4.55 p.m.
Stamford ..	5.30 p.m.
Bedford ..	6.0 p.m.
London ..	6.30 p.m.

BY the time these lines are read the stage should be set for the first British tests in ultra-short-wave transmission from a 'plane. It is hoped that many readers will be able to get "on the air" with 5-metres receivers by 10 a.m. on Sunday next, when Mr. S. G. Morgan (G6SM) will begin his flight from Croydon and proceed to Liverpool, transmitting speech throughout the journey.

The 'plane will cruise at about 75 miles per hour so that the approximate localities and times on the outward journey will be as follows:—

London ..	10.0 a.m.
Aylesbury ..	10.30 a.m.
Daventry ..	11.0 a.m.
Birmingham ..	11.20 a.m.
Stafford ..	11.40 a.m.
Stoke ..	11.50 a.m.
Liverpool ..	12.15 p.m.

A special transmission giving final details will be given by 5BY (Croydon) at 7.45 a.m. on 40 metres and at 8.0 a.m. on 80 metres.

Although listeners within clear visual range of the machine may have the best opportunity to pick up the signals, powerful reception should be possible more than a hundred miles away, and no one in the British Isles can confidently declare that he is outside the orbit; in fact, several Continental amateurs will also be participating.

G6SM, who will be operating the 'plane set, will transmit on exactly 5 metres (60 megacycles). Attempts will be made to maintain constant touch with two stations on the ground, G5BY and G6VH, throughout the flight, but as many other amateur stations as possible will be worked *en route*. Radiotelephony will be mainly used, but at intervals the call sign

Portugal's Broadcast Debut

THE new 20 KW. broadcasting station at Lisbon is to open on October 5th, transmitting on about 291 metres. If necessary, the power can be raised to 100 kW.

Radio Smuggling

AFTER radio pirates — radio smugglers. A woman in Co. Donegal found listening with a set which had been brought into the Irish Free State without payment of Customs duty has been fined £100.

Programme Canning on Film

INSTEAD of using the "Blattnerphone," the Australian Broadcasting Commission is now "canning" complete programmes by sound tracks on film. It is claimed (says a Sydney correspondent) that a complete opera or national event can now be recorded and preserved by this method.

Car Radio

THE design of automobile wireless sets cannot yet be said to have reached finality. It is interesting to note in this connection that Captain Duncan Sinclair, the well-known Communications Consultant and part organiser of the A.A. Broadcasting Service, now advises manufacturers and others on the various problems in car radio. His office is Windsor House, Victoria Street, London, S.W.1.

Radio's First Representative at B.I.F.

MR. A. E. WATKINS, of Messrs. Watmel Wireless Co., Ltd., has been elected first representative of the radio section on the Exhibitors' Advisory Committee of the British Industries Fair. His election is the result of the increase in the number of radio exhibitors from nineteen to forty-four, as a minimum of twenty-five exhibitors entitles the section to one representative.

Germany's Standard Receiver

AS stated in our issue of May 2nd, the Hitler Government recently ordered the German radio trade to produce cheap standard receivers which would put the programmes of the Ministry of Propaganda within the reach of the masses. We now learn that a standard design has been triumphantly vindicated by Professor Leithäuser of the Heinrich Hertz Institute in a grand listening tour through Germany. The receiver is a two-valve all-mains model (pentode output) with loud speaker, and the retail price complete (including valves) will be exactly 75 marks or £3 10s. at par. An official communiqué states that it has been necessary for all concerned to make large sacrifices to achieve this extremely low price.

A battery set is to be constructed on current-saving lines to a design of Herr Nestel, of the R.R.G. Laboratories.

This standard receiver is to be on sale in time for the autumn radio show. Twenty-eight German firms, forming a new association, will all manufacture it.

News of the Week

Current Events in Brief Review

Roumanian Radio Ban

ROUMANIA, it seems, is the only country in Europe where the importation of wireless receivers is completely forbidden. The rule is not relaxed in the case of travellers passing through the country.

Short Waves from Portugal

WE learn that the Portuguese Government is contemplating the erection of a 10 kW. short-wave station to cover the Portuguese colonies in Africa, India and Timor.

A "Record" Record

THE King has consented to accept a copy of the special H.M.V. record of His Majesty's speech at the opening of the World Economic Conference. The disc—a double-sided roin.—is now available to the public and has a special royal label of blue, gold and scarlet bearing the royal arms.

The Royal speech was recorded at the H.M.V. studios at St. John's Wood by private wire from the Conference Hall. The first copies were pressed in the record time of three hours in order that the speech could be broadcast by the B.B.C. during the same evening.

Concert for DX-ers

WE learn that a concert, dedicated to the Anglo-American Radio and Television Society and the International DX-ers Alliance, will be broadcast by Radio Normandy between 1 and 1.30 a.m. on July 2nd next.

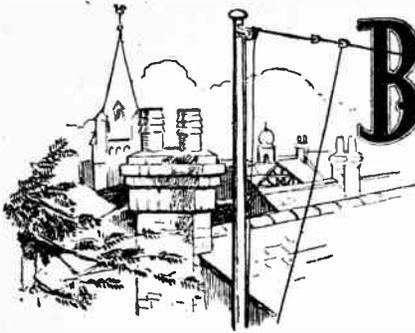
Reports of reception should be addressed to 11, Hawthorn Drive, Willowbank, Uxbridge, England.

The Pentagrid Converter

IN view of the considerable attention aroused by the description of the Pentagrid Converter in our issue of May 12th last, readers may be interested to know that additional information regarding this American frequency changer will appear in the July issue of our sister journal, *The Wireless Engineer*.

Palm Goes to Italy

ITALIAN short-wave stations are the most popular in New Zealand, according to Mr. S. Robson, President of the New Zealand DX Club. Practically without exception, he reports, the Italians reach a high standard of quality and reliability. A Wellington correspondent declares that "Daventry is practically a wash-out."



Broadcast Brevities



By Our Special
Correspondent

Pleasant Sunday Evenings

THE majority of long-distance listeners are averse to the idea of B.B.C. programmes on Sunday evenings between 6.30 and 8 o'clock. Even with the most selective of receivers there is no gainsaying the fact that the local stations do "spread" themselves to a greater or lesser extent, and it has hitherto been during this sacrosanct period that the connoisseur has been able to seize upon those elusive and distant foreigners which are usually eclipsed when the B.B.C. is transmitting.

I am sorry to note a greater willingness at Broadcasting House to consider the question of earlier Sunday evening programmes.

Economy Steps In

A scheme is actually being discussed for continuous Sunday broadcasting from 12.30 p.m. to 10.30 p.m. If it should go through, however, its supporters will have scored a very doubtful victory, for it is quite probable that the extra two hours of broadcasting will be regarded as a suitable excuse for bringing down the economy axe.

No Alternative

"If," say the powers that be, "the public wants continuous broadcasting on the Sabbath, they must pay for it. We will cut down the number of alternative programmes on that day."

In fact, the first three or four hours of Sunday transmissions would consist of one programme only, the alternatives not beginning until later in the afternoon.

No Slow Foxtrots

The composition of these early Sunday evening programmes will not offer any great problem to the B.B.C. I am told that there will be no departure from the ordinary type of Sunday programmes, so woe betide the prophet who suggests that Henry Hall would bring his boys along to play slow foxtrots.

Big Ben

IT seems that there has been a scare over the Big Ben broadcasts. Observant passers-by cannot have failed to notice that the Houses of Parliament are at present submerged under scaffolding; already several anxious enquirers have asked the B.B.C. whether the clock itself is likely to be silenced.

Business as Usual

Apparently such fears are baseless, and Big Ben will continue to be the most regular and the most popular item in broadcast transmission.

I say "most popular" advisedly, for letter after letter coming from the Dominions and Colonies stresses the keen delight with which Big Ben is picked up in the far corners of the Empire.

Canadian Broadcasting Secrets

SOME big surprises may be expected when Mr. Gladstone Murray discloses the contents of the voluminous report he is now preparing on his recent mission to Canada.

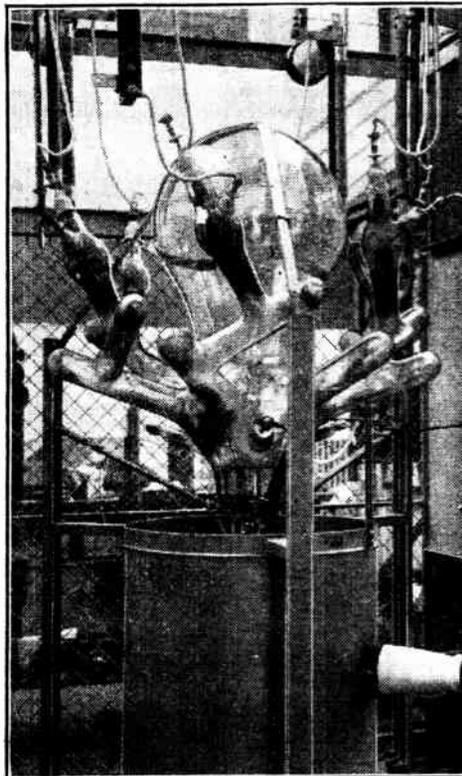
The B.B.C. Publicity Chief, it will be remembered, went over to Canada to help in organising broadcasting in the Dominion on B.B.C. lines, but I believe that before this task could be proceeded with an immense amount of spade work was necessary in order that our cousins in Canada could be made to orientate their views and lose sight of American principles in broadcasting.

Waves Over the Frontier

American influence in the Canadian ether is very strong, which is not surprising considering that no tariff wall can impede the passage of ether waves from those great American networks babbling their sponsored programmes all day long. Mr. Murray's report will make interesting reading—if it is ever published!

A Midget Organ

IF you can tune in Scottish Regional it will be worth listening to the Children's Hour on July 3rd, when a recital will be given on a pipe organ 12in. high, 9in. broad and 4½in. deep. This is the newly installed organ of Titania's Palace, which is being exhibited in Glasgow. This famous palace has been on view in many cities and towns on behalf of well-known charities. The organ is said to be a faithful reproduction of a modern pipe organ, complete in every detail.



ANOTHER NEW VALVE. This striking object is the high tension mercury arc rectifier at the new 100-kw. broadcasting station at Bisamberg, near Vienna.

New Blood in Vaudeville

ONE morning in July next certain broadcast artistes may wake to find themselves famous. A really excellent plan is going forward for a vaudeville hour given by entirely untried performers; each artiste will be making his or her first appearance in a broadcast studio.

The programme is bound to prove interesting, for nearly everybody, I suppose, can attract attention on a first hearing. The programme will offer a real opportunity to some of the younger generation to break the barrier which, unhappily, does seem to hedge the broadcast microphone.

Audition Rules Relaxed?

Naturally each performer will have given a reasonably satisfactory audition, but I believe that to some degree the usual rules will be relaxed, on the principle that not even an audition judge, referee or umpire is infallible.

Jack Payne To-morrow

NO self-respecting dance band "fan" will absent himself from the loud speaker to-morrow evening (Saturday) when Jack Payne and his Band return to the B.B.C. microphone for an hour's broadcast.

Lovers of ballet music will also be catered for, as later in the evening music will be given from the repertoire of the Camargo Ballet Society with the B.B.C. Theatre Orchestra, conducted by Constant Lambert. Two works by the conductor will be included, "Elegia Blues" and two scenes from the "Adam and Eve" ballet.

Why Not An Ultra Short-wave Broadcast?

THE ultra short waves seem to have leaped into greater prominence than ever in the last week or two, and it looks as if, this time at any rate, British amateurs are teaching their Yankee cousins a few tricks. The transmission on these waves from an aeroplane on Sunday next is quite an innovation.

It would be a good thing if the B.B.C. could give us a broadcast of a conversation picked up from a 'plane transmitting on the "ultra shorts."

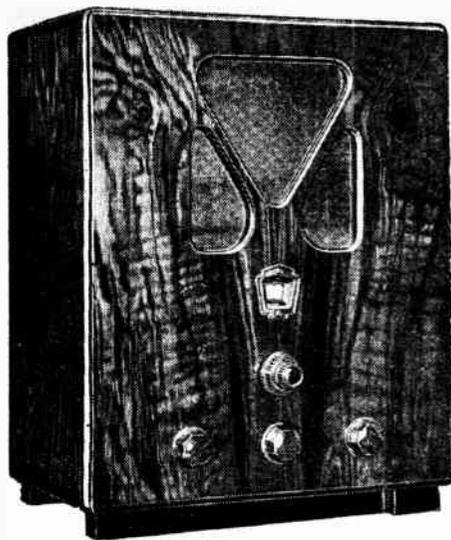
No Technical Obstacle

Very little is being done with the ultra short-wave plant on the roof of Broadcasting House, yet more and more it is coming to be realised that the very high frequencies have practical possibilities, particularly as a means of guaranteeing good quality of reproduction.

There should be no technical obstacle to picking up ultra short waves from the air in the same manner that the B.B.C. engineers receive the short-wave signals from the launch "Magician" on the Thames during the Boat Race.

Sunbeam U35

A Mains Receiver for A.C. or D.C. Supply



WITH electricity undertakings in all parts of the country changing over from D.C. to alternating current, the lot of the prospective purchaser of a mains receiver is one of difficulty and uncertainty. In many cases it is known that a change-over will take place eventually, but the actual date is either some considerable time ahead or cannot be ascertained with certainty.

In the Sunbeam U35 receiver we have a receiver which will function equally well on either type of supply. No change in the circuit is necessary other than the usual adjustment to the mains voltage, and if adjacent A.C. and D.C. power points were available at approximately the same supply voltage the set could be plugged into either with impunity. This was actually done in the course of our tests, and on both types of supply the performance was identical as far as it was possible to judge by ear. The set can, therefore, be purchased for use on D.C. mains with the certain knowledge that there will be no sacrifice of performance if the supply is subsequently changed to A.C. and that there will be no additional outlay.

The indirectly heated Tungstram valves are run in series with the mains through a tapped resistance which is adjusted to the mains voltage by a plug link incorporating a fuse. Actually, the heaters are rated at

0.18 amp. at 20 volts, so that the total consumption of the set, including H.T., is about 50 watts at 240 volts. The H.T. current is rectified direct from the A.C. mains through a Westinghouse half-wave metal rectifier. On D.C. mains the rectifier offers a low resistance in the direction of the flow of the current, and does not drop more than a few volts. A single stage filter is used to smooth the H.T. current, and is quite effective, the mains hum being less than that of many receivers using full-wave rectifiers. The design could be improved by the addition of by-pass condensers to reduce interference such as switch clicks. It is only fair to add, however, that the mains feeders on which the set was tested were more than usually troublesome from this point of view.

As might be expected, having regard to the attractively low price, the radio circuit is simple but efficient. A single tuned circuit precedes the screen grid H.F. valve, which is coupled to the grid detector by a simple tuned anode circuit with reaction. The pentode output valve feeds a permanent magnet Rola loud speaker, the primary of whose output transformer is used as a choke feed for external loud speakers.

A two-gang condenser is used for tuning, and a concentric trimming control is provided to ensure accurate alignment at any part of the tuning scale. When working near the oscillating point the trimming and reaction controls are to a certain extent interdependent, but the tuning process is quite simple if the trimmer is always properly ad-

justed before increasing the reaction feed.

A short piece of wire inside the cabinet serves as an internal aerial, and with it reliable reception of the B.B.C. regional stations is possible inside a radius of ten or fifteen miles. With a good outdoor aerial several Continental stations were received on medium waves in daylight, but it would be necessary to wait until after sunset before they could be regarded as of sufficient strength for the proper enjoyment of the programmes. After dark a choice of at least fifteen stations should be available even under poor reception conditions.

For a straight three-valve receiver without band-pass tuning the medium wave selectivity is very much better than was expected.

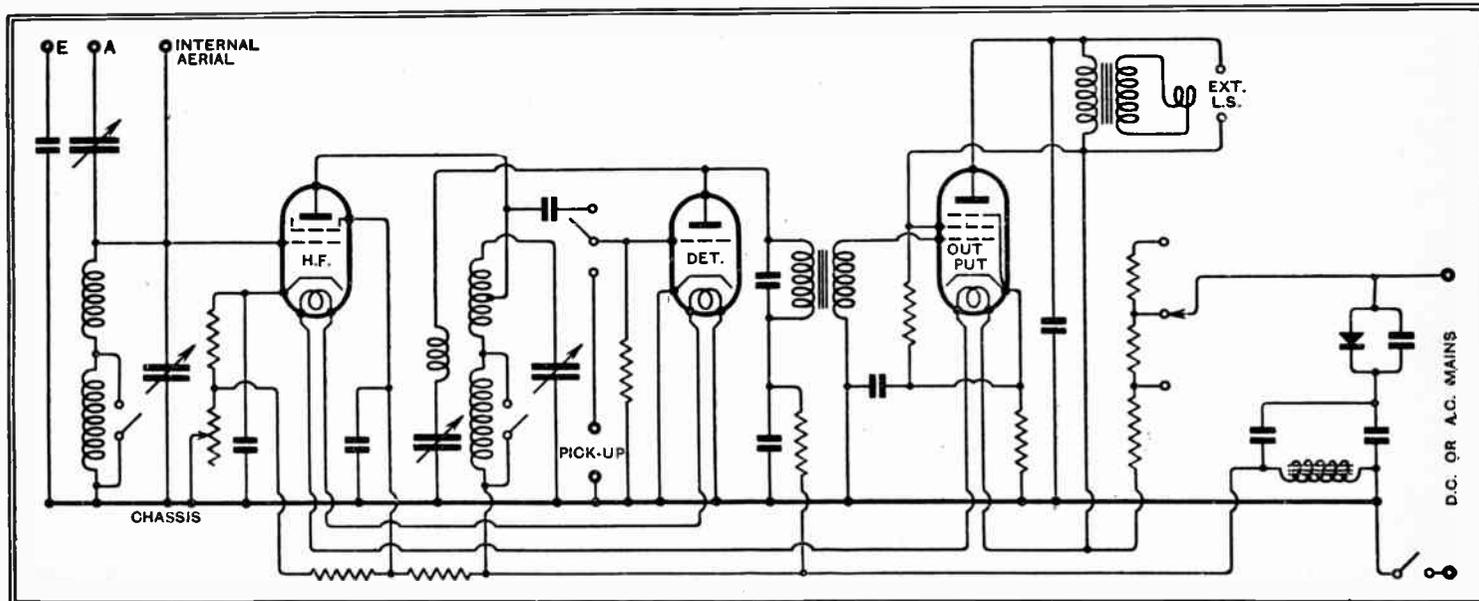
At a distance of fifteen miles from Brookmans Park, with the set at maximum sensitivity, the National transmitter spread from 240 to 285 metres and the Regional from 320 to 395 metres. On long waves Radio Paris and Daventry are easily separated, but it is difficult to extract Zeesen from between them without a slight background from both stations.

Ample volume—estimated at about 750 milliwatts—is available without overloading, and the quality is clear and well balanced. Reproduction of speech is particularly good.

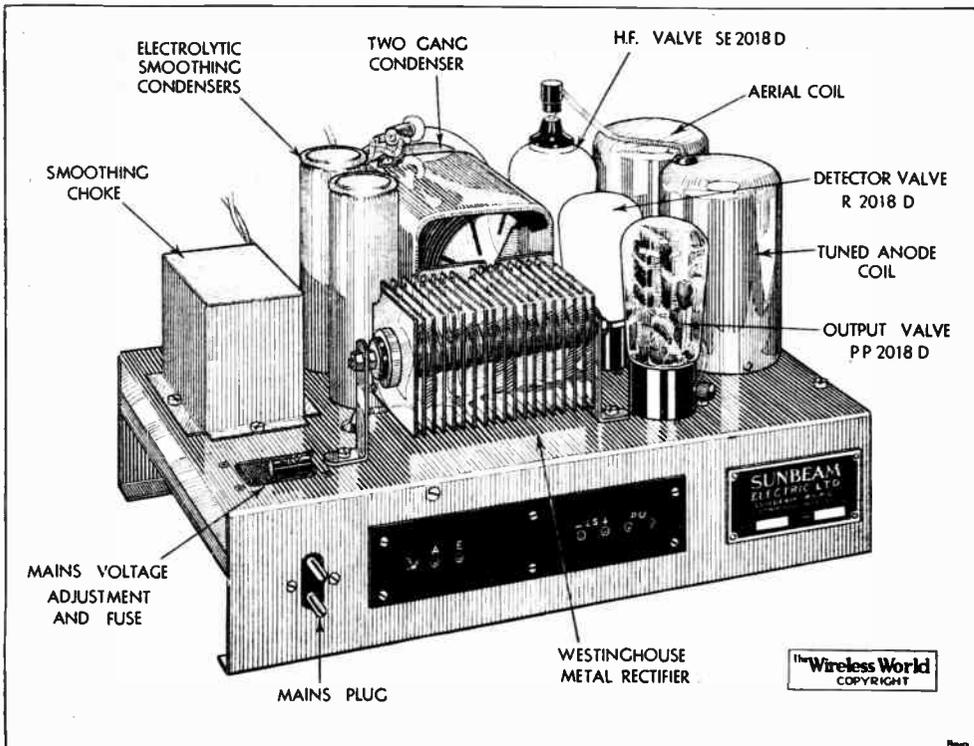
The cabinet is rigidly constructed of solid wood and is well finished. Ventilation holes are cut in the base, and although the edge of the chassis near the filament resistance tends to get rather hot, an extended run proved

FEATURES

Type.—Straight three-valve with universal power unit for A.C. or D.C. mains. Moving-coil loud speaker. Internal or external aerial. Provision for gramophone pick-up. **Circuit.**—Screen-grid H.F. with tuned anode coupling; grid detector with reaction; pentode output valve. Westinghouse half-wave rectifier. **Controls.**—(1) Illuminated tuning dial calibrated in wavelengths. Two-gang condenser with trimmer. (2) Reaction. (3) Volume and on-off switch. (4) Wave-range. **Price.**—9 gns. **Makers.**—Sunbeam Electric Ltd., Sunbeam Road, North Acton, London, N.W.10.



Simplicity is the keynote of the Sunbeam U35 circuit. The filament resistance is adjustable for different mains voltages, and the half-wave metal rectifier offers negligible resistance when the set is used on a D.C. supply.



Sunbeam U35 receiver chassis. The filament resistance, which is mounted under the left-hand edge of the base plate, is adjusted by a two-pin plug incorporating a fuse.

that the equilibrium temperature is not unduly high.

For the man whose mains supply is likely to be changed in the near future the Sunbeam U35 is an adequate and inexpensive solution of the problem.

triode output valve will serve for matching loud speakers of 14-16 ohms, 5-8 ohms, and 1.5-2.5 ohms impedance respectively. The curves obtained with all three ratios were substantially the same. In the case of the AB.OP.2 model, the ratios are 1 to 1, 1 to 1.5, and 1 to 2.7, and the price in each case is 21s.

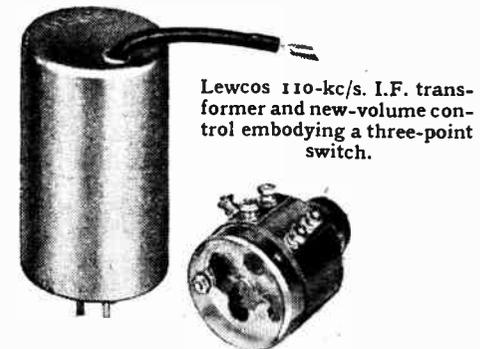
The only criticism we have to make is that since the component is intended to carry large amounts of D.C., a small air gap in the core would enable the primary inductance to be maintained at a more uniform level throughout.

LEWCOS I.F. TRANSFORMERS AND NEW VOLUME CONTROL

LEWCOS superheterodyne I.F. transformers consist of two separate windings loosely coupled and spaced to give a band-pass characteristic. Each coil is tuned to a frequency of 110 kc/s by a fixed condenser of a type which permits very accurate adjustment during the testing process. They are enclosed in copper screening boxes to the base of which is fixed a four-pin valve-type plug so that it can be mounted in an ordinary valve holder. The copper screen is joined to the low potential end of the secondary winding.

Several specimens were tested and in every case the results obtained were identical.

Response curves plotted with two samples taken at random show that the peak separation is approximately five kc/s and that a



most satisfactory degree of accuracy in matching is achieved. The curves are not materially altered by using valves of different make, a fact accounted for by the relatively large capacity of the tuning condensers, and small changes in the external capacities have negligible effect on the tuning.

These transformers are available with or without a pigtail lead for connection to the anode terminal of a screen-grid valve, but the price is the same on either type, namely, 10s. 6d.

A recent addition to the Lewcos range of components is a combined volume control and three-point switch, the component having been developed for use in connection with Q.P.P. and Class "B" amplifiers. The three-point switch can be connected so as to interrupt the grid bias battery circuit in addition to the L.T. supply when in the "off" position. It is available in all the usual values up to 50,000 ohms at the price of 6s. 6d., but resistance values up to 250,000 ohms are made, the prices increasing progressively with the higher values. All resistance elements are wire-wound and the component is perfectly silent in operation.

The makers are the London Electric Wire Co. and Smith's, Ltd., Church Road, Leyton, London, E.10.

LABORATORY TESTS

A Review of Manufacturers' New Products

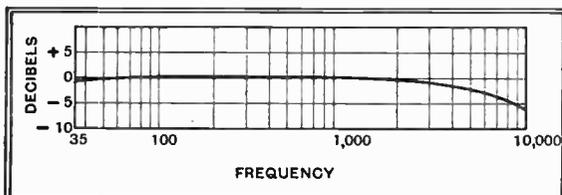
BRYCE OUTPUT TRANSFORMERS

A RANGE of output transformers designed for use with large power valves but equally applicable to any type of output valve used either singly or in push-pull has been introduced by W. Andrew Bryce and Co., Woodfield Works, Bury, Lancs. Each model provides three difference ratios, the AB.OP.1 serving for low-resistance loud speakers and the model AB.OP.2 for those of high resistance. Both models are provided with a centre-tapped primary winding and a core of generous size is used, thereby permitting quite large amounts of D.C. to be handled.

The core is not gapped, and as a consequence the effective inductance changes con-

D.C. in mA.	Inductance in Henrys.	D.C. in mA.	Inductance in Henrys.
0	114	60	7.5
10	39	70	6.2
20	25	80	5.8
30	18	90	5.2
40	13	100	5
50	9.5	—	—

the 1:15 step-down terminals enabled an excellent overall characteristic to be

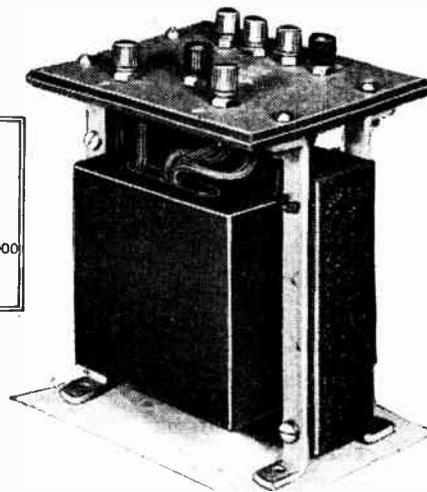


Bryce three-ratio output transformer model AB.OP.1, also overall characteristic curve taken with 20 mA. of D.C. flowing through the primary.

siderably with D.C. The accompanying table gives the measured inductance of the primary under various working conditions.

The ohmic resistance of the primary winding is 315 ohms.

Tests made with the AB.OP.1 model, an output valve of 3,000 ohms optimum load and a non-inductive 14-ohm resistance across



obtained, the curve being sensibly flat up to 3,000 c/s and only 3 decibels down at 6,000 c/s. The ratios provided are 1 to 15, 1 to 25, and 1 to 47, which, with an ordinary



KINGS OF THE AIR

"MAINS VOLUME" from BATTERY SETS

WITH

COSSOR CLASS "B" VALVES

By adapting your present Battery Set to use a Cossor Class "B" Valve you can obtain volume at least equal to that of the average Mains Receiver without extravagance in High Tension Battery Consumption.

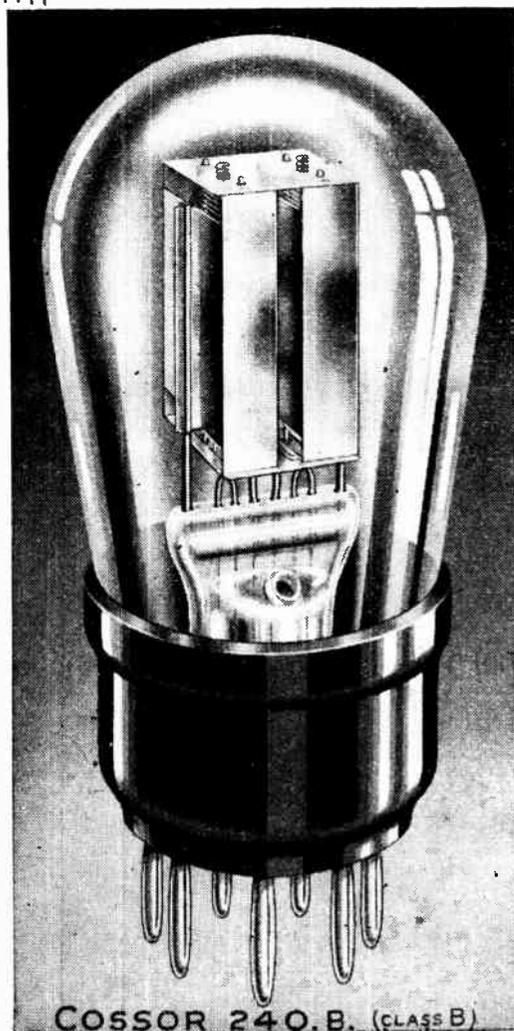
TWO TYPES:

COSSOR 240 B

Filament volts 2.0; Filament amps 0.4; Anode volts 150 max.; Max. Anode Current Swing 50 mA.; Max. Peak Applied Signal (Grid to Grid) 40 volts; Static Anode Current at $V_a = 100$, $V_g = 0$ (each half) 1.5 mA. Price **14/-**

COSSOR 220 B

Filament volts 2.0; Filament amp. 2.0; Normal Anode volts 120; Max. Anode Current Swing 35 mA.; Max. Peak Applied Signal (Grid to Grid) 40 volts; Static Anode Current at $V_a = 100$, $V_g = 0$ (each half) 1.25 mA. Price **14/-**



COSSOR 240 B. (CLASS B)

To A. C. COSSOR LTD.,
Melody Dept., Highbury Grove, London, N.5.

Please send me, free of charge, a copy of Folder No. L93, which tells me how to use Class "B" Amplification.

Name

Address

W.W. 23/6/33

Send for a copy of Folder L93 which tells you all about Class "B" Amplification—what it is—how it works and how to use it. Please fill in the coupon.

A. C. Cossor Ltd., Highbury Grove, London, N.5. Depots at Birmingham, Bristol, Glasgow, Leeds, Liverpool, Manchester, Newcastle, Sheffield, Belfast, Cardiff & Dublin.  5020

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Each paragraph is charged separately and name and address must be counted.

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ADVERTISEMENTS for these columns are accepted up to **FIRST POST ON MONDAY MORNING** (previous to date of issue) at the Head Offices of "The Wireless World," Dorset House, Stamford Street, London, S.E.1. or on **SATURDAY MORNING** at the Branch Offices, 19, Hertford Street, Coventry; Guildhall Buildings, Navigation Street, Birmingham, 2; 260, Deansgate, Manchester, 3; 28a, Renfield Street, Glasgow, C.2.

Advertisements that arrive too late for a particular issue will automatically be inserted in the following issue unless accompanied by instructions to the contrary. All advertisements in this section must be strictly prepaid.

The proprietors retain the right to refuse or withdraw advertisements at their discretion.

Postal Orders and Cheques sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.**, and crossed **& Co.** Notes being untraceable if lost in transit should not be sent as remittances.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

RECEIVERS FOR SALE.

MILDMAY RADIO EXCHANGE

OFFERS the Following, brand new, in sealed boxes:—

CLIMAX Table Type Radiograms, complete with Cosor valves; HOLA D.C. speakers, Collaro A.C. motors, with automatic stop and Harlie pick-ups, at the nett price of £8/10, listed at £23/2; limited number only; part exchange arranged.

PHONE: Clissold 5001. 24, Mildmay Grove, London, N.1. [2919]

BETTER Part Exchange at Appleby's, 109, Edgware Rd., Hyde Park, London, W. [2650]

PHILIPS 3-valve D.C. Receiver, complete, with loud speaker, perfect order; £5.—Bex, 20, Victoria Gardens, W.11. [2848]

H.M.V. 532 10-valve Superhet Radiogram, A.C.; cost £80 a few weeks ago; no reasonable offer refused.—BM/LCR4, London. [2925]

NEW Atwater Kent 7-valve A.V.C. Model 137, £16, with set spare valves; also several fine cabinets.—Gardiner, 45, Conduit St. W.1. [2935]

SHORT Wave Superhet, McMichael Colonial Superhet, with valves, batteries, and loud-speaker; £6/10.—Hill, 240, Brixton Hill, S.W.2. [2920]

MORE Part Exchange Receiver Bargains for Disposal; state approximate requirements for quotation.—Coultas, Wireless Engineers, Horley. [2613]

8-VALVE "Fady" set, as new, complete with A.C. pack, no valves; bargain, £4 the lot.—Lipton, 614, Old Ford Rd., London, E.3. Advance 3345. [2900]

CLIMAX All-electric 200-250 A.C. Band Pass Three, in walnut cabinet, complete with valves and moving coil speaker; listed £16/16, unopened, £8/8, c.o.d., carriage paid.

OSTER-GANZ Combined A.C./D.C. All-electric Set, 3 valves and Magnavox moving coil speaker, in walnut cabinet; listed £11/11, our price £4/19/6, c.o.d., carriage paid.—Kay, 167, City Rd., Finsbury, E.C.1. [2835]

EDDYSTONE Kilodyne 4, complete, batteries, valves, coils, Blue Spot speaker, range 10-350 metres; £4; or exchange with ash for Baird television.—Bull, 68, Queen's Rd., Peckham, New Cross 4301. [2899]

FERROCART (3) (A.C. Edition), Radio Gram chassis, A.C. 200-240, incorporating all switching and volume control, for gramophone, 5 watt output (P.X.25), complete with valves; cost of components alone £22, all at £1.—Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [2932]

SCOTT (American) Superheterodyne, 15 to 550 metres, 12 valves, including rectifier, 110-120 volts or 200-250 volts A.C., chromium plated chassis and power pack, Scott dynamic speaker, laboratory built and tested, 5 years' makers' guarantee, purchased November, 1931, cost over £55, no cabinet; offers.—Box 7263, c/o The Wireless World. [2913]

CHARGERS AND ELIMINATORS.

180 Accumulator Chargers, ½ amp., 2-6v., in ventilated metal case with mains flex (Westinghouse rectifiers); 7 days' trial; 10/8.—Arden Agency, Wollaston, Wellingborough [2757]

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TWO UNIT PORTABLE KIT "A"

Author's Kit of FIRST SPECIFIED Components Less Panel, Baseboard, Valves, Speaker, Batteries and Cabinet. **£4-16-3** or 12 monthly payments of 8/10.

ESSENTIAL ACCESSORIES

1 OLDHAM 2 cell, unspillable L.T. Accumulator, type P.Z.V.3.	13 6
1 PERTRIX 130 volt H.T. battery, type No. 312	16 6
1 SIEMENS 4½ volt G. bias battery, type G.1.	1 0
1 BLUE SPOT 29 P.M. "Class B" Loudspeaker	21 12 6
4 VALVES as specified	22 4 6

TWO UNIT PORTABLE CABINET to specification
£1 - 15 - 0

KIT-BITS Selected C.O.D. items for Two Unit Portable. You pay the postman. We pay post charges on orders over 10/-.

1 UTILITY 2 gang .0005 mfd. Condenser with air-dielectric trimmer type W.312	12 0
1 Set of 2 VARLEY COILS (Aerial and H.F. transformer) "Niacor"	21 1 0
1 ORMOND L.F. Transformer 31.1 type No. 531	7 8
1 WEARIE L.F. "Class B" Senior type	13 6

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OUR PRICE £7-7-0
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1 Peto-Scott "Plymax" baseboard 10" x 14" ready drilled with buttons and brass strips, AS SPECIFIED BY THE AUTHOR. NOT METAL PAPER COVERED.	9 6
4 Polar Valves as specified.	22 8 3
1 Colar "Star" 3-gang .0005 mfd. Var. Condenser with disc drive	21 10 6
1 Set of 3 Colmen Ferrocort Coils	21 17 6
2 Multitone Transformers as specified	21 7 0
1 Amplion Loudspeaker with "Class B" transformer.	21 19 6

CLASS "B" FERROCART PETO-SCOTT CABINET

THE perfect cabinet for "Wireless World's" latest triumph. Its neat design and beautiful finish will make your set equal in every way to the best commercial receivers to-day. In beautifully figured Walnut with front accurately drilled to take the "Class B" Ferrocort. Size, 19 1/2" high x 15" wide x 12 1/2" deep. Shelf and Baffle Board 3/16, and Carriage 2 1/2 extra.

For Illustration, see last week's issue Page 4.
PETO-SCOTT Genuine "Plymax" Baseboard 10" x 14" x 1/2" ready drilled with buttons and brass strips. AS SPECIFIED BY THE AUTHOR. NOT METAL PAPER COVERED. **9/6**

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CASH — C.O.D. — H.P.

If you want to see the CLASS "B" FERROCART before you buy—hear it demonstrated without obligation by:

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77, CITY ROAD, LONDON, E.C.1.
West End Showrooms: 62, High Holborn, London, W.C.1.
● TRADE SUPPLIED—BEST DISCOUNTS.

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Readers who hesitate to send money to advertisers in these columns may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Wireless World," both parties are advised of its receipt.

The time allowed for decision is three days, counting from receipt of goods, after which period, if buyer decides not to retain goods, they must be returned to sender. If a sale is effected, buyer instructs us to remit amount to seller, but if not, seller instructs us to return amount to depositor. Carriage is paid by the buyer, but in the event of no sale, and subject to there being no different arrangement between buyer and seller, each pays carriage one way. The seller takes the risk of loss or damage in transit, for which we take no responsibility. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50, 5/-. All deposit matters are dealt with at Dorset House, Stamford Street, London, S.E.1. and cheques and money orders should be made payable to Iliffe & Sons Limited.

SPECIAL NOTE—Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post. When sending remittances direct to an advertiser, stamp for return should also be included for use in the event of the application proving unsuccessful.

Chargers and Eliminators.—Contd.

N.P. Have a Few Slightly Soiled Instruments for A.C. Mains; from 55/- to £12; stamp.

N.P. Specialise in Battery Chargers; from 75/- to £40; A.C. mains.

N.P. Fully Guarantee "Satisfaction or cash refunded" after trial; use "W.W." Deposit System, or c.o.d.; terms quoted.

N.P. with Westinghouse or Valve Rectification; trade list lowest on market; stamp.

N.P. Senior Two will do 1 to 30 x 2v. cells, or a "bank" of H.T. at one time; L.T. 0 to 30 amps, variable resistance, ammeter, etc.; 105/-; photographs and trade lists; stamp.

N.P. Supply Sliding Resistances and Ammeters; state all requirements for our prices per return post; specialists in A.C. mains chargers.—Nash Products, Ltd., Stechford, Birmingham, 9. [2926]

VORTEXION, Wimbledon, for the latest type transformers, all with screened primaries and

12 MONTHS' Guarantee, absolute reliability (we supply talkie equipment); regulation guaranteed within 5% all models except superas, which are 2 1/2%, you cannot buy more reliable or better looking transformers, not a pressed shrouding, but a substantial casting free from hum. Fitted with detachable feet for mounting in any position.

VORTEXION—Specified for A.C. quality amplifier, 400 volts 110 m.a., 4v. 3, C.T., 4v. 2, 4v. 1, C.T., terminals, 24/-; tagged leads, 20/-; shrouded, 24/-.

VORTEXION—Ferrocort III, 350-0-350, 60 m.a., 4v. 2.5, C.T., 4v. 3.5, C.T.; open type 13/6, shrouded 16/-; post 9d.

VORTEXION—250-0-250, 4v. 1 to 2a., 4v. 2 to 4a.; open type 10/6, shrouded 12/6; post 9d.

VORTEXION—Super model for H.T. 8 or 9 or 10, 4v. 1 to 2, 4v. 2 to 4; open type 14/6, shrouded 16/6; post 1/-.

VORTEXION—2 1/2-watt Monodial A.V.C. model; open type 14/6, shrouded 16/6; post 1/-.

VORTEXION—5-watt Monodial A.V.C. model, 400-0-400, 120 m.a., 4v. 6a., 4v. 3 1/2a., 4v. 2, 4v. 1a., super screened; 20/-, shrouded 24/-.

VORTEXION—350-0-350, 120 m.a., 4v. 2 to 5a., 4v. 2 to 4a., 4v. 2.5a.; open type 14/6, shrouded 16/6.

VORTEXION—400 or 450 or 500v., 120 m.a., 4v. 2 to 5, 4v. 2 to 5, 4v. 2 to 5; open type, 19/-, shrouded 23/-.

VORTEXION—400 or 450 or 500, 150 m.a., 4v. 4a., 4v. 2.5, 4v. 2, 4v. 2, 4v. 2, core size 2 1/2 in. x 1 1/4 in., a super job, 2% regulation; 35/-, shrouded, with terminals, less terminals, 30/-, open type 26/-; post 1/3.

VORTEXION Auto Transformers to R.E.S.A. Specification, 100, 110, or 120v. to 200, 220 or 240 volts, 60 watts, 7/3, post 9d.; 120 watts, shrouded, 12/6, open type 10/6, post 1/-; 200 watts, open 14/6, shrouded 16/6, post 1/-; 500 watts 30/-, 2,000 watts £4/10.

VORTEXION 600 watt Transformers, £4/10, carriage free.

VORTEXION 30h. at 60 m.a. Chokes 5/6, 40h. at 60 m.a. 8/6, 30h. at 150 m.a., 200 ohms, 10/6 open type, 12/6 shrouded.

VORTEXION 20v. 30 m.a. Eliminators, 110 or 220 input with 4v. 4a. winding, 37/6.

VORTEXION—Transformers made to your specification.
VORTEXION (S. A. Brown), 182, The Broadway, Wimbledon. Tel.: Liberty 2814. [2894]

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

Chargers and Eliminators.—Contd.

SERADEX Resistors. See test report, page 437, of last week's issue of "The Wireless World."

"WIRELESS World" states: "Although an accuracy of 4% is claimed for type M-150, the specimens tested showed a much closer agreement than this."

M-150 Resistors. 1/2 watt rating, 8/1, each, all values; M-300 resistors, 3 watts rating, 1/3 each, all values. See advert. on page 10.

SERADEX G.125 Resistors, 25 ohms to 1,500 ohms, 9d.; 5,000 ohms, 1/; 10,000 ohms, 1/3; intermediate sizes at next highest price.

SERADEX Glass-wind Resistors are Guaranteed Accurate to within 2 1/2%. "Wireless World" confirms this on page 437 of issue for June 16th.

SERADEX Filter Condenser, type B. "Wireless World" tested these and report that, tested at 800 volts, there was no sign of leakage.

SERADEX Type B Condensers, 1.0 mfd., 1/6; 2.0 mfd., 2/3; 4.0 mfd., 4/5; 4x4 mfd., 7/3; 8x8 mfd., 14/6.

FULL Illustrated Lists from Trevor Pepper, 48, Wakegreen Rd., Birmingham. [2916]

TANTALUM for A.C. Chargers, H.T. and L.T. Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [2139]

HOYNE'S Transformers and Chokes the Best Obtainable, perfect insulation, regulation and reliability, used exclusively by discriminating manufacturers, all fitted with tapped and screened primaries, filaments all centre tapped, stout cast aluminium clamps fitted to all models, also clearly marked terminal strips.

HOYNE'S Components are Guaranteed for One Year.

HOYNE'S Transformers Built to Your Specifications, at very competitive prices.

HOYNE'S Supply the Trade

HOYNE'S—250-0-250v. 60 m.a., 4v. 1-2a., 4v. 2-4a.; 10/7, post 9d.

HOYNE'S—250-0-250v. 60 m.a., 4v. 1-2a., 4v. 2-4a.; 4v. 1a.; 12/6, post 1/.

HOYNE'S—350-0-350v. 60-70 m.a., 4v. 2-3a., 4v. 3-4a., 12/6, post 1/.

HOYNE'S—350-0-350v. 70-80 m.a., 4v. 2-3a., 4v. 3-4a., 4v. 1-2a.; 15/6, post 1/.

HOYNE'S—350-0-350v. 120 m.a., 4v. 2-3a., 4v. 4-6a., 4v. 1-2a.; 16/6, post 1/.

HOYNE'S—500-0-500v. 140 m.a., 4v. 2-4a., 4v. 4-6a., 4v. 2a., 4v. 2a.; 27/6, carriage 1/6, weight 12lb.

HOYNE'S—0-110-135v. 90 m.a., 4v. 2-4a., suitable for H.T.6 or 7; 10/5, post 9d.

HOYNE'S—200v. 200 m.a., 4v. 2-4a., 4v. 1-2a., suitable for H.T.8; 15/6, post 1/.

HOYNE'S—0-200-240v. 200 m.a., 4v. 2-4a., 4v. 1-2a., suitable for H.T.8 or 9; 14/6, post 1/3.

HOYNE'S—Line transformers and chokes always in stock; we can also supply all components.

M. J. HOYNE, Offices and Works, 8a, Gladstone Rd., Wimbledon, S.W.19. Tel.: Liberty 3303. Open every day, including Wednesday and Saturday, till 7 p.m. [2771]

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RADIO-GRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon. [1686]

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ROTARY Converters, 220 volts D.C. to 200 volts A.C., capacities up to 0.44 K.V.A., cheap.—Milo Engineering Works, Milo Rd., East Dulwich, S.E.22. Sydenham 4422. [2907]

DYNAMOS, ball bearing suitable charging, lighting, guaranteed, 12-volt 10-amp. C.A.V., 12/6; 6-volt 12-amp. C.A.V., 10/6; many others in stock; 12-volt cut-outs, 1/6, post 6d.—R. Wickham, 12a, Hercules Rd., Lambeth, S.E.1. [2880]

CRYPTO 110v. D.C. to 230v. A.C., 400w., £7; M.L. 220v. D.C. to 220v. A.C., 40w., £4; ditto, 90w., £5 5; E.D.C. 230v. D.C. to 230v. A.C., 50w., with filter, £6; B.T.H. 220v. D.C. to 475v. D.C., 100w., £5; ditto, 725v. D.C., 130w., £6; B.T.H. 1/2 h.p. motors, 220v. D.C., £2 10; ditto, 475v. or 725v. generators, 25/; all new condition; rotaries all double wound.—Raymart, 44, Holloway Head, Birmingham [2942]

LOUD-SPEAKERS.

B.T.H. R.K. Moving Coil Speakers, guaranteed new, unused, manufacturers' surplus, original price

6 Guineas, highly sensitive and wonderful tone response, will handle up to 10 watts output, available for 6v., 100v., 200v. D.C., 30/; also A.C. models.

£2/10; carriage paid, c.o.d., or cash with order; the best value in speakers obtainable to-day.—Seekamp, 46, Farringdon St., London, E.C.4. [1425]

SONOCHORD Senior, 2,500 ohms, 11in., new, 30/; V.M.S.4, as new, 8/6.—Sullivan, 356, Caledonian Rd., N. [2927]

3,000 Blue Spot 1001. Inductor Units, guaranteed brand new, un-packed; usual price 39/6, our price 15/6, post paid.—Radio Supply, 13, Acton St., Birmingham. [2969]

30/-!!—B.T.H. R.K. moving coil speakers, 6in. cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; suitable for public address work; weight 30 lb., and are vastly superior to cheap speakers now on the market, 100 volts, 150 volts, and 200 volts D.C.

27/6!!—6v. D.C. speaker, as above; £2/7/6, speaker as above for 100-250 A.C.

SIMPSON'S Electric Turntables, 25/; carriage paid; cash with order, or c.o.d.

B.T.H. Brand New Public Address Amplifiers, 4-stage, including microphone stage, 2 types, 12 watts and 6 watts outputs, 12-watt type has 2 P.P.5 400s in output, 6-watt type has 2 P.P.3 425s in output, 12-watt type price £15, 6-watt type £12/10; B.T.H. cinema type pick-ups, brand new, 17/6.—Ward, 12, Tredgare Rd., Bow, E.3. [2921]

For PERFECT VOLUME CONTROL — WATMEL POTENTIOMETERS

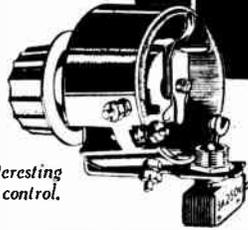
Our Policy this year is to specialise in Potentiometers. You can, therefore, be certain when purchasing a Watmel Potentiometer that you are obtaining the very best from a firm that is concentrating on this type of component.

This resistance meets with the requirements for a volume control which will have an equal variation of volume for the rotation of the knob. This is specially important for the control of the grid bias of the new variable-Mu valves.

Here is illustrated the Watmel Type 2 Potentiometer with mains switch.

Price. Square Law Winding 8/6 Without Mains Switch 6/6 Type 1. Standard Winding 5/6

Please write for the interesting Watmel book on volume control. Free.



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EVERY TEST WITH ONE INSTRUMENT ONLY

D.C. AND A.C.

The Avometer is indispensable to the Service men of leading radio manufacturers as the only instrument which adequately meets their needs. It is the only complete testing instrument giving direct readings in amps, volts and ohms without the necessity for mathematical calculations.

Two models: One for D.C. only, 8 Gas., and the Universal Avometer, giving both D.C. and A.C. readings (30 cycles), 12 Gas. Deferred Terms if desired.

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The AVOMETER

REGD. TRADE MARK THE AUTOMATIC COIL WINDER AND ELECTRICAL EQUIPMENT CO., LTD., Winder House, Douglas Street, London, S.W.1. Phone: Victoria 3405-7

BRITISH MADE

Loud-Speakers.—Contd.

LAST Batch Set Manufacturers' Surplus M.C. Speakers, positively no more at this price: Ultra 95 P.M. (really hefty jobs), with power and pentode transformer, list £4/15, at 47/6; B.T.H. A.C. Seniors, list 155/7, 200-250 volts, at 50/; multi ratio transformer for same, list 19/6, at 9/6; Rolas P.6, 90-130 volts (2,500 ohms), 110-175 volts (2,000 ohms), or 200-250 volts (6,500 ohms), list 35/6, at 18/6 each; P.7, voltages, as above, list 46/6, at 25/6; the above fitted humbuckers, state if power or pentode transformer required; permanent magnets, P.6 P.M., list 49/6, at 28/6; P.7 P.M., list £3 at 33/6 all carriage paid, cash with order, or c.o.d.—Chal-Electric, No. 6, Conduit St., London, W.1. [2939]

PICTURE RECEIVER APPARATUS.

SENIOR Blathaller Speaker, £5; Junior ditto, £4; Siemens and Halske Riffel-speakers, £4 10; Mullard M7B valves, listed £20, our price £5; U.L.4s, 25/; Philips 50w. P.A. amplifier, cost about £90, our price £20; Vitavox 6v. M.C. horn units, 50/; super 50w. equipment, with twin turntables fader and pick-ups, in steel cabinet transportable, £25.—Raymart, 44, Holloway Head, Birmingham. [2944]

VALVES.

THE Following Valves are Guaranteed as New, and any valve differing from the makers' characteristics will be exchanged, all latest types.

A.C./Pens., P.T.4s, G.U.1s, A.C.S.G./V.M.s. Pen.4V.s, P.T.625s, V.M.S.4s, D.C.2 Pens., D.P.T.s, M.P.T.4s, V.M.4V.s, A.C.S.I./V.M.s, P.M.24B.s, D.C.28.G./V.M.s, 11/; M.S.4s, M.S.4Bs, A.C.S.G.s, S4V.A.s, S4V.B.s, M.S.G./L.A.s, D.S.B.s, A.C.S. 2s, P.X.4, D.C.28.G.s, 9/6; U14s, 10/.

M.L.4s, A.C./P.s, 41M.P.s, P.M.24s, 8/; A.C./H.L.s, 164V.s, 354V.s, A.C.2, H.L.s, 41M.H.L.s, U10s, U.U.60/250s, M.H.4s, M.H.L.4s, 7/6; V.S.2s, 215S.G.s, 220S.G.s, P.M.12s, P.M.12A.s, 9/; 442 H.U.s, D.W.3s, 8/6.

ALL types of Brand New American Valves in Stock, with first class makes: 247s, 235s, 224s, 235s, 237s, 244s, 12/; 227s, 226s, 280s, 245s, 9/6; 242s, 232s, 11/6; U.X.210s, 15/.

U.X.250s, 7 watts output, 16/; 281s, 14/6; for quickest delivery send telegraph money order.

OVER 4,000 Valves Always in Stock for Immediate Delivery; carriage paid; cash with order or c.o.d.—Ward, 12, Tredgare Rd., Bow, E.3. [2922]

THE Finest Valves for Your American set are undoubtedly Arcturus or R.C.A.; prices from 9/6.—Norman Michel, 51, St. Matthew's Parade, Northampton. [2903]

VALVES, as new, one-third list prices; P.X.4, M.H.L.4, M.H.4, V.M.S.4, P.T.625, A.C./PENS., PEN.220A, A.C./H.L.s, A.C. S.G., 215 S.G.—Box 7255, c/o The Wireless World. [2905]

AND Another Large Purchase of Set Manufacturers' Stock, guaranteed as new, and any valve differing from the makers' characteristics will be exchanged free, all latest types.

H.L.210s, H.210s, L.210s, 210H.L.s, 210H.F.s, P.M.III.F.s, H.3/9; P.M.2s, P.M.2As, L.P.2s, 220P.s, 215P.s, 4/9; D.H.s, 41M.H.L.s, M.H.4s, A.C./H.L.s, A.C./2H.L.s, 354V.s, D.C.2H.L.s, 182H.4s, 7/6; M.L.4s, A.C./P.s, 164V.s, 104V.s, P.M./24s, 442B.U.s, 1807s, 7/6; S4V.B.s, S4V.s, M.S.4Bs, M.S.G./H.A.s, A.C./S.G.s, A.C./S2, 41M.S.G.s, D.S.B.s, 215/S.G.s, P.M.12s, P.M.12As, 9/; Pen.4V.s, V.M.S.4s, M.M.4V.s, P.T.41s, P.T.41Bs, D.P.T.s, A.C./Pens., 11/; 620Ts, 680Ps, 10/.

OVER 4,500 Valves Always in Stock for Immediate despatch; carriage paid for cash or c.o.d.; prompt delivery.

NEWMAN, 309, Roman Rd., E.3. [2892]

OSRAM and Mullard Valves, guaranteed as new, any found faulty exchanged free; H.L.210, L.210, P.M.III.L., P.M.III.F., 3/3; L.P.2, 4/; P.2, P.M.202, 5/; P.T.2, P.M.22A., 8/6.—H Smith, 20a, Grange Rd., N.W.1. [2917]

COMPONENTS, ETC., FOR SALE.

PREMIER.

PREMIER SUPPLY STORES Offer the Following Set Manufacturers' Surplus Brand New Goods at a Fraction of the original cost; all goods guaranteed perfect; carriage paid over 5/6, under 5/6, postage 6d. extra. (Ireland carriage forward.)

KOLSTER BRANDES 1933 All-electric 3-valve Set, K with M.C. L.S.; list price £11/11, to clear £6/6.

KOLSTER BRANDES 1933 All-electric 2-valve Set, K with L.S.; list price £7/10, £4 19/6.

KOLSTER BRANDES 1933 2-valve Battery Set, with L.S.; list price £4 10, 59/6.

KOLSTER BRANDES 1933 All-electric 6-valve Superhet, long, medium and ultra short waves, moving coil L.S.; list price £24 17/6, to clear £17 17/.

WESTERN ELECTRIC Mains Transformers, input 200-250 volt, output 50-0-500 volt, at 150 milliamps., 4v. 4a., 4v. 2.5a., 4v. 2a., 4v. 1a., 4v. 1a., massive job; 19/6.

ELLIOTT First Grade Moving Coil Milliammeters, projecting type, 0-10 m.a., 0-30 m.a., 0-50 m.a., 0-100 m.a., 0-150 m.a., 2 1/2in. diameter, 15/ each; flush type, 0-100 m.a., 0-150 m.a., 3 1/2in. diameter, 17/6 each.

T.C.C.C. Electrolytic Condensers, 10 mfd., 100 volts working, 1/; 15 mfd., 1/3.

SPECIAL Offer of Mains Transformers, manufactured by Philips, input 100-115v. or 200-250v., output 180-0-180 volts, 40 m.a., 4v. 1a. and 4v. 3a., 4/6.

ALL Premier Guaranteed Mains Transformers have engraved terminal strips with terminal connections, input 200-250 volts, 40-100 cycles, all windings paper interleaved.

PREMIER H.T.8 Transformer, 250v. 60 m.a. rectified, with 4v. 3.5a. c.t. L.T. and screened primary, 15/; with Westinghouse rectifier, 25/.

PREMIER H.T.9 Transformer, 300v. 60 m.a., rectified, with 4v. 3.5a. c.t. L.T. and screened primary, 15/; with Westinghouse rectifier, 26/.

PREMIER H.T.10 Transformer, 200v. 100 m.a., rectified, with 4v. 3.5a. c.t. L.T. and screened primary, 15/; with Westinghouse rectifier, 26/.

PREMIER Mains Transformers, output 135v. 80 m.a., for voltage doubling, 8/6; 4v. 3-4a. c.t. L.T., 2/6 extra; Westinghouse rectifier for above, giving 180v. 30 m.a., 8/6.

This advertisement continued on next page.

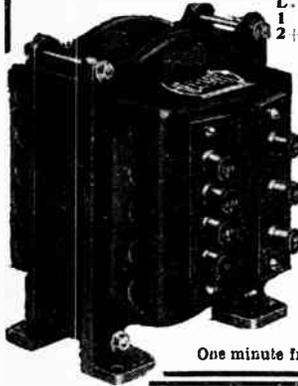
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Whether you are building a Mains Unit Amplifier or Battery Charger... Heayberd components will guarantee perfect results. Whatever the component required—whatever the output desired—Heayberd can assist you. Mains Transformers and chokes are soundly constructed from chosen materials. Special metal end-plates protect the windings from mechanical damage and insulated terminals complete a thoroughly safe job. Here are two typical transformers:

MODEL W31 (For Westinghouse H.T. 8 Rectifier)-Rectified H.T. outputs: 60 ma. at 200 or 250 volts. A.C., L.T. supply: 2+2v. 5 amps. and 30/- 2+2v. 1 amp.

MODEL 715 (For Valve Rectification)-Secondary Outputs: 230 | 230v. 30 ma. A.C., L.T. Supply: 2+2v. 1 amp. and 28/6 2+2v. 4 amps.



Full details of Heayberd components and complete mains units are given in the 36 page Handbook "Mains Power for Radio." Write for your copy to-day, enclosing 3d. stamps.

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"B.A.T." MICROPHONES, all patterns.

CLAROSTAT POTENTIOMETERS, 50 ohms to 50,000 ohms in wire-wound, and up to 1 megohm with special element.

"B.A.T." MAINS TRANSFORMERS & POWER CHOKES, all patterns, low prices. Etc., Etc.

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40, BUCKINGHAM GATE,
WESTMINSTER, S.W.1.

Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)

PREMIER Mains Transformers, output 250-0-250 volts, 60 m.a., 4v. 1-2a., 4v. 2-3a., 4v. 3-4a. (all c.t.), with screened primary, 15/-.
PREMIER Auto Transformers, 100-110, 200-250 volts or vice versa, 60-watt, 7/9; 100-watt, 10/-.

SPECIAL Offer of Manufacturers' Type Transformers, any input, output 250-0-250 volts, 60 m.a., 4v. 1a., 4v. 3a. (both c.t.), 8/6; H.T. 8 transformer, with 4v. 3-4a. (c.t.), 8/6; with rectifier, 18/6.

PREMIER Chokes, 40 m.a., 25 hys., 4/-; 65 m.a., 30 hys., 6/-; 150 m.a., 30 hys., 10/6.

PYE Chokes, 20 or 32 hys., 4/-; Premier multi-ratio output transformers, 6 taps giving 15 different ratios, 7/6.

PREMIER Eliminators, input 200-250 volts, 40-100 cycles, A.C., incorporating Westinghouse metal rectifiers, output 250v, 60 m.a., S.G. and 120v. taps, 42/6; with 4v. 4a. c.t. L.T., 7/6 extra.

PREMIER Eliminators, output 150v. at 30 m.a., S.G., and 100v. taps, with 4v. 3-4a. c.t. L.T., 37/6; or with trickle charger, 42/6.

PREMIER Eliminators, output 120v. at 20 m.a., S.G. and 100v. taps, 27/6 with L.T. trickle charger incorporated, 35/-.

ACCUMULATOR Chargers, 200-250 volts A.C., all incorporating Westinghouse metal rectifiers; 2, 4, and 6v. at 1/2 amp., 17/6; 2, 4, and 6v. at 1 amp., 22/6; 12v. 1a., 27/6; 6v. 2a., 35/-; 12v. 2a., 35/-; 12v. 1.5a., 30/-; 6v. 3a., 35/6; 12v. 3a., 52/6; 3 separate 12v. 1a. circuits, 75/-.

AMPLION High Inductance Chokes, resistance 2,500 ohms, 80 hys., 60 m.a.; 5/6.

WESTINGHOUSE Metal Rectifiers: 120v. at 20 m.a., 6/6; 180v. at 30 m.a., 8/6; 250v. at 60 m.a., 10/-; 300v. at 60 m.a., 11/-; 200v. at 100 m.a., 11/-; 8v. at 1/2 amp., 6/6; 6v. at 1 amp., 9/6; 12v. at 1a., 12/6; 6v. at 2a., 20/-.

B.T.H. Induction Type (A.C. only) Electric Gramophone Motors, 100-250v.; 30 - complete.

ROLA Type F6 Moving Coil Speakers, 2,000 or 6,500 ohms, with power or pentode output transformers, 17/6; A.C. conversion kit for this speaker, 10/- extra.

WESTERN-ELECTRIC Condensers, 250v. working, 1 mfd. 6d., 2 mfd. 1/-; 500v. working, 1 mfd. 1/-; 400v. working, 3 separate 4 mfd. condensers, 8/6.

T.C.C. Condensers, 750v. working, 2 mfd. 4/-, 4 mfd. 6/-; 400v. D.C. working (300v. A.C. working), 4 mfd. 4/-.

T.C.C. Condensers, 250v. working, 4x4x1 mfd. 5/-; 300v. working, 4x4x2x2x2 mfd. 7/-; 300v. working, 4x4x2x1 mfd. 6/-.

HEAVY Duty Variable Resistances, slider type, wound on porcelain, 2,000 ohms quarter-amp. and 500 ohms half amp.; 5 - each.

FOR Callers only.—The following valves, guaranteed as new: P.T.625, M.P./P.F.N., D.C.S.G., V.D.S., V.M.S., 84V.A., A.C.S.G., A.C.S.G.V.M., V.M.S.G., 41N.S.G., V.M.S.4, M.S.4B, U5, 504V, M.S.G.L.A., M.S.G.H.A., M.H.L.4, M.L.4, M.H.4, U14, 84V.B., D.W.3, P.T.4, D.S., D.S.B., M.S.4, 41M.L.F., M.V.S.G., A.C.H.L.; at half list price.

THE Last Few Western Electric 4211-D Valves, 10v. 3a. filament, 750-1,000v. plate, 50-65 m.a., impedance 3,500 ohms, amplification factor 12; cost £5, to clear at 15/-.
500-VOLT 125-milliamp. Full Wave Rectifying Valves, 4v. 2a. filament; 7/6.

PHILIPS 328 Valves for L.T. Charging, 5/6; 329 Barretter lamps, 2/-.

ALL the Following Lines 6d. each, or 5/- doz. assorted: Shielded S.G. or Pentode leads; 2ft. lengths of screened wire; 5-pin valve holders; Chabtree 5-amp. sunk switches; T.C.C. 0.1 mfd. condensers; 0.5 condensers.

ALL Orders to the Premier Supply Stores, 20-22, High St., Clapham, S.W.4. Macaulay 2188. Closed 1 o'clock Wednesdays, open to 9 o'clock Saturdays. Nearest Station, Clapham North Underground.

PREMIER [2948]

READY RADIO 0.005 Extensor Condensers; 2, 3; post 4d.

R.L. Cosmic Triple Wave Coil Units, list 12/6, our price 3/6, post 6d.; Lest bakelite B.C. adaptors, 5d. each, post 1 1/2d.

CELESTION Soundex Moving Coil Speakers; list 27/6, our price 15/6; post 1/-.

LAMPLOUGH Silver Ghost M.C. Speakers, 200-250 volts, with tapped transformer; 10/6; post 1/-.

BLUE SPOT 100T. Inductor Speakers, brand new, boxed; 15/-; post 1/-.

RADIOGRAM Cabinets, polished walnut (535 Marconi), felt lined lid, auto stay, at quarter of cost; a gift, 35/-.

REGENTONE 3-valve All Electric A.C. Sets, 203-250 volts, 50-100 cycles, moving coil speaker; list 12 guineas, 6 guineas.

HARLEY Pick-up, with arm and volume control, new; 27/6 list, 14/6.

ROLA J.G. M.C. Speaker, fitted transformer and rectifier for A.C. mains, 200-250v., multi ratio input transformer; 60/-.

EKCO Pick-up Head, new, 7/6, post 4d.; Philips filament transformer, 4v. 4a., C.T., new, 6/6.

(This advertisement continued on next page.)

**Important
Notice:—**

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**AMPLIFIER
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CAN NOW BE
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the best value
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**DICTIONARY
of WIRELESS
TECHNICAL TERMS**

Compiled by
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and issued in conjunction with
"THE WIRELESS WORLD"

Second Edition. Completely revised and brought up to date

This handy volume is very much more than a Dictionary. It not only takes the technical terms of wireless and explains their meaning, but in doing so it concentrates into a small space a large amount of information on wireless subjects. It has become, in fact, a compendium of current wireless knowledge, and an invaluable handbook for all who are interested in wireless transmission and reception. Diagrams and illustrations are freely interspersed throughout the book to amplify the explanations of the text.

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W.W.48

5-7 Metre Reception

On short waves, consistently reliable and silent contact is of the utmost importance and it is significant that CLIX was chosen by the Wireless World to provide contact for the



ULTRA SHORT-WAVE TWO

CLIX "MASTER" PLUGS

Also have positive METAL-to-METAL wiring. Widely variable and non-collapsible prongs give firm grip and full contact with ANY battery socket. Specially curved ends for easy insertion. Clearly engraved. **1 1/2d.**

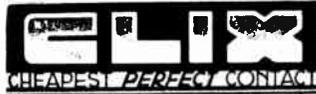


CLIX SPADE TERMINALS

Positive metal-to-metal wiring is fully protected from creeping acid by a specially designed collar making corrosion impossible. Contact is perfect. Large size: Nickel-plated or lead-coated. **2d.**

CLIX Chassis Mounting VALVEHOLDERS

Acknowledged by experienced experimenters and technical experts to be the perfect valveholder for Short wave Work. Sturdily built. Highest quality insulating material. Resilient sockets guarantee full-surface contact with ANY type of valve pin and definitely prevent arcing. For easy entry and withdrawal the sockets "float" and align with valve pins. **4-Pin, 8d. 5-Pin, 9d. 7-Pin (Floating Type) 1/-**



CLIX Plugs, Sockets, etc., Specified. Write for new Folder, "W."

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AUTO - KINECAM nearly new 16 m/m 3-speed Ciné Camera, F. 2.6 Cinar lens. In leather case with stand. **£9 : 10 : 0**
KODASCOPE, Model C, 16 m/m. Projector with electric motor and resistance for D.C. Power Transformer for A.C. **£6 : 10 : 0**
PATHE 9 m/m Baby Ciné Projector with electric motor **£4 : 4 : 0**

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FOR HOME TALKIES AND MOVIES. Maximum efficiency and minimum price.



Buttons, 1/-; Volume Controls, 6d. No. 1 Speech Pendant Mike, 6/6. Marconi W/T Trans. Hand Mike, 15/-. No. 12 Ring Pedestal, 18/6. Lecture Desk Mike, 65/-. Pub. Address Amplion, £5. Browns £20 model, £12. West Electric £14.

Microphone Carbon Granules. In glass capsule, enough for four buttons. Grade No. 1, 8d.; No. 2, Medium, 1/-; No. 3, Fine, 1/6; Carbon, solid back, blocks, 3d. Mouthpieces, curved or straight, 10d. Carbon diaphragms 55 m. in. 4d. Panel brackets, pivoted, 5/-. Reed Receiver Unit for Amplifier making, 3/-. Leaflet with diagrams free if stamped envelope sent.

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FROM L.T. TO H.T.

BATTERY SUPERSEDER.

BATTERY SUPERSEDER.—No H.T. Batteries needed. Send stamped envelope for descriptive leaflets. The GENEROMETER makes H.T. from your L.T. 2-volt battery, rectified and smoothed. Gives 3 tapings with output exactly suited to Class-B amplification, and lasts indefinitely. A boon and blessing to all using H.T. Reduced from **£3 15s.** New and Guaranteed. **37/6**

Write for Bargain List W.23.

ELECTRADIX RADIOS,
218, Upper Thames St., London, E.C.4. Telephone: City 0291.

Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)

WESTERN ELECTRIC Arc Type Milliammeter, 0-100, M.C., 15/-; post 4d.; W.F. M.C. voltmeter, 0-80v., 12/6, post 4d.; voltmeter, 0-20, 2/6, post 3d.; hot wire ammeter, 0-5, 4/6, post 3d.; H.A.V. 0-200 m.a., 5/6, post 3d.; Edgecombe, 0-1.5a., M.C., 7/6, post 4d.; modulation transformers, ex-R.A.F., 7/6; S. G. Brown's, 4/6, post 6d.

WATCHMAKER'S Precision Lathe (treadle), complete, compound slide rest, collets, etc., write full details, as new: 80/-.

CAMERA, Bausch and Lomb, extra rapid Aplanat F.8 lens, double extension, postcard, 5 plate holders (metal); 40/-; post 1/-.

METAL Tripod, 3 section, 4/6, post 9d.; roll film developing tank, 4/6, post 9d.; G.P.O. solid back hand microphone, 6/6, post 6d.

THORNTON-PICKARD Camera, F.8, roller shutter, 1/2 plate, mahogany case, 4 plate holders; 20/-; post 1/-.

EBURY BRIDGE RADIO Co., Bankrupt and Surplus Dealers, 33, Ebury Bridge Rd., S.W.1 (near Victoria Station). Phone: Sloane 8407. [2949]

SEND for Surplus Radio List, post free.—Hulne, George St., Rugby. [2925]

SOUTHERN RADIOS Wireless Bargains.—Set manufacturers' guaranteed surplus:—

CONDENSERS.—4 mfd. 2/6, 2 mfd. 1/9, 1 mfd. 1/- each, all 750 volts test guaranteed; blocks, 20 mfd. 2+2+2+2+2+2+2+2+2+2+1+1 11/-, 12 mfd. 2+2+2+2+2+2+1+1 6/9, 10 mfd. 2+2+2+2+1+1 6/3, all 1,500-volt test guaranteed; variable condensers, Radiophone 4-gang, fully screened, with trimmers, 0.0005, 8/9 each (list 45/-); 0.0005 Cydon 3-gang, fully screened and trimmers, 8/3 each (list 32/-); Utility 2-gang 0.0005, fully screened, with trimmers, esutcheon, knob, and dial, 8/- (list 39/6).

SPEAKERS.—Celestion Soundex permanent magnet, 16/- (list 27/6); Rola FG permanent magnet, 28/- (list 49/6); D.C. mains energiser, 2,500 to 6,500 ohms, complete with humbucking coils and transformers, 16/6 (list 39/6); ultra permanent magnet speakers, 95P.M., complete with power pentode transformer, 47/6 (list £4/15); Westinghouse metal rectifiers, H.T.B. complete with mains transformer for same, 25/- the two (listed at 40/- the pair).

CONSTRUCTORS' Kits.—Ready Radio "303" battery 3-valve kits, less valves, 18/- each; complete with 3 Mullard valves (P.M.11.F., P.M.2, 2D.X.), 33/- each (list 70/-); Ready Radio Meteor screen grid 3-valve kit, less valves 26/-; with 3 Mullard valves (P.M.12a, P.M.2D.X., P.M.2a), 49/- (list £3/10); all kits in manufacturers' original cartons and guaranteed brand new.

LEWCOS Coils, assorted; 7/6 per dozen (actual value of each coil 7/6).

VALVES (6 only), as new.—Mullard D.O.20 for power amplifiers, 9/6 each (list 30/-); Philips half-wave rectifying valves, 9/6 each (list 30/-).

ALL Goods Guaranteed Brand New and Perfect and Sent Carriage Paid.

SOUTHERN RADIO, 323, Euston Rd. (near Warren St. Tube), London, N.W.1. Phone: Museum 6324. [2945]

COVENTRY.—B.T.H. Minor, permanent magnets, universal output transformer, 7in. cone; 28/-.

70-100v. 2,150 ohms, cadmium plated, 7in. cone transformer, for pentode or triode; 20/-.

70-100v. 2,500 ohms, 200v. 7,000 ohms, less transformer, 14/-; with transformer, 17/6.

METRO-VICK, heavy duty, shrouded, 100 and 20 henry L.F. chokes, 6/6.

METRO-VICK A.B. Transformer, 200-250, tapped primary, 250-0-250 anode, 4v. 5a., 4v. 2a.; 15/6.

B.T.H. Senior Tone Arms and Pickups, black, nickel, or gilt; 22/-.

ALL Brand New, in makers' original cartons; cash with order or c.o.d.; postage on £2 orders; 3 days' approval against cash.—Tommy Atkins, 1, Tennyson Rd., Stoke, Coventry. [2936]

MAYFAIR RADIO Offers Brand New Surplus Stock, all guaranteed; carriage paid, cash with order, or c.o.d.

GRAMOPHONE Motors, Pathé, 100-250 A.C., complete with turntable and automatic stop; 27/6.

RADIO Gramophone Cabinets, from the Marconiophone factory (these are not veneered ply), type 535, overall 40"x19"x16", take chassis 19/16, cost to make £8/10, at 50/- or if collected 45/-; Marconiophone figured walnut, as used in the 70 guineas model, type 531, cost to make £12, at 45/- or if collected 95/-, overall 40"x27"x20, take chassis up to 26"x19".

ELECTRIC Clocks, Ediswan (last 12), 200-250 A.C. 50 v.; list 35/-, at 25/-.

PICK-UPS, B.T.H. Senior, 1933, 6 only, with volume control; list 2 guineas, at 28/-.

MAYFAIR RADIO, 31, George St., Hanover Sq., London, W.1. [2931]

MAINS Transformers, new, Parmeko, 200/250v., 40-80 cycles, 250-0-250, 60 m.a., 4v. 1a., 4v. 3a., C.T.s., 19/6.

ALSO Several Larger and Smaller Types for Disposal; cheap; write your requirements.

D.C. Generators (Crypto), 200v. 1a., £3; 45v. 20a., £4.—Barson, 89, London Rd., Leicester. [2938]

YOU GET EVERY INFLECTION to PERFECTION



The quality of speech obtained from this new Savage Microphone is a revelation. It is highly sensitive, yet so even in its response that it is possible to get a relatively large volume from speakers in the same room before singing-back occurs. It is equally effective for band relay work.

PRICES.

The Savage microphone is beautifully finished in Chromium Plate and supplied with table stand as illustrated at **£4 2 6** or with Floor Stand at **£5 0 0**
 Microphone Transformer DE/Sr in heavy cast iron box to prevent coil picking up hum **£1 5 0**

SAVAGE AMPLIFIERS

(Approx. 20 watts sound output).
 Two stage, type S220, complete with valves **£18 0 0**
 Three stage, type 320, complete with valves **£19 10 0**

with the new

SAVAGE TYPE 'M' MICROPHONE

W. BRYAN SAVAGE, 56/58, CLERKENWELL ROAD, LONDON, E.C.1.

New & Novel

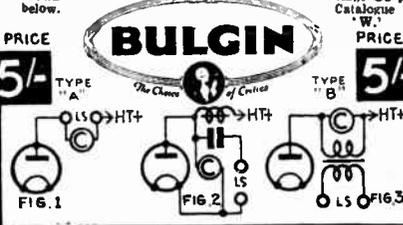
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THE FIRST OF ITS KIND

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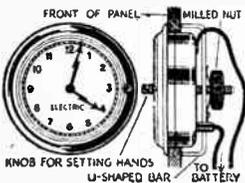
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And 11 Monthly Payments of 5/6		5/-
12 Exide W.H. High Tension Accumulators (120 volts, 5,000 m.a.)	Cash Price £3 15.0	
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And 11 Monthly Payments of 5/6		5/-

All goods sent carriage paid.

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Phone: NATIONAL 1977.



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R.
SELECTED Parts for Sale, as new; any e.o.d. or "Wireless World" deposit system, which we recommend if in doubt as to the splendid value offered; we take risk of damage in transit to our customers; goods tested for callers and guaranteed.

WE Hold a Large Stock of First Class Radio Apparatus, meters, resistances, condensers, heavy chokes, etc., in addition to goods advertised.

FERRANTI Resistances, with holder, 3,000, 5,000, 15,000, 20,000, 30,000, 50,000, 100,000, 2/6 each; Varley Power, 500, 1,000, 5,000, 10,000, 40,000, 50,000, 3/- each.

B.T.H. Universal Senior Gramophone Motors, A.C. or D.C., brand new, complete with auto stop and all fittings; 55/-.
TRANSFORMERS.—Ferranti A.F.4, 8/-; A.F.6, 18/6; O.P.M.1c, 16/6; O.P.M.2, 13/-; O.P.M.4, 14/-; Ignac 7-1, G type, 7/6; B.I. choke, new, 13/-; O.P.M.4c, 16/-; A.F.5c, 21/6; A.F.3, 10/6; A.F.5e, 17/6; A.F.5, 17/6.

R.I. Q.P.P. Transformer and Choke, second-hand, 19/- pair; B.T.H. Senior P.M., latest type, £3; Polar Star 3-gang superhet, condenser, 16/-.
VARLEY S.P. Coil, 7/6; H.F. 5; Atlas Q eliminator, new, £2; R.I. 20H, 250 m.a. chokes, as new, 15/-.

TELSEN Multi Ratio Output Transformer, 6/6; Telsen 3H, chokes, 3/-; Telsen 5-1, 3-1 Radiograms, 4/6; Westinghouse H.T.4 and A4 rectifiers with Varley transformer, £2; Cyblon twin 0.0005 extensor, double thumb, 15/6; ditto discs, S.M., 17/6; single extensor, 7/6.

PHILLIPS D.C. Eliminator, 150v, 20 m.a., 21/-; Philips 1 1/2a, charger, input 210v., 18/6; Amplion Q.P.P. P.M. speaker, 27/6.

SUITCASE Cabinets in Best Crossville Leather, 14 1/2 x 14 x 8, ample room for 12in. turntable and pick-up, 15/-; new; Magnavox D.C. 144, with transformer, 2,500 ohms, 15/6.

RYALL'S RADIO, 33, Chancery Lane, London, W.C.2 (nearest Tube Chancery Lane; bus 67 passes door, or tram to Savoy St.), Holborn 3529. Open Saturday afternoon. Close 7 p.m., Thursdays 1 o'clock, Saturday 6 p.m.

R. [2920]
PEPPER Offers the Following Under Usual Guarantee; 3 days' approval against cash; carriage paid over £2.
EKCO A.C.25 Eliminator, £1/13/6; Heayberd ditto, 250v. 60 m.a., with 4v. 6 amps. L.T., listed £9, £3/10.

STRIPPED Type Mains Transformers, manufacturers' surplus, screened primaries, for mains, 200-230-250 volts 50 cycles.

300V., 550 m.a., for H.T.11, with 2.0-2v. 2 1/2a., 2.0-2v. 3-4a.; 22/6; carriage 1/6.

240V., tapped 200v. 200 m.a., for H.T.8 or 9, with 2.0-2v. 2a., 2.0-2v. 3-4a.; 12/11; carriage 1/3.

OWING to a Large Number of Customers Having Written Us Asking Us to Reprint Our Surplus Lists, we are issuing a new edition, which offers many remarkable bargains; free for stamp.

TREVOR PEPPER, 48, Wakegreen Rd., Birmingham, 13. [2915]

BRAND New Celestion Speaker Units, 3 1/2"; ditto, Amplion, 2.3. Raynart, 44, Holloway Head, Birmingham. [2943]

EVERYTHING for Movies and Talkies.—Phone, write, or, better still, call and inspect immense stock of bargains.

ILLUSTRATED ENTERPRISES, 159, Wardour St., London, W.1. Tel.: 6889 Gerrard. [1621]

MAINS RADIO Offer, for one week only, outstanding bargains in set manufacturers' surplus, as new; carriage paid.

T.C.C. Blocks.—4, 4.5c V.A.C. working, 3/6; 4 x 4.250 V.D.C. working, 3/6; 4 x 4 x 1 x 1.0.5 mfd., 250 V.D.C. working, 4/6; 0.1 mfd., 400v., 9d.

3-GANG Condensers, with trimmers, shrouded, 6/6; Utility 2-gang ditto, 5/-; 1 and 2 mfd., 1,250v. test, 1/- and 1/4.

2-VALVE Sets, oak cabinet, with speaker, with 210 H.P. and Marconi power 2v, new, £1; Telsen Radiogram transformers, 6/-.
VALVES, as new, A.C./S.G./V.M.s, 8/11; 41M.S.G.s 8/-; P.E.N.4V, 10/-; 8215s, 7/-.—The Mains Radio Development Co., 4-6, Muswell Hill Rd., N.6. [2941]

MICROPHONE, brand new Amplion, P.A. type, with pilot lamp; first £3/10.—Holiday and Hemmerdinger, 2, Dolefield, Manchester. [2906]

VALVES, as new.—P.P.5400s, P.M.24hs, V8, 12/6; 84V.A.s, 84V.B.s, M.S.G.H.A.s, 8/6; D.W.3s, 104Vs, 354Vs, A.C.P.I.s, A.C.H.L.s, 6/6.

FERRANTI Moving Coil Meters, 0-15 m.a., 0-50 m.a., 0-500 m.a., 17/6; 8 mfd. electrolytics, Polymet 2/3, T.C.C. 3/3.

RADIOPHONE .0005, 4-gang, 11/6; Hydra, 600v. working, 8 mfd., 3/9; 4 mfd., 2/3; T.C.C. 12v. 200 mfd., 7/6; manufacturers' 5-pin chassis valve holders, 2.9 doz.; B.T.H. Minor pick-up, 13/6.

BAKERS Cinema Speaker, 200-230 D.C., £3 10; Deil inductor motor, 230v., automatic stop, etc., £2, list price £4/15.—Weyman, 42, Pembury Rd., Westcliff, Essex. [2937]

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"Radio Data Charts" provide designers of wireless apparatus with a ready and convenient means of solving problems without having recourse to complicated formulæ and mathematics.

By the use of the charts it is possible to tackle all the more familiar problems in radio receiver design; such as, for example, finding the relationship between inductance capacity and frequency, and working out the design of high frequency transformers. All keen amateurs will appreciate this helpful book.

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SERVICE RADIO, 46, Lisle St., London, W.C.2, offer the following amazing bargains in wireless components, etc.:-

SMOOTHING Chokes, 20 henrys 120 m.a., 9/- each; 50 henrys 60 m.a., 7/3 each; 40 henrys 40 m.a., 6/3 each; block condensers, 20 mfd., 2+2+2+2+2+2+2+2+2+1+1/-; 12 mfd., 2+2+2+2+2+1+1, 6/9 each; 10 mfd., 2+2+2+2+1+1, 6/3 each; all 1,500 volts test; Mullard Radio for the Million A.C. kits, including 3 Mullard valves (Pen. 4v., 354v. S.4V), £3/10 each (listed £6/10); H.M.V. tone controls, 1.3 each (listed 12/6); Paillard A.C. gramophone motors, complete with turntables, 100 volts to 250 volts, 17/6 each (listed £3); Utility 2-gang condensers, fully shrouded and trimmers, complete with escutcheon knob, etc., 9/- each (listed 39/6); Rola permanent magnet speakers, P.6, 28/- each (listed 49/6); mains energised I.C. speakers, 2,500 volts to 6,500 volts, complete with transformers, 16/6 each (listed 39/6); bargain parcels containing 6 chassis mounting 5-pin valve holders, 6 assorted fixed condensers (all useful capacities), 6 assorted Leveos coils, 3 coils connecting wire, 6 assorted resistances, 7/6 per parcel (value £1/15); we invite callers to inspect our large stocks at our address; hundreds of bargains in mains transformers, valves, sets, kits, etc., etc.; every article guaranteed and carriage paid.—Service Radio, 46, Lisle St., London, W.C.2. Phone: Gerrard 6655. [2873]

NEARLY Complete Kit for A.C. Monodial Super with A.V.C., 2 milliammeters, and 6 of specified valves; £10.—Write: J., 327, City Rd., E.C.1. [2918]

EPTON Leads Again!—H.M.V. 3-gang 0.0005 condensers, 8 trimmers drum-drive, wave-length dial, 10/6; 2-gang 0.0005, trimm is mounted on ball bearings, 4/11.

UTILITY Screened 2-gang 0.0005, trimmers, disc-drive, illuminated dial, etc., 8/9; ditto, semi-screened, Uniknob model, 9/6; Polar, Uniknob model, screened, 2-gang, 0.0005, disc-drive, trimmers, etc., 7/9.

REGENTONE Attractive Walnut Table Cabinets, with felt-lined baffle, silk-lined back, brand new, ideal for 3-valve sets; 12/6.

VALVES, as new: A.C.S.G. V.M., A.C.S.1 V.M., 10/-; P.M.22A, P.T.2, 230 Pen., 12/6; 41M.P., 41M.S.G., 41M.D.G., A.C.P.1, D.U.2, 624B.U., 7/3; 41M.H.F., 41M.R.C., 41M.L.F., 41M.H., 6/9; M.S.4, S.4V.A., V.S.2, P.M.24A, P.T.425, P.T.625, P.M.26, 8/11; P.M.256A, P.M.3, P.M.4, S.610, S.410, P.625, 5/6; A.C.H.L., A.C.2H.L., 7/-.

CASH With Order, or e.o.d.—Epton, 93, New Rd., Chingford, E.4. [2954]

CHAL-ELECTRIC Offers Brand New Set Manufacturers' Boxed Surplus, all carriage paid, cash with order, or e.o.d.; if not satisfied all cash refunded without quibble.

VARIABLE Condensers—Polar Star 3-gang 0.0005, with covers, trimmers, disc drive, escutcheon, light knob, etc., list 30/6, at 17/-; J.B. Nu-gang, fitted as above, at 15/-; 2-gang Nu-gang, fitted as above, 10/-; Polar Uniknob, fitted as above, 10/-.

VALVES, as new, Mazda A.C. P.E.N.s, P.E.N., 220a., A.C.S.G.V.A., A.C.S.G., U.U.120/350, at 9/6; A.C.2H, 7/6; 50 in all only.

SMOOTHING Chokes, Metropolitan Vickers, 20 henry 120 m.a. (400 ohms), 1/9; 2 mfd., 500 A.C. working, 1.800 ohms, at 5/-.

SMOOTHING Condensers, T.C.C., C.E.C. and Murphy, 800 test, 1 mfd., 1/1; 2 mfd., 1/9; 4 mfd., 2/6; all the following separate tapings, 1,500 test, 500 A.C. working, 800 peak, 1 mfd., 1/9; 2 mfd., 2/4; 4 mfd., 4/-; multiple blocks, same voltage, 20 mfd., 4-4+2+2+2+2+1+1, at 11/-; 4+2+2+1, at 6/9; 14 mfd., 4+4+4+1, at 8/-; 9 mfd., 4+4-1, at 5/6; T.C.C. dry electrolytics, 500 working, 8 mfd.; list 9/-, at 5/6.

THE Following Goods are as Brand New, but without boxes, British Radiophone, 4-gang (super het.), with covers, trimmers, less drive, list 32/-, at 10/-; H.M.V. 3-gang fitted drum drive, fitted trimmers, etc., 10/-; Utility 2-gang, complete, disc drive, covers, etc., escutcheon, etc., 8/6.—Chal-Electric, 6, Conduit St., London W.1. [2940]

EXPERIMENTER'S Surplus—Ferranti A.F.5, 15/-; A.F.6, 15/6; T.C.C. condenser, 600 volt test, 4+4+1+1+5, 6/-; goods guaranteed.—Ross, 5, Mare St., Hackney. [2914]

PAIR Sonechord Matched Speakers, £2; Brown's type U unit, 10/-; Simplicon double dial, 4/6; 2-valve Mullards, 202, 2D.X., 1L.F., Marconi L.P.2, 4/- each.—Burn, 32, Middleton Rd., West Hartlepool. [2904]

VARNISHED Insulated Sleeving, all colours.—Send P.O. for 1 for 24ft. in 3ft. lengths, of any colour; will take all standard wires; separate your circuits.—Small Tools, Ltd., 400b, Colstonian Rd., N.1. [2689]

MOVING Coil Milli-Amimeters, 0-50, 10/6 each; 2 milliamps and 120v. 17/6 each; other ranges in stock; alterations, repairs of every description.—The Victrola Electrical Co., 47, High St., Battersea, S.W.11. [0355]

RADIO CLEARANCE Co. Offer the Following Bargains, all post paid: Mains transformers, all input, 200-240, output for H.T.8 and 3.5 amps, L.T., 6/6; 350+350, 80 m.a., 4v. 3.5 amp., 7/6; 350-350, 120 m.a., 4v. 1-2 amp., 4v. 2-3 amp., 4v. 3-5 amps., 9/6.

WE Can Supply Practically Any Mains Valve Not Exceeding 19/- in Price; all guaranteed as new at the flat rate of 7/6 each. Paillard A.C. induction motors 100-250 volts, 16/6; H.M.V. condensers, 400 volts, working, 4+4 M.F., 2/6; 4+4+1+1+0.5, 3/6; 4+4+1+1+1+0.1+0.1+0.1+0.5, 4/-; T.C.C. 3 M.F., 800v. working, 2/6.

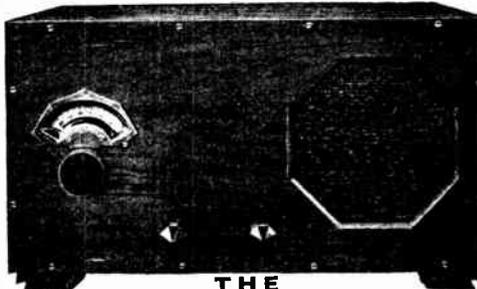
ROLA F6 P.M. Speakers, pentode transformers, 25/-; 250v. A.C. working condensers, 0.01, 0.1, 0.006, 6d.; 1 mfd. 9d., 2 mfd. 1/-, 4 mfd. 2/-.

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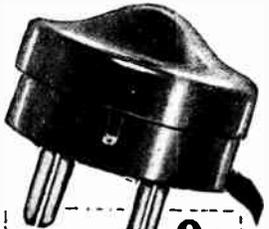
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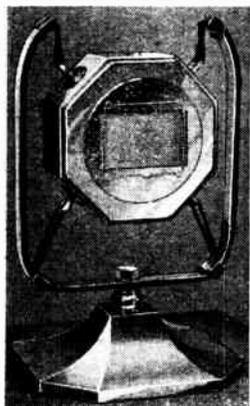
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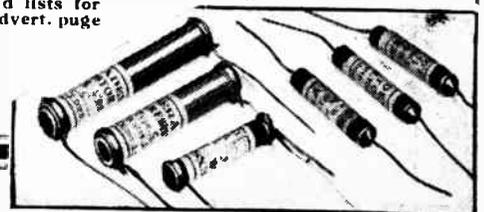
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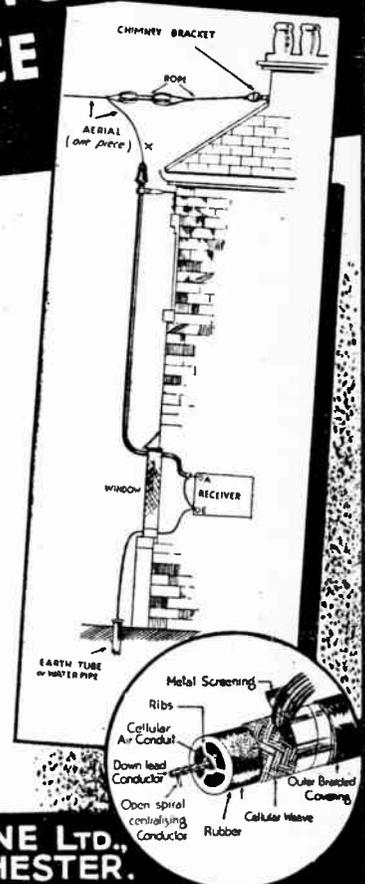
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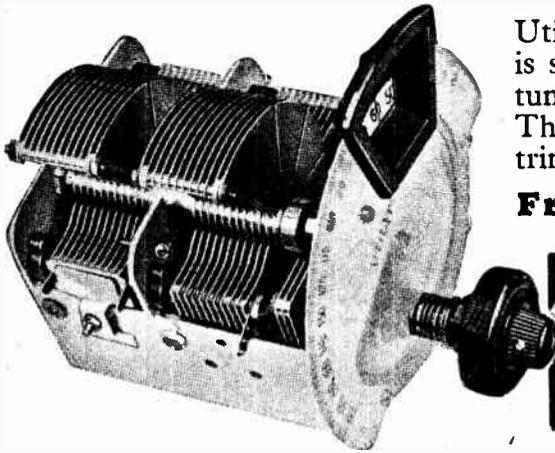
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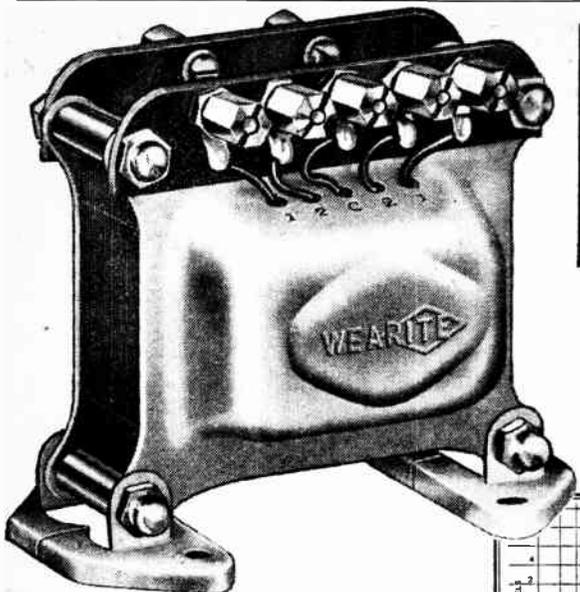
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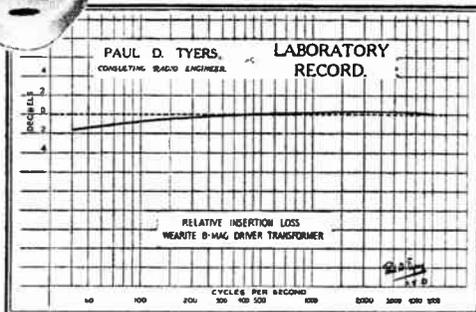
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Primary resistance 400 ohms
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Inductance, using average 2 m.a. driver valve on average signals, 35 henries.

Ratios:—Outer terminals, 1 to 1; half, 2 to 1; Tap, 1.5 to 1; Half Tap, 3 to 1.

3068

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725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1.37 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Concert, Stock Exchange Quotations, and Weather Report. 6.0, Programme for Children. 6.45, News Bulletin. 7.0, Gaelic Talk. 7.15, German Lesson. 7.30, Time Signal. 7.31, Lecture Recital by Carl Hardebeck. 8.0, Variety Programme by the Concert Six. 8.30, Soprano Solos by Violet Pearson. 8.50, The Station Orchestra. 9.10, Baritone Solos by W. Lemass. 9.30, Readings. 9.45, Sponsored Programme. 10.45, Time, News, Weather, and Close Down.

BARCELONA
EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert: Hungarian Dance No. 4 (Brahms); Nocturne (Percy); Selection from Lucia de Lammermoor (Donizetti); Intermezzo (Malvezzi); Selection from Werther (Massenet); Selection from The Snow Maiden (Rimsky-Korsakov). 8.0, Request Gramophone Concert. 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral, Weather, Exchange, and Market Prices. 10.5, Concert by the Station Orchestra: Overture, Light Cavalry (Suppé); La Coeur de Mini Pinson (de Sévère); Selection from Countess Maritza (Kálmán); Gavotte from Armida (Gluck); Standchen (R. Strauss); Slav Dance (Glazunov). 11.0, Recitations. 11.15, Duets from Operettas. 12 Midnight, Dance Music from the Casa Libre. 12.30 a.m. (Thursday). In an interval, News. 1.0 (approx.), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk and Dopolavoro Announcements. 8.30, Giornale Radio, Weather and Announcements. 8.40 (approx.), Concert of Chamber Music. Soloists: Milena Barberio (Soprano) and Ita Lombardo d'Angelo (Pianoforte). Overture, Giraldia (Cagnoni); Soprano Solos (Guarino): (a) Niina-nauna, (b) Sera; Pianoforte Solos: (a) Allegro (Rossi), (b) Allegro (Galuppi), (c) Presto (Paradisi); Pavane from Le Maschere (Mascagni); Soprano Solo: Stornello (Cimara); Pianoforte Solo: Sonata, Op. 81 (Beethoven); Overture, Il guillare (Ragni); Pianoforte Solos: Four Etudes (Chopin); Soprano Solo: Enigma (Zanella); Prelude to Act IV, of William Ratcliff (Mascagni); Soprano Solo: Serenade (Savasta); Fire Dance (Falla). In the interval, Talk. 10.30, Dance Music relayed from the Gran Caffè del Levante. 10.55, News. BASLE.—See Schweizerischer Landessender.

BELGRADE
697 kc/s, 430.4 metres; 2.8 kW.—6.55 p.m., Time and Programme Announcements. 7.0, Talk. 7.30, Sextet Recital of Yugoslav Songs. 8.0, Radio Play. 8.30, Sports Notes. 8.45, Military Band Concert. In an interval at 9.30, News. 10.30, Cigany Music from the Rudnickan Restaurant.

BERLIN
DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Songs and Choral Music on Gramophone Records. 2.45, Programme for Children. 3.30, Weather and Exchange. 3.45, Reading (Ernst Weichert). 4.0, See Hamburg. 5.0, Readings from Nazi Novels (W. Glaser, Peter Hagen and K. A. Scheininger). 5.30, Pianoforte Recital of Conrad Ansgore Music by Margarethe Ansgore; Ballad in D Minor; Extracts from Traumbilder, Op. 3; Adagio and Finale from the Sonata, Op. 21, in E Minor. 6.0, A Poem. 6.5, The Quiet Hour—Religious Address and Organ Recital. 6.35, Technical Talk on Wireless. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Hitler and Chamberlain—Some Edifying Recollections. 8.30, Styria and Carinthia—a Programme of Austrian Folk Music. 10.0, Weather and News. 10.45, Weather for Shipping. 11.0, Concert from Heilsberg. 12 Midnight (approx.), Close Down.

BERLIN
WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.0 p.m., Talk: Excursions by Water. 6.20, Magdeburg—Literary and Musical Programme by Students, with Introductory Talk. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 6.50, The Watch Word. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.30, Symphony Concert by the Station Orchestra, conducted by Eugen Jochem; the Station Choir, conducted by Heinz-Karl Weigel; and Walter Drwenski (Organ). Overture, Egmont (Beethoven); Hymn for Choir and Organ, Helden (Köhneke); Fantasia and Fugue for G Minor for Organ (Bach). Choir: Fest und Gedenksprache, Op. 169 (Brahms); Symphony No. 4 in E Minor, Op. 98 (Brahms). 10.0, News. 10.30, Talk: What They are Talking about in Berlin. 10.35, Johannes Brahms—Programme arranged by Walter Berten. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender. BEROMÜNSTER.—See Schweizerischer Landessender. BODEN.—See Stockholm. BODO.—See Oslo.

NATIONAL

Variety programme. A Musical Pilgrim's Progress, by Mr. J. D. M. Rorke.

LONDON REGIONAL

Organ recital. Dance music.

WEST REGIONAL

Orchestral concert from the National Museum of Wales.

NORTH REGIONAL

A relay from the Hippodrome, Manchester.

BELFAST

Orchestral concert from Stramillis.

ABROAD

BARCELONA 10.5 p.m. Concert by the Station Orchestra.

COPENHAGEN 8.5 p.m. Concert of modern operetta music, by the Radio Orchestra.

HILVERSUM 7.55 p.m. Song recital, by Elize de Haas.

LANGENBERG 8.5 p.m. Concert by the Münster Municipal Orchestra, relayed from the Schlossgarten.

LEIPZIG 4.0 p.m. Concert by the Leipzig Symphony Orchestra.

OSLO 8.1 p.m. Concert by the Station Orchestra.

RADIO PARIS 7.20 p.m. Concert of songs and ballads.

ROME 5.30 p.m. Orchestral concert of light music.

STRASBOURG 8.45 p.m. Brahms' symphony concert, by the Municipal Orchestra.

WARSAW 9.10 p.m. Pianoforte recital, by Joseph Turczynsky.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.30, News. 7.45, Report on the Cycling Tour of France. 8.5, Agricultural Talk. 8.20, News. 8.30, Gramophone Music. 9.0, Planquette Concert by a Symphony Orchestra; Soloists: M. Lacombe (Baritone) and M. Ressa (Tenor).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—5.45 p.m., Programme for Children. 6.35, Gramophone Music. 6.40, Talk. 6.55, Talk for Housewives. 7.0, See Prague. 7.25, Concert by the Station Orchestra, conducted by F. Dyk; Soloists: V. Strelcova-Zachova (Soprano), Z. Ruth-Markov (Bass), R. Jil (Violin); Overture, The Gipsy Baron (Joh. Strauss); Songs: Gipsy Dance (Debussy); Violin Solo, Gipsy Melodies (P. de Sarasate); Songs: Recitations, Gipsy Poems; Czardas from Coppélia (Delibes); Czardas from International Suite (Moszkovsky); Songs; Hungarian Dances Nos. 5 and 6 (Brahms). 8.25, See Prague. 10.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—2.45 p.m., Service in Honour of the Feast of SS. Peter and Paul, relayed from Breslau Cathedral. 3.0, Market Prices. 3.30 (from Gleiwitz). Pianoforte Recital by Eva Ebner-Robert. 4.0, Reading (Gertrud Aulich). 4.20, Tenor Recital by Albert Gärtner: Im wunderschönen Monat Mai (Schumann); Frühlingsglaube (Schubert); Ich wandre nicht (Schumann); Mähnacht (Brahms); Wie bist du meine Königin (Brahms); Love Song from The Valkyries (Wagner); Reiselied (Nick); Three Songs (Paul Graener); (a) Der Kuckuck, (b) Die Königin, (c) Der König. 4.50, Talk: The Mining Districts of Upper Silesia. 5.10, Agricultural Prices. 5.15, Concert of Summer Songs by the Upper Silesian Choral Society. 5.35, Talk: The German Element in Poland. 6.0, Talk: The 28th June in German History—Sarajevo and Versailles. 6.25, Quartet in A Minor, Op. 29 (Schubert). 6.50, Weather, News and Market Prices. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Organ Recital, relayed from a Church. 9.0, News. 9.10, The Germans in the Volga Provinces—their Songs and their Sufferings—Lecture Recital. 10.0, Time, Weather and News. 10.10 (approx.), Talk: How to eliminate Radio Disturbances. 10.40, Talk: Along the Oder. 11.0, Serenade from Heilsberg. 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.15 p.m., See Prague. 6.25, German Transmission: News, Talk: The Languages of Europe and the

Near-East, Talk for Workers, and Talk on Schools. 7.0, See Prague. 7.25, See Bratislava. 8.25, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert, relayed from the Grand Hotel, Antwerp. 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert. 5.0, Dance Music, relayed from the St. Sauveur Dance Hall. 6.0, Talk: Scientific Study. 6.15, Gramophone Music: Tarantella, Napolitana (Popecki); The Pilgrim's Progress (Bantock). 6.30, Saxophone Solos: Berceuse (Faure); Le Cygne (Saint-Saëns); Pièce en forme de Habanera (Ravel); Sielienne (Gaubert). 6.45, Gramophone Records: Extracts from The Four Ways—Suite (Coates); Gavotte (Rameau); Hungarian Rhapsody No. 14 (Liszt-Doppler). 7.15, Talk: The Natural History Museum at Mons. 7.30, Talk on Hygiene. 8.0, Song Recital by Mme. Gina Falvy; Song (Brahms); Two Gipsy Songs (Dvorák); Two Songs (Goeyens); Spring Waters (Rachmaninov). 8.15, Variety Programme. 8.45, Gramophone Concert. 9.0, Dance Music, relayed from the St. Sauveur Palais de Dances. 9.30, Poetry Reading. 9.45, Dance Music (cont'd.). 10.0 (in an interval), Journal Parlé.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Light Music on Gramophone Records. 1.0 p.m., Le Journal Parlé. 1.10, Concert, conducted by André Felleman, relayed from the Grand Hotel, Antwerp. 5.0, Concert by the Radio Orchestra, conducted by Charles Walpot: Hungarian March (Berlioz); Overture, Lysistrata (Lincke); Aubade à Kiki (De Boeck); Selection from Werther (Massenet); Clarinet Solo: Introduction and Variations on Marlborough (Paradis); Ballet Music from Faust (Gounod). 6.0, Gramophone Music. 6.15, Talk: Free-thinking and Freemasonry. 6.30, Sonata Recital by Mme. Rynemund and M. Laurent: Sixth Sonata (Mozart); Sonata, Op. 100 (Brahms). 7.0, Gramophone Records: Overture, Tannhäuser (Wagner). 7.15, Talk: A Sea Voyage Four Hundred and Fifty Years Ago. 7.30, Gardening Talk. 8.0, The Magic Violin—Radio Play (Grassin), with Music by Doullez. 9.0, Reading (Pirandello). 9.15, Concert by the Cecilia Choir, conducted by L. De Voelt; Soloist: Mme. De Baeker. 10.15, Le Journal Parlé. 10.25, Gramophone Music.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra. Soloist: D. Teodoru (Violin). Carnival Overture (Dvorák); Suite, Conte d'Avril (Widor); Selection from The Girl of the Golden West (Puccini); Selection from The Gipsy Baron

(Joh. Strauss); Tchaikovsky Potpourri (Urbach); Waltz, Les Sirènes (Waldteufel); Symphonic Poem, Moldavia (Arnetani); Waltz from the Ballet Raymond (Glazunov); Violin Solo, Le Cygne (Saint-Saëns); Cavalry March (Schubert). In an interval at 6.0, Radio Journal. 7.0, Educational Talks. In an interval at 7.20, Gramophone Music. 8.0, Cello Recital. 8.30, Song Recital. 9.0, Talk. 9.15, Clarinet Recital. 9.45, Radio Journal. 10.0, Light Music by the Marco Orchestra, relayed from the Continental Restaurant.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.25 p.m. till Close Down. 4.0 p.m., Talk. 5.0, Song Recital. 5.30, Apponyi in America—Play (Bela Barabas). 6.15, Concert. 7.15, News. 7.25, Programme by Franz Kiss. 8.0 till Close Down, Dance Music.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, relayed from the Wivex Restaurant. 2.0 to 3.0, Interval. 3.0, Orchestral Concert, conducted by Th. Hyring. In an interval, Talk for Women. 5.0, Gramophone Music. 5.35, Exchange and Fish Market Prices. 5.50, Agricultural Talk. 6.20, French Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.30, Talk: Educational Problems. 8.0, Chimes from the Town Hall. 8.5, Modern Operetta Music by the Radio Orchestra, conducted by Walter Meyer-Radon. Soloist: Otto Steenberg (Songs); Overture, Gipsy Love (Lehár); Selection from Countess Maritza (Kálmán); Two Airs from The Czarevitch (Lehár); Selection from Rainbow (Gershwin); Air from Schön ist die Welt (Lehár); Air from Countess Maritza (Kálmán); Russian Dance from Tatianna (Lehár); March from Sunny (Kern). 9.10, Talk: Potato-growing in Denmark. 9.40, Pianoforte Recital by Sara Behr. 10.0, News. 10.15, Concert by the Radio Orchestra, conducted by Walter Meyer-Radon: Overture, Prometheus (Beethoven); Waltz, Accelerationen (Joh. Strauss); Selection from Madame Butterfly (Puccini); Two Pieces from Peer Gynt (Grieg); La Procession nocturne (Rabaud). 11.0, Dance Music, relayed from Nimb's Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Thursday), Close Down.

CORK.—See Heilsberg.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. T. St. A. Ronald and B. McNabb announcing. 4.30 p.m., Orchestral Concert for Portsmouth and Southsea Listeners. Potpourri, Ein Souper bei Suppé (Morena); Pianoforte Solo: Polonaise in A (Chopin); The Gingerbread Waltz from Hansel and Gretel (Humperdinck); Song, The Two Grenadiers (Schumann); Morning and In the Hall of the Mountain King, from the Peer Gynt Suite (Grieg); Pianoforte Solo: Rondo Capriccioso (Mendelssohn); Autumn (Chaminade); Song: The Song of the Flea (Mussorgsky); Pianoforte Solo: Minuet in G (Paderewsky); Traume (Wagner). 5.15, Concert for Isle of Wight Listeners: Waltz, Jolly Fellows (Vollstedt); Song, Floral Dance (Moss); Trio, Friend of Mine (Sanderson); Song, Annie Laurie (Trad.); Waltz, Amoureuse (Berger); Trio, Pearl of mine (Fletcher); Song, The Lute Player (Allison); Trio, Love's old sweet Song (Molloy); Song, Mairé, my Girl (Aitken); Pianoforte Solo: Wasps (Holbrooke); Song, Temple Bells (Woodforde Finden); Waltz, Mezza Notte (Amadio). 6.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Ibeolians: Love me to-night (Hart); Sing a new Song (Wever); The Night when Love was born (Young); The Clouds will soon roll by (Woods); I can't believe it's true (Newman); Ain't cha coming out to-night (Robison); Moon (Hills); Big Ben's saying Goodnight (Murray); Someone to care for (Warren); That's my home (Rene); Won't you stay to Tea? (Revel); Contented (Bestor); It pays to advertise (O'Hogan); I sigh for you, Rio Rita (Santugini); London Bridge is falling down (Bleyer); They all do the Rumba (Pola). 11.0, Club Concert of Gramophone Records for North Walsham and Aylsham Listeners: Potpourri of Stephen Foster Melodies; Sir Harry Lander: Back to the Shore where the Heather grows; The Lute Will Evans: Building a Chicken House; Gracie Fields: He's dead but he won't lie down; Lea Ellis: Now I'm in Love (Shapiro); Billy Richardson: Wot a thier price o' swedes? (Winnecombe); Maurice Chevalier: On top of the World; Wish Wynne, Bluebird; Jack Smith: Pardon me, pretty Baby; Flanagan and Allan: Oi; Orchestra: Old Music Hall Melodies. 12.5 a.m. (Thursday), I.B.C. Late News Bulletin. 12.10, Dance Music: I've told every little Star (Kern)

JUNE 28th

WEDNESDAY

continued

Rosa mia (Potter); The Song is you (Kern); Piano Solo: Why waste your tears? (Hubert); Let me explain (Towers); Lover of my Dreams (Coward); Her name is Mary (Sievier); Piano Solo: Where are you, Sweethearts of Yesterday? (arr. Hylton); Trees (Rasbach); Tea for Two (Youmans); I want to be happy (Youmans). 1.0 a.m., Concert of Light Music: Vienna, City of my Dreams (arr. Reeve); Ay, Ay, Ay (Freire); Piano Solo: Dance from The Enchanter (Hollbrooke); Suite: La Source (Delibes); In the gloaming (Chaminade); The Wedding of the Winds (Hall); Piano Solo: Rangoon Rice Carriers (Hollbrooke); Poor Butterfly (Hubbell de Philipp); 1.30, Organ Recital: Spirit of America (Zanicini); Bird Songs at Eventide (Coates); Song, Devonshire Cream and Cider (Sanderson); A Palace of Dreams (Waller); Song, Up from Somerset (Sanderson); Serenade (Drigo); The Flowers of the Forest (arr. Henderson). 2.0, Dance Music by the Icolians: Sheltered by the Stars (Young); Just a little home for the Old Folks (Leslie); You've got me in the Palm of your Hand (Leslie); Fit as a Fiddle (Freud); I can't believe it's true (Kahn); My Romance (Young); I wonder how the old folks are to-night? (Yellen); Pal of my Dreams (Gilbert); Let's all Dance the Polka (Benson); There's a Crowd (Warren); Marching along together (Pola); Sweethearts for ever (Caesar); You're my everything (Warren); I'm forgetting myself (Meyer); Ooh, that Kiss (Warren); I guess I'll have to change my Plan (Schwartz). 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres, and Trier, 1,157 kc/s, 259.3 metres.—3.20 p.m., Programme for Children. 4.25, Economic Notes. 4.30, See Langenberg. 5.45, Economic Notes. 6.0, Talk: The Dopolavoro Society in Italy. 6.25, Topical Programme. 6.45, Today's News. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Programme to be announced. 8.30, Gramophone Concert. 9.30, Programme to be announced. 10.20, Time and News. 11.0, See Munich. 12 Midnight, Close Down.

FREDRIKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call na (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—4.0 p.m., Concert by the Hamburg Philharmonic Orchestra, conducted by Gerhard Maasz; Military March No. 2 (Schubert); Overture, Der Schauspielersdirektor (Mozart); Selection from Der Rosenkavalier (R. Strauss); Bilder aus dem Süden (Nicodé); Aquarellen-Walzer (Jos. Strauss); Overture, Carnival in Rome (Joh. Strauss). 5.0, Talk: The Riddle of Instinct. 5.30, Hamburg, Bremen and Lübeck—Report on Events in the Senates and Houses of Burgesses of the Hanseatic Free Cities. 6.10, Concert of Music by Julius Spengel for his Eightieth Birthday; The Station Chamber Orchestra conducted by the Composer; Soloist, Bruno Micksche (Violin); Introductory Talk; Concert Piece for Violin and Small Orchestra; Overture to Tragi-Comedy. 6.40, Frankfurt Exchange. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Stuttgart). 8.30, See Berlin (Witzleben). 10.0, Time and News. 10.20, Topical Talk. 10.30, Concert by the Station Chamber Orchestra, conducted by Gerhard Maasz; Wedding March (Boschi); Prelude to Schirrin und Gertraude (Graener); Sword Dance (Poldini); Oriental Festival March and Hindu Dance from Aladdin (Nielsen); Selection from Die schwarze Orchidee (Hilbert); Intermezzo from Mona Lisa (Schilling); Caucasian Suite (Ippolitov-Ivanov); Ballet Music from Ritter Pasman (Joh. Strauss); Egyptian March (Joh. Strauss).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Agricultural Prices and Exchange. 3.20, Hints for the Housewife. 3.30, Programme for Children. 4.0, Dialogue between a Mother and a Leader of the Young Hitlerites: Shall my Child become a Young Hitlerite? 4.25, Concert, relayed from the Zoological Garden. The Königs-

berg Opera House Orchestra, conducted by Ludwig Leschetitzky and the Station Choir. Prelude to Titus (Mozart); Overture to Act 2 and Chorus from Rienzi (Wagner); Four Songs, Op. 17, for Women's Choir, Two Horns and Harp (Wagner); Selection from The Jewels of the Madonna (Wolf-Ferrari); Sphärenklänge (Hallen); Prelude (Liszt). 5.45, Review of Periodicals. 6.15, Agricultural Prices. 6.25, Songs of East Prussian Composers—Recital by Erna Pfeiffer. Songs (Jensen): (a) Wie Lenzeshahn hast du mich stets erquicket, (b) Mutter, o sing mich zur Ruh, (c) Schon stehen die Rosen in Blüte; Songs (Constance Berncker): (a) Nachtgesang, (b) Mädchen Abendlied; Songs (Tieszen): (a) Trutzlöcherchen, (b) Spruch, (c) Deutsches Lied. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, News. 8.5, Talk: The Effects of the Treaty of Versailles on World Trade. 8.35, See Berlin (Witzleben). 10.0, News. 10.15 (approx.). Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Festival Overture (Lassen); Dance of the Fireflies (Berlioz); Dance from The Tempest (Humperdinck); Selection from Martha (Flotow); Transaktion-Walzer (Jos. Strauss); Selection from Flotte Bursche (Suppe); Selection from The Gipsy Baron (Joh. Strauss). 12 Midnight, Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). 11.40, Concert by De Notenkrakers, conducted by D. Wuis. 1.40, Programme for Women. 2.40, Programme for Children. 5.10, Concert by the V.A.R.A. Orchestra, conducted by Hugo de Groot. Overture, The Betrothal by Lanternlight (Offenbach); Selection from The Tales of Hoffmann (Offenbach); Im chambre séparée (Heuberger); Melody (Reinhardt); Dance from Madame Sherry (Hoschna); Gramophone Music; Meditation (Leonevallo); Roses of Picardy (Haydn Wood); Selection from Le petit duc (Lecocq). 6.10, Song Recital by Elze de Haas, Johan Jong at the Organ, Adlio (Tosti); Mina (Pergolesi); Cario mio ben (Giordano); March from Signor Jorsalfar (Grieg); Melody (Grieg); Selection from Die Fledermaus (Joh. Strauss); Selection from The Gipsy Baron (Joh. Strauss); Song from Paganini (Lehár). 6.40, Talk. 7.0, Organ Recital by C. Steyn. 7.20, Talk. 7.39, S.O.S. Messages. 7.40, Concert by De Flier-Fuitters, conducted by J. v. d. Horst. 8.25, Dramatic Programme. 8.55, Concert by the V.A.R.A. Orchestra, conducted by Hugo de Groot. Overture, Le Maschere (Mascani); Ballet Music from Undine (Lortzing); Waltz from Polnblut (Nedbal); Sérénade amoureuse (Filippucci); Elgy (Jaksch); Impromptu (Kukla); Potpourri, Waldteufeleien (Kling). 9.40, News. 9.55, Concert (contd.). Overture, Zampa (Hérold); Waltz, Gold and Silver (Lehár); Minuet of the Fireflies, from The Damnation of Faust (Berlioz); Rakoczy March (Berlioz); Second Hungarian Rhapsody (Liszt); Extravaganzen (Morena). 10.40, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—Programme of the Christian Radio Society (N.C.R.V.). 11.55 a.m., Trio Concert; Overture (E. Bach); Die Hydropathen (Gungl); Selection from Madame Favart (Offenbach); Russian Sketches (Fetras); Organ Solo by Sydney Gustard; Round the World in Eight Minutes; Bizet Potpourri (Homan-Weban); Was Blumen träumen (Translaten); Selection from Das Nachtlager in Granada (Kreutzer); Selection from The Geisha (Jones); Overture, The Bohemian Girl (Balfe). 1.40 p.m., Agricultural Talk. 2.25, Programme Announcements. 2.40, Sacred Reading. 3.10, Gramophone Music. 3.40, Military Band Concert; Choral; The Globe Trotters' March (Leopold); Overture, Neerlandia (Wesly, arr. G. Parés); Lotus Flowers (Ohlsen); Adagio (Beethoven); In the Gipsy Camp (Blumentrit); Finale. 4.40, Programme for Children. 5.40, Violin Recital by Loty Laguna; Sonata in A (Händel); Sonata in D minor (Brahms). 6.10, Talk. 6.40, Police Notes. 6.55, Time Signal and Press Review. 7.10, Gramophone Music; Gavotte in G Minor for Harpsichord (J. S. Bach); Concerto in G for Harpsichord, Two Violins, and Cello (J. C. Bach). 7.25, Talk. 7.40, Gramophone Music. 7.55, Concert by the Utrecht Municipal Orchestra. Part I. Wagenaar Music, conducted by the Composer: (a) Cortège from De betoverde prinses, (b) Intermezzo, (c) Overture, Drie Koningenvond. Part II. Conductor, Henri van Gondever; Symphony (C. Franck). In the interval at 8.40, Medical Talk. 10.0, News. 10.10, Gramophone Music. 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Programme for Children. 6.50, Programme for Boys. 7.0, Concert by the Station Orchestra; Melody from The Rose of Stamboul (Fall); Waltz (Merikanto); Two Pieces (Kaski); Melody (Sihellus). 7.35, Talk. 7.55, Song Recital. 8.15, Popular Music by a Mandoline Orchestra. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music, relayed from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Orchestral Concert, conducted by Wolf; Soloist, Hermann Munk (Songs to the Lute); Overture, Undine (Lortzing); Songs to the Lute: (a) Westphalian Folk Song, Wenn ich zum Tore nausgeh', (b) Gestern abend bei Mondenschein, (c) Sie giecht wohl einem Rosenstock, (d) O möchte mein Liebchen ein Rosenstock sein, (e) Erlaube mir, feins Mädchen, (f) Ein Mädchen ging vom Hause fort; Two Russian Dances, Nos. 1 and 8 (Bullerian); Scenes from Lucia di Lammermoor (Donizetti); Waltz, Wiener Bürger (Ziehrer); Selection from Frederica (Lehár); Dehler-Marsch (Lippe). In an interval at 2.0 (approx.), Announcements. 2.30, Sponsored Programme with Gramophone Records. 3.30, Economic Notes and Time. 3.50, Programme for Young People. 4.30, Concert by the Station Quintet; Soloists, Kläre Hansen (Soprano) and Hans Wöcke (Baritone). 5.45, Talk arranged by the Post Office. 5.50, Talk for Women. 6.10, Talk: The Technique of Speech. 6.30, Italian Conversation. 6.50, Weather, Time, Economic and Sports Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.30, Announcement. 8.35, Concert by the Münster Municipal Orchestra, relayed from the Schlossgarten; Overture, Coriolanus (Beethoven); Selection from Tannhäuser (Wagner); Pirtation (Steck); Love's Dream after the Ball (Czibulka); Second Polonaise in E (Liszt); Waltz, Die Schönbrunner (Lanner). 9.0, Talk in Connection with Nordic Week—Nordic Customs. 10.10, Topical Talk. 10.20, Announcements and Sports Notes. 10.50, Concert of Chamber Music by the Station String Quartet and Soloists; Piano Solo; Quartet in C Minor, Op. 13 (Strauss); Baritone solo; Schilffeder (Protze); String Quartet in A Minor (Fortner). 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Concert by the Leipzig Symphony Orchestra, conducted by Theodor Wünschmann; Overture, Theodora (Händel); Symphony No. 1 in D (Haydn); Selection from Don Giovanni (Mozart); March in G minor (Schubert); Leonora Overture No. 3 (Beethoven); Military March No. 11 (Singer); Märkische Suite, Op. 92 (Kaun); Overture, The Barber of Bagdad (Cornelius). In the interval at 1.0 p.m., News. 2.0 to 2.10, News. 3.35, Market Prices. 4.0, Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer; Soloists: Emil Lüh (Violin) and Friedrich Sammler (Harpsichord); Overture, Prometheus (Beethoven); Violin Concerto No. 8 in A minor, Op. 47 (Spohr); Symphony No. 14 in A (Haydn); Allegro molto from the Serenade in D, Op. 11 (Brahms); Tone Poems (Reinecke). In the interval at 4.45 (approx.), Book Review for Children. 5.50, Market Prices, Weather, and Time. 6.0, Talk: Let us forget. 6.20 (approx.), Concert (contd.): Concerto grosso in B Flat, Op. 3, No. 1 (Händel Reger); Serenade in D minor, Op. 69 (Volkmann); Overture, Don Giovanni (Mozart). 6.50, Interval. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.30, Concert relayed from Berlin (Witzleben). 10.5, News. 10.15 (approx.), Concert by the Leipzig Symphony Orchestra. 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—5.0 to 5.30 p.m., Programme in English by the I.B.C. F. Miklavc announcing; International Broadcasting Club Concert; Waltz, Come out Vienna (Joh. Strauss-Levy); Ballad: A Glass of Golden Bubbles; Waltz, Dance, Pretty Lady, from Waltz Time; Accordion Band, Flower of Spain; Accordion Band, Ziganette; Monologue, In Charge of a Book-stall; Waltz, You loving me; Waltz, Little Yvonne; Tango, In Santa Lucia. 6.0, Readings. 6.30, Gramophone Music. 7.0, Talk: A Visit to Morocco and the Atlas Mountains. 7.30, Literary Talk. 8.0, Concert of Yugoslavian Music by the Station Orchestra. 9.0, Quartet Recital of National Songs. 9.30, Weather and News. 9.45, Dance Music. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—7.0 p.m., Gramophone Music. 7.40, Weather Report.

7.45, Gramophone Records: Overture, Oberon (Weber); Ballet Music from Marouf (Raband); Norwegian Rhapsody (Lalo). 8.15, Talk: Gymnastics for Women. 8.25, Recital of Luxembourg Songs. 8.30, Talk in Luxembourg Dialect. 8.40, Gramophone Music. 8.50, News in French. 9.15, Gramophone Music. 9.45, News in German. 9.55, Dance Music and Variety Music on Gramophone Records. In the intervals, Exchange and News.

LWOW

788 kc/s, 381 metres; 16 kW.—7.20 p.m., Miscellaneous Items. 7.40, See Warsaw. 8.0, Humorous Programme. 8.50, See Warsaw. 9.0, Sports Talk. 9.10, See Warsaw. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Educational Talk. 8.45, Concert by the Pierre Lorraine. Soloists, Mme. Lamotte (Soprano), M. Pichard (Baritone), and Georges Cecil (Tenor); Overture, Jeanne Henri (Méhul); Tenor Aria from Fortunio (Messager); Madrigal (Thomé); Baritone Solo from Gilles Ravisseur (Grissart); Overture, La petite mariée (Lecocq); Soprano and Tenor Duet from La petite mariée (Lecocq); Selection from Les Cloches de Corneville (Planquette); Overture, Gillette de Narbonne (Audran); Soprano Solo from Gillette de Narbonne (Audran); Valse des heures (Ganne); Selection from La Mascotte (Audran); Soprano and Tenor Duet from La Mascotte (Audran); Selection from L'Africaine (Meyerbeer); Extracts from Faust (Gounod); La Sabotière (Ganne); Spanish March (Acéves). After the Concert, News.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, Programme for Women and Dance Music. 9.25, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time and Political Review. 11.15 (approx.), The Three Musketeers—Radio Play (Morales de Acevedo) after the Novel by Dumas. 1.15 a.m. (Thursday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.15 p.m., See Prague. 6.30, German Transmission; Humorous Programme. 6.45, Chromatic Accordion Recital. 7.0, See Prague. 7.25, Band Concert. 7.50, Concert of Light Music by the Station Orchestra, conducted by Musil. 8.55 (approx.), See Prague. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—2.45 p.m., Weather. 3.0, Request Concert. 4.0, Talk: Aircraft. 4.30, A Play. 7.30, Programme for Young People. 8.30 (approx.), Concert from the Radio Theatre. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 526 kc/s, 560 metres and Nürnberg, 1,256 kc/s, 239 metres.—4.55 p.m., Concert by the Munich Concert Orchestra, conducted by Richard Planer. Overture, Die Perle von Corra (Kosmer); Entr'acte and Waltz from Coppelia (Delibes); Italian Suite No. 2 (Beccce); Bavarian Humoresque (Pfitzinger); Potpourri Pudding (Morena); Waltz (Lanner); Indian Wedding (Percy); March, Der Adler von Lille (Blankenburg). 6.5 (from Nürnberg), Dialogue: Aerial Defence of the Civil Population. 6.25, Gramophone Records of Songs by Galli-Curci and Gigli. 6.45, Time, Weather and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Twelfth Mozart Festival, relayed from the Kaiser-saal of the Residenz, Würzburg. Zaide-Singspiel (Mozart), with words by Willy Meckbach. 9.0, Concert by the Station Orchestra, conducted by Hans Winter. Soloist: Herbert Harum (Pianoforte). Castelli romani—Three Pieces for Pianoforte and Orchestra (Marx); Sinfonietta (Jung). In the Interval, Talk: Workers' Poetry. 10.20, Time, Weather and News. 11.0, Serenade conducted by Erich Kloss. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrumd, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Gramophone Music. 6.0, Talk. 6.30,

JUNE 28th WEDNESDAY continued

Programme for Girls. 7.0, Advertising Notes. 7.15, Weather and News. 7.30, A Visit with the Microphone. 8.0, Time. 8.1, Concert by the Station Orchestra, conducted by Hugo Kraum: Suite from L'Arlesienne (Bizet); Pavane (Ravel); Andante con moto from the Italian Symphony (Mendelssohn); Humoresque (Tchaikovsky); Cherry Ripe (Scott); Suite (Halvorsen); Two Hungarian Dances (Brahms). 9.10, Advertising Notes. 9.30, Agricultural Report. 9.40, Weather. 9.45, News. 10.0, Topical Talk. 10.15, Accordion Duets. 10.45, Dance Music on Gramophone Records.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time and Announcements. 8.45, Concert, Soloists: Micozzi (Clarinet), Mazzioetti (Tenor); Overture, The Mandarin's Son (Cui); Second Movement from the Concerto for Clarinet and Pianoforte (Mozart); Italian Suite (Laparra); Songs: (a) Aria, Vaghiissima sembianza (Donaudy), (b) Aria from Traviata (Verdi); Pavane (Saint-Saëns); Songs: (a) Margherita (Mazzioetti), (b) Tormento (Tosti), (c) Non piangere Lili from Turandot (Puccini); Gigue (Wamser). Talk in an interval. 10.0 (approx.), Popular Songs. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals)—6.45 p.m., Talk on Music, with Songs by Princess Hélène de Croÿ. 7.0, Le Journal Parlé. 8.30, Concert by the Symphony Orchestra, conducted by Eduard Flament: Suite of Six Pieces (Bach); Sinfonia Radio (Flament); Selection from The Valkyrie (Wagner); Norwegian Dances (Grieg). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music. 7.15, Journal Parlé. 7.30, La fiancée du Tontou—One-Act Play (Péllissier). 8.0, Talk on Economics. 8.15, Interval. 8.30, Le Geste—Play in Three Acts (Donnay and Duvernois). 10.30, Dance Music from the Lido. 11.0, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Music. 8.0, News. 12 Noon, Educational Talk. 12.15 p.m., Music from Ni veuve ni joyeuse—Operetta (Fancher) by the Radio Paris Orchestra. 12.30, Organ Recital by G. Desserre from the Gannont Palace; Hungarian March (Rakoczy); Stop the Sun! Stop the Moon! (Cook); Selection from The Pearl-Fishers (Bizet); Chanson (Friml); Suzanne (Hoffmann). 1.0, Exchange and News. 1.5, Concert by the Radio Paris Orchestra: Selection from Der Orloff (Garnichstaedten); Selection from Madame Cupidon (Hesse); Selection from The Countess Maritza (Kálmán); Selection from La jolie Persane (Lecocq); Overture, Les Noeës de l'Alcaide (Le Rey). In the interval at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange. 6.10, Agricultural Talk. 6.40, German Lesson. 7.0, Medical Talk. 7.20, Concert of Songs and Ballads: Canzone vesuviana (Mareucci); Romance sans paroles (Masson); Canzonetta (Mendelssohn); Romance in B Flat (Luigini); Love Song (Malvezzi); Romance (Moreau); Chanson de la Esmeralda (Mesquita); Romance sans paroles (Saint-Saëns); Chanson intime (de la Presse). 7.45, Commercial Prices and News. 8.0, Competition Results. 8.30, News. 8.40, Fashion Review by Mlle. José. 8.45, Gramophone Records. 9.0, Knock—Comedy in Three Acts (Romains), relayed from the Comédie des Champs Elysées. In the interval at 9.15, News.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relay by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Popular Programme. 7.45, KDKA Home Forum. 8.0 to 8.58, New York Relay. 8.0, Betty and Bob. 8.15, Radio Troubadours. 8.30, Happy Days in Dixie. 8.58, Teaberry Baseball Scores. 9.0, Southern Symphonies, from New York. 9.30, Business News and Market Reports. 9.45, Sketch, from New York. 9.58, Baseball Scores. 10.0, Rhythm Kings. 10.15, Larry Larson (Organist). 10.35, The Singing Lady. 10.45, Little Orphan Annie, from New York. 11.0, Time Signal and Press News Reeler. 11.5, Ensemble. 11.15, Weather Report. 11.16, Sport Review. 11.23, I Bring a Song. 11.28, Announcement. 11.29, Temperature Report. 11.30, Pittsburgh Spotlights. 11.45 to 3.30 a.m. (Thursday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12.0 Midnight, Amos 'n' Andy. 12.15 a.m., Al Mitchell's Orchestra, with Everett Marshall (Baritone). 12.30, String Symphony. 1.0, Crime Clues. 1.30, Jones and Hare. 1.45, Popular Programme. 2.0, United States Marine Band. 3.0, Willard Robison and his Deep River Orchestra. PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.0 kW.—6.35 p.m., Recitations. 7.0, Review of Periodicals. 7.15,

Miscellaneous Items and Announcements. 7.35, Gramophone Music. 7.40, Recitations. 7.58, Time. 8.0, Concert relayed from LWOW, 789 kc/s, 381 metres. 8.50, See Warsaw. 10.0, Time Signal, Sports and Police Notes. 10.15, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by Vaclav Smetacek; Soloist, F. Pom (Songs); Overture, King Stephen (Beethoven); Symphonic Poem from My Country (Smetana); Two Songs (Sivic); Scherzo (Krycka); Festival Overture in D (Smetana). 3.55 to 4.0, Exchange. 5.45, Talk for Tourists. 5.55, Talk on Economics. 6.5, Agricultural Talk. 6.10, Gramophone Music. 6.15, Programme for Workers. 6.25, News in German. 6.30, German Transmission: Talk for Workers and Market Report. 7.0, Chimes from St. Ludmila's Church and News. 7.25, See Bratislava. 8.25, Violin and Pianoforte Sonata, Op. 10 (Foerster). 8.40, Talk: Czechoslovak Health Resorts. 8.55 to 10.0, Programme in Honour of the Yugoslav National Holiday. 8.55, An Address. 9.5, Choral Music. 9.30, Extracts from Osman (Gundulic). 10.0, Time, News, Press Review and Sports Notes. 10.15, News in French for Listeners Abroad. 10.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Lausanne), Tourist Talk. 7.25, News. 7.30, Talk: The Theatre in Summer. 8.0 (from Lausanne), Concert. 9.0 (from Geneva), Chamber Music Recital by MM. Klein, Motet and Karr. 9.50, News. 10.0 (from Geneva), Dance Music. 11.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1R0, 680 kc/s, 441 metres; 50 kW. Relay by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres.—1.10 to 2.15 p.m., Concert of Light Orchestra Music. In the intervals at 1.30, Giornale Radio and Exchange; and at 2.0, Time Signal and Announcements. 4.45, Children's Radio Review. 5.10, Weather Report. 5.15, Exchange, Report of the Royal Geographical Society and Giornale Radio. 5.30, Orchestral Concert of Light Music. 6.40 (from Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopplavoro Notes. 6.57, Report of the International Institute of Agriculture (in Italian and English). 7.10, Tourist Talk. 7.20, Announcements in Various Languages. 7.40, Giornale Radio. 8.0, Time Signal, Announcements and Gramophone Music. 8.15, Medical Talk. 8.30, Giornale Radio and Sports Notes. 8.45, Dafni—Opera in Three Acts (Mule), conducted by the Composer. In the intervals, Two Talks. After the Opera, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relay at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 to 10.0 (approx.), New York Relay. 9.0, Popular Concert. 9.30, Texas Cow Girl. 9.45, Lady Next Door. 12.45 a.m. (Thursday), Stock Reports. 1.0 to 2.30, New York Relay. 1.0, Popular Programme. 1.30, Donald Novis (Tenor). 2.0, Ferde Grofé's Orchestra. 2.15, Musical Programme. 2.20, Variety Programme. 3.0, Popular Programme, from New York. 3.30, Musical Programme, from New York. 4.0, Programme Resumé.

SCHWEIZERISCHER

LANDESENDER

BERGMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—6.15 to 6.35 a.m. (from Berne), Gymnastics. 10.20 (from Berne), Broadcast for Schools. 10.50 to 11.59, Interval. 11.59, Time Signal from Neuchâtel Observatory and Weather Report. 12 Noon (from Berne), Gramophone Concert. 12.30 p.m., Time and News. 12.40 (from Berne), Gramophone Concert (contd.). 1.25 to 1.35 (from Berne), Exchange, Time and Weather. 5.0 (from Berne), In the Kingdom of the Lake and Water Sprites—Gramophone Music. 6.15 (from Berne), Songs by Franz Baumann on Gramophone Records. 6.30 (from Zürich), Talk: The Excavations in the Island of Verd. 7.0 (from Zürich), Time and Market Prices. 7.10 (from Zürich), Gramophone Music. 7.30 (from Zürich), English Lesson. 8.0 (from Zürich), Songs by the Schwamendingen Quartet. 8.30 (from Zürich), Talk: Roman Architecture. 9.0, News. 9.10 (from Zürich), Concert by the Swiss Radio Orchestra. 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relay by Boden, 344 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres;

Ostersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—2.30 p.m., Speech by the Crown Prince at the Opening of the World Power Conference in the Concert Hall. 5.5, Provincial Programme. 6.0, Gramophone Music. 6.45, Interviews with Members of the World Power Conference. 7.15, Weather and News. 7.30, Talk, relayed from Orebro, 1,265 kc/s, 237.2 metres. 8.0, Concert by the Station Orchestra. Soloist, Ruth Althin (Songs); Selection from Tristan and Isolde (Wagner); Overture, The Flying Dutchman (Wagner); Three Songs (Hakanson); Musik am Abend, Op. 44 (Grahner); Two Songs (Melebers); Suite from Aladdin (Nielsen). 9.15, Talk, relayed from Orebro: The Shoe-making Industry in Nerike. 9.45, Weather and News. 10.0, Dance Music by the Enders Orchestra, relayed from the Bern Hall. 11.0 (approx.), Close Down.

STRASBOURG

859 kc/s, 345 metres; 11.5 kW.—12.45 p.m., News. 1.0, Time and Exchange. 1.5, Orchestral Concert of French Operetta Music, conducted by Maurice de Villers. 3.30, Concert by the Casino Orchestra, conducted by Broutille, relayed from the Casino, Vichy. In an interval at 4.20, Report on the Cycle Tour of France. 5.0, Talk in German on Electricity. 5.15, Orchestral Concert, conducted by Roskam. March, Lisbona (Candiola); Waltz, Dolores (Waldteufel); Overture, The Crown Diamonds (Anber); Suite, Monsieur de Pourceaugnac (Bastide); Lontaneta (Razigade); Idylle passionnelle (Razigade); Hungarian Dances Nos. 5 and 6 (Brahms). 6.0, Concert by the Station Trio, relayed from Lille, 1,130 kc/s, 265.4 metres. 7.0, Talk in French on Sociology. 7.15, Gramophone Music. 7.20, Time and News. 7.45, Report on the Cycle Tour of France. 8.5, Gramophone Music. 8.22, Talk on Gardens, relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres. 8.30, Press Review in German. Lottery Results and Announcements. 8.45, Brahms Symphony Concert by the Municipal Orchestra, relayed from the Orangerie. Conductor: E. G. Münch. Fourth Symphony in E minor, Op. 98; Nanie, Op. 82, for Choir and Orchestra; Zigeunerlieder, Op. 108, for Soloists, Choir and Orchestra. After the Concert, Press Review in French. 10.30, Dance Music from the Savoy. 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relay by Freiburg, 527 kc/s, 570 metres.—1.15 p.m., Time and News. 1.30, German Regimental Marches on Gramophone Records. 2.0, Sponsored Music arranged by the Post Office. 2.15 to 3.20, Interval. 3.20, See Frankfurt. 4.30, See Langenberg. 5.45, German Opera Music on Gramophone Records. 6.10, Talk: An Austrian speaks. 6.35, Time and News. 7.0, Transmission for all German Stations. 8.30, Gramophone Concert. 9.40, Soldiers' Reminiscences. 10.0, Time and News. 10.20, Choral Music on Gramophone Records. 11.0, See Munich. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. (Transmissions uncertain owing to Recent Fire).—6.0 p.m., News. 6.15, Operetta Music: Two Airs from Rip Van Winkle (Planquette); You are my Heart's Delight, from The Land of Smiles (Lohar); Air from Mariette (Messager). 6.30, Orchestral Music. 6.50, Hay-In Music: (a) Allegro, (b) Minuet. In the interval, Talk. 7.15, News. 7.25, Local News. 7.30, Opera Music: Waltz from Mirella (Gounod); Air from Le Jongleur de Notre-Dame (Massenet); Aria from Le roi d'Ys (Lalo). 7.45, 'Cello Solos: Après un rêve (Fauré); Sonata (Benedetto); Interlude (Chausson). 8.0, Songs. 8.15, Military Music. 8.30, Music by a Viennese Orchestra. 8.45, Accordion Music. 9.0, Concert by the Fraters Mandoline Society. In the interval, Light Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco: Selection from Faust (Gounod); Air from La Bohème (Puccini); Waltz (Müllerk); Pour lui (Daniderff); Encore une java (Maye). 11.0, Opera Music: Prelude to Act I of Lohengrin (Wagner); Overture, Philémon et Baucis (Gounod); Dance Air from L'enfant prodige (Debussy); March from The Valkyries (Wagner). 11.15, Light Music. 11.30 to 12 Midnight, Programme in English by the I.B.C. 11.30, Old Time Dance Memories. 11.57, I.B.C. Goodnight Melody. 12 Midnight, News. 12.5 a.m. (Thursday), Light Music. 12.15, Military Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m., Instrumental and Vocal Concert: Roberto Repini-Secco ('Cello). Bruno Bidussi (Pianoforte) and Thea Mendieta (Soprano). Sonata in F for 'Cello and Pianoforte (R. Strauss); Soprano Solos: (a) O bellissimo capelli (Falconieri), (b) Das Veilchen (Mozart), (c) L'eco dei Boholi (Gordigiani); Pianoforte Solos: (a) Rondo and Capriccio (Beethoven), (b) Ballad (Brahms), (c) Noc-

turne (Viozzi); Soprano Solos: (a) Spirato pur, spirato (Donaudy), (b) Aria from La Bohème (Leoncavallo); 'Cello Solo: Taran-tella (Popper). 6.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relay by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 559 kc/s, 500.8 metres.—5.10 p.m., Song Recital. 6.0, Press Review. 6.35, Giornale Radio and Announcements. 7.0, Time and Announcements. 7.5, Gramophone Music: Bella Romagna (Landi); That Night when Love was born (Young-Baer); Caro ricordo (Landi); The Clouds will soon roll by (Woods Brown). 7.20, News in Foreign Languages. 7.40 Gramophone Music. 8.0, News. 8.15, Medical Talk. 8.30, Comedy in Three Acts. After the Comedy, Variety Music. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Spanish. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relay by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—1.10 to 2.0 p.m., Arias and Lieder on Gramophone Records. 2.0 to 3.0, Interval. 3.0, Time, News and Exchange. 3.20, Talk: The Effect of Soot and Smoke on Buildings and Monuments. 3.30, Talk: Home and Social Life in the Tropics. 3.55, Light Music on Gramophone Records. 4.35, Talk: Secret Chemical Processes. 4.55, Othmar Wetzky Concert by the Prix Quartet, the Composer at the Pianoforte. Soloists, Erika Rokyta (Soprano), Anny Hartig-Blank (Pianoforte), and Leopold Wlach (Clarinet). Soprano Solos: (a) Herbstbegnien, (b) Die Nachtigall, (c) Vor meinem Fenster, (d) Blüten; Pianoforte Solos: (a) Legend, (b) Ballad, (c) Scherzo; Cantieno for Soprano and Strings; Songs for Soprano and Strings: (a) Nachtmärchen, (b) Ein Traum, (c) Gesang der Gräser, (d) Schlaflied; Soprano Songs, the Composer at the Pianoforte: (a) Zwischen mir und dir, (b) So viel Sterne auch fallen, (c) So regnet es sich langsam ein, (d) Janchelze, mein Herz; Divertimento for Strings and Clarinet. 5.45, Talk: Practical Therapeutics in Austrian Spas and Health Resorts. 6.10, Talk for Workers. 6.35, Talk: The German Catholic Day. 6.50, Engineering Talk. 7.0, Concert by the Josef Holzer Orchestra, with Waltz Songs by Adele Kern; Overture, Das Nachtlager von Granada (Kreutzer); Waltz, Parla (Arditi); Interlude from Carmen (Bizet); Waltz from Romeo and Juliet (Gounod); Overture, Zampa (Hérold); Valse Caprice (Rubinstein). 7.35, Time, Weather and Programme Announcements. 7.40, Concert (contd.): Intermezzo from Cavalleria rusticana (Mascagni); Waltz from La Bohème (Puccini); Selection from L'Arlesienne (Bizet); Waltz Song from Die Fledermaus (Joh. Strauss); Russian March (Joh. Strauss). 8.15, Topical Talk. 8.30, Sarajevo Survey. 9.30, News. 9.45, Talk in French: Tourist Traffic and the Cultural Mission in Austria. 9.55, Concert by the Julius Herrmann Orchestra.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Gramophone Music. 12.25, Press Review. 12.35, Gramophone Music. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.10, Announcements. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.45, Announcements. 4.0, Popular Concert, relayed from Ciechocinek. 5.0, Topical Talk. 5.15, Song Recital by L. Pizenska-Morawsky (Mezzo-Soprano) and S. Protasewicz (Baritone). 6.15, Talk: Women and Sport. 6.35, Concert of Chamber Music by Mme. Bankier (Pianoforte), Z. Roësner (Violin) and C. Moszkovsky (Violin). Concerto in A minor for Two Violins and Pianoforte (Vivaldi); Pianoforte and Violin Sonata in E minor (Mozart); Concerto in C minor for Two Violins and Pianoforte (Bach). 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Recitations of Poems about the Sea. 8.0, Light Music, relayed from Lwów, 788 kc/s, 381 metres. 8.50, Radio Journal. 9.0, Agricultural Correspondence. 9.10, Pianoforte Recital by Joseph Turczynsky. Sonata in A (Mozart); Ecossaises (Beethoven); Minuet in E Flat (Beethoven); Waltzes (Schubert-Dohnanyi); Two Songs Without Words (Mendelssohn); Scherzo in E (Mendelssohn); Spanish Song (Schumann-Tausig); Romance in F Sharp (Schumann); Frühlingsnacht (Schumann-Liszt). 10.0, Talk in Esperanto: Science and Education in Poland Yesterday and To-day, relayed from Cracow, 959 kc/s, 312.8 metres. 10.20, Gramophone Music. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Stock Exchange Quotations, and Weather Report. 6.0, Programme for Children. 6.45, News Bulletin. 7.0, French Lesson. 7.15, Talk: Dublin Statues. 7.30, Time Signal. 7.31, Carillon relayed from Birmingham. 7.45, The Station Orchestra. 8.15, Gaelic Song Recital by T. J. O'Flouin. 8.30, Violin Solo by H. Franklin. 8.45, Sketches and Songs by J. MacDonagh and Company. 9.45, Sponsored Programme. 10.45, Time, News, Weather, and Close Down.

BARCELONA

EAJ1, 360 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Records. 8.30, Exchange Quotations. 9.0, Gramophone Music, followed by News. 10.0, Chimes, Weather, Exchange, and Market Prices. 10.5, Concert by the Station Orchestra: Japanese March (Verre); Selection from Boris Godunov (Musorgsky); Waltz from The Romantic Girl (Worsley); Barcarolle (Mendelssohn); Cello Solo: Musette (Offenbach); Oriental Dance (Bortkiewicz). 11.0, Astronomical Talk: New Stars. 11.15, Song Recital. 11.30, Dance Music, relayed from the Casa Libre. In the interval at 12.0 Midnight, News. 1.0 a.m. (Friday), Close Down.

BASLE.—See Schweizerischer Landessender.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk, and Populavoro Announcements. 8.20, Giordale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), Military Band Concert, conducted by Salvatore Rubino: March, La strauiera (Bellini); Overture, The Force of Destiny (Verdi); Selection from Lucrezia Borgia (Donizetti); Prelude, Dance and Finale from Act III of La Gioconda (Ponchielli); Five Songs without Words (Mendelssohn); Wedding March (Mendelssohn). In the interval: Reading. 10.30, Gramophone Music. 10.55, News.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.55 p.m., Time and Programme Announcements. 7.0, Gramophone Music. 7.20, Talk. 8.0, Trio No. 2, Op. 72 (Godard). 8.30, Programme relayed from Ljubljana. 10.30, News and Time, followed by Light Music from the Ratnicki Dom Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Wagner Concert on Gramophone Records. 2.45, Programme for Children. 3.10, Programme for Young People. 3.30, Weather and Exchange. 3.45, Hermann W. Anders reads from his own Works. 4.0, See Heilsberg. 5.0, Interview with a Mother: Five Children on Forty Marks Each. 5.20, Talk: Equality in Marriage. 5.35, Das Italienisches Liederbuch (H. Wolf)—Song Recital by Agnes v. Spetzer. 6.6, A Poem. 6.5, Recitations by Karl Graef, with Pianoforte Accompaniment. 6.30, Radio Report on Agriculture in Thüringia. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Epigrams. 8.5 (approx.), Orchestral Concert, relayed from the Philharmonie. Conductor: Peter Schmitz. Soloists: Valesca Burgstaller (Pianoforte) and Lottmarie Hilgenfeldt (Contralto); Overture, Ein feste Burg, Op. 32 (Nicola); Songs (Brahms-Reger): (a) Sapphic Ode. (b) Liebestreu; Burlesque in D Minor for Pianoforte and Orchestra (R. Strauss); Sommerabend, Op. 9 (Burgstaller). 9.0, A Pleasant Journey—Variety Programme. 10.0, Weather and News, followed by Radio Report on the Budapest v. Berlin Football Match. 10.45, Weather Report for Shipping. 11.0, Concert from Langenberg. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.30 p.m., Orchestral Concert: March, Frühlingssingzug (v. Blon); Waltz, Vibrationen (Joh. Strauss); Serenade (Kark); Komödianten (Kark); Selection from Boccaccio (Suppé); Sonnenmeer (Leuschner); Waltz from Naïfa (Delibes); Serenade, Marie Louise (Meisel); Slav Dances Nos. 1 and 3 (Dvorak); Viktoriamarsch (v. Blon). 5.25, Hans Heyek reads from his own Works. 5.45, Felix Draeseke Recital by Else Schön (Soprano) and Ferdinand Leitner (Pianoforte). 6.10, Talk on Exemplary Lives, by Friedrich Schnack. 6.30, Talk on Pomerania. 6.40, The Witzleben Station informs its Listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Breslau. 8.10, Report on the Second Half of the Football Match, Budapest v. Berlin, relayed from the Herthaplatz. 8.40, Folk Song Recital by Young Hitlerites, relayed from Magdeburg. 9.0, Topical Talk. 9.10, Agricultural Talk. 9.30, Violin Concerto No. 9 in D Minor Op. 55 (Spohr) by Max Strub and the Station Orchestra, conducted by Eugen Jochum. 10.0, News. 10.15 (approx.), Dance Music relayed from the Delphinalast. In an interval at 11.0 (approx.), Talk: What they

THURSDAY

JUNE THE TWENTY-NINTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Cabaret Programme. The Week Abroad, by Mr. Vernon Bartlett.

LONDON REGIONAL Dagenham Schools' Non-Competitive Musical Festival.

MIDLAND REGIONAL Ballad Concert. A Carillon Recital.

WEST REGIONAL An hour in the company of students celebrating the centenary of Rhys the Rhymester.

NORTH REGIONAL The Yorkshire Mummers Concert Party.

SCOTTISH REGIONAL Joining the Soddjers, a martial comedy by A. Slorach.

ABROAD

BRUSSELS (No. 1) 8.0 p.m. Concert by the Station Symphony Orchestra.

COPENHAGEN 10.5 p.m. Mozart Symphony Concert by the Station Orchestra.

HAMBURG 8.0 p.m. Concert by the Bremen Cathedral Choir and Symphony Orchestra.

HILVERSUM 7.55 p.m. Concert of Opera Music by the Concertgebouw Orchestra and Soloists.

HUIZEN 7.40 p.m. Orchestral Concert.

LYONS 8.30 p.m. Concert by Madame Garon (Songs), Mlle. Richard (Violin), M. Dnjols (Viola), and M. Trillat (Pianoforte).

ROME 5.30 p.m. Vocal and Instrumental Concert.

STOCKHOLM 10.0 p.m. Concert of Chamber Music.

STRASBOURG 8.30 p.m. Concert by a Virtuoso Septet, relayed from the Casino, Vichy.

TOULOUSE 7.45 p.m. Orchestral Opera Music.

are talking about in Berlin. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.25, Talk, arranged by the International Labour Bureau. 7.40, Lottery and Charade Results. 7.45, Report on the Cycling Tour of France. 8.5, Talk on Wines. 8.20, News. 8.30, Two One-Act Plays: (a) Les deux visages (Nozière), (b) Le Voyageur (Amiel).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—4.0 p.m., Concert by the Municipal Orchestra, relayed from Trenčianske Teplice. 5.30, Talk. 5.45, Gramophone Music. 6.0, Concert of Light Music by the Station Orchestra. 6.55, Talk for Housewives. 7.0, See Moravská-Ostrava. 7.45, See Prague. 8.40, See Brno. 10.0, See Prague. 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gliwicz, 1,184 kc/s, 253 metres.—12 Noon, Concert by the Silesian Philharmonic Orchestra, conducted by Hermann Behr. 2.0, Time and News. 2.20, Popular Gramophone Concert. 3.0, Market Prices. 3.30, Talk: Hints for the Week-end. 3.40, Book Review. 4.0, Concert of Light Music, relayed from the Haus Metropol, Hindenburg. 5.0, Programme for Children. 5.30, Market Prices. 5.35, Pianoforte and Harpsichord Recital of Chamber Music, with Commentary. 6.0, Programme to be announced. 6.20, Discussion between Workmen and Labour Leaders. 6.50, Weather and News. 7.0, Transmission for all German Stations: Young Manhood and the National Labour Service. Music by the Station Orchestra, conducted by Ernst Prade. 8.0, Relay of Community Singing from the Schlossplatz. 9.0, News. 9.10, James Hilder—A Radio Play of the Polish Wars of the sixteenth Century (Heinz Bierkowski). 10.10, Time, Weather and News. 10.30, Talk: With a Collapsible Boat on the Lakes of Berlin. 10.50, Dance Music from Berlin (Witzleben). In an interval at 11.0, Talk: What People are saying in Berlin. 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.0 p.m., German Transmission: Concert of Schrammel Music and Songs. 7.0, See Moravská-Ostrava. 7.45, Humorous Programme. 8.10, See

Prague. 8.40, Joyful Youth—Pictures of Old Litomyšl, after the Novel by Jerabek. 10.0, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

1.1.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Little Station Orchestra, conducted by P. Leemans: Overture, Der Bettelstudent (Millicke); Suite (Berry); Chanson d'Arlette (De Taeve); Selection from The Desert Song (Romberg); Cello Solo, Habanera (Ravel); Serenata (Tarenghi); Waltz, Ton Amour (Langlois); Selection from Mister Anders (Ellis and Myers). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Music. 5.0, Operetta Music on Gramophone Records. 5.30, Programme for Children. 6.0, Talk: The Crisis. 6.15, Accordion Music, Sketches and Vocal Dance Music on Gramophone Records. 7.15, Talk for Workers. 7.30, Sports Notes. 8.0, Concert by the Station Symphony Orchestra, conducted by Jean Kimpes: Soloist, Mme. Van Houdt-Volekaert (Songs); Part I: Berlioz Programme: Selection from Bonvenuto Cellini; Songs: (a) L'absence, (b) La captive; Dance of the Fireflies, from The Damnation of Faust; Ballet Music and March from The Fantastic Symphony; Part II: French Romantic Music: Rhapsody (Lalo); Entr'acte from Mignon (Thomas); Scene and Waltz from Gretia (Gretia (Guirand)); Gramophone Records: (a) Serenade (Gounod), (b) Sérénade à Mignon (Delibes); Ballet Music from Sylvia (Delibes); Gramophone Record, Le Carnaval de Rome (Thomas); Selection from Le Roi malgré lui (Chabrier). In an interval at 8.45, Political Talk. 10.0, Le Journal Parlé. 10.10, Request Gramophone Records.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Gramophone Concert. Part I: Sacred Music, Part II: Opera Music. Part III: Cinema Organ Music. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans. Soloists: P. Douliez (Pianoforte); and F. Wigy (Violin). From Seville to Triana (Lucchesi); Lehar Potpourri (Hruby); Pianoforte Solo, Waltz (Moszkowsky); Les trésors de Colombine (Drigo); Meditation from Thais (Massenet); Violin Solo, Serenade (Drdla); Viennese Waltz (Abraham); March, Vivat Hungaria (Kálmán). 5.0, Concert by the Radio Orchestra, conducted by Charles Walpot: Le rêve passe (Krier); Goldschmieds Hämmerlein (Eilenberg); La Paloma (Yradier); Piece (Muellet-Melhorn); Schwarzwälder Spieluhr (Richter); Selection from Tip Toes (Gershwyn). 5.45, Programme for Children. 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans: La matinée enfantine de Foncec Jean (Ghesquiere); Waltz (Zieherer); In a Monastery Garden (Kettelberg); Chanson sans Paroles (Tchaikovsky); The Whistler and his Dog

(Pryot); Le Cygne (Saint-Saëns); Simple avenu (Thomé); Piece (Reisfeld). 7.10, Catholic Report. 7.15, Review of Films and Books. 7.30, Programme for Women. 8.0, Concert by the Radio Orchestra, conducted by Charles Walpot. Soloists: M. Tontené (Baritone) and M. Lombard (Vibrapone). Festival March (Gillon); The Nutcracker Suite (Tchaikovsky); Baritone Solos. 8.45, Talk. 9.0, Concert (contd.); Le Carnaval des animaux (Saint-Saëns); Vibrapone Solos: (a) Serenade (Lohr), (b) Song (Lohr), (c) You are my Heart's Delight, from The Land of Smiles (Lehár); Down South (Myddleton); Selection from L'ahaut (Yvain); Entry of the Gladiators (Fucik). 9.55, Evening Prayer. 10.0, Le Journal Parlé. 10.10, Extracts from Ernani—Opera (Verdi) on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: Spanish March (Gyldmark); Waltz from Casanova (Lincke); Overture, Il Seraglio (Mozart); Selection from La Juive (Halévy); Scandinavian Suite (Fredericksen); Selection from Clo-Clo (Lehár); Gavotte (Popper); Chant d'Amour (Sanmartin); Orientale (Cui); Polonaise (Cui). In an interval at 6.8, Radio Journal. 7.0, Educational Talks. 7.40, Opera Music on Gramophone Records. In the intervals, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.20 p.m. till Close Down.—6.10 p.m., Talk. 6.40, Recital of Drinking Songs. 7.20, Ladislav Zimay Memorial Programme. 8.30, A Folk Play (Franz Osepreghy). 10.30, News, followed by Gigány Music by Alexander Bura Band.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., String Ensemble Concert, relayed from the Hotel d'Angleterre. 2.0 to 3.10, Interval. 3.10, Reading. Two Songs (Kai Senstius). 3.30, Concert by Teddy Petersen's Orchestra, relayed from the Wivex Restaurant. 5.0, Programme for Boys. 5.35, Exchange and Fish Market Prices. 5.50, Talk: The Old Testament. 6.20, English Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.30, Talk: Danish and Swedish Intellectual Life. 8.0, Time Signal from the Town Hall. 8.1, Orchestral Concert of Old Dance Music; March (Fetras); Waltz, A Summer's Evening (Waldteufel); Mazurka, Liebezahner (E. Strauss); Pizzicato Polka (Joh. Strauss); Waltz, Wo die Citronen blühen (Joh. Strauss); Polka, Tivoli Vauxhall (Lumbye); Torch Dance (Lumbye); Quadrille, Nordens Kunstnere (C. C. Möller); Amica Galop (C. C. Möller). 9.0, Pictures of Everyday Life—Race-Horse Training. 9.30, Gramophone Music. 9.50, News. 10.5, Mozart Symphony Concert by the Station Orchestra, conducted by Launy Gröndahl. Soloist, Ernst Ilye-Kundsen (Flute). Flute Concerto in D; Symphony in D. 10.50, Modern Dance Music, relayed from the Arena. In an interval at 12 Midnight, Time Signal and Chimes from the Town Hall. 12.30 a.m. (Friday), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—6.0 p.m., Gramophone Music. 6.30, The Letter Box. 6.45, Programme Announcements. 6.50, Miscellaneous Items and News. 7.0, See Warsaw. In the interval at 10.25 (approx.), Sports Notes. 11.0 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. T. St. A. Ronald and B. McNabb announcing. 4.30, Concert for Worthing and Littlehampton Listeners: Overture, Mignon (Thomas); Selection from Rigoletto (Verdi); Pianoforte Solo, Liebestraum (Liszt); Song, Fairy Tales of Ireland (Coates); Pianoforte Solo, Rustle of Spring (Sinding); Hungarian Dance No. 2 (Brahms); Pianoforte Sonata in G (Scazzatti); Songs: (a) The Crystal Spring (Traditional, arr. Sharpe). (b) The Blackbird in the Apple Tree (Lubbock); Pianoforte Solo, Prelude in C Sharp Minor (Rachmaninoff); Danzas Españolas No. 5 (Granados); Waltz from The Sleeping Beauty (Tchaikovsky). 5.15, Concert for Brighton and Hove Listeners: Nautical Moments (arr. Winter); Song, At Santa Barbara (Kennedy Russell); Ocarina Solo, Under the Double Eagle (Taticro); Pan and the Wood Goblins (Rathke); Songs: (a) Comin' thro' the Rye (arr. Smart), (b) For you alone (O'Reilly); The Dwarf's Patrol (Rathke); Xylophone Solo, Spanish Dance (Moszkowsky); Vienna, Vienna (Foss); Song, I hear a Thrush at Eye (Adman); Cuban Serenade (Herbert); Oriental Serenade (Herbert). 6.0, Programme in French. 10.0 till Close Down. Programme in English by the I.B.C. 10.0, Dance Music by the Ibcians: Sweetheart (Miller); What did I get in return? (Young); Can't we meet again? (Conelly);

JUNE 29th

THURSDAY

continued

Hold up your hands (Robinson); If I ever get a Job again (Lewis); Moon Song (Callow); The Girl in the Little Green Hat (Rich); Twenty Million People (Johnson); What have I got to lose? (Kahn); Let me explain (Towers); Hyde Park Corner (Hargreaves); Rosa Mia (Potter); Rock your Carers away; The London Fire Brigade (Towers); Nightfall (Lewis); A Bedtime Story (Nicholls); 11.0, Club Concert for Wisbech Listeners; Snacks in Bars (Egger); Morning aboard the Saucy Sue; Call me Darling; The Wink of the Old Glad Eye; Come along with me (Robison); Banjo Solo, Cracker Jack (Roser); For Good or for Bad (Pearson); Mrs. Orsfield's Fortune told; Brother, can you spare a dime? (Gorney); Coming round the Mountain (Robison); Banjo Solo, Flapperette (Greer); It's Winter again (Hoffman); When the Lilac blooms again (Rottler); 12.5 a.m. (Friday), The L.B.C. Late News Bulletin, 12.10 (approx.); Tango Band; Will you dance through life with me? (Swabach); Il canto dell'attesa; There was a Banjo Musician (Schwartz); Farewell (Banjo Musician (Schwartz)); 12.30, Dance Music; Mama Inez, 12.30, Dance Music; Business in F (Bleyer); The Old Man of the Mountain (Young); The Toy-maker's Dream (Golden); Way out West in Kansas (Robinson); Give me a Tune (Koger and Varna); Songs that are old live for ever (Warick); This is my Love Song (Burke); 1.0, Variety Concert; Old Music Hall Memories; The Sunshine of your Smile; The Old Folks at Home; Quartet, Cherry Ripe; Selection from The Bohemian Girl (Balfe); There is a Tavern in the Town (Traditional); More Old Music Hall Memories; 1.30, Concert of Light Music; Balalika Solo, Caucasian Gipsy Song (Traditional); Banjo Solo, St. Louis Blues (Hardy); Song, In a Cloister Garden (Edgar and Morgan); Selection from Congress Dances (Heymann); Song, Street of Dreams (Lewis and Young); Banjo Solo, In the Moonlight (McHugh); Balalika Solo, Russian Potpourri, 2.0, Dance Music by the Dredians; Love is the Sweetest Thing (Noble); Pulceze, Mr. Hemmingway; Sweet Muchacha (Hoffmann); Everyone says I Love You (Kahn); How deep is the Ocean? How do you do, Mr. Brown (Abraham); What would happen to me? (Woods); Leave a little for me (Abraham); Please (Robin); It's Winter again (Hoffmann); Here lies love (Robin); Look who's here (Adams); A Million Dreams; Always in my Heart (Turk); Someday we'll meet again; Strange Interlude (Bernie); 2.17, L.B.C. Good-night Melody, 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres, and Trier, 1,157 kc/s, 259.3 metres. 4.30 p.m., Concert by the Station Orchestra, conducted by Dr. Reinhold Merten. Soloists: Emmalotte Krause (Soprano); Overture, Jessondra, Op. 63 (Spohr); So wisse dass in allen Elementen, from Undine (Lortzing); Overture, Abu Hassan (Weber); Air from Oberon (Weber); Overture, Der Beherrscher der Geister (Weber); Das Glück (Haas); Du bist die Macht (Haas); Tramer um einen Sonntag (Raeky); Frühling (Raeky); In Hammersbach (Elgar); Minuet (Elgar); Humoresque in E (Humperdinck); The Swan of Tuonela, Op. 22, No. 3 (Sibelius); Rondo infinito, Op. 42 (Sindino). 5.45, Economic Notes, 6.0, Talk; Objectivity and Conviction, 6.25, Topical Talk, 6.45, Today's News, 6.50, Time and News, 7.0, Transmission for all German Stations, relayed from Breslau, 8.0, Special Transmission, 8.10, Concert by the Station Orchestra, conducted by Dr. Reinhold Merten. Soloists: Hans Garvens (Violin) and Reinhold Merten (Pianoforte). Part I, Symphony in B minor (Borodin). Part II, Violin Music, 9.20, Max Eyth—Radio Sequence (Karl Klinghardt), 10.30, Time and News, 10.40, See Langenberg, 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Gall ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres, and Kiel, 1,292 kc/s, 232.2 metres. 6.0 p.m., Programme for the Twenty-Fifth Anniversary of the Death of Paul Tiedke, 6.45, Frankfurt Exchange, 6.50, Weather, 7.0, Transmission for all German Stations, relayed from Breslau, 8.0, Concert by the Bremen Cathedral Choir and Symphony Orchestra, conducted by Liesche. Soloist: Cäcilie Reich (Soprano);

Symphonic Poem, Op. 21, Es waren zwei Königs-kinder (Volbach); Choir: (a) Es ist so still geworden (Schulz), (b) Der Mond ist aufgegangen (Schulz), (c) Herzlich tut mich erfreuen die schöne Sommerzeit, (d) Geh aus, mein Herz, und suche Freud; Soprano Solos: (a) Silesian Folk Song, Maria auf dem Berge, (b) Du mein einzig' Licht (arr. Brahms), (c) Vesper Song (arr. Hinze-Reinhold); Choir: (a) Wohltauf in Gottes schönem Welt, (b) Wer recht in Freuden wandern will, (c) Regiment sein Strassen zieht, (d) Wenn's die Soldaten durch die Stadt marschieren; Selection from Hansel and Gretel (Humperdinck); Folk Songs for Mixed Choir: (a) Mein G'müt ist mir verwirret (Häslter), (b) Es steht eine Lind' in jenem Tal, (c) Die Sonne scheint nicht mehr, (d) Schwesterlein, (e) Horeh, was kommt von draussen rein; Soprano Solos: (a) Ich ein Knab' ein Röslein steln, (b) Flattere, kleiner Vogel, (c) The Last Rose of Summer, (d) Es wohnt ein Fiedler (arr. Brahms), (e) Oeh Moder, eck' wel' n Ding hau; Folk Songs for Mixed Choir: (a) Ihren Schäfer zu erwart'g, (b) Tanz mir nicht mit meiner Jungfer Gretel, (c) Wie komm' ich denn zur Tür herein, (d) Jan Himmer op de Lammerstraat; Academic Festival Overture (Brahms), 10.0, Time and News, 10.20, Topical Talk, 10.30, Dance Music by the Station Chamber Orchestra, conducted by Gerhard Maasz.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Music. In the interval at 1.20, News, 2.30, Programme arranged by the Post Office, with Gramophone Records, 3.0, Agricultural Prices and Exchange Rates, 3.30, Programme for Young People, 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Overture, Rosamunde (Schubert); Mazurka (Debussy); Réverie (Debussy); Prelude to Die Loreley (Brahms); Suite from Aladdin (Nielsen); Overture, Pique Dame (Suppé); Waltz from The Count of Luxembourg (Lehár); Indian Song (Dvorák); Selection from Der Zigeunerprimas (Kálmán). In the interval at 4.50 approx., A Travel Report: Through the Streets of Tripolis, 5.30 (from Danzig), Songs to the Late, by Käthe Schwarz-Neubek, 5.45, Talk on Prussia, 6.15, Agricultural Prices, 6.20, Gardening Talk, 6.45, See Leipzig, 6.55, Weather, 7.0, Transmission for all German Stations, relayed from Breslau, 8.15, See Langenberg, 10.0, News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.41 a.m., Concert by the Wireless Orchestra, conducted by Néo Treep; Selection of Marches (Robrecht); Overture, Si j'étais roi (Adam); Alsatian Dances (Levadé); Bizet Potpourri (Urbach); Waltz from Gipsy Love (Lehár); Japanese Bell Dance (Yoshitomo); Puppenspiel (Lederer); Funeral March of a Marionette (Gounod); Selection from The Mikado (Sullivan); Chineseische Strassenserenade (Sielke); Salut d'amour (Elgar); March (Sullivan-Komzak), 1.55 p.m., Interval, 2.10, Gramophone Music, 2.40, Talk; Queen Victoria as a Girl, 3.10, Gramophone Music, 3.40, Talk, 4.10, Gramophone Music, 4.40, Programme for Children—Radio Play, 5.20, Concert by the Wireless Orchestra, conducted by Néo Treep; March, Unter dem Doppeladler (Blon); Down South (Myddleton); Selection from The Vagabond King (Friml); Hochzeitung in Liliput (Translaten); Parade of the Tin Soldiers (Jessel); Waltz, Red Roses (Lehár); Selection from Le tribut de Zamora (Gounod); Overture, Franz Schubert (Suppé); Selection from Rigoletto (Verdi); March, Manhattan Beach (Souza). In an interval at 6.10, Talk on Sports, 7.10, Talk: A Summer Holiday in Paris and Brittany, 7.40, Time and News, 7.45, Gramophone Music, 7.55, Concert of Opera Music by the Concertgebouw Orchestra and Soloists, Conductor: Dr. Frieder Weismann, Part I, Verdi Music; Overture, Duet and Aria from The Force of Destiny; Credo from Otello; Aria from La Traviata; Duet from Aida, Part II, Puccini Music; Two Arias from Tosca; Aria from Madame Butterfly; Aria from Tosca; Duet from Madame Butterfly, Part III, Wagner Music; Selection from Tristan and Isolde; Prelude to Lohengrin; Two Arias from The Mastersingers; Overture, Tamhäuser, 10.10, Concert of Light Music by Kovacs Lajos and his Orchestra, Soloist: Bob Scholte (Songs). In an interval, News, 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW. Programme of the Christian Radio Society (N.C.R.V.).—1.40 p.m., Time Signal, 1.42, Handicrafts Lesson, 2.40, Talk for Women, 3.10, Programme Announcements, 3.40, Bible Reading and Organ Music, 4.40, Choral and Organ Recital, 5.25, Handwork for Children, 5.55, Talk: Dutch Monuments—Prince Hendrik of Zeeman, 6.25, Dressmaking Lesson, 6.40, Police Notes, 6.55, Time

Signal and Press Review, 7.10, Talk, 7.40, Orchestral Concert: March from The Queen of Sheba (Gounod); Overture, Raymond (Thomas); Nocturne and Scherzo from A Midsummer Night's Dream (Mendelssohn); Intermezzo from The Sleeping Beauty (Tchaikovsky); Selection from La Bohème (Puccini); Overture, Iphigenia in Aulis (Gluck); Symphony No. 2 in D, The London Symphony (Haydn); Overture, Der Freischütz (Weber). In the interval at 8.40, Talk on Architecture, and at 9.25, News, 10.10, Gramophone Music, 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815, kc/s, 368.1 metres.—6.15 p.m., Saxophone Solos, 6.40, Humorous Programme, 7.0, Song Recital, 7.20, Talk, 7.45, Orchestral Concert, 8.45, News in Finnish, 9.0, News in Swedish, 9.15, Light Music (relayed from the Kappeli Restaurant), 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Eysoldt; Soloist, Josefa Kastert (Violin); March, Hoch Habsburg (Kral); Overture, The Daughter of the Regiment (Donizetti); Violin Solos: (a) Allegro (Pierce), (b) Adagio (Mozart), (c) Variations on a Norwegian Theme (Weber); Wiegandied (Platen); Fantasia on the Song, Rose Marie (Blume-Weninger); Russian Rhapsody from Prince Igor (Borodin); Selection from La boîte à joujoux (Debussy); Waltz, Mein Ideal (Blon); Ein Abend in Wien (Schubert), 2.30, Interval, 2.45, Reading (Heinz Steguweit), 3.10, Programme for Children, 3.40, Talk on Samoa, 4.0, Talk: School Excursions, 4.30, Concert by the Station Orchestra and Choir, a Children's Choir, and Soloists, Mimi Berger (Soprano), Liselotte Mann (Contralto), Franz Legrand (Tenor), and Hans Remagen (Baritone). In the intervals, Recitations, 6.5, Talk: Well-planned Settlements, 6.25, Talk: Tombstones illustrate German History, 6.45, Hermann Kutzschbach and Josef Gielen discuss Arabella—latest opera of Richard Strauss, 7.0, Transmission for all German Stations, relayed from Breslau, 8.0, News, 8.15, SS, Peter and Paul and their Companions, 9.20, Talk in connection with Nordic Week: Germanic Philosophy, 9.30, Talk with Gramophone Music: The Nightingale, 10.10, News, 10.30, Topical Talk, 10.40, Serenade and Dance Music, conducted by Eysoldt, 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Gramophone Concert of Operetta Music, 1.15 p.m., Music by the Berlin and Vienna Philharmonic Orchestras, on Gramophone Records, News in an interval, 2.0, News, 2.10, Art and Film Review, 2.30, Concertina Concert of Folk Music, 3.35, Exchange and Market Prices, 4.0, Programme for Children, 5.50, Economic Notes, Weather, and Time, 6.0, Hans Franck discusses his Biographical Drama, Kleist, 6.30, Talk: Health Rules for Travellers, 6.45, An Impresario and a Theatrical Manager discuss Richard Strauss's New Opera, Arabella, 7.0, Transmission for all German stations, relayed from Breslau, 8.0, Concert by the Kampfbund Orchestra and the Fridericiana Choir, relayed from Halle, Soloist, Artur Bohmhardt (Violin); Cassation (Mozart); Three Songs for Chorus Serenade in C (Haydn); Three Songs for Chorus; The Halfner Serenade (Mozart), 9.30, Talk: In the Land of Adolf Hitler's Youth, 10.0, News, 10.20 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—5.30 p.m., Gramophone Music, 8.30, Duets from Opera, 9.15, Concert by a Slav Vocal Quintet, 10.0, Concert by the Station Orchestra, 10.30, Weather and News, 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—(German Programme, 7.0 p.m., Gramophone Music, 7.30, Talk for Women, 7.40, Weather Report, 7.45, The Eroica Symphony (Beethoven), on Gramophone Records, 8.30, Popular German Songs, on Gramophone Records, 8.50, News in French, 9.15, German Poetry Reading (Theodor Storm), 9.45, News in German, 9.55, Dance Music and Variety Music on Gramophone Records. In the intervals, Exchange and News.

LWOW

788 kc/s, 381 metres; 16 kW.—6.40 p.m., Miscellaneous Items, 7.0, See Warsaw, 7.55, News, 8.0, Concert by the Station Orchestra, Interludes by the Eryano Choir of Lwów, 10.0, Reading, 10.15, Gramophone Music, 10.25, Sports Notes, 10.40, See Warsaw, 11.0 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East, 7.45, Report on the Cycle Tour of France, 8.30, Concert by Mme. Garon (Songs), Mlle. Richard (Violin), M. Dijols (Viola) and M. Trillat (Pianoforte); Quartet for Strings and Pianoforte (Schumann); Songs: (a) Aria from Orpheus (Gluck), (b) Aria from the Whit-sun Cantata (Bach); Violin Solos: (a) Rondino (Beethoven-Kreisler), (b) Andalous (Granados), (c) Caprice viennois (Kreisler); Suite for Pianoforte, The Children's Corner (Debussy); Songs: Nocturne (Franck); Epitaph (de Brouille); Le Colibri (Chausson); Cello Solos: (a) Capriccio (Hindemith), (b) Ariette (Martini), (c) Two Songs of Spain (Nin); Quartet, No. 2 for Strings and Pianoforte (Faure). After the Concert, News.

MADRID

(EAJ7), 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal and Programme for Children, 9.15 News and Political Review, 9.30 to 10.30, Interval, 10.30 English Lesson, 11.0, Chimes, Time, Political Review and Talk on Educational Films, 11.30 (approx.), Concert by the Station Sextet with Songs, After the Concert, Literary Programme, 1.15 a.m. (Friday), News, 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.0 p.m., See Prague, 7.0, Folk Music by a Country Band, 7.45, See Prague, 8.40, See Brno, 10.0, See Prague, 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—2.45 p.m., Weather Report, 3.0, Concert of Music by Fomin and Alexandrov, 4.0, Agricultural Talk, 4.30, Reading (Heine) and Music, 5.30, Programme Announcements, 5.45, Reading from Works on Marx-in, 6.30, Dance Music, 9.0, News, 9.30, Programme Announcements, 9.55, Chimes from the Red Square, 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 526 kc/s, 560 metres and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., See Frankfurt, 5.45, Reading: Poets of the New Germany, 6.10, Talk: Immannel Kant and the National Revolution, 6.30, Pianoforte and Violin Recital by Bernhard Klein (Pianoforte) and Margot Schmitt (Violin); Fantasia for Pianoforte Op. 77 (Beethoven); Sonata in D for Violin and Pianoforte (Schoeck), 7.0, Transmission for all German Stations, relayed from Breslau, 8.0, Concert by the Station Orchestra, conducted by Karl List; March, Königsritter (Kretzschmar); Ballet Overture (Lincke); Potpourri, Hoch Deutsches Lied (Buehwald); Interlude by Willi Reichert, the Swabian Humorist; New Slav Dances (Dvorák); March Potpourri (Woitsehach), 9.10, The Little Kinsmen, Comedy in One Act (Thoma), 9.40, Humorous Radio Sequence (Scherber), 10.20, Time, Weather and News, 11.0, Serenade, conducted by Erich Kloss, 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—2.0 to 3.0 p.m., Military Music, 5.0, Popular Concert, conducted by Erling Nielsen, 6.0, Talk, 6.30, Divine Service, 7.0, Advertising Notes, 7.15, Weather and News, 7.30, Violin Recital by Trygve Christiansen, 8.0, Time, 8.1, Agricultural Talk: The Prevention of Forest Fires, 8.30, Sacred Concert by the Choir Boys of Trondhjem Cathedral, 9.40, Weather and News, 10.0, Topical Talk, 10.15, Recitations (Ivar Aasen), by Mme. Grace Grung.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopobavoro Announcements, Agricultural Report and Giornale Radio, 8.20, Gramophone Music. In the interval at 8.30, Time

and News. 8.46, Variety Concert. In the interval at 9.30, I million di Cece—a Comedy in One Act (Arturo di Vita). 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,465.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Talk on the Theatre. 8.30, Gramophone Concert; Part I, Mendelssohn Music: Overture, Ruy Blas; Chant sans paroles; Pianoforte Solo, Die Spinnerin; Spring Song; Overture, Scherzo, Nocturne and Wedding March from A Midsummer Night's Dream; Part II, Variety Music: Selection from Die Bayadere (Kálmán); My Rosine (Habt); A Cabin in the Wood (Dufas); Humoresque (Dvorak); Les fleurs que nous aimons (Crémieux); Réve de la vachère (Labitzki); Cœur et fleurs (Tahani); The Way to the Heart (Lincke); Two Pieces (Bayle). 10.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Programme for Children. 7.15, Journal Paris. 7.30, Gramophone Music. 8.0, Agricultural Talk. 8.15, Interval. 8.30, Sponsored Concert. 9.0, Interval. 9.15, Offenbach Song Recital by Suzanne Brindejonck-Offenbach: Airs from (a) Le belle Héloïse, (b) La vie parisienne, (c) La Chanson de Fortunio; Two Airs from The Grand Duchess of Gerolstein; Two Airs from La périoche; Airs from (a) Madame Favart, (b) The Drum Major's Daughter; Barcarolle from The Tales of Hoffmann; Air from Orpheus in the Underworld. 9.45, Pianoforte Quintet (Sehmann). 10.20, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—5.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 8.0, News. 12 Noon, Protestant Address. 12.30 p.m., Orchestral Concert: Dance on a Rustic Theme (Raquel); French Rondel (Boëlleman); Breton Gavotte (Bourgault-Ducoudray); Old French Songs and Airs (Broustel); En Lozère (Brun); Scènes champêtres corréziennes (Casadesu); Popular Songs (Lühr); Danse villageoise (Chabrier); Bretagne (Fouthone); Bourrée d'Anvergne (Colomb); Marche Lorraine (Ganne); Suite béarnaise (Dequ); Nuits algériennes (Grieg); Suite Savoyarde (Chanaud); Berceuse gasconne (Lacombe). In the intervals at 1.0, Exchange and News; and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange. 6.10, Agricultural Talk. 6.30, Gramophone Records: Two Songs from Le petit duc (Lecocq); Overture, La Princesse Jeanne (Saint-Saëns). 6.45, Legal Talk. 7.0, Talk: Paul Valéry. 7.20, Orchestral Concert: Persian Dance (Guiraud); En Bretagne (Rhené-Baton); Alsatian Dances (Levadé). 7.45, Review of the German Press. 8.0, Two Plays: (a) Le Carrosse du Saint-Sacrement (Merimee), (b) La Chienne du Roy (Lavedan). In the intervals at 8.30, News; at 8.40, Review by Bonnaud; and at 9.15, News.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., The Pioneers, from New York. 7.45, KDKA Home Forum. 7.55, Care of the Garden, by Alfred C. Botes. 8.0, Betty and Bob, from New York. 8.15, Radio Troubadours, from New York. 8.45, State Federation of Pennsylvania Women; Programme under the direction of the Department of American Citizenship. 8.58, Baseball Scores. 9.0, Thursday Special, from New York. 9.30, Business News and Market Reports. 9.45, Southeastern Revue, from New York. 9.58, Baseball Scores. 10.0, Rhythm Kings. 10.15, Concert Favourites, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time and Press News Reeler. 11.5, Bert Low and his Orchestra. 11.15, Weather Report. 11.16, Sport Review. 11.23, I Bring a Song. 11.28, Announcement. 11.29, Temperature Report. 11.30, Pittsburgh Spotlights. 11.45 to 1.0 a.m. (Friday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12.0 Midnight, Variety Programme. 12.15 a.m., Booth Tarkington's Maud and Cousin Bill. 12.30, Popular Programme. 12.45, Merle Thorpe Talks. 1.0, Captain Diamond's Adventures. 1.30, Rin Tin Tin Thrillers. 1.45, Programme to be announced. 2.0 to 4.0, New York Relay. 2.0, Death Valley Days. 2.30, Wayne King's Orchestra, with Lady Esther. 3.0, Time and Century of Progress Festival Orchestra.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—6.40 p.m., Miscellaneous Items and Announcements. 7.0, See Warsaw. 7.40, Recitations. 7.58, Time. 8.0, Recital of Polish and Italian Songs by Mme. Marek-Onyszkiewiczowa (Soprano) and M. Kazimierz Czarnecki (Tenor). 8.50, News from Warsaw. 9.0, Concert by Mme. Szrajberowna (Violin), Feliks Nowowiesky (Organ), and Jozef Mankowsky (Baritone); Melodies (Nowowiesky); Sicilienne and Rigaudon (Francoeur); Minuet (Mozart); Romance in F (Beethoven); Rondino (Beethoven); Meditation from Thaïs (Massenet);

JUNE 29th

THURSDAY

continued

Kujawiak (Wieniawsky). 10.0, See Warsaw. 10.25, Sports Bulletin. 10.40, Time Signal, Sports, and Police Notes. 10.55, Concert relayed from the Esplanade Café. 11.50 (approx.).

PRAGUE

614 kc/s, 458.6 metres; 120 kW.—4.0, See Bratislava. 5.30, Religious Talk. 5.45, Reminiscences of a Blind Actor. 6.0, German Transmission, relayed from Morics; Extracts from Passion Plays, followed by News in German. 7.0, See Moravská-Ostrava. 7.45, Musical Programme by Karel Hruska. 8.10, Liebeslieder Walzer (Brahms). 8.40, See Brno. 10.0, Time, News, Press Review, and Sports Notes. 10.15, Light Music by J. Skalicky and his Chamber Orchestra. 11.0 (approx.). Close Down.

RADIO-SUISSE ROMANDE

SOTTENS; 743 kc/s, 403 metres; 25 kW.; and **Geneva, 395 kc/s, 760 metres.—3.30 p.m.** (from Geneva). Concert by the Broadcasting Serenaders. 4.0 (from Geneva). Talk. 4.20 (from Geneva). Concert (contd.). 5.0 (from Geneva). Programme for Children. 5.30 to 7.0, Interval. 7.0 (from Geneva). Programme for Mountain Lovers. 7.30 (from Geneva). News. 7.35 (from Geneva). Radio Interviews. 8.0, Concert by the Radio-Suisse Romande Orchestra. 9.0 (from Lausanne). Popular Concert by M. Glausen (Accordion) and the Radio Lausanne Peasant Orchestra, conducted by M. Moser. 9.50, News. 10.0 (from Lausanne). Popular Songs on Gramophone Records. 10.30 (approx.). Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—5.0 p.m., Orchestral Concert of Old Dances. 6.0, Talk on Wireless. 6.30, Song Recital. 7.0, Weather. 7.3, Talk. 7.30, Symphony Concert, relayed from Bulduri. Soloist: Ernst Melchik; Symphony No. 6 in B Minor, Op. 74 (Tchaikovsky); Leonora Overture, No. 3 (Beethoven); Death and Transfiguration (R. Strauss); Prelude à l'après-midi d'un Faune (Debussy); Overture, Tannhäuser (Wagner). In the intervals at 8.20, News, and at 9.0, Weather. 9.30, News, followed by Dance Music. 10.30 (approx.). Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.5 to 2.15 p.m., Variety Concert. In the interval, at 1.30, Giornale Radio and Exchange, and at 2.0, Time and Announcements. 4.45, Children's Radio Review. 5.10, Weather. 5.15, Exchange and Giornale Radio. 5.30, Vocal and Instrumental Concert. Cesaro Colamarino (Cello), Elvi Lacerini (Soprano), and Mario Cavagnis (Tenor). Cello Solos: (a) Adagio (Porpora), (b) Romance sans paroles (Thomé); Soprano Solos: (a) Il forestiero (Zanella), (b) Bimba, bimbeta (Sibella), (c) Aria from Der Freischütz (Weber); Tenor Solos: (a) Posate, dormite (Bassani), (b) Ständchen (Schubert); Cello Solos: (a) Hebrew Melody, Kol Nidrei, Op. 47 (Bruch), (b) Rustic Dance (Squire); Tenor Solos from: (a) Lucia di Lammermoor (Donizetti), (b) Sigolotto (Verdi). 6.40 (from Naples). Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 7.10, Tourist Talk. 7.20, Announcements in Various Languages. 7.40, Giornale Radio. 8.0, Time Signal and Announcements. 8.15, Gramophone Music. 8.30, Giornale Radio and Sports Notes. 8.45, Symphony Concert. 9.45, Talk. 10.0, A Comedy, or a Concert of Variety Music. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals at W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—12.45 a.m. (Friday), Stock Reports. 1.0 to 4.0, New York Relay. 1.0, Fleischmann Hour. 2.0, Capt. Henry's Show Boat. 3.0, Lucky Strike Hour. 4.0, Programme Résumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER; 653 kc/s, 459 metres; 60 kW.; **Basle, 1,229 kc/s, 244.1 metres;** and **Berne, 1,220 kc/s, 245.9 metres.—6.15 to 6.35 a.m.** (from Zürich). Gymnastics. 11.59, Time Signal from Neuchâtel Observatory, and Weather. 12 Noon (from Zürich). Gramophone Concert. 12.30 p.m., Time and News. 12.40 (from Zürich). Gramophone Concert (contd.). 1.25 to 1.35 (from Zürich). Exchange, Time, and Weather. 5.0 (from Zürich). Concert by the Little Swiss Radio Orchestra. 6.0 (from Berne). Gramophone Music. 6.30 (from Berne). Talk on Davos. 7.5 (from Zürich). Concert by the Swiss Radio Orchestra. 7.45 (from Basle), Italian Lesson. 8.30 (from Zürich). Concert by the Swiss Radio Orchestra. 9.0, News. 9.10 (from

Zürich). Concert by the Oerlikon Seebach Music Society. 10.15 (approx.). Close Down.

SEVILLE

EAJS, 815 kc/s, 368.1 metres; 1.5 kW.—9.30 to 10.0 a.m., News. 3.0 to 4.0 p.m., Popular Music by the Station Orchestra, with Flamenco Songs. 10.0, Variety Concert: Prelude to La verbena de la Paloma (Bretón); Waltz from Coppélia (Delibes); Love Song from Bohemios (Vives); Papillon (Faure); Gavotte (Jimenez); Foxtrot (Ahler); Estrellita (Ponce); Selection from Mignon (Thomas); Spanish Serenade (Chaminade); Melody from Tosca (Puccini); Sari Waltz (Kálmán); Overture, Poet and Peasant (Suppe). In the interval, News, Exchange, and Weather. After the Concert, Dance Music.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by **Boden, 244 kc/s, 1,229.5 metres;** **Göteborg, 932 kc/s, 322 metres;** **Mörby, 1,166 kc/s, 257 metres;** **Motala, 221.5 kc/s, 1,354.4 metres;** **Ostared, 389 kc/s, 770 metres;** and **Sundsval, 554 kc/s, 542 metres.—5.5 p.m.**, Studio Service. 5.30, Reading. 6.0, Gramophone Music. 6.45, A Microphone Visit to a Shoe Factory, relayed from Örebro. 12.56 kc/s, 237.2 metres. 7.15, Weather and News. 7.30, Talk by Gustav Näsström: The World Exhibition at Chicago. 8.30, The Bridal Couple Return Home—Comedy (Dietze Sjögren). 9.45, Weather and News. 10.0, Concert of Chamber Music: String Quartet, Op. 18, No. 5 (Beethoven); Pianoforte Quintet (Berg). 11.0 (approx.). Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—7.45 to 8.0 a.m., Report on the Cycle Tour of France. 11.30, Variety Music on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Orchestral Concert, conducted by Maurice de Villers. 2.0, Programme for Children. 3.0 to 3.30, Interval. 3.30, Gala Concert by the Casino Orchestra, relayed from the Casino, Vichy. Conductor: Brouillac. Overture, Le roi fa dit (Delibes); Prelude to Pénélope (Faure); Orchestral Suite, Impressions d'Italie (Charpentier); Selection from The Huguenots (Meyerbeer). 4.45, Report of the Cycle Tour of France, relayed from Metz. 5.0, French Elocution Lesson. 5.15, Concert of Jazz Music, conducted by Roskam. 6.0, Talk in German on Rabelais. 6.15, Talk in French. 6.30, Chaminade Concert by the Station Orchestra, conducted by Maurice de Villers: Idylle arabe; La chaise à porteurs; Three Songs; Pierrette; Automne; Song Duet; Spanish Serenade; Sérénade d'automne; Orchestral Suite from Cahirhoé. 7.30, Time and News. 7.45, Report on the Cycle Tour of France. 8.5, Gramophone Music. 8.15, Press Review in German, Lottery Results and Announcements. 8.30, Concert by a Virtuoso Septet, relayed from the Casino, Vichy; Overture (Händel); Three Pieces (Mendelssohn); (a) Serenade, (b) Venetian Gondola Song, (c) Die Jagd; Suite bergamasque (Debussy); Cello Solo: Russian Song (Lalo); Symphony (Mozart). 10.0, Press Review in French.

STUTTGART

MUHLACKER; 832 kc/s, 360.5 metres; 60 kW. Relayed by **Freiburg, 827 kc/s, 570 metres.—12 Noon**, Orchestral Concert, conducted by Otto Seyfert: Overture, The Gipsy Baron (Joh. Strauss); Marienwalzer (Lanner); Selection from The Count of Luxembourg (Lehár); Overture, Der Opernball (Heuberger); Waltz, Bei mir z'haus (Strauss); March Potpourri, Alle mit uns (Robrecht). 1.0 p.m., Concert from **Langenberg, 2.30**, Gramophone Music. 3.20, Programme for Children. 4.30, See Frankfurt. 5.50, Talk on Eels. 6.15, Concert of Folk Songs from Alsace-Lorraine, with Commentary. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from **Breslau, 8.0**, Accordion Music on Gramophone Records. 8.15, See **Langenberg, 9.20** (from **Freiburg**). Recital of Folk Songs to the Guitar. 10.0, Time and News. 10.20, Serenade by the Ferracelli Orchestra of Milan, relayed from the Wilhelms-Bau. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—(Transmission uncertain, owing to recent fire). 6.0 p.m., News. 6.15, Instrumental Music. Cello Solo: Les cloches (Debussy); Flute Solo: Madrigal (Gaubert); Violin Solo: Slav Dance (Dvorak); Chant polonais (Liszt). 6.30, Programme for Children. 7.0, Music from Sound Films. 7.15, News. 7.25, Local News. 7.30, Accordion Music. 7.45, Orchestral Opera Music: Entr'acte from Act I of Carmen (Bizet); Selection from Samson and Delilah (Saint-Saëns); Prelude to Werther (Masse-net). 8.0, Light Music. 8.15, Concert by a Viennese Orchestra: Melody (Azezo); Waltz, Tales from the Vienna Woods (Joh. Strauss); Moonlight on the Rhine (Vollstedt); Pot-

pourri of Viennese Airs (Kromeyer); Wiener Zugvögel (Translatour). 8.45, Musical Hall Programme. 9.15, Concert by a Symphony Orchestra: Coronation March (Kretschner); Choral (Franck); Selection from The Gipsy Princess (Kálmán); Waltz, Ever or Never (Waldteufel); Prelude (Tchaikovsky). 9.45, Concert. Part I: Opera Music. Airs from: (a) Le Cid (Masse-net), (b) Faust (Gounod), (c) The Fair Maid of Perth (Bizet). Part II: Military Music. Pepita (Neuman); March (Rossini); Marche des petits soldats (Ganne). 10.15, North African News. 10.20, Concert for Listeners in Morocco: Vindobona (Leopold); Air from La Juive (Halévy); The Pilgrim's Chorus, from Tannhäuser (Wagner); Si tu voulais m'aimer (Cazes); Potpourri of Music from Sound Films (Borchert). 11.0, Orchestral Music. 11.15, Song. 11.30 till 12 Midnight, Programme in English by the I.B.C. 11.30, Dance Music. 11.57, I.B.C. Goodnight Melody. 12 Midnight, News. 12.5 a.m. (Friday), Dance Music. 12.30 (approx.). Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 to 6.5 p.m., See Turin. 6.30, Lottery Results. 6.35 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by **Milan, 905 kc/s, 331.5 metres;** **Genoa, 919 kc/s, 312.8 metres;** and **Florence, 599 kc/s, 500.8 metres.—5.10 p.m.**, Variety Music. 6.0, Weather Report. 6.35, Giornale Radio and Announcements. 7.0, Time and Tourist Talk. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News and Gramophone Music. 8.20, Talk on the following Transmission. 8.30, Faust—Opera in Five Acts (Gounod). In the intervals, Talk: The Fate of Königsmark, Humorous Talk, and Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in French. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by **Graz, 852 kc/s, 352.1 metres;** **Innsbruck, 1,018 kc/s, 283 metres;** **Klagenfurt, 662 kc/s, 453.2 metres;** **Linz, 1,220 kc/s, 245.9 metres;** and **Salzburg, 1,373 kc/s, 218.5 metres.—2.0 p.m.**, Report on a Balloon Chase relayed from **St. Pölten, 2.15**, Programme for Children. 2.40, Time and Programme Announcements. 2.45, Report from the Balloon Chase. 2.50, Orchestral Concert. In the intervals, Reports from the Balloon Chase. 5.0, Chamber Music by the Kolbe Quartet. String Quartet in E. Almor (Kienzl); String Quartet in D, Op. 4, No. 1 (Mendelssohn). 6.0, Talk: The Styrian Frontier District. 6.30, Military Band Concert, conducted by Josef Carl Richter: March, Regiment-kinder (Fueckl); Waltz, Wien Madln (Ziehrer); March, Hoch Tirol (Mahr); Waltz, Wine, Women and Song (Jon. Strauss); Song (Domantig-Roll); March, A. Neustadt (Putz); Waltz from Eva (Lehar); Military Tone Pictures, Retreat (Keler-Bela); Deutschmeister-Marsch (Jurik). 7.20, Result of the Balloon Chase. 7.25, Time, Sports Notes, and Programme Announcements. 7.30, Austria, as seen by Visitors. 7.55, See **Hilversum, 10.0**, Talk. 10.10, News. 10.20, Dance Music on Gramophone Records.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.7 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Weather Forecast. 12.15, Concert by the Station Symphony Orchestra, conducted by J. Oziminsky; Extracts from Elvige (Kurpinsky); Pan Twardowski (Munichelmer); Le Rond d'Opus (Saint-Saëns); Gipsy Dances from Manru (Paderewsky); Symphony No. 6—The Pastoral (Beethoven). 2.0, Agricultural Talk. 2.15, Gramophone Music. 2.45, Agricultural Talk. 3.5, Popular Orchestral Concert, with Songs. 4.0, Programme for Children. 4.30, Song Recital by Mme. Skwarczewska. 5.0, Talk. 5.15, Choral Concert of Polish Music. Soloist: Jean Dworakowsky (Violin). Polish Airs (Moczyński); Fanfare (Moczyński); The Death of a Hero (Noskowski); Violin Solos: (a) Reverie from Janek (Zelensky), (b) Polish Song (Wieniawsky), (c) Song without Words (Wieniawsky); Song (Moniuszko); Three Popular Songs for Male Voices. 6.0, Gramophone Music. 6.35, Programme Announcements. 6.40, Miscellaneous Items. 7.0, Radio Play. 7.40, Technical Correspondence. 8.0, Concert by the Warsaw Station Orchestra, with Choral Interludes, relayed from **Lwow, 788 kc/s, 381 metres.** In the interval, Radio Journal. 10.0, Dance Music relayed from the Café Europe, **Ciechocinek, 10.25**, Sports Notes. 10.40, Aviation Weather Report and Police Notes. 10.45, Dance Music, relayed from **Ciechocinek.**

WILNO

533 kc/s, 563 metres; 16 kW.—6.40 p.m. The Letter Box. 7.0, See Warsaw. 11.0 (approx.). Close Down.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Stock Exchange Quotations, and Weather Report. 6.0, Programme for Children. 6.45, News Bulletin. 7.0, Gardening Talk by G. O. Sherrard. 7.15, Literary and Dramatic Talk by Aodh de Blacain. 7.30, Time Signal. 7.31, Violin and Pianoforte Duets by A. O'Connor and Lilian Connolly. 8.0, Contralto Solos by Eira Haise. 8.15, The Station Orchestra. 8.30, Talk by John Brennan (with illustrations by John Lynskey): Songs of the Irish Counties. 9.0, Tenor Solos by Peter Lynch. 9.15, Programme by the Emer Comedy Company. 9.45, Sponsored Programme. 10.45, Time, News, Weather and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Wagner Concert by the Station Trio. Selection from The Mastersingers. The Dusk of the Gods, The Rheingold and Lohengrin. 8.0, Request Gramophone Records. 8.30, Exchange Quotations. 9.0, Gramophone Music, followed by News. 10.0, Chimes. Weather, Messages to Seamen, Exchange and Market Prices. 10.10, Concert by the Station Orchestra: March (Raymond); Waltz (Siede); Intermezzo (Delmas); Melody (Moszkovsky); Scene from Hebe (Piercé); En la Romeria del Refo (Barrios); Hungarian Dance No. 7 (Brahms). 11.0, El Alcalde de Zalamea—Play in Three Acts (Calderón de la Barca). In the interval at 12 Midnight, News. 1.0 a.m. (Saturday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk and Populavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35, Concert of Opera Music. In the interval, Theatre Notes and Announcements. 10.30, Dance Music relayed from the Gran Caffè del Levante. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.30 p.m., French Lesson. 7.0, Gramophone Music. 7.20, Recital of Yugoslav National Airs. 8.0, Recital of Yugoslav National Songs. 8.30, Violin and Pianoforte Recital: Sonata No. 6 (Leclair); Sonata No. 6 in A (Beethoven); Sonata in A Minor (Schumann). 9.30, Concert by the Station Orchestra. 10.30, News and Time Signal, followed by Cigány Music from the Rumunski Kralj.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert. Part I: Opera Music, Part II: Nazi Songs and Marches. 3.0, Talk for Girls: The Holidays. 3.30, Weather and Exchange. 3.45, Walter Bauer reads from his own Works. 4.0, See Leipzig. 5.0, Educational Talk: New National Journals. 5.25, Topical Talk. 5.35, Recital of Songs by Clemens Schmalstieg, with the Composer at the Pianoforte. 6.0, A Poem. 6.5, String Quartet in C Sharp Minor, Op. 20 (Max Butting). 6.30, Talk: Industrial Anarchy or Economic Leadership. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations. 8.0, Epigrams. 8.5 (approx.), Concert of Modern German Light Music. 9.0, Dance Music in a New Style, by Henry Kassbon and his New Orchestra. 10.0 (approx.), News. 10.35, A Report on Gramophone Records of a Dialogue on Richard Strauss' New Opera, Arabella. 10.45 (approx.), Weather for Shipping. 11.0, Serenade from Frankfurt. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.15 p.m., Topical Programme. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.10, The Magic Flute—Opera in Two Acts (Mozart). In the interval at 9.25 (approx.), Topical Programme. 10.10, News. 10.15 (approx.), Concert, relayed from the Traube Weinrestaurant. In an interval at 11.0 (approx.), Talk: What they are talking about in Berlin. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER. — See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.30, Educational Talk. 7.45, Report on the Cycling Tour of France. 8.5, Spanish Lesson. 8.20, News. 8.30, Symphony Concert. Soloists: Mme. Cornuau-Frouin and Pierre Samson (Songs), Jean Feillon (Viola), and Jean Champeil (Violin).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.5 p.m., Hungarian Programme. 6.55, Talk for Housewives. 7.0, See Prague. 7.25, Dance

FRIDAY
JUNE THE THIRTIETH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** "I'll tell you Everything," by Mr. J. B. Priestley.
- LONDON REGIONAL** A recital of miscellaneous gramophone records.
- MIDLAND REGIONAL** "What's in the wind?" by Mr. Richard Clements.
- NORTH REGIONAL** Maud, a song cycle by Arthur Somervell.
- SCOTTISH REGIONAL** An Excerpt from the Gaiety Whirl of 1933, relayed from the Gaiety Theatre, Ayr.

ABROAD

- BARCELONA** 7.0 p.m. Wagner Concert.
- BARI** 8.35 p.m. Concert of Opera Music.
- BUDAPEST** 11.0 p.m. Pianoforte Duet Recital by Ernst Dohnányi and Imre Stefániai.
- HAMBURG** 10.30 p.m. Brahms' Chamber Music, relayed from Hanover.
- HEILSBERG** 6.20 p.m. Pianoforte Sonata in F Minor, Opus 57—Beethoven.
- HILVERSUM** 8.10 p.m. Concert by the Haydn Quartet.
- PARIS (Poste Parisien)** 8.30 p.m. Comic Opera: "Galathée," by Massé.
- PRAGUE** 9.30 p.m. String Quartet in A Flat, Opus 105—Dvorak.
- RADIO PARIS** 8.45 p.m. Concert of Chamber Music.
- STRASBOURG** 6.0 p.m. Chamber Music by the Station Trio, relayed from Lille.

by J. Odchazel. 8.0, See Prague. 10.30 Music by the Station Orchestra, conducted (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed from Gliwicz, 1,184 kc/s, 253 metres.—4.0 p.m., Emil Poser in a Pianoforte Recital of his own Works. 4.30, Baritone Recital by Heinz Nissen. 5.0, Radio Report of a Hitler Youth Demonstration. 5.30, Market Prices. 5.35, Johann Strauss, the Waltz King—Talk with Gramophone Illustrations. 6.5, Programme to be announced. 6.25, Talk: The Rise of Prussia. 6.50, Weather Forecast. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Luisa Miller—Opera in Three Acts (Verdi), relayed from the Municipal Theatre. In the interval at 8.55, Time and News. 9.50, News and Military Music. 10.15, Time and News. 10.45, Talk: The Holidays. 11.0, Light Music and Dance Music by Fritz Wollner and his Band, relayed from the Café Vaterland. 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—2.50 p.m., Concert by the Station Orchestra conducted by Janota: Overture, Mein Heim, Op. 62 (Dvorak); Yugoslavian Rhapsody, Op. 60 (Borck); Selection from The Two Widows (Smetana-Provaznik); Piece (Janacek). 3.55 to 4.0, See Prague. 5.35, Agricultural Talk. 5.45, Gramophone Music. 5.55, Programme from Moravská-Ostrava. 6.5, Talk: Creative Art. 6.15, Talk for Workers. 6.25, German Transmission: News, Sports Notes and Talk on Gardening. 7.0, See Prague. 7.25, Concert by the Station Schrammel Quartet. 8.0, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans. 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Records. 5.0, Concert by the Station Orchestra, conducted by Franz André: Rumba, Muchacha (Garney and Duke); Waltz (Heyman); Violin Solos; Saxophone Solos; Caprice (Delfour); Two Pieces (d'Argrèves): (a) Battifolage, (b) Badinage: Le rouet d'Omphale (Saint-Saëns); Extracts from: (a) The Fair Maid of Perth (Bizet), (b) Carmen (Bizet). 6.0 Talk: The Hospital Visitor. 6.15, Quartet in F (Haydn) on Gramophone Records. 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, The Secret Marriage (Cimarosa); Liebestraum (Liszt); Romanian Fantasia (Dimitriescu); Melody (Kalkman); Pavane (Sarly); Plute Solo; Andalusian Melody (Pessard); Russian Pot-

pourri (Douliez). 7.15, Talk: Belgian Agriculture and Trade by Barter. 7.30, Legal Notes and Literary Review. 8.0, Concert by the Symphony Orchestra, conducted by Menemans. Soloists: Mme. Fanville (Songs) and Mme. de Val (Soprano). Overture, Hansel and Gretel (Humperdinck); Minuet (Mozart); Minuet for Flute and Strings from Orpheus (Gluck); Minuet from the Petite Suite (Debussy); Four Songs; Le Festin de Taraignée (Roussel). 8.45, Talk: The Dinant Museum. 9.0, Concert cont'd.: Marche printanière (Filipucci); Overture, The Thieving Magpie (Rossini); Tango from the Spanish Suite (Albeniz); Selection from Cocorico (Ganne); Songs: (a) Der Nussbaum (Schumann), (b) Aria from La Traviata (Verdi), (c) Berceuse (Gretchaninov); Overture, Die Fledermaus (Strauss); Spanish Serenade (Glazunov); Shrove Tuesday (Danneau). 10.0, Le Journal Parlé. 10.10, The Listener's Quarter-of-an-Hour. 10.25, Accordion Music on Gramophone Records. 11.0, La Brabançonne.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Gramophone Music. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans: Marche ethnienne (Filipucci); Leemans. 5.0, Concert by the Station Symphony Orchestra, conducted by Arthur Menemans: Overture, Egmont (Beethoven); Symphony No. 2 (Brahms); Aria from the Suite in D (Bach); Hungarian Dances (Brahms). 6.0, Gramophone Music. 6.15, Recitations. 6.30, Gramophone Music. 7.15, Reading. 7.30, Wireless Notes. 8.0, Concert by the Radio Orchestra, conducted by Franz André; Soloists: M. Brenders and M. Gras (Pianoforte) and M. Lombard (Xylophone); Overture, The Barber of Seville (Rossini); Two Symphonic Rhapsodies (Coates); Festival in Cordova (Turina); Interlude by Mme. Cortes; Scherzo for Two Pianofortes (Saint-Saëns); Xylophone Solo, The Nutcracker Suite (Tchaikovsky). 8.45, Act I of Heer Danneke, after an old Flemish Ballad (Corbet). 9.15, Concert (cont'd.): Patrouille enfantine (Ganne); Violin Solo, Caprice (Mackay); Mazurka (De Boeck); Interlude by Mme. Cortes; Piece (Sermon); Piece (Albeniz); 1933 Potpourri (Candris). 10.0, Le Journal Parlé. 10.10, Dance Music from the Century Hotel, Antwerp.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Dinico Orchestra. In an interval at 6.0, Radio Journal. 7.0, Educational Talks. 7.20, Gramophone Music. 7.40, Symphony Concert by the Station Orchestra, conducted by C. C. Notara; Soloists: Mlle. Chehap (Pianoforte) and Mme. Pastor (Violin); Overture, Titus (Mozart); Concerto in D

Minor for Pianoforte (Bach); Symphony No. 8 in F Minor (Beethoven); Violin Concerto in E Minor (Mendelssohn); Danse des Sylphides (Berlioz). In an interval at 8.40, Song Recital. 9.45, Radio Journal. 10.0, Talk in German on Romania.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.0 p.m. till Close Down.—6.30 p.m., Talk. 7.0, Song Recital by Maria Basilides: Angus Dei (Bach); O höre mein Gebet (Händel); Melody (Amarilli); Four Italian Folk Songs; Romance from Mignon (Thomas); Aria from The Prophet (Meyerbeer). 7.35, Exchange. 7.45, Review of Foreign Politics. 8.0, Concert by the Opera House Orchestra conducted by Wilhelm Komor. 9.30, Announcements. 9.40, Concert by the Anton Kozec Cigány Band from the Café Ostende. Soloist: Paul Kalmár (Hungarian Folk Songs). 10.10, Weather. 11.0, Pianoforte Duet Recital by Ernst Dohnányi and Imre Stefániai.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, relayed from the Bellevue Strandhotel. 2.0 to 3.0, Interval. 3.0, Concert by Mogens Hansen's String Ensemble Orchestra, conducted by Walter Meyer-Radon; Soloist, Palle Andersen (Pianoforte). 5.0, Reading. 5.35, Exchange and Fish Market Prices. 5.50, Book Review: Adam Homo (Paludan Müller). 6.20, German Lesson. 6.50, Weather Forecast. 7.0, News. 7.15, Time Signal. 7.30, Review of Politics for June. 8.0, Chimes from the Town Hall. 8.5, Programme by Per Kuntzon. 8.10, Italian Music by the Station String Orchestra, conducted by Walter Meyer-Radon: Concerto grosso in D Minor, Op. 3, No. 11, for Two Violins, Cello and Harpsichord; Concerto grosso in F Minor, Op. 1, for Two Violins, Two Violas, Cello and Harpsichord (Locatelli). 8.45, Pan Gaden (Rudolf Värmland)—Radio Play. 9.20, Saxophone and Pianoforte Recital by Otto Bunner Jansen and Viktor Fischer. 9.45, Recital of Old Time Danish Songs. 10.0, News. 10.15, Concert by the Radio Orchestra, conducted by Walter Meyer-Radon: Ballet Suite (Rameau-Mottl); Ballet Music from Idomeneo (Mozart); Selection from The Sleeping Beauty (Tchaikovsky); Dance from Prince Igor (Borodin). 11.0 (approx.), Close Down.

GORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 11 p.m., Programme in English by the I.B.C., T. St. A. Ronald and B. McNabb announcing. 4.30, Concert for Southampton and Winchester Listeners: Selection from The Flower of Hawaii (Abraham); Song, A Batchelor Gay, from The Maid of the Mountains (Tate); Song, The Desert Song (Romberg); You are my Heart's Delight, from The Land of Smiles (Lehar); Songs: (a) I give my Heart, from The Dribarry (Müllacker-Mackeben), (b) The Night was made for Love, from The Cat and the Fiddle (Kern); Waltzes from A Waltz Dream (Oscar Straus); Duet, A Paradise for Two, from The Maid of the Mountains (Tate); Song, The White Horse Inn (Stolz-Benatzky); Selection from Liliac Time (Schubert-Berte). 5.15, Concert of Gramophone Music for Bournemouth and Weymouth Listeners: Coeur Brise Gilet, by Marek Weber and his Orchestra; Marta, by The Street Singer; Sicilienne and Rigaudon (Francœur-Kreisler), by Tossy Spawakawsky; Try to forget, by Edith Baker; Negro Spiritual Medley, by Paul Robeson; Les Siècles (Waldteufel), by Marek Weber and his Orchestra; Happy-go-lucky You, by Layton and Johnston; Good-night, by Jeanette Macdonald; Somebody's waiting for me (Harry Lauder); I'll never be the same, by Greta Keller; Mon Réve (Waldteufel), by Marek Weber and his Orchestra. 6.0, Programme in French. 10.0 (approx.) till Close Down, Programme in English by the I.B.C. 10.0 (approx.), Dance Music by the Heolians: Willow, weep for me (Ronell); Her Name is Mary (Ramsay); Look what you've done (Kalmár); Roll along Kentucky Moon (Halley); This is no Dream (Meyer); My Heart's to Let (Waller); One little Word led to another (Perkins); When you've fallen in Love (Waller); On a Dreamy Afternoon (Ewing); Three Wishes; Moonlight on the River (Green); Let me give my Happiness to you (Postford); Twentieth Century Blues (Coward); I'm one of the Lads of Valencia (Com); Lover of my Dreams (Coward); Put a little Springtime in the Winter of their Lives (Pickard). 11.0, Club Concert for Beccles Listeners: Out of Breath; Song, The Drum-Major (Newton); Orchestral Selection from Aphrodite; Pianoforte Medley from The Desert Song (Romberg); O Maiden, my Maiden (Lehar); Song, My Sword and I (Byng); It seems to me; Selection from Wild Violets (Stolz); Pianoforte Solo, Everyone says I Love You (Kalmár), from Horse

JUNE 30th

FRIDAY

continued

Feathers; The Wedding of the Birds; Song, Rolling down to Rio (German); Violin Solo, The Song of Songs (Moya); Princess Pat (Herbert), 12.5 a.m. (Saturday), The I.B.C. Late News Bulletin, 12.10 (approx.), Dance Music; I'm sure of everything but you; Young and Healthy (Dubin); Just a Little Home for the Old Folks; Ragtime Medley (arr. Charles); Farewell to Arms (Wrubel); You'll always be the same Sweetheart; Her Name is Mary (Sievier); Pianoforte Solo, Slipping Fingers (Steele); Leave the Pretty Girls alone (Flanagan); Bananas (Samuels); Thompson's Old Grey Mule (Rickard); More Ragtime (arr. Charles); Little Nell (Divina), 1.0, Military Band Concert: Zampa Overture (Herold); Selection from Lohengrin (Wagner); Cradle Song (Brahms); Cornet Solo, Il Bacio (Arditi); Squirrel Dance; March from The Ring of the Nibelungs (Wagner); Tally Ho (Barroti); War March of the Priests from Athalia (Mendelssohn), 1.30, Concert of Opera Music: Selection from La Traviata (Verdi); Soldiers' Chorus from Faust (Gounod); Intermezzo from Cavalleria rusticana (Mascagni); Anvil Chorus from Il Trovatore (Verdi); Softly awakes my heart, from Samson and Delilah (Saint-Saëns); Swan Chorus from Lohengrin (Wagner); Waltz Song from La Bohème (Puccini), 2.0, Dance Music by the Bachelors: Please handle with care; The Knife of Diamonds (Steele); Cinderella's Wedding Day; The Juggler (Groftasch); Business in Q (Bleyer); Overnight (Alter); The Japanese Sandman (Whiting); Cheerful Little Earful (Rose); Well, well, well (Donaldson); Balloons (Yellen); Jack in the Box (Shand); Always in my Heart (Turk); Butterflies in the Rain (Myers); To-night (Valiero); Old Father Thames (Wallace); Play, Fiddle, play (Laurence), 2.57, I.B.C. Good-night Melody, 3.0, Close Down.

FLensburg.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,167 kc/s, 259.3 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres, and Trier, 1,157 kc/s, 259.3 metres.—6.25 p.m., Reading from Johann Oherich (Wilbrandt), 6.45, Today's News, 6.50, Time and Announcements, 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender), 8.0, Special Transmission, 8.10, Dance Music by the Station Orchestra, 8.45, Variety Programme, 9.0, See Munich, 10.20, Time, News, and Weather, 10.45, Serenade, conducted by Reinhold Merten. Soloist: Adolf Permann (Baritone); Extracts from Les petits riens (Mozart); The Count's Aria from Pizarro (Mozart); Overture and Aria from Das Nachtlager in Granada (Kreutzer); Overture, Bruschino (Rossini); Prelude to La Gioconda (Ponchielli); Posa's Death Scene from Don Carlos (Verdi); Overture, The Force of Destiny (Verdi); Ford's Aria from Falstaff (Verdi); Overture, The Bartered Bride (Smetana), 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Variety Programme, 6.40, Frankfurt Exchange and Hamburg Market Prices, 6.50, Weather Report, 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender), 8.0 (from Hanover), Concert by the Station Quartet and Orchestra, conducted by Otto Ebel von Sosen; Address: Heidehanschaft (von Sosen); Heidemittag (Dreyling); Quartet: (a) Ueber die Heide (Dreyling), (b) Die Sommervogel singen (Dreyling); Das Geheimnis (Bin); Das Heidelied (Ritzau); Quartet: (a) Die Schuegans zieht, (b) Auf der Lüneburger Heide (Dreyling); Heidenacht (Kockert), 8.45 (from Hanover), The Wedding of a Hanoverian Prince—Report of the Wedding of Crown Prince George of Hanover and Princess Marie in 1843—Programme arranged by H. Bodenstedt, 10.0, Time and News, 10.20, Topical Talk, 10.30 (from Hanover), Brahms Chamber Music; Clara Spitta (Pianoforte), Eleanor Day (Cello), and Egon Gabler (Clarinet); Sonata in E Flat for Clarinet and Pianoforte, Op. 120; Sonata in E Minor for Pianoforte and Cello, Op. 38, 11.0 (from Bremen), Orchestra Concert, conducted by Reinhold Krug; Overture, Die Schweizerfamilie (Weigl); Waltz, Bulher konum' (Ziehler); Baby spielt soldat (Miehell); Suite from The Prodigious Song (Worms); The Quarrel between Mrs. Tschang and Mrs. Tschang (Niemann); Piapperrnächchen (Eilenberg); The Old Musical Clock (Humphries); Plaudereien in der Kinderstube (Manfred); March from The Girl in the Taxi (Gilbert), 11.55, Close Down.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken. In the interval at 1.20, News, 2.30, Programme arranged by the Post Office with Gramophone Records, 3.0, Agricultural Prices and Exchange Rates, 3.30, Programme for Children, 4.0, Talk for Women, 4.30, Concert by the Königsberg Opera House Orchestra, conducted by Karl Hrubetz; Festival Overture, Dem deutschen Volke (Zimmer); Old Viennese Waltz (Lehar); Opera Melodies (Weber); Overture, Der Generalkonsul (Reinhardt); Waltz (Hrubetz); Potpourri from the Rhone to the Danube (Rhoel); In the Harbour of Port Said (Armandola); Soldatenlieder-Quadrille (Haseh); Stolz weht die Flagge Schwarz-Weiss-Rot (Thiele); Intermezzo, Narzissenmadel (Siede); Sturmloeken-Marsch (Freitag), In the interval at 5.0 (approx.), Talk: Where shall we go for our next flight? 5.40, Book Review, 5.50 (from Danzig), Talk on Danzig, 6.15, Agricultural Prices, 6.20, Pianoforte Sonata in F Minor, Op. 57 (the Appassionata) (Beethoven) by Rudolph Winkler, 6.50, Weather, 7.0, Transmission for all German Stations, relayed from Stuttgart, 8.0 (from Danzig), Concert by the Police Band, conducted by Ernst Stiehlert; March, Am Rhein, am deutschen Rhein (Ries); Overture, Der Wildschütz (Lortzing); Fantasia, Waldteufelchen (Kling); Waltz, Wod die Zitronen blihen (Strauss); Rhapsody (Lalo); La musica proibita (Gastaldin), In the interval, News and Announcements, 9.40, Authors' Hour—Max Jungnickel, 10.10, News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.)—11.40 a.m. to 3.40 p.m., Programme of the Algemeene Vereniging Radio Omroep (A.V.R.O.), 11.40, Time, 11.41, Gramophone Music, 12.10 p.m., Concert of Light Music by Kovacs Lajos and his Orchestra; Soloist: Bob Scholte (Songs), 1.40, Recitations, 2.40, Gramophone Concert, In the interval: Music by a Male Voice Choir, conducted by Jacob Hamel, 3.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.), 3.40, Gramophone Music, 4.10, Programme for Children, 4.40, Concert by the Small V.A.R.A. Orchestra, conducted by H. de Groot; Overture, Jean de Paris (Boieldieu); Waltz from La Bohème (Puccini); Suite printanier (Nevin); Romance (Svendsen); Dream of Love after the Ball (Czibulka); In a Bagdad (Bratton); Hochzeitszug in Lilliput (Translaten); Down South (Myddleton); Die Nachtschwärmer (Ziehler); Medley of Tosti's Songs (Godfrey), 5.40, Song Recital by A. de Booy, with Organ Accompaniment: Somewhere (Harris); The Sunshine of your Smile (Ray); Charm (Marchetti); Glow-Worm Idyll (Lincke); Selection from Mignon (Thomas); Selection from The Desert song (Romberg); Du schwarzer Zigeuner (Vacek); Play, fiddle, play (Deutscher); Same old Moon (Baskette); Egyptian Serenade (Veld), 6.20, Talk: China and Japan, 6.40, Concert by De Notenkrakers, conducted by D. Wims; Waltz, Accelerationen (Strauss); Czardas (Monti); Allegro spiritoso (Senaillé); Estrellita (Pence-Heifetz); Waltzes Nos. 1 and 4 (Dvorak); Gramophone Records: Habanera (Barbot); Saxophobia (Wiedoeff); Melody (Cesar-Frank); Jardins sous la pluie (Debussy); Meditation from Thais (Massenet); Gipsy Polka (Holmar), 7.40 to 10.40, V.P.R.O. Programme, 7.40, Talk, 8.10, Quartets Concert by the Haydn Quartet; String Quartet in A Minor, Op. 29 (Schubert); String Quartet No. 2 (Pijper); String Quartet in C, Op. 51, No. 2 (Haydn), In the interval at 9.10, Talk, 9.40, Religious Notes, 9.45, News, 9.55, Talk on Hans Andersen, 10.25, Gramophone Music, 10.40, Organ Recital by C. Steyn, 11.10, Gramophone Music, 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.55 a.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.), 11.55, Concert by the K.R.O. Sextet; March, Au revoir (Schoutemeyer); Napoli (d'Ambrosio); Triumphal March (Grüschel); Il natale di Pierrot (Monti); Waltz-Mazurka (Thomas); Polichinelle (Rachmaninov); Gramophone Records and Announcements; El Capitan (Sonsa); Extracts from The Tales of Hoffmann (Offenbach); Waltz, Frühlingsboten (Eberle); Nostalgin (de Michel); Finale, 1.25 to 1.40 p.m., Interval, 1.40, Gramophone Music, 2.10, Pianoforte Recital by Mlle. Driessen, 2.25, Recitations, 2.40, Pianoforte Recital (cont'd.), 2.55, Recitations (cont'd.), 3.10, Gramophone Music, 3.50, Concert by the K.R.O. Boys conducted by Lustenhouwer; Soloist: J. Mossel (Songs), 4.25, Jubilee of the Dutch Cycling Union—Reception by the Mayor and President of the Union, 5.55, Concert by the K.R.O. Boys (cont'd.), 5.25, Agricultural Talk, 5.55, Talk on Germany, 6.10, Concert by the K.R.O. Boys

(cont'd.), 6.40, Police Notes, 6.55, Talk, 7.15, Gramophone Music, 7.40, Concert by the K.R.O. Orchestra, conducted by J. Gerritsen; Soloist: Mme. Binnendijk (Songs), Overture, Djamilah (Bizet); Song: La captive (Berlioz); Le roset d'Opphale (Saint-Saëns); Songs: (a) Allerseeën (Richard Strauss), (b) Heimliche Aufforderung (Richard Strauss), (c) Irrlichten (Schubert), (d) Gretchen am Spinnrade (Schubert); Dinanche matin (Massenet); Sous les lilas (Massenet); Printemps qui commence (Saint-Saëns); Mon cœur s'ouvre à ta voix (Saint-Saëns); Songs: (a) O jubel mijn hart (Knier), (b) Aan een Zigeuner (Molenaar), (c) Avondleide (Kuller); Meeresstille und Glückliche Fahrt (Mendelssohn); Two Icelandic Melodies (Svendsen); Lortzing Potpourri (Urbach); Schatzwalzer (Strauss); Rakoczy March (Liszt); Gramophone Music, In the interval at 8.10, News, at 8.25, Gramophone Music, and 8.50, Gramophone Music, 10.10, News, 10.15, Dance Music by Félix Kwast and his Orchestra, and Gramophone Music, 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Programme for Children, 6.40 (from Helsinki), Orchestra Concert, 7.30, Dramatic Programme, 7.55 (from Helsinki), Violin Recital, 8.20, Talk, 8.45, News in Finnish, 9.0, News in Swedish, 9.15, Light Music, relayed from the Kappell Restaurant, 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert conducted by Wolf, 12.50 p.m., News, 1.0, Concert conducted by Eysoldt, Soloist: Josef Schwan (Pianoforte), Ballet Overture (Kremsler); Liebesträume (Liszt); Variations in F, Op. 34, for Pianoforte (Beethoven); Minuet (Mozart); Selection from Fedora (Giordano); Erinnerung (Bayer); Mondnacht in Venedig (Brase); Theme and Variations from Coppélia (Delibes); March, Alles für Deutschland (Müncke), In the interval at 2.0, News, 2.30 to 3.30, Interval, 3.30, Economic Notes and Time, 3.50, Talk on German Youth, 4.30, Concert of German Music, Gerda Schüler-Rehm (Soprano), Maria Schaben (Contralto), Walter Trienes (Pianoforte), and Otto Siegl (Violin), Part I: Otto Siegl Music; Suite, Op. 59, for Violin and Pianoforte; Three Songs, Op. 79, for Contralto: (a) Flieg duhin, (b) Traumverkündigung, (c) Tag der Liebe; Country Dances, Op. 57, for Pianoforte, Part II: Couvrouisier Music; Three Songs for Soprano: (a) Maria mein im Rosenbad, (b) Dornröschen, (c) Holder strahlst dich aus dir, Part III: Schoeck Music; Three Songs for Soprano: (a) Kennst du das auch, (b) Das bescheidene Wänschlein, (c) Mit einem gemalten Band; Sonata in D for Violin and Pianoforte, 5.50, Talk: Old Germanic Handicrafts, 6.10, Topical Talk, 6.20, English Lesson, 6.45, News, 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender), 8.0, News, 8.5, Travelling—a Humorous Radio Sequence, 8.40, Thunder Storms in Early Summer—Readings from the Poems of Jakob Knip, Friedrich Gottlieb, Klopstock and Billinger, 8.55, Talk in connection with Nordic Week: The Nordic Element in German Literature, 9.5, Symphony Concert by the Station Orchestra conducted by Buschkötter, Soloist: Johannes Willy (Baritone), Four Ballads (Loewe): (a) Nächtliche Heerschau, (b) Fridericus Rex, (c) Prinz Eugen, (d) Graf Eberstein; Second Symphony in D (Brahms), 10.15, News, 10.30, Serenade and Dance Music conducted by Eysoldt, 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 369.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12.5 p.m., Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber; Overture, Demetrius (Rheinberger); Suite (Granville Bantock); Three Bagatelles (Kaun); Norwegian Rhapsody in B (Svendsen); Humoresque, Gaudemus igitur (Liszt); Overture, Ilka (Doppler); Selection from Madame Butterfly (Puccini); Waltz, Gruss an Wien (Baumann); Triumphal March (Reinecke), In the interval at 1.0 (approx.), News, 2.0, News, 2.10, Reading of Lyrics, 2.30, Song Recital by Alice Jung (Soprano) and Gudrun Haensch-Recht (Contralto), 3.0, Programme for Young People: How to build a Garden Observatory, 3.25, Talk for Women: The Study of Heredity and Eugenics, 3.55, Exchange and Market Prices, 4.0, Concert by the Station Orchestra, conducted by Theodor Blumer; Overture, The Taming of the Shrew (Goetz); A Musical Joke, for String Orchestra and Two Horns (Mozart); Serenade, Op. 1 (Schoeck); Oriental Suite, Op. 25

(Heuberger); Hungarian Dances Nos. 5 and 6 (Brahms); Suite No. 1 from L'Artésienne (Bizet); Waltz, Schau Trau-Wein (Joh. Strauss), In an interval at 5.0, Book Review, 5.50, Exchange, Weather and Time, 6.0, Health Hints for Hikers, 6.20, Herr Walther und die Waldfrau—Melodrama (Ritter) recited to the Pianoforte by Joseph Krahe, 6.45, Programme to be announced, 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender), 8.0, Concert by the Dresden Soloist Ensemble; Overture, La Sirène (Auber); Abendstimmung (Kaun); Selection from King and Marshall (Heise); Waltz, Künstlerleben (Vollstedt); Album Leaves (Gade); Consolation, No. 3 (Liszt); Serenade d'Arlequin (Schütt); Schön Rosmarin (Kreiser); Waltz, Strandcaun (Ohlsen); Cavatina, Op. 86, No. 3 (Raf); Selection from The Yellow Jacket (Lehar), 9.15, News, 9.25, Kleist—Biographical Drama (Hans Franck), 10.25, News, 10.45 (approx.), Talk with Gramophone Illustrations: The Military March as an Historic Memorial 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.30 p.m., Concert by the Station Orchestra, 7.30, Natural History Talk, 8.0, Gramophone Music, 8.30, Programme from Belgrade, 697 kc/s, 430.4 metres, 10.30, Weather and News, 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—Dutch Programme, 7.0 p.m., Gramophone Music, 7.40, Weather Report, 7.45, Concert conducted by Willem Mengelberg, on Gramophone Records, Prélude, Hansel and Gretel (Humperdinck); Symphonic Poem, Les Préludes (Liszt); Overture, Tannhäuser (Wagner), 8.25, Selection from Il Trovatore (Verdi), 8.30, Talk in Dutch, 8.40, Gramophone Music, 8.50, News in French, 9.15, Talk in Dutch, 9.45, News in German, 9.55, Dance Music and Variety Music, on Gramophone Records, In the intervals, Exchange and News.

LWOW

788 kc/s, 381 metres; 16 kW.—6.35 p.m., News, 6.40, Pianoforte Recital, 7.0, Gramophone Music, 7.20, Miscellaneous Items, 7.40, See Warsaw, 10.0, Reading, 10.25, See Warsaw, 11.0 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South East, 7.45, Report on the Cycle Tour of France, 8.30, Concert by the Pierre Lorraine Quintet, with M. Favre (Oboe) and M. Mallet (Baritone), Overture, The Italian Girl in Algiers (Rossini); Chanson d'au-revoir (Andran); Andante from Miss Deanna (Missis); Extracts from L'Africaine (Meyerbeer); Allegro from the Oboe Concerto in G (Handel); Baritone Solos; Pavane (Mozart); Musette from Mirella (Gounod); Baritone Solos; Oboe Solos (groveles); Menuet des Lutins (Mare-Delmas); Girdle-Girofla (Lecocq); Waltz Suite, Teroso Mio (Buccini); Invocation (Luigini); Selection from The Prophet (Meyerbeer), After the Concert, News.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, Request Gramophone Records, and Scientific Talk, 9.15, News and Political Review, 10.30 to 11.0, Interval, 11.0, Chimes, Time, and Political Review, 11.15 (approx.), Symphony Concert on Gramophone Records: Overture, Der Freischütz (Weber); In the Steppes of Central Asia (Borodin); Danse macabre (Saint-Saëns); Symphony No. 3 (Brahms); Symphonic Piece for Pianoforte and Orchestra, Nights in the gardens of Spain (Falla); Dance from La vida breve (Falla), 1.15 a.m. (Saturday), News and Programme Announcements for Listeners Abroad, 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.15 p.m., See Prague, 6.25, Gramophone Music, 7.0, See Prague, 7.25, Concert by the Ostrava Schrammel Quartet, 8.0, See Prague, 10.30 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 00 kW.—9.55 a.m., Relay from a Theatre, 12.15 p.m., Literary Review and Art Notes, 2.45, Weather Report, 3.0 to 5.30, Dramatic Programme, 5.30, Radio Play for Young People, 6.30, Concert from the Radio Theatre, 8.0, News, 9.30, Programme Announcements, 9.55, Chimes from the Red Square, 10.55, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert, conducted by Erich Kloss, 5.45, Talk: The Younger Generation.

JUNE 30th

FRIDAY

continued

6.5, Talk on Adolf Lüderitz. 6.25, Talk on Animals. 6.45, Time, Weather, and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Military Band Concert, conducted by L. Kiessling; March, Pankgraf (Schlenk); Jubel-Overtüre (Flotow); Selection from Der Obersteiger (Zeller); Ein Morgen in Sans-Souci (Kockert); Waltz, Die Schönen von Valencia (Morena); Potpourri, Jung Deutschland (Weminger). 8.40, Topical Talk. 9.0, Twelfth Mozart Festival, relayed from Kaiser-Saal of the Residenz, Würzburg; Conductor, Hermann Abendroth; Soloist, Hermann Zilcher (Pianoforte); Pianoforte Concerto in A; Symphony in E Flat. 10.20, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Concert by the Station Orchestra, conducted by Hugo Kramm; Hungarian March (Berlioz); Overture, Die Fledermaus (Joh. Strauss); Scènes napolitaines (Mussæff); Norwegian Rhapsody No. 1 (Svendsen); Legends (Gjerström); Waldteufel Potpourri (arr. Kling); Spanish Dance (Marquina); Norwegian Military March of 1751 (Olson). 6.30, Temperance Talk. 7.0, Advertising Notes. 7.15, Weather and News. 7.30, Concert. 8.0, Time. 8.1, Dramatic Programme. 9.30, Agricultural Report. 9.40, Weather. 9.45, News. 10.0, Topical Talk. 10.15, Variety Programme.

ÖSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Report, Report of the Royal Geographical Society and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time and News. 8.45, Concert of Popular Music. In the intervals, Talk and Announcements. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Talk on the Theatre. 7.0, Le Journal Paris. 8.30, Literary and Music Programme for Children. 9.15, Concert by the Symphony Orchestra, conducted by Eduard Flament. Desde la Reja (Hugnet-Tagelle); Chanson d'amour (Nougès); Clarinet Solo; La campagne s'éveille (Flament); Flute Solo, Pastorale (Thiriet); Violin Solo, Selection from La Vie Parisienne (Offenbach). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 6 kW.—7.0 p.m., Gramophone Music. 7.5, Spoken Talk. 7.15, Journal Paris. 7.30, Gramophone Music. 7.55, Review of the Week. 8.0, Talk on Music. 8.10, Gramophone Music. 8.30, Galathée-Opéra-Comique in Two Acts (Massé). 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 8.0, News. 12 Noon, Jewish Programme. 12.30 p.m., Gramophone Concert: Selection from Le Bourgeois gentilhomme (R. Strauss); Aria from William Tell (Rossini); Sicilienne from Pelléas et Mélisande (Faure); Aria from Lucia di Lammermoor (Donizetti); Menuet antique (Ravel); Selection from Don Giovanni (Mozart); Marche écossaise (Debussy); Il Bacio (Arditi); Symphony from the New World (Dvorák). In the intervals at 1.0, Exchange and News, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange. 6.10, Agricultural Talk. 6.30, Gramophone Music. 6.50, Assurance Societies' Report. 7.0, Dialogue. 7.20, Gramophone Concert: Nagent sur Marine (Paradis); On the Garden Wall (Strony); Tiger Rag (Dixieland); Je ne t'aime plus (Cazes-Cyname); Extase (Ganne); March, The Cadets (Souza). 7.45, Commercial Prices and News. 8.0, Literary Programme. 8.30, News. 8.40, Gastronomic Review. 8.45, Chamber Music Concert. In the interval at 9.15, Press Review and News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—4.0 to 5.0 p.m., U.S. Marine Band, from New York. 7.30, Popular Programme. 7.45, KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, International Sunday School Lesson by Rev. S. S. Lappin. 8.30, John Dunlap (Tenor). 8.45, Happy Jack, from New York. 8.58, Baseball Scores. 9.0, Vic Schilling and his Orchestra, from New York. 9.30, Business News and Market Reports. 9.45, Riggs and Moke. 9.58, Baseball Scores. 10.0, Rhythm Kings. 10.15, Concert Favorites. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time and Press News Recler. 11.15, Weather Report. 11.16, Sport Review. 11.23, I Bring a Song. 11.28, Announcement. 11.29, Temperature Report. 11.30, Pittsburgh Spot-

lights. 11.45 to 1.0 a.m. (Saturday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15 a.m., Booth Tarkington's Maud and Cousin Bill. 12.30, Pastoral. 1.0, Programme to be announced. 1.30 to 3.0, New York Relay. 1.30, Adventures in Health, from New York. 1.45, Phil Cook and the Ingram Shavers. 2.0, Goldman Band. 2.30, Popular Programme. 3.0, Century of Progress Festival Orchestra.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—6.35 p.m., Gramophone Music. 6.50, Report by the Physical Education Committee. 7.5, Talk on the History of Poland. 7.20, Miscellaneous Items and Announcements. 7.35, Theatre Notes and Announcements. 7.40, See Warsaw. 7.58, Time. 8.0, See Warsaw. 10.0, Time Signal, Sports and Police Notes. 10.15, Dance Music, relayed from the Café Polonia. 11.50 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Brno. 3.55 to 4.0, Exchange. 5.45, Talk. 5.55, Programme from Moravská-Ostrava. 6.5, Agricultural Report. 6.15, Talk for Workers: Books on Sociology. 6.25, News in German. 6.30, German Transmission: Topical Talk and Talk on the Problems of the East. 7.0, Chimes from St. Ludmila's Church and News. 7.10, Talk: Czech Rivers. 7.25, Popular Songs. 8.0, London Fog—Sketch (Tuma). 8.30, In the Well—Comic Opera in One Act (Blödek). 9.30, String Quartet in A flat, Op. 105 (Dvorák). 10.0, Time, News, Press Review and Sports Notes. 10.15, Russian News. 10.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS; 743 kc/s, 403 metres; 25 kW; and Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Lausanne), Talk on Swimming. 7.25 (from Lausanne), News. 7.30 (from Lausanne), Political Review. 8.0 (from Lausanne), An Evening at the Black Cat. 9.50, News. 10.0 (from Lausanne), Concert by the Radio Lausanne Peasant Orchestra, with Humorous Comments by Jean-Louis. 10.30 (from Geneva), Talk: The Work of the League of Nations. 10.50 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Orchestral Concert of Light Music. In an interval at 2.0, Time and Announcements. 4.45, Children's Radio Review. 5.10, Weather. 5.15, Exchange and Giornale Radio. 5.30, Concert by a Mandoline Quartet and Soloists: Margherita de Acutis (Soprano) and Gino Del Signore (Tenor). Minuet, Mascherine eleganti (Coletta); Seguidilla (Ruspanini); Soprano Solos from: (a) Manon (Massenet), (b) L'Amico Fritz (Mascagni), (c) La rondine (Puccini); Nell' Oriente misterioso (Berrutti); Al paese di Carmen (Delys); Tenor Solos: (a) Stornellata sull'Arno (Belli), (b) Mexican Song, Amapola del camino (Rubio), (c) Song (Tchaikovsky); Spanish March, Pepita (Macchini). 6.40 (from Naples), Shipping Notes. 6.50, Agricultural and Dopplavoro Notes. 7.10, Tourist Talk. 7.20, Announcements in Different Languages. 7.40, Giornale Radio. 8.0, Time, Announcements and Talk. 8.15, Gramophone Music. 8.30, Giornale Radio and Sports Notes. 8.45, Gramophone Concert. 9.45, Talk on Literature and Art. 10.0, Orchestral Concert. Soloists Serra Massara (Soprano), Adolfo Facchini (Tenor), and Antonelli (Bass). Selection from Terra Santa (Salviucci); Strapaese (Pizzini). 10.45, Dance Music. In an interval at 10.55, Giornale Radio. 11.30 (approx.), Close Down.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 p.m., Biblical Drama. 9.15, Popular Programme, from New York. 9.30, Talk: The Mind Age. 9.35 to 9.45 (approx.), South Sea Islanders, from New York. 12.45 a.m. (Saturday), Stock Reports. 1.0, Cities Service Concert, from New York. 1.30, WGY Farm Forum. 2.0 to 3.30, New York Relay. 2.0, Musical Grocery Store. 2.30, Popular Programme. 3.0, Musical Programme. 3.30, Country Club, from New York, followed by Programme Résumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—6.15 to 6.35 a.m., Gymnastics. 11.59, Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from Zürich), Concert of Light Music. 12.30 p.m., Time and News. 12.40 (from Zürich), Concert. 1.25 to 1.35 (from Zürich),

Exchange, Time, and Weather. 5.0, Programme for Children. 5.30 (from Zürich), Concert by the Little Swiss Radio Orchestra. 6.30 (from Berne), Talk: American-Swiss Descent. 7.0 (from Berne), Time and News. 7.20, Concert by the Swiss Radio Orchestra. 8.0 (from Berne), Der Kampf um den Himmel—Radio Play (Arno Schirokauer), produced by the Author. 9.0, News. 9.10, Il campanello di notte—Opera in One Act (Donizetti), relayed from Lugano. 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Scout Report. 5.25, Zither Music, relayed from Malmö, 1,301 kc/s, 231 metres. 5.40, Recital of Finnish Songs by Sonja Schaar-Hämäläinen. 6.0, Weather Report for June. 6.15, Gramophone Music. 7.15, Weather and News. 7.30, Legal Talk. 8.0, Concert of Light Music by the Elite Orchestra. 8.45, Talk. 9.15, Choral Concert, conducted by C. O. Olthén. 9.45, Weather and News. 10.0, Organ, Cello, and Song Recital, relayed from a Göteborg Church; Organ Symphony, Op. 42 (Gullmánt); Aria (Stradella); Sonata in C for Cello and Organ (Händel); Largo (Händel); Sonata in G Minor for Cello and Organ (Loeillet); Organ Solo: Pièce héroïque (C. Franck). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—7.45 to 8.0 a.m., Report of the Cycle Tour of France. 11.30, Variety Music on Gramophone Records. 12.30 p.m., Report of the Cycle Tour of France. 12.45, News. 1.0, Time and Exchange. 1.5, Orchestral Concert, conducted by Maurice de Villers. 2.0 to 3.30, Interval. 3.30, Gala Concert by the Casino Orchestra, relayed from the Casino, Vichy; Conductor, Brouillac; Soloist, M. Reynal (Violin) and M. Benedetti (Cello); Overture, Oberon (Weber); Prelude to Messidor (Bruneau); Suite Algérienne (Saint-Saëns); Violin Solo; Cello Solo; Selection from Don Giovanni (Mozart); Fête polonaise from Le roi malgré lui (Chabrier). In an interval at 4.30 (approx.), Report of the Cycle Tour of France, relayed from Belfort. 5.0, Literary Talk in French on Rainer Maria Rilke. 5.15, Orchestral Concert, conducted by Roskam; March, Sempre avanti (Enck-Leopold); Slav Caprice (Bayer); Waltz, Galanterie (Leopold); Overture, The Story of the Princess (Kostal); Selection from Der Frauenfresser (Eysler); Melody (Bucari); Intermezzo, Amaka (Scassola); Liberty March (Kostal). 6.0, Chamber Music by the Station Trio, relayed from Lille, 1,130 kc/s, 265.4 metres. 7.0, Topical Talk in German. 7.15, Talk in German: Work and Capital. 7.30, Time and News. 7.45, Report of the Cycle Tour of France. 8.5, Gramophone Music. 8.15, Press Review in German, Lottery Results, and Announcements. 8.30, Annual Fir-Tree Festival, relayed from Thann. After the Programme, Press Review in French. 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12.40 p.m., Respighi Concert on Gramophone Records. 1.15, Time and News. 1.30, Concert from Langenberg. 2.0, Concert arranged by the Post Office. 2.30, Advanced English Lesson. 3.0 to 3.45, Interval. 3.45 (from Mannheim), Talk by Paul Teickner; My Sunday Walks. 4.0, Song Recital by Elisabeth Jentsch. 4.30 (from Badenweiler), Orchestral Concert, conducted by Albert Hitzig; Overture, Das Nachtlager in Granada (Kreutzer); Waltz, Künstlerleben (Joh. Strauss); Romance in F for Violin and Orchestra (Beethoven); Selection from The Master-singers (Wagner); Serenata d'Amalfi (Bucci); Siamische Wachtparade (Linke); Selection from The Land of Smiles (Lehár); March, Deutschlands Ruhm (Schröder). 5.45, German Folk Songs on Gramophone Records. 6.10, Talk: The History of Queen Olga's Regiment of Grenadiers. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0 (from Mannheim), The Palatinat—a Humorous Programme. 8.40, A Conversation with our Neighbours on the Frontiers. 9.0, See Munich. 10.20, Time and News. 10.45, See Frankfurt. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire.—6.0 p.m., News. 6.15, Music by an Argentine Orchestra. 6.30, Arias from Operas: O beau pays de la Touraine, from Les Huguenots (Meyerbeer); Cavatina from William Tell (Rossini); Salmé, laissez-moi Caïmer, from Hérodiade (Massenet). O Star of Eve, from Tannhäuser (Wagner). 6.45, Divertissement on Russian Songs (Rabaud). 7.0, Medical Talk. 7.5,

Accordion Solos. 7.15, News. 7.25, Local News. 7.30, Viennese Music. 7.45, Opéra-Comique Music: Ne parle pas, from Les Dragons de Villars (Maillart); Song from The Daughter of the Regiment (Donizetti); Aria from Rigoletto (Verdi). 8.0, Operetta Music: Selection from The Land of Smiles (Lehár); Selection from Frasquita (Lehár); Ballet Music from Le Roi Pausole (Honégger). 8.15, Songs. 8.30, Instrumental Solos. 8.45, Operetta Music. 9.0, Review. 9.5, Trio in B flat (Schubert), followed by Sound Film Songs. 9.45, Accordion Solos. 10.0, Viennese Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Orchestral Music. 11.15, Opéra-Comique Songs. 11.30 to 12 Midnight, Programme in English by the I.B.C. 11.30, Organ Recital. 11.57, I.B.C. Goodnight Melody. 12 Midnight, News. 12.5 a.m. (Saturday), Dance Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—8.0 p.m. till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.0 p.m., Chamber Music. 6.0, Weather Report. 6.35, Giornale Radio and Announcements. 7.0, Time and Announcements. 7.5, Gramophone Music. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News. 8.15, Sponsored Musical Programme. 8.30, The Grasshopper and the Ant—Operetta in Three Acts. Talk in the interval. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning); and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in German. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—1.10 p.m., German Opera Music on Gramophone Records. 2.0 to 2.50, Interval. 2.50, Time, Weather, and Exchange. 3.10, Programme for Children. 3.25, Tarantol, Princess of China—a Tragi-Comedy in Five Acts (F. Schiller). 5.0, Talk: Prehistoric Cave Animals. 5.20, Schumann Pianoforte Recital by Julius Vargha; Variations on the name Abegg, Op. 1; Papillons, Op. 2. 5.55, Travel Notes and Tourist Report. 6.10, Talk: Swimming as a Competitive Sport. 6.25, Sports Review of the Week. 6.35, Talk: Gold, Silver, Lead, and Copper Mining in Ancient Times in Austria. 7.0, Talk: National Parks in Austria. 7.25, Time, Weather, and Programme Announcements. 7.35, Concert of Music by Paul Mestrozzi by the Otto Römisch Orchestra; Soloists: Mimi Brix and Richard Waldemar (Songs). 8.35, Talk: Engene of Savoy. 9.0, Concert by the Vienna Symphony Orchestra, conducted by Karl Anderletti; Soloist: Viktor Polatschek (Clarinet); Overture, Der Freischütz (Weber); Clarinet Concerto in A (Mozart); Symphonic Poem, The Golden Spinning Wheel, Op. 109 (Dvorak). 10.0, News. 10.15, Variety Music on Gramophone Records.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fantare from St. Mary's Church, Cracow. 12.5 p.m., Gramophone Music. 12.25, Polish Press Review. 12.35, Gramophone Music. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.10, Announcements. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.45, Aviation Report and Anti-Gas Drill. 3.50, Gramophone Music. 3.55, Talk on Maritime and Colonial Affairs. 4.0, Popular Concert, relayed from Cichocinek. 5.0, Review of Periodicals. 5.15, Song Recital by E. Hoppe (Soprano) and H. Merkl (Bass): Bass Solos: (a) Song from Salvatore Rosa (Gomiz), (b) Song from Simon Bocanegra (Gomiz), (c) Song (Gall); Soprano Solos: (a) To the Sun (Maszynsky), (b) Barcarolle (Szopsky), (c) Song (Karlłowicz), (d) Bird of Paradise (Rozewicz); Bass Solos: (a) Song (Gall), (b) Three Airs (Moniuszko); Soprano Solos: (a) Aria from The Magic Flute (Mozart), (b) Nocturne (Leonecavallo), (c) Aria from La Bohème (Leonecavallo). 6.15, Talk, relayed from Wilno, 533 kc/s, 563 metres. 6.35, Gramophone Music. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Topical Talk. 8.0, Concert by the Station Symphony Orchestra, conducted by C. Wilkomirsky; Soloist: Irene Dubiska (Violin); Overture, Coriolanus (Beethoven); Suite, Le Tombeau de Couperin (Ravel); Violin Concerto in G (Bruch); Symphony No. 3 in F (Brahms). In the interval: Radio Journal. 10.0, Dance Music. 10.35, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music.

ZURICH.—See Schweizerischer Landessender.

SATURDAY

JULY THE FIRST

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL: Tango Orchestral Concert. Variety Programme.
LONDON REGIONAL: Arabella, Act 1 (Strauss), relayed from Dresden.
MIDLAND REGIONAL: Farce; a farcical fantasy of fun, relayed from the Pavilion, Leamington Spa.
NORTH REGIONAL: Camp-fire Sing-song from the Scout Camp, Gosforth Park, Newcastle-upon-Tyne.
BELFAST: A concert by selected first-prize winners from recent musical festivals.

ABROAD

- ATHLONE: 8.45 p.m. A Revue by D. Day and Company.
BRUSSELS (No. 1): 5.10 p.m. Concert of Jazz Music by Robert de Kers and his Cabaret Kings.
COPENHAGEN: 8.5 p.m. Concert of old Dutch Music, conducted by Launy Grøndahl.
HILVERSUM: 11.40 a.m. Concert by the Haydn Quartet.
HUIZEN: 7.40 p.m. Variety Programme by the K.R.O. Boys.
LANGENBERG: 4.30 p.m. Concert of Italian Opera Music by the Station Orchestra, conducted by Kuhn.
RADIO PARIS: 9.0 p.m. Operetta: "Oh, Papa!" by Yvain, from the Theatre des Nouveautés.
STRASBOURG: 2.15 p.m. Popular music on Gramophone Records.
WARSAW: 8.0 p.m. Concert of Light Music, conducted by S. Nawrot.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by F. Dyk; Overture, Rosamund (Schubert); Selection from La Traviata (Verdi); Melody (Provasnik); Potpourri, Von Wien durch die Welt (Hruby); Modley of Old Music (Hora). 4.0 to 5.45, Interval. 5.45, Talk: Tales of the Army. 6.0, Band Concert of Light Music, Conductor, K. Nagl. 6.55, Talk for Housewives. 7.0, See Prague. 7.25, One-Act Play (Floss). 8.25, Wireless Notes. 8.40, See Brno. 10.0, See Prague. 10.15, See Moravská-Ostrava. 11.30 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayd from Gleiwitz, 1,184 kc/s, 253 metres.—3.50 p.m., Book Review. 4.10, Film Review. 4.30, Programme Announcements. 4.40, Concert by the Station Orchestra, conducted by Bruno Janz; Overture, Der Erlenhügel (Kühnau); Four Small Pieces (Henneberg); Selection from Die Kirschenlegende (Penna); Russian Dance (Bullerian); Intermezzo amoroso (Clemus); Ballet Suite, Faun und Elfenreigen (Kark); Waltz, Hoffungsstrahlen (Lammer); March (Münnecke). 6.0, Programme to be announced. 6.20, Variety Programme. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, See Munich. 10.0, Time and News. 10.40, Dance Music relayed from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.15 p.m., See Prague. 6.25, German Transmission: News and Gramophone Music. 7.0, See Prague. 8.25, See Bratislava. 8.40, Variety Programme, including A Paper Ideal—One-Act Comedy (Skoch). 10.0, See Prague. 10.15, See Moravská-Ostrava. 11.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 519 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by Leemans. Ein kleiner Wiener marsch (Kreiser); Suite from The Merchant of Venice (Sullivan); Valse poudrée (Popy); Suite, Les Ermyres (Massenet); Pianoforte Solo: Toccata (Bazelaire); Selection from Paganini (Lehár); Sérénade, La Fontaine d'amour (Leemans); Gallop (Richter). 1.0 p.m., Le Journal Parlé. 1.10, Concert, relayed from the Grand Hotel, Antwerp. 3.45, Running Commentary on the Races at Francorchamps. In an interval at 4.45, Talk. 5.10, Concert of Jazz Music by Robert de Kers and his Cabaret Kings, relayed from the

Century Hotel, Antwerp. 6.0, Talk: Walks in Belgium—by the Banks of the Meuse. 6.15, Running Commentary on the Races at Francorchamps (cont'd.). 6.25, Sarabande (Suizer), on Gramophone Records. 6.30, Pianoforte Recital by Mlle. Dinsart. Reflets dans l'eau (Debussy); Alborada del gracioso (Ravel); Nocturne in D Flat (Chopin); Hungarian Rhapsody No. 9 (Liszt). 7.0, Selection from Show Boat (Kern), on Gramophone Records. 7.15, Talk: The Cultural Work of the New Spanish Republic. 7.30, Journal Parlé. 8.0, Running Commentary on the Races at Francorchamps (cont'd.). 8.10, Concert by Primas Sylva (Violinist) and his Cigány Band. 8.45, Reading of Poems about Animals by Lamar-tine, de Lisle, de Banville, Jules Renard, Apollinaire, Cladel, Polak and Kärne. 9.0, Concert, relayed from the Kursaal, Ostend. 11.52, Running Commentary from Francorchamps (cont'd.). 12 Midnight (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish.—12 Noon, Concert, relayed from the Grand Hotel, Antwerp. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans; Cortège du Serrail (Delibes); Petite suite (Kalkman); Tes yeux (Binne-centro); Selection from The Dance of the Dragonflies (Lehar); Humoresque (Dvorak); Tango (Langlois); Potpourri (Dostal). 4.45, Talk: The League of Nations. 5.0, Concert by the Station Symphony Orchestra, conducted by Jean Kumpfs; Overture, Si j'étais roi (Adam); Minuet (Bocherini); Loin du bal (Gillet); La danza (Rossini); Petite suite (Debussy); March, No. 1 (Schubert); Spring Song (Mendelssohn); The Flight of the Bumble Bee (Rimsky-Korsakov); Dance of the Tumbler (Rimsky-Korsakov); Ballet Music from Carmen (Bizet). 6.0, Gramophone Records: Minuet in G (Beethoven); Gavotte from Iphigenia in Aulis (Gluck-Brudni); Kikimora (Ljadov); Sonata in D (Scriabin). 6.15, Talk: Bavaria. 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans; Overture, The Canning Peasant (Dvorak); Danza illirica (Escobar); Ballet Music, from Phileas et Baucis (Gounod); Humoresque for Two Violins (Donizetti); La Burgonde (Vidal); Fox-trot (Michailov). 7.15, Talk: Protestant Authors in Modern French Literature. 7.30, Agricultural Talk. 8.0, Concert by the Station Symphony Orchestra, conducted by Jean Kumpfs; Scènes alsaciennes (Massenet); 'Cello Concerto (Haydn). 8.45, Recitations. 9.0, Orchestral Concert (cont'd.): Selection from La Bohème (Puccini); Songs; Dance (de Boeck); Závava (Gilson); Claironnerie (Ducasse); Songs; Ballet Music from Sylvia (Delibes). 10.0, Le Journal Parlé. 10.10, Dance Music by Robert de Kers and his Cabaret Kings, relayed from the Century Hotel, Antwerp.

ATHLONE: 725 kc/s, 413 metres; 60 kW. Relayd by Gork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Stock Exchange Quotations and Weather Report. 6.0, Gramophone Concert. 6.45, News Bulletin. 7.0, Recitations. 7.15, Gaelic Talk. 7.30, Time Signal. 7.31, Organ Recital by A. J. Thornton, relayed from the Unitarian Church. 8.0, Recital of Scotch Songs by Lena Munroe. 8.15, The Station Orchestra. 8.30, Tenor Solos by W. Fortune. 8.45, A Revue by D. Day and Company. 9.45, Sponsored Programme. 10.45, Time, News, Weather and Close Down.

BARCELONA

E.A.J., 860 kc/s, 348.8 metres; 8 kW.—6.31 p.m., Programme for Children. 8.0, Request Gramophone Records. 8.30, Exchange Quotations, Fortnightly Report arranged by the Institute of Hygiene, and Gramophone Records (cont'd.). 9.0, Gramophone Music. 9.15, Talk by a Member of the Catalan Anti-War Society, Gramophone Music and News. 10.0, Chimes, Weather, Exchange Quotations and Market Prices. 10.5, Concert by the Station Orchestra. March (Heliot); Launt (Grieg); En la Reja (Frigola); Roses d'automne (Mingote); Overture, Mariana (Wallace). 11.0, Vicente Diez de Tejada reads from his own Works. 11.15, Violin and Pianoforte Recital. 11.40, Dance Music, relayed from the Casa Llibre. In the interval at 12 Midnight, News. 1.0 a.m. (Sunday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Talk, Tourist Report, Sports Notes and Dopplavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), Symphony Concert, conducted by Rito Selvaggi, Symphony, No. 7 (Mahler); Searlattiana (Searlatti-Selvaggi); Concerto dell'estate (Pizzetti); Scherzo from Romeo and Juliet (Zandomai). In the interval, Art Notes. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.0 p.m., Gramophone Music. 7.0, Cigány Music from the Kolarac Restaurant. 7.50, Talk. 8.20, Concert by the Station Orchestra. 10.20, News and Time Signal, followed by Relay of Foreign Stations.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Gramophone Music. 3.0, Handwork for Children. 3.30, Weather and Exchange. 3.45, Recitation from The Reminiscences of Julius Hart. 4.0, See Hamburg. 5.0, Weekly Review. 5.20, Talk: Richard Strauss' New Opera, Arabella. 5.30, Concert of Light Music, by the Ferdý Kaufmann Orchestra; Ständchen (Schubert); Minuet (Schubert); German Dance (Max Rogner); Sarabande (Leoneavallo); Die Romantiker (Lammer); Love Sérénade (Hans Lühr). 6.0, Poetry Reading. 6.5, Concert (cont'd.); Melancholy (Hans Bullerian); Madrigal (Hans Bullerian); Victoria regia (Künneke); Blüthenräume (Künneke); Gavotte (Popper); Gingerbread Waltz from Hansel and Gretel (Humperdinck). 6.30, Talk: The Employment of Juveniles. 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.5, Epigrams. 8.5, See Leipzig. In the intervals at 9.0 and 10.0, Weather and News. 11.0, Weather Report for Shipping. 11.25, Sports Notes. 11.30, Sérénade from Munich. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc s. 419.5 metres; 1.5 kW.—4.0 p.m., Concert, relayed from the Zoological Garden. 5.30, Talk: The German Gynnaestic Tournament. 5.50, Sonata in C for Pianoforte (Brahms) by Käthe Heine-mann. 6.20, Talk for those who stay at Home. 6.40, The Witzleben Station informs its Listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.10, Humorous Stories. 8.20, A Holiday Programme—Radio Varieties (Hansjürgen Nierentz and Willi Krause). 9.35 (approx.), A German Summer Festival, relayed from a Nazi Camp. 10.0, News. 10.15 (approx.), Dance Music. In the interval at 11.0 (approx.), Talk: What they are talking about in Berlin. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.30 p.m., Radio Journal. 7.30, Sports Talk. 7.35, News and Exchange. 7.45, Report on the Cycling Tour of France. 8.5, English Lesson. 8.20, News. 8.30, Gramophone Concert. 9.0, Two Comedies: (a) L'Evasion (Adam), (b) L'Innocent criminel (Dubreuil).

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Sibiano Orchestra. In an interval at 6.0, Radio Journal. 7.0, Educational Talks. In an interval at 7.20, Gramophone Music. 8.0, Choral Concert. 8.30, Variety Items. 8.45, Concert by the Station Orchestra. Soloist: Rinaldo Sansalvadore (Oboe); Potpourri of Romanian Melodies (Paschill); Lelair Pot-pourri (Hruby); Oboe Solo, Suite écossaise (Godard); Marche militaire (Saint-Saëns). 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—Also relayed on 840 metres from 7.10 p.m. (approx.) till Close Down. 6.30 p.m., Answers to Correspondents. 7.0, Exchange. 7.10, Concert by the Lajos Kiss Cigány Band. 8.0, Talk on the Plattensee. 8.30, News. 8.45, Cabaret. 10.0, Weather. 10.50, Gramophone Music.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayd by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, conducted by Max Skalka, relayed from Hotel d'Angleterre. 2.0 to 3.0, Interval. 3.0, Gramophone Music. 3.30, Concert by the Radio Orchestra, conducted by Launy Grøndahl; Soloist: Dagny Møller (Songs); March, The Girls of America (Dugan); Overture, Die Weihe des Hauses (Beethoven); Selection from The Pearl Fishers (Bizet); Waltz from The Merry Peasant (Feld); March (Kühnau); New Danish Songs; Fantasia on Old Sea Shanties (Grøndahl); Sérénade (Levermann); Selection from Engel-hering Johann (Pnepke); Andante lamentoso for Strings (Nielsen); Slav Folk Song (Nowowiejsky); March, The Last Stand (Myddleton). 5.35, Exchange and Cash Market Prices. 5.50, Talk: Radio in Africa. 6.20, French Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.30, Talk. 8.0, Chimes from the Town Hall. 8.5, Old Danish Music—Concert by the Radio Orchestra, conducted by Launy Grøndahl, Soloist, Paul Knudsen (Songs); Overture, Hugo og Adel-heid (Kühnau); Ballet Music from Elverøj (Kühnau); Songs: (a) Al min Sorg er nu forsvundet (Kühnau); Overture, Et Eventyr i Rosenborg Have (Weyse); (b) Flugten ter Skoven hviler (Weyse); (c) En Fisk seg lang (Heise); (d) Lette Bolge naar en blaaer (Gade); (e) Svulen rider Sommer i By (J. P. E. Hartmann); (f) Sérénade from Der var engang (Lange-Müller); Waltz from Et Folkesang (Gade); Andantino from Noctetten for Strings (Gade); Prehde and Melody from Syvsoverdag (J. P. E. Hartmann); Prelude to Renaissance (Lange-Müller). 9.10, Sport in English Literature—Readings, with Commentary. 9.40, Songs. 10.0, News. 10.15, Concert by the Radio Or-chestra, conducted by Launy Grøndahl; Apollo March (Lineke); Waltz from Casanova (Lineke); Sérénade (Schröder); Selection from Lilae Time (Schubert-Berté); Vision (Drdla); Russian March (Ganic). 11.0, Dance Music, relayed from the Lodberg Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.15 a.m. (Sunday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. T. St. A. Ronald and B. McNabb announcing. 4.30, Concert for Turnbridge Wells and Isle of Thanet Listeners. When the Little blooms again (Rottet); Song, Her Name is Mary (Shevier); The Clock is playing (Bar-tow); Chorus, Come to the Fair (Easthope Martin); Pianoforte Solo, The Squirrel Dance (Elliott Smith); Happy Days and Lonely Nights, (Fisher); Chorus, The Rogue Song; Pianoforte Solo, You, Just Wonderful You (Maurice); The Cuckoo Waltz (Jonassen); Song, My Darling (Heymann); Selection of Stephen Foster Melodies. 5.15, Concert for Dover and Folkestone Listeners. I Lost my Girl from Memphis; Just an Echo in the Valley (Woods); I'm Yours; A Ghost of a Chance (Washington); The Japanese Samu-ran; You're Still my Sweetheart (Yellen); The Moon is Low; It seems to be Spring; I'm Playing with Fire (Berlin); Let's be Native; Try a little Tenderness (Woods); Lovin' you. 6.0, Programme in French. 11.0 till Close Down, Programme in English by the I.B.C. 11.0, I.B.C. Members' Request Half-Hour. Farewell to Arms (Wrabel); Have you ever been Lonely? (Brown); Just an Echo in the Valley (Woods); Lullaby of the Leaves; Sally; The Rosary (Nevin); 18.2 Overture (Tchaikovsky). 11.30, Gramophone Concert. Prelude to The Loves of Robert Burns; Songs made Famous by Harry Champion; Organ Solo, Rain on the Roof (Ronell); What good am I without you; Guitar Solo, Picking any Way (Lang-Kress); Sleepy Time Down South; Harlequin Holiday (Koeber); In a Clock Store (Orth). 12.0 a.m. (Sunday), The I.B.C. Late News Bulletin. 12.10 (approx.), Club Concert for Kings Lynn Listeners. We belong together (Him-

JULY 1st

SATURDAY

continued

merslein); Hold me (Little, Oppenheim and Schuster); In Eger on the Teger Sea (Kern); Shuffle off to Buffalo (Dubin and Warren); I can't Remember (Berlin); Forty-Second Street (Dubin and Warren); You'll never get up to Heaven that Way (Lerner-Baer); I wake up Smiling (Leslie Ahlert); Two Buck Tim from Timbuctoo (Heymann); The grass is getting greener all the Time (Neman); Maybe I love you too much (Berlin); When my little Pomeranian met your little Pekinese (Little); You've got me crying again (Newman); Piccinny (Goldberg); Stormy Weather (Koehler and Arlen); 1.0, Vocal and Instrumental Concert: Old Medley; Shoo the Hoodoo Away; Song, You're still my Sweetheart (Yellen); Japanese Sandman; The Moon is Low; Song, Try a little Tenderness (Woods); Lullin' at Life; Looking for Love-Light. 1.30, Variety Concert. African Lament (Gilbert); A Music Hall Show in Grandpa's Day; Maggie's Cold; Xylophone Solo, Xylophonia (Green); Sketch, The Gladiator; Accordion Solo, March (Lucas); Mama Inez (Grenet). 2.0, Dance Music by the Hoolians. Horses Carry Tails (Redman); Can't we meet Again (Connelly); This is the Rhythm for Me (Monk); Do you Recall? (Connelly); What more can I Ask? (Noble); A Boy and Girl were Dancing (Revel); Brighter than the Sun (Noble); I may never pass your way Again (Dubin); The King's Navee (Leslie); How are You? (Pola); Toasts (Sarony); Leave a little for Me (Abraham); The Lady I Love (Young); I can't write the Words (Marks); Isn't it Romantic? (Hart); Balloons (Shawn); 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,167 kc/s, 259.3 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—3.30 p.m., Programme for Young People. 4.25, Economic Notes. 4.30, See Stuttgart. 5.45, Economic Notes. 6.0, Reading; Modern German Lyrics. 6.25, Time, Programme Announcements, Weather and Economic Notes. 6.30, Review of the Week. 6.50, To-day's News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.5, See Leipzig. 10.30, Time, News and Weather. 10.45, Dance Music from Berlin (Witzleben).

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hannover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—4.0 p.m., Concert by the Hamburg Philharmonic Orchestra, conducted by Adolf Secker: Overture, Beherrscher der Geister (Weber); Peer Gynt Suite No. 1 (Grieg); Selection from The Mastersingers (Wagner); Overture, Die Abreise (d'Albert). 5.0, Reading from the Works of Rudolf Tarnow with Commentary. 5.20 (from Bremen), Recital of German Folk Songs and Dances for Mandoline and Guitar; March, Treue Liebe (Ritter); Stolzenfels am Rhein (Meissler); Ländler, Lieb' Mütterchen (Klose); Two Alsatian Folk Dances (Merkling). 5.50 (from Kiel), Variety Programme. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.10, See Berlin (Witzleben). 10.0, Time and News. 10.20, Topical Talk. 10.30, Programme from Berlin (Witzleben).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—11.30 a.m., Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetitzky. Overture in C in the Old Style (Schubert); Spinning Song from The Flying Dutchman (Wagner); Musik zu einem Ritterballlet (Beethoven); Selection from The Merry Wives of Windsor (Nicolai); Prelude to The Italian Girl in Algiers (Rossini); Selection from I Pagliacci (Leoncavallo); Waltz, Wienerblut (Strauss); Selection from Das Pensionat (Suppé). 1.5 p.m., Gramophone Concert. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office with Gramophone Records. 3.0, Agricultural Prices and Exchange. 3.30 (from Danzig), Handwork for Children. 4.0 (from Danzig), Concert by the Danzig Theatre Orchestra, conducted by Eugen Schwiedeski. March Venezia (Fabiani); Overture, The Bohemian Girl (Balfe); Prelude to Act Five of King Manfred (Reinecke); Réverie (Vieuxtemps); Russian Sketches (Petras); Waltz, Dream of Love after the Ball (Zizkalka); Overture, La Dame blanche (Boieldieu); Gavotte, Petite Marquise (May); Waltz, Die Rosensteiner (Lanner); Johann Strauss Potpourri; March, Die Ehrenwache (Lehnhardt). In the in-

terval at 4.50 (approx.), Traffic Report. 5.40, Talk: International Capitalism. 6.5, Programme Announcements. 6.15, Agricultural Market Prices. 6.25, Monthly Review. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, See Leipzig. In the intervals at 9.0 and 10.0, Weather, News and Sports Notes. 12.30 a.m. (Sunday), Dance Music and Light Music, relayed from Berlin (Witzleben).

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). 11.40, Concert by the Amsterdam Chamber Orchestra, conducted by D. Kiekens. Overture, Banditenstreichle (Suppé); Du und du (Strauss); Salut d'amour (Elgar); Selection from Les Saltimbanques (Ganne); Gramophone Records; Selection from Rosamund (Schubert); Adagio from the Sonata Pathétique (Beethoven); Minuet (Mozart); Hungarian March (Fueck); Gramophone Records; Hehuzimännechen Wachtparade (Noack); Extase (Ganne); Dorfkindler (Kálmán); A Wedding Day on Troldhaugen (Grieg); Minuet (Haydn). 1.40, Interval. 1.55, Gramophone Music. 2.40, Literary Talk. 3.0, Talk: The Dutch Cycling Union Jubilee. 3.55, Concert by J. Jong (Organ), R. Bennik (Percussion Instruments and Xylophone), and J. Huy (Saxophone). 4.40, Programme for Children. 5.40, Concert by De Flierevluiters, conducted by J. van de Horst. Soloist: J. Lammen (Bass). 6.40, V.R.O. Programme. 7.40, Concert by the Small V.A.R.A. Orchestra, conducted by H. de Groot. Waltz, Accelerationen (Strauss); Waltz from The Girl in the Taxi (Gilbert); Fate (Baynes); Phirtation (Steek); Daisy (Daere); Pensant Waltz (Krome). 8.10, News and Announcements. 8.25, Concert (contd.): Per aspera ad astra (Urbach); Die Nachtschwärmer (Ziehrer); Egyptian Ballet (Luigini); In a Little Old garden (Hewitt); Melody (Beccé); Selection from Boccaccio (Suppé). 9.20, Report on the Dutch Cycling Union Jubilee. 9.55, Concert (contd.): Marche des petits pierrots (Bose); Mio tesoro (Beucchi); Bonsior, Madame la Lane (Chapelier); Melody (Gilbert); Piece (Daniferdt); Melody (Yellam-Cobb); Love me and the World is mine (Ball); L'amour riant (Christine); Siamesische Wachtparade (Lincke); Serenade (Braga); Mimi d'amour (Vercollier). 10.40, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.10 till Close Down, Programme of the Catholic Radio Society (K.R.O.). 11.10 a.m., Talk on the Dutch Cycling Union. 11.40, Police Notes. 11.55, Gramophone Music. 1.25 p.m., Interval. 1.40, Programme for Young People. 2.10, Programme for Children. 3.40, I.I.R.O. Programme. 4.40, Concert by the K.R.O. Orchestra, conducted by M. van 't Woud: Triumphant March (Verdi); Overture, Le Roi d'Yvetot (Lalo); Caucasian Suite (Ippolitov-Ivanov). In the interval at 4.55, Talk on Esperanto. 5.25, Sports Talk. 5.55, Gramophone Music. 6.0, Press Review. 6.20, Concert by the K.R.O. Orchestra (contd.): Overture, Le Roi d'Yvetot (Lalo); Two Dutch Peasant Dances (Sanehting). 6.40, Police Notes. 6.55, Talk. 7.15, Gramophone Music. 7.40, Variety Programme by the K.R.O. Boys, conducted by P. Lustenhouwer; M. Jack Mossel (Songs); De Drie Keddy's (Entertainers); and M.G.L.P. (Recitations); Blaze away (Holzmann); Guter Mond (Parin); After To-night we say Goodbye (Towers); Melody (Ralton); Ideale (Tosti); Quick Foxtrot (Ralton); Items by De Drie Keddy's; Yo-Yo (Nelson); Potpourri (Moren); Recitations; Interlude; Melody (Keddy); Piece (Siczynsky); Items by De Drie Keddy's; Recitations; Russian Foxtrot (Geitner); Piccolo Solo; Selection from Ball in Savoy (Abraham); Melody (Bochmann); Items by De Drie Keddy's; Sevilla (Abraham); Aus Liebe zur Kunst (Lincke); La bella Tangelita (Abraham); Butterflies in the Rain (Reaves); Waltz (Fischer); Finale. In the interval, News. 11.55, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.0 p.m., Talk. 7.20, Announcements and Gramophone Music. 7.40, See Warsaw. 11.35, Dance Music.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,795 metres, 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Talk. 6.40, Selection from Eugen Onegin (Tchaikovsky) by the Station Orchestra. 7.0, Talk. 7.25, Recital of Finnish Songs. 7.50, Dialogue.

8.15, Concert by the Station Orchestra: Estudiantina (Waldteufel); Melody from Frasquita (Lehar); Finnish Song (Haunikaime). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music, relayed from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert by the Dortmund Symphony Orchestra, conducted by Theo Erpenbach, relayed from Dortmund; Soloists: August Posewsky (Violin) and Curt Schabrich (Cello); Overture, Iphigenie in Aulis (Gluck); Adagio, Allegro, and Minuet from the Military Symphony (Haydn); Romance in G for Violin and Orchestra (Beethoven); Entr'acte and Ballet Music from Rosamund (Schubert); Serenade in D Minor for Cello (Volkmann); Hungarian Dances Nos. 1 and 3 (Brahms); Waltz, The Blue Danube (Joh. Strauss); Radetzky March (Jos. Strauss, Sen.). In the interval at 2.0, News. 2.30, Gramophone Music. 3.0, Songs for Children. 3.30, Economic Notes and Time. 3.45, Talk: Touring in the Rhine District and Westphalia—by the River Weser of Pied Piper Fame. 4.10, Talk for Women. 4.30, Concert of Italian Opera Music by the Station Orchestra, conducted by Kühn; Soloists: Josef Schömmner (Tenor) and Hans Wocke (Baritone); Overture, Tancredi (Rossini); Intermezzo from Mala vita (Giordano); Baritone Solo from A basso porto (Spinelli); Prelude to Aida (Verdi); Interlude of Cavalry Chorus by a Nazi Choir; Topical Talk; Duet from Otello (Verdi); Selection from A Masked Ball (Verdi); Topical Talk in an interval. 5.45, Talk: The Finnish Territorial Army. 6.5, Talk on Amateur Photography. 6.15, English Reading. 6.35, Botanical Talk. 6.50, News. 7.0, Transmission for all German Stations; German Horsemanship. 8.0, News. 8.5, See Leipzig. In the interval at 9.0 to 9.10, Talk in Connection with Nordic Week: The Gothic Script, and at 10.5, News. 10.30, News. 11.10, News. 11.20, Topical Talk. 11.30, Serenade from Munich. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12.5 p.m., Song Recital on Gramophone Records; Tenor Solo, Cicilie (Richard Strauss); Baritone Solo, Es muss ein Wunderbares sein (Liszt); Tenor Solo, Mattinata (Leoncavallo); Ballad for Baritone, Heinrich der Vogler (Loewe); Tenor Solo, Ständchen (Schubert); Baritone Solo, Nicht mehr zu dir zu gehen (Brahms); Baritone Solo, Gebet (Heinrich Wolf); Tenor Aria from Martha (Flotow); Baritone Aria, Room for the Factotum, from The Barber of Seville (Rossini); Tenor Solo, Students' Hymn (Loh); Baritone Aria from The Seasons (Haydn); Recitative for Tenor from Tannhäuser (Wagner); Baritone Aria from Carmen (Bizet). 1.0, News. 1.15, Concert of Folk Music on Gramophone Records. In an interval at 1.45, Wireless Hints. 2.0, News. 2.10, Wireless Notes. 2.20, Gramophone Concert; Fascist Triumph March (Giovencenzo); Hindu Song (Rimsky-Korsakov); The Star-Spangled Banner (Sousa); In the Steppes of Central Asia (Borodin); Spanish Dance No. 5 (Granados); March (Rogan). 2.30, From Hölz to Hitler—Radio Report of a Procession in Sangerhausen. 2.45, Programme for Children. 3.30, Recitation; Walther and Hildegund (Hans Freyberg). 3.45, Exchange Quotations. 4.0, Concert from Berlin (Witzleben). In an interval at 5.0, Talk on Music. 6.0, Talk: Richard Strauss' New Opera, Arabella. 6.20, A Modern Dictionary. 6.25, Talk: German Societies for Germans in other Countries. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Arabella—Opera in Three Acts (Hugo von Hofmannsthal-Richard Strauss), relayed from the Dresden State Opera. 11.10, News. 11.30 (approx.), Dance Music. 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—5.30 p.m., Concert by the Station Orchestra. 6.30, Educational Talk. 7.0, Talk on Espionage. 7.30, Humorous Programme. 8.0, Relay of an Opera from Zagreb, 977 kc/s, 307 metres. 10.30, Weather and News. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. French Programme.—7.0 p.m., Gramophone Music. 7.40, Weather Report. 7.45, Symphony Concert on Gramophone Records: Two Movements from L'enfant prodigue (Debussy); (a) Prélude-Cortège, (b) Air de danse; Sarabande (Roger Ducasse); Minuet, Waltz and March from The Damnation of Faust (Berlioz). 8.15, Talk with Illustrations: Songs of Lorraine. 8.30, Talk in French. 8.40, Gramophone Music. 8.50, News in French. 9.15, Military Band Concert on Gramophone Records. 9.45, News in German. 9.55, Dance Music and Variety Music on Gramophone Records. In the intervals, Exchange and News.

LWOW

788 kc/s, 381 metres; 16 kW.—7.20 p.m., Miscellaneous Items. 7.40, See Warsaw. 9.15, Reading. 9.30, See Warsaw. 12 Midnight (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South East. 7.45, Report of the Cycle Tour of France. 8.30, Operetta Programme, relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres. After the Programme, News.

MADRID

EAJ7; 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, and Request Gramophone Concert. 9.15, News. 9.30 to 11.0, Interval. 11.0, Chimes and Time. 11.5 (approx.), La Bohème—Opera (Puccini) on Gramophone Records. 1.15 a.m. (Sunday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN. See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.15 p.m., See Prague. 6.25, Choral Concert. 7.0, See Prague. 8.25, See Bratislava. 8.40, See Brno. 10.0, See Prague. 10.15, Concert of Popular Music by the Station Orchestra, conducted by Musil. 11.30, Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—2.45 p.m., Weather. 3.0, Concert of Music by Weber, Rossini, Chopin and Gounod. 4.0, Talk on Harvesting. 4.30, Radio Play. 5.30, Programme Announcements and Programme for Children. 6.30, Radio Concert. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5, Press Review.

MOTALA. See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserlautern, 536 kc/s, 560 metres; and Nurnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Orchestral Concert; Overture, Die Landstreichler (Ziehrer); Selection from La Favorita (Donizetti); Waltz, Alt Wien (Kreuser); Potpourri, Was wir lieben (Ganglbauer); Intermezzo, Die Kätzchen (Siede); Goldschmieds Hämmerlein (Eilenberg); March, Unsere Reichswehr (Blankenburg). 5.40, Radio Sequence for Young People. 6.15, Rond the Donnersberg—Musical Sequence, relayed from Rockenhäusern. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Variety Programme, Part I.—Joyous Youth; the Augsburg Cecilia Quartet, the Small Station Orchestra, the Radio Schrammel Ensemble and Soloists. Part II.—Er hat was vergessen—Country Scene (Weiss Ferd). After the Programme, Concert by the Klemens Rapp Orchestra. 10.20, Time and News. 11.0, Serenade by the Otto Reiter Orchestra. 12 Midnight (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.30 p.m., Divine Service Relay. 6.0, Programme for Children. 6.45, Talk on Economics. 7.0, Advertising Notes. 7.15, Weather and News. 7.30, Norwegian Music—Talk and Songs by Mme. Martha Vesby. 8.0, Time. 8.1, Sports Notes. 8.15, Popular Orchestral Concert, conducted by Oivind Fjeldstad. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Recitations by Fridtjof Krohn. 11.45, Dance Music on Gramophone Records.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolarvo Announcements, Tourist Talk, Agricultural Report, and Giornale Radio. 8.20, Sports Notes and Gramophone Music. In the interval at 8.30, Time and News. 8.45, I Granatieri—Operetta in Three Acts (V. Valente). In the intervals, Book Review and Announcements. After the Operetta, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and G-dot Signals).—6.45 p.m., Le Journal Parlé. 8.30, Le Voyage de M. Perrichon—Comedy in Four Acts (Labiche). 11.0 (approx.), Close Down.

PARIS

POSTE PARISIEN; 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music. 7.15 Journal Parlé. 7.35, Gramophone Music. 7.50, Talk: The Event of the Week. 8.0, Answers to Correspondents. 8.5, Gramophone Music. 8.10, Interval. 8.25, Concert

of Chamber Music by Eugene Coles. 8.55, Interval. 9.10, Dance Music by the Sonora-Radio Band, conducted by Fred Hoffmann. After the Programme, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—5.45 a.m., Physical Culture. 7.30, Weather and Musical Culture (contd.). 7.45, Gramophone Music. 8.0, News. 12 Noon, Chamber Music on Gramophone Records: Chansons de France (Casadesu); Menuetto (Asioli); Rondo (Cimarosa); Piece (Cimarosa); Fairy Stories (Darrin-Bach-Lisley); (a) Le petit Poucet, (b) La belle au bois dormant, (c) Peau d'An, (d) Riquet à la Houppe; Fairy Stories (Zimmermann); (a) Little Red Riding Hood, (b) Blue Beard; Suite funambulesque (Messager-Salabert); Minstrels (Debussy); In Mickey's Kingdom (Cuttelli). In the intervals at 1.0 p.m., Exchange and News, and at 1.30, Exchange. 2.0, Exchange. 3.0, Programme for Children. 3.45, Exchange. 7.0, Agricultural Report. 7.10, Talk on Science. 7.30, Gramophone Records: Melody (Stolz); S.O.S. of Love (Hajos); La petite femme de Paris (Colarde Fontade); Melody (Stolz). 7.45, Review of the Latin Press. 8.0, Variety Programme on Gramophone Records: Four Sketches: Un Soir au Grand Théâtre; Dans les Magasins (Borel-Clerc); Le Toutou de Bécon; Act III of Maman Colibri; Two Music Hall Sketches by Grogg; (a) The Clarinetist, (b) The Little Violin. 8.30, News. 8.40, Review by Bonnard. 8.45, Gramophone Records: Duet from Veronique (Messager); Ballet Music and Quadrille from Virginie (Brucan). 9.0, Oh Papa! Opera in Three Acts (Yvain) from the Théâtre des Nouveautés.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayed by WBKX on 48.86 metres and 25.27 metres.—7.30 to 8.58 p.m., New York Relay. 7.30, Concert Echoes. 8.0, Radio Troubadours. 8.30, Wealth of Harmony. 8.58, Baseball Scores. 9.0, Mitchell Shuster and his Orchestra, from New York. 9.30, Concert Favorites, from New York. 9.55, Baseball Scores. 10.0, Rhythm Kings. 10.15, United States Government in Pittsburgh. 10.30, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie, from New York. 11.0, Time and Press News Reeler. 11.5, Don Bestor and his Orchestra. 11.15, Weather Report. 11.16, Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, A Reeler by Bill and Alex of the Downtown Y.M.C.A. 11.45, Jack Pettis and his Orchestra. 11.59, Time Signal. 12 Midnight, American Taxpayers' League, from New York. 12.15 a.m. (Sunday), Programme to be announced. 12.50, Songs of Melody. 1.0, Jack Denny and his Orchestra, from New York. 1.20, Stadium Concerts by the Philharmonic Symphony Orchestra, from New York. 3.15, Programme to be announced.

PORSGRUND.—See Oslo.

POZNAN

696 kc/s, 335 metres; 1.9 kW.—6.35 p.m., Recital by Aleksander Klechowski (Tenor) and Stanislaw Pawlak (Violin): Violin Solos: (a) Concerto (Bocherini), (b) Zigeunerweisen (Sarasate), (c) Krakowiak (Stakowsky); Tenor Solos: (a) Aria from Cavalleria rusticana (Mascagni), (b) Song (Miwia-domsky), (c) Spanish Serenade (Leoncavallo), (d) Two Songs (Rutkowski and Jensen). 7.20, Miscellaneous Items and Announcements. 7.35, Theatre Notes and Announcements. 7.40, See Warsaw. 7.58, Time. 8.0, See Warsaw. 10.0, Time Signal, Sports, and Police Notes. 10.15, Dance Music, relayed from the Esplanade Café. 11.50 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 to 4.0 p.m., See Bratislava. 5.45, Talk. 5.55, Talk on Commerce. 6.5, Agricultural Talk. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission. 7.0, Chimes from St. Ludmila's Church, and News. 7.10, Talk on the Czech Language. 7.25, Military Band Concert: Conductor, Jan Pesta; Overture, Orpheus in the Underworld (Offenbach); Selection from Russalka (Dvorak); Intermezzo from Cavalleria rusticana (Mascagni); Czech Polka (Svarek); Selection from The Bonbon King (Prozavnik); National Song Medley (Kasperek). 8.25, See Bratislava. 8.40, See Brno. 10.0, Time, News, Press Review, and Sports Notes. 10.15, See Moravia-Ostrava. 11.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres, 25 kW.; and Geneva, 395 kc/s, 760 metres.—3.30 p.m. (from Lausanne), Concert by the Radio Lausanne Orchestra, conducted by E. Moser. 4.15 (from Lausanne), Pianoforte Recital by Jeanne Tissot. 4.30 (from Lausanne), Concert (contd.). 5.30 to 7.0, Interval. 7.0 (from Geneva), Talk on India. 7.30 (from Geneva), News. 8.0 (from Geneva), Humorous Talk. 8.15 (from Geneva), Ballads for Violin

JULY 1st SATURDAY continued

and Pianoforte. 8.35 (from Geneva), Trouillard et Cie. 9.0 (from Lausanne), Chamber Music by the Budapest Trio: Trio No. 5 (Beethoven); Trio Op. 49 (Mendelssohn). 9.50, News. 10.0 (from Lausanne), Dance Music. 10.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—5.0 p.m., Concert. 6.0, Talk. 6.30, Light Music. 7.0, Weather. 7.3, Agricultural Talk. 7.30, Orchestral Concert, relayed from Baiduri; Overture, Der Freischütz (Weber); Symphony No. 6 in G (Haydn); The Moldau (Smetana); Interlude (Mehlich); Scotch Dances (Grieg). In the intervals at 8.0, News, and at 9.0, Weather. After the Concert, News and Dance Music. 11.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 254 metres.—1.0 to 2.15 p.m., Orchestral Concert of Variety Music. In the intervals at 1.30, Giornale Radio and Exchange; and at 2.0, Time and Announcements. 4.30, Children's Radio Review. 4.45, Report of the Royal Geographical Society and Giornale Radio. 5.5, News. 5.15, Exchange and Weather. 5.50, Concert by the Station Orchestra; Soloist: Adriana L'Abate (Pianoforte); Overture, La suocera e la nuora (Sassano); Valzer di sogno (Rampoldi); Foxtrot, Mia dolce amica (Restano); Viandante russo (Ferraris); Selection from Adriana Lecouvreur (Cilea); Etude (Feliotti); Ronda degli Arlecchini (Mangiagalli); Pianoforte Solo: Moto perpetuo (Dowd); Two-step, Allegria (Orselli). 6.40 (from Naples), Shipping and Sports Notes. 6.50, Agricultural and Popolavoro Notes. 7.0, Tourist Talk. 7.20, Announcements in Different Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Gramophone Music. 8.30, Giornale Radio and Sports Notes. 8.40, Introductory Talk to the following Transmission. 8.45, Faust—Opera in Five Acts (Gounod). In the intervals, Two Talks. After the Opera, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres; and by W2XAD on 19.56 metres.—12.05 a.m. (Sunday), Stock Reports. 1.0 p.m. to 4.0, New York Relay. 1.0, Soloist. 1.15, Green and Hall. 1.30, The Economic World Today. 2.0, Ferde Grofe's Orchestra. 2.15, Musical Programme. 2.50, K-7, Secret Service Spy Story. 3.0, Saturday Dancing Party with B. A. Rolfe and his Terra Orchestra. 4.0, Programme Resumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 663 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres. 6.15 to 6.35 a.m., Gymnastics. 11.59, Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from Berne), Gramophone Concert. 12.30 p.m., Time and News. 12.40 (from Berne), Gramophone Concert (contd.). 1.25 (from Berne), Exchange, Time and Weather. 1.30 (from Berne), Answers to Correspondence. 1.45 (from Berne), Review of New Books. 2.15 (from Berne), English Music on Gramophone Records. 2.20 (from Berne), Talk: London 3.0 (from Berne), Programme to be announced. 3.30 to 5.0, Interval. 5.0 (from Berne), Concert by the Bimphiz Accordion Quartet. 5.30 to 7.0 (from Berne), Programme to be announced. 7.5, Chimes. 7.10 (from Berne), Time and News. 7.15 (from Berne), Programme to be announced. 7.50 (from Berne), Modern Music. 8.30, Festival Concert for the Inauguration of the Richard Wagner Museum at Tribschen, relayed from Lucerne. 9.0, News. 9.10 (from Berne), Talk. 9.30 (from Lucerne), Concert (contd.). 10.10 (from Berne), Folk Songs. 11.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,364.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.0 p.m., Technical Talk. 4.20, Concert of Light Music by Herman Martenssons Ensemble. 5.0, Weather Report. 5.5, Concert of Light Music (contd.). 5.20, Programme for Children. 5.45, The Practical Corner. 6.0,

Gramophone Music. 6.45, Talk. 7.15, Weather and News. 7.30, Cabaret Programme. 8.15, Military Band Concert, conducted by Ivar Widner. Festpel (Widner); Suite (Vretblad); Swedish Rhapsody, The Foolish Maiden (Atterberg); Extracts from Samson and Delilah (Saint-Saëns); Intermezzo and Chorus from Carmen (Bizet); Overture, William Tell (Rossini). 9.15, Songs to the Lute and Readings. 9.45, Weather and News. 10.0, Modern Dance Music by Gösta Jonssons Orchestra.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—7.45 to 8.0 a.m., Report of the Cycle Tour of France. 11.30, Variety Music on Gramophone Records. 12.45 p.m., News. 1.0, Time. 1.1, Concert of Jazz Music, conducted by Roskam. 2.0, Legal Talk in German. 2.15, Popular Music on Gramophone Records. 2.45, Talk in French: Debussy's Poetic Tendencies. 3.0 to 3.30, Interval. 3.30, Gala Concert by the Casino Orchestra, relayed from the Casino, Viehy; Conductor: Brouillette; Overture, Arvefeld (Guirand); Serenade (Küne); Babillage (Küne); Orchestral Suite from Hansel and Gretel (Humperdinck); Selection from Cavalleria rusticana (Mascagni); Theresen-Walzer (C. Faust). 5.0 (approx.), Report of the Cycle Tour of France, relayed from Evian. 5.15, Orchestral Concert, conducted by Maurice de Villers; Soloist: Burglin (Clarinet); Musiques foraines (Florent Schmitt); Suite Grecque (Bazelaire); Rhapsody for Clarinet and Orchestra (Debussy); Selection from Le marchand de sable qui passe (Roussel); Three Pieces (Mussorgsky). In an interval at 6.15, French Elocution Lesson. 7.0, Tourist Talk in French. 7.15, Agricultural Talk in French. 7.30, Time and News. 7.45, Report of the Cycle Tour of France. 8.5, Gramophone Music. 8.15, Press Review in German. Lottery Results, and Announcements. 8.30, Dramatic Programme: (I) Les trois bossus—One-act Tale in Verse (Jean Ott); (II) Humorous Dialogues (Henri Farcimon); (a) Les sept phénomènes, (b) Le chasseur étourdi, (c) Le Bonguinat et le veilleur de nuit, (d) Le soldat Larivouillat; (III) La raçon du passé—One-act Radio Play (Henri Picard); (IV) Poems (Antoine Lugnier). In an interval at 9.30 (approx.), Press Review. 10.30, Dance Music from the Savoy. 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12.20 p.m., Gramophone Music. 1.50, Concert by the Station Orchestra, conducted by Gustav Grollsh; Kinderlieder-Marsch (Zielner); Waltz, Mein Lebenslauf ist Lieb und Lust (Jos. Strauss); Polpouri, Streit, Lichter (Morena); Die türkische Scharwache (Michaelis); International Waltz Polpouri, (Robrecht); Finnish Cavalry March. 2.20, News. 2.50 (from Karlsruhe), Accordion Recital by Hans Scheer. 3.30, See Frankfurt. 4.30 (from Freiburg), Orchestral Concert, conducted by Heinrich Praff; Overture, Yulva (Reissiger); Ballet Music from Faust (Gounod); Romantic Suite (Armandola); Faust-Walzer (Paecke); Waltz, Soirée d'été (Waldteufel); Paradenmarsch der jungen Kerls (Roland); Waltz, Trau schau wen from Der Waldmeister (Joh. Strauss); March, Frei wog (Lattanz). 5.50, Fantasia on the Brazilian National Anthem (Burl) on Gramophone Records. 6.15, Natural History Report. 6.40, Time and News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, See Munich. 10.20, Time and News. 10.45, See Berlin (Witzleben). 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.0 p.m., News. 6.15, Songs from Operettas: A ton amour simple et sincère from La Basoche (Messager); Duet from Coup de Romlis (Messager); Song from Nina Rosa (Romberg). 6.30, Night on the Bare Mountains (Mussorgsky). 6.45, Songs from Sound Films. 7.0, Music by a Viennese Orchestra. 7.15, News. 7.25, Local News. 7.30, Opera Music: Celeste, Aida, forma divina, from Aida (Verdi); Aria from Sigurd (Reyer); Aria from Figaro (Mozart). 7.45, Cello Solos: Sonata (Handel); Arlequin (Popper); Nocturne (Chopin). 8.0, Concert of Music of Marseilles. 8.30, Orchestral Music. 9.0, Extracts from Herodiade (Massenet), followed by Bal Musette. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Request Concert. 11.30 to 12 Midnight, Programme in English by the I.B.C. 11.30, Variety. 11.57, I.B.C. Goodnight Melody. 12 Midnight, News and Weather. 12.5 a.m. (Sunday), Orchestral Music. 12.15, Military Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.40 p.m. till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Gama, 959 kc/s, 312.8 metres; and Florence, 699 kc/s, 500.8 metres.—5.40 p.m., Variety Music. 6.0, Weather Report. 6.35, Giornale Radio and Announcements. 7.0, Time and Announcements. 7.5, Gramophone Music: Tic-tic-tic-tac (Feola-Lama); La lupa (Panciroli); E' lampadina (Capaldo); Son Jecina (Ferrari). 7.20, News in Foreign Languages and Gramophone Music. 8.00, Talk: Events and Problems. 8.40, Variety Programme. In the intervals, Review of Books and Announcements. After the Programme, Giornale Radio. 9.0, News and Gramophone Music.

VATICAN CITY

15,120 kc/s, 19.34 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Announcements in Different Languages. 8.0 to 8.15 p.m., Religious Information in Italian.

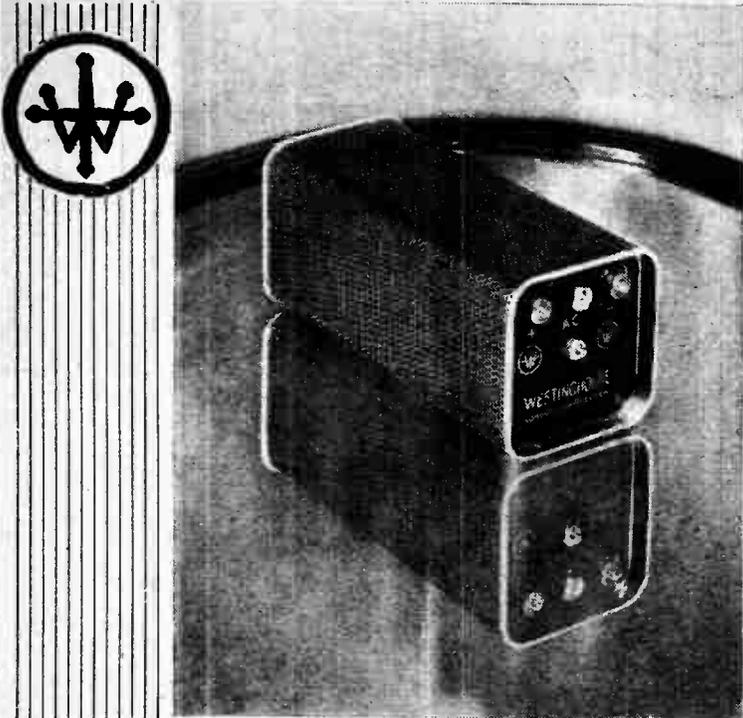
VIENNA

581 kc/s, 517 metres; 190 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—10 p.m., Concert: Overture, Poet and Peasant (Suppé); Love Serenade (Hess); Milliezer Potpourri (Morena); Song, Wenn dich in Wiener Mädel kunst (Engel); Viennese Song, In einem kleinen Café in Hernalz (Leopold); Lehar Potpourri (Hrubý). 2.25, Time, Weather and Exchange. 3.0, Concert by a Mandolin Band, conducted by Heinrich Scheppel; Overture, Flotte Borsche (Suppé); Toréador et Andalouse (Rubinstein); Waltz, Ma belle aimée (Waldteufel); Grossmütterchen erzählt (Ritter); Waltz from Coppelia (Delibes). 3.30, Talk on Stamp Collecting. 3.50, Reading for Women: The Home of the Brentanos. 4.15, Italian Lesson. 4.40, The History of the Pianoforte, illustrated by Gramophone Records. 5.10, Concert relayed from Zell am See. 6.10, Song Recital by Hilde Simsek; Recitative and Aria from the Bartered Bride (Smetana); Aria from Il Seraglio (Mozart); Elizabeth's Aria from Don Carlos (Verdi); Heimkehr (R. Strauss); Was du mir bist (Korngold); Hat dich die Liebe berührt (Marx). 6.40, Talk. 6.5, Topical Talk. 7.5, Epigrams. 7.10, Time, Weather, Sports Notes, and Programme Announcements. 7.20, Radio Report from the Lead Mines of Kreuth. 8.50, Tobias Wunderlich—Play arranged for Radio (Ortner). 10.5, News and Weather. 10.20, Dance Music, relayed from the Café Palmhof.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Farefare from St. Mar's Church, Cracow. 12.5 p.m., Light Music, relayed from Ciechocinek. In an interval at 12.25, Polish Press Review. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.10, Announcements. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.50, Answers to Military Correspondence. 4.0, Song and Pianoforte Recital by J. Korwin-Szkoeka (Soprano) and Mme. Czotok-Alperowicz (Pianoforte); Pianoforte Solos: (a) Prelude and Fugue in A Minor (Bach-Liszt), (b) Variations in C Minor (Bethoven); Soprano Solos: (a) Aria from Aida (Verdi), (b) Aria from La Bohème (Puccini), (c) To Spring (Pandelini); Pianoforte Solos: (a) Etude in F, Op. 25, No. 2 (Chopin), (b) Polonaise in E Flat Minor, Op. 26, No. 2 (Chopin), (c) Jardins sans la pluie (Debussy), (d) Prelude in A Minor (Debussy), (e) Cordoba (Abeñiz); Soprano Solos: (a) Aria from Beatrice Cenci (Kozyczyk), (b) Marquise (Niewiadowski). 5.0, Topical Talk. 5.15, Popular Concert, relayed from Ciechocinek. 5.45, Programme for Invalids, relayed from Lwow, 788 kc/s, 381 metres. 6.0, Divine Service, relayed from Wilno, 533 kc/s, 563 metres. 7.0, Talk. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Recitation. 8.0, Concert of Light Music by the Station Orchestra, conducted by S. Nawrot; Soloist: Mme. Talarico (Songs). 9.5, Radio Journal. 9.5, Talk on Gardening. 9.30, Chopin Pianoforte Recital by Mme. Rose Benzel. 10.0, Dance Music, relayed from the Café Europa, Ciechocinek. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Note. 10.40, Relay from the Café Europa, Ciechocinek (contd.). In the interval at 11.20, News for Members of the Polish Polar Expedition.

ZURICH.—See Schweizerischer Landessender.



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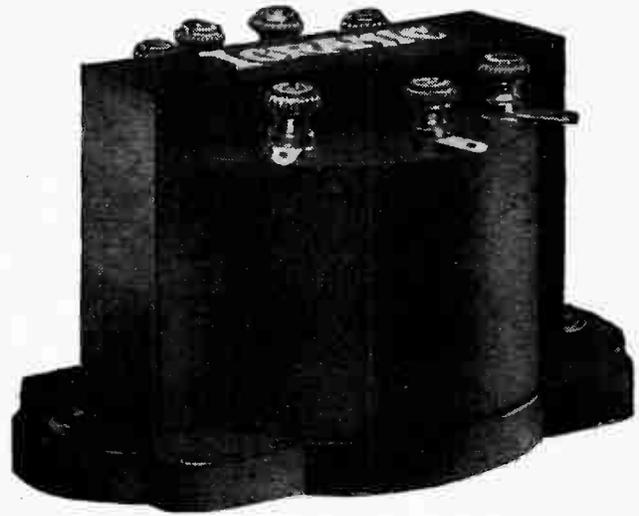
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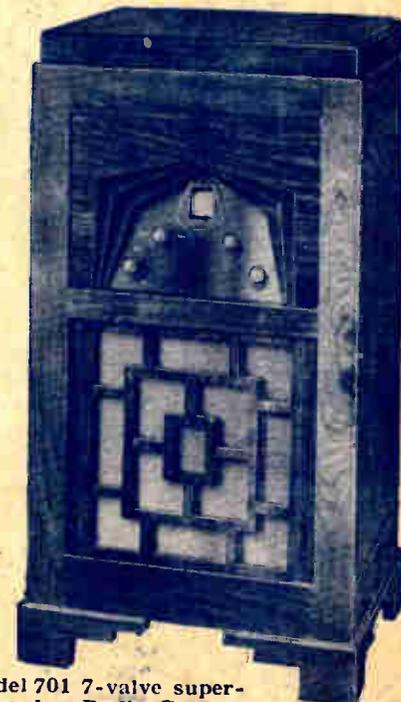
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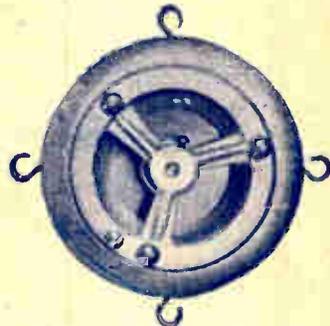
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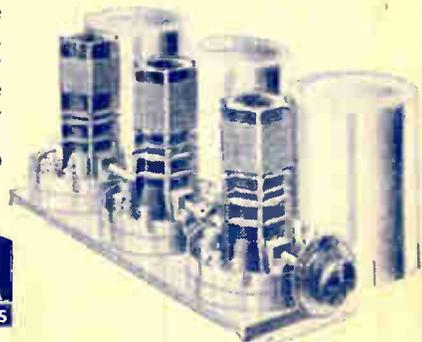


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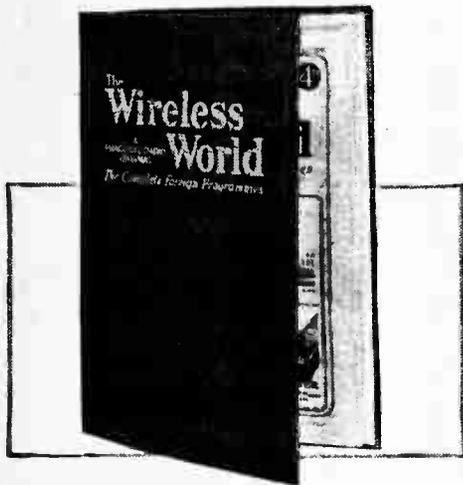
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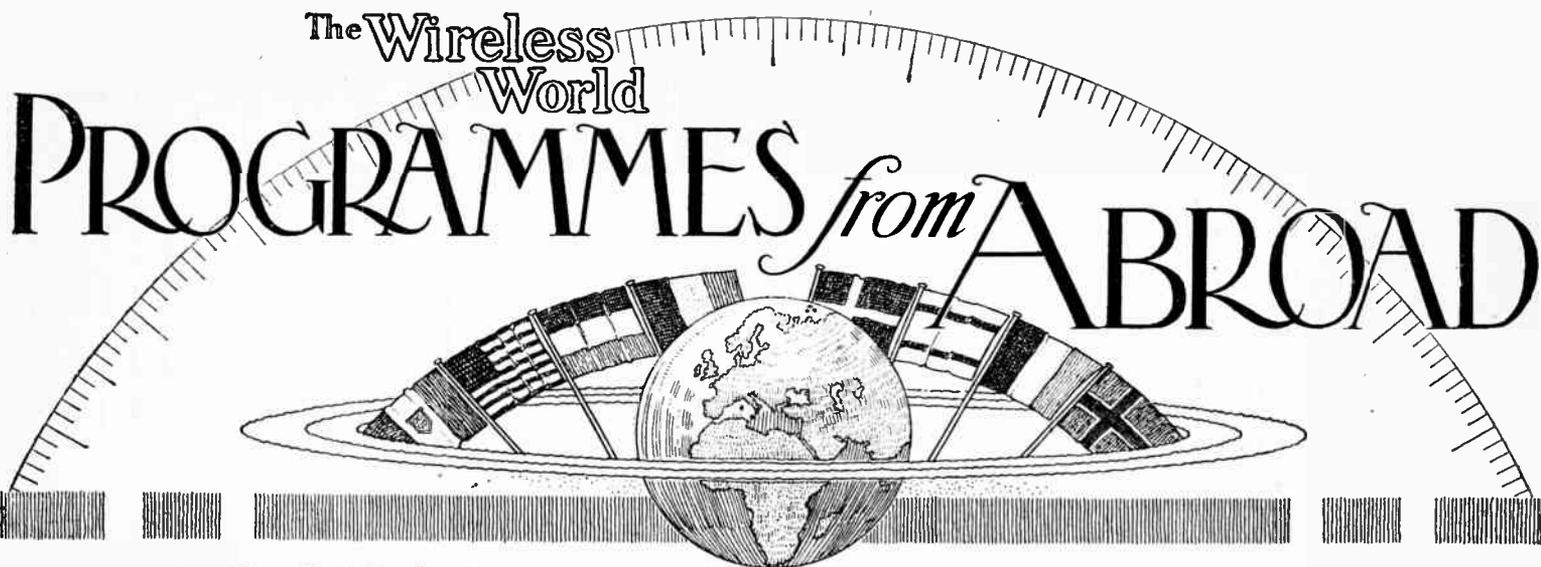
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**BROADCASTING STATIONS
ARRANGED IN ORDER
OF WAVELENGTH**

**TIMES AND DETAILS OF
FULL WEEK'S FOREIGN
TRANSMISSIONS**

Metres.	kc/s.	kW.	Station.	Tuning Positions.	Metres.	kc/s.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania)	453.2	662	7	Milan (<i>Experimental Relays Rome</i>)		
1875	160	8.5	Huizen (Holland)	450.3	666	20	Madona (Latvia). (<i>Relays Riga</i>)		
1796	167	40	Lahti (Finland)	447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Rjukan (0.15 kW.), Notodden (0.08 kW.); Aalesund (0.35 kW.) (Norway) (<i>relays Oslo</i>).		
1725	174	75	Radio Paris, C.F.R.				Rome, IRO. (<i>S.-W. Station, 2 RO on 25.4 m.</i>)		
1635	183.5	60	Berlin (Deutschlandsender) (Germany). (<i>S.-W. Stn. DJA on 31.38 m., DJB on 19.73 m., DJC on 49.83 m., DJD on 25.51 m., DJE on 16.89 m.</i>)	441.2	680	50	Stockholm, SASA (Sweden)		
1554.4	193	30	Daventry National	435.4	689	55	Belgrade (Yugoslavia)		
1538	195	7	Ankara (Angora) (Turkey)	430.4	697	2.5	Madrid, EAJ7 (Union Radio). (<i>After 7.0 p.m.</i>)		
1481	202.5	100	Moscow, RV1 (Old Komintern) (Russia)	424.3	707	2	Moscow, Imini Stalina (Russia)		
1446	207.5	13	Eiffel Tower, FL, Paris	419.5	715	1.5	Berlin, Witzleben (Germany)		
1412	212.5	120	Warsaw 1 (Poland)	416.4	720.5	5	Rabat (Morocco)		
1380	217.5	100	Novosibirsk, RV6 (Russia)	413	725	60	Athlone (Irish Free State)		
1354.4	221.5	30	Motala (Sweden). (<i>Relays Stockholm</i>)	408.7	734	16	Katowitz (Poland)		
1304	230	500	Moscow, WZSPS (Trade Union) (Russia)	403.8	743	25	Sottens (Radio Suisse Romande) (<i>Switzerland</i>)		
1275	235	0.5	Tunis-Kasbah (Tunisia)	398.9	752	25	Midland Regional. (Daventry)		
1230	244	0.6	Boden (Sweden). (<i>Relays Stockholm</i>)	394.2	761	12	Bucharest (Roumania)		
1200	250	5	Stamboul (Turkey)	389.6	770	120	Leipzig (Germany)		
1200	250	21	Reykjavik (Iceland)	385.1	779	8	Toulouse (Radiophonie du Midi) (France)		
1190	252	200	Luxembourg	385.1	779	10	Stalino, RV26 (Russia)		
1170	256	25	Tashkent, RV11 (Russia)	381	788	16	Lwow (Lemberg) (Poland)		
1154	260	7.5	Kalundborg (Denmark). (<i>Relays Copenhagen</i>)	376.4	797	50	Scottish Regional (Falkirk)		
1117	268.5	40	Moscow, Popoff RV58 (Russia)	372.2	806	1.5	Hamburg (Germany)		
1083	277	60	Oslo (Norway)	370.1	810.5	0.8	Radio, LL, Paris		
1071	280	35	Tiflis, RV7 (Russia)	368.1	815	0.7	Seville, EAJ5 (Union Radio) (1.0 kW.); Galicia EAJ4 (0.2 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Helsinki (10 kW.) (Fin- land) (<i>relays Lahti</i>); Kharkov, RV20 (10 kW.) (Russia).		
1035	290	36	Kiev, RV9 (Russia)				Fredriksstad (Norway). (<i>Relays Oslo</i>)		
1000	300	100	Moscow (Russia) (<i>S.-W. Stn. on 50 m.</i>)	364.1	824	1	Bergen (Norway)		
938	320	20	Kharkov, RV4 (Russia)	363.6	825	13	Algiers (Algeria)		
857	350	100	Leningrad (Russia)	360.6	832	60	Mühlacker (Stuttgart) (Germany)		
840	357	18.5	Budapest (Hungary)	355.9	843	50	London Regional (Brookmans Park)		
825	363.6	50	Sverdlovsk, RV5 (Russia)	352.1	852	7	Graz (Austria). (<i>Relays Vienna</i>)		
760	395	1.3	Geneva (Switzerland). (<i>Relays Sottens</i>)	348.8	860	7.6	Barcelona, EAJ1 (Spain)		
720	416.6	15	Monte Ceneri (Switzerland). (<i>Testing</i>)	348.8	860	10	Leningrad, RV70 (Russia)		
720	416.6	20	Moscow, RV2 (Experimental) (Russia)	345.2	869	11.5	Strasbourg, PTT (France)		
690	434.6	1.5	Oulu (Uleaborg) (Finland)	341.7	878	35	Brno (Brunn) (Czechoslovakia)		
680	441.2	0.6	Lausanne (Switzerland). (<i>Relays Sottens</i>)	338.2	887	15	Brussels II, Velthem (Belgium). (<i>In Flemish</i>)		
574.7	522	7	Ljubljana (Yugoslavia)	335	896	5	Cadiz (Spain)		
569	527	0.25	Freiburg-im-Breisgau (Germany). (<i>Relay Stn.</i>)	334.4	897	1.9	Poznan (Poland)		
568.1	528	2	Grenoble (France)	331.5	905	50	Milan (Italy). (<i>Relays Turin</i>)		
566	530	0.25	Hanover (Germany). (<i>Relays Hamburg</i>)	328.2	914	60	Poste Parisien (France)		
563	533	16	Wilno (Poland). (<i>Relay Station</i>)	325	923	60	Breslau (Germany)		
560	536	0.25	Augsburg (Germany). (<i>Relays Munich</i>)	321.9	932	10	Göteborg (Sweden). (<i>Relays Stockholm</i>)		
560	536	1.5	Kaiserslautern (Germany). (<i>Relays Munich</i>)	318.8	941	0.25	Dresden (Germany). (<i>Relays Leipzig</i>)		
550	545	18.5	Budapest No. 1 Lakihegy (Hungary)	318.8	941	1.5	Naples, INA (Italy). (<i>Relays Rome</i>)		
542	554	10	Sundsvall (Sweden). (<i>Relays Stockholm</i>)	315.8	950	1.6	Marseilles, PTT (France)		
537.6	558	3	Palermo (Italy)	312.8	959	0.7	Radio Vitus (Paris). (<i>S.-W. Stn. on 43.75 m.</i>)		
533	563	60	Munich (Germany)	312.8	959	1.7	Cracow (Poland)		
525	571	15	Riga (Latvia)	312.8	959	10	Genoa, IGE (Italy). (<i>Relays Turin</i>)		
517.2	580	100	Vienna (Bisamberg) (Austria)	309.9	968	1	Cardiff		
509	589	15	Brussels No. 1, Velthem (Belgium). (<i>In French</i>)	309.9	968	50	West Regional (Washford Cross)		
500.8	599	20	Florence, IFI (Italy). (<i>Relays Turin</i>)	307	977	0.75	Zagreb (Yugoslavia)		
495.8	605	1.2	Trondheim (Norway)	304	986	13	Bordeaux Lafayette, PTT (France)		
488.6	614	120	Prague, No. 1 (Czechoslovakia)	301.5	995	50	North National (Manchester)		
480	625	50	North Regional (Manchester)	298.8	1004	11	Tallinn (Esthonia)		
472.4	635	60	Langenberg (Germany)	296.1	1013	20	Hilversum (Holland). (<i>7 kW. before 4.40 p.m.</i>)		
465.8	644	1.5	Lyons la Doua, PTT (France)	293.5	1022	0.7	Limoges, PTT (France)		
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland)	293.5	1022	2.6	Kosice (Czechoslovakia)		
453.2	662		San Sebastian, EAJ8 (0.6 kW.); Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (<i>relays Heilsberg</i>); Klagenfurt (0.5 kW.) (Austria) (<i>relays Vienna</i>); Porsgrund (0.7 kW.) (<i>relays Oslo</i>), Tromsø (0.1 kW.) Hodö (0.5 kW.) (Norway); Uppsala (0.15 kW.) (Sweden) (<i>relays Stockholm</i>).	291	1031	13.2	Viipuri (Viborg) (Finland). (<i>Relays Helsinki</i>)		
453.2	662	0.25	Agen (France)	288.3	1040	50	Scottish National (Falkirk)		
				288.3	1040	1	Bournemouth (<i>Relay Station</i>)		
				286	1049	0.8	Montpellier (France)		

BROADCASTING STATIONS ABROAD

(In Order of Wavelength).

Metres.	kc/s.	kW.	Station.	Tuning Positions.	Metres.	kc/s.	kW.	Station.	Tuning Positions.
284.8	1053	0.7	Lyons (Radio-Lyon) (France)		244.1	1229	0.5	Basle (Switzerland). (Relays Beromünster)	
283.6	1058	0.5	German Relays (Berlin, Magdeburg, Stettin)		242.3	1238	1	Belfast (N. Ireland)	
283.6	1058	0.5	Innsbruck (Austria). (Relays Vienna)		240.6	1247	0.5	Stavanger (Norway)	
282.2	1063	2	Lisbon C ¹ IAA (Portugal). (Short-wave Station on 31.25 m.)		238.9	1256	2	Nürnberg (Germany). (Relays Munich)	
					238	1260	1	Nîmes (France)	
281.2	1067	0.75	Copenhagen (Denmark)		237.2	1265	3	Bordeaux, Sud-Ouest (France)	
278.8	1076	13.5	Bratislava (Czechoslovakia)		235.5	1274	0.5	Kristiansand (Norway)	
276.5	1085	60	Heilsberg (Germany)		235	1283	1.65	Lodz (Poland). (Relay Station)	
273.7	1096	7	Turin (Italy)		232.2	1292	0.25	Kiel (Germany). (Relays Hamburg)	
271.5	1105	1.3	Rennes, PTT (France)		230.6	1301	—	Swedish Relay Stations. (Malmö, Norrköping, Karlstad and Trollhättén).	
269.8	1112	20	Bari (Italy)						
269.8	1112	0.25	Bremen (Germany). (Relays Hamburg)		227.4	1319	0.5	Flensburg (Germany). (Relays Hamburg)	
267.6	1121	1.5	Valencia (Spain)		225.9	1328	10	Fécamp, Radio-Normandie (France)	
265.8	1128.5	1.3	Lille, PTT (France)		224.4	1337	1	Cork (Irish Free State)	
263.8	1137	11.2	Moravska Ostrava (Czechoslovakia)		222.9	1346	0.15	Häidiksvall (Sweden)	
261.5	1147	50	London National (Brookmans Park)		219.9	1365	1.5	Béziers (France)	
259.3	1157	17	Frankfurt-a.M. (Germany)		218.5	1373	0.2	Plymouth	
259.3	1157	2.3	Trier (Germany). (Relays Frankfurt)		218.5	1373	0.5	Salzburg (Austria). (Relays Vienna)	
257.1	1167	10	Hörby (Sweden). (Relays Stockholm)		217	1382	0.5	Königsburg (East Prussia) (Germany)	
255.1	1176	0.7	Toulouse, PTT (France)		217	1382	0.25	Karlstad (Sweden)	
253.1	1185	5	Gleiwitz (Germany). (Relays Breslau)		215.6	1391	0.2	Halmstad (Sweden)	
252	1193	1	Barcelona, EAJ 15 (Assoc. Nat.) (Spain)		214.3	1400	1	Aberdeen	
249.6	1202	0.8	Juan-les-Pins, Nice (France)		211.3	1420	1	Newcastle	
247.7	1211	10	Trieste (Italy). (Relays Turin)		209.8	1430	1.25	Magyarovar, Miskolcz and Pecs (Hungary)	
245.9	1220	0.12	Swansea		207	1450	0.15	Boras (Sweden)	
			Berne (0.5kW.) (Switzerland) (relays Beromünster); Eskilstuna (0.2 kW.), Sättle (0.4 kW.) (Sweden) (relays Stockholm); Cassel (0.25 kW.) (Germany) (relays Frankfurt); Linz (0.5 kW.) (Austria) (relays Vienna); Pietarsari (0.5 kW.), Turku (Abo) (0.5 kW.) (Finland) (relays Helsinki).		206	1460	0.2	Ornsköldsvik (Sweden)	
					204.1	1470	0.2	Gävle (Sweden)	
					202.7	1480	0.25	Kristineham (Sweden)	
					201.3	1490	0.25	Hälsingborg (Sweden)	
					195	1530	0.2	Karlskrona (Sweden)	



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FOREIGN SUNDAY PROGRAMMES

JULY THE SECOND

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Recital for two pianofortes.
- LONDON REGIONAL** Service from St. Leonard's, Shorditch, address by Rev. Canon E. C. Baldwin.
- MIDLAND REGIONAL** Orchestral concert from the Winter Gardens, Droitwich Spa.
- WEST REGIONAL** Choral programme from Exeter Cathedral.
- NORTH REGIONAL** Service from St. Matthew's Church, Douglas, Isle of Man.
- SCOTTISH REGIONAL** Service from St. Cuthbert's Church, Edinburgh.
- BELFAST** Service from St. Columbs' Cathedral, Londonderry.

ABROAD

- ATHLONE** 8.50 p.m. "Hamlet," a tragedy by Shakespeare.
- BUCHAREST** 8.0 p.m. Opera: "The Pearl Fishers," by Bizet.
- COPENHAGEN** 8.1 p.m. English Music. 10.15 p.m., Viennese opera music by the Station Orchestra.
- HEILSBURG** 8.0 p.m. The Danzig Municipal Theatre Orchestra.
- LEIPZIG** 12 Noon. The Symphony Orchestra. 7.20 p.m., Brahms' Pianoforte Concerto, No. 2, in B Flat.
- PITTSBURGH** 8.0 p.m. National opera concert.
- PRAGUE** 7.30 p.m. Opera: "Dalibor," by Smetana.
- VIENNA** 5.0 p.m. The Symphony Orchestra. 7.20 p.m., Brahms recital on two pianofortes. 8.0 p.m., Selection from "Orpheus in the Underworld" (Offenbach).

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—10.0 a.m. Protestant Service. 11.0, Paul Keller Programme, relayed from the Schauspiellhaus. 11.30, Talk on Prince Louis Ferdinand. 12 Noon, Concert by the Oels Stadtmusik Orchestra, relayed from Oels. In the interval, Unveiling of the Elfer Grenadiers' Monument—Radio Report. 2.0, Announcements. 2.10, Talk on Fishing. 2.30, Talk: The Young Hitlerites' Movement in Silesia. 2.50, Pianoforte Recital by Manfred Evers; Polonaise-brillante, Op. 72 (Weber); Nocturne in B. Op. 62, No. 1 (Chopin); Hungarian Rhapsody No. 12 (Liszt). 3.10, Programme for Children. 3.45, Concert from London. 4.30, Concert by the G6rlitz Choir, relayed from Naumburg. Conductor: Bruno Fischer: Die Finken und die Schlangen (Pfuschl); Morgen im Walde (Hoffmann); Wachsen mir Flugel (Weinzierl); Das Strassburgel (Kienzl); Wieland der Schmied (Hoffmann). From the Old Fortifications of Cosel. 4.50, Radio Report. 5.10 (from Gleiwitz). Concert by a National Socialist Band. 7.0, Talk by Dr. Hermann von M6ller. 7.30, Weather. 7.35 (approx.), Variety Concert on Gramophone Records. 8.0, Sports Report. 8.30, Demonstration by Young Hitlerites, relayed from the Stadium. 10.0, Time and News. 10.30 (approx.), Concert from Berlin (Witzleben). 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 60 kW. 5.30 p.m., Choral Concert of Moravian and Slav Songs. 6.0, German Transmission: Soprano and Pianoforte Recital. 7.0, Jan Neruda Programme. 7.25, See Prague. 10.45 (approx.), Close Down.

BRUSSELS (No. 1)

1.N.R., 590 kc/s, 509 metres 15 kW.—9.45 a.m., Gardening Notes. 10.0, Running Commentary on the Races at Francorchamps. 10.10, Concert by the Small Station Orchestra, conducted by P. Leemans. Soloist: Mlle. Streulens (Songs). 11.0, Gramophone Concert. 11.50, Running Commentary on the Races at Francorchamps. 12 Noon, Concert by the Station Orchestra, conducted by C. Walpot. Soloists: Mlle. Martini (Songs) and M. Durand (Tenor). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Station Symphony Orchestra, conducted by Jean Kumps. Monologues in the interval. 2.0, Running Commentary on the Races at Francorchamps. 2.10, Extracts from Manon—Opera (Massenet) on Gramophone Records. In the intervals at 3.0 and at 3.45, Running Commentary (cont'd.). 5.0, Dance Music, relayed from the Casino, Knocke. In the

interval at 5.30 (approx.), Football Results. 6.0, Violin and Harp Recital by M. Mison (Violin) and M. Guéry-Famercie (Harp). 6.45, Programme for Children. 7.0, Gramophone Music. 7.15, Religious Address. 7.30, Talk on Music. 8.0, Carillon Recital of Polish Songs, relayed from Tournai. In the interval at 8.15, Gramophone Music. 8.45, L'Offense—Radio Play (Gressesse). 9.0, Concert relayed from the Kursaal, Ostend. 10.30, Le Journal Parlé. 10.40, Dance Music, relayed from the Kursaal, Ostend.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish. 10.0 a.m., Pianoforte Recital on Gramophone Records. 11.0, Concert by the Station Orchestra, conducted by P. Leemans. 12 Noon, Concert by the Station Symphony Orchestra, conducted by J. Kumps. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Radio Orchestra, conducted by Charles Walpot. Soloists: Mlle. Martini (Songs) and M. Durand (Tenor). 5.0, Dance Music from the Kursaal, Ostend. 5.30, Sports Notes. 6.0, Gramophone Music. 6.30, Concert by the Station Orchestra, conducted by P. Leemans. 7.15, Religious Address. 7.30, Music Review. 8.0, Concert by the Station Symphony Orchestra, conducted by Jean Kumps. Soloist: Mr. Borgers (Tenor). 8.45, Recitations. 9.0, Concert (cont'd.). 10.0, Le Journal Parlé. 10.10, Dance Music from the Casino, Knocke.

BUCHAREST

761 kc/s, 394 metres; 12 kW. 9.0 a.m., Divine Service Relay. 10.30, Religious Address. 10.45, Programme for Workers. 11.0, Concert of Light Music. 12 Noon, Gramophone Music. 1.0 p.m., Radio Journal. 1.15, Gramophone Music. 4.0, Programme for Peasants. 5.0, Light Music and Romanian Music by the Marco Orchestra. In an interval at 6.0, Radio Journal. 7.0, Educational Programme. In the interval at 7.20, Reading. 8.0, The Pearl Fishers—Opera in Three Acts (Bizet). In the intervals, Radio Journal.

BUDAPEST

545 kc/s, 560.5 metres; 18.5 kW.—Also relayed on 840 metres from 7.15 p.m. till Close Down. 9.15 a.m., News. 10.0, Sacred Music and Address from the Parish Church. 11.15, Evangelical Service, followed by Concert by the Opera House Orchestra conducted by F. Friedl. 2.0 p.m., Gramophone Music. 3.0, Agricultural Report. 3.45, Concert by the Simi Kurina Cigany Band. 4.50, Talk. 5.20, Concert by the Mandits Orchestra, relayed from the Luna Park. 6.0, Gala Concert by the Hungarian Vocal Society. 7.15, Waltzes and Ballet Music—Orchestral Concert, conducted by Micael Nador. 8.45,

Talk with Songs. 9.45, News. 10.0, Music by the Berend Dance Band, relayed from the Café Donaukorso. 11.15, Concert by Alexander Farkas Cigany Band, relayed from the Café Bodo.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,163 metres.—10.0 a.m., Divine Service, relayed from Viborg Cathedral. 11.30, Weather. 11.40, News. 12 Noon, Time and Chimes from the Town Hall. 12.2 p.m., Gramophone Music. 12.30, Radio Report of the Danish Bicycle Club Race. 1.0, Talk in English. 1.20, Talk in German: Walther Rathenau's Philosophy. 1.40, Talk in French: The French Language. 2.0, Divine Service, relayed from Holmens Church. Also relayed on Skamlebaek, 6,075 kc/s, 49.4 metres. 3.30, Programme for Children. 4.0, Concert by a Wind Instrument Orchestra, relayed from a Park. In an interval, Talk on the Derby, relayed from Charlottenuud. 5.50, Concert by the Provincial Workers' Choir, relayed from the Scandinavian Hotel, Stoge. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.30, Talk. 8.0, Time Signal from the Town Hall. 8.1, Concert of English Music by the Station Orchestra, conducted by Walter Meyer-Radon: Overture, The Indian Queen (Purcell); Suite of English Music of Queen Elizabeth's Time (arr. Rabaud); St. Paul's, Suite for Strings (Holst); Extracts from the Suite, The Crown of India (Elgar); Overture, The Mikado (Sullivan); Suite, Summer Days (Coates). 9.0, Song Recital by Per Knudsen. 9.45, Trio for Violin, Viola and Cello (Boccherini). 10.5, News. 10.15, Concert of Viennese Opera Music by the Station Orchestra, conducted by Walter Meyer-Radon: Overture, Light Cavalry (Suppé); Selection from Boccaccio (Suppé); Overture, Ein Opernhaus (Heuberger); Selection from The Merry Widow (Lehar); Overture, A Waltz Dream (O. Straus). 11.0, Dance Music by Erik Tuxen and his Band, relayed from the Arena. In an interval at 12 Midnight, Time Signal and Chimes from the Town Hall. 12.30 a.m. (Monday), Close Down.

CORK.—See Athlone.

DANZIG.—See Hailsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—2.0 to 8.0 p.m., Programme in English by the I.B.C., Announcers, T. St. A. Ronald and B. McNabb. 2.0, Orchestral Concert for South Coast Listeners: I kiss your lips (Rudolph); Songs: (a) I bring a Love Song. (b) For you alone (Geell); Charming Episode (Ormandy); The Valley of Poppies (Ancliffe); Songs: (a) You will remember Vienna. (b) Because (d'Harlet); A Birthday Serenade (Lincke). 2.30, Violin Recital with Orchestral Music for South Coast Listeners: The Fortune Teller (Herbert); Violin Solos: (a) Serenade to Nicolette, (b) Salut d'amour (Elgar); La Source (Delibes); Violin Solos: (a) In the Gleaming (Chaminade). (b) Ballet Music from Rosamunde (Schubert); March from Sylvia (Delibes); Violin Solo: Valse bluette (Drigo); Waltzes from A Waltz Dream (O. Straus). 3.0, Celebrity Concert on Gramophone Records for South Coast Listeners: Albert Sandler and his Orchestra: The Sleepy Lagoon (Coates); Cicely Courtneidge: The Moment I saw you (Grey and Gay); Maurice Chevalier: Louise; Len Fillis: Now I'm in Love (Shapiro); Pat Rossborough and Rudy Starita: The Match Parade (Wehle); Elsie Carlisle: The Porter's Love Song (Johnson); Beatrice Harrison: The Garden of Sleep (de Lara); Albert Sandler and his Orchestra: Under Heaven's Blue (Payan). 3.30, Musical Comedy Memories for South Coast Listeners: Selection from Chu Chin Chow (Norton); My Hero, from The Chocolate Soldier (O. Straus); Selection from The Desert Song (Romberg); Indian Love Call, from Rose Marie (Prinz); A Bachelor Gay, from The Maid of the Mountains (Fraser-Simson); Pianoforte Duet, from The Cat and the Fiddle (Kern); Selection from The Merry Widow (Lehar). 4.0, Birthday Greetings. 4.30, Descriptive Adventure Story. 5.0, Orchestral Music and Songs: The Wedding of the Birds (Hall); Song, Just Once for all Time (Heymann); Guitar Solo, Picking my way (Lang-Kress); Some of these Days (Brooks); Southern Rhapsody (Hosmer); Songs: (a) Live, Love and Laugh (Heymann). (b) Just because I lost my heart (Gilbert); Princess Pat (Herbert). 5.30, I.B.C. Members' Request Half Hour: The Mill in the Black Forest (Ellenberg); Twilight Reveries and you (Roberts); Under the Double Eagle (Tapiero); Big Ben's saying Goodnight (Murray); Shall my soul pass through Ireland (Traditional); Her name is Mary (Sievier); Selection from Cavalleria rusticana (Mascagni). 6.0, Club Concert for Exeter Listeners, by Special Request in recognition of Cathedral Week. During this Concert the name of the Winner of the Competition for the Blind will be announced:

ATHLONE
725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Sponsored Programme. 8.30, The Lyric Trio. 8.50, Hamlet—Tragedy in Three Acts (Shakespeare)—Abridged Version by J. Stephenson and Company. 9.20, Bass-Baritone Solos by M. O.C. Maguire. 9.35, Trio Concert. 10.0, Pipe Solos by S. MacAonghusa. 10.15, Gaelic Song Recital. 10.30, Concert by the Cork Traditional Quartet. 11.0, Time, News, Weather, Sports Talk and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—12.0 Noon, Chimes and Weather. 2.0, Gramophone Music. In the interval at 2.30, Theatre Notes. 3.0, Film Review and Sextet Concert. 4.0, Programme for Hospitals and other Benevolent Institutions, with Gramophone Records. 5.0 to 6.0, Interval. 6.0, Concert, relayed from the Agricultural Hall. In the interval, Agricultural Talk in Catalan. 9.0, Dance Music, relayed from Hollywood Bar. 10.0, Extracts from Musical Comedies on Gramophone Records. 11.45, Chess Lesson. 12.0 Midnight (approx.), Close Down.

BARI

1,112 kc/s, 269.3 metres; 20 kW.—11.0 a.m., Agricultural Talk. 11.15, Bible Reading. 11.35, Sacred Music, relayed from the Church of San Domenico. 1.0 p.m., Giornale Radio. 1.10 to 2.15, Gramophone Concert. In the intervals at 1.55, Weather, and at 2.0, Time and Announcements. 5.30 to 6.30, Gramophone Music and Sports Notes. 8.0, Sports Report and Giornale Radio. 8.30, Time and Announcements. 8.35 (approx.), Concert of Operetta Music and Songs. In the interval, Literary Notes. 10.30, Gramophone Music. 10.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BERLIN

DEUTSCHLANDSENDER, 163.5 kc/s, 276.5 metres; 60 kW.—6.0 a.m., Gymnastics from Berlin (Witzleben). 6.15, Review of Saturday's News, followed by Harbour Concert from Hamburg. 8.0, Agricultural Talks. 8.45, Service from St. Mary's Church, Berlin. 10.5, Weather Report from Berlin (Witzleben). 11.0, Recitations. 11.15, Weather. 11.30, See Leipzig. 12 Noon, Concert by the Sch6nberg Labour Service Camp Orchestra, with Introductory Talk. 12.55 p.m., Time Signal. 1.0, Concert from Breslau. 2.0, See Hamburg. 3.0, Programme in Honour of the Fallen, relayed from the Potsdam Air Port. 3.20, Film Talk by Josef Delmont. 3.30, Programme for Children. 4.0, See Heilsberg. 5.0, Arlis Abeba—an African City of the old Roman Empire. 5.30, Vocal and Instrumental Concert of Old German Folk Music. 6.0, Reading from the Works of Hellmuth Unger. 6.30, The Return to Nature—Play (Paul Fechter), on Gramophone Records. 7.45, Sports Notes. 8.0, Concert of Austrian Musical Masterpieces. 9.0, News. 9.45, Weather. 11.0, Programme from Berlin (Witzleben). 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—11.30 a.m. to 2.0 p.m., See Leipzig. 2.0 p.m., Talks for Garden City Dwellers. 3.10, Talk: Through Old Berlin in the last Hausom Cab. 3.30, Orchestral Concert, conducted by Ewald Huth. In an interval, Franciscan Literature. 6.10, The People of the Borderland—a Discussion. 6.40, Duet in B Flat for Violin and Viola (Mozart). 7.0, A Literary and Musical Programme—Love Letters of Famous Men (arr. Gustav Stolze). 7.40, A Dialogue. 7.55, Sports Notes. 8.10, See Munich. 10.20, News, followed by Light Music from the Traube Weinrestaurant. In an interval from 11.10 to 11.30, Topical Report. 12 Midnight, Dance Music on Gramophone Records. 1.0 a.m. (Monday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODD.—See Oslo.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—12.5 p.m., Concert by the Station Orchestra, conducted by F. Dyk: Overture, Boccaccio (Suppé); Two Duets (Nedbal); Melody (Eysler); Two Duets (Nedbal); Waltz from The Gipsy Baron (Joh. Strauss); Duets from The Vintage's Bride (Nedbal); Fantasia (Piskacek); Duets from Polenbut (Nedbal); Friant and Tango (Grün). 1.30, See Prague. 1.45 to 1.50, Hydrographic Report. 4.0, Concert by the Municipal Orchestra, relayed from Piestany. Conductor: J. Obrneca. 5.30, Talk. 5.45, Gramophone Music. 6.10, Light Music by a Schrammel Quartet. 6.55, Talk for Housewives. 7.0 till Close Down, See Prague. 10.45 (approx.), Close Down.

BREMEN.—See Hamburg.

JULY 2nd

SUNDAY

continued

Classical Selection; Part I (arr. Ewing); Abide with me; All through the Night; Selection from The Student Prince (Romberg); On Wings of Song (Mendelssohn); Blossoms from Mozart's Garden; Young Tom o' Devon (Russell); Waltz from The Sleeping Beauty (Tchaikovsky); The Storm (Shaw); Classical Selection; Part II (arr. Ewing); Glorious Devon (German). 7.0, Military Band Concert: Selection from The Pirates of Penzance (Sullivan); Extracts from the Ballet, La Source (Delibes): (a) Danse des Echarpes, (b) Scène d'amour, Variation, (c) Danse Circasienne; L'entente cordiale (Allier); Amorettenanz (Gungl); Xylophone Solo: National Emblem (Bakley); Präludium (Jarnefeld); The Standard of St. George (Alford). 7.30, Celebrity Concert on Gramophone Records: Selection from Music in the Air, Part I: Noah Beery; The Whip; Clapham and Dwyer on Photography; Grace Fields: Song of the Highway; Raie de Costa: When day is done (de Sylva); Flanagan and Allen: Oil; Selection from Music in the Air, Part II. 8.0, Concert of Opera and Operetta Music. 9.0 till Close Down, Programme in English by the I.B.C. 9.0, Organ Recital: During the Concert the Name of the Winner of the Competition for the Blind will be announced; Ca c'est Madrid (O'Henry); Butterflies in the Rain (Myers); Songs: (a) For good or for bad (Pearson), (b) Brother can you spare a Dime? (Harburg); There's something about a Soldier (Gay); Paradise; Song: It's Winter again (Hoffmann); The Wooden Soldier and the China Doll. 9.30, Concert of Light Music: Evolution of Dixie (Lake); Shetland Lullaby (Karl Gehl); Everyone says I Love You (Kalmr); Pulcinello (Alletier); Street of Dreams (Lewis and Young); Xylophone Solo: The Dripping Well (Abbey); Selection from He Wanted Adventure (Waller and Tunbridge). 10.0, Orchestral Music and Songs: Overture, Die Fledermaus (Strauss); One Fine Day, from Madame Butterfly (Puccini); Song: Red Devon by the Sea; Pianoforte Solo: Selection from Rigoletto (Verdi); Waltz Song from La Bohème (Puccini); Song: O Mistress Mine (Quilter); Polonaise in A (Chopin); Hungarian Dance No. 1 in G Minor (Brahms). 10.30, Light Music: It's within your power (Gordon and Revel); Something came and got me in the Spring (Scholl); Don't be late in the Morning (Le Clerq); Hold me (Little); Moon Song (Cossow); Rockabye Moon (Johnson Steele); Wear a great big Smile; Selection from He Wanted Adventure (Waller and Tunbridge). 11.0, Club Concert for Exeter Listeners: Classical Selection, Part I (arr. Ewing): Abide with me; All through the Night; Selection from The Student Prince (Romberg); On Wings of Song (Mendelssohn); Blossoms from Mozart's Garden; Young Tom o' Devon (Russell); Waltz from The Sleeping Beauty (Tchaikovsky); The Storm (Shaw); Classical Selection Part II (arr. Ewing); Glorious Devon (German). 12.5 a.m. (Monday), I.B.C. Late News Bulletin in English. 12.10 (approx.), Dance Music by the Icolians: Someone to care for (Wurten); My Darling (Heymann); You've got me crying again (Newman); A Ghost of a Chance (Washington); Stormy Weather (Koehler); You'll never get up to Heaven that Way (Lerner); Forty Second Street (Dubin-Warren); Two Buck Tim from Tinbucket (Heymann); The Grass is getting greener all the time (Newman); Shuffle off to Buffalo (Dubin-Warren); Hiawatha's Lullaby (Donaldson); I sigh for you, Rio Rita (Santugini); I shall still keep smiling along (Wallace); I can't remember (Berlin). 12.57, I.B.C. Good-night Melody. 1.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—10.30 a.m., See Vienna. 11.30, See Leipzig. 12 Noon, Concert by the Station Orchestra, conducted by Dr. Rheinhold Merten. 1.0 p.m., See Langenberg. 2.0, Talks arranged by the Wiesbaden Board of Agriculture. 2.10, Rural Programme—Two Talks. 3.0, Programme for Young People. 4.0, Meeting of the Frankfurt-am-Main Accordion Society. Concert, conducted by P. Ernst. 4.50, See Stuttgart. 6.0, Talk: Behind the Scenes in a Press Agency. 6.25, Poems of Nassau. 6.40, Talk: Rudolf Jungmayr. 6.55, Talk: The Heavens in July. 7.20, Sports Notes. 7.30, Talk: Rudolf Presber. 8.0, Special Transmission. 8.10, Concert by the Station Orchestra, conducted by Dr. Rheinhold Merten, and the Station Choir. Soloists: Erna Vogel and Gretel Krüger (Soprano), Oskar Wittzschack (Tenor), Otto Köhler (Baritone) and Wilhelm Müller (Bass). 10.30, Time and News. 10.45 (approx.), Concert from Berlin (Witzleben). 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (m Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hannover, 630 kc/s, 566 metres, and Kiel, 1,292 kc/s, 232.2 metres.—10.55 a.m., Divine Service, relayed from the University Church, Kiel. 12.15 p.m. (from Hannover), Orchestral Concert, conducted by Richard Grille. In the interval at 12.55, Time and Weather. 2.0 (from Hannover), Programme for Young Hitlerites. 3.0, 1933 Mecklenburg Week. Relay of the Mecklenburg Choral Festival from the Garden of the Shooting Gallery in Güstrow. Part I—Massed Choir, conducted by R. Meister. Gottesmacht und Vorsehung (Beethoven); Frisch gesungen (Sülicher); Ueber allen Gipfeln ist Ruh (Kuhlau); Wenn alle Brunnlein fließen (Heinrichs); Wetterleuchten (Stieber). Part II—The Rostock Male Voice Choir, conducted by Walter Kroschinski. Soloist: Ursula Tise (Soprano). Heimit (Nossler); For Choir, Soprano and Orchestra; Nicht verzagen (Kaun). 3.30, Orchestral Concert, conducted by Gerhard Maasz. Soloists: Arno Schmeidel (Clarinet) and Richard Beckmann (Pianoforte). 5.0 (from Hannover), Town and Country—Folk Dances and Sketches. 5.50 (from Bremen), Concert by a Nazi Band, conducted by Hans Gätjen. 6.30 (from Hannover), Concert by the Harzburg Male Voice Choral Society. 7.0, See Stuttgart. 7.30 (from Bremen), Talk: A Higher Standard in Sport. 7.40, Sports Report. 7.55, Weather. 8.0, Bad Harzburg Centenary Programme with concert from the Kirsaal. 10.0, Time and News. 10.20, Hamburg, Bremen and Lübeck—Report on Events in the Senate and Houses of Burgesses of the Hanseatic Free Cities. 10.35 (approx.), Concert and Dance Music from Berlin (Witzleben).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s (276.5 metres); 60 kW. Relayed by DANZIG, 662 kc/s (453.2 metres)—10.30 a.m., See Vienna. 11.30 to 2 p.m., See Leipzig. 2.0, Talk on Chess. 2.30, Programme for Young People. 3.0, Talk: The Deaf Mute. 3.25, The Evolution of the Soldier's Song during the last four Centuries, with Illustrations. 4.0, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschitzky, relayed from the Königsberg Tiergarten. Sports Notes in the Interval. 5.30, Talk: Modern Italy—the Nation and Sport. 5.55, Poems of a Worker (Heinrich Lersel). 6.10, Paul Juon Recital: Pianoforte Quintet in F, Op. 44, No. 2. Movements from the Dance Rhythms for Pianoforte Duet. 7.0, See Berlin (Witzleben). 7.40, Part Relay from the Third Masurian Water Sport Week in Lätzen. 8.0, Sports Notes. 8.10, Orchestral Concert, relayed from the Kurgarten, Zoppot. The Danzig Municipal Theatre Orchestra, conducted by Karl Tutein: Overture, Rienzi (Wagner); Finale from the Third Act of Faust (Gounod); Suite, Aus Hohers Zeit (Grieg); Selection from The Sleeping Beauty (Tchaikovsky); Selection from Il Trovatore (Verdi); Spanish Caprice (Rimsky-Korsakov); Selection from The Queen of Spades (Tchaikovsky); Hungarian Rhapsody No. 6; Selection from Madame Butterfly (Puccini). In the Interval at 9.0, News. 10.0, News, Sports Notes and Report of the Tannenbergs Municipal Centenary Festival, followed by Programme of Light Music and Dance Music. 12 midnight, Close Down.

HILVERSUM

Announced HUIZEN, 1,013 kc/s (296.1 metres); 20 kW. (7 kW. up to 4.40 p.m.). 8.10 a.m. to 9.10 a.m., Programme of the Catholic Radio Society (K.R.O.). 8.10, Religious Programme. 9.10 to 11.55, Programme of the Christian Radio Society (N.C.R.V.). 9.10, Organ Recital by J. Meijer: Fantasia on Psalms 116 and 22 (Noordt); Movement from Sonata No. 7 (Mendelssohn); Prelude (Herzog). 9.25, Divine Service, relayed from the Church, Slidrecht. 11.5, Sacred Music on Gramophone Records. 11.55 to 4.50, K.R.O. Programme. 11.55, Concert by the K.R.O. Boys, conducted by P. Lustenhouwer. Soloist: J. Mossel (Songs). 1.20, Religious Address. 1.58, Literary Talk. 2.10, Concert by the Boisdue Orchestra, conducted by J. Wierds, and a Mandoline Band, conducted by J. Kolyk. 3.40, Programme for Invalids. 4.40 to 7.25, N.C.R.V. Programme. 4.40, Divine Service, relayed from the Noorderkerk, Maassluis. 6.25, Organ Recital by D. Akkerhuis. 7.25 till Close Down, K.R.O. Programme. 7.25, Literary Talk. 7.50, Football Results. 7.55, Concert by the K.R.O. Orchestra, conducted by J. Gerritsen. Soloist: G. van den Berk (Tenor). 8.40, News. 8.45, Concert (contd.). 9.5, Tenor Solos by G. van den Berk. 9.15, Concert (contd.). 9.30, Tenor Solos by G. van den Berk. 9.40 Concert (contd.). 10.20, Epilogue. 10.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—8.40 to 11.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 8.40, Horticultural Talk. 9.10, Orchestral Concert.

9.40, Recitations. 9.55, Concert (contd.). 10.25, Talk: The Cinema. 10.40, Concert (contd.). 11.10, Recitations. 11.40 to 4.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Gramophone Music. 12.40, Concert by the Wireless Orchestra, conducted by Nico Treep. 1.40, Weekly Book Talk. 2.10, Divertissement for Violin, Viola and Cello (Mozart). 2.40, Gramophone Music. 4.10, Gramophone Music and Sports Notes. 4.40 to 5.40, Programme of the V.A.R.A. Orchestral Concert. 5.40 to 7.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 5.40, Review of Books. 6.25, Divine Service. 7.40 till Close Down, Programme of the A.V.R.O. 7.40, Time and News. 7.55, Concert by the Wireless Orchestra, conducted by Nico Treep. 8.55, Songs by the Fidelio Singers. 9.10, Concert by the Haage Orchestra, conducted by Albert van Raalte, relayed from the Kurhaus, Schönevening. Soloist: Jan Smeterlin (Pianoforte). 9.55, Songs by the Fidelio Singers. 10.10, Concert by the Wireless Orchestra, conducted by Nico Treep. 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusements' Guide and Sports Notes. 8.15, Press Review. 8.30, Radio Concert. 9.0, News. 9.15, Radio Concert (contd.). 10.0, The Listeners' Half Hour. 10.30 p.m. till Close Down, Programme in English by the I.B.C.: Announcer, Miss L. Ballet. 10.30, Light Orchestral Music: Vivienne (Fiack); Song: At Dawning (Cadman); Longing (Haydn Wood); Waltz: Tales from the Vienna Woods (Strauss); Song: Absent (Metcalfe); Hochzeitsreigen (Linke); Song: Where Heaven lies, from The Princess of Kensington (German); 1921 Tunes. 11.0, Celebrity Concert on Gramophone Records: Cedric Sharpe Sextet: In the Gloaming (Harrison); Florence Austral: On the Banks of Allan Water (Traditional); Kreisler: Polichinelle Serenade (Kreisler); Alfred Rose and his Tzigane Orchestra: Czardas (Mondi); Derek Oldham: The Lavender Seller (Breville-Smith); Teddy Brown: The Skater's Waltz (Waldeufel); Winnie Melville: My Man (Adams); Alfred Rose and his Tzigane Orchestra: Selection from Countess Maritza (Kálmán). 11.30, Billy Arnold's Hollywood Music, relayed from the Hollywood Cabaret. 12 Midnight, The Birthday Party; Many Happy returns of the Day (Dubin and Burke); Daddy (Behrend); Coal Black Mammy (St. Helier); Uncle Ned (Foster); Granny's Photo Album (Greer); Shout 'em, Aunt Tilly; Uncle Pete (Burnley Jones); Jollification (Reeves). 12.30 a.m. (Monday), Organ Recital and Songs: The Song of Songs (Moya); Song: If I am dreaming (Millböcker); Trees (Rasbacht); Organ and Violin Duet: Intermezzo from Cavalleria rusticana (Mascagni); Serenade (Toselli); Rustics: (a) One of the Guard (Longstaffe), (b) False Phyllis (arr. Lane Wilson); Caprice viennois (Kreisler). 1.0, Dance Music: What more can I ask? Misty Mornin'; Brighter than the Sun; Saratoga Swing; I'm one of the Lads of Valencia; The King's Navee; How do you do, Mr. Brown? How deep is the Ocean? 1.27, I.B.C. Good-night Melody. 1.30 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURTH.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW. and Helsinki, 815 kc/s, 368.1 metres.—7.20 p.m., Pianoforte Recital by Sigrid Holst-Kuosma relayed from Viipuri, 1,031 kc/s, 291 metres. Prelude in B Minor (Linnala); Humoresques and Bagatelles (Nielsen); Etude (Scriabin); Jardins sous la Pluie (Debussy); Nocturns (Chopin). 7.45, Humorous Programme. 8.0, Orchestral Concert. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Concert from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—11.30 a.m., See Leipzig. 12.5 p.m., Aviation Week—With the Short Wave Transmitters in a Balloon. 1.0, Concert by the Station Orchestra, conducted by Dr. Wilhelm Buschkötter. Soloist: Robert Grote (Cello). 2.30, Reading in Dialect. 3.0, Talk: Reminiscences of Helsingfors, with Gramophone Illustrations. 3.25, Talk: Collect, but with Discernment. 3.40, Talk: The State and Culture in Italy. 4.0, Light Music about Animals and Flowers, on Gramophone Records. 4.35, Radio Report from the Dortmund-Wambel Races. 4.50, Talk by a War-Disabled Man. 5.0, Concert by the Cecilia Choral Society of St. Joseph's, Epen, accompanied by the Small Station Orchestra, conducted by Wolf. In the interval: Talk—Sun Bathing. 6.0, The Congress of German Cavalrymen in Düsseldorf—Radio Report. 6.30, The Nibelungen Legends and Songs. Talk with Illustrations from Das

Lied von Kriemhilds Not—Wie Siegfried ermorder wurde (arr. Wilhelm Schläfer). Recitations. 7.0, Variety Programme. 7.4, Sports Notes. 8.0, Programme from Stuttgart. 9.35, Talk on the National Revolution. 9.45, Radio Report of the West German Guards' Review, from Beckum. 10.0, News. 10.30, Talk on Chess. 10.45, Programme from Berlin (Witzleben). 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769 kc/s, 389.6 metres; 120 kW. and Dresden, 941 kc/s, 319 metres.—11.30 a.m., Nimrod von uns, Herr, du treuer Gott—(Cantata (Bach), by the Municipal and Gewandhaus Orchestra, the Choir of St. Thomas and Soloists. 12 Noon, Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer. Soloists: Alois Heidrich (Oboe), and Karl Meissner (Viola); Suite (Kusterer); Selection from Dornröschen (Humperdinck); Selection from Schifflied, Op. 28, for Pianoforte, Oboe and Viola (Klughardt); Ländler (Zschorlich); Selection from A Masked Ball (Verdi); Waltz, Roses from the South (Joh. Strauss); Rhapsody, España (Chabrier). 2.0 p.m., Weather and Time. 2.5, Market Prices. 2.20, Programme Announcements. 2.40, Agricultural Notes. 2.50, Finches and Nightingales—A Programme for Bird Lovers. 3.30, Concert by a Nazi Band. In the interval at 4.20, Talk. 5.30, Choral Concert. 6.0, Radio Report of a Festival in Sangerhausen. 6.30, Wind Instrument Concert, relayed from Plauen. 7.0, Radio Report of the Tenth Leipzig Rowing Regatta. 7.2, Pianoforte Concerto, No. 2 in B Flat, Op. 83 (Brahms), by Walter Bolde and the Leipzig Symphony Orchestra, conducted by Theodor Blumer. 8.0, Political Address. 8.2, Talk on Jena University, on the 375th Anniversary of its Foundation. 8.30, Variety Concert by the Station Orchestra, conducted by Alfred Schröter, the Harmon Quartet and Soloists. 10.0, News. 10.15 (approx.), Dance Music. 12 Midnight, Close Down.

LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. English Programme.—7.45 p.m., Symphony Concert of English Music. 8.30, Talk in English. 8.40, Gramophone Music. 8.50, News in French. 9.15, Gramophone Music. 9.45, News in German. 9.55, Gramophone Music. 9.25, Dance and Variety Music on Gramophone Records. Exchange and News in the intervals.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—9.0 to 10.0 a.m., Topical Review. 3.0 p.m., Chimes Time, and Announcements. 3.5 to 5.0, Concert of Light Music. 8.0 to 9.30, Chimes News and Dance Music. 11.0, Chimes, Time and Baritone Song Recital by Pedro Blaise, followed by Municipal Band Concert from the Paseo de Rosales. 12.30 a.m. (Monday), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.0 p.m., Concert by the Station Orchestra, conducted by V. Musil: Selection from The Three Musketeers (Friml); Spanish Serenade (Welser); Waltz (Pehlick); Russian Dance (Kostal); March Entr'acte (Bayer). 7.25 till Close Down. See Prague. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—2.45 p.m., Weather. 3.0, Extracts from The Czar's Bride—Opera (Rimsky-Korsakov). 4.0, Talk. 4.30, Talk: Latvian Art. 5.30, Musical Programme by Young Amateurs. 6.30, Symphony Concert, conducted by Georg Sebastian. Programme of Music by Schubert, Liszt, and Beethoven. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5, Press Review and Talk in German: Life in a Former Imperial Colony.

MOTALA.—See Stockholm.

MÜHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres, and Nürnberg, 1,256 kc/s, 239 metres.—11.30 a.m., See Leipzig. 12 Noon, Concert by a Police Band, conducted by Max Windsch. 1.0 p.m., Time, Weather, and Programme Announcements. 1.10, Agricultural Talk. 1.30, Gramophone Concert of Variety Music. 2.30, Talk: The National Revolution. 2.50, Old German Songs to the Lute, by Hans Neumann. 3.15, Palatinat Programme, relayed from Ebernberg; Round the Donnersberg—Young Hitlerites of the Palatinat pay Homage to the Statues of Franz von Sickingen and Ulrich von Hutten at the Sickingen Monument. 4.25, Concert, conducted by Erich Kloss; Soloist: Margarethe Düren (Soprano); Humorous Prelude (Kark); Brise de mer (Leoncavallo); Ballet Music from Coppélia (Delibes); Aria from Madame Butterfly (Puccini); Bronislawa's Song, from Der Betelstudent (Millöcker);

Fascinata (Murzilli); Toscanini (Murzilli); Potpourri, Das Dorf ohne Glocke (Künnecke); March, Deutsche Hoffnung (Meindl). 5.25, Talk: Franz von Sickingen. 5.45, Concert; Josefa Kling-Stoll (Soprano), Ernst Brüchele (Cello), and Richard Staab (Pianoforte); Four Songs (Welcker); Suite for Cello and Pianoforte (Forquerai). 6.10, Sechs Mann und ein Tod—Radio Play (Albrecht Schaeffer). 6.50, Violin and Pianoforte Recital of Dance Music. 7.30, Talk by Dr. Paul Rohrbach: A Journey to our Old Colonies. 7.50, Weather and Sports Notes. 8.10, The Mikado—Operetta in Two Acts (Gilbert and Sullivan), arranged for Radio by Hugo Hartung. 10.20, Time and News. 11.0, Serenade from Langenberg. 12 Midnight (approx.). Close Down.

NAPLES.—See Roms.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 822 kc/s, 547.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 622 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—10.15 a.m., Road Report. 10.20, Chinese and Divine Service. 1.0 p.m., Running Commentary on the Football Match—Finland v. Norway—relayed from the Sports Ground, Bislet. 2.30, Programme, relayed from the University. 4.30, Gramophone Music. 5.30, Divine Service from Slidre Cathedral, relayed from Valdres. 7.0, Parliamentary Notes. 7.15, Weather and News. 7.30, Talk. 8.0, Time. 8.1, Musical Programme, relayed from the Fair at Valdres. 9.15, Recitations. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Orchestral Concert, conducted by Olvin Ejelstad. 11.15, Dance Music. 12 Midnight (approx.). Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—10.25 a.m., Bible Reading. 10.40, Sacred Music. 11.5, Agricultural Talk. 12.45 p.m., Giornale radio. 1.0, Concert of Light Music. In the interval at 1.30, Time and Announcements. 2.0 to 5.30, No Transmission. 5.30, Gramophone Music. 6.30 to 8.0, No Transmission. 8.0, Dopolaro Announcements and Giornale radio. 8.20, Sports Notes. 8.25, Gramophone Music. In the interval at 8.30, Time and Announcements. 8.45, Symphony Concert, conducted by Fritz Reiner. In the interval, Talk: The Duke of the Abruzzi in the Poetry of G. Pascoli. After the Concert, Gramophone Music. 10.55, News.

PARIS

EIFFEL TOWER. Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—1.0 p.m., News. 1.15, Weather. 1.30, Concert of Light Music by the Jean Ibos Orchestra, with Songs. 6.30, Le Journal Parle. 8.30, Gramophone Concert: Part I: Messenger Music; Part II: Variety Music. 10.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—10.0 a.m., Flourish of Trumpets and Roll of Drums. 10.20, Press Review. 10.30, Gramophone Concert. 12 Noon, Interlude. 12.15 p.m., Songs from Sound Films. 12.45, Sponsored Programme. 12.50, Half-an-Hour of Fantasy by Paul Weill. 1.20, Interlude. 1.30, Sponsored Programme. 7.0, Journal Parle. 7.5, Sports Notes. 7.30, Catholic Review. 8.0, Gramophone Music. 8.15, Interlude. 8.30, Concert by the Clevers Quintet. 9.0, Interlude. 9.15, Reading from the Poems of François Coppee, Paul Verlaine and Others. 9.45, Dance Music on Gramophone Records. 10.15, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—7.45 a.m., Gramophone Music. 8.0, Press Review and Weather. 8.30, Physical Culture. 10.0, Elementary Book-keeping Lesson. 10.20, Advanced Book-keeping Lesson. 12 Noon, Religious Address. 12.20 p.m., Sacred Music. Choral, Reveille!; Lord hear my Prayer (Archangelusky); Prelude in E Minor (Bach). 12.30, Gramophone Concert. 2.0 to 5.30, Interval. 5.30 to 6.0, Programme in English by the I.B.C. W. Brown-Constable announcing Gramophone Concert. C'est Paris (Padilla); Sous la feuillée (Thomé); Canzonetta (Pierre); Chanson du Printemps (Gounod); Valse bleue (Margis); Le Temps des Cerises (Bernard); Aubade printanière (Lacôme); Dans le Rue (Vivain). 6.0, Popular Concert. 7.0, Concert of Variety Music. 8.0, Dance Music. 8.30, News, Sports Notes and Weather. 8.45, Variety Concert. 9.15, Press Review and News. 9.30, Gramophone Concert with Songs by Mlle. Berzeal. 10.30 to 11.0, Programme in English by the I.B.C. Light Music. Round the Marble Arch (Butler and Gay); In a Monastery Garden (Ketybey); Selection from The Pirates of Pezance (Sullivan); Waltz from Die Fledermaus (Joh. Strauss); Harry Lauder's Famous Songs; Hyde Park Corner (Evans). 11.0, (approx.). Close Down.

PITTSBURGH

(KDKA), 580 kc/s, 505 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.0 p.m., Summer Idyll from New York. 7.15 The Boys of Wynecastle. 7.30 to 9.30, New York Relay. 7.30, Jan Garber and his Orchestra. 8.0, National Opera Concert. 9.0, Pianoforte Duets by Merton Gould and Bert Shefter. 9.15, Symphonette. 9.30, Vesper Services from Shadyside Presbyterian Church. 10.30, Programme to be announced. 11.0, Time Signal and Press News-Reeler. 11.5, Programme to be announced. 11.15, Weather Report. 11.16, Sport Review. 11.23, Programme to be announced. 11.28, Announcement. 11.29, Temperature Report. 11.30, L'Heure Exquise, from New York. 12 Midnight, Time Signal and Jack Pettis and his Orchestra. 12.30 to 3.15 a.m. (Monday), New York Relay. 12.30, Great Moments in History. 1.0, Riesenfeld's Viennese Programme. 1.30, Don Hall Trio. 1.45, Floyd Gibbons. 2.0, Golf Headlines and Will Rogers and Orchestra. 2.30, Goldman Band. 3.0, Time Signal and Mountain Music.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—10.35 a.m., Bach Song Recital. 11.0, Promenade Concert by the Municipal Orchestra, relayed from Teplice Sanov. 12 Noon, Chimes, 12.5 p.m., See Bratislava. 1.30, Agricultural Talk. 1.45 to 1.55, Social Report. 4.0, Promenade Concert, relayed from Kolin. 5.30, Gramophone Music. 6.0, German Transmission, Musical Programme with Introductory Talk, followed by News. 7.0, Concert by the Prague Piano-Accordion Quartet. 7.25, Talk on the following Transmission. 7.30, Dalibor-Opera (Smetana). Talk in the interval. 10.30, News. 10.45 (approx.). Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres. 9.40 a.m., Chimes. 9.45 (from Lausanne), Protestant Service from the Chapelle des Terrenux. 11.0 (from La Chaux de Fonds), Concert by the Accordion Club, relayed from the Parc des Crétets. 12 Noon (from Geneva), Radio Report from an Aeroplane flying over Geneva. 12.15 p.m. (from Lausanne), Gramophone Concert. In the interval at 12.30, News. 2.0 (from Geneva), Running Commentary on the Swiss Grand Prix Motor Cycle Race. 2.30 to 3.30, Interval. 3.30, Concert by the Radio Lausanne Orchestra, conducted by E. Moser. 4.0 (from Lausanne), Vocal Concert. 4.30 (from Lausanne), Orchestral Concert (cont'd.). 5.0 (from Geneva), Running Commentary on the Swiss Grand Prix Motor Cycle Race (cont'd.). 5.45 to 7.0, Interval. 7.0 (from Lausanne), Talk. 7.40 from Lausanne, Sports Notes. 8.0 (from Geneva), Talk on the following transmission. 8.45 (from Geneva), La Bohème—Opera in Four Acts (Puccini). In the interval, News. 12 Midnight (approx.). Close Down.

RUJUKAN.—See Oslo.

ROME

(IRO), 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres, and 2R0, 11,810 kc/s, 25.4 metres from 4.0 p.m.—10.10 a.m., News, Sports Notes and Amusement Guide. 10.30, Agricultural Report. 10.45, Bible Reading. 11.0 to 12 Noon, See Turin. 12.30 p.m., Concert of Variety Music. 1.30 to 2.30, See Turin. In the interval at 2.0, Time and Announcements. 4.45 (Naples), Programme for Children, Weather and Sports Notes. 5.0 to 6.15, Orchestral Concert. Sports Notes in the intervals. 7.30, Sports Notes and News. 8.0, Time and Announcements. 8.10, See Turin. 8.30, Sports Notes. 8.45, Concert: Overture, Si j'étais roi (Adam); Morgen (Grieg); Ballet Music (Debussy); Spanish and American Songs by Marca Senes. 9.30, L'uomo che ama la verità—Comedy in One Act (Franco Saba). 10.0 (approx.), Variety. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAO on 19.56 metres.—8.0 to 10.0 p.m. (approx.). New York Relay. 8.0, Wayne King's Orchestra. 8.30, Dr. Ralph Sockman in the Radio Pulpit. 9.0, Fiddlers Three. 9.15, Wildroot Institute. 9.30 to 10.0, Temple of Song. 12.45 a.m. (Monday), Horse Sense Philology. 1.0 to 3.45, New York Relay. 1.0, Popular Programme. 2.0, Manhattan Merry Go Round. 2.30, American Album of Familiar Music. 3.0, Variety Programme. 3.15, Highlight and Shadows. 3.45, Sunday at Seth Parker's, from New York, followed by Programme Resume.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—10.0 a.m.

(from Zürich), Protestant Address. 10.45 (from Zürich), Concert of Chamber Music. 11.30 (from Zürich), Otto Wirz reads from his own Works. 12 Noon (from Zürich), Gramophone Records of Famous Singers. 12.30 p.m., Time, Weather, and News. 12.40 (from Zürich), Concert by the Swiss Radio Orchestra. 1.30 (from Zürich), Concert by the Vodellers' Double Quartet. 2.30, Interval. 5.0 (from Zürich), Gramophone Concert of Viennese Wine Festival Music. 5.30 (from Zürich), Talk with Gramophone Illustrations: A Wedding Festival in Serbia. 6.15 (from Zürich), Talk in a foreign Language. 7.0 (from Zürich), Time and Sports Results. 7.5 (from Zürich), Concert by the Swiss Radio Orchestra. 8.0 (from Zürich), Talk on the Rhone Valley. 8.30 (from Zürich), Programme to be announced. 9.0, News. 9.10 (from Zürich), Programme to be announced. 9.40, Old Dance Music by the Swiss Radio Orchestra, and Modern Dance Music on Gramophone Records. 10.15 (from Zürich), Sports Report. 10.30 (approx.). Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

680 kc/s, 436 metres; 55 kW. Relayed by Bodan, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,165 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—9.30 a.m., Rural Programme. 10.0, Gramophone Music. 11.0, Divine Service from Umasa, 1,301 kc/s, 231 metres. 12.45 p.m., Weather. 3.0 (from Göteborg), Concert of Light Music, conducted by Karl Bornfors. 4.0, Talk. 4.30, Choral Concert, conducted by Felix Körling, relayed from Halmstad, 1,391 kc/s, 216 metres. 5.5, Programme for Children. 5.30, Reading. 6.0, Evensong relayed from Kristenshamn, 1,480 kc/s, 203 metres. 7.35, Escape—Play (John Galsworthy). 9.0, Orchestral Concert. Soloist: Anna Edström (Songs). Overture, Phèdra (Massenet); Songs: (a) Aria from La Bohème (Puccini); (b) Aria from Turandot (Puccini); Symphonic Poem, Phaëton (Saint-Saëns); Three Songs; Spanish Dance, La Calesera (Alonso). 10.0, Light Music by the Radio Orchestra. 11.0 (approx.). Close Down.

STRASBOURG

859 kc/s, 345 metres; 11.5 kW.—9.30 a.m., Orchestral Concert, conducted by Maurice de Villers. 10.45, Protestant Service in German. 11.30, Catholic Service. 12 Noon, Gramophone Music. 12.45 p.m., News. 1.0, Time Signal. 1.1, Opera and Operetta Airs on Gramophone Records. 2.15, Relay of Speeches from the Opening of the National School of Clockmaking, relayed from Besançon. 3.45, Report on the Prix du Président de la République, relayed from the Hippodrome, St. Cloud. 5.15, Dance Music. 6.0, Medical Talk in German. 6.15, Sports Notes in French. 6.30, Orchestral Concert, conducted by Maurice de Villers; Soloist: Olivia Lehmann (Songs). 7.30, Time and News. 7.45, Report of the Cycle Tour of France. 8.5, News in German. 8.30, Concert by a Virtuoso Septet, relayed from the Casino Viehy; Overture, Tutti in maschera (Pedrotti); Minuet (Bocherini); Petit air ancien (Broggi); Romance (Till); Musette (Peiffer); Serenade (Widor); Humoresque (Lévine); Selection from Werther (Masse-net); Danses alsaciennes (Lévard). 10.0, News in French. 10.30, Dance Music from the Savoy. 12 Midnight (approx.). Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—11.30 a.m., See Leipzig. 12 Noon, A Visit with the Microphone. 12.15 p.m., Concert from Frankfurt. 1.0, Programme for the Centenary of the Birth of Peter Rosegger, with Gramophone Records. 2.0, Agricultural Talk, relayed from Karlsruhe. 2.30, Chopin Pianoforte Recital by Hans Brelme; Barcarolle in F Sharp, Op. 60; Nocturne in B Flat Minor, Op. 9, No. 1; Fantasia Impromptu in C Sharp Minor, Op. 66; Fantasia and Polonaise in A Flat, Op. 61. 3.0, Interval. 3.30, Programme from Frankfurt. 4.0 (from Freiburg), Concert by the Kürnberg Choir, conducted by Hugo Schulz. 4.30, Concert by the Pforzheimer Symphony Orchestra, relayed from Pforzheimer. Conductor: Julius Schröder. Festival Overture (Leutner); Verdi Potpourri (Rhode); Paraphrase on the Song, La Paloma (Manfred); Romance (Leoncavallo); Potpourri, Wien bei Nacht (Komzak); Potpourri of Slav Folk Melodies, Eishlumen (Leuschner); Thermen-Walzer (Joh. Strauss); March, Deutschlands Waffenehre (Blankenburg). 6.0, Radio Report of the Wurtemberg Shooting Festival, on Gramophone Records, relayed from Ulm. 6.20, Concert of German Chamber Music. Heleme Renate Lang (Pianoforte), Hermann Huhl (Violin), and Felix Petyrek (Pianoforte). Prelude and Fugue in B Minor for Organ (Bach), arranged for Two Pianofortes (Schwebach); Sonata for Violin in A Minor (Bach); Sonata in G for Two Pianofortes

(J. C. Bach); Three Marches for Pianoforte Duet, Op. 45 (Beethoven). 7.20, Sports Notes. 7.35, Report on Stuttgart's Fiftieth Gymnastic Display, 1933. 8.0, Stuttgart, calling here—National Potpourri (arr. Görlich); The Heinz Mönch Zither Trio, the Schulrahe Balalaika Orchestra, the Stuttgart Vocal Quintet, the Station Choir, Orchestra and Soloists. 9.30 (from Freiburg), Humorous Variety Programme. 10.10, Time and News. 10.45 (approx.), Concert from Berlin (Witzleben). 12 Midnight (approx.). Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions uncertain owing to recent fire.—6.30 to 7.0 p.m., Programme in English by the I.B.C. 6.30, Henlys Concert of Dance Music. 10.30 till Close Down, Programme in English by the I.B.C. 10.30, Fulfrød Bile Beans Concert. 11.0, Dance Music.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—9.40 to 9.55 a.m., See Turin. 9.55, Mass from the Cathedral of San Giusto. 10.40, See Turin. 11.0, Religious Address. 11.20, Agricultural Report. 11.40, to 12 Noon, Interval. 12 Noon till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,095 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa 959 kc/s, 312.8 metres and Florence, 599 kc/s, 500.3 metres.—9.40 to 9.55 a.m., Giornale Radio. 10.40, Agricultural Report. 11.0, Mass from the Church of the Annunciation, Florence. 12 Noon, Bible Reading. 12.30 p.m., Variety Concert. In the interval at 1.0, Time and Announcements. 1.30, Sponsored Music. 1.45 to 2.30, Gramophone Music. 4.30, Variety Concert. Sports Notes in the interval. 6.15, Weather Report and Gramophone Music. 6.30, Giornale Radio and Sports Notes. 7.0, Time and Announcements. 7.10, Gramophone Music. 8.0, Announcements. 8.10, Reading. 8.30, Talk on the following Transmission. 8.40, Daffni—Opera (Mullé), conducted by the Composer. In the intervals, Talk and Announcements.

VIENNA

581 kc/s, 517 metres; 60 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres, and Salzburg, 1,373 kc/s, 218.5 metres.—10.30 a.m., Unveiling of the Rosegger Memorial, relayed from Mürtzschlag. Address by Gerhart Hauptmann. 11.30, Religious Programme. Opening Address by the Cardinal Archbishop of Vienna. Address by Heinrich Suso Waldeck. 12.10 p.m., Symphony Concert by the Vienna Symphony Orchestra, conducted by Anton Kourath. Soloist: Emmy Zopf (Pianoforte). 1.30, Concert of Light Music by the Vienna Symphony Orchestra. 2.45, String Quartet in E Minor, Op. 59, No. 2 (Beethoven), by the Weiss-Quartet. 3.20, Time and Programme Announcements. 3.25, Festival Programme for the Fiftieth Anniversary of the Miners' Choral Society, relayed from Bleiberg-Kreuth. 4.0, Review of Books. 4.30, Variety. 5.0, Concert by the Vienna Symphony Orchestra, conducted by Josef Holzer. 6.15, Talk: The Caste System of Hindooism. 6.40, Paul Wiegler reads from his own Works. 7.10, Time and Sports Notes. 7.20, Brahms Recital on Two Pianofortes: Variations on a Theme by Robert Schumann, Op. 28; Selection from the Waltzes, Op. 39; Two Hungarian Dances. 8.0, Selection from the Operetta Orpheus in the Underworld (Offenbach), with Humorous Commentary. 10.0, News. 10.15, Concert of Light Music from the Hotel Kranz-Ambassador.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Weather. 12.15, Concert by the Station Symphony Orchestra, conducted by Oziminski. Soloist: W. Losinska (Soprano). 2.0, Talk: The Linen Industry in Poland, relayed from Lwow, 788 kc/s, 381 metres. 2.15, Agricultural Weather Report. 2.20, Gramophone Music. 2.45, Agricultural Talk. 3.5, Choral Concert. 3.30, Pianoforte Recital by Roman Jasinski. Programme for Young People. 4.30, Song Recital by Mme. B. Pryman-Kiszcyer. 5.0, Talk: Work Distribution. 5.15, Concert of Popular Polish Music by the Poznan Opera House Orchestra, relayed from Ciechocinek. Soloist: Mme. L. Rohowska (Pianoforte). 6.0, Gramophone Music. 6.40, Miscellaneous Items. 7.0, Dramatic Programme. 7.40, Answers to Technical Correspondence. 8.0, Concert of Light Music by the Station Orchestra, conducted by S. Navrot. Soloist: C. Horbowska (Soprano). In the interval, Radio Journal. 10.0, Dance Music. 10.25, Sports Notes. 10.40, Aviation Weather Report and Police Notes. 10.45, Dance Music.

ZURICH.—See Schweizerischer Landseender.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Stock Exchange Quotations, Weather Report. 6.0, Programme for Children. 6.45, News Bulletin. 7.0, Gaelic Talk. 7.15, Recitations by C. Murphy. 7.30, Time Signal. 7.31, Verdi and Puccini Concert by the Station Orchestra. Soloist: T. W. Hall (Songs). 8.40, Pianoforte Recital by Rhona Clarke. 9.0, Folk Music by the Station Orchestra. 9.10, Folk Songs by Mme. Erni Ritter. 9.25, Palm-erston Pipe Band. 9.45, Sponsored Programme. 10.45, Time, News, Weather and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Records. 8.20, Sports Notes. 8.30, Exchange and Talk in Catalan. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral. Weather, Exchange, and Market Prices. 10.5, Humorous Review of the Week in Verse. 10.15, Concert by the Station Orchestra. March (Fucik); Selection from La Dolores (Bréton); Habanera (Conté); Minuet (Elgar); Two Melodies (Barrios). 11.10, Song Recital by Margarita Prats. 11.30, Orchestral Concert, relayed from the Café Español. In the interval at 12 Midnight, News. 1.0 a.m. (Tuesday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk and Dopolavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), Othello—Opera (Verdi). In the intervals: Talk, Art Notes and News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—7.20 p.m., Haydn Quartet Concert, Quartet No. 19. Three Movements from the Quartet No. 20. 7.50, Arias from Opera. 8.30, Programme (not yet announced), relayed from Zagreb, 977 kc/s, 307 metres. 10.30, Time and News.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—12 Noon, Weather. 12.5 p.m., Gramophone Concert of Popular Music. In the interval at 12.55, Time. 1.45, News. 2.0, Gramophone Concert (contd.). 3.0, Talk for Women: Clothes for Holidays. 3.30, Weather and Exchange. 3.45, Review of Books. 4.0, Concert from Breslau. 5.0, Educational Talk. 5.25, Topical Talk. 5.35, Quartet in C Minor, op. 50, for Violin, Pianoforte, Viola and Cello (Theodor Blumer). 6.0, A Poem. 6.5, Old Chamber Music for Flute, Harp and Soprano: Songs with Flute and Harp Accompaniment (Scarlati). Andantino for Flute and Harp (Mozart); Recitative and Aria from Céphale et Procris (Grétry). 6.25, Radio Report of a Cricket Match. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations relayed from Frankfurt. 8.0, An Axiom. 8.5, Request Concert, with Gramophone Interludes of Popular Music. 10.0, News. 10.45, Weather. 11.0, Concert from Leipzig. 12 midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.30 p.m., Pianoforte Recital: Sonata in E and Sonata in G (Scarlati); Prelude in C Minor and Prelude in D Flat (Chopin); Märchen, op. 42, No. 3 (Nikolaus Medtner); Spieluhr (von Sauer); Two Pieces (Debussy): (a) Danses des Delphes; (b) Jeux d'eau. 4.55, Talk on Music. 5.5, Serenade Music on Gramophone Records: Serenata notturna (Mozart); Eine kleine Nachtmusik (Mozart). 5.30, The Development of the German Theatre—a Report. 5.50, Reading of Short Stories. 6.10, Georg Vollerthum Recital by Paul Stieher-Walter (Tenor) and Maria Neusitzer-Thoemissen (Soprano), with the Composer at the Pianoforte; Tenor Solos: (a) Zwei Mei len Trub, (b) Lönsbat-Inde. (c) Schrei; Soprano Solos: (a) Slawisches Lied. (b) Ein Mädchen singt; Duets: (a) Benti voi, (b) Zwiesgespräch im Schiffe. (c) Altdeutscher Liebesrim. 6.40, The Witzleben Station informs its Listeners . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations relayed from Frankfurt. 8.10, Melodies from Vienna: Johann Strauss Concert: Gramophone Records; Entry March from The Gipsy Baron; Waltz, Morgenblätter; Annen-Polka; Waltz, Sphärenklänge; Quick Polka, Leichter Blut; Waltz, Tausend und eine Nacht; Perpetuum mobile; Waltz, Roses from the South; Waltz, The Blue Danube. 9.0, Concert by the Edwin Fischer Chamber Orchestra conducted by Paul van Kempen: Symphony in A (Mozart); Intermezzo Goldoniian for String Orchestra, Op. 127 (Enrico Bossi); Concerto for String Orchestra, Op. 78 (Otto Siegl). 10.0, News, followed by Dance Music from the Zoological Gardens. In the interval from 11.0-11.5, Talk: What they are talking about in Berlin. 12 Midnight, Close Down.

MONDAY

JULY THE THIRD

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Orchestral concert.
LONDON REGIONAL	Chinese Moon Party, feature programme.
MIDLAND REGIONAL	Choral programme, Sixteenth and Seventeenth Century Madrigals.
WEST REGIONAL	Orchestral concert from the National Museum of Wales.
NORTH REGIONAL	Relay from the Coliseum, Douglas, Isle of Man.
SCOTTISH REGIONAL	"Third Time Lucky," a Radioptimistic revue.
ABROAD	
ATHLONE	7.31 p.m. Verdi and Puccini concert by the Station Orchestra.
BRUSSELS (No. 1)	8.0 p.m. The Station Symphony Orchestra.
HAMBURG	10.30 p.m. Orchestral Concert, relayed from Kiel.
HEILSBURG	8.5 p.m. "The Arabian Nights," Fantastic Operetta, by Johann Strauss.
LEIPZIG	10.30 p.m. Concert by the Dresden Orchestra.
PRAGUE	8.25 p.m. Haydn Pianoforte Recital. 10.30 p.m., Recital of Greek Music on two pianofortes.
RADIO PARIS	8.0 p.m. Fairy Opera: "Isoline," by Messager.
VIENNA	7.0 p.m. Concert by the Symphony Orchestra.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER. — See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.15, News. 7.30, Talk: Bordeaux a Century Ago. 7.45, Report on the Cycling Tour of France. 8.5, Talk on Social Hygiene. 8.20, Charades. 8.25, News. 8.45, The Damnation of Faust—Opera (Berlioz), relayed from the Casino, Vichy.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by F. Dyk: Overture, The Cunning Peasant (Dvorak); Slav Dances, Nos. 1, 2, and 3 (Lanko); Serenade (Maendzinsky); Spanish Rhapsody (Chabrier); Suite from The Taming of the Shrew (Zilcher). 3.55 to 4.0, See Prague. 5.40, Talk. 5.55, Concert by the Vienna Philharmonic String Quartet: Quartet in C Minor, Op. 18, No. 4 (Beethoven); String Quartet in E Minor, From out my Life (Smetana). 6.55, Talk for Housewives. 7.0, See Prague. 7.10, See Brno. 8.25, See Prague. 10.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.0 p.m., Gramophone Music. 2.0, Time and News. 2.20, Operetta Music on Gramophone Records. 3.0, Agricultural Prices. 3.40, Book Review. 4.0, Orchestral Concert conducted by Max Kaden, relayed from Bad Salzbrunn; Soloists: Karl Heun (Trombone), Hans Wachlin (Violin), Ernst Weidlich (Trumpet) and Arthur Seylle (Flute); March, Leier und Schwert (Stybold); Concertino for Trombone and Orchestra (Sachse); Two Pieces for Violin and Orchestra: (a) Spanish Serenade (Chaminade-Kreisler); (b) Kubelik-Serenade (Drdla); Nordische Fantasie for Trumpet and Orchestra (Hoch); Traviata-Walzer for Flute and Orchestra (Bode); March, Lustig sein ist heut' Parole (Siedel); Selection from Der Tenor der Herzogin (Künneke). 6.30, Agricultural Prices. 5.35, Talk: German Culture. 5.55, Programme to be announced. 6.15 Technical Talk. 6.30, Talk: The Political Organisation of the National Movement. 6.50, News. 7.0, Transmission for all German Stations relayed from Frankfurt. 8.0, Recital of Folk Songs from Glatz by the Station Choir and Orchestra conducted by Ernst Prade and Soloists: Käthe Helbig

(Soprano), Gerda Specht (Contralto) and Carl Brammer (Tenor). 9.0, See Berlin (Witzleben). 10.0, Time and News. 10.30, Technical Wireless Talk. 10.40, Talk: Frederick the Great and Silesia. 11.0 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: News and Talk, with Illustrations: German Poetry in Moravia. 7.0, See Prague. 7.10, Reading. 7.25, Cabaret Programme. 8.25, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans. 5.0, Concert by the Radio Orchestra, conducted by Franz André: Marche Militaire (Saint-Saëns); Entr'acte symphonique (Despreux); Divertissement, La Parisienne (Mambour); Violin Solo: Adagio pathétique (Marsick); Adoration (La Gye); Melody (Godard); Florante (Ramsay); Interlude (Rogister); Violin Solo: Lullaby (Brenta); Sérénade à Rosine (Thoen); March (Goeyens). 6.0, Talk. 6.15, Gramophone Records. (a) Quartet, Op. 67 (Brahms), (b) Unfinished Quartet (Loken). 7.15, Walloon Report. 7.30, Film Review. 8.0, Concert by the Station Symphony Orchestra, conducted by Meulmans: Prelude (Rogister); Scènes alsaciennes (Massenet); Humoresque for Wind Instruments (Gilsou); Stèle funéraire (Marsick); Ballet Music from Céphale and Procris (Grétry); Overture, The Barber of Seville (Rossini); Sortie militaire (Faulx); Potpourri of Melodies of Tournai (Daneau); Petite suite (Jongen); Waltz from La Houssarde (Ganne); Selection from Mirella (Gounod-Borelli). 10.0, Le Journal Parlé. 10.10, Gramophone Concert.

BRUSSELS (No. 2)

I.N.R., 587 kc/s, 338.2 metres; 15 kW.—Programme in Flemish.—12 Noon, Concert by the Little Station Orchestra, conducted by P. Leemans. 1.0 p.m., Le Journal Parlé. 1.10, Extracts from 1 Pagliacci—Opera (Leoncavallo) on Gramophone Records. 5.0, Beechum Concert by the Symphony Station Orchestra, conducted by Arthur Meulmans: Leonora Overture No. 3; Symphony in B Flat. 5.45, Programme for Children. 6.30, Concert by the Little Station Orchestra, conducted by P. Leemans: Overture, Il Guarany (Gomez); Ballet Suite, A Thousand and One Nights (Bortkiewicz); Selection from Der Obersteiger (Zeller); Variations on a Popular Romanian Song (Negrea); Potpourri. Radio Budapest (Priekysstrah). 7.15, Talk on Folklore. 7.20, Educational Talk. 7.30, Le Journal Parlé.

8.0, Concert by the Radio Orchestra, conducted by Franz André: Librado March (Alpaerts); Selection from the Merry Widow (Lehar); The Blue Danube (Joh. Strauss); Three Light Pieces (Fletcher); Potpourri (Morena); Petite Suite (Mantel). 8.45, Talk. 9.0, Concert, relayed from the Kursaal Ostend. 10.30, Le Journal Parlé. 10.40, Dance Music from the Kursaal, Ostend.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: Overture, Alessandro Stradella (Flotow); Waltz from Gipsy Love (Lehar); Selection from Il Trovatore (Verdi-Tavan); Selection from The Rose of Stamboul (Fall); Selection from White Horse Inn (Stolz-Benatzky); Romanian Potpourri, Floricele (Paschid); March (Fucik). In the interval at 8.0, Radio Journal. 7.0, Educational Programme. In an interval at 7.20, Gramophone Music. 8.0, Harp and Violin Recital: Fantasia (Saint-Saëns); Andante religioso (Thomé); Sérénade (Pierné). 8.30, Wind Instrument Quartet. 9.0, Review. 9.15, Light Music by the Fancica Luca Orchestra, relayed from the Iordachesco Restaurant. 9.45, Radio Journal.

BUDAPEST

645 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.50 p.m. till Close Down.—5.30 p.m., Concert by the Budapest Concert Orchestra, conducted by Emil Abranyi. 7.0, A Dialogue on the Animal Kingdom. 7.40, Market Prices. 7.50, Song Recital by Andreas Böhm. 8.20, A Radio Play. 10.10, News. 10.20 (approx.), Concert by the Anton Koczé Cigány Band, relayed from the Café Ostende.

CASSEL.—See Frankfurt.

COPENHAGEN

1,867 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the Max Skalka String Ensemble, relayed from the Hotel d'Angleterre. 2.0 to 2.50, Interval. 2.50, Gramophone Music: Clara Clairbort Violett's Aria from Act I of La Traviata (Verdi); Taucredi Pasero: Aria from Act II of The Barber of Seville (Rossini); Beniamino Gigli: Neapolitan Song (de Curtis); Adolf Busch: Cieliano (Geniani-Buse); Hilmer Borgeling: Café Rouge (Winter); Elsie Carlisle and Sam Brown: Sittin' in the Dark (Greer and Adamson); Kate Smith: Moon Song (Coslow and Johnstone); Melody Gents: Heut' bin ich bei Laune (Bochmann). 3.20, Talk for Housewives. 3.30, Concert by the Teddy Petersen Orchestra, relayed from the Wivex Restaurant. 5.0, Pianoforte recital by Bent Frøda: Liebesleid (Kreisler-Rachmaninov); Etude (Friedman); Les réverences (Friedman); Viennese Dance (Gartner-Friedman); Polka (Smetana). 5.25, Exchange and Fish Market Prices. 6.20, Talk by Knud Randal: The World Exhibition at Chicago. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.30, Talk. 8.0, Time Signal from the Town Hall. 8.1, Charlottenlund Revue 1933, with Incidental Music by Victor Cornelius, Willy Kjærnl, and Henry Wilton, relayed from Charlottenlund. 10.30, News. 10.50, Dance Music by the Jens Wamby Band, relayed from the Restaurant Nimb. In an interval at 12 Midnight, Time Signal and Chimes from the Town Hall. 12.30 a.m. (Tuesday), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—6.35 p.m., Gramophone Music. 6.55, See Warsaw. 7.20, Miscellaneous Items and News. 7.35, Programme Announcements. 7.40, See Warsaw. 11.0 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. Announcers: T. St. Ronald and B. McNabb. 4.30, Programme for Children. 5.0, Concert for Chiechester and Bogmor Listeners. Intermezzo, In Pierrrette's Garden (Clifton Brookes). Song: The Blackbird in the Apple Tree (Lulbock). Cello Solo: The Broken Melody (Van Biene). The Bumble Bee's Wedding (Clare). Song: Fairy Tales of Ireland (Coates). Violin Solo: Caprice Basque (Sarasate). Poor Butterfly (Habel de Phillipi); Serenade (Pierné). 5.30 to 6.0, Celebrity Concert on Gramophone Records for Hastings and Eastbourne Listeners. Stanley Holloway: The Lion and Albert. The Boswell Sisters: Had me down my Walking Cane. Wish Wym; An Embankment Impression. George Robey. I stopped, I looked, I listened (Grey). Clarence Mayne: Medley of Songs. Layton and Johnstone: Auf wiedersehen my Dear (Nelson and Ager). Jack Hylton: Lover come back to me (Romberg). 6.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Ibcians. Let me

JULY 3rd

MONDAY

continued

LWOW

788 kc/s, 381 metres; 16 kW.—7.20 p.m., Miscellaneous Items. 7.40 till Close Down, See Warsaw. In an interval, Reading. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South East. 8.45, The Damnation of Faust—Opera (Berlioz), relayed from the Casino, Vichy. After the Opera, News.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.1 p.m., Chimes, Exchange, News, and Request Gramophone Music. 9.15, News. 9.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.30 p.m., German Transmission: Song and Pianoforte Recital by Isabella Klein (Songs) and A. Immerglück (Pianoforte). Pianoforte Solos: (a) Piece (Schubert), (b) Die Neugierige (Schubert); Songs from the Cycle, Dichterliebe: Pianoforte Solos: (a) Paraphrase of the Death of Isolde from Tristan and Isolde (Wagner-Liszt), (b) Widmung (Schumann), (c) Der Vogel als Prophet (Schumann), (d) Hungarian Dance No. 6 (Brahms); Songs (Brahms): (a) Waldesamkeit, (b) Vergebliches Ständchen. 7.0, See Prague. 7.10, See Brno. 8.25, See Prague. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—2.45 p.m., Weather. 3.0, Programme of the Music of Wassiljenko Tscherepnichin and Prokofiev. 4.0, Sound Film of a Soviet Court-martial. 4.30, Readings. In the interval, Sound Film Music. 5.45, Talk: The Consumer—a Judge of Quality of Production. 6.30, Dance Music. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

663 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres, and Nürnberg, 1,256 kc/s, 239 metres.—4.5 p.m., Talk: The Old Province of Leininger. 4.30, Palatine Programme—Round the Donnersberg—a Musical and Literary Programme, relayed from Kirchheimbolanden. 5.45, Talk for the Younger Generation. 6.5, Talk: Music and the Masses. 6.25, Concerto for Two Pianofortes (Liszt). 6.45, Time, Weather and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, See Breslau. 8.30, Wind Instrument Concert, conducted by Georg Lange. 9.25, Talk: Science and Religion under the National Socialist Government. 9.50, Humorous Zoology—Radio Sequence (Ernst Klotz). 10.20, Time and News. 11.0, Concert of Chamber Music: String Trio in A Minor, Op. 77b (Reger); Soprano Songs (Schumann): (a) Die Nanne, (b) Lorelei, (c) Flügel, um zu fliegen; Soprano Songs (Pfitzner): (a) Wie glänzt der helle Mond, (b) Verrat, (c) Ich höhr' ein Vögelin loben; Serenade in D for String Trio (Beethoven).

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres, and Rjukan, 671 kc/s, 447.1 metres.—5.30 p.m., Chamber Music by the Radio Ensemble. 6.30, Talk by General Higgins of the Salvation Army. 7.0, Announcements, Weather and News. 7.30, Talk on P. A. Munch. 8.0, Time. 8.1, Pianoforte Recital by Erik Winkler: Sonata, Op. 1, No. 3 (Beethoven); Rondo, capriccioso Op. 14 (Mendelssohn); Polonaise Op. 21 (Scriabin); Nocturne Op. 5 (Scriabin). 8.40, Sigurd Mathiesen reads from his own works. 9.10, Political Review. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Tenor Recital by Simon Edvardsen. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time and Announcements. 8.45, Chamber Music: Olga Nicastro (Pianoforte); E. Caatagna (Bassoon), and Iole Manno Rondini (Violin). Pianoforte Solo: Carnival in Vienna (Schumann); Romance and Burlesque, Op. 2, for Bassoon (Trilmetz); Son-

explain (Towers); Put a little Springtime in the Winter of their Lives (Pickard); Rosamía (Potter); I'm one of the Lads of Valencia; What have I got to lose (Kahn); Moon Song (Coslow); Hyde Park Corner (Hargreaves); Twenty Million People (Johnson); It's no use, I'm in Love (Rice); Rock your cares away: The Village Band (Fryburg) Nightfall (Lewis); What did I get in Return (Young); If I ever get a Job again (Lewis); Hold up your Hands (Robison). 11.0, Club Concert for Boston Listeners. Part I. Military Band Music. Here, There and Everywhere (Bose). Song, Drake's Drum (Stanford). Light of Foot (Latann); Selection from San Toy (Monckton). Song: The Old Superb (Stanford). On the Quarter Deck (Alford); The Thunderer (Souza). Part II. Light Music. Selection from Die Fledermaus (Strauss); The Raggle Taggle Gipsies, O (Trad.; arr. Sharp); Hares on the Mountain (Trad.; arr. Sharp); The Valley of the Poppies (Ancliffe). Cello Solo: Barlequinade (Squire). Song: A Brown Bird is Singing (Haydn Wood). Violin Solo: Valse Bluette (Drigo). A Birthday Serenade (Lincke); Medley of Good Old Songs. 12.5 a.m., (Tuesday), I.B.C. Late News Bulletin. 12.10, (approx.), Old Favourites in New Guise. Humoresque (Modern Arrangement) (Dvorak). Accordion Band: After the Ball (Harris). Selection from Naïla (Modern Arrangement) (Delibes). Accordion Band: The Old Rustic Bridge by the Mill (arr. Wood). Modern Conception of Russian Melodies (de Filippi). 12.30, Dance Music by the Icolians. All over Italy (Butler); Maria, my own (Gilbert); Something came and got me in the Spring (Schell); Castles in the Sand (Sandford); Selection from Forty-Second Street (Dubin-Warren); Hiawatha's Lullaby (Donaldson); Shuffle off to Buffalo (Dubin and Warren); I shall still keep smiling along (Wallace). 12.57, I.B.C. Good-night Melody. 1.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.0 p.m., The German Almanack. 6.15, Italian Lesson. 6.45, Review of the Day's News. 6.50, Time and News. 7.0, Transmission for all German Stations. The Separationists—The Outbreak of 1923: Radio Sequence. 8.0, Special Transmission. 8.10, Concert by the Station Orchestra, conducted by Hans Rosshard, soloists: Robert vom Scheidt (Baritone), Serenade, Op. 55 (R. Frank); Elfenreigen (Klose); Die Heinzelmännchen (Hans Pfitzner); Rheinische Nachtmusik, Op. 35 (Walter Niemann); Serenade for Little Orchestra, Op. 1 (Schoeck); Songs: Scherzo, Op. 1 (Hans Pfitzner). 9.10, Programme to be announced. 9.25 Concert by the Station Orchestra, conducted by Dr. Reinhold Merten: Wiener Liedermarsch (Komzak); Potpourri, Wiener Operetten-Revue (Robrecht); Ballet Overture, Willst du mein Liebster sein? (Kroner); March from Eine Nacht in Venedig (Joh. Strauss); Polka-Mazurka (Müllacker); Landesschützenmarsch No. 2; Trau dem Kärntnerland (Kummerer). 10.20 Time and News. 10.45, Serenade on Gramophone Records. 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 808 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Review of New Books. 6.25, Talk on the Armies of Other States—France. 6.45, Frankfurt Exchange. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Topical Talk. 8.10, The Sea Serpent—a Humorous Nautical Programme. 9.10 (from Hanover), Brautlage Concert of Zither Music, Songs, Dances and Music of the Harz Mountains. 10.0, Time and News. 10.20, Topical Report. 10.30 (from Kiel), Orchestral Concert, conducted by Heinrich Licht: March, Einziger der Tribünen (Alibout); Overture, The Merry Wives of Windsor (Nicolaï); Waltz, Frauenliebe (Fahlrbach); Suite, Im Zeichen des Rokoko (Alibout); Intermezzo, Falling Leaves (Carona); Oriental Furioso (Boehnlein); March, Hoch Wien (Bayer); Fantasia on Norwegian Folk Songs (Haaaland); Slow Waltz, Rose-mousse (Bose); Waltz, Tesoro mio (Becucci); Selection from Casanova (Lincke); Reiter-Marsch (Schubert).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert of Potpourris. In the interval at 1.20, News. 2.0, News. 3.0, Exchange and Market Prices. 3.30, Programme for Young People. 4.0, Concert by a Police Band: March, Treuschwur (Rust); Overture (Cooper); Waltz, Mein Lebenslauf ist Lieb' und Lust (Jos. Strauss); Polacca brillante (Weber); Finale from Arielle, die Tochter der Luft (E. Bach); Torch Dance on Themes from Wagner's Mastersingers (Eckert); Jugendklänge aus Alt Heidelberg (Rhode); Die kleine Patrouille (Siede). In the interval, Talk: Memorable Days of the Week. 5.30, Talk: The Poet and the Nation. 5.45, Unfamiliar Nineteenth Century Pianoforte Music, played by Arno Libbay: Two Nocturnes in F Sharp and F Minor, Op. 38 (Adolf Jensen); Two German Dance Melodies Nos. 2 and 3, Op. 19 (Robert Volkmann); Four Pieces (Rudolf Niemann): (a) Humoresque, (b) Träumerei, (c) Intermezzo, (d) Polonaise. 6.15, Market Prices. 6.25 (from Danzig), Talk: The Danzig Banks. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, News. 8.5, The Arabian Nights—Fantastic Operetta (Joh. Strauss). 9.35, News. 9.45 (from Danzig), Reading (Ludwig Bäte). 10.15, News.

HILVERSUM

Announced HUIZEN, 1,013 kc/s, 296.1 metres; 20 kW (7 kW up to 4.40 p.m.). Programme of the Christian Radio Society (N.C.R.V.). 12.30 p.m., Organ Recital from a Lutheran Church in Amsterdam. 1.40, Brahms Concert on Gramophone Records. 3.10, Programme to be announced. 3.40, Sacred Music and Address. 4.40, Vocal and Instrumental Concert. Sonata in A Minor for Violin and Pianoforte (Veracini); Contralto Solos with Violin obbligato (Bach): (a) Gelobet sei der Herr, (b) Qui sedes ad Dextram; Duet for Contralto and Soprano: Et in unum Dominum (Bach); Soprano Solos: (a) Genügsamkeit ist ein Schatz, (b) Höhr, ihr Völker, Gottes Stimme (Bach); Violin and Pianoforte Duets: (a) Sarabande-Gavotte (Rameau-Zepparuni); (b) Adagio (Vivaldi-Corti); Concerto grosso in D Minor (Vivaldi), on Gramophone Records; Duet for Soprano and Contralto: Amor, dir werd' ich nie trauen (Händel); Violin and Pianoforte Duets: (a) La Préciense (Copperin-Kreisler); (b) Andante-Allegro (Rossi-Zepparuni); Soprano Solos (Schubert): (a) Morgenlied, (b) Auf dem See; Aria for Contralto (Verdi). 6.10, Answers to Correspondence. 6.40, Police Notes. 6.55, News. 7.10, Answers to Correspondence. 7.40, Concert by the Con Amore Choral Society. 8.40, Talk by J. Vincent, Carillonier of the Royal Palace at Amsterdam. 9.10, Organ Recital. 10.20, Gramophone Music. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 160 kc/s, 1,875 metres; 8.5 kW. Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—11.10 a.m., Concert of Light Music, conducted by Otto Hendriks. 1.10 p.m., Gramophone Music. 1.25, Song Recital by Grethe Weinjanzelck-Hogenbirck. 1.55 to 2.10, Interval. 2.10, Gramophone Music. 2.40, Organ and Song Recital by Frans Hasselaar (Organ) and Hans Clemens (Songs). Introduction and Passacaglia (Reger); Largo (Händel); Ave Maria (Cahn); Agnus Dei (Bizet); Pastoral from the First Organ Sonata (Gulmann); Elegie (Massenet); Good-bye (Tosti); Improvisation arr. Hasselaar. 3.40, Cello Recital by Louis Schuyver. Spanish Serenade (Glazunov); Minnet (Debussy); Sicilienne (Faure); Malaguena (Albéniz); Melody (Rubin-stein); Serenade (Popper); Village Song (Popper); Minnet (Becker). 4.10, Talk: The Life and Compositions of Tchaikovsky. 4.40, Concert of Light Music by Kovacs and his Orchestra, with Songs by Bob Scholte. 6.40, Book Review. 7.15, Brahms Pianoforte Recital by Henriette Bosmans. Two Ballads; Waltzes, Op. 39; Rhapsody, Op. 119. 7.40, Time and News. 7.45, Gramophone Music. 8.40, Concert of Light Music. 9.10, Concert by the Wireless Orchestra, conducted by Nio Trepp. Selection from Cavalleria rusticana (Mascagni); Waltz (Ivanovici); Rhapsody (de Boeck); Narzissenmüdel (Siede); Algerian Song (Ketlibey); Overture, Zampa (Hérold); Waltz, Spährenklänge (Jos. Strauss); Traume (Wagner); Serenade (Pierne); March of the Tinsoldiers (Pierne). 10.40, News. 10.50, Concert (contd.). March, Jahrmarkt-trummel (Lincke); Selection from A Kiss in Spring (Kalluán). 11.10, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—6.35 p.m., Talk: Danzig and Poland. 7.20, Announcements and Gramophone Music. 7.40 till Close Down, See Warsaw.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—7.10 p.m., Choral Concert. 7.35, Talk. 8.0, Concert by the Radio Orchestra: Selection from La Traviata (Verdi); Elegy (Massenet); Petite Suite (Hämäläinen); Potpourri (Kauppi). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Concert from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Wolf. Soloists: Heinz-Joachim Körner and Karl Delselt (Pianoforte). Overture, Der Erlenhügel (Kuhlau); Pieces for two Pianofortes: (a) Sonata in B Flat (Clementi), (b) Bohemian Melody (Prani); Romance and Pantomime (Friml); Selection from The Flying Dutchman (Wagner); Slav Rhapsody, No. 1 (Dvorák); Suite campestre (Amadei); Waltz, Am schönen Rhein gedenk' ich dein (Keler-Bela). In the interval at 2.0, News. 2.30, Meat Market Prices. 3.0, Programme for Children. 3.30, Exchange and Time. 3.50, Programme for Young People. 4.30, See Munich. 5.50, Reading for Women (Hedwig Leipert). 6.10, Songs of a Coppersmith (Heinrich Lersch). 6.20, Talk for Parents: The Nation in the Nursery. 6.45, Weather and News. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, First General News. 8.10 (approx.). See Frankfurt. 9.15, Topical Talk. 9.25, See Frankfurt. 10.0, News. 10.30, Talk: The Heavens in July. 10.45, Gramophone Records of the Cast of the Scala, Milan. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. and Dresden, 941 kc/s, 319 metres.—12.5 p.m., Mozart's Opera Music on Gramophone Records. 1.0, News. 1.15, Gramophone Music, followed by News. 2.10, Art and Film Reports. 2.30, Talk for Women. 3.0, Violin and Pianoforte Recital, by Erika Sieger and Gerhard Burger. 3.20, Interval. 3.35, Market Prices. 4.0, Concert by the Zittau Municipal Orchestra, conducted by Rudolf Quast. In the interval: Talk on Wolf Dietrich. 5.50, Market Prices, Weather, Time and News. 6.0, Educational Programme to be announced. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Political Address. 8.5, Dance Music. 9.0, Talk by Dr. Johannes Hartmann. 9.25, Music in Japa—Concert by Willy Schmitt (Tenor), Willy Heuser (Violin), and Helmut Maurer (Pianoforte); Violin Sonata in D, Tambourin (Leclair); Tenor Solos: Folk Songs (Brahms), (a) Du mein einzig Licht, (b) Es steht ein' Lind, (c) Mein Mädcl hat einen Rosenmund; Tenor Solos from the Italian Song Book (H. Wolf): (a) Nun lass uns Frieden schliessen, (b) Heh' auf dein blondes Haupt und schlaf nicht, (c) Wir haben beide lange Zeit geschwiegen; Chromatic Fantasia for Pianoforte (Bach); Violin Solos (Reger): (a) Burla, (b) Wiegenlied; Tenor Solos (Brahms): (a) Komm bald, (b) Minnelied; Theme with Variations, from the Sonata in E for Violin (Paganini). 10.15, News. 10.30 (approx.), Concert by the Dresden Orchestra, conducted by Herbert Nerlich: Overture, Don Pasquale (Donzetti); Waltz, Dolores (Waldteufel); Ballet Suite (Gyldmark); Major and Minor (Schreiner); Es war an der alten Mühle im Park von Sanssouci (Niel); Bei den Wiener Schrammeln (Recktenwald); March, Junges Blut, frischer Mut (Yardner). 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.30 p.m., Concert by the Station Orchestra. 7.30, Talk in Esperanto. 8.0, An Opera, relayed from Belgrad, 697 kc/s, 430.4 metres. 10.30, Time and News. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,911 metres; 200 kW.—Swiss Programme.—7.30, Talk in German. 7.45, Symphony Concert of Swiss Music on Gramophone Records. 8.20, Talk in French: The Chateau de Grunères. 8.30, Talk in German. 8.40, Gramophone Music. 8.50, News in French. 9.15, Swiss Songs and Choruses. 9.45, News in German. 9.55, Gramophone Music. In the intervals, Exchange and News.

JULY 3rd

MONDAY

continued

ata in C Minor for Violin and Pianoforte (Grieg); Sonata for Bassoon and Pianoforte (Saint-Saëns); Violin Solos: (a) Andante (Muller), (b) La rosellina (Schubert-Manno), (c) Caprice viennois (Kreisler); Pianoforte Solos: (a) Suite (De Gregorio-Schaivo), (b) Etude (MacDowell). After the Concert, Gramophone Music. 10.55, News.

PARIS

EIFFEL TOWER, 207.5 kc/s, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres), at 10.25 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., News. 7.0, Le Journal Parlé. 8.45, La Damnation de Faust—Opera (Berlioz), relayed from the Casino Vichy 11.15 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music. 7.15, Journal Parlé. 7.30, Radio Report on the Cycle Tour of France. 7.45, Hot Jazz on Gramophone Records. 8.15, Interlude. 8.30, Concert: Extract from the Third Concerto (Sporst); Variations for Clarinet and Pianoforte (Weber); Two Airs from L'Amour masqué (Messager); Véronique's Aria from Véronique (Messager). 9.0, Interlude. 9.15, Sponsored Concert 10.15, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—7.20 a.m., Weather and Physical Culture. 7.45, Gramophone Music. 8.0, Press Review and Weather. 12 Noon, Gramophone Concert. Part I.—Chamber Music: The Lener Quartet; Concert in G No. 2 (Beethoven); Song: The Battle of Marignano (Janquin); Harpsichord Solos: (a) La cage de cristal, (b) Le petit Ave blanc (Ibert); Three Old Songs; Sonata Appassionata for Pianoforte (Beethoven). Part II.—Popular Music: Eight Russian Folk Songs (Liadov); Circassian Song (Leontovitch); Two Choral Songs (Ravel); Mother Goose Suite (Ravel); An American in Paris (Gershwin). In the interval at 1.0, Exchange, News, and Weather; and at 1.30, Exchange, 2.0, Exchange. 3.45, Exchange and Market Prices. 4.45, Cello Recital by M. Marcellet; Sonata in G (Sammartini); Variations on a Theme of Mozart (Beethoven); Second Suite (d'Hervelois); Elegie (Faure); Symphonic Variation (Boellmann); Sketch (Farjinsky); Saudades (Milihaud); Two Spanish Songs (Nin). 7.0, Exchange. 7.10, Gramophone Concert: Selection from Barbe Bleue (Offenbach); Song from The Drum Major's daughter (Offenbach); Song from Madame l'Archiduc (Offenbach); Selection from La Basoche (Messager); Selection from Rip van Winkle (Planquette); Overture, The Merry Wives of Windsor (Nicolaï). 7.50, Commercial Notes and News. 8.0, Isoline—Fairy Opera (Messager). In the interval at 8.40, Review by Paul Reboux; and at 9.15, Press Review and News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relay by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Monday Matinee, from New York. 8.45, Human Values. 8.58, Baseball Scores. 9.0, Radio Guild—Drama, from New York. 10.0, Rhythm Kings. 10.15, Dr. Curtis Howe Springer. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal and Press News Reeler. 11.5, Sam Robbins and his Hotel McAlpin Orchestra, from New York. 11.15, Weather Report. 11.16, Sport Review. 11.23, I Bring a Song. 11.28, Announcement. 11.29, Temperature Report. 11.30, Pittsburgh Spotlights. 11.45 to 3.0 a.m. (Tuesday), New York Relay. 11.45, Today's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, Al Mitchell's Orchestra, with Baritone Solos by Everett Marshall. 12.30, Rudy Vallee and his Hotel Pennsylvania Orchestra. 1.0, Cluquet Club Eskimos. 1.30, Potash and Perlmutter. 1.45, Phil Cook and the Ingram Shavers. 2.0, Sinclair Minstrels. 2.30, Jack Frost Melody Moments. 3.0, The Silver Toppers.

PORSCRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—6.35 p.m., Announcements. 6.50, Topical Talk. 6.55, Gramophone Music. 7.5, Talk. 7.20, Miscellaneous Items and News. 7.35, Theatre Notes and Programme Announcements. 7.40, See Warsaw. 7.58, Time Signal. 8.0, See Warsaw. 10.0, Time Signal, Sports and Police Notes 10.15 (approx.) Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Bratislava. 3.55 to 4.0, Exchange. 5.55, Talk. 6.5, Agricultural Report. 6.40, Gramophone Music. 6.15, Talk: Optimism and Pessimism. 6.25, News in German. 6.30, German Transmission; Talk: Pseudonyms. 7.0, Chimes. 7.1, News. 7.40, See Brno. 8.25, Haydn Pianoforte Recital by Jan Herman; Sonata in E flat; Sonata in G. 8.0, Time.

9.1, Václav Tomasek—Pictures from the Life of the Composer (Vrabsky), with Incidental Music. 10.0, News. 10.15, News in German. 10.30, Recital of Greek Music on Two Pianofortes; Jasmine and Minarets (Riadis); Dances of Cythera (Mitropoulos); Greek Intermezzo (Margaritis); Scherzo from a Symphony (Margaritis); Macedonian Dances (Margaritis). 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

ROTTENS, 743 kc/s, 403 metres; 25 kW., and Geneva, 395 kc/s, 760 metres.—3.30 p.m. (from Lausanne), Concert by the Radio Lausanne Orchestra, conducted by E. Moser. 4.0 (from Lausanne), Talk. 4.15 (from Lausanne), Concert (contd.). 5.0 (from Lausanne), Programme for Children. 5.30 to 7.0, Interval. 7.0 (from Lausanne), Talk on Alpine Climbing. 7.30, News. 7.35 (from Lausanne), Answers to Correspondence. 8.0 (from Geneva), Recital for Two Pianofortes; Mine, Maronssia Orlot and M. Milihaud; Piece in B Minor (Ropartz); Lindaraja (Debussy); Jeux en plein air (Tailleferre). 8.20 (from Geneva), Dramatic Programme. 8.45 (from Geneva), Songs by Mme. Pinguet-Fauchère. 9.0 (from Lausanne), Concert by the Radio Lausanne Musette Orchestra, with Songs and Whistling Solos by Doltézi. 9.50, News. 10.0 (from Lausanne), Concert. 10.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—7.5 p.m., Dialogues. 7.25, Soprano Solos by Vera Frienovics. 7.50, Dialogue. 8.0, News. 8.20, Concert. 9.0, Weather and News. 9.15 (approx.), Dialogues. 9.30, Dance Music. 10.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

680 kc/s, 441 metres; 50 kW. Relay by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres, from 4.0 p.m.—1.0 to 2.15 p.m., Gramophone Concert. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30, Soloist Concert. Angelo Parigi (Tenor), Virginia Brunetti (Soprano), Maria Soccori (Soprano) and Maria Fiori (Violin). Violin Solos: (a) Andante doloroso (Goldmark), (b) Allegretto (Boccherini), (c) Tarantella (Favilli); Tenor Solos: (a) Lascia ch'io pianga (Handel), (b) Razzolun sulla via le galline (Respighi), (c) Io di saluti ve ne mando mille (Wolf-Ferrari), (d) Canzonetta d'altri tempi (Tocelli); Violin Solos: (a) Nocturne in E flat (Chopin), (b) Le cocoon (Daquin); Four Popular Tuscan Songs for two Sopranos: (a) Non ti fidar di chi ti guarda in bocca, (b) Giovannetto dalla bella vita, (c) Se vuoi vedere il servo tuo morire, (d) O valorosi che andate alla guerra. 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 7.10, Tourist Report. 7.20, Announcements in Different Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.5, Gramophone Music. 8.15, Giornale Radio and Sports Notes. 8.30, Song Recital by Anna Maria Laudisa (Soprano). 8.45, The Damnation of Faust—Opera (Berlioz), relayed from the Casino, Vichy. In the intervals; Humorous Talk, Announcements and Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY; 790 kc/s, 379.5 metres; 50 kW. Relay by intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 p.m., Book News by Levere Fuller. 9.15, Theatre of the Air. 9.45 till 10.0 (approx.), Lady Next Door, from New York. 12.45 a.m. (Tuesday), Stock Reports. 1.0, Sonoryland Sketch, from New York. 1.30, Dramatised Penny. 1.45, Ferde Grote's Orchestra, from New York. 2.0, A. and P. Gipsies, from New York. 2.30, WGY Players, One Man's Family. 3.0, Contented Programme, from New York. 3.30, Ship of Joy, from New York, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59, Time Signal from Neuchâtel Observatory and Weather Forecast. 12 Noon (from Berne), Gramophone Records of Bavarian Folk Music. 12.30 p.m., Time, Weather and News. 12.40 (from Berne), Gramophone Records of Unfamiliar Opera Music. 1.25 (from Berne), Exchange, Time and Weather. 2.0, Interval. 5.0 (from Zürich), Talk for Women. 5.30 (from Berne), Gramophone Records of Songs of Nature. 6.0 (from Berne), Gramophone Records of Organ Music. 6.30 (from Zürich), Talk: The Im-

portance of Book-keeping for the Business Man. 7.0, Time and Weather. 7.5 (from Zürich), Gramophone Music. 7.30 (from Zürich), Elementary English Lesson. 8.0, Concert by the Swiss Radio Orchestra. 9.0, Weather and News. 9.10 (from Zürich), Attention in Theater—Play. 10.15, Close Down.

SEVILLE

(EAJS), 815 kc/s, 369.1 metres; 1.5 kW.—3.0 to 4.0 p.m., Concert by the Station Orchestra, followed by Flamenco Songs. 10.0, Variety Programme. In the interval, News, Exchange, and Weather. After the Programme, Flamenco Songs. 12 Midnight (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relay by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,165 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Rural Programme, relayed from Karlstad, 382 kc/s, 217 metres. 5.45 (from Göteborg), Microphone Report. 6.15, Gramophone Music. 7.30, Talk. 8.0, Concert of Finnish Music, Margareta Zilliacus (Songs), Arvo Hannikainen (Violin) and W. Witkovsky (Pianoforte); Suite for Violin and Pianoforte (Palmgren); Two Songs (Palmgren); Four Songs (Sibelius); Suite for Violin and Pianoforte (Sibelius). 8.45, Talk. 9.15, Popular Programme. 10.0, Chamber Music Concert. Quintet, Op. 34 (Blumny); Concert Trio for Clarinet, Horn and Bassoon (Crusell); Quintet, Op. 23—Aus Litauen (Laurischkus). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—7.45 a.m., Report of the Cycle Tour of France. 8.0-11.30, Interval. 11.30, Light Music on Gramophone Records. 12.30 p.m., Report of the Cycle Tour of France. 12.45, News. 1.0, Time Signal and Exchange. 1.15, Mozart Concert, conducted by Maurice de Villers. 3.30, Concert, conducted by M. Bronilac, relayed from the Casino, Vichy. 5.0, Assurance and Harmonium Recital by M.L. Pazoda and Halter. 5.40 (approx.), Report of the Cycle Tour of France. 6.0, Talk in French: The Cinema. 6.15, Topical Talk in German. 6.30, Dance Music. 7.30, Time Signal and News. 7.45, Report of the Cycle Tour of France. 8.5, News in German. 8.30, Gramophone Music. 8.45, The Damnation of Faust—Opera (Berlioz), relayed from the Casino, Vichy. After the Opera, News in French. 11.15 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relay by Freiburg, 527 kc/s, 570 metres.—12 Noon, Orchestral Concert, relayed from Baden-Baden. Conductor: Karl Assinus. Overture, Si j'étais roi (Adam); Sérénade, Eine kleine Nachtmusik (Mozart); Sizziletta (Schmalstieg); Sizziletta (Blon); Selection from This (Massenet); Mazurka (Liszt); Strauss Operetta Potpourri (Schlögel). 1.15 p.m., Time and News. 1.50, Concert from Langenberg. 2.0, Programme arranged by the Post Office. 2.30, Spanish Lesson. 3.0, Elementary English Lesson. 3.30 to 4.30, Interval. 4.30, Concert by the Station Orchestra, conducted by Gustav Gürlich. Soloist: Heinrich Becher (Oboe). Overture, Jean de Paris (Goldini); Concert Piece for Oboe with Orchestral Accompaniment (Klinghardt); Selection from Madame Butterfly (Puccini); Waltz from The Geisha (Jones); Extracts from the Scandinavian Suite (Frederiksen); March, Trene, Waffengefähren (Blankenburg). 5.45, Talk relayed from Karlsruhe: Robert Wagner and his Supporters. 6.15, See Frankfurt. 6.45, Time and News. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Three Humorous Sketches: (a) Das Angbot (Röder), (b) Wir streichen die Zimmer (Schäke), (c) Hädlichkeit (Weichenmayr). 9.0, Concert from Berlin (Witzleben). 10.0, Reminiscences of an Old Front-line Soldier. 10.20, Time and News. 10.45, Sérénade by the Station Orchestra, conducted by Gustav Gürlich. Soloist: Max Mensing (Baritone). 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 5 kW.—Transmissions uncertain owing to recent fire.—11.30 p.m. till Close Down. Programme in English by the I.B.C. 11.30, Light Music. 11.57, I.B.C. Goodnight Melody. 12 Midnight (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m. till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relay by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 p.m., Variety Music. 6.0 to 6.5, Weather Report. 6.35, Giornale Radio and Announcements. 7.0, Time, Tourist Talk and Gramophone Music. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, Announcements and Gramophone Music. 9.0, The Damnation of Faust—Opera in Four Acts (Berlioz), relayed from the Casino, Vichy. In the intervals, Notes and Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning); and 5,969 kc/s, 50.26 metres (Evening); 10 kW. 11.0 to 11.15 a.m., Religious Information in Italian. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relay by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—12 Noon, Concert by the Vienna Symphony Orchestra, conducted by Theodor Christoph. Overture, Phèdre (Massenet); Suite from Der alte Hans (Nedbal); Symphonic Dances (Hoffmann); Waltz, Morgenblätter (Johann Strauss); Overture, Boccaccio (Suppé). Selection from Das Fürstentum (Lehár). Waltz, Dorfkinder from Der Zigeunerprimas (Kálmán); Potpourri, Wiener L e b e n (Könzák). In an interval at 1.0, Time and News. 2.0 to 3.0, Interval. 3.0, Time and News. 3.20, Talk: Keeping the Streets Clean. 3.30, Programme for Young People—Recital on Two Pianofortes. 3.55, Light Music on Gramophone Records. 4.35, Programme for Young People. 5.0, Talk: Indian Music. 5.25 (Concert); Franziska Brantstaedter (Soprano), Ernst Neumann (Cello), and Edith Wächter (Pianoforte); Sonata in D, Op. 102, No. 2 for Cello and Pianoforte (Beethoven); Sonata in F for Cello and Pianoforte (Tessarini-Frowell); Songs (Brahms): (a) Schwesternlied, (b) Die Sonne scheint nicht mehr, Heinekehr vom Feste (Blech); Waltz from La Bohème (Puccini); Aria from A Masked Ball (Verdi). 6.5, Talk in Dialect. 6.25, Talk: Books of Reference in Connection with the Week's Talks. 6.30, Talk with Gramophone Illustrations: Old Indian Music. 6.55, Talk: Popular Ideas of Legal Justice. 7.20, Time and News. 7.30, Viennese Operetta Music by the Vienna Station Symphony Orchestra, the Vienna Volkoper (Choir, and Soloists); Conductor: Josef Holder. 9.0, Topical Report. 9.15, News. 9.30, Pianoforte Recital by Therese Tröster: Fugue in G (Bach-Busoni); Prelude and Etude (Chopin). Dance macabre (Saint-Saëns-Liszt); Feux follets (Liszt); Festival in Seville (Albeniz); Third Etude (Arbiter); Johann Strauss Potpourri (Rosenthal). 10.10, Dance Music on Gramophone Records.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.5 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.1 p.m., Gramophone Music. 12.25, Polish Press Review. 12.33, Weather Report. 12.35, Gramophone Music. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.10, Announcements. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.45, Traffic Report. 3.50, Gramophone Music. 4.0, Popular Concert by The Poznan Opera House Orchestra, conducted by Tilla, relayed from Ciechocinek. 5.0, Talk in French. 5.15, Gramophone Music. 5.30, Pianoforte Recital by Stanislaw Niedzielski. 6.15, Talk: Modern Poland. 6.35, Gramophone Music. 6.55, Programme for Soldiers. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Literary Talk. 8.0, Waldmeister—Operetta (Johann Strauss). In the intervals, Radio Journal and Answer to Agricultural Correspondence. 10.0, Dance Music. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music.

WILNO

533 kc/s, 563 metres; 16 kW.—6.35 p.m., Dukas Concert on Gramophone Records. 6.45, Miscellaneous Items. 6.55, See Warsaw. 7.20, Talk in Lithuanian. 7.35, Programme Announcements. 7.40, See Warsaw. In the interval at 9.0 (approx.), Sports Notes. 11.0 (approx.), Close Down.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—7.55 p.m., Book Review. 8.10, Announcements. 8.30, Vocal and Instrumental Concert. 10.30, Programme Announcements, News and Weather. 10.40, Dance Music. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

TUESDAY

JULY THE FOURTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Symphony concert.
- LONDON REGIONAL** "Please Ring," an entertainment of jingles and jangles in song.
- MIDLAND REGIONAL** Orchestral concert from Cheltenham Spa.
- WEST REGIONAL** "Light is my Heart," orchestral and choral programme.
- NORTH REGIONAL** Programme by the Liverpool Maux Society.
- SCOTTISH REGIONAL** Orchestral Concert.
- BELFAST** An operatic programme.
- ABROAD**
- BERO-MUNSTER** 9.10 p.m. Extracts from "Der Freischütz," by Weber, relayed from **Berne**.
- BRUSSELS (No. 1)** 6.30 p.m. Sonata recital by Jean Meer (pianoforte) and Valenti Santi (Violin).
- BUDAPEST** 8.0 p.m. Opera Music by the Budapest Concert Orchestra.
- EIFFEL TOWER** 8.30 p.m. European concert.
- HAMBURG** 9.30 p.m. Beethoven concert, relayed from **Bremen**.
- MORAVSKA-OSTRAVA** 9.10 p.m. Concert by the Station Orchestra.
- POST PARISIEN** 8.30 p.m. The Station Orchestra.
- ROME** 8.45 p.m. Vocal and Instrumental concert.

ATHLONE
725 kc/s, 413 metres; 60 kW. Relayd by **Cork**, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Stock Exchange Quotations, and Weather Report. 6.0, Programme for Children. 6.45, News Bulletin. 7.0, Gaelic Reading. 7.15, Talk. 7.30, Time Signal. 7.31, Popular Waltzes by the Station Orchestra. 7.50, Waltz Songs from Opera by K. McCully. 8.0, Ballet Music from Opera by the Station Orchestra. 8.20, Dance Songs from Opera by K. McCully. 8.30, A Sketch by Elizabeth Young and Company. 9.0, Harp Solos by T. Nic Chormaic. 9.15, Baritone Solo by M. P. Ruddle. 9.30, Talk by Mrs. C. Stockley: Art and the Child. 9.45, Sponsored Programme. 10.45, Time, News, Weather, and Close Down.

BARCELONA
EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert: Selection from La Bohème (Puccini); Aubade (Pierné); Intermezzo from Cavalleria rusticana (Mascagni); Cantabile (Cui); Selection from Le Roi de Lahore (Massenet); Polonaise in B Flat (Schubert). 7.45, Talk in Catalan. 8.0, Request Gramophone Records. 8.30, Exchange and Art Notes. 9.0, Gramophone Concert. In the interval, Football Results. After the Concert, News. 10.0, Chimes from the Cathedral, Weather, Messages to Seamen, Exchange and Market Prices. 10.5, Sponsored Programme. 10.30, Concert by the Station Orchestra. Overture, The Barber of Seville (Rossini); Serpolette (Michel); Tyrolese Dance (Krone); Selection from Pan y toros (Barbieri); Serenata al viento (Mascheroni); Carezze (Mascheroni). 11.30, Concert by a Mandoline Band, conducted by Felix de Santos Sebastian. In the interval at 12 Mid-night, News. After the Concert, Gramophone Music. 1.0 a.m. (Wednesday), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk and Dopolavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), Concert by a Plucked String Quartet: Overture, Le Maître de Chapelle (Pier); Intermezzo Capriccioso (Amadei); Selection from I Pagliacci (Leoncavallo); Oriental March (Mastelli). 9.15, Un'avventura di viaggio, One Act Comedy (Bracco). 9.45, Concert (contd.): Overture, La clemenza di Tito (Mozart); Dance, Meriggio moscovita (Berruti); Intermezzo: from Act II. of Mignon (Thomas); One-Step Pattinando (Amadei). 10.30, Gramophone Music. 10.55, News.

BASLE—See Schweizerischer Landessender.

BELGRADE
697 kc/s, 430.4 metres; 2.18 kW.—7.0 p.m., Gramophone Music. 7.30, Song Recital. 8.0, Violin Recital by Karel Holub. Präludium (Ehmann-Noren); Dumka (Ehmann-Noren); Zitzico (Saraste); The Mountains of Aethusa, from the Myths Cycle (Szymanowski); Mazurka (Dvorak). 8.50, Dramatic Programme. 9.35, Concert by the Radio Orchestra. 10.35, Time and News. 10.45 (approx.), Dance Music from the Ratnicki Dom Restaurant.

BERLIN
DEUTSCHLANDSENDER, 163.5 kc/s, 1,635 metres; 60 kW.—12 Noon, Weather. 12.5 p.m., Gramophone Records of German Opera Singers. In the interval at 12.55, Time. 1.45, News. 2.0, Gramophone Records of Chamber Music. 3.10, Talk: Plugs and Banners. 3.30, Weather and Exchange. 3.45, Dialogue: Songs about Women in the Germanic Sagas. 4.0, See Leipzig. 5.0, Talks for Women: (a) What the Young Mother should know about Baby's First Year. (b) What is a School for Mothers? 5.35, Schubert and Schumann Recital by Maria Ekkehard: Three Songs (Schubert): (a) Wehmüt, (b) Der Wegweiser, (c) Widerschein; Songs (Schumann): (a) Zwielfelt, (b) Frühlingnacht, (c) Verrätene Liebe, (d) Lust der Sturmzeit. 6.0, Poems. 6.5, Talk: Dogs and Carrier Pigeons for the Army. 6.30, Political Press Review. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from **Berlin (Witzleben)**. 8.0, An Axiom. 8.5, Variety Programme on Gramophone Records. 8.30, Orchestral Concert, conducted by Paul Scheinpfug, relayed from **Swinemünde**. Soloist: Hermann Hoppe (Pianoforte). The Unfinished Symphony (Schubert); Concert Piece in F Minor for Pianoforte and Orchestra (Weber); Divertissement for Pianoforte and Chamber Orchestra (Hermann Pilleney); Overture, Tannhäuser (Wagner). 10.0, News. 10.45, Weather. 11.0, Dance Music. 12 Midnight, Close Down.

BERLIN
WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.15 p.m., Review of Books. 6.40, The Witzleben Station informs its Listeners. . . 6.45, Topical Talk. 7.0, Transmission for all German Stations. Rügen—a Radio Sequence about Germany's Largest Island. 8.10, Firenze Ridente—Musical Comedy (R. U. Raffaelli), conducted by the Composer. 10.0, News. 10.30, Topical Talk, followed by Concert from **Hamburg**. In the interval from

11.0 to 11.5, Talk: What they are talking about in Berlin. 12 Midnight, Close Down.

BERNE—See Schweizerischer Landessender.

BEROMUNSTER—See Schweizerischer Landessender.

BODEN—See Stockholm.

BODO—See Oslo.

BORDEAUX-LAFAYETTE
986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.15, News. 7.30, Programme for Women. 7.45, Report on the Cycling Tour of France. 8.5, Topical Talk. 8.20, News. 8.30, European Concert, relayed from **Paris (Eiffel Tower)**.

BRATISLAVA
1,076 kc/s, 279 metres; 14 kW.—6.25 p.m., Violin Sonata in G Minor, Op. 8 (Lewandowsky). 6.55, Talk for Housewives. 7.0, See **Prague**. 7.10, See **Bрно**. 8.0, Talk on the Tatra Mountains, relayed from **Kosice**, 1,022 kc/s, 293 metres. 8.15, See **Prague**. 9.10, See **Prague**. 10.0, See **Prague**. 11.0 (approx.), Close Down.

BREMEN—See Hamburg.

BRESLAU
923 kc/s, 352 metres; 60 kW. Relayd by **Gleiwitz**, 1,184 kc/s, 253 metres.—4.0 p.m., Soloist Concert. 5.0, Review of Books. 5.20, Market Prices. 5.25 (approx.), Talk: Travel in Germany—East Prussia. 5.40, Programme to be announced. 6.0, Poems by Herbert Böhmie. 6.20 (from **Gleiwitz**), Songs by Scholars of an Upper Silesian Mining District. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from **Berlin (Witzleben)**. 8.0, See **Munich**. 8.50, News. 9.0, The Prussian Achilles—Radio Play about Prince Louis Ferdinand (Josef Buchhorn). 10.15, Time and News. 10.35, Talk: On the Edges of the Wood in Summer Time. 10.50, Light Music and Dance Music from the Admiralspalast in **Hindenburg**. 12 Midnight, Close Down.

BRNO
878 kc/s, 342 metres; 35 kW.—2.50 p.m., Concert by the Station Orchestra conducted by Jan Janota. 3.55 to 4.0, See **Prague**. 5.35, Talk for Boy Scouts. 5.45, Gramophone Music. 6.15, Talk for Workers. 6.25, German Transmission: News, Medical Talk, Agricultural Report and Talk on Village Life. 7.0, See **Prague**. 7.10, Military Band Concert, conducted by F. Zita: March (Soukup); Overture, The Gipsy Baron (Joh. Strauss); Selection from Il Trovatore (Verdi); Moravian Songs (Vackar); Slav

March (F. Zita). 8.0, Talk: The Tatra Mountains, relayed from **Kosice**, 1,022 kc/s, 293 metres. 8.15, See **Prague**. 9.10, Concert by the Station Orchestra, conducted by F. Suchy: Soloist, J. Gotthard (Violin): Concerto for Violin (Vanhall); Adagio (Janacek); Symphony Op. 12 for Chamber Orchestra (Suchy). 10.0, See **Prague**. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)
I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by Leemans; Part I: Bach Music: Sarabande, Pastoral Pieces, Arias, Bourrée in A Minor, Gavotte in D Minor, Sicilienne; Part II: Catalan Procession (de Séverac); Rondola espanola (Casado); Tata Aragonesa (Falla); Habanera (Ravel); Maleguena (Moscovsky); Bolero (Stanb); Castilian Dance (Turina); A Festival at Cordova (Turina). 1.0 p.m., Le Journal Parlé. 1.10, Music by Ketelbey on Gramophone Records. 1.40, Request Gramophone Records: Two Airs from The Land of Smiles (Lehar) Selection from Rose-Marie (Friml); Tamo (Silesi); Waltz, Frühlingsstimmen (Joh. Strauss). 5.0, Gramophone Records: Overture, Mirella (Gounod); Funeral March of a Marionette (Gounod). 5.10, Waltz Songs from: (a) Mirella (Gounod), (b) Romeo and Juliet (Gounod), (c) Le Pardon de Ploërmel (Meyerbeer). 5.25, Overture, The Huguenots (Meyerbeer), on Gramophone Records. 7.30, Programme for Children. 6.5, Literary Talk. 6.15, Reading of Poems. 6.30, Sonata Recital by Jean Meer (Pianoforte and Valenti Santi (Violin): Sonata in E for Solo Violin (Bach); Sonata in D (Handel); Three Sonatas (Scarlatti); Sonatina in D (Schubert). 7.15, Weekly Review. 7.30, Art Notes and Talk for Women. 8.0, Symphony No. 9 (Berthoven) on Gramophone Records. 8.45, History Talk. 9.0, Concert relayed from the Kursaal, Ostend. 10.30, Le Journal Parlé. 10.40, Gramophone Records: Suite in G Minor (Purcell); Suite (Purcell); Allemande and Courante from Suite, No. 5 (Handel) Toccata in A Flat (de la Tombe). 10.55, Christus Vincit (Liszt).

BRUSSELS (No. 2)
N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Finnish.—12 Noon, Light Music on Gramophone Records. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Little Station Orchestra, conducted by P. Leemans: Overture, Die schöne Galathee (Suppé); Italian Serenade (Caludi); Selection from The Merry Widow (Lehar); Waltz, Poème (Fibich); Concert Mazurka for Flute (Doppler); Selection from Mister Cinders (Ellis-Myers); Foxtrot, Fascinat' Vamp (Nussbaum). 6.0, Concert by the Radio Orchestra, conducted by Charles Walpot: March (Blankeburg); Waltz, Il bacio (Arditi); Piece (Chevatal); Waltz, Tesoro mio (Becucci); Alt-Wien (Drdla); Salut d'amour (Elgar); Serenade,

Pizzicati (Flife); Gallop, Firework (Demaele). 5.45, Programme for Children. 6.30, Gramophone Records of Light Music. 7.15, Instrumental Solos on Gramophone Records. 7.30, Tourist Talk. 8.0, Radio Revue in Ten Scenes and a Prologue (Suls). 10.0, Le Journal Parlé. 10.10, Gramophone Dance Music.

BUCHAREST
761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Motoi Orchestra. In an interval at 6.0, Radio Journal. 7.0, Educational Programme. In an interval at 7.20, Gramophone Music. 8.0, Song Recital. 8.20, Concert by the Station Orchestra: Overture, Undine (Lortzing); German Dances (Reger); Valse triste (Nedbal); Suite from The Bartered Bride (Smetana); Polka (Rektenwald); Mandolinata (Drigo); Nocturne (Tchaikovsky); Russian Dance (Tchaikovsky). In an interval at 9.0, Talk. 9.45, Radio Journal.

BUDAPEST
545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 8.0 p.m. till Close Down.—5.30 p.m., Gramophone Music. 6.30, Talk. 7.0, Concert by the Arpad Toll Cigany Band. 7.50, Market Prices. 8.0, Concert of Opera Music by the Budapest Concert Orchestra, conducted by Wilhelm Komor, relayed from the Zoological Garden: Soloists, Ibolya Durvas and Paul Erdi: Overture, William Tell (Rossini); Selection from L'Africaine (Meyerbeer); Variations (Proch); Prologue to I Pagliacci (Leoncavallo); Selection from La Traviata (Verdi); Selection from Turandot (Puccini); Melodies from Mignon (Thomas); Song from The Tales of Hoffmann (Offenbach); Drinking Song from Hamlet (Thomas); Duet from Rigoletto (Verdi); Ballet Music and Intermezzo from The Queen of Sheba (Goldmark). 9.15, News. 9.30 (approx.), Dance Music by the Balazs Band, relayed from the Markus Restaurant.

CASSEL—See Frankfurt.

COPENHAGEN
1,067 kc/s, 281 metres; 0.75 kW. Relayd by **Kalundborg**, 260 kc/s, 1,153 metres.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the Harald Andersen String Ensemble, relayed from the Bellevue Strandhotel. 2.0 to 3.30, Interval. 3.30, Concert by the Station Orchestra, conducted by Launy Gröndahl. French Comedy Overture (Kéler-Béla); Waltz Suite (Schubert); Selection from Miss Decima (Audran); Intermezzo from L'unico Fritz (Mascagni); Melody (Neruda); Norwegian Rhapsody No. 1 (Svendsen); Overture (Kuhlhan); Waltz, Tales from the Vienna Woods (Joh. Strauss); Concert Polka for Two Violins (Lumbye); Melody (Scalabrini); Slav Poem (Poszy); Military March (Tolft). In an interval at 4.15 (approx.), Reading from Mrs. Caudle's Curtain Lectures (Douglas Jerrold). 5.35, Exchange and Fish Market Prices. 6.20, Talk with Gramophone Illustrations: A Day with the Benedictines in the Abbey of Maria Laach, Germany. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.30, Talk: Are Mental Diseases curable? 8.0, Time Signal from the Town Hall. 8.1, Pictures of Daily Life—A Microphone Visit to a Bathing Place. 8.30, Relay of the European Concert from Paris. 9.20, Concert by the Wiggers Quartet. 9.50, News. 10.5, Johannes Nielsen Memorial Concert by the Station Orchestra, conducted by Launy Gröndahl. Soloist: Aage Thygesen (Songs). Andante sinfonico, from the Symphony in F for Strings; Slesvigs Jubelmarch; Lyric Poem; Serenade for 'Cello, with Pianoforte and Orchestral Accompaniment; Jutland Songs; English Intermezzo for Oboe and Strings; Festival Polonaise. 11.5 (approx.), Close Down.

CORK—See Athlone.

DANZIG—See Heilsberg.

DRESDEN—See Leipzig.

FECAMP
1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. T. St. Ronald and B. MacNab announcing. 4.30, Programme for Children. 5.0, Octet Concert for Torquay and Exeter Listeners: Spring Song (Mendelssohn); Song: The Sweetest Flower that blows (Hawley); Ave Maria (Schubert); Song: Because (d'Hardelet); Toreador and Andalousa (Rubinstein); Song: The Second Minuet (Besly); Hungarian Dance in A minor (Brahms); Romance (Rubinstein). 5.30, Light Concert for Plymouth and Devonport Listeners: Old Medley; Shoo the Hoodoo away; Song: You are still my Sweetheart (Yellen); The Japanese Sandman; The Moon is low; Song: A Ghost of a Chance (Washington); Lullin' at Life; Looking for Lovelight. 6.0, Programme in French. 10.0 (approx.) till Close Down: Programme in English by the I.B.C. 10.0, Dance Music by the Ibrolians: Night shall be filled with Music (Collins); Love me to-night (Hart); We've got the Moon and Sixpence (Grey); The Night when Love was born (Young); Business in Q (Bleyer); Sing a New Song (Wever); Nightfall (Lewis); The Clouds will soon roll by (Woods); I can't believe it's true (Newman); Dixiana (Caldwell); Moon (Miles); Mr. and Mrs. Sippi (Caldwell); Under my Umbrella (O'Flynn); Sylvia (Scollard); And so I married the Girl (Magidson); I wake up smiling (Ahlert). 11.0, Club

JULY 4th

TUESDAY

continued

Concert for Grantham Listeners. Part I—Orchestral Music. Selection from Wild Violets (Stolz); Song: Nirvana (Adam); Vaise Septembre (Godin); Spanish Gypsy Dance (Marquya); Song: Mountain Lovers (Squire); Woodland Peace (Favilla); Ke-sa-ko (Chapin); Medley of War Marching Songs. Part II—Members' Request Programme. Sussex by the Sea (Ward Higgs); The Journey's End (arr. Hewett); In the Moonlight (McHugh); Get happy; Dance of the Marionettes (Gaston); Keep your feet still (Trad); Roses of Picardy (Haydn Wood); Pomp and Circumstance (Elgar). 12.5 a.m. (Wednesday), I.B.C. Late News Bulletin. 12.10 (approx.). Light Orchestral Music: Pan and the Wood Goblins (Rathke); Song: Molly Bawn (Lover); The Dwarf's Patrol (Rathke); Song: Captain Mac (Sanderson); Serenade (Heykens). 12.30. Dance Music by the Ibcobians: Love is the Sweetest Thing; Good Morning, Mr. Sun; I'll do my best to make you happy; Smile and Sing your cares away; Where the Blue of the Night; The Turning of the Tide; Now that you're gone; Now's the time to fall in Love. 12.57. I.B.C. Good-night Melody. 1.0 (approx.). Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.0 p.m., Talk on Karl Borromäus Berthold and the Future of German Handicraft. 6.45. A Review of the Day's News. 6.50. Time and News. 7.0. Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0. Special Transmission. 8.10. Dialogues (arr. Paul Laven). 8.55. Romances from Tieck's Magelone for Voices and Pianoforte, Op. 33 (Brahms), by Franz Nothold (Baritone) and Hans Rosbaud. 10.10. Time and News. 10.35. Serenade on Gramophone Records. 12 Midnight. Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.5 p.m. (from Bremen), Theodor Storm Memorial Programme on the Forty-Fifth Anniversary of his death: Egmont Koch (Baritone); Willy Loose (Violin); Werner Riecke (Cello) and Reinhold Krug (Pianoforte); Symphonic Andante for Cello and Pianoforte (Erlanger); Baritone Solos, (a) Schliesse mir die Augen beide (Schütt), (b) Othelloberd (Rüter), (c) Trost (Trunk); Music for Pianoforte, Violin, Cello and Baritone. Theodor Storm (Graener); Violin and Pianoforte Duet, The Bells (Sibelius); Baritone Solos, (a) Mondlicht (Kuske); (b) Gute Nacht (Licht). 6.45. Frankfurt Exchange and Hamburg Market Prices. 6.50. Weather. 7.0. Transmission for all German Stations relayed from Berlin (Witzleben). 8.0. See Frankfurt. 9.30 (from Bremen), Beethoven Concert by Willy Loose (Violin), Werner Riecke (Cello), H. Krüger (Viola) and Reinhold Krug (Pianoforte); Variations on Der Schneider Kakadu; Duet for Viola and Cello. 10.0. Time and News. 10.20. Topical Report. 10.30. Concert by the Hamburg Philharmonic Orchestra, conducted by Gerhard Maasz: Overture, Der Erlenhügel (Kuhlan); Summer Night's Wedding from the Music for Gurre (Halvorsen); Scandinavian Folk Music (Hartmann); Overture, The Little Matchseller (Enna); Elegie and Musette from the Suite, King Christian II. (Sibelius); Berceuse (Järnefelt); Symphonic Dance No. 2 (Grieg); Four Pianoforte Pieces (Sjögren); Polka (Reesen); Cantilena from the Ballet Suite (Gyldenmark); Marche grotesque (Sinding); Minuet from the Suite, From Finland (Palmgren); Swedish Rhapsody (Lindberg).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert of Popular Music. In the interval at 1.20. News. 2.0. News. 2.30. Programme arranged by the Post Office, with Gramophone Records. 3.0. Exchange and Market Prices. 3.30. Musical Improvisations for Children. 4.0. Concert by the Königsberg Opera House Orchestra, conducted by Karl Hrubetz: March, Deutscher Hort (Heuberger); Waltz, Wir sind heute so vergnügt (Willi Meisel); Selection from The Pearl Fishers (Bizet); March, Ostmarken-Rundfunk (Karl Hrubetz); Ballet Overture (Kremsler); Waltz, Münchner Bier (Otto

Ränisch); Potpourri, Für's Herz und Gemüt (Komak); Intermezzo, Der Zirkus kommt (Kust); Descriptive Piece, Ein lila Fächer (Ludwig Siede); March, Karl Schäfer-Olympiasieger (Kreuzberger). In the interval at 5.0. Review of Books. 5.45. Talk, relayed from Graz: The Viking Exhibition in the Prussia-Museum. 6.15. Market Prices. 6.25. Talk: The Position of Doctors under the new Régime. 6.50. Weather. 7.0. Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0. News. 8.10. See Berlin (Witzleben). 10.0. News.

HILVERSUM

Announced **HUIZEN**, 1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.55 a.m. till Close Down. Programme of the Catholic Radio Society (K.R.O.). 11.55. Concert by the K.R.O. Sextet. 1.25 to 1.40. Interval. 1.40. Programme for Women. 2.40. Song Recital by Mlle. Miep Beuning (Soprano). 3.25. Concert by the K.R.O. Boys, conducted by P. Lustenhouwer. 4.10. Gramophone Music. 4.40. Concert by a Balalaika Ensemble. 5.40. Talk. 6.0. Concert (contd.). 6.40. Police Notes. 6.55. Talk. 7.15. Gramophone Music. 7.25. Talk. 7.40. Concert by the K.R.O. Orchestra, conducted by J. Corrits. Soloist: A. Smoorenburg (Songs). Overture, Freidensfeier (Reinecke); Woodland Sketches (MacDowell); Lolita (Bucconi); Overture, Les dragons de Villars (Maillart); Selection from Mignon (Thomas). In the interval at 8.10 (approx.). News. 8.40. Gramophone Music. 8.50. Concert by the K.R.O. Orchestra (contd.). Songs: (a) Onderhuis (Löser), (b) Jonge liefde (Mann), (c) In 't woud (Loots), (d) March, Onze Jongens (Leenwen); Wiener Lied (Drescher); Schatzwäzler (Strauss); Ter zege (Wiets); Selection from Hérodiade (Massenet); Extracts from A Masked Ball (Verdi); Ballet Overture (Kremsler); Selection from The Rose of Stamboul (Fall); Salut d'amour (Elkar); March (Blankenburg). 10.10. News. 10.15. Concert by the K.R.O. Boys, conducted by P. Lustenhouwer; Soloist, J. Mossel (Songs). 10.55. Gramophone Music. 11.40 (approx.). Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced **HILVERSUM**, 160 kc/s, 1,875 metres; 8.5 kW.—Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—11.40. Time. 11.41. Gramophone Music. 12.10 p.m., Orchestral Concert. In the interval: Accordion Music by the Van Dijk Volendamers. 1.55 to 2.10. Interval. 2.10. Gramophone Music. 2.40. Dressmaking Lesson. 3.40. Pianoforte Recital by Theo Potjes: Rondo and Caprice (Beethoven); Scherzo (d'Albert); Etude in Waltz Time (Saint-Saëns); Etudes (Chopin); (a) No. 4, Op. 10, (b) No. 9, Op. 25; Seguidilla (Albeniz). 4.10. Concert by a Children's choir, conducted by Jacob Hamel. 4.40. Programme for Children. 5.10. Organ and Violin Recital by Pierre Falla (Organ) and Boris Lensky (Violin); Overture, Alessandro Stradella (Flotow); Organ Solos: (a) Birthday Serenade (Lincke), (b) Waltz from Coppélia (Delibes), (c) Venetian Barcarolle (Leoncavallo); Gli Spilli Francesi (de Laya); Rocooco Suite (Rols); Organ Solo: The British Patrol (Asel); Nocturne (Boulangier); Rose mousse (Bose); First Waltz (Durand); Organ Solos: (a) Rocooco Serenade (Helmund), (b) Melody (Translatour), (c) Parade of the Wooden Soldiers (Jessel). 6.10. Talk. 6.40. Gramophone Music. 7.10. Talk: Touring in Austria. 7.40. Time and News. 7.45. Jewish Programme. Concert by the Wireless Orchestra, conducted by van Raalte, a Choir and Soloists: Francis Koene (Violin), G. Sirato (Jewish Sacred Songs), and Jan. Musch (Recitations). Introductory Talk by A. Keesing. Violin Concerto in G Minor (Bruch); Recitations; Jewish Songs; Talk by the Lord Mayor of Amsterdam; Egyptian Ballet (Luigini); Jewish Songs. 9.40. Concert of Light Music by Kovacs Lajos and his Orchestra, with Songs by Bob Scholte. In the interval at 10.40. News and Gramophone Music. 11.40 (approx.). Close Down.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—7.30 to 8.0 p.m., Programme in English by the I.B.C. 7.30. Billy Arnold's Hollywood Music, relayed from the Hollywood Cabaret. 8.0. Amusements Guide. News, Financial Notes and Racing Results. 8.10. Press Review. 8.20. Radio Concert. 9.0. Weather and News. 9.30. Jazz Music, relayed from the Casino.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—7.5 p.m., Festival Programme of the Academic Temperance Society, relayed from Viipuri, 1,031 kc/s, 291 metres. 8.45. News in Finnish. 9.0. News in Swedish. 9.15. Concert from the Kappell Restaurant. 11.0 (approx.). Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon. Concert, conducted by Wolf. 12.50 p.m., News. 1.0. Concert by the Station Choir, the Station Chamber Orchestra, and Soloists. Tenor and Choir, with Instrumental Accompaniment: Hans Spielmann, der hat eine einzige Kuh; Minuet for String Quartet (Haydn); Soprano Solo: Schönster Schatz, mein Engel (Brahms); Two Poems: Choir and Instruments: Madenlust; Ländler; Pieces for Six Voices: (a) Dat du min Leevehe best, (b) Et soll sich halt keener; Minuet for String Quartet (Mozart); Duet for Soprano and Tenor: Licht und Liebe (Schubert); Dance Song for Choir and Instruments; Short Story; Scherzo for String Quartet (Beethoven); Waltz, Sure Buren Danz; Swiss Songs for Tenor (Schubert); Serenade for String Quartet (Haydn); Soprano, Tenor, Choir and Instruments: Die Henne (Schubert); Three Poems; Pieces for Six Voices: (a) Et hat emol gerähnt, (b) Das faule Gretchen; Tenor Solo with Instruments: Der Schweinertanz; Scherzo for String Quartet (Schubert); Tenor Solos: (a) Ich hör' ein Bächlein rauschen (Schubert), (b) Wach auf, mein' Herzensschöne (Brahms); Pieces for Six Voices: (a) Abschied, (b) Jetzt reisen wir zum Tor hinaus, (c) Kehraus; Banerumarsch. In the interval at 2.0. News. 3.0. Programme for Children. 3.30. Exchange and Time. 4.0. Talk, relayed from Wörsdorf: The First German Rural Education Week. 4.30. Concert from Stuttgart. 5.50. Talk: Excavations of the Stone Age near Cologne. 6.10. Readings in Dialect. 6.20. Italian Lesson. 6.45. Weather and News. 7.0. Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0. First General News. 8.5. Talk: The Nazi Movement. 8.15. Concert by the Merry Five of Langenberg. 8.45. A Visit with the Microphone. 9.0. Westphalian Landscape—The Environs of Münster—a Radio Picture (Karl Wagenfeld). 10.5. News. 10.30 (approx.). Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12.5 p.m., German Music on Gramophone Records. 1.0 p.m., News. 1.15. Johann Strauss Music on Gramophone Records, followed by News. 2.40 to 2.45. Interval. 2.45. Talk: German Names. 3.0. Organ Recital by Prof. Günther Ramin. 3.35. Market Prices. 4.0. Wind Instrument Concert: March, Unsere Garde (Förster); Festival Overture (Lortzing); Two Alsatian Peasant Dances (Merkling); Waltz, España (Waldteufel); Selection from Der Freischütz (Weber); Spanish Rhapsody (Richard); Selection from The Count of Luxembourg (Lehár); Clog Dance from (zar and Carpenter (Lortzing); Au der Weser (Pressel); March, Regimentkinder (Fueck); Parade March (Müller); Waltz, Die lustigen Brüder (Vollstedt); Intermezzo, Falter and Rosen (Kockert); Serenade, Arabische Sonne (Kockert); Oriental Procession (von Blon); March, Markische Heide (Lincke). In the interval Talk: Dress and Fashions in Summer. 5.50. Market Prices. News, Weather and Time. 6.0. Talk: The Leipzig Library for the Blind and the Leipzig Braille Press. 6.15. Talk for Parents: The Children's Holidays. 6.45. Programme to be announced. 7.0. Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0. Political Announcements. 8.5. Programme for Young Hitlerites: Talks by Baldur von Schirach and Hans Vogel. 8.40. Recital of Nazi Songs. 9.15. L'Air de enchanter—Opera in One Act (Glück). 10.5. News. 10.15 (approx.). Recital of Seventeenth Century Music for Harpsichord, Viola da Gamba and Baritone—a Radio Sequence (Walther Bergmann). 12 Midnight, Close Down.

LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. Belgian Programme.—7.0 p.m., Programme for Children. 8.0. Violin Concerto No. 5 in A Minor (Vieuxtemps) on Gramophone Records. 8.25. Song Recital by Annette Cornavin, followed by Gramophone Music. News in the intervals.

LWOW

788 kc/s, 381 metres; 16 kW.—7.5 p.m., Gramophone Music. 7.10. Miscellaneous Items. 7.40. See Warsaw. 10.40 (approx.). Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30. European Concert, relayed from Paris. After the Concert, News.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—9.0 p.m., Chimes, Exchange, News and Talk on Prehistoric Spain, followed by Request Gramophone Music. 8.30. Talk and Gramophone Music. 9.15. News. 9.30 to 11.0. Interval. 11.0. Chimes, Time and Political Review. 11.15 (approx.). Extracts from La Bohème—Opera (Puccini) on Gramophone Records. 12.15 a.m. (Wednesday), News. 12.30 (approx.). Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.0 p.m., See Prague. 7.10. See Brno. 8.0. Talk on the Tatras Mountains, relayed from Kosice, 1,022 kc/s, 293 metres. 8.15. See Prague. 9.10. Concert by the Station Orchestra, conducted by V. Musil: Overture, The Kiss (Smetana); Suite from The Sleeping Beauty (Tchaikovsky); Polka from Selwauda, The Piper (Weinberger); Selection from a Ballet Pantomime (Benes). 10.0. See Prague. 10.0 (approx.). Close Down.

MOSCOW

TRADES UNION, 250 kc/s, 1,504 metres; 60 kW.—2.45 p.m., Weather. 3.0. Gramophone Concert of Music by Schubert, Liszt, Mozart, Donizetti, Verdi and Rossini. 4.0. Talk: Modern Agricultural Machinery. 4.30. Talk: Armenian Art. 5.50. Literary and Musical Programme for Children. 6.50. Symphony Concert, conducted by Georg Sebastian. Programme by Bizet, Saint-Saëns and Wagner. 9.0. News. 9.50. Programme Announcements. 9.55. Chimes from the Red Square. 10.5. Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 (from Nürnberg), Concert by the Franconian Chamber Orchestra, conducted by Markus Rünnelein: Overture, Titus (Mozart); Selection from Aida (Verdi); Liebeslieder-Walzer (Joh. Strauss); Romance from the Symphony in B Flat (Haydn); Hungarian Dances (Brahms); Gavotte from Idomeneo (Mozart); Wiegenlied (Karganov); Stillern March (Leopold). 5.45. Talk: Natural History Observation for July. 6.5. Soprano Solos by Johanna Beck. 6.20. Palatinat Programme—Round about the Donnersberg. Radio Report of a Visit to a Works at Eisenberg. 6.50. Time, Weather and Agricultural Notes. 7.0. Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0. Symphony Concert by the Station Orchestra, conducted by Erich Kloss. Soloist: Adolf Vogel (Bass Baritone). Prelude to Hansel and Gretel (Humperdinck); Aria from Don Giovanni (Mozart); Ballet Music from Prometheus (Beethoven); Aria from Der Wildschütz (Lortzing); Symphony No. 6 in C (Schubert). 9.20. Eger—Radio Sequence in Six Pictures (Kilhn-Helmessen). 10.20. Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 451.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.30 p.m., Songs by Famous Singers on Gramophone Records. 6.30. Mme. Kolbjörnsen recites her own Poems. 7.0. Announcements, Weather and News. 7.30. Violin Recital by Gunnar Knudsen: Suite, Op. 3 (Alnaes); Romance (Sinding); Berceuse (Gjerström); Norwegian Caprice (Gjerström); Two Norwegian Dances (Halvorsen). 8.0. Time. 8.1. Talk, relayed from Murdal Verk: Old Household Habits and Customs. 8.45. Orchestral Concert, conducted by Oivin Fjeldstad: Cavalry March (Halvorsen); Overture, Rakoczy (Kéler Béla); Waltz, Au revoir (Waldteufel); Dance of the Butterflies (Wingar); Waltz of the Flowers (Wingar); Stéphanie Gavotte (Zibulka); Polka (Vollstedt); American Patrol (Mecham). 9.0. Weather and News. 10.0. Topical Talk. 10.5. Talk. 10.30 (approx.). Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Announcements, Tourist Talk,

JULY 4th

TUESDAY

continued

VATICAN CITY

15,120 kc/s, 19.24 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in English. 8.0 to 8.15 p.m., Religious Information in Italian.

Agricultural Notes and Giornale radio. 8.20, Gramophone Music. In the interval at 8.30, Time and Announcements. 8.45, Relay of an Opera. In the intervals, Talk and Announcements. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., News. 7.0, Le Journal Parlé. 8.30, European Concert. The Choir and Orchestra, conducted by Walter Straram. Soloists: Mme. Rister Ciampi (Songs) and Panzera (Violin). Overture, Benvenuto Cellini (Berlioz); Ode to Music for Soloist, Women's Choir, and Orchestra (Chabrier); Symphony No. 2 (Saint-Saëns); Song: Variations on La Caravane de Venise (Massé); Suite, Shylock (Faure); La Mer (Ropartz); Violin Solos: (a) Chanson du Pêcheur (Faure), (b) Chanson triste (Duparc); La Demoiselle élie for Soloist and Women's Choir (Debussy); Divertissement on a Pastoral Theme (Pierlé).

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m. Gramophone Music. 7.15, Le Journal Parlé. 7.30, Radio Report on the Cycle Tour of France. 7.45, Gramophone Music. 8.15, Interlude. 8.30, Concert by the Station Orchestra; Soloist: Suzanne Bertin (Songs); Overture, Mozart (Hahn); The Emperor Waltz (Joh. Strauss); Serenade (Braga); Song, Rossignol, mon mignon (Lévy); Berceuse, for Violin and Piano-forte (Faure); Selection from Lakmé (Delibes); Jeux d'enfants (Bizet); Le matin (Chaminade); Romance from Baraque (Planquette); Song from Mamezelle Quai Sons (Planquette); Serenade and Aria from Don Quixote (Massenet); Selection from Frederica (Léhar); Scene and Ballet Music, Au clair de lune (Filippucci); Greek March (Ganne). 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—7.30 a.m. Weather and Physical Culture. 7.45, Gramophone Music. 8.0, Weather and Press Review. 12 Noon, Gramophone Concert of Variety Music: Les deux amis (Magnus); Voici mon coeur (Remieux-Varenne); L'amour de ma vie (Bosc-Marinié); The Little Café (Whiting); La fontaine de Caracot (Létorey); Je suis à la mode (Avignon); Si j'aimais (Erwin); Eternel Printemps (Poppy); L'ame des violins (Buxell-Febvre); Arab Tales (Ben Danon); Papillon (Zoubaloff); Morgenblätter (Strauss); Tu m'as juré (Lenoir); Music Hall Sketches by Grock; Mary Ann (Silver); La belle est un jardin d'amour (Weckerlin); The Song of the Trump (Heymann); My Garden of Roses (Wood); C'est toi, cheri, mon seul amour (Hermitte); March of the Wooden Soldiers (Jessel); Estrellita (Ponce); Mascara de (Lacôme) Les lilias (Doelle); Place blanche (Mele). In the intervals at 1.0, Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 7.0, Exchange. 7.10, Gramophone Music. 7.50, Commercial Prices and News. 8.0, Variety Programme. 8.30, Weather and News. 8.40, Review by Pierre Seize. 8.45, Tosca—Opera (Puccini) on Gramophone Records. In the interval at 9.15, Press Review and News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Programme to be announced. 8.0, Betty and Bob, from New York. 8.15, Radio Troubadours, from New York. 8.45, Congress of Clubs Period (Subject to be announced). 8.58, Baseball Scores. 9.0, Meredith Wilson's Orchestra. 9.30, Programme to be announced. 9.45, Sketch, from New York. 8.58, Baseball Scores. 10.0, Rhythmic Kings. 10.15, Tom Gerun and the Casino Orchestra, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal and Press News-Reader. 11.15, Weather Report. 11.16, Sport Review. 11.23, I Bring a Song. 11.28, Announcement. 11.29, Temperature Report. 11.30, Pittsburgh Spotlights. 11.45, Today's News by Lowell Thomas, from New York. 12 midnight, Anos 'n' Andy, from New York. 12.15 a.m. (Wednesday), Programme to be announced. 12.45 to 1.45, New York Relay. 12.45, Bartone Solos by Ray Heatherstone. 1.0, Crime Clues. 1.20, Adventures in Health. 1.45, Floyd Gibbons, World's Fair Reporter. 2.0, Stadium Concerts by the Philharmonic Symphony Orchestra, from New York. 2.30, Programme to be announced. 2.59, Time Signal. 3.0, Household Musical Memories, from New York.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Brno. 3.55 to 4.0, Exchange. 5.56, Talk. 6.5, Agricultural Report. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Talk: Modern Poetry for Women. 7.0, Chimes and News. 7.10, See Brno. 8.0, Talk: The Tatra Mountains, relayed from Košice, 1,022 kc/s, 293 metres. 8.15, Upwards and Downwards—Scene for

Vocal Soloist. Piano-forte and Speaking Choir. 9.10, See Brno. 10.0, Time and News. 10.15, Gramophone Music. 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and GENEVA, 395 kc/s, 760 metres.—7.0 p.m. (from Geneva). Talk. 7.30, News. 7.35 (approx.), (from Geneva), Radio Interview and Answers to Correspondence. 8.0, (from Lausanne), Chamber Music by the Lausanne Trio: Sonata in G (Loëillet); Trio in G Minor (Smetana); English Pousant Dance (Cyril Scott); Kleiner Wienemarsch (Kreisler). 9.0 (from Lausanne), Cabaret Concert. 9.50, News. 10.0 (from Lausanne), Cabaret Concert (contd.). 10.30 (from Geneva), Talk on the Work of the League of Nations. 10.50 (approx.), Close Down.

RJKAN.—See Oslo.

ROME

1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres, and 2RO, 11,810 kc/s, 25.4 metres, from 5.30 p.m.—Transmits at intervals from 1.0 to 2.15 p.m., Orchestral Concert. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30 to 6.15, Orchestral Concert. Foxtrot, Tu mi baci così (Rizza); Selection from William Ratcliff (Mascagni); Tango, Sogno azzurro (Barizza); Danza esotica (Billi); Selection from The Blue Mazurka (Lehar); Foxtrot (Buehler); Dance Intermezzo, Bébé (Manno); Foxtrot (Fragna). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 7.0, Tourist Report. 7.10, Lesson in Morse. 7.20, Announcements in Different Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Sponsored Gramophone Music. 8.20, Sports Notes. 8.45, Concert. Soloists: Tito Rosati (Cello) and Emilio Livi (Tenor). Quartet for two Violins, Viola and Cello (Mario Peracallo). Tenor Solos: (a) Aria from La Traviata (Verdi). (b) Aria from Fedora (Giordano), (c) Aria from Martha (Plotow). (d) Serenade from I Pagliacci (Leoncavallo); Cello Solos: (a) Réverie (Debussy), (b) Andalusia (Granados), (c) Guitar (Moskovsky). 9.30, Blanche and Mary—Comedy in One Act (Washington Borg). 10.0, Concert (contd.). Ballet égyptien (Luigini). 10.20 (approx.), Dance Music. In the interval at 10.55, Giornale Radio. 11.30 (approx.), Close Down.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 790 kc/s, 379.5 metres; 30 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—12.45 to 3.30 a.m. (Wednesday), New York Relay. 12.45, The Goldbergs. 1.0, Blackstone Plantation. 1.30, Wayne King's Orchestra. 2.0, Ben Bernie's Orchestra. 2.30, Ed Wynn and the Fitt Chief Band. 3.0, Lives at Stake. 3.30, National Radio Forum, from New York, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.5 metres.—6.15 a.m. (from Berne), Gymnastics. 6.36-11.59, Interval. 11.59, Time Signal from Neuchâtel Observatory and Weather. 12 noon (Zürich), Concert by the Small Swiss Radio Orchestra. 12.30 p.m., Time, Weather and News. 12.40 (from Zürich), Concert (contd.). 1.25 (from Zürich), Time, Exchange and Weather. 5.0 (from Zürich), Concert of Light Music. 5.30 (from Berne), Gramophone Music. 6.30 (from Berne), Talk: Wonders of the Animal and Plant Worlds. 7.0 (from Berne), Time, Weather and Notes on the Broadcasts for Schools. 7.10 (from Berne), Students' Songs on Gramophone Records. 7.45, Concert by the Swiss Radio Orchestra. 8.0 (from Berne), Talk on Psychology. 8.30, Light Music by the Swiss Radio Orchestra. 9.0, Weather and News. 9.10 (from Berne), Extracts from Der Freischütz Opera (Weber). 10.40, Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 433 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Mörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Light Music. 5.30, Microphone Report. 5.45, Gramophone Music. 6.45, Choral Concert. 7.30, Talk. 8.0, Orchestral Concert, conducted by Karl Söderberg: Overture, Die Fledermaus (Joh. Strauss); Fantasia on Country Melodies (Riedinger). 9.15, Literary Review. 10.0,

Light Music from Malmo, 1,301 kc/s, 231 metres. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—7.45 a.m., Report of the Cycle Tour of France. 8.0 to 11.30, Interval. 11.30, Gramophone Music. 12 Noon, Orchestral Concert, conducted by Maurice de Villers. 12.30 p.m., Report of the Cycle Tour of France. 12.45, News. 1.0, Time and Exchange. 1.5, Orchestral Concert, conducted by Maurice de Villers. 2.0 to 3.0, Interval. 3.0, Report of the Cycle Tour of France. 3.15 to 5.0, Interval. 5.0, Talk in French: Picardy. 5.0, Viola and Piano-forte Recital by MM. Briquet and Pogoda. Sonata (Eccles) Concert Piece (Enesco); Allegro de concert (Sporck). 5.45, Report of the Cycle Tour of France. 6.0, History Talk in French. 6.15, Topical Talk in French. 6.30, Orchestral Concert, conducted by Maurice de Villers. Soloist: H. Hastin (Songs). Serenade and Waltz (d'Indy); Pour quoi chante un poète—Lyric Suite in Three Parts for Solo Voice and Orchestra (Moreau); Sarabande and Minuet (d'Indy); Songs: (a) L'absence de Capdevielle, (b) Le Vagabond malheur (Casadesu); Les Danses d'Estherelle (Casadesu). 7.30, Time and News. 7.45, Report of the Cycle Tour of France. 8.5, News in German. 8.30, European Concert, relayed from Paris (Eiffel Tower). After the Programme, News in French. 10.0 (approx.), Close Down.

STUTT GART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12 Noon, Concert by a Nazi Band, relayed from the Schlossplatz. 1.0 p.m., Gramophone Music. 1.15, Time and News. 1.30, Concert from Langenberg. 2.0, Programme arranged by the Post Office. 2.30, Advanced English Lesson. 3.0, Talk on Flowers. 3.30, Programme for Women. 4.0, Concert of Music by Heinrich Zöllner for his Seventy-ninth Birthday, with the Composer at the Piano-forte. Margarete Wiedemayer (Soprano) and Hermann Kopp (Violin). Songs: (a) Das einsame Mägdlein, (b) Brautschau, (c) Heimliche Liebe; Suite for Violin and Piano-forte, Op. 121; Songs: (a) Die Lor' sitzt im Garten, (b) Nun ade, mein herzallerliebster Schatz, (c) Waldvöglein, (d) Liebeserklärung. 4.30, Orchestral Concert, relayed from Wildbad. Conductor: Hermann Eschrich. Overture, Fidelio (Beethoven); Overture, Semiramis (Rossini); Movement from the Unfinished Symphony (Schubert); Selection from La Traviata (Verdi); Two Waltzes and Two Hungarian Dances (Brahms); Selection from La Bohème (Puccini); Entry of the Guests into the Wartburg and Festival March from Tannhäuser (Wagner). 5.45, Talk (from Mannheim), The Task of the National Press. 6.10, Reading with Musical Accompaniment—Wieland auf Schloss Warthausen (Matthäus Gerster). 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Through Wood and Vale—a July Programme of Songs and Readings. 8.40, Concert by the Station Orchestra and Choir, conducted by Ferdinand Drost. Soloists: Gerda Hansi (Soprano) and Hermann Lingor (Tenor). Prelude, Siciliana and Chorus from Cavalleria rusticana (Mascagni); Intermezzo from Cavalleria rusticana (Mascagni); The Anvil Chorus from Il Trovatore (Verdi); Chorus from The Force of Destiny (Verdi); Overture, Fra Diavolo (Auber); Soprano Aria from Fra Diavolo (Auber); Chorus from The Gipsy Baron (Joh. Strauss). 9.50, Discussion on Labour Service, relayed from Karlsruhe. 10.10, Time and News. 10.30, Talk on Stuttgart's Fifteenth Gymnastic Festival. 10.45, Serenade on Gramophone Records. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions uncertain owing to recent fire.—11.30 p.m. till Close Down, Programme in English by the I.B.C. 11.30, Military Band Music. 11.57, I.B.C. Goodnight Melody. 12 Midnight (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.15 p.m., till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 958 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.15 p.m., Dance Music from the Savon Dance Hall. 6.0, Weather Report. 6.35, Giornale Radio and Announcements. 7.0, Time, Geographical Report and Gramophone Songs. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News. 8.15, Sponsored Music. 8.30, Announcements. 8.35, Variety Programme. 9.20, One Act Comedy. 10.0, Chabrier Music. 10.40, Dance Music. 11.0, Giornale Radio.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—12 Noon, Concert by the Vienna Symphony Orchestra, conducted by Josef Holzer. In an interval at 1.0 p.m., Time and News. 2.0 to 3.0, Interval. 3.0, Time and News. 3.20, Talk: An Expedition with a Camera through the Southern Wienerwald. 3.35, Programme for Children. 4.0, The Front Quintet in A, Op. 114 (Schubert), on Gramophone Records. 4.35, Talk: The Wireless Amateur on Holiday. 5.0, Talk: The History of the Salzburg Musical Festival. 5.20, Piano-forte and Baritone Recital by Grete Krebs-Hoffmann and Gustav Fuschberg: Sonata in B flat (Schubert); Songs (Schumann): (a) Widmung, (b) Der Hiddago, (c) Wanderlied, (d) Frühling-fahrt; Aria from Euryantia (Weber); Aria from Hans Heiling (Marschner). 6.10, Talk on Josef Seifert. 6.35, Talk on Famous Works of Art. 7.0, Concert by the Vienna Symphony Orchestra, conducted by Fred Kempl: Overture, Peter Schmall (Weber); Suite from Euryantia (Weber-Otto Jokl); Ballet Music; Petite Suite d'orchestre (Bizet); Extracts from the Cycle Nachtschichten (Rechitzer); Waltz, Mephistos Höllenrufe (Joh. Strauss); Overture, Der lustige Krieg (Joh. Strauss). 8.35, History Talk: The Siege of Vienna in 1683. 9.0, Concert by the Vienna Symphony Orchestra, conducted by Josef Holzer: Overture, Ein tolles Mädel (Ziehrer); Ländler, Grossmütterchen (Langer); Waltz, Schwungräder (Joh. Strauss); Idyll, Das Vöglein im Walde (Doppler); Russian Dance No. 2 (Bullerini); Song, Au warst mein ganzes Glück (Beeth); Potpourri, From Pontius to Pilate (Morcna); Waltz, An der Schönen grünen Narenta (Komzak); Song, Es singen die Vögel ganz anders in Wien (Ganzberger); Liechen tanzt Mazur (Mokry); Intermezzo, Puppen, lustig und fidel (Siede); Potpourri, Rendezvous bei Lehar (Hrny); Overture, Frau Luna (Lincke); Viennese Song, Die Mitai und der Jan (Hellmesberger); Die Waldquelle (Kockert); Song from Countess Maritza (Kálmán); Waltz, Nachtschwärmer (Ziehrer); Potpourri, Kinder, spiel' ma Weanatauz (Droscher). In an interval at 9.45, News.

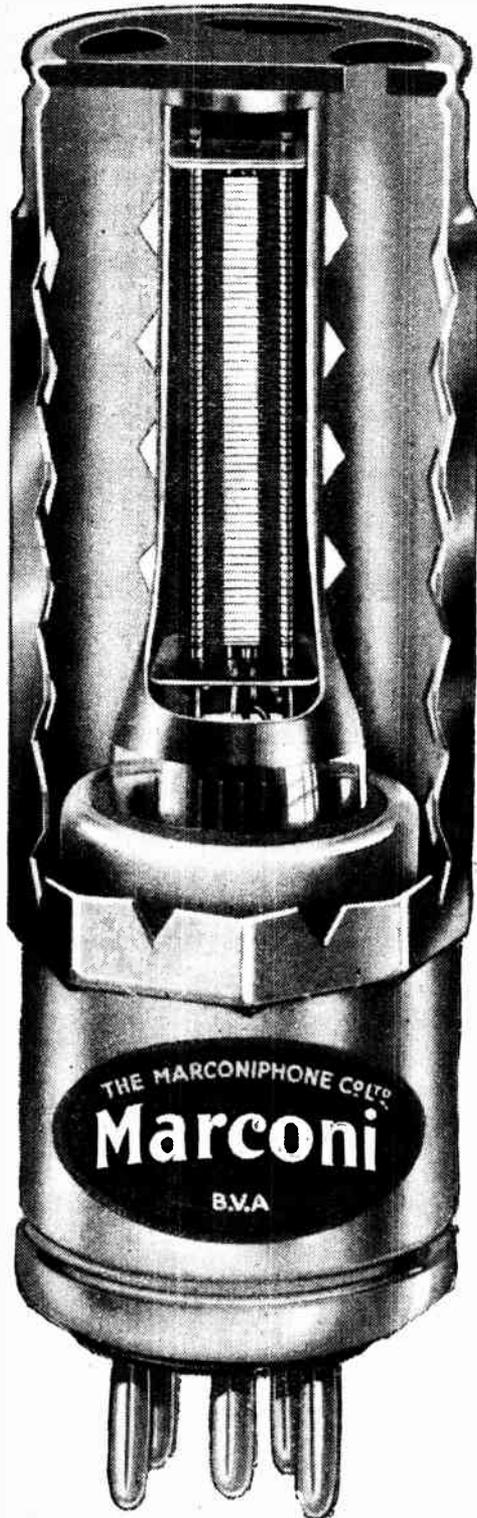
WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Gramophone Music. 12.25, Polish Press Review. 12.33, Weather Report. 12.35, Gramophone Music. 12.55, Gramophone Music. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.10, Announcements. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.45, Aviation Report and Anti-Gas Drill. 3.50, Gramophone Music. 3.55, Announcements. 4.0, Popular Concert by the Poznan Opera House Orchestra, conducted by B. Tilia, relayed from Chochocinek. 5.0, Answers to Correspondence. 5.15, Recital by Mme. Godeonow-Szablowska and J. Rosenberg-Schmidler (Piano-forte) and P. Godeonow (Violin): Piano-forte Solos (Chopin): (a) Ballad in G minor, (b) Scherzo in B flat minor, (c) Bolero; Concerto for Violin and Piano-forte (Nardini); Allegro for Violin and Piano-forte (Veracini); Piano-forte Solos: (a) Waltz-Improvisation (Liszt), (b) Dance (Debussy), (c) Serenade (Albeniz), (d) Olfia's Dance (Pick-Mangialicci); Pieces for Violin and Piano-forte: (a) Berceuse (Mallartini), (b) Romance in E flat (Stojowski), (c) Memories of Poznan (Wieniawsky). 6.15, Talk: Is Fruit Nutritious? 6.35, Song Recital by Mme. Głusinska-Makszyńska. 7.5, Gramophone Music. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Topical Talk. 8.0, American Independence Day Programme: Speech by Mr. Crosby, the United States Ambassador; The Polish National Anthem; Speech by the President of the Polish-American Society; American Anthem; Address by the President of the American Academic Society; Music by the Station Symphony Orchestra, conducted by Sule. Soloists: E. Rove-Stalinska (Songs), N. Manska (Violin), and H. Diekstein (Piano-forte). Dixieland (Haines); Piano-forte Solo: Rhapsody in Blue (Gershwin); Four American Songs; Violin Solos: (a) Four Popular Melodies (Powell), (b) Hawaiian Song (Aise-Kreiser), Indian Suite (MacDowell); Witches' Dance (MacDowell); Four Songs; Three Pieces (MacDowell): (a) Eglantine, (b) Water Lily, (c) Tropical Summer; Dance (MacMillen); Melody for Violin (Davis); The Star-Spangled Banner (Souza). In the interval, Radio Journal and Agricultural Notes. 10.0, Dance Music. 10.25, Sports Notes. 10.45, Aviation Weather Report and Police Notes. 10.40, Dance Music.

ZURICH.—See Schweizerischer Landessender.

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The Wireless World

THE PRACTICAL RADIO JOURNAL
23rd Year of Publication

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As many of the circuits and apparatus described in these pages are covered by patents, readers are advised, before making use of them, to satisfy themselves that they would not be infringing patents.

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EDITORIAL COMMENT

An Extra Symbol?

Circuits and Wiring Plans

IN a letter published in this week's issue, a correspondent urges the desirability of standardising a special symbol to represent iron-cored H.F. tuning coils. It is proposed that the new symbol will be used to differentiate between the new coils and the older air-cored types.

When iron-cored H.F. coils were first used in a *Wireless World* constructional receiver, the question of representing them by a distinctive symbol was considered, but was then rejected on the grounds that diagrams tend to become complex, and so all non-essentials should be avoided. After all, a theoretical diagram is intended to illustrate basic principles rather than practical details, and if all these details are shown, it becomes a wiring plan, which is anything but helpful as an aid to a quick and easy appreciation of circuit principles.

Essential Circuit Details at a Glance

In preparing theoretical diagrams it is right and proper that every attempt should be made to give as much essential information as possible, but if these diagrams are to serve their primary purpose, the practical side must not be allowed to intrude unduly. On the other hand, and in support of our correspondent's plea, it would often be helpful to see at a glance (particularly in a set where air- and iron-cored coils are mixed) which types are used in specific positions.

Apart from the question of coil symbols, other minor problems beset the pictorial representation of circuits. Should the H.T. positive line run above the diagram, or, American fashion, below it? Is it more helpful to show

the function (*i.e.*, detector, I.F. amplifier, etc.) of a valve, or manufacturers' type designations? Views of readers on these matters would help towards standardisation, which is obviously desirable.

The I.E.E. Anti-Interference Committee

Good News for Harassed Listeners

AS stated elsewhere in this issue, the Institution of Electrical Engineers has now set up a committee "for the purpose of considering and making recommendations on the question of interference with broadcast reception arising from the operation of other electrical plant." It was the original suggestion of *The Wireless World* that the I.E.E. was the appropriate body to bring together the various interested parties, and it is naturally gratifying to know that work has already begun.

Whatever may arise from the committee's deliberations, its constitution is certainly not such as to warrant the criticism that wireless interests are likely to be unduly favoured. Excluding nominees of official and semi-official organisations, only two of the twenty-six members can be considered as directly representing the interests (which are in this matter identical) of the listening public and the wireless industry.

A suggestion for a localised anti-interference effort appears in this issue, and, being put forward at such an opportune moment, cannot fail to provide useful material for all those who are interesting themselves in the problems involved.

Direction Finding for Amateurs

An Inexpensive Hobby : Organising Transmitter "Hunts"

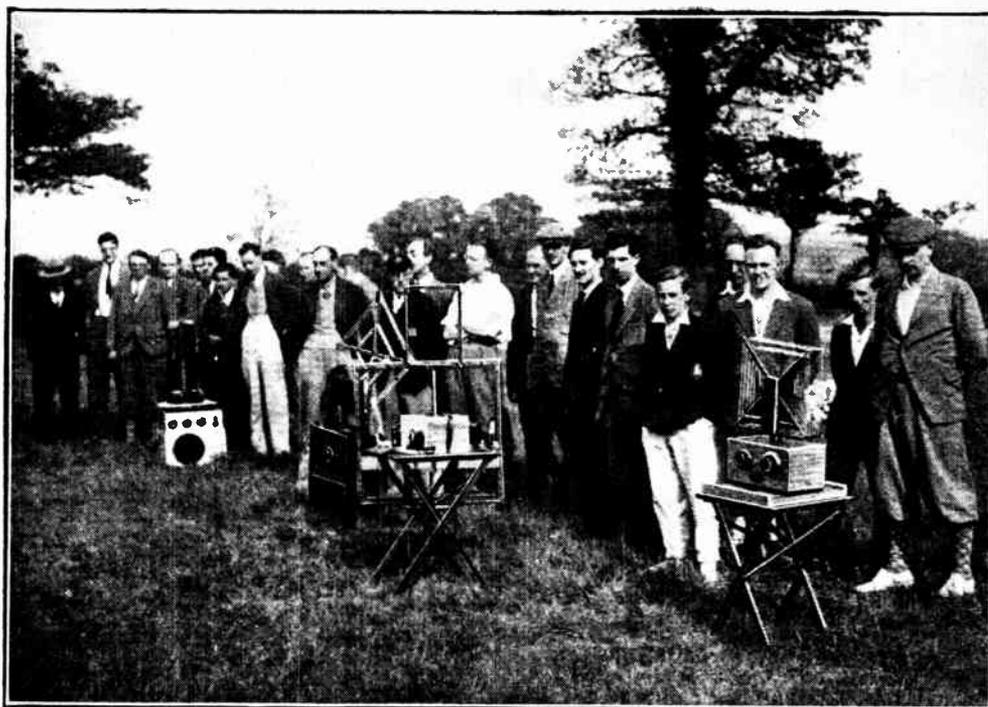
By ALEXANDER BLACK

THE spice of competition enters into Direction Finding as into no other branch of wireless to-day, and those who are seeking an open-air hobby during the summer months cannot do better than join a club which organises "transmitter hunts" and similar events. In this article the author gives some practical advice on D.F. sets.

COMPARATIVELY few wireless enthusiasts realise that Direction Finding is a pleasant and cheap hobby. Almost any set is capable of conversion for this class of work, and, alternatively, most amateurs have a collection of spare parts which can be used to build a suitable receiver.

The waveband used is from 150 metres to 170 metres. A description follows of two sets which are very simple to construct and have proved very satisfactory to work. The first is a two-valve set consisting of a leaky grid detector with reaction, transformer-coupled to either a triode or pentode output valve.

In this case the frame aerial should consist of approximately six turns with $\frac{1}{2}$ in. spacing between turns, on a frame with 2ft. sides. It should be wound in the form of a solenoid, as this is preferable to a slab, or pancake, form of aerial. As will be seen by reference to the accompanying diagram, the centre tap of the frame is returned to L.T. negative. It is essential that the exact electrical centre of the frame should be taken; this is one reason why a



PRIZE-WINNERS. A "meet" of the Golders Green and Hendon Radio Society last year. The small and compact receivers are those of prize-winning groups in a D.F. competition.

solenoid form is preferable to other types of aerial, as it is easier to get its centre tap accurately. With a centre-tapped frame it is easier to obtain definite minimum positions.

This set should be made inside a metal box for preference, although not essential, as this tends to eliminate direct pick-up of the signals by the wiring of the set.

It might be mentioned here that all direction finding bearings are taken on the minimum signal—i.e., with the plane of the frame aerial at right angles to the transmitting station. The small condenser A is adjusted when the approximate minimum signal is found, until at a certain setting

it will be seen that signals disappear at a sharply defined position of the frame.

The frame aerial can be conveniently mounted on a turntable (such as is used for portable sets) on top of the set itself, the leads being brought from the frame aerial through a hole in the top of the set. In order to get the necessary smooth reaction it is sometimes essential to return the detector grid leak to a potentiometer C, 400 ohms, which is connected across the filament circuit.

Centre-tapped Frame

In the case of the three-valve set a similar frame aerial may be used; one consisting of ten turns on 12 in. sides, with $\frac{3}{8}$ in. spacing, is quite satisfactory. As a screen-grid valve will be used it is essential to have fairly good screening, and again it is desirable to mount the whole set inside a metal box, as above mentioned. The tuning arrangement following the S.G. valve may be quite conventional, and consist of either tuned anode or tuned grid, with a reaction winding. The number of turns depends, of course, on the type of coil; usually about two-thirds the number of turns are required for the amateur band as for ordinary medium-wave broadcast reception. Alternatively, a special coil may be made on a $2\frac{1}{2}$ in. former, consisting of 35 turns, with 9 turns for reaction. Here, again, the frame aerial must be centre tapped, as for the two-valve set, and care should be taken in mounting it. It will be seen that an existing set can be quite easily converted to this circuit, the main alterations necessary being in the

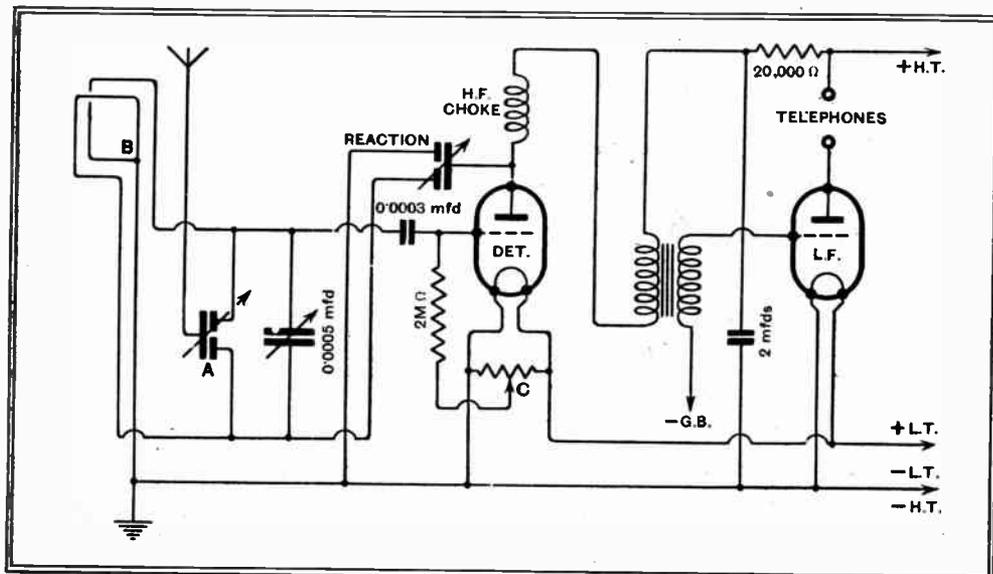


Fig. 1.—Circuit for a simple two-valve set suitable for D.F. work. It comprises a leaky grid detector with reaction, transformer-coupled to the output stage.

Direction Finding for Amateurs—

aerial circuit. Note that the moving plates of the aerial condenser are not at earth potential, and must therefore be insulated.

In every case the frame aerial should be mechanically strong and rigid. The usual way of taking bearings after the frame has been set in position on minimum signal is to sight a prismatic compass along one of the wires of the frame aerial and in that way to get its magnetic bearing, not forgetting to add or subtract 90 degrees in order to get the magnetic bearing of the station, and also remembering that the magnetic North is approximately 13 degrees West of True North.

The Vertical Component

An alternative method is to mount a compass scale between the frame aerial and the set, and, after having put the set in position, to rotate the compass card until its North corresponds with True North. A pointer should be fitted on the frame aerial so that when the frame aerial is at a position of minimum signal strength the pointer will give a direct bearing on the station in question.

Those who do not mind the extra constructional work involved would be well advised to try adding the aerial and the earth shown in the diagram connected to the small single-plate differential condenser A for neutralising the effects of the vertical component, which tends, unless balanced out, to flatten the minimum positions. For the 160-metre waveband the aerial need only consist of a vertical metal rod about 3ft. long, and the condenser should consist of a single moving plate and two separate fixed ones, each with an area of about 1in. square.

One of the biggest amateur direction finding events is the annual D.F. competi-

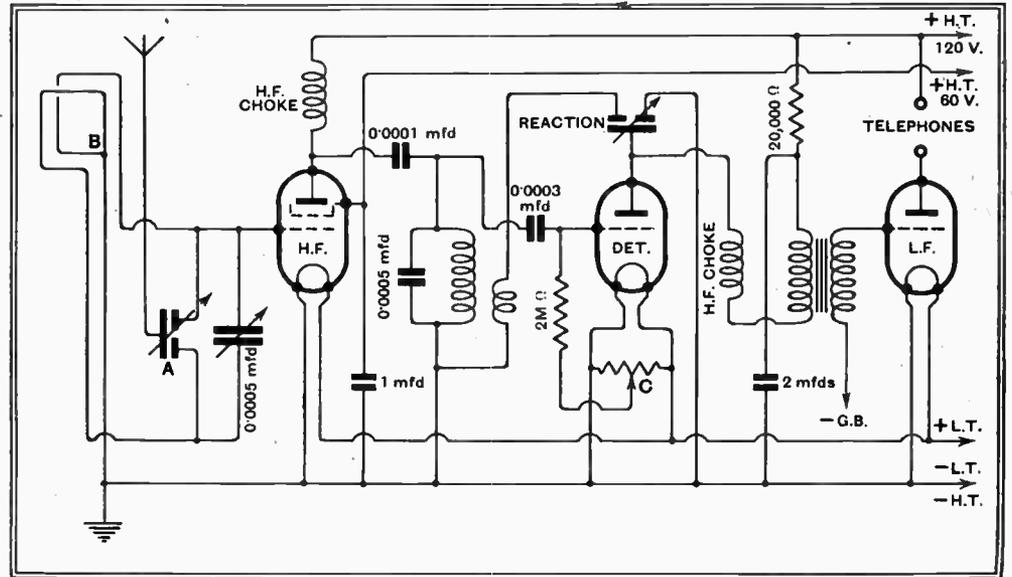


Fig. 2.—A three-valve circuit, consisting of an S.G. stage followed by a conventional detector and L.F. arrangement.

tion organised by the Golders Green and Hendon Radio and Scientific Society. This year's competition takes place on Sunday next, July 2nd. There will be two objects in view: (a) to locate the direction of a mobile transmitter called Station X, and (b) to discover transmitting Station X. A fixed transmitter station called Station Y at a known position will be available in order to test apparatus used and make any necessary corrections to data available.

The Wavelength Used

The mobile station (Station X) will be a crystal-controlled transmitter using pure C.W. on a wavelength of 164 metres, the call sign being G5CD. At stated times

during the day Station X will transmit for 15-minute periods, during which time competing groups will endeavour to trace the movements of the transmitter.

In the second part of the scheme Station Y will transmit from a house on the south side of a road at the intersection of imaginary lines drawn between Chipperfield Church, Bricket Wood Station, Moor End Halt and Bushey Halt. The wavelength will be 157.7 metres, and the call sign 5RD. During the transmission periods groups, each consisting of not more than three active members, will operate in an area bounded by the main roads linking Chesham, Berkhamsted, Boxmoor, King's Langley, Watford, Rickmansworth, Cheries, Blackwell Hall, and Chesham.

A field day of this kind gives excellent scope for the exercise of skill, resourcefulness and imagination in the operation of D.F. sets under difficult conditions. It is expected that many clubs in the London area will take part.

The Hon. Secretary of the Golders Green and Hendon Radio Society, 55, Ebury Street, London, S.W.1, is always pleased to supply direction finding hints to interested experimenters.

Surplus Eliminator Output

The Advantages of a High Voltage

WHEN setting out to design an H.T. battery eliminator for use on A.C. mains it is always an advantage to aim at an output voltage much greater than that which will normally be required. The reason for this is chiefly that it will be possible to make use of decoupling resistances of a fairly high value, and this will ensure complete freedom from motor-boating and similar troubles. In addition, the surplus voltage will be found extremely handy for supplying the field current needs of a moving-coil loud speaker when desired.



HOT ON THE TRAIL. This photograph, taken several years ago, shows the somewhat cumbersome outfit then used to track a hidden transmitter.

Electrical Interference

Removing Crackles that Disturb Reception: Brighton and Hove to Lead the Way



WHILST receivers continue to improve in performance and broadcasting becomes daily more important in the general scheme of civilisation, interference caused by electrical machinery and apparatus continues and is to-day in many localities the most serious trouble with which the broadcast listener has to contend.

The applications of electricity are constantly increasing, and yet comparatively little has been done until quite recently to tackle the causes of interference at the source and make electrical apparatus incapable of radiating. Probably things would have drifted on for a long while yet had not an effort been made to bring matters to a head. *The Wireless World* can claim to have taken an initial step in trying to bring together those authorities chiefly concerned with the question, with a view to getting support for legislation which would give the Post Office control over electrical interference and the necessary authority to suppress it.

What *The Wireless World* Has Done

Readers will recollect that last year *The Wireless World* originated an interference crusade, the object of which was to stimulate wireless societies and qualified individuals in all parts of the country to undertake the task of assisting the Post Office in their efforts to trace interference, in order that the Post Office might then approach the owners of the offending apparatus with a view to inducing them to suppress it. The Post Office, unfortunately, has, as yet, no authority to insist upon precautions being taken by the owners of radiating apparatus; they can do no more than try to persuade those responsible that in the common interest they should do something about it. The Post Office has done all they can both tactfully and effectively, and is ready and willing to give advice as to the best means of suppressing the numerous and varied causes of this trouble.

The Wireless World was not satisfied that this state of affairs should continue: whilst fully appreciating the excellent work which the Post Office was doing, it was felt that it was essential that there should be authority to compel where persuasion had no effect. We realised that this authority could only be obtained with Parliamentary sanction and by the pass-

ing of legislation to meet the situation. We realised, too, that legislation was unlikely to go through unless some agreement could be reached between the various electrical manufacturers and associations concerned as to what would be a fair basis on which to legislate, that is to say, to

Here is a new plan to help to remove the unnecessary crackles which mar your reception. Starting with the Brighton and Hove district, "The Wireless World" shows how the problem may be tackled by local action.

decide how long a period must be allowed before existing apparatus was modified and when the new requirements should come into force in regard to new apparatus supplied or installed. We therefore recommended, after careful consideration as to what body was most suitably situated to take the initial step, that the Institution of Electrical Engineers should be prevailed upon to appoint a committee representative of the various electrical interests to consider the problem, keeping the question of legislation as their main terms of reference.

National and International Conferences

No sooner had we put forward this recommendation in *The Wireless World* than we were gratified to receive spontaneous support for it from *The Electrical Review* and from *The Electrician*, whilst the Institution of Electrical Engineers promptly accepted the task and appointed a committee which is at present deliberating on the problem.

It must be realised that it would be unfair to expect that hasty decisions could be arrived at in a matter of this kind, or that legislation could be put through in a matter of a week or two. Even when agreement may be reached in regard to all apparatus manufactured or installed by British firms, the problem of imported goods of an interfering character has to be dealt with simultaneously. At once the problem assumes an international aspect, and it is, therefore, not surprising to find that an International Conference has been convened by the International Electrotechnical Commission, to be held

in Paris this month. At this Conference there will be representatives of about a dozen international organisations, either directly or indirectly interested in the question of interference with broadcast reception. It is stated that the chief purpose of convening this conference is to endeavour to ascertain the best means whereby the fullest co-operation between all these international bodies can best be effected in the interests of the solution of this particular problem. It is proposed that this conference shall consider setting up a joint committee, composed of representatives of the international organisations, to draft recommendations which may form the basis of legislation in the different countries.

The matter is so urgent and pressing that we feel confident that those who are dealing with it will not procrastinate unnecessarily. The longer we wait for legislation the harder will be the task involved, and the greater the burden on manufacturers and others in conforming to the new regulations, so that a prompt settlement of this trouble is in the best interests of all parties.

How Listeners Can Help Themselves

In the meantime, however, there is much which individuals throughout the country can do locally to assist. When we launched our interference crusade we visualised the possibility of the wireless societies and individuals relieving the Post Office of much of the work involved in tracking down and identifying sources of interference, but information which reached us led us not to press further for co-operation of this kind at that time, because it was likely to prove an embarrassment to the Post Office if interference search parties were organised and by their activities ran the risk of prejudicing the owners of interfering apparatus before they were approached officially by the Post Office.

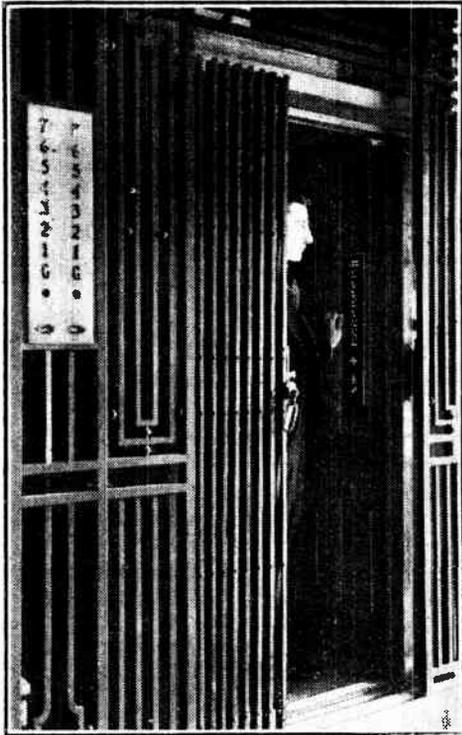
It may not be sufficiently well known that engineers of the Post Office are always prepared to investigate serious interference on receiving reports from listeners, and a special Post Office form is available for this purpose, but it is rather too much to expect that the engineers can rush about hither and thither throughout the country to deal with individual cases.

If the Post Office is ready to investigate cases on the strength of individual reports by listeners we feel sure that if a large number of reports of interference were received at the same time from a particular locality, the Post Office would then be likely to make a very special effort to tackle interference in that area, and their

Electrical Interference—

engineers would have the advantage of a large amount of material to work upon. *The Wireless World* is therefore proposing that wireless societies, individual readers, wireless dealers and others who are actually experiencing interference in a given district should obtain the Post Office interference forms and fill them up, and by acting promptly and collectively in this way we feel confident that very satisfactory results can be attained.

The official Post Office interference form consists of a questionnaire designed to elicit as much information as possible on



Electric lifts are often responsible for serious interference to broadcasting reception—

the nature of the interference experienced. The questionnaire asks for information on the nature of the receiver used, whether the receiver works from batteries or from mains, nature of the aerial, and whether interference has increased since any alterations have been made. You are asked to state whether you are aware if your neighbours are similarly suffering, and whether the interference occurs on any particular wavelength, and, amongst a number of other questions, you are invited to state if you are aware of any electrical machinery in your neighbourhood which might be likely to cause the trouble.

These forms are at present available either by direct application to the General Post Office, or through the local District Engineers. We would strongly urge that

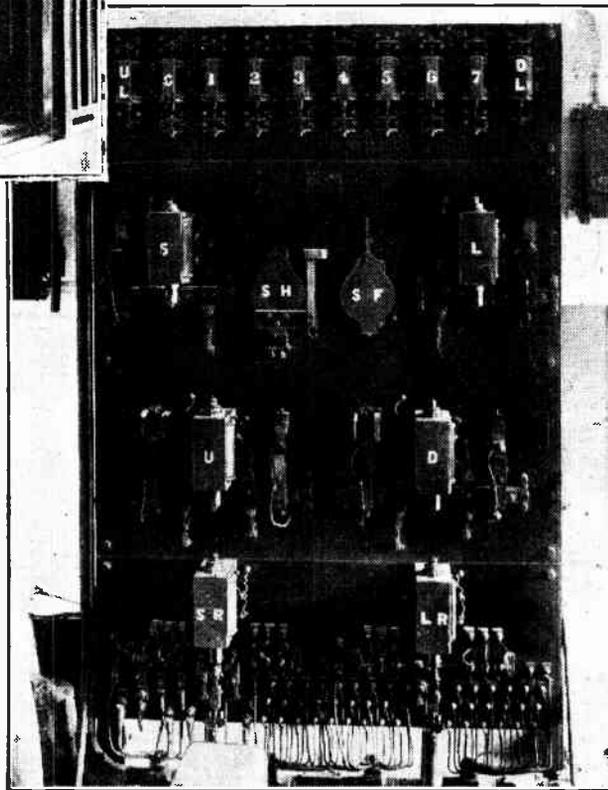
the Post Office should simplify matters by arranging for the distribution and collection of these forms by all Head Post Offices.

In order to test out the value of a collective effort to encourage the Post Office to investigate causes of interference more thoroughly, it seems to us essential that there should be concentration in a given area.

Brighton and Hove First

We propose, therefore, to commence with the Brighton and Hove district, as being a thickly populated neighbourhood in which interference of all types is likely to be present. We would like all listeners in that area, therefore, who are troubled with interference, to undertake to procure at once the official interference form from the District Post Office Engineer (addressed care of the local Head Post Office) and complete it with as much despatch as possible, ensuring that the form is back in the hands of the Post Office officials in the course of a day or two. We do not want this effort to be restricted to our readers alone, and we hope that every reader will encourage others to co-operate.

The greater the number of genuine complaints of interference received by the Post Office in the Brighton and Hove district, the more ready we may anticipate the Post Office will be to concentrate



—unless the relay and other actuating mechanism (shown above) are electrically “silenced.”

their technical forces on the problem. Careful and sympathetic official consideration of the project is already assured, and it rests with listeners to see that it does not miss its mark through apathy on their part.

**A New Edition of
Morecroft**

MORECROFT'S "Principles" has been such a well-known text-book for the past dozen years that a new edition needs but little introduction. The first edition, published in 1921, has since been followed by a second edition in 1927, and a third edition is now to hand.*

In bringing the work up to date the author has been reasonably rigorous in his excision of obsolete matter, retaining only such features as are of fundamental importance and still remain necessary for the explanation of the phenomena under discussion. In new matter an attempt has been made—and with notable success—to present technical facts and tendencies up to the time of writing. Thus we find the chapter on valves dealing adequately with A.C. heating, with the variable- μ tetrode, Barkhausen oscillations, etc. Modern circuit practice, both in broadcast and commercial apparatus, is also discussed, and such important modern subjects as microphone and loud speaker characteristics are reviewed, while commercial telephony channels (e.g., the Transatlantic) are illustrated, with descriptions of antenna arrays such as are used in this type of communication.

Non-mathematical Expositions

The new edition is a good account of modern wireless practice in all its branches, characterised—as were the earlier editions—by a minimum of mathematics, which makes it an excellent expository text-book for the reader who desires a broad general view without being over-burdened by mathematical detail.

The book is, of course, written from the American standpoint, and has thus features which are less attractive to the English reader. It is a definite criticism that British sources of information are not utilised as liberally as they might have been, this being particularly true of the section on propagation and atmospheric, where British work of fundamental importance appears to have been overlooked. A criticism that must be made of all Morecroft's editions is also the length of the chapters. A book of over 1,000 text pages is divided only into ten chapters, and one has always felt—in using the old Morecroft as a general reference—that more subdivision would have been helpful to the reader. This is, however, a minor objection to an excellent work. J..F. H.

* "Principles of Radio Communication," by John H. Morecroft, D.Sc. (assisted by A. Pinto and W. A. Curry). London: Chapman and Hall, Ltd. 1933. Price, 46s. 6d. net.

1933 Short-Wave Manual by Don. C. Wallace. Although intended primarily for the beginner, this practical handbook contains a wealth of information that will prove of inestimable value to the short-wave enthusiast. Commencing with a brief history of the origin of short-waves and the part played by amateurs in opening up this new avenue for communication, it then deals with aerial design, construction of short-wave coils, and the layout and practical operation of receivers and transmitters. A section is devoted to ultra-short-wave apparatus for use on the five-metre wave-band. Published by the Pacific Radio Publishing Co., Pacific Buildings, San Francisco, California, U.S.A. Price one dollar.

How the Superhet Works. 6.

Whistle Interference

The Need for Well-designed Pre-selector Circuits

By W. T. COCKING

PERHAPS the most baffling phenomenon associated with the superheterodyne is the incidence of whistles, which are sometimes erroneously attributed to instability. As a superhet must be judged partly by its freedom from whistles, it is essential that the designer should comprehend their cause and cure.

IT has so far been assumed that the intermediate frequency has a value of 110 kc/s, but it will be obvious that any desired frequency could be employed, and it is necessary to justify our choice. The intermediate frequency is equal to the difference between the frequencies of the oscillator and of the incoming signal. There are, therefore, two different oscillator frequencies which will permit the intermediate frequency to be obtained for any signal, and there may be two different signals transferred to the intermediate frequency for any oscillator frequency.

This will be readily apparent, for to receive a station on 1,000 kc/s, the oscillator can be set to either 1,110 kc/s or to 890 kc/s, since in each case the difference between the oscillator and the signal frequencies is 110 kc/s. Using the 1,110 kc/s oscillator frequency to beat with the 1,000 kc/s signal, it is equally apparent that a station on 1,220 kc/s will also beat with the oscillator to provide the intermediate frequency.

This is the phenomenon known as second channel interference, and in modern single control superheterodynes the station causing the interference is always higher in frequency than the wanted

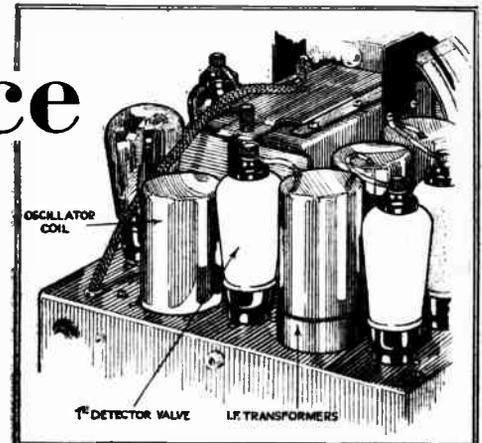
station by twice the intermediate frequency. Selectivity in the I.F. circuits will do nothing whatever to reduce second channel interference; the selectivity necessary for combating the evil must occur before the first detector. In order to avoid second channel interference it is necessary merely that the pre-selector circuits should

give large discrimination between the wanted station and one on a frequency higher by twice the intermediate frequency. Not only the intrinsic selectivity of the signal-frequency circuits must be taken into consideration, therefore, but also the relative initial intensities of the stations, and the value of the intermediate frequency.

It will be apparent that the higher the intermediate frequency we choose the less will second channel interference be evident with pre-selector circuits of given efficiency, for the higher the intermediate frequency the further away from resonance will be the station causing second channel interference. It has already been pointed out, however, that a low intermediate frequency is desirable from the point of view of adjacent channel selectivity.

The selectivity of a tuned circuit depends not only upon the efficiency of that circuit itself, but upon the percentage difference from resonance of an interfering signal. If we choose an intermediate frequency of 25 kc/s it will reject a station on 35 kc/s, 10 kc/s off tune, with the same ease that a circuit of equal intrinsic efficiency will reject a station on 140 kc/s if it be tuned to 100 kc/s, or 1,400 kc/s if it be tuned to 1,000 kc/s. In each case

the percentage frequency difference remains the same, but the actual frequency difference gets smaller and smaller as the intermediate frequency is reduced. Since stations are spaced on the basis of a constant frequency separation the advantages of using a low intermediate frequency are readily apparent.



If whistles are to be avoided in a superhet with single dial control, careful choice must be made of the pre-selector circuits, the I.F. frequency, and the H.F. valves. This illustration shows the essential components associated with the frequency changer.

From the point of view of adjacent channel selectivity, therefore, we should like to choose as low an intermediate frequency as possible, whereas the other extreme is desirable as regards second channel interference. There are other limitations, however; for the frequency can hardly be within the range of frequencies to be received, and it is not advisable that it approach it too closely, nor must it be near the audible range. In general, therefore, the frequency chosen must be higher than 1,600 kc/s, between 500 kc/s and 450 kc/s, or between 130 kc/s and 25 kc/s.

Choosing the I.F.

The chief advantage of the superheterodyne in providing high selectivity is lost if the intermediate frequency is higher than the signal frequency, so that we rule out the use of frequencies higher than 1,600 kc/s. We also pass by the 450/500 kc/s possibility for normal requirements, since this is higher than the long-wave range; its use, however, is by no means impossible, and in special cases it might be desirable. In general, therefore, we must make our choice in the 25/130 kc/s band, and at first we should be inclined to compromise on a mean frequency of some 87 kc/s, but we have not yet considered every factor.

The phenomenon of beat interference has already been dealt with by the present writer,¹ and it was shown that if the signal frequency circuits be tuned to a station spaced from the local by an amount equal to the intermediate frequency, that station and the local could be received together, even in the absence of the oscillator. This, of course, is provided that the pre-selector circuits are not selective enough to prevent the local from setting up an appreciable voltage at the first detector. The local station, in fact, acts as an oscillator to heterodyne certain stations to the intermediate frequency.

¹ The Selectivity of the Superheterodyne. *The Wireless World*, May 13th and 20th, 1931.



Part of the "Alba" set in which second channel interference is avoided by the use of an I.F. frequency of 473 kc/s.

How the Superhet Works—

The effect can be prevented in the same way as second channel interference, by making the pre-selector circuits give enough selectivity, and, in general, this is the only remedy. Even if the effect does occur, however, it is only on stations spaced from the local by the intermediate frequency, so that it may not be serious. Should there be two local stations, however, spaced by the intermediate frequency, then it is possible for audible interference due to their beats to occur over a large portion of the tuning range. It is important, therefore, to select an intermediate frequency which is not equal to the difference between the frequencies of any two nearby stations.

Effect of Harmonics

The two London stations are spaced by 304 kc/s, the two North stations by 370 kc/s, and the two Scottish stations by 243 kc/s, so that none of these is likely to cause any trouble. The Midland Regional, however, is separated from the London Regional by 91 kc/s, and, although the stations are some distance apart, there are places where they are both receivable at a strength sufficient for beat interference to occur. We should, therefore, not choose an intermediate frequency between about 81 kc/s and 101 kc/s. The Midland Regional and the North Regional are separated by 127 kc/s, so that it is wise not to select a frequency between 117 kc/s and 137 kc/s. A frequency lower than 80 kc/s is hardly practicable on account of second channel interference, so that we find that we must choose in the 101 kc/s to 117 kc/s range. Here there is very little choice, and we are practically forced to 110 kc/s. It is on this account that this frequency has been standardised by *The Wireless World*, and it may be said that practical results have entirely justified the choice.

Second channel interference, therefore, may occur when receiving a station 220 kc/s lower in frequency than the local, and beat interference is possible when receiving a station 110 kc/s higher or lower than the local. There are other possibilities of whistles, however, for consider the case when we receive a station 165 kc/s lower than the local. The oscillator will then be working on a frequency 55 kc/s lower than that of the local station, and if this sets up a voltage on the first detector grid a beat frequency of 55 kc/s will be formed. If the first detector is not effectively linear, harmonics will be present, and the second harmonic of 55 kc/s is 110 kc/s, the intermediate frequency.

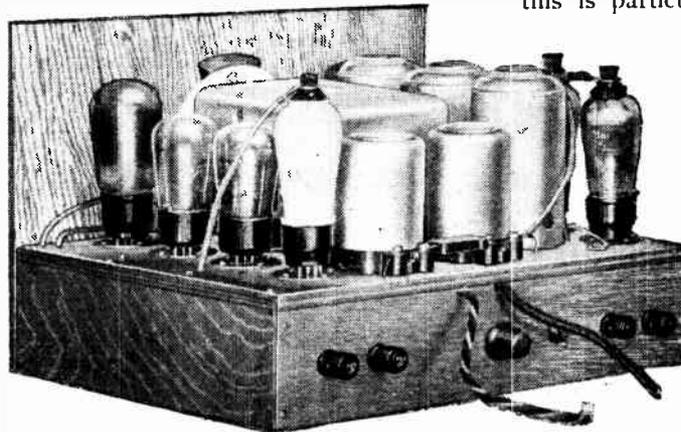
If either the pre-selection is insufficient, or the first detector is non-linear, therefore, whistles may be found whenever a station is received for which the oscillator must be set on either side of the local by 55 kc/s, 36.3 kc/s, 27.5 kc/s, and so on.

Even this does not exhaust the possible whistles, for harmonics of the oscillator, and harmonics of the signals, produced by overloading the H.F. valve, can ac-

Previous articles of this series dealing with the theory of the superhet are as follows: (1) the signal-frequency stage; (2) the H.F. stage and the oscillator; (3) the frequency changer and the I.F. amplifier; (4) the second detector; (5) the action of the first detector.

count for many more. The writer has calculated that, taking into account harmonics up to the fifth, a superheterodyne used close to Brookmans Park can give a whistle which is due initially to those stations on over 90 distant transmitters. If one local closed down one-half of the whistles would disappear; if both stations closed down they would all vanish.

In practice, of course, it is rare for the trouble to occur with such magnitude. Their possibilities should be borne in mind, however, for the writer has actually handled a receiver in which every one of the calculated whistles appeared. The calculation, in fact, was undertaken in an



A popular constructional receiver—"The Wireless World" A.V.C. Monodial A.C. Super in which an intermediate frequency of 110 kc/s is used.

endeavour to account for them, since previously it was not thought that so many were possible. Needless to say, the receiver in question was of poor design.

It should be emphasised that whistles are quite rare in a properly designed receiver, and there should never be more than perhaps four points at which such interference is found. Even these can be removed, but, as they do not represent serious interference, it is not always economical to include the extra circuits which would be needed. Good initial design, and the correct adjustment of the receiver, are all that is necessary to avoid the trouble. The importance of correct adjustment can hardly be overstressed, for the intrinsic merit of a design can be completely ruined by mal-adjustment of the circuits.

Second channel and beat interference can be avoided only by the use of a suitable pre-selector system, but while this remedy is applicable also to the various forms of harmonic interference, these can also be avoided by the use of a first detector which is effectively linear. Since such a characteristic is necessary to avoid

distortion in frequency changing, it would naturally be used. One must guard against overloading the first detector, however, for the first symptom of this would normally be the appearance of whistles rather than of noticeable distortion.

Avoid Overloading

Under the majority of ordinary circumstances, two tuned circuits with screened air-core coils will provide sufficient selectivity for the avoidance of all but three or four whistles when the set is used on a good aerial within a few miles of modern twin-wave high-power stations. Under the same conditions, three tuned circuits will remove all whistles. It is necessary, however, that the first detector should be effectively linear, and that neither this valve nor the H.F. valve should be overloaded, otherwise many whistles will be found even with three tuned pre-selector circuits. The question of overloading is important, since if the receiver be used very close to a local station it may prove advisable to limit the size of the aerial; this is particularly likely to be the case

when battery valves are used, since they will not handle such a large input as the mains types.

Although the receiver may include the necessary number of pre-selector circuits of the requisite efficiency, and the operating characteristics of the valves be adjusted to perfection, this will be of no avail unless the circuits are accurately ganged. In a straight set mis-ganging merely reduces the sensitivity and selectivity, and if it be slight it may pass unnoticed. In a superheterodyne the result is initially the same, but the reduction in the selectivity of the signal frequency circuits greatly increases any tendency for the generation of whistles, and these will certainly make themselves evident.

There is no difficulty in obtaining accurate ganging, provided that a suitable circuit be chosen and the receiver be correctly built. This matter, therefore, will be treated at length in Part 7 of this series of articles.

**A.R.R.L. Convention at the
World's Fair, Chicago****An Invitation to British Amateurs**

The Central Division of the American Radio Relay League will hold its Annual Convention on August 3rd, 4th and 5th at the World's Fair in Chicago in connection with the Century of Progress Exhibition. A cordial invitation is issued to all licensed amateur transmitters.

A special committee of the A.R.R.L. has undertaken the task of inviting as many as possible of the amateurs in other countries of the world, and a comprehensive programme has been mapped out for the benefit of those attending the Convention.

UNBIASED



Lend me

A Repeat Performance

THE other evening I was at a loose end owing to the fact that Mrs. Free Grid had rendered my house uninhabitable by turning it into a meeting place for a wretched committee for supplying flannel waistcoats to the Andaman Islanders, or something equally foolish. Eventually I passed the evening at an open-air theatrical performance which had been widely advertised.

To hear the dialogue better, I took my seat underneath one of several loud speakers suspended from the trees. Hardly had the performance begun, however, than I was completely disconcerted. The speech from the loud speakers was followed almost immediately by a gibbering echo. Hastily putting myself into that calm and judicial frame of mind which comes as second nature to those of us who dwell in a scientific atmosphere, I soon observed that the "echo" was in reality no echo at all, but the actual voices of the performers reaching me a fraction of a second after being heard *via* loud speaker, and the resultant lack of synchronisation was the cause of all the trouble.

The performers on the stage were as close to the microphone as I was to the loud speaker, and consequently one channel for the conduction of their voices was about 99 per cent. electrical, while the other channel was 100 per cent. air; hence the lag.

Feeling thoroughly incensed at the whole business, I left the place immediately the performance was finished.

From the Milky Way

NEWS from America is always refreshing, and I was delighted to read the other day in one of our public-spirited dailies a delightfully naïve confession from an American citizen who, with "thousands of wireless fans," has been receiving wireless messages from the Milky Way.

The wavelength of the transmission, it appears, is 14.6 metres—no doubt about that—but, unfortunately, the frequency is giving a little trouble, as it cannot be tied down to a very definite figure, but is somewhere in the neighbourhood of 20,000 kc/s! The "fans" are apparently human ones, all out to help the learned professor, and not, as I had at first supposed, ordinary mechanical ones for the purpose of cooling his fevered brow.

Don't Infringe the Monopoly

THE Post Office, apart from its privilege of collecting our wireless licence money, possesses a monopoly of the means of communication in this once fair land, whether by letter or by telegraph.

Strictly speaking, this means that you are transgressing the law every time you receive the glad eye, and after what has come to my ears it would not surprise me in the least if some Jack-in-Office applied for a summons under the Wireless Telegraphy Act on the grounds that this was wireless transmission on a very short wavelength; indeed, it would scarcely cause me to raise my eyebrows if I heard that a summons for "inciting to commit an unlawful act" was taken out against the writer of the wretched song which tells about an unfortunate woman who stuck a lamp in the window every night in the hope that one day her prodigal son, far out at sea, would spot it and be guided on his homeward path.



Transgressing the Law.

Their sublimest effort, however, is in connection with the installation of a simple aerial transporter railway which two small boys established between their respective gardens. The Post Office came down upon the unfortunate infants like a ton of bricks and invoked all the majesty of the law to prevent them wilfully conspiring together to usurp its monopoly of message carrying.

In the end the lads had to enter into a solemn undertaking that they would use the railway "solely for the carrying of goods and merchandise, and not for the carrying of any intelligence."

On the subject of *intelligence*, I should just like to say . . . [No doubt you would, but you mustn't.—Ed.]

I Am Disgusted

NEVER before had I come across such flagrant flouting of the warnings, not only of the B.B.C., but of the various recording companies, as the other day,

By

FREE
GRID



. . . . your ears.

when paying a visit to a large departmental store in a well-known provincial city. The time of my visit was quite early in the forenoon, before the B.B.C. had started work, and yet I found that in every department a large loud speaker was churning out its stuff. Between each tune an announcement was made, and it soon became apparent that it was not radio at all, but that the establishment was running its own "Christopher Stone" act from somewhere in the building, the stuff being fed to all departments.

The quality of the music was distinctly good, but when the announcer threw in the microphone the results were simply devastating, though I could not make out whether this was due to a poor microphone or an announcer with faulty dentures.

A Lamentable Affair

EVENTUALLY I asked one of the shop walkers if it were possible to catch a glimpse of the studio from which the music emanated. He directed me to the wireless department, in a corner of which I was horrified to discover a hand-wound playing desk and an old G.P.O. microphone in charge of a scruffy-looking youth sucking bull's-eyes. The speech distortion was thus easily accounted for.

When I addressed him he deftly transferred his bull's-eye to his cheek, and was not at all loath to give me full information concerning the installation. As I had supposed, his duties were to feed gramophone stuff to the various loud speakers in the building until the B.B.C. came on the air. In addition, he had, from time to time, to interpolate advertisements of various articles which the store sold. I questioned him about the news bulletin, and he said that as the shop did not close until 7 p.m. it was sent out daily.

Needless to say, I left the building in disgust, pondering on the open defiance of law and order, which, unfortunately, seems so rampant in this country nowadays, and which must, I feel sure, shock the moral susceptibilities of all decent-minded citizens.

It is unfortunate, but nevertheless true, that in no sphere of activity is this flagrant flouting of the law so rampant as in the case of radio. In my opinion, the only way to prevent this lamentable state of affairs is to change the law; the trouble would then automatically disappear.

News of the Week

Current Events in Brief Review

Something for Nothing

IN marketing a new receiver a French radio manufacturer advertises that "all new customers are refunded with an amount equal to the cost of a wireless licence."

Table d'Hôte

GASTRONOMIC analogies are popular in France. The latest concerns radio and the gramophone, the former being compared to a *table d'hôte* meal, the latter to *à la carte*.

Unfortunately, in both cases there is no waiter to find fault with.

Catching the Subscriber

IN order to popularise the Anglo-Indian Wireless Telephone Service the Government of India has decided that when a telephone call comes through for a particular person who cannot be found, instructions will be given to "chase" him by 'phone, and when found connect him overseas without extra charge.

Ferrié Research Fund

SO great was the response to the appeal for a monument in memory of the late General Gustav Ferrié that the required sum was greatly exceeded, and the trustees decided with the balance to initiate a fund to stimulate wireless research. It is stated that 100,000 francs are still needed to provide the desired amount of capital.

Lyons: A Radio City

THE extraordinary signal strength from Lyons 1a Doua station, with its reputed power of only 1.5 kW, has awakened radio interest in the city. We hear that the Fifth International Wireless and Gramophone Exhibition is to be held at Lyons from September 16th to the 24th. Last year the attendance amounted to 50,000, and as Lyons is steadily building up its own wireless industry, it is hoped that a record number of visitors will attend this year.

More Transoceanic Broadcasting

BROADCASTS designed "to bring the American public a more complete understanding of international relations, and to provide Europe, South America and Asia with reliable interpretations of American thought," are being arranged by a Public Affairs Institute with the co-operation of the Columbia Broadcasting System.

The plan (writes our Washington correspondent), which is to exchange more programmes with foreign countries, has the support of such authorities as Dr. Nicholas Murray Butler, President of Columbia University, and Mr. Alan Welsh Dullies, now advising the American delegates at the London Economic Conference.

There seems little doubt that next winter will see regular programme exchanges across the Atlantic.

"The Wireless World" and the Lucerne Plan

OUR readers may or may not be aware that *The Wireless World* was the only journal (with the exception of one German contemporary) to publish the complete Lucerne Wavelength Plan as early as Friday last.

In this list, which was secured by special arrangement within a few minutes of the signing of the Plan in the Conference Hall, we were able to give exclusive publication of the B.B.C.'s wavelengths as allotted to particular stations. It is understood that the B.B.C. at present has little latitude in the distribution of the wavelengths allotted to it, one of the terms of the new Plan being that station wavelengths must not be altered at shorter notice than six weeks. The B.B.C. wavelengths given in the published list are those officially allotted to the British stations.

Lucerne Plan: French Sarcasm

THE Lucerne Conference has not had a good Press in France, particularly from those journals which were denied close contact with the progress of events. In a bitter article one of our Paris contemporaries says: "In spite of the ostracism which journalists had to submit to at Lucerne, we have been able to obtain precise details with regard to the working arrangement. The Assembly's five great commissions consisted of: *The Commission of Silence, The Commission of Self-Congratulation, The Commission of Digestive Functions, The Protocol Commission, and the Commission of Status Quo*. Everyone was an important official; indeed, not a single member held a rank lower than that of President, Vice-President or Secretary. The next Conference ought to be held in Mexico, where, we believe, the whole of the army is on the General Staff."

Wireless Sweepstake

A NEW kind of lottery has been initiated by the Hungarian Broadcasting Company. Only licence holders are allowed to compete in the sweepstake, in which the prizes consist of free licences.

Concerts from Ostend

DESPITE rumours, we understand that authority has been given for summer broadcast concerts from the Ostend Kursaal which proved so popular last year. Certain of these are likely to be relayed by the B.B.C.

London Tests on Five Metres

MR. D. WALTERS, Fairfax Corner, Bedford Park, London, W.4, who welcomes tests on his five-metre transmissions, asks us to state that his call sign is G5CV, not 5CB, as stated in our issue of June 16th.

Radio Week in Italy

THIS is Italy's National Radio Week. This great campaign for popularising wireless began on Sunday last, June 25th. Special price reductions in receivers are current during radio week. Sets are installed free of charge and a number of free wireless licences are being distributed. In addition a special broadcast sweepstake has been instituted, the winners of which will be entitled to such awards as a stay in a first-class hotel, a sea voyage, or a short trip in a 'plane.

Magnavox Moves

WE learn that as from July 1st the manufacture and sale of Magnavox loud speakers for all purposes will be transferred to the Benjamin Electric, Ltd., of Tariff Road, Tottenham.

British International Pictures

THE photographs reproduced in our issue of June 9th to accompany Mr. Dallas Bower's first article in his series on "The Sound Film" are the copyright of British International Pictures.



SEA FEVER (RADIO VERSION). Set construction is one of the most popular hobbies in the Navy. Here is a scene on H.M.S. Hood.

Five-Metre 'Plane Tests Postponed

Many Transmitters Active on Sunday Next

IT is much regretted that, owing to a serious mishap to the 'plane which he had engaged for the ultra-short-wave tests scheduled for Sunday last, Mr. S. G. Morgan (G6SM) was unable to take off as arranged. Any alteration to an aeroplane—even the addition of a single aerial wire—necessitates a new certificate of airworthiness from the Air Ministry, and it was impossible to secure a new machine and comply with this regulation at such short notice.

Accordingly, the trial is postponed until Sunday week, July 9th, when the programme will be carried out as described in our last issue. Many listeners have already intimated their intention to take part. Full particulars, together with time-table, will appear in *The Wireless World* of Friday next, July 7th.

Mr. S. G. Morgan, who asks us to offer apologies on his behalf to any amateurs who did not read the published notices of postponement, states that last-minute details of his flight will appear in the "Personal" column of *The Daily Telegraph* on Saturday, July 8th.

Although the delay is unfortunate, many readers may be able to turn it to advantage by ensuring that their five-metre receivers are operating satisfactorily. Several opportunities will occur in the South of England on Sunday next, July 2nd, when two "districts" of the Radio Society of Great Britain are co-operating in five-metre (56 m.c.) field-day experiments extending from Kent into Hampshire. A chain will be formed by stations 2NH, 3AW, 5IS, 5SA, 6GZ, 6NF, and 6QB. Among the transmission sites will be Blackdown and Tatsfield. Special five-metre transmissions will also be made from the tower of the Crystal Palace from 10 a.m. to 6 p.m. by G6NF.

In this connection we should be glad to receive the names and call signs of owners of five-metre transmitters who would be willing to send out test signals on July 7th and 8th, and thus help listeners in calibrating their receivers. Call signs and schedules should reach *The Wireless World* offices, Dorset House, Stamford Street, London, S.E.1, not later than first post on Monday, July 3rd.

The Sound Film - 3

"Wild" Shots and Sound Mixing

By DALLAS BOWER

EDITING is one of the most important departments of film production; in fact, it may be said that a film is not made in the strict sense until it is "cut." The editor or "cutter," working in co-operation with the director, gives a film its final shape, arranges the some hundreds of shots in their proper sequence as laid down in the scenario; he selects from what, in its unedited form, is no more than the raw material of a film.

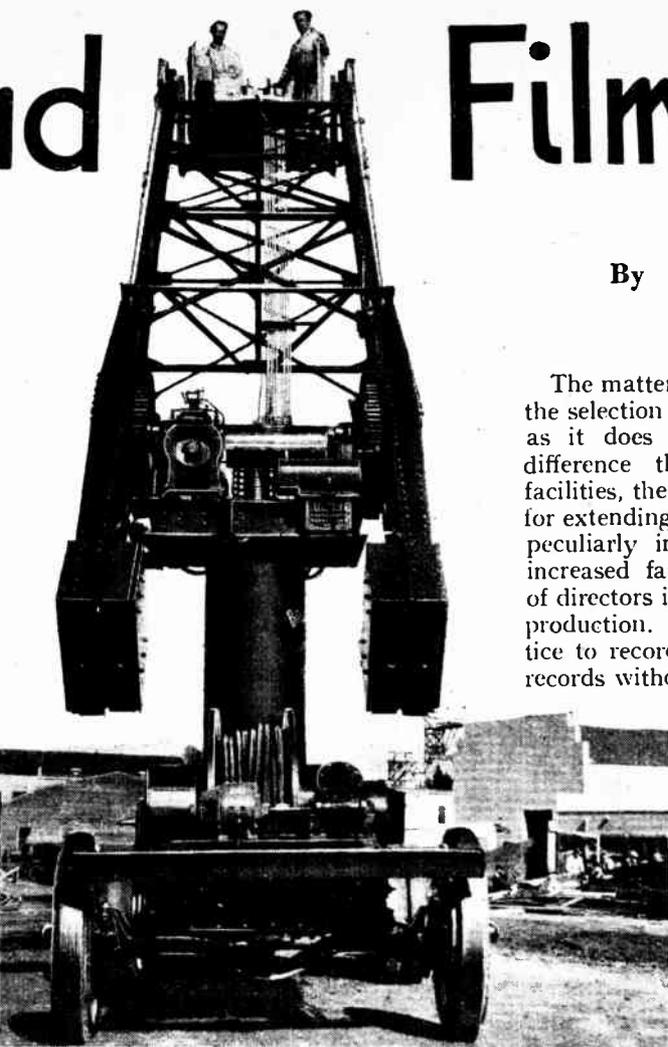
He is like the builder of an elaborately tiled wall. The tiles, of various shapes and sizes, are the raw material; they are the elements of the wall, but they will not take on the sensible form of a wall until they are arranged in a pattern in accordance with a preconceived plan or design.

The term "film editor" is somewhat confusing, as it leads the uninitiated person to suppose film editing must surely be something to do with the scenario; such, however, is not the case.

In the early days of sound-films the sound track was regarded as incapable of being edited to any large extent in the way that the picture could be edited. Sound cutting has evolved somewhat slowly; in fact, only quite recently have the potentialities of sound editing become fully appreciated. This is brought about largely by the development of re-recording machinery, i.e., a means for mixing two or more sound tracks, and so producing a composite. For instance, a musical background to a dialogue sequence is mixed with the dialogue on a machine called a re-recorder, or dubber. The sound tracks of the various shots in the sequence are edited—put into their proper continuity—and set aside for the time being. The "mute" or picture is then projected while the orchestra or whatever musical accompaniment is required plays music of such duration that it starts and finishes with the starting and finishing of the sequence.

The Work of the "Dubber"

The musical record obtained is called a post-synchronised music track. This track, or, rather, a special print or positive of it, together with a special print of the original dialogue track, is then put on the



A 75,000 dollar travelling camera crane used for filming many Universal Pictures productions.

dubber for mixing. Obviously they are of the same length, as they both synchronise with the picture. The dubber is in reality no more than a specially-prepared multiplicity of sound projectors, each channel having its own photo-electric cell, initial amplifier and gain control. The common output from each channel passes into the recording amplifier proper, and so to the sound-camera. It will be under-

RECENTLY the potentialities of sound editing have come to be more fully recognised in talkie production, and it is now possible to think in terms of "film time and film space." In this, the third and concluding article of the series, the author relates how disconnected noises, recorded at different times and in different places, are now merged by means of the "dubber" to provide synthetic sound effects with convincing realism.

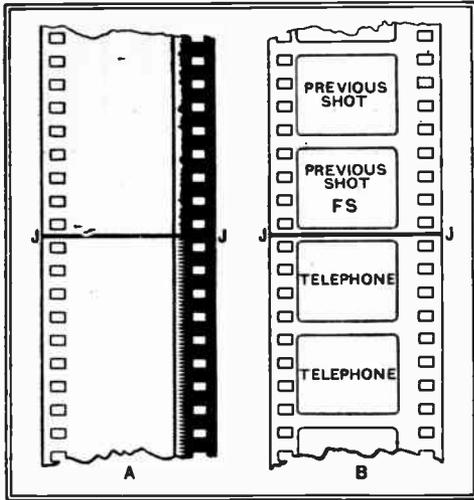
stood that such a facility is extremely valuable, as it enables all manner of sounds to be mixed, thereby achieving through entirely artificial means a result which is in every way requisite and by no means a violation of verisimilitude.

The matter resolves itself once more into the selection of raw material in sound, just as it does with pictures, but with the difference that, with modern dubbing facilities, the scope and flexibility available for extending the great physical freedom so peculiarly indigenous to the screen, are increased far beyond the wildest dreams of directors in the early days of sound-film production. To-day, it is a common practice to record "wild" sound tracks, i.e., records without any specific mute counterparts, and mount them in positions along the film where they may be required; in short, cutting sound just as mute was cut in the silent-film days, achieving synchronisation, where necessary, by parallel juxtaposition of mute and sound on the editing table itself.

Let us take an example of a simple piece of sound "editing." First, we must examine briefly the most important of the editor's primary tools—the synchroniser, which is illustrated on page 466. It consists essentially of two or more sprocketed drums placed alongside each other and locked together. The rolls of film (mute and sound) on the input end of the machine pass over the drums and are held in position on them by spring-tensioned rollers. These rollers are the key of the whole machine, as, once set into position for running, they maintain the ratio of all the rolls of film to each other. The mute and sound track are placed parallel on their respective drums, the synchronising marks (using the example of a simple dialogue shot) are exactly opposite, i.e., the length ratio of the two rolls is 1:1. The rollers, held tight in position on the film, maintain the ratio as the film passes into the output side of the machine.

Synchronising Picture and Sound

We will suppose there is a sequence of shots, already joined together in continuity, but where, between a particular two of them, the editor wishes to insert a close view of a ringing telephone. He will put the two rolls of film—mute and sound—on the machine, synchronise by the marks he has already made on the first two or three feet of the rolls, lock



A is a positive sound track, B a positive mute. Sound and picture are on separate films for editing, but in the finished or "married print" they are on the same film.

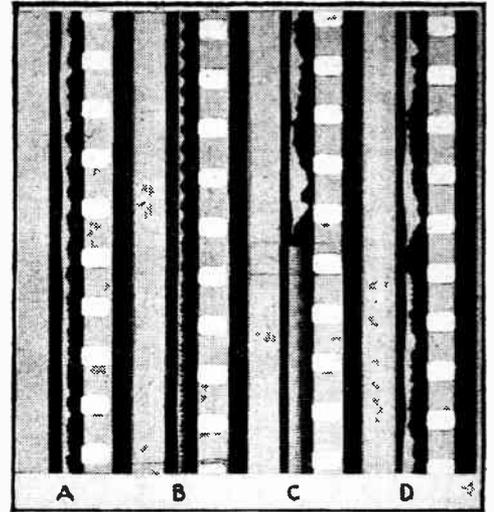
synchronisation by the rollers, and wind the film to the point where he wishes to make his insertion. Here he does the physical act of cutting, passing his scissors through the mute and sound-track of the foregoing shot at the place he decides it shall end, still maintaining synchronisation by keeping both rolls, even at the point of cutting, on the drums. Then he takes the mute of the telephone, joins it (in the first instance temporarily by means of a clip) to the end of the shot he has just cut, and likewise with the sound-track of the telephone's bell. He continues to wind until he decides there is sufficient of the telephone, he cuts it (i.e., mute and track) just as he did the end of the foregoing shot, and joins its end to the beginning of the next shot.

The above illustration will help to make the example more clear. We have the two films A and B, A being the sound-track and B being the mute. FS is the last picture or frame of the shot which, when the film is seen on the screen, we shall see immediately before the telephone. J is the "cut" or join, the place where the insertion of the telephone mute and sound is made. The chief interest of this example of a simple mute and wild sound "cut-in" lies in the fact that it is very unlikely the track of the bell will be a record of the bell belonging to the actual telephone we see in the mute. More likely it is a wild track of a telephone bell ringing, recorded at some totally different time and place to the taking of the photo-

graph we now see wedded to it. Thus we have proved by this very ordinary case the existence of film time and film space. A philosophically inclined reader may ponder over this with great pleasure, given our example as a cue for his thinking.

Synthetic Sound

Now let us examine a case where the entire sound constituent of an event can be created in the editing room by wild track selection and re-recording. As we are primarily concerned with sound, we will suppose the little "incident" we are about to build up has been photographed entirely without sound, that it is already edited and in continuity, just as it will appear on the screens of the cinema halls. The scene is a street accident. First, we see the street, a busy thoroughfare; perhaps we are tracking through it on the pavement, or maybe it is a shot from a stationary camera position. Then, in another shot, we see our character, perhaps the leading man, crossing the street. A flash of a car approaching. Another flash back to the character. A short shot of a pedestrian on the pavement calling "Look out!" immediately followed by a terrific shriek of brakes. A shot of people running. Another shot of a crowd gathered round a stationary car. Our problem is to build the sound for such an incident.

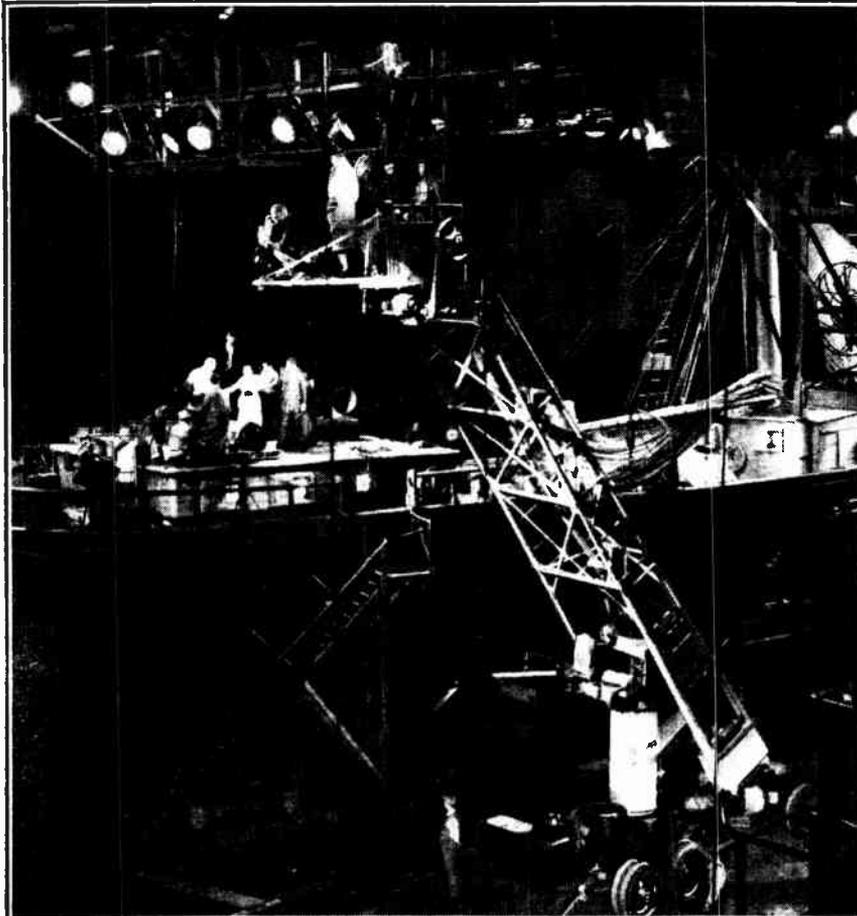


A—sound record of traffic noises; B—"Look out!"; C—brake on wheels; D—the synthetic record obtained, as explained in the article, by grafting one sound upon another.

sound of the street, i.e., traffic noise, must be behind both the man's voice and the shriek of brakes. Although both will be much too loud for us to hear the traffic behind them during their time of utterance, we must not break the continuity of the background, because by so doing we should stress the artificiality of the medium at a situation where it would be most imperative that no consciousness of the *deus ex machina* should be felt by the audience in any way whatsoever. To take a musical analogy, it is rather as if we were removing the ground-bass at a point where it was the foundation of what we had to say harmonically.

We will call the traffic noise A, the man's voice B, and the brakes C, with sub-headings C1 and C2. The above photos show how the ratios of the wild tracks would appear on the synchroniser mounted in such a way as to synchronise with the sequence of events as described. Our traffic track A is probably stock material, kept in the editing room library of wild tracks, track B "Look out!" is a wild record taken in the studios of any individual with a voice suitable to the shot of the man we see, while C is a synthesis of two tracks of shrieking brakes—C1 the actual shriek caused by the brake acting suddenly on the drum, C2 the heavy spin of the

tyres on the locked wheels of the car slithering over the road surface. We might have been lucky and obtained



The crane camera in use in a big indoor set. The "ship" is stated to be the largest ever constructed for filming purposes.

Analysing the sounds we need, we find (1) Traffic noise, (2) A man's voice, (3) Shrieking of brakes. The generalised

We might have been lucky and obtained

The Sound Film—

a record of the two sounds good enough in itself, but in order to give the extra dramatic emphasis necessary, we need both sounds to be heard clearly, and in order to achieve this we take the best of each from a number of records of the same thing, and join them together. We have, therefore, a synthetic noise to represent our car pulling up, recorded at some time in some place. We have our traffic, perhaps recorded a year ago in another place. We have our voice, re-recently recorded in the studio.

All our sounds have hitherto been widely separated in time and space; they have borne, until we have mounted them in the way we have, no relation to our picture. Now, by our editing process of selection and arrangement, and by passing the three tracks simultaneously through a three-channel dubber, we obtain a composite track D, which is what we need as the sound counterpart to our sequence—a street accident.

DISTANT RECEPTION NOTES

WELL, the deliberations at Lucerne are completed at last, and the new wavelength plan is out. Naturally, it will not please everybody, for there is hardly a country in Europe which does not think that it is entitled to at least one, and preferably two, long-wave channels. Nobody, again, wants any channel much below 300 metres, but most countries have to have one or two amongst their share. Taken as a whole, the plan seems a very sound one, carefully worked out and likely to have good results so long as everyone concerned does everything to ensure rigid adherence to its details.

One reads rather sadly that no fewer than seven countries—Lithuania, Finland, Holland, Hungary, Sweden, Poland, and Greece—have not signed the Convention, though it is stated that it is "anticipated that they will comply with its provisions." This is not good enough, for more than one of the countries concerned owns sufficient high- and medium-powered stations to wreck the entire scheme if it should choose to indulge in wavelength grabbing. It is to be hoped that all of these seven will sign before the plan comes into operation, as it will on January 15th next.

Interference from Small Stations

Signing the Convention again may or may not mean going the whole hog, so to speak. France, if my memory serves me, signed both the Geneva and the Prague agreements, and so did Sweden; but the smaller stations of these two countries seem to have been using almost any wavelengths that they liked, and they are responsible for a great

deal of the chaos that has prevailed for so long in the lower part of the medium band. When reception conditions are good, even a quarter-kilowatt relay can cause interference at a surprising distance.

It is good to see that several European countries are waking up to the seriousness of the other kind of interference, that caused by oscillating receiving sets and by electrical

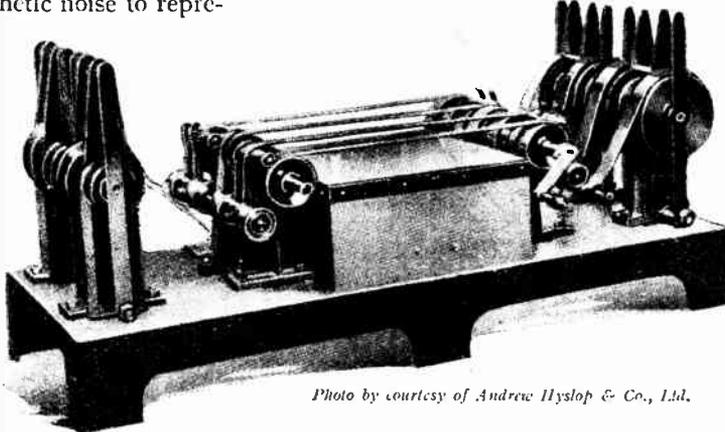


Photo by courtesy of Andrew Hyslop & Co., Ltd.
A four-film synchronous winder used for mixing sounds and applying them to "mute" pictures.

machinery. Austria passed a law dealing with this matter some time ago, and I believe that Germany has taken similar steps. Both Spain and Denmark are now taking action, too. Our own Parliament will be considering man-made interference before long, and it is to be hoped that a satisfactory Bill will pass into law. It should certainly be made a punishable offence to sell or to install any kind of apparatus that can interfere with broadcast reception, for extensive experiments made by or on behalf of the Post Office authorities show that there is hardly a case in which radiation cannot be eliminated altogether or reduced to something very small if proper steps are taken.

I wonder if any fellow long-distance enthusiasts have picked up a very powerful Dutch transmission, which is usually to be heard rather late at night. This is the new 50-kilowatt station at the Hague, which is eventually to take over Huizen when Huizen is Huizen, or Hilversum when Hilversum is Huizen.

The Upper Medium Band

At the moment of writing the weather is very unsettled, and atmospherics have been a distinct nuisance for some days. This is only what one would expect, for thunderstorms of considerable violence have occurred in many parts of the country.

Except from stations at the bottom of the long-wave band and the top of the medium-wave band signal strength continues to be almost phenomenal for the time of year. It appears that the band between approximately 520 and approximately 1,160 metres is the one to suffer most this summer. Luckily, it contains few broadcasting stations of importance, though there may be a different tale to tell next year.

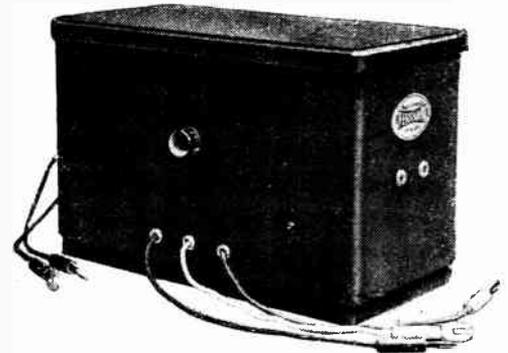
Stations particularly worth attention are Vienna, Prague, Langenberg, Lyons Doua, Beromünster, Paris Ecole Supérieure, Rome, Berlin Witzleben, Katowice, Söttens, Leipzig, Hamburg, Strasbourg, Milan, the Poste-Parisien, Hilversum, Turin, Gleiwitz, Nürnberg, and Fécamp on the medium waves. On the long waves all of the important stations are well heard except for Kalundborg and Oslo, whilst Radio-Paris, Zeesen and Warsaw are outstanding.

D. EXER.

Ferranti Class "B" Super Power Converter

THERE must be a large number of owners of battery sets who have decided to take advantage of the new Class "B" push-pull amplification system whereby nearly seven times the normal output can be obtained for practically no increase in H.T. battery consumption. It may be difficult, however, to find room in an existing receiver to house the necessary extra valve and components, and it is to meet these conditions that the Ferranti Class "B" converter has been introduced. The valve which has hitherto done duty as an output valve in the receiver is made to act as driver, and may with advantage be biased to a more negative value so as to reduce anode current. The converter consists of a highly efficient driver transformer, a Class "B" valve, and a multi-ratio output transformer contained in an attractive walnut finished cabinet measuring but 9in. x 6in. x 4½in. wide.

To put the converter into operation it is necessary to disconnect the speaker from the set and join it in turn to various pairs of terminals on the secondary of the output transformer until the most pleasing results are obtained. In addition to this, the output terminals of the receiver must be joined to the input of the unit and the Class "B" valve fed with L.T., for which purpose two leads with spade terminals are provided.



The Ferranti Class "B" converter, giving an output of about 2 watts. The L.T. switch can be seen at the front of the case.

The unit will work equally well after a triode or pentode, and by virtue of the number of tapings on the output transformer can be matched with any speaker of high or low impedance. The price is 63s. complete with valve.

BOOKS RECEIVED

The Inventor and His World by H. Stafford Hatfield. A book of sound practical advice to inventors, explaining what is and is not patentable, the need for practical manufacturing knowledge, or the aid of one having such knowledge in producing a successful patent, the psychology of marketing and disposing of inventions, and a brief outline of present Patent Law. Pp. 269, with 4 illustrations. Published by Kegan, Paul Trench, Trubner & Co., Ltd., London. Price 6s.

Photo-Electric Cell Applications by R. C. Walker, B.Sc., and T. M. C. Lance. Describing the uses of Photo-electric cells in Television, Talking Pictures, Electric Alarms, Counting devices, etc. Pp. 193+viii with 111 Diagrams and Illustrations. Published by Sir Isaac Pitman and Sons, Ltd., London. Price 8s. 6d.

BROADCAST BREVITIES

By Our Special Correspondent

Break in the "Foundations"

THE "Foundations of Music" series is to cease—for two months. There is something cataclysmic in this decision, for the "Foundations," like the poor, have been always with us. Although the interruption will not be longer than a few weeks, i.e., during July and August only, the break is the first in a sequence of 285 weeks during which they have held the stage every evening except Sunday.

For the Student

The "Foundations" started as broadcasts of classical music, when classical music was less common in the programmes than it is to-day. Nowadays there is a little more latitude in the choice of pieces, the sole criterion being that the material chosen and the manner of its playing shall be of value to the serious student of music.

Practically every artiste of distinction in this country has contributed to the "Foundations." The composers most frequently drawn upon have been Beethoven, Bach, Schubert and Brahms.

Mid-Week Service Closes Down

Another temporary suspension will be that of the Mid-Week Service, which will not be held during the months of August and September.

A little while ago there was some talk of terminating this feature, but the Rev. W. H. Elliott, addressing a special appeal from the pulpit for opinions on the value of the service, was overwhelmed with requests for its continuance.

Are Announcers Human?

IT is a good thing that announcers are human enough to make mistakes sometimes, otherwise we should fail to appreciate their almost machine-like precision and accuracy. The other evening we were told that the next soloist would be "Mr. Michael Cole," and it was quite entertaining to sense the flutter of excitement in the studio and hear the hurried whispers which preceded the correction, "Mr. Maurice Cole." Instantly listeners felt more at home; the announcer was a human being after all!

Nerve Strain for Listeners

IT is good news that Mr. Val Gielgud, the Productions Director of the B.B.C., has decided to revive "Flags on the Matterhorn," the German radio play, on July 6th (Regional) and 7th (National). "Flags on the Matterhorn" was broadcast here in a translation in July last, the sixty-fifth anniversary of the conquest of the mountain. Until 1805, the year of the race between Whymper and Carrel, the 14,780 feet high Matterhorn was thought to be unconquerable. The play tells the story of the Englishman's victory over the Italian guide, a victory which took a terrible toll of human life. Some listeners found the thrilling story as brought to them by the microphone too severe a strain for their nerves. The tremendous realism of the microphone performance, however, made "Flags on the Matterhorn" one of the outstanding plays of a decade of broadcasting.

Sir John Reith

THE very latest rumour at Broadcasting House is that Sir John Reith intends to resign. There is no doubt that the broadcasting machine has been so efficiently organised that it practically "runs itself," but anyone with any experience of machinery knows that an untended machine is about as trustworthy as a cat among pigeons, and I shall be very surprised indeed if, when Sir John leaves Portland Place, he does so because the B.B.C. "can look after itself."

In any case, there is probably no truth in the rumour.

The King to Broadcast

THE King is to be heard on the broadcast microphone on July 26th when His Majesty travels to Southampton to open the new graving dock there.

In addition to the King's speech there is to be a running commentary on the scene by Mr. Howard Marshall.

Mast Climbing: The New Sport

I AM surprised that no publicity seeker has ever before hit upon the idea executed by Mr. E. L. Mallalieu, M.P., on Sunday last, when he climbed the North Regional mast to take a photograph of his constituency.

We all know that the B.B.C. is forbidden to broadcast advertisements, but there should be no legal difficulty in using the masts for propaganda purposes.

B.B.C.'s Opportunity

The spectacle of an athletic man balancing on a Daventry 500-footer would be very compelling, and I have no doubt that the B.B.C. could speedily arrange a scale of

charges for ascending the various masts belonging to the Corporation.

No doubt the tariff would be fairly high for the Brookmans Park masts, for, although comparatively low, their nearness to the Metropolis would ensure large Sunday afternoon crowds. On the other hand, Scottish Regional masts would be available for a mere song for obvious reasons.

Views Across the Atlantic

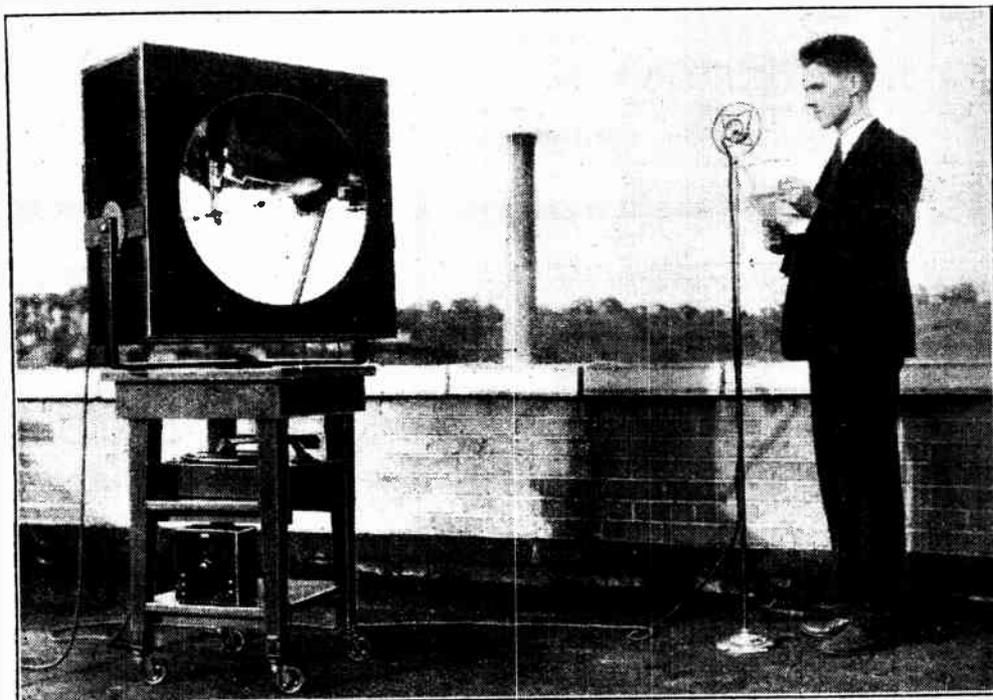
TRANSATLANTIC conversations on the World Economic Conference will be broadcast next month. An American economist, talking from the United States, will give his views to listeners on both sides on July 10th, and on the following night a British expert will reply. Further talks will be given on July 17th and 18th. I understand that the B.B.C. programmes may be revised from time to time at short notice, as and when the opportunity presents itself, for a special broadcast from the Conference.

The B.B.C.'s Chaplain

THE Rev. F. A. Iremonger will on July 17th take over his duties as "Chaplain to the B.B.C." At least, this seems to me to be the most appropriate title, though there have been all sorts of other suggestions, such as "Vicar of Broadcasting House," "Bishop of Broadcasting," and "Priest of the Ether," none of which seems quite the correct thing. What do you think?

Criticism

OVERHEARD at a cinema following the inaugural recital on the B.B.C. organ: "I say, Minnie, what did you think of the B.B.C. organ? A bit old-fashioned, what! It didn't seem to tremble properly."



ULTRA-SHORT WAVES AND THE MICROPHONE. Parabolic mirrors are used for "beamcasting" at the Chicago Century of Progress Exposition. This is the apparatus under test. Its sponsors guarantee that, unless the beam is intercepted, complete privacy is secured.

Six-Sixty "Super Five"

Good Performance Combined With Simple Tuning



A SUPERFICIAL glance at the title suggests that this receiver is yet another superheterodyne. Actually, it is a straight set incorporating two screen-grid H.F. stages—a type which has many advocates among discriminating people. Although perhaps not quite so sensitive or selective as the superhet, the straight receiver is free from second channel whistles, and has a lower general level of background noise.

In the Six-Sixty "Super Five" the first H.F. stage is tuned and the second aperiodic. The aerial and tuned anode coils associated with the first stage are tapped down to improve selectivity. The grid detector—a triode—is transformer-coupled to the power pentode output valve, which feeds the moving-iron loud speaker through a choke filter circuit. High-tension current is derived from a full-wave valve rectifier and is smoothed by a choke in the negative lead. A potentiometer in series with the choke supplies the variable grid bias for volume control in the first H.F. stage, and also the bias for the power valve. The second H.F. valve is independently biased by a resistance in the cathode lead.

The principal components comprising the chassis are of exceptionally good quality. Isolantite insulation is used at all vital points in the high-frequency circuits and the tuning condensers and coils are of efficient design. The latter are enclosed in copper cans of large volume. The well-mounted detachable pilot lamp and the neat mains voltage adjustment with its automatic reference

scale are details which stamp the chassis as a high-grade product. Freedom from microphonic noises is ensured by inserting thick rubber washers on both sides of the holding-down bolts in the base. Plug and socket connections are provided for the loud speaker, and the plug itself is fitted with additional sockets for an external loud speaker.

The gramophone pick-up is connected directly in the grid circuit of the detector valve, and must therefore be removed when reverting to radio reception. During the playing of records the detector becomes the first L.F. amplifier, and derives the necessary bias from the radio volume control potentiometer which should be set in the maximum position. An external pick-up volume control is required.

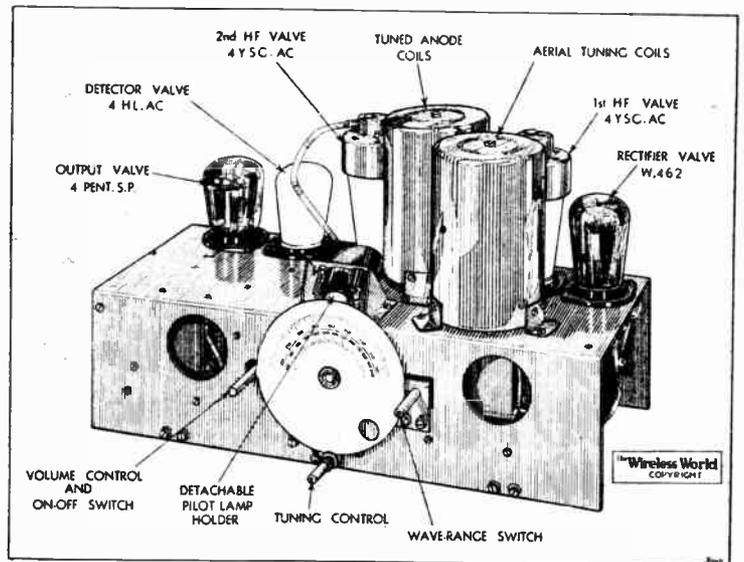
No reaction is employed, and the receiver is simple to operate. There are three controls: the tuning dial, which is calibrated in wavelengths, the volume control and on-off switch, and the waverange switch. Alternative aerial connections are provided at the back of the set, one for local station reception at close range and the other for distant reception at maximum efficiency.

The range is equal to, or slightly better than, that of a good three-valve set using reaction, and the performance is obtained without the need for critical tuning adjustments. Five or six foreign stations were received on medium waves during the daytime, and the long-wave range was exceptionally good from the

FEATURES

Type.—Four-valve "straight" receiver with two H.F. stages (no reaction). **Circuit.**—Tuned screen-grid H.F.—aperiodic screen-grid H.F.—triode grid detector—power pentode output. **Controls.**—(1) Tuning with illuminated dial calibrated in wavelengths. (2) Volume and on-off switch. (3) Waverange. **Price.**—14 gns. **Makers.**—Six-Sixty Radio Co., Ltd., 17 18, Rathbone Place, London, W.1.

point of view of sensitivity—more so than in many superhets we have tested. Selectivity on long waves was also of a very high standard, and the Zeesen programme, in London, was quite free of interference from Daventry and Radio Paris. On the medium waveband approximately five channels on each side of the Brookmans Park transmitters were taken up by the spread of these stations. The power output is ample for the built-in moving-iron loud speaker,



The chassis is mounted in the cabinet on rubber washers to minimise microphonic noise.

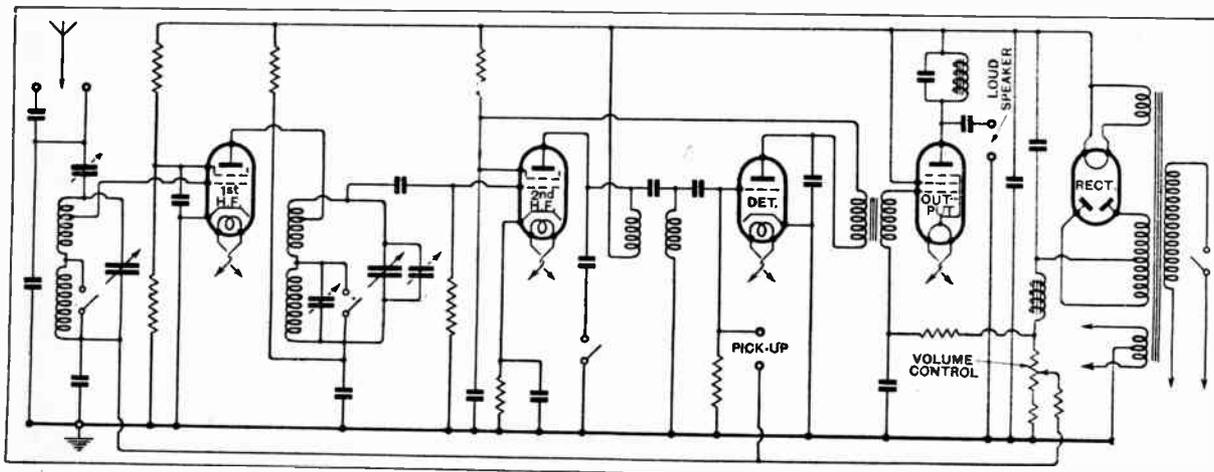
which gives surprisingly good quality for its type. The reproduction is particularly clear and incisive in the middle and upper middle registers, and there is sufficient bass response to save the set from sounding high-pitched. There is no evidence of box resonance, and

the walnut-finished cabinet is both solid in construction and imposing in size and appearance.

VALVE AND CIRCUIT TESTING

USERS of the older type of Avometer multi-range testing meter may not be aware that a booklet giving much useful information on valve and circuit testing is now issued by the manufacturers.

During the month of July, all buyers of Avometers will be given, free of all cost, an Avodapter, which facilitates the testing of valves *in situ*.



Two H.F. stages—the first tuned and the second aperiodic—give ample range without reaction in the Six-Sixty "Super Five."

LABORATORY TESTS

A Review of Manufacturers' New Products

HIVAC VALVES

HIVAC valves are made by The High Vacuum Valve Co., Ltd., 113/117, Farringdon Road, London, E.C., attention having been given so far to the development of the two-volt battery valves. Other types are in course of development, and will soon make their appearance. In all, eleven different battery types are contemplated, but at the time of preparing this review seven only are generally available, but the remainder will be released very soon. The seven two-volt battery valves examined comprise an H.210, L.210, D.210, P.220, PP.220, SG.210 and VS.210. The last two mentioned are screen-grid H.F. amplifying valves, the VS.210 being a variable-mu type. The working grid bias is from 0 to 14 volts and over this range the mutual conductance changes from 1 mA/volt to 0.075 mA/volt. The maximum anode potential is 150 volts, and the price of this valve and the ordinary screen-grid model is 10s. 6d.

The D.210 is a triode valve designed especially for use as a detector. It differs from the other general-purpose types in that the entire electrode assembly is surrounded by an earthed shield, the function of which is to reduce the external electrostatic field of the valve. The D.210 has an A.C. resistance of 13,300 ohms, an amplification factor of 16 and a mutual conductance of 1.2. Its price is 5s. 6d.

The H.210 and the L.210 are general-purpose valves, the former being suitable for use as a grid detector or oscillator in super-heterodyne receivers while the latter will serve as a first stage L.F. amplifier or anode-bend detector. The H.210 has an A.C. resistance of 22,000 ohms and an amplification factor of 25, while the L.210 is rated at 8,600 ohms A.C. resistance and amplification factor 10, and the price is 4s. 6d. in each case.



Selection of Hivac two-volt valves.

Two power valves are available, a P.220 and a PP.220, the former costs 5s. 6d. and the latter 6s. 6d. The P.220 is intended primarily for use in portable sets and provides an undistorted output of 175 milliwatts, while the PP.220 gives about 250 milliwatts. Pentode equivalents and also a Class "B" amplifier will be available very soon.

Tests made with some specimen Hivac valves in a recent *Wireless World* receiver

gave results in every respect comparable with those they replaced, selectivity, sensitivity and volume being sensibly the same and the performance of the receiver was entirely satisfactory from every point of view. When the remaining valves in this series become available there will be an exact replacement for every valve now in general use.

DIX-MIPANTA TEST METER

A SMALL vest-pocket size universal test meter suitable for D.C. or A.C. measurements has been introduced by Electradix Radios, 218, Upper Thames Street, London, E.C.4. It has three voltage ranges selected by sockets placed just above the scale window, and they cover respectively 0-7.5 volts, 0-150 volts, and 0-300 volts. On the lowest range the resistance of the meter is exactly 100 ohms, and if used for the measurement of anode current will enable readings up to 75 mA. to be made. The 150- and 300-volt ranges each have a resistance of 71 ohms per volt and require 14 mA. for a full-scale deflection.



Universal vest-pocket test meter — the Dix-Mipanta.

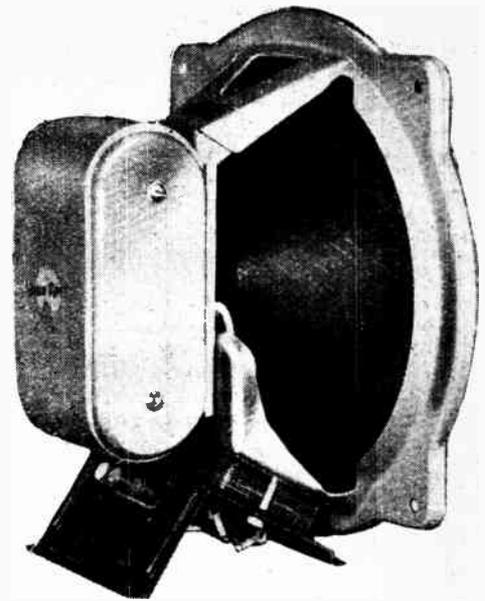
Despite its small size the accuracy with which voltage measurements can be made is surprisingly high, indeed, it could not be improved in view of the limitations imposed by the scale. For example, an A.C. potential of 300 volts was read as being 297 volts on the Dix-Mipanta, the difference being of the order of the thickness of the pointer only. The same high order of accuracy was maintained over the major part of the 300-volt range.

The 7.5-volt range can be regarded as sensibly accurate over the most useful part of its scale, and measurements of A.C. valves' heater voltages can be made with the assurance that the meter error is negligible.

This instrument should prove exceedingly useful to the experimenter, since the one meter suffices both for A.C. and D.C. measurements, and the price is 19s. 6d., complete with a pair of leads and plugs.

BLUE SPOT MODEL 45 P.M.

IN the Blue Spot range of permanent-magnet moving-coil loud speakers the model 45 P.M. occupies an intermediate position between the inexpensive 29 P.M. and the de luxe model 99 P.M., which is already well known. The chassis, diaphragm, and moving coil are similar to those of the more expensive models, but the permanent magnet and output transformer are of slightly different design. Three ratios are provided in the transformer, which is



Blue Spot model 45 P.M. permanent-magnet moving-coil chassis.

mounted underneath the chassis on an angle bracket suitable for supporting the loud speaker vertically. As in the 99 P.M. model, the centring spider is of unusually large diameter, which ensures adequate flexibility with lateral rigidity.

The useful frequency range is from 75 to 4,500 cycles, but the diaphragm responds up to more than 8,000 cycles. In the bass the output is greatest between 90 and 140 cycles, with a maximum at 120 cycles, while in the upper register the response is at a maximum between 2,500 and 3,000 cycles. Speech is exceptionally clear, and the essential elements contributing to good reproduction of music are adequately represented. The sensitivity is in every way satisfactory.

The chassis is finished in the characteristic Blue Spot copper enamel, and the price is 45s. The makers are The British Blue Spot Co., Ltd., 94-96, Rosoman Street, Rosebery Avenue, London, E.C.1.

SOLON RESIN-CORED SOLDER

MADE by W. T. Henley's Telegraph Works Co., Ltd., Holborn Viaduct, London, E.C.1, the Solon resin-cored solder is particularly well suited for use in the construction of wireless receivers, for the flux embodied in the solder is entirely free of any corrosive content. It is exceedingly handy and simple to use, and as only the correct quantity of flux is expended, clean and safe joints are made with the greatest of ease. The soldering iron must be maintained at a reasonably high temperature, in which connection it should be mentioned that this firm market, also, an electric soldering iron under the same trade name.

Solon resin-cored solder is sold in 6d. reels, while the price of the Solon electric soldering iron is 7s. 6d.

Trade Notes

The Curtis Manufacturing Co., Ltd., 32, Spring Street, Paddington, London, W.2, manufacturers of resistances of every kind, have now acquired new premises at 26-28, Paddenswick Road, Hammersmith, London, W.6. The telephone number is Riverside 4456.

The Edison Swan Electric Co., Ltd., 155, Charing Cross Road, London, W.C.2, announce that accommodation has now been found at the above address for their Publicity Department and the telephone number is Gerrard 8660.

READERS' PROBLEMS

Short-circuiting the Pick-up Coil

A READER, who is using a metallised first detector valve in his Monodial superheterodyne, has noticed that signals disappear when the metal coating of this valve is touched. He can see no definite reason for this effect, but imagines that it may possibly be due to an alteration in the value of the bias resistor brought about by shunting it with the resistance of the body to earth. We are asked to say whether this assumption is correct, and also whether the effect is a normal one.

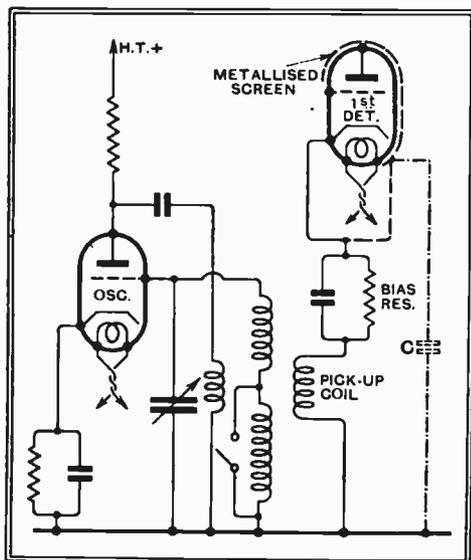


Fig. 1.—When the metallised bulb of a first detector valve is touched, signals will be weakened as a result of the added body capacity C.

It is natural that signals should be weakened in strength, or even cut out entirely, by touching the metallised coating of the first detector valve. The pick-up coil, through which energy from the oscillator circuit is induced into the detector grid circuit, is included in the cathode circuit, and, as a result of touching the metal, this pick-up coil is shunted by the capacity of the body, and what amounts to a partial short-circuit is introduced across it. At the same time the amount of capacity transferred to the tuned circuit of the oscil-

lator is increased, with the result that the oscillator frequency changes, and so the signal may easily be lost entirely. The "phantom" condenser C, connected by dash-dot lines in Fig. 1, represents body capacity.

This accounts for the effect noticed; the change of effective bias resistance brought about by touching the valve is entirely negligible, and could not be responsible.

Internal Short-circuits

MANY L.F. transformers, smoothing chokes, and similar components are fitted with earthing terminals through which their cases or iron cores may be connected to earth. Whether these terminals be used or not is seldom a matter of importance, but at any rate no harm should be done by earthing them in the manner intended by the makers, and indeed it is a good plan to make it a rule always to "tie down" all masses of metal wherever possible.

These remarks are prompted by a letter from a reader, who finds that his H.T. fuses "blow" as soon as the metal shroud of the smoothing choke is earthed. The set works quite well without the earth connection, but we are asked to say what is likely to be wrong with the choke.

It seems that there must be a short-circuit between the metal shroud and the winding; very probably one of the terminals or leading-out wires is imperfectly insulated, and the fault should not be a difficult one to trace or to put right.

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers. Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which brief particulars, with the fee charged, are to be found at the foot of this page.

enormous H.F. amplifying properties makes this disadvantage even more acute. In order to overcome this shortcoming a form of pre-selector circuit is employed, which is coupled to the grid circuit by a small capacity condenser: it is advantageous for this to be variable.

This idea may sound rather unreasonable for short-wave reception where all possible sources of losses should be avoided, but in practice it makes little difference to a super-regenerative receiver, where the sensitivity is very high.

All the tuned circuits and associated parts, including the valve which is of the screen-grid type, are completely screened—on top as well. This is very important if the selectivity gained by the additional tuned circuit is to be realised, since a super-regenerative receiver will pick up on the coils and wiring to a surprising extent, even though screened all round; and an aerial often makes little or no difference to the rectified output.

In order to avoid extra coil changing, the aerial coil can be tapped to cover the required wavelength bands, while the grid coil can be interchangeable; or two of the common dual-range short-wave coils can be utilised. Efficiency of coils is not so very important; I find that coils wound on any old formers give very satisfactory results.

CORRESPONDENCE

Iron-dust Cores

THE universal application of dust-core radio-frequency inductances seems to call for standardised representation.

In the development of Nucleon tuning coils I have found it convenient to utilise a symbol consisting of a broken or dotted line instead of the usual full line normally used for an iron-core coil.

I am suggesting that this convention be adopted, and I believe a number of radio workers are already utilising my suggestion.

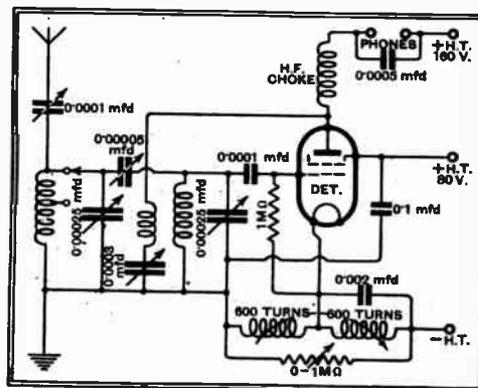
The use of a broken line is actually symbolical of the exact nature of the core, and it therefore appears to be a very appropriate symbol.

It is to be hoped that the suggested symbol will be recognised by the standardisation committees to whom the suggestion is being communicated. PAUL D. TYERS.

Watford.

Inexpensive Short-wave Receiver

YOUR readers may be interested in a single-valve super-regenerative circuit with which I have had considerable success. To those acquainted with the Armstrong Super-regenerative arrangement, the diagram will more or less explain itself. It will be recalled that one of the chief drawbacks of this type of receiver is the poor selectivity, which together with the



Circuit of super-regenerative receiver described by Mr. J. H. Slater.

Using a small indoor aerial about 12ft. long, 15 or more American and Canadian stations could be heard on most nights with this circuit; W8XK, Pittsburg on 48.86m. and 25.27m. often came in with sufficient strength to work a loud speaker at moderate volume. Results do not come all at once with this type of receiver, which requires considerable practice and patience to adjust. The strength of the quencher oscillations (controlled by the variable resistance), has an important bearing on the performance of the receiver, and the best strength can only be found by trial, and may vary with different wavelengths.

For those who like to get the utmost out of a single valve, there is nothing to beat the super-regenerative circuit, and with improved selectivity, it bids fair to rival many of the smaller super-het. arrangements.

J. H. SLATER.

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M.L.4s, A.C./P.s, 41M.P.s, P.M.24s, 8/-; A.C./H.L.s, 164V.s, 354V.s, A.C.2/H.L.s, 41M.H.L.s, U.10s, U.U.60/250s, M.H.4s, M.H.L.4s, 7/6; V.S.2s, 215S.G.s, 220S.G.s, P.M.12s, P.M.12A.s, 9/-; 442 B.U.s, D.W.3s, 8/6.

ALL Types of Brand New American Valves in Stock, A.1 first class makes: 247s, 235s, 224s, 236s, 237s, 233s, 244s, 12/-; 227s, 226s, 280s, 245s, 9/3; 242s, 232s, 11/-; U.X.210s, 15/-.

U.X.250s, 7 watts output, 16/-; 281s, 14/6; for quickest delivery send telegraph money order.

OVER 4,000 Valves Always in Stock for Immediate Delivery; carriage paid; cash with order or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. [2922

AND Another Large Purchase of Set Manufacturers' Stock, guaranteed as new, and any valve differing from the makers' characteristics will be exchanged free; all latest types.

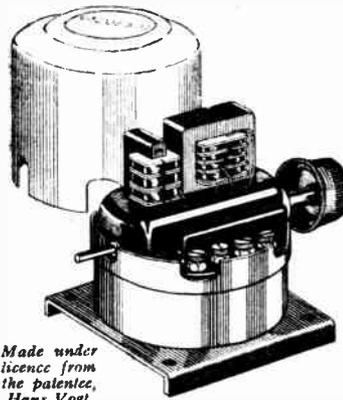
H.L.210s, H.210s, L.210s, 210H.L.s, 210H.F.s, P.M.1H.F.s, 3/9; P.M.2s, P.M.2As, L.P.2s, 220P.s, 215P.s, 4/9; D.H.s, 41M.H.L.s, M.H.4s, A.C.H.L.s, A.C.2H.L.s, 354V.s, D.C./3H.L.s, 1621s, 7/-; M.L.4s, A.C./P.s, 164V.s, 104V.s, P.M./24s, 442B.U.s, 1807s, 7/6; S.4V.B.s, S.4V.s, M.S.4Bs, M.S.C./H.A.s, A.C./S.G.s, A.C./S.2, 41M.S.G.s, D.S.B.s, 215/8.4s, P.M.12s, P.M.12As, 9/-; Pen.4V.s, V.M.8.4s, M.M.4V.s, P.T.41s, P.T.41Bs, D.P.T.s, A.C./Pens., 11/-; 620P.s, 680P.s, 10/-.

OVER 4,500 Valves Always in Stock for Immediate despatch; carriage paid for casa or c.o.d.; prompt delivery.

NEWMAN, 309, Roman Rd., E.3. [2892

COLVERN FERROCART COILS

COLVERN
always associated
with all that is best
in radio frequency
coils.
FERROCART Coils
are synonymous for
outstanding select-
ivity, compactness
and efficiency.



Made under licence from the patentee, Hans Vogt.

TYPES F1 F2 F3

For single S.G.H.F. stage receivers

37/6 per set.

TYPES F10 F11 F12 F13

Suitable for 2 S.G.H.F. stage receivers

50/- per set.

Mounted on sub base with ganged wave change switches.

COLVERN

MAWNEYS ROAD, ROMFORD, ESSEX.

London Wholesale Depot, 150, King's Cross Rd., W.C.1

COMPONENTS, ETC., FOR SALE.

R. **SELECTED** Parts for Sale, as new, any c.o.d. or "Wireless World" deposit system, which we recommend if in doubt as to the splendid value offered; we take risk of damage in transit to customers; goods tested for callers and guaranteed.

METHODS, moving iron and moving coil, all new instruments specially made for Ryall's Radio, all guaranteed for one year, moving coil meters to B.E.S. first grade specification, all panel flush type bakelite case.

MOVING Coil, 0-1 m.a., 25/-; 0-10 m.a., 0-5 m.a., 21/-; 0-250v., 1,000 ohm per volt, 32/-; 0-300v. ditto, 33/6; all with zero adjustment, size 3/4in. diameter, 2 1/2in. dial face.

MOVING Iron Meters, first grade air damped, with zero adjustment, A.C. meters, 0-250v., 18/-; A.C. and D.C., 0-50 m.a., 15/-, size as above.

MOVING Iron Meters, in cases, as above, A.C. meters, 0-12v., 10/-; 0-250v., 12/-; 0-3 amps., 10/-; A.C. and D.C., 0-50 m.a., 10/-; 0-10 m.a., 8/6; D.C.

T.C.C., type 84, 1 mfd., 350v. working, 1/3; T.C.C., 2 mfd., 350 working 1/6.

SIMPSON'S A.C. turntable, 21/6; B.T.H. Universal motor, Senior model, complete without auto stop, 40/-; pair Polar twin S.M. thumb drive, 0.0005, 12/6; pair Wearite Binowave coils, 12/6.

VARLEY Pentode Output Choke, 9/-; Varley Pentode output transformer, 9/-; Varley heavy duty intervalve transformer, 10/6; pair Varley P.P. transformers, separate G.B., 22/6; Varley Standard chokes, 9/- each.

POLAR Star 3-gang Condensers, 16/6; with drive, 18/6; Radiophone 3-gang condensers, fully screened, with trimmers, Radiopack type, 9/-, post 9d.; Polar Uniknob 2 gangs, with drive, 7/6; Radiophone 4 gangs, 12/6; with cover and drive, 16/-; Radiophone 4-gang superhet. type, screened, with trimmers, Radiopack type, 9/-, post 9d.

T.C.C. Block Condensers, 2-4 mfd., 250v. working, 3/6; ditto, 2-4 mfd., 2-2 mfd., 4/-; Ryall's condenser block, 2-4 mfd., 2-2 mfd., 400v. working, 8/-; Ryall's S.T. 300-400 coils, 4/- pair, to clear; Lotus new 4 gangs, 17/6.

VALVES, all guaranteed as new, full emission.—A.C./P.1, 8/6; A.C./H.L., 7/6; M.H.F., 7/-; A.C./S.2, 9/-; S.4V.A., new, 12/-; Mazda S.G.V.M., 9/6; S.21, 7/6; A.C./P.3, 8/-; A.C./P.E.N., 10/6; 904v., 7/6; P.E.N.220A, 8/6; U.10, 7/-; 164v., 7/6. Following callers only: P.625, 5/-.

RYALL'S RADIO, 35, Chancery Lane, London, W.C.2 (nearest Tube Chancery Lane; bus 67 passes door, or tram to Savoy St.), Holborn 3529. Open Saturday afternoon. Close 7 p.m., Thursday 1 o'clock, Saturday 6 p.m.

R. [2973

PREMIER. **PREMIER SUPPLY STORES** Offer the following Set Manufacturers' Surplus Brand New Goods at a Fraction of the original cost; all goods guaranteed perfect carriage paid over 5/-, under 5/-, postage 6d. extra. (Ireland carriage forward.)

ELIMINATOR Kits, including Transformer, Westinghouse metal rectifier, Pye choke, T.C.C. condensers, resistances, and diagram, 250 volts at 60 m.a., 30/-; 150 volts at 30 m.a., 25/-; 120 volts at 20 m.a., 20/-.

FIBONITE Sheets for Changing Boards, 24in.x24in.x3/16in., 3/- each.

T.C.C. Condensers.—2 mfd., 750v. working, 4/-; 4 mfd., 6/-; 4 mfd., 400v. D.C. working (300v. A.C.), 4/-.

I M.F., 500v. working, 1/6; 4 mfd., 200v. working, 2/6; 0.5 mfd., 1,500v. working, 2/-; 0.25 mfd. mica, 2/6; 4 mfd. Electrolytic (aqueous type), 440v. working, 3/-; 8 mfd., 3/6.

DUBILIER Condensers, 0.01 mica, 6d.; 0.01 mica, 1,000v. working, 1/6.

POLAR 3-gang 0.0005 Condensers, split end vanes, totally screened, disc drive; 10/-.

AMSCO Triple-gang 0.0005 Condensers, with trimmers; 7/6.

ORMOND 0.0005 Condensers, 1/3; 2-gang semi shielded, 3/6.

WESTERN ELECTRIC Mains Transformers, input 200-250 volt, output 500-0-500 volt, at 150 milliamperes, 4v. 4a., 4v. 2.5a., 4v. 2a., 4v. 1a., 4v. 1a., 4v. 1a., 15/6.

FULLIOTT First Grade Moving Coil Milliammeters, projecting type, 0-10 m.a., 0-30 m.a., 0-50 m.a., 0-100 m.a., 0-150 m.a., 2 1/2in. diameter, 15/- each; flush type, 0-100 m.a., 0-150 m.a., 3 1/4in. diameter, 17/6 each.

T.C.C. Electrolytic Condensers, 10 mfd., 100 volts working, 1/-; 15 mfd., 1/3.

SPECIAL Offer of Mains Transformers, manufactured by Philips, input 100-115v. or 200-250v., output 180-0-180 volts, 40 m.a., 4v. 1a. and 4v. 5a., 4/6.

ALL Premier Guaranteed Mains Transformers have engraved terminal strips with terminal connections, input 200-250 volts, 40-100 cycles, all windings paper interleaved.

PREMIER H.T.8 Transformer, 250v. 60 m.a. rectified, with 4v. 3.5a. c.t. L.T. and screened primary, 15/-; with Westinghouse rectifier, 25/-.

PREMIER H.T.9 Transformer, 300v. 60 m.a. rectified, with 4v. 3.5a. c.t. L.T. and screened primary, 15/-; with Westinghouse rectifier, 26/-.

PREMIER H.T.10 Transformer, 200v. 100 m.a. rectified, with 4v. 3.5a. c.t. L.T. and screened primary, 15/-; with Westinghouse rectifier, 26/-.

PREMIER Mains Transformers, output 135v. 80 m.a., for voltage doubling, 8/6; 4v. 3.5a. c.t. L.T., 2/- extra; Westinghouse rectifier for above, giving 180v. 30 m.a., 8/6.

PREMIER Mains Transformers, output 250-0-250 volts, 60 m.a., 4v. 1-2a., 4v. 2-3a., 4v. 3-4a. (all c.t.), with screened primary, 15/-.

PREMIER Mains Transformers, output 350-0-350 volts, 90 m.a., 4v. 3-5a., 4v. 2-3a. (both c.t.), with screened primary, 15/-.

PREMIER Mains Transformers, output 400-0-400 volts, 100 m.a., 4v. 4-5a., 4v. 2-3a. (both c.t.), with screened primary, 15/-.

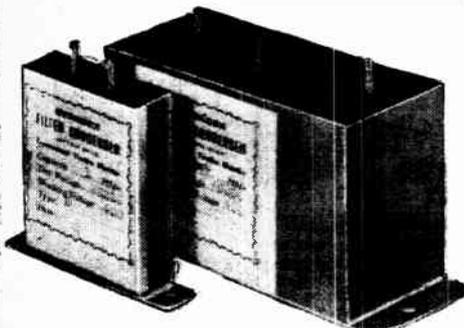
PREMIER Auto Transformers, 100-110/200-250 volts or vice versa, 60-watt, 7/9; 100-watt, 10/-.

(This advertisement continued on next page.)

SERADEX Filter Condensers

Type B.

Non-inductive. 400v. D.C. Working.



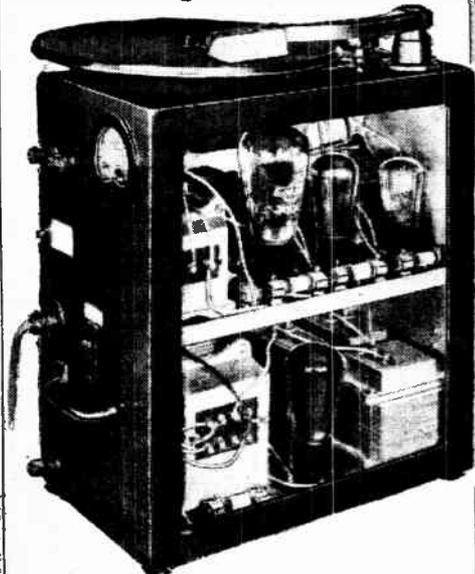
1.0 Mfd. - 1/6	2.0 Mfd. - 2/3
1 x 1 Mfd. - 2/6	4.0 Mfd. - 4/5
4 x 4 Mfd. - 7/3	8 x 8 Mfd. - 14/6

Illustrated List of above and other ratings from

TREVOR PEPPER,
WAKE GREEN ROAD, BIRMINGHAM.

THE "OMEGA" AMPLIFIER

25 Watt



Read "The Wireless World" Test Report of June 16th—page 433

SUPER-POWER SPEAKERS AND MICROPHONES ALSO SUPPLIED

Full details gladly given by the Manufacturers

F. O. & H. S. HUGHES LTD.,
128a, NARBOROUGH ROAD, LEICESTER
(Phone 5334).

Components, etc., for Sale.—Contd.

A.C. Pen. V.M.S.4, 8/- each; A.C. eliminator, 250v., H.T.8, 4v., 4 amps., C.T.; 30/-—84, Swinburne Rd., Oxford. [2986]

5,000 Siemens Halske Condensers, rated test voltages, 10 mfd. 500 A.C., 6/-; 8 mfd. 1,500 D.C., 5/6; 8 mfd. 500 A.C., 5/-; 6 mfd. 500 A.C., 5/-.

4 mfd. 2,000 D.C., 6/-; 4 mfd. 1,500 A.C., 5/6; 4+4 mfd. 1,500 D.C., 5/6; 4 mfd. 500 A.C., 3/-.

2 mfd. 2,500 D.C., 4/-; 2 mfd. 1,500 A.C., 3/6; 2 mfd. 500 A.C., 1/9; 2 mfd. 500 D.C., 1/3.

0.1+0.1 mfd. 3,500 A.C., 2/6; 0.1+0.1 mfd. 1,500 A.C., 1/6; 0.5 1,500 A.C., 1/6; 0.5 2,000 D.C., 1/6.

TRANSMITTING Type, 4 mfd. 3,500 A.C., 20/-; 6 mfd. 2,000 D.C., 12/6; 4 mfd. 2,000 D.C., 10/-; 2 mfd. 2,000 D.C., 5/6; 1 mfd. 2,000 D.C., 3/-.

50 Siemens Halske M.C. Speakers, 12in. cone, 220v. D.C. field, 15 ohm speech coil, packed in original cases; 22/6 each.

All Prices Cash With Order or e.o.d., postage paid on all orders over £2, liberal discount for quantities.

H. FRANKS, 42a, St. George St., Cannon Street Rd., Commercial Ltd., London, E.C.1. Phone: Royal 8546. [2969]

A.P.3, 9/6; twin-gang, 4/6; mains transformer, 10/6; choke, 50 henry, 50 ma., 4/6; also S.T.300 parts cheap. Box 7353, c/o The Wireless World. [2990]

CHAL ELECTRIC Offers Brand New Set Manufacturers' Boxed Surplus; all carriage paid; cash with order or e.o.d.; if not satisfied cash refunded without quibble.

VARIABLE Condensers.—Polar Star 3-gang, 1933, complete with disc drive, trimmers, covers, light, knob, etc., list 30/-, at 17/-; 2-gang Uniknob, fitted as above, at 10/-; J.B. Nu Gang 3-gang, fitted as above, at 15/-; 2-gang Nu Gang, as above, 9/6.

SMOOTHING Condensers, C.E.C. and Murphy, 800 test 1 mfd., 1/-, 2 mfd., 1/9; 4 mfd., 2/6; the following 1,500 test, 500 A.C. working, 800 peak, 1 mfd., 1/9; 2 mfd., 2/4; 3 mfd., 4/-; Multiple blocks (separate tappings), 20 mfd., 2+2+2+2+2+2+2+2+1+1, at 11/-; 11 mfd. block, 4+2+2+2+1, at 6/9; 14 mfd. block, 4+4+4+1, at 7/6; 9 mfd. blocks, 4+4+1, at 5/3.

VALVES, Mazda A.C./Pens., A.C.S.G./V.M., A.C./S.G., Pen. 220a, at 9/-; A.C./2H.L., at 7/6.—Chal Electric, No. 6, Conduit St., London, W.1. [2998]

BROWN P.A. Speaker, 200v. field, 30/-; Celestion P.P.M., 30/-; A.F.4, A.F.3, 7/6; metallised S.G.215, 220P, 10/-; P.O. or call.—Spellacy, 40, Gordon Rd., Ilford. [2995]

CLASS B Ferrocart Four, complete kit, including valves, speaker and cabinet, £10; no junk; specification on request, stamp.—Aldridge, 29, Chatterton Rd., London, N.4. [2996]

BOXED, perfect, guaranteed.—Celestion Q.P.P. 19A speaker, 32/-; two Mazda A.C.220A, 9/9; two 50,000 pots, 2/-; Novotone type H, 31/-; Mullen, 158, Crosslet Rd., Dumbarton. [2954]

EPTON Leads Again!—H.M.V. 5-gang 0.0005 condensers, trimmers, drum drive, wavelength dial, can be dismantled and used as a 2-gang or 1-gang with or without drum drive; 10/6.

UTILITY Screened 2-gang 0.0005, trimmers, disc drive, illuminated dial, etc., 8/9; ditto, semi screened, Uniknob model, 9/6; Polar, Uniknob model, screened, 2-gang, 0.0005, disc drive, etc., 7/9.

REGENTONE Attractive Walnut Table Cabinets, with felt lined baffle, silk lined back, ideal for 3-valve sets; 12/6.

VALVES, as new.—A.C.S.G./V.M., A.C.S./V.M., 10/-; P.M.22A, P.T.2, 12/6; 41M.P., 41M.S.G., A.C.P.1, D.U.2, 624B.T., 7/3; 41M.H.F., 41M.R.C., 41M.L.F., 41M.H., 6/9; M.S.4, 84V.A., V.S.2, P.M.24A, P.T.425, P.T.625, P.M.26, 8/11; P.M.256A, P.M.3, P.M.4, 8/10, 8/10, P.625, 5/6; 1821, A.C.H.L., A.C.2H.L., 7/-; Epton, 93, New Rd., Chingford, E.4. Silverthorn 1427. [2982]

MOVING Coil Milli-ammeters, 0-50, 10/6 each; 2 milliamps and 120v. 17/6 each; other ranges in stock; alterations, repairs of every description.—The Victoria Electrical Co., 47, High St., Battersea, S.W.11. [0355]

HALF-PRICE, as new.—Collaro electric motor, set K.G.O. coils, K.S.O. coil, Cylidon 3-gang, Atlas output choke, R.I. barafed, Ferranti resistances, fixed condensers, Collins, 304, Thimblemill Rd., Smeethwick. [2974]

GARRARD Record Changer, £7; Varley superhet. coils, 30/-; Colvern Ferrocart coils, 30/-; Radiophone super 3-gang and dial, 25/-; Parmeko monodial transformer, £3.10.—Weller, 9, Walton Close, Cricklewood, N.W.2. [2985]

ELIMINATORS, Ekco A.C.18 42/-, Atlas A2 30/-, perfect; valves, M.S.G./L.A. (2) 7/6 each, P.E.N. 4v. (new) 9/-, A.C./H.L., V.M.S.4 (perfect) 6/- each; Ferranti B1 choke, 10/-; Mulhard V3 (battery), less valves, 27/6.—St. Clare, Altwood Bailey, Maidenhead. [2988]

COSMIC RADIO SERVICE, 23, Water St., Liverpool.—Bankrupt stock: J.B. condensers, 3-gang, screened, 14/-; Nu-gang 2, 10/-; Nu-gang A1, 8/-; Atlas A.C.244 H.T. unit, new, £1.15; British Radiophone 3-gang, 14/-; Polar 3-gang superhet., 14/-; 2-gang tub, 9/-; A.P.5C, 17/-; A.P.3, 12/-; A.P.4, 10/-; Rectatone, 8/-; Ni-choke 2, 6/-; Varley square peak coils, 7/6; postage extra. [2958]

RADIO CLEARANCE Co. Offer the Following: Brand new manufacturer's surplus; 2v. all-electric receiver, M.C. speaker, 200/250 A.C., listed £8.10, at £3; Ekco R.S.2, £7; Ekco R.S.3, £9; Tecalemit 4v. 2 S.G., M.C. speaker, 200/240 A.C., £7; Amplion Six, £9; Crypto rotary converters, 220 D.C. or 220 A.C. 300 watt output, £6; all goods advertised in last week's issue still available.—Radio Clearance Co., 78, Commercial St., E.1. [2999]

MISCELLANEOUS.

EASY Payments.—We supply, by easy payments, components, accessories, and sets, any make; 10% down, balance spread over 11 months. Send list of requirements to London Radio Supply Co., 11, Oat Lane, London, E.C.2. [0337]

T. W. THOMPSON & CO.

17, Stratton Ground, WESTMINSTER, S.W.1

Telephone: Franklin 6533.

Nearest Station, St. JAMES' PARK (Underground).

Open every day till 7.30 p.m. (Thursdays 1 o'clock).

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ALL GOODS ON THREE DAYS' APPROVAL AGAINST CASH OR C.O.D. (I. F. S. excepted).

FINAL CLEARANCE OF H.M.V., etc. AND OTHER COMPONENTS AT FURTHER REDUCED PRICES. YOUR BIG OPPORTUNITY NOW TO BUY CHEAP.

RADIO GRAM CABINETS IN WALNUT.—Made for 535 Marconi, felt-lined lid with auto stay. Cost makers £8. To clear, 43/-, A handsome piece of furniture. Size 3ft. 6in. height 1ft. 8in., width 1ft. 1in.

ALL MAINS TABLE CONSOLE CABINETS.—Polished walnut, 19in. x 16in. x 10in., beautifully designed, complete with felt-lined baffle. Price to clear 10/6, postage 1/-.

WESTINGHOUSE METAL RECTIFIERS.—125 volts 12 m.a., 3/- each, post 6d. Price for 2, making 125 volts 24 m.a., 5/-, post 6d.

CONDENSER BANKS, ALL BRAND NEW AND GUARANTEED.—T.C.C. 8 m.f., 4 plus 1 250 volt working, 3/3 each, post 6d.; in dozen lots, 2/9 each. Ditto, H.M.V., 3/- each; in dozen lots, 2/6 each, post 1/3. T.C.C. 10 m.f. Electrolytic, 100 volts working, suitable for set or S.G. tappings, or smoothing by pass condensers for automatic grid bias, 1/- each, post 3d., or 9/- per dozen, post 9d. T.C.C. 15 m.f. electrolytic, as above, 1/3 each or 12/- dozen. T.C.C. 3 m.f. 800 volt working, 3/- each, post 6d., or per dozen 2/6 each. H.M.V. 10.5 m.f., tapped 600 volts, 3/9 each or per dozen, 3/3 each. H.M.V. 11.5 tapped, 4/- each, post 6d., or per dozen, 3/3 each. H.M.V. 12.9 m.f., 4/- each, post 6d., or per dozen, 3/3 each.

BRITISH SANGAMO FIXED CONDENSERS.—Bakelite case 0.0002, 0.00025, 0.0005, 0.001, 0.002, 0.005, 3/- per dozen or 22/- per gross.

WEGO BAKELITE MOULDED-CASED CONDENSERS.—With terminals, 700 volt test, 1 m.f., 1/- each, post 3d., or 10/- per dozen; 2 m.f., 1/9, post 3d., or 18/- per dozen; 1 m.f., 2/8 each, or per dozen, 2/3 each. Postage on dozens, 1/3.

MOVING COIL SPEAKERS.—200/250 volt, all new with perfect reproductions, Rola, Magnavox, and Lamphing Silver Ghost, 15/- each, post 1/-. If for A.C. mains, 25/- each.

REGENSTAT ELIMINATOR VOLTAGE CONTROLS.—List 5/6, to clear 1/- each, post 3d.

L.T. TRICKLE CHARGERS.—Charging 2, 4 or 6 volt at 1 amp., fitted Westinghouse metal rectifier, 12/6, post 6d.

COLUMBIA SUPER-SIX DOUBLE SPRING GRAMOPHONE MOTORS.—With turntable, worth £1, to clear 18/6, post 9d. Single spring type 50, 10/6. All brand new and boxed.

CENTRALAB VOLUME CONTROLS.—Brand new, 2/3 each, post 3d.

MULTI-RATIO SPEECH TRANSFORMERS.—Suitable for any M.C. speakers, 4/3, post 3d.

FIVE- AND FOUR-PIN VALVE HOLDERS.—4/4 each, post 1/4d.

DUR AMESCO 3-GANG 0.0005 VARIABLE CONDENSERS WITH TRIMMERS.—Complete with illuminated drum drive marked in meters, die-cast chassis, cost 17/6, to clear 9/11. Can be dismantled and used as 2-gang with dial or single gang with dial postage 1/-.

BRITISH RADIOPHONE SUPER HET FOUR-GANG VARIABLE.—0.0005 with trimmers, fully screened, cost 35/-, clearing at 9/11, post 9d.

UTILITY 2-GANG 0.0005, FULLY SCREENED.—Trimmers, illuminated dial and excitation. List price 18/6, to clear 7/11, post 6d.

AEROVOX ELECTROLYTIC CONDENSERS, DRY A, for eliminating hum from M.C. speakers, etc., 2,000 m.f. 7/6, 1,000 m.f. 8/6, all new, post 6d.

D.C. ELIMINATORS.—200/250 volts inputs, output 150 volt 30 m.a., 2 pos. tappings, 1 variable, all new and guaranteed 10/6, post 9d.; 3 pos. tap, 1 var., 15/-, post 9d. In the event of mains being changed within the next six months, full purchase price will be allowed in exchange for A.C. eliminators.

COLLARO INDUCTION ELECTRIC GRAMOPHONE MOTORS.—Latest type, complete with automatic stop and all fittings, 37/6, brand new and boxed, post 1/-.

BROADCAST MICROPHONES.—Pedestal type with rubber suspension, 15/6. Watch-type pattern, very sensitive, 4/6, post 6d. Highest grade Reisz pattern microphones, in heavy polished octagonal aluminium case with rings for suspension, 55/-, post 1/-.

COSMIC SHORT WAVE COILS.—On Bakelite former and base, 1/6 each, post 6d., brand new.

COSMIC TRIPLE WAVE COIL UNIT.—On Bakelite with base, listed 12/6, to clear 2/9, post 6d., brand new.

READY RAD-DUOTONE 0.0005 VARIABLE CONDENSERS, with automatic switch, 1/9, post 6d., brand new.

We are expecting very shortly a large consignment of RADIO GRAMS, CHASSIS, A.C. MAINS VALVES, and ALL MAINS SETS. Please send for List of Goods not seen in this Advertisement.

T. W. THOMPSON & CO.

ELECTRADIX BARGAINS

DIXMIPANTA

for A.C. Tests, 7½v, 150v, 300v and two ranges m/a. Bakelite, Vest Pocket **19'6**



DIXONEMETER

Multi-range D.C. Meters **60'.**



No H.T. Batteries H.T. D.C. indefinitely **37'6**

PHOTO CELLS. Last chance at sacrifice prices of a few £5 light sensitive R.C.A. 867 for 25/-, Holders 1/-, and Brit. Talking Pics. at 15/-, 2/6 Booklet ready shortly. Beck mounted prisms 5/6, P.C. Lens 3/6, R.C.A. Micro Adjusters 1/-, Exciter Lamps 3/8.

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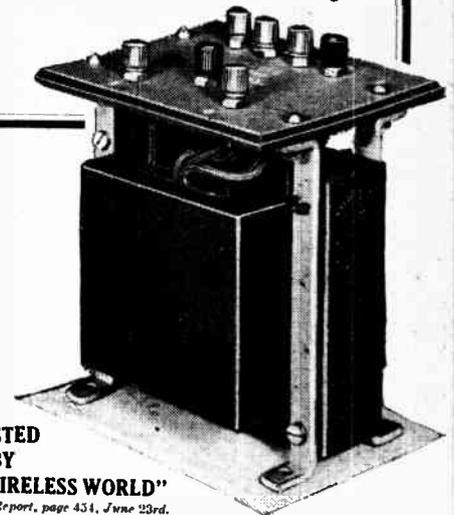
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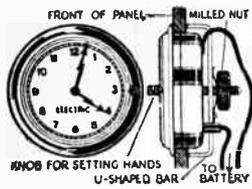
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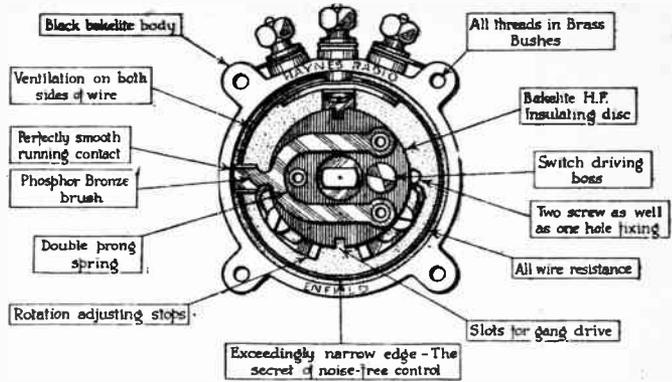
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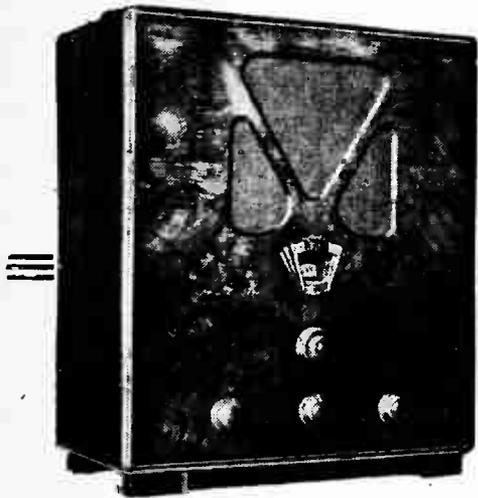
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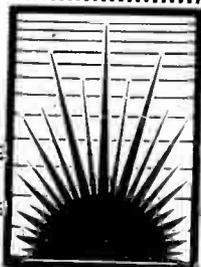
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AT HOME

- NATIONAL** Orchestra: concert from Bournemouth.
- LONDON** Orchestral concert from Buxton.
- REGIONAL**
- MIDLAND** Military Band programme.
- REGIONAL**
- WEST** "A Siddons' At Home," relayed from the Birthplace of Mrs. Siddons at Brecknock.
- REGIONAL**
- NORTH** Orchestral concert from the Pavilion Gardens, Buxton.
- REGIONAL**
- SCOTTISH** Choral and Band programme.
- REGIONAL**
- BELFAST** Variety programme.

ABROAD

- BARCELONA** 7.0 p.m. Trio concert.
- BRUSSELS** 5.0 p.m. The Station Symphony Orchestra.
- (No. 1)
- EIFFEL** 8.30 p.m. Handel Festival.
- TOWER**
- HEILSBURG** 8.35 p.m. The Königsberg Opera House Orchestra.
- LEIPZIG** 8.30 p.m. Concert of old National music.
- ROME** 8.45 p.m. Opera: "Dafni," by Mulé, conducted by the composer.
- VIENNA** 7.0 p.m. "A walk through Vienna," concert.
- WARSAW** 6.35 p.m. Violin recital by Mme. L. Kmitya.

ATHLONE
725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Stock Exchange Quotations and Weather Report, 6.0, Programme for Children, 6.45, News Bulletin, 7.0, Gaelic Talk, 7.15, German Lesson, 7.30, Time Signal, 7.31, Irish Transport Workers' Brass and Reed Band, 8.30, Contralto Solos by Doris Hill, 8.45, Pianoforte Solos by Dina Copeman, 9.5, Orchestral Music, 9.15, Variety Concert by the Nono Brothers, 9.45, Sponsored Programme, 10.45, Time, News, Weather and Close Down.

BARCELONA
EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert, Aria from Tannhäuser (Wagner); Selection from Norma (Bellini); Melody (Couperin); Canzonetta Op. 35 (Tchaikovsky); Cassation in G (Mozart); Czardas, Mariska (Michiels), 8.0, Request Gramophone Records, 8.30, Exchange, 9.0, Gramophone Music and News, 10.0, Chimes from the Cathedral, Weather, Exchange and Market Prices, 10.5, Concert by the Station Orchestra, 11.0, Recitation of Poems, 11.15, Song Recital by Francisco Rovira (Baritone), 11.45, Sextet Concert relayed from the Casino San Sebastian, Barcelona, in the interval at 12 Midnight, News, 1.9 a.m. (Thursday), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Talk, Tourist Report and Dopolavoro Announcements, 8.20, Giornale Radio and Weather, 8.30, Time and Announcements, 8.35 (approx.), Concert of Chamber Music, Soloists: Giacomina de Vito (Violin), Franco Ruggiero (Pianoforte), and Enza Motti Messina (Soprano); Pianoforte Sonata, Op. 11 (Schumann); Violin Solo: Chaconne (Bach); Soprano Solos: Three Thirteenth Century Songs (Casella); Minuet (Porpora-Kreisler); Capriccio, No. 24 (Paganini-Kreisler); Violin Solos: (a) Jewish Melody (Gastelnuovo Tedesco), (b) Slav Dance, No. 2 (Dvorak-Kreisler); Soprano Solos: Three Sicilian Songs (Mulé); Pianoforte Solos: (a) Berceuse (Chopin), (b) Polichinelle (Rachmaninov); Violin Solo: Souvenir de Moscow (Wieniawsky). In the interval: Talk, 10.30, Gramophone Music, 10.55, News.

BASEL.—See Schweizerischer Landessender.

BELGRADE
697 kc/s, 430.4 metres; 2.5 kW.—7.0 p.m., Trio for Oboe, Clarinet and Bassoon (Flegler), 7.40, Folk Songs, 8.10, Dramatic Programme, 8.55, Aida—Opera (Verdi) on Gramophone Records, 10.0, Time and News, 10.15, Gramophone Dance Music.

BERLIN
DEUTSCHLANDSENDER: 163.6 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Recital by Albrecht Lier, 2.45, Programme for Children, 3.10, Talk: The Indians, 3.30, Weather and Exchange, 3.45, Recitation, 4.0, See Hamburg, 5.0, Talk: Greek Tragedy and Modern Man—Euripides, 5.30, Recital of Old Pianoforte Music: Three Pieces (Scriabine-Bülow); (a) Sarabande in G Minor, (b) Burlesque in G Minor, (c) Minuet in G; L'appel des oiseaux (Rameau); Le Coucou (Daquin); Six Pieces (Bach); (d) Minuet in G minor, (e) Prelude in E, (c) Minuet in G, (d) Minuet in G Minor, (e) Polonaise in G Minor, (f) Sarabande in D Minor, 6.0, Poems, 6.5, Talk by a Nazi Parson, 6.55, Wireless Technical Talk, 6.50, Weather and Announcements, 7.0, Transmission for all German Stations; Sachs, halte Wacht—on Transylvanian Radio Sequence (Fritz Heinrich Reimisch), 8.0, An Axiom, 8.5, See Langenberg, 10.20 (approx.), Weather and News, 10.45, Weather, 11.0, Dance Music, 12 Midnight, Close Down.

BERLIN
WITZLEBEN; 715 kc/s, 419.5 metres; 1.5 kW.—6.20 p.m., Radio Report from the Berlin-Hamburg Express, 6.40, The Witzleben Station informs its Listeners, 6.45, Topical Talk, 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender), 8.10, Deutsches Liederspiel, Op. 14, for Solo Voices, Mixed Choir, and Pianoforte (Herzogberg), 8.50, Have you heard, 9.0, Radio Report from the Dramatic School of the Berlin German Theatre, 9.30, A Radio Report on the New Literature, 10.0, News, followed by Dance Music from the Delphi-Palast, in the interval from 11.0 to 11.5 (approx.), Talk: What they are talking about in Berlin, 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER. — See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE
986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal, 7.15, News, 7.30, Tourist Talk, 7.45, Report on the Cycling Tour of France, 8.5, Agricultural Notes, 8.20, News, 8.30, Gramophone Music, 9.0, Symphony Concert.

BRATISLAVA
1,076 kc/s, 279 metres; 14 kW.—4.0 p.m., Concert by the Station Orchestra, conducted

by F. Dyk: Overture, William Tell (Rossini); Selection from Dalbor (Smetana-Leopold); Humoresque (Dvorak); Waltz from Der Rosenkavalier (R. Strauss); Intermezzo (Kocian); Entry of the Guests, from Tannhäuser (Wagner); Love Song (Bece); Suite from Peasant Jack (Nedbal), 5.30, Talk on Yugoslavia, 5.40, Gramophone Music, 5.55, Hungarian Programme, Talk on Films and Song Recital, 6.55, Talk for Housewives, 7.0, See Prague, 7.15, Spy No. 67—Play in One Act (Künn), 7.55, Gramophone Music, 8.5, See Prague, 9.5, Popular Concert by the Station Orchestra, conducted by F. Dyk, 10.0, See Prague, 10.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU
923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—2.0 p.m., Time, Weather, and News, 2.20, Gramophone Concert of Light Music, 3.0, Agricultural Prices, 3.20, Programme for Women, 3.40, Talk: German Landscapes at the Art Exhibition in the Museum, 3.55, Talk: Are you Superstitious on Legal Questions? 4.15, Pianoforte Duet Recital by Maria Schuk and Bruno Sowa: Sonata in A Flat, Op. 92 (Hummel); Au Springbrunnen (Schumann); Three Burlesques, Op. 58 (Reger), 4.45, Reading (Rudolf Fitze), 5.15 (approx.), 5.10, Agricultural Prices, 5.15 (approx.), Contralto Song Recital by Margarete Zahn: Death and the Maiden (Schubert); An die Musik (Schubert); Von ewiger Liebe (Brahms); Der Mond steht über dem Berg (Brahms); Gesang Weylas (Wolf); Verborgenhelt (Wolf), 5.30, Talk: German Libraries on the Upper Silesian Frontier, 5.50, Flute Recital by Wilhelm Krummschmidt: Andante favori (Mozart); Das glückliche Waldvögelin (Wetzlar); A Venetian Carnival (Briccialdi); Variations on a German Song (Boehm), 6.20, A Dialogue: Peasant Life in Rosenberg, 6.50, News, 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender), 8.10, See Frankfurt, 9.10, Variety Concert, 10.0, Time and News, 10.30, Talk: The Law for the Wireless Listener, 10.50, Dance Music, relayed from Berlin (Witzleben), 12 Midnight, Close Down.

BRNO
278 kc/s, 342 metres; 35 kW.—6.0 p.m., German Transmission: History Talk and Gramophone Music, 7.0, See Prague, 7.15, Songs about the Reformer, John Huss, by Vlasta Kubikova, 7.30, Humorous Programme, 8.5, Chromatic Accordion Solos, 8.25, Boy Scouts' Programme, 8.55, Concert by the Salon Trio, 9.30, Talk with Gramophone Illustrations: A Journey to the Caucasus Mountains, 10.0, See Prague, 10.30 (approx.), Close Down.

BRUSSELS (No. 1)
I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert conducted by André Fellemann, relayed from the Grand Hotel, Antwerp, 1.0 p.m., Le Journal Parlé, 1.10, Concert by the Station Orchestra, conducted by C. Walpot, Soloists: Mlle. Lambert (Songs) and M. Rubeau (Tenor), Overture, The Gipsy Baron (Joh. Strauss); La voix des cloenes (Luigini), Songs, Selection from Madame Butterfly (Puccini), Tenor Solos, Ballet Suite (Popy), 5.0, Concert by the Station Symphony Orchestra, conducted by Meulemans, Overture, Le Roi la dit (Debibes); Dance of the Hours, from La Gioconda (Ponchielli); Ballet Music from Hérodiade (Massenet); Overture, Die Fledermaus (Joh. Strauss); Ballet Music from Faust (Gounod), 6.0, Travel Talk: Dinant and District, 6.15, Gramophone Music, 6.30, Pianoforte Solos by Mlle. Tambyseur, Fantasia, Op. 77 (Beethoven); Improvmtu, Op. 142 (Schubert); Baigueses au soleil (de Séverac); Bourrée fantasque (Chabrier), 7.0, Saxophone Solos by Paul Gasen, 7.15, Religious Address, 7.30, Medical Talk, 8.0, Pianoforte Solos by Mme. Grandorge, Lullaby and Dance (Strens); Jardins sous la pluie (Debussy), 8.15, Macintosh—Play (arr. Bartlett), after a Short Story by Somerset Maugham, 9.15, Concert relayed from the Kursaal, Ostend, 10.30, Le Journal Parlé, followed by Dance Music from the Kursaal, Ostend.

BRUSSELS (No. 2)
I.N.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Radio Orchestra, conducted by Charles Walpot, Soloists: Mlle. Lambert (Songs) and M. Rubeau (Tenor), Unie-marche (Walpot); Third Waltz Potpourri (Robrecht); Overture, The Gipsy Baron (Joh. Strauss), Songs, Stolz Potpourri (Jostal), Tenor Solos, Spanish Dances (Moszkowsky), 1.0 p.m., Le Journal Parlé, 1.10, Concert conducted by André Fellemann, relayed from the Grand Hotel, Antwerp, 5.0, Concert by the Radio Orchestra, conducted by Charles Walpot, Italian March (Rossini); Waltz, Dorfschwalben aus Oesterreich (Joh. Strauss); Potpourri (Schneider), Violin Solo, Nocturne (Chopin), Potpourri (Urbach); Selection from Le chemin du Paradis (Heymann); The Skaters' Waltz (Waldteufel), 6.0, Gramophone Music, 6.15, Recitations, 6.30, Gramophone Music, 7.15, Talk on Economics, 7.30, Talk: The Flemish Choral Society's Festival at Antwerp, 8.0, Concert by the Station Symphony Orchestra, conducted by Arthur Meulemans, Viennese Rhapsody (Schmitt); La forêt enchantée (d'Indy); Fantasia on two popular airs (Lekeu); Fête polonaise (Chabrier), 8.45, Reading from the Decameron (Boccaccio), 9.0, Concert (cont'd.), Spanish Fantasia (Gevaert); Flemish Songs, "Cello Solo, Le cygne et le lys blanc (Vanderhaegen), Horn

Solo: Serenade, Le passant (Vanderhaegen); Serenade (Waelput); Flemish Songs; Waltz (Maes); Funeral March (De Boeck), 10.0, Le Journal Parlé, 10.10, Dance Music from the Casino, Knocke.

BUCHAREST
761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra; Soloist: D. Teodoru (Violin): Overture, Queen for a Day (Adam); Spanish Waltz (Lincke); Selection from Samson and Delilah (Saint-Saëns); Two Russian Dances (Bullerian); Gavotte from Armide (Gluck); Violin Solo, Réverie (Vieuxtemps); Intermezzo (Dron); Ballet Music from Hérodiade (Massenet). In an interval at 6.0, Radio Journal, 7.0, Educational Programme, In an interval at 7.20, Gramophone Music, 8.0, Saxophone Recital, 8.30, Pianoforte Recital, 9.0, Violin Solos by A. Theodoresco: Concerto in G (Haydn); Andante and Scherzo from the Spanish Symphony (Lalo), 9.30, Programme relayed from a Restaurant, 10.0, Radio Journal.

BUDAPEST
545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.25 p.m. till Close Down.—4.0 p.m., Concert by the Weidinger Orchestra, 4.45, News, 5.0, Talk, 5.30, Concert by the Postal Officials' Orchestra, conducted by Wilhelm Roubal Junior, relayed from the Márkus Restaurant, 6.45, Talk, 7.15, Market Prices, 7.25, Julia Banko and Georg Kádás Recital by Margarete Karacsony and Josef Cselenyi with Gigyány Band Accompaniment, 9.0, Violin Recital by László Szerdahelyi, 9.30, News, 9.45, Dance Music by the Lantos Band, relayed from the Royal Hotel, Soloist: Karl Vajda, 10.50, Weather, 10.40 (approx.), Gigyány Music by the Tonin Lakatos Band, relayed from Café Patria.

CASSEL.—See Frankfurt.

COPENHAGEN
1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time and Chimes from the Town Hall, 12.5 p.m., String Ensemble Concert, relayed from the Wivex Restaurant, 2.0 to 3.0, Interval, 3.0, Gramophone Music, 3.30, Concert by the Radio Orchestra, conducted by Lanny Gröndahl, March (Bayer); Overture, Orpheus in the Underworld (Offenbach); Variations for String; on a Theme of Tchaikovsky (Arensky); Selection from The Black Domino (Anber); Waltz (Lacôme); Minuet and Finale from the Symphony in C (G. Dittersdorf); Berceuse-Réverie (Sgambati); Spanish Waltz, A Day in Seville (Waldteufel); Selection from Orpheus and Eurydice (Gluck); Torch Dance from The Dance at Koldingshus (Kjerulf); Russian Parade March (Tosca). In the interval at 4.15 (approx.), Programme for Children, 5.35, Exchange and Fish Market Prices, 6.20, Talk, 6.50, Weather Forecast, 7.0, News, 7.15, Time Signal, 7.30, Agricultural Report, 8.0, Chimes from the Town Hall, 8.5, Concerto for Strings (Lully-Weingartner), 8.30, Talk: Potato Growing in Denmark, 9.0 to 2.0 a.m. (Thursday), A Radio Ball, 9.0, Concert by the Louis Preils Dance Band, in the interval at 10.0, News, 11.15, Dance Music by the Valencia Band, 12 Midnight, Time and Chimes from the Town Hall, 12.5 a.m. (Thursday), Dance Music from the Ritz Restaurant, 1.0, Dance Music from Nimb's Restaurant, 2.0 (approx.) Close Down.

CORK.—See Athlone.

CRACOW
959 kc/s, 312.8 metres; 1.5 kW.—7.20 p.m., Talk, 7.35, Miscellaneous Items and News, 7.40, See Warsaw, 7.55, Programme Announcements, 8.0, See Warsaw, 11.0 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP
1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Renald and B. McNabb, 4.30, Programme for Children, 5.0, Concert of Light Music for Portsmouth and Southsea Listeners: Intermezzo: Animal Antics (Aucliffe); Song: Always in my Heart (Turk); Pianoforte Solo: Still I love her; Egyptian Serenade, Amina (Lincke); Pianoforte Solo: The Match Parade (Lockton-Wehle); Song: I'll never be the same (Coward); The Whistler and his Dog (Pryor), 5.30, Gramophone Concert for Isle of Wight Listeners: Selection from Music in the Air, Part I, Come Gipsy from Countess Maritza (Kálmán); Violin Solo: Waltz, Op. 39 (Brahms); Brothers of the Empire (Helmere); Spanish Serenade (Herbert); Chinese Serenade (Herbert); Concertina Solo: War March of the Priests (Mendelssohn); He's dead but he won't be down; Selection from Music in the Air, Part II, 6.0, Programme in French, 10.0 till Close Down, Programme in English by the I.B.C., 10.0 (approx.), Dance Music by the Ibcians: Way out West in Kansas (Robinson); Get Cannibal (Weems); The Old Man of the Mountain (Young); You Rascal, You (Theard); Sailing on the Robert E. Lee (McAffery); Give me a Tune (Roger); Getting Sentimental

JULY 5th

WEDNESDAY

continued

(Malneck); This is my Love Song (Burke); Heaven for Two (Pepper); Deep in my Lady's Eyes (Gartman); From Saturday Night till Monday Morning (Dubin); Deep Night (Vallee); Body and Soul (Green); You're getting to be a Habit with me (Dubin); Chansonette (Friml); You're beautiful to-night, my Dear (Young). 11.0, Concert for Grimby Listeners. Part I—Gramophone Records: Veterans of Variety, Part 1. Crazy Night at the Opera; Talk by John W. Jackson, Esq.; O.B.E. Town Clerk of Grimby; Mouth Organ Solo: Here comes the Band; The Lincolnshire Poacher (Traditional); (Lapham and Dwyer's Fairy Tales; Old King Cole; Veterans of Variety, Part 2. Part II—Organ Recital. Just humming along (Meyer); Selón Rosmarin (Kreisler); Violin Solo: The Song of Songs (Moya); A Brown Bird Singing (Haydn Wood); Sylvan Scenes (Fletcher); Violin Solo: Because (d'Hardelet); Rhapsody in Blue (Gershwin). 12.5 a.m. (Thursday), I.B.C. Late News Bulletin in English. 12.10 (approx.). Music by a Rumba Band: African Lament (Gilbert); Sweet Muchacha (Hoffman); Mama Inez (Grenet); Fiesta, The Peanut Vendor; They all do the Rumba (Steininger). 12.30, Dance Music by the Ibeolians: The World is so small (Nesbit-Walker); Little Nell (Divina); Mediterranean Madness (Nesbit); Three Wishes (Posford). This is no Dream (Meyer); Let me give my happiness to you (Posford); One little Word led to another (Perkins); My heart's to let (Walter). 12.57, I.B.C. Good-night Melody. 1.0 (approx.). Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.0 p.m., Dialogue with a Rose Grower. 6.25, Topical Talk. 6.45, Review of the Day's News. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Special Transmission. 8.10, Concert of German Opera Music, conducted by Dr. Reinhold Merten. 9.10, The Brown Shirts—a Picture of the First Struggles of the Nazis in Germany (Eberhard Moes). 10.25, Time and News. 11.0, Serenade, from Munich. 12 Midnight, Close Down.

FREDRIKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 556 metres; and Kiel, 1,292 kc/s, 232.2 metres.—4.0 p.m., Concert by the Station Orchestra, conducted by Adolf Secker. Overture, Hans Heiling (Marchner); Polovtsian Dances from Prince Igor (Borodin); Suite from Der Rosenkavalier (R. Strauss); Overture, Der Improvisator (d'Albert). 5.0, Talk: Experiences among the Natives in the South Seas. 5.15, Talk: Hermann Löns—Hunter and Game Preserver. 5.30, Hamburg, Bremen and Lübeck—Report on Events in the Semtes and Houses of Burgesses of the Hanseatic Free Cities. 6.0, Talk on the Hundred and Twenty-fifth Anniversary of the Birth of Johann Gustav Droysen. 6.25, Walkenried—Play (Ernst). 6.45, Frankfurt Exchange. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Political Talk. 8.10, Humour of the Harz Mountains—Radio Sequence in Three Scenes. 10.0, Time and News. 10.20, Topical Report. 10.30, (from Hanover). Concert by a Symphony Orchestra of Unemployed Musicians. Conductor: Otto Ebel v Sosen. Comedy Overture (Scheinpflug); Comedy Suite from The Taming of the Shrew (Zlicher); Suite from The Merchant of Venice (Hummerdinck); Symphonic Introduction to Moretto's Comedy Donna Dianna (Riemenschneider); Spining Song and Intermezzo from Twelfth Night (Hummerdinck); Prelude to Die Abreise (d'Albert).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Music. In the intervals at 1.20 and 2.0, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Agricultural Prices and Exchange. 3.20, Hints for the Housewife. 3.30, Programme for Children. 4.0, Talk: The Reform of the Village Schools. 4.30, Concert by the Danzig Municipal Orchestra, conducted by Karl Tutein, relayed from Zoppot: Overture, Indra (Plotow); Second Movement from the Symphony in B Minor (Schubert); Selection from The Mastersingers (Wagner); Norwegian Dances (Grieg); Selection from Aida (Verdi); Overture, Waldmeister (Joh. Strauss); Waltz, Das Leben ein Kampf (Strauss). 5.55, Book Review. 6.15, Agricultural Prices. 6.25,

Talk: The Army and Military Training for Civilians in Poland. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Two Talks: (a) Germany and Eastern Europe, (b) Early Germanic Settlements in Eastern Europe. 8.35, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetitzky, relayed from the Königsberg Zoological Gardens. Soloist: Alfred Bartolittius (Tenor); Overture, Oberon (Weber); Walter's Prize Song from The Mastersingers (Wagner); Ballet Suite (Rameau-Mottl); Opera Arias; Waltz from Eugen Onegin (Tchaikovsky); Symphonic Poem, Romeo and Juliet (Svendson). In the interval, News. 9.45 (from Danzig), Reading from Das Marmorbild (Josef von Eichendorf). 10.15, News. 10.25 (approx.), Dance Music, relayed from Berlin (Witzleben). 12 Midnight, Close Down.

HILVERSUM

Announced HUIZEN; 1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Christian Radio Society (N.C.R.V.).—12.10 p.m., Concert by the Station Quintet. 1.40, Programme to be announced. 1.50, Harmonium Recital from a Church in Amsterdam. 2.40, Concert by the Delft Trio: Trio, Op. 1, No. 3 (Beethoven); Souvenir de Spa (Servais); Songs on Gramophone Records: (a) Wiegendorf (Brahms), (b) Ständchen (R. Strauss); Trio in B Flat (Volkman). 4.10, Programme for Children. 5.10, Relay from the Festival in Wassenaar. 5.55, La Procession nocturne (Kaband) on Gramophone Records. 6.10, Talk arranged by the Department of Buildings and Roads. 6.40, Police Notes. 6.55, News. 7.10, Recitations, with Songs. 7.40, Request Concert on Gramophone Records; Entry of the Guests into the Wartburg (Wagner); Selection from Si j'étais roi (Adam); Soprano Solo: The Rustle of Spring (Sinding); Invitation to the Waltz (Weber); Organ Solo: March of the Tin Soldiers (Jessel); Am Lagerfeuer (Siede); Nachtigallendändchen (Klose); Kirschblütenfest (Dieker); In a Chinese Temple Garden (Kettelbey); Coronation March (de Metz); March, Blaze away (Holzmann); Matrosen-Streiche (Rathke); Kleinbahnfahrt (Rathke). 8.40, Talk. 9.10, Organ Recital from Amsterdam. 10.10, News. 10.20, Gramophone Music. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 160 kc/s (1,875 metres), 8.5 kW.—11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). 11.40, Organ Recital by J. Jong. 11.55, Concert by De Notenkrakers, conducted by D. Wims: Servus Wien (Schrammel); O schöner Mai (Strauss); Sielietta (von Blom); Minuet (Bocherini); Selection from Countess Maritza (Kálmán); Russian March (Ohlsen). 12.25 p.m., Organ Recital (contd.). 12.40, Concert by the Notenkrakers (contd.): Waltz Potpourri (Gere); Scotch Lullaby (Kunits); Désir (de Micheli); Bolero (Mannfred); Russian Rhapsody (Michiels). Gramophone Records: Slav Potpourri (Wilke); Melody (Martin); Kikeriki (Evans). 1.25 to 1.40, Interval. 1.40, Programme for Women. 2.40, Programme for Children. 5.10, Concert by De Filereiniters, conducted by J. van de Horst. 5.55, Concert by the V.A.R.A. Maudoline Orchestra, conducted by J. Kok. Freiheitsjubil (Blankenburg); Lotsblumen (Ohlsen); Im Heineleinchen-Bar (Rosen); Geister der Luft (Lincke); Stephanie Gavotte (Czibulka); March (Rosey). 6.25, Organ Recital by C. Steyn: Selection from La Mascotte (Andran-Gorbin); Two Serenades (Leonevallo); Bei Tage, bei Nacht (von Knorr-Renes). 6.40, Talk. 7.0, Organ Recital (contd.): Broeders, verluft u ter vrijheid; Melody (Pijpers); Ne dis pas tonours (Lemoir); Musical Jigsaw (Kettelbey). 7.20, Talk. 7.40, S.O.S. Messages. 7.42, Variety Items. 7.55, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot: Melodies (Coates), (a) Moon Magic, (b) Roses from Samarkand, (c) Miniature Suite, (d) The Three Bears, (e) Extracts from Cinderella. 8.40, Dramatic Programme. 9.10, Concert (contd.): Hungarian Festival Overture (Keler-Béla); Die Schönbrunner (Lauer); Hungarian Rhapsody No. 2 (Liszt). 9.40, Gramophone Music. 10.10, Concert (contd.): Overture, Gypsy Love (Lehar); Mit Dampf (Strauss); Spring ins Feld (Strauss); Perpetuum mobile (Strauss); Mein Baden (Komzak); Selection from Polenlied (Nedbal). 10.55, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

733 kc/s, 408 metres; 16 kW.—7.10 p.m., Talk for Housewives. 7.25, Announcements and Gramophone Music. 7.40, See Warsaw. 10.40, Dance Music. 11.0, The Letter Box in French.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—7.0 p.m., Orchestral Concert 7.50, Radio Play (Vilho Kuprikoski). 8.20, Concert by the Radio Quartet. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Concert from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Wolf. Soloist: Marga Bünnl (Guitar); Overture, Der Beherrscher der Geister (Weber); Guitar Solos: (a) Wiegendorf (Schumann), (b) Andante Largo (Sor), (c) Minuet, No. 2 (Sor); Selection from Heiteren Suite (Schubert); (a) Liebesnied, (b) Pirote; Waldmorgen from Der Berggeist (Stierlin); Selection from Cavalleria rusticana (Mascagni); Potpourri, Strauss bleibt Strauss (Schweichert). In the interval at 2.0, News. 2.30 to 3.0, Interval. 3.0, Reading. 3.30, Economic Notes and Time. 3.50, Programme for Young People. 4.30, Concert by Die Fröhlichen Fünf. In the interval, Topical Talk. 5.50, Dialogue for Women. 6.10, German for Germans. 6.30, Italian Lesson. 6.50, Weather, Time, Economic Notes and Sports Report. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, News. 8.5, Il Re pastore—Opera in Two Acts (Mozart) with Introductory Talk. 10.30, News. 11.0, See Munich. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12.5 p.m., Concert by the Station Orchestra, conducted by Theodor Blumer: Overture, The Thieving Magpie (Rossini); Selection from Die toten Augen (d'Albert); Waltz, Op. 25 (Fuchs); Elegy from the Serenade for Strings (Tchaikovsky); Suite, Bilder aus dem Süden (Nicodé); Selection from The Land of Smiles (Lehar); Lyric Suite (Grieg); Edelweiss-Walzer, Op. 5 (Blumer). In an interval at 1.0 p.m., News. 2.0, News. 2.10, Talk: Sixty Years of the Saxon Army Club. 2.25 to 3.0, Interval. 3.0, Concert: Karin Brandt (Mezzo-Soprano) and Nino Neidhart (Pianoforte); Holder Blüten Mai (Handel); O holder Schlaf (Handel); Songs (Convoisier); (a) Ich will mich zur lieben Maria vermieten, (b) Maria voll der Gnaden, (c) Maria mein in Rosenhag; Extracts from the Partita, Op. 56 (Neidhart). 3.35, Economic Notes. 4.0, Choral and Dramatic Programme for Young People. 5.50, Economic Notes, News, Weather, and Time. 6.0, Review of Books on Gardening. 6.20, Talk on the Sixty-fifth Birthday of Stefan Georg. 6.45, Programme to be announced. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Political Announcements. 8.5, Variety Programme. 8.30, Concert of Old National Music: Funeral March on the Death of Maria Theresa, for Guitars (Diabelli); Soprano Solo (Mozart); (a) Götter, welch schwere Prüfung, (b) Einsam und still will ich beklagen, (c), glaubt ihr, Beständigkeit; Suite in Four Movements for Guitar (Paganini); Songs (Mozart): (a) Auf den Tod einer Nachtigall, (b) Ach, süßes teures Leben, (c) Nichts laßt mich mehr; Guitars: (a) Capriccio-Babarena (Granada), (b) Extracts from Der Reliquienschein; Liebes Mündel, wo ist's Bändel? (Mozart); Trio for Pianoforte, Lute, Violin, and Bass (Kolmutz). 9.10, News. 9.20, Reading. 9.35, Concert by the French Horn Quartet of the Dresden State Opera House Orchestra. 10.15, News. 10.20 (approx.), Dance Music by the Erich Lehrer Band. 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 579.7 metres; 7 kW.—5.30 to 6.0 p.m., Programme in English by the I.B.C. Announcer: P. Miklavcic. 5.30, International Broadcasting Club Concert: Selection from The Count of Luxembourg (Lehar); Trios: (a) Come along with me (Robison), (b) Coming round the Mountain (Robison); Lutua Bocca Dice: No (Rosen); L'Edera (Lao Schor); He's got a Wife and Family at Home; Will you dance through life with me? The Windmill (Rust); The Village Band (Fryburg and Edgar). 6.0, Reading. 6.30, English Gramophone Records. 7.0, Travel Talk on Morocco. 7.30, Literary Talk. 8.0, Talk on Music. 8.30, Song Recital by Mlle. Ilanus and M. Pavlic. 9.30, Time and News. 9.45, Concert by the Station Orchestra. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. Luxembourg Programme.—7.45 p.m., Violin Concerto in D (Beethoven) on Gramophone Records. 8.30, Recitation of Luxembourg Poetry. 9.15, Recital of Gramophone Songs by Josy Kugener, followed by Gramophone Music and News.

LWOW

788 kc/s, 381 metres; 16 kW.—7.20 p.m., Miscellaneous Items. 7.40, See Warsaw. 9.0,

Answers to Technical Correspondence. 9.10, See Warsaw. 10.0, Talk: Art in Lwów. 10.15, See Warsaw. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.10 p.m., Radio Gazette for Lyons and the South-East. 8.30 (approx.), Le Souffle du désordre—Play (Fauré Frenient). After the Play, News Bulletin.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, News, Talk for Women, and Dance Music. 9.25, News. 9.30 to 11.0, Interval. 11.0, Chimes, Time, Political Review, and Dramatic Programme. 12.15 a.m. (Thursday), News. 12.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.30 p.m., See Prague. 7.45, Programme to be announced. 8.5, See Prague. 9.5, Summer Evenings in Poetry and Music—Programme by F. Zeman and V. Musil. 10.0, See Prague. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—2.15 p.m., Concert of U.S.S.R. Songs. 2.45, Weather. 3.0, Propaganda Programme; Talk: The Development of the Soviet Union. 4.0, Talk: The Safeguarding of Socialist Property. 4.30, Literary Programme; Part I: Literature of the Past; Part II: Soviet Literature. In the interval, Light Music. 5.45, Talk: The Russian Steel Industry. 6.30, Dance Music. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—5.5 p.m., Palatinate Programme, relayed from the Hindenburg Park, Ludwigshafen: Round the Donnersberg—a Literary and Musical Programme. 6.5, Talk: Revolutions. 6.25, Sonata, Op. 10, in D Minor, for Violin and Pianoforte (Sandberger). 6.45, Time, Weather, and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0 (from Nürnberg), Orchestral Concert, conducted by Carl Demmer. 9.0, York—Play (Paul Ernst), with Incidental Music. 10.20, Time and News. 11.0, Serenade, conducted by Erich Kloss. 12 Midnight (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres, and Rjukan, 671 kc/s, 447.1 metres.—5.30 p.m., Concert relayed from Trondheim, 605 kc/s, 495.8 metres. 6.30, Programme for Boys. 7.0, Advertising Notes. 7.15, Weather and News. 7.30, Talk. 8.0, Time Signal. 8.1, Concert by the Station Orchestra, conducted by Oivind Fjeldstad: Overture, The Caliph of Bagdad (Boieldieu); Two Irish Pieces (Walton O'Donnell); Arabesque (Debussy); Symphony in E Flat (Mozart); Molly on the Shore (Grainger); Legend No. 10 (Dvorak); Bacchanale from Samson and Delilah (Saint-Saëns). 9.15, Talk. 9.30, Weather and News. 10.0, Topical Talk. 10.15, Weekly Review. 10.45, Dance Music.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time and Announcements. 8.45, Orchestral Concert. Soloists: N. Arcidiacono (Tenor), and Gallesi (Oboe); Overture, Egmont (Beethoven); Tenor Solos: (a) Ultima canzone (Tosti), (b) Lamento from L'Arlésiana (Cilea); Petite Suite (Debussy); Tenor Solos: (a) Song (Denza), (b) Lolita (Buzzi-Peccola); Sonata in G Minor for Oboe (Handel); Andante (Marinuzzi-Geminiani); Oboe Solo: (a) Improvviso (Butner), (b) Scottish March (Goldmark); Selection from The Siege of Corinth (Rossini). In the interval, Talk on the Slave Trade in Ancient Sicily. 10.0, Variety Songs. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., News. 7.0, Le Journal Parlé. 8.30, Handel Festival Concert, conducted by Edouard Flament; The Girardin Marchal Choir, conducted by Alice Sauvrezis; Soloists, Lili Febréque, M. Souchal and L. Dufont: Largo (arr. Guirrod); M. Souchal, Aria from Acis

JULY 5th

WEDNESDAY

continued

and Galatea; L. Fabrégue, Aria from Belshazzar; L. Dufont, Te Deum; Concerto Grosso, No. 21, for String Orchestra; Extracts from Samson. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.30 a.m., Gramophone Music. 7.45, Journal Parlé. 7.50, Radio Report of the Cycle Tour of France. 7.45, Gramophone Music. 8.0, Insurance Societies' Report. 8.5, Talk on Parasites. 8.15, Interlude. 8.30, Madame Belliard—Play (Charles Vildraz). 10.30, Dance Music, relayed from the Lido.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—7.30 a.m., Weather and Physical Culture. 7.45, Gramophone Music. 8.0, Weather and Press Review. 12 Noon, Educational Talk. 12.20 p.m., Italian Caprice (Tchaikovsky). 12.30, Organ Recital, from the Gannont Palace. 1.0, Exchange and News. 1.5, Opera Music on Gramophone Records: Prologue to Thésée (Lully); Aria from Armide et Renaud (Lully); Aria from Castor et Pollux (Rameau); Overture and Aria from The Secret Marriage (Cimarosa); Extracts from (a) Figaro (Mozart), (b) Alceste (Gluck). 2.0, Exchange. 3.45, Exchange and Market Prices. 6.40, German Lesson. 7.0, Exchange, Weather, Agricultural Report and Racing Results. 7.10, Talk. 7.30, National Dances on Gramophone Records. 7.50, Commercial Report and News. 8.0, Gramophone Concert. Waltz, The Blue Danube (Strauss); Six Sketches by Grock; E Viva la Carmenita (Grock). 8.30, News and Weather. 8.40, Fashion Talk. 8.45, Gramophone Concert (cont'd.). Le Rouet d'Omphale (Saint-Saëns); The Flight of the Humble Bee (Rimsky-Korsakov); Finlandia (Sibelius). 9.10, Paradise Lost—Comedy in Four Acts (Paul Gavault). relayed from the Athenaeum. In the interval at 9.15, Press Review and News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relay by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., KDKA Home Form. 8.0 to 8.58, New York Relay. 8.0, Betty and Bob. 8.15, Radio Troubadours. 8.30, Happy Days in Dixie. 8.58, Baseball Scores. 9.0, Southern Symphonies, from New York. 9.30, Business News and Market Reports. 9.45, Sketch, from New York. 9.58, Baseball Scores. 10.0, Rhythm Kings. 10.15, Tom Germ and the Casino Orchestra, from New York. 10.30, The Singing Lady. 10.45, Little Orphan Annie, from New York. 11.0, Time Signal and Press News-Boiler. 11.5, Ensemble. 11.15, Weather Report. 11.16, Sport Review. 11.23, I Bring a Song. 11.28, Announcement. 11.29, Temperature Report. 11.30, Pittsburgh Spotlights. 11.45 to 1.30 a.m. (Thursday), New York relay. 11.45, Today's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, Al Mitchell's Orchestra with Baritone Solos by Everett Marshall. 12.30, String Symphony. 1.0, Crime Clues. 1.30, Potash and Permut. 1.45 to 3.15, New York relay. 1.45, Phil Cook and the Ingram Shavers. 2.0, Tales of the Titans. 2.30, United States Marine Band. 3.0, Willard Robinson's Deep River Orchestra.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—6.0 p.m., Topical Talk. 6.15, See Warsaw. 7.20, Miscellaneous Items and News. 7.35, Theatre Notes and Programme Announcements. 7.40, See Warsaw. 7.58, Time Signal. 8.0, See Warsaw. 10.0, Time Signal and News. 10.15, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4 p.m., See Bratislava. 5.30, Gramophone Music. 6.0, German Transmission: Old and New Prague—a Radio Report with Music and Recitations. After the Programme, News. 7.0, Talk: Jan Huss. 7.15, See Brno. 7.30, Gramophone Music. 7.45, Folk Songs Recital. 8.5, Military Band Concert, relayed from Kralovska Obora. 9.5, See Bratislava. 10.0, Time and News. 10.15, News in French for Foreign Countries. 10.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS; 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Lausanne), Talk in German: Rainer Maria Rilke, Poet and Thinker. 7.25 (from Lausanne), Agricultural Report and News. 7.30 (from Lausanne), English Book Review. 8.0, Concert by the Radio-Suisse Romande Orchestra. 9.0 (from Lausanne), The Obstacle—Comedy in Dialogue Form (Berr de Turique). 9.20 (from Lausanne), Concert by the Lyrette de Radio Lausanne, conducted

by Otto Held. 9.50, News. 10.0 (from Lausanne), Dance Music. 10.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—7.30 p.m., Concert of Dance Music, relayed from Bulduri: Invitation to the Waltz (Weber); Viennese Dances (Beethoven); Scottish Pastoral Dances (P. Grainger); Piedmontese Dances (Sinigaglia); Waltz, Roses from the South (Joh. Strauss); Latvian Dances (Jurjans); Slav Dances (Dvorak); Russian Dance (Tchaikovsky); Hungarian Dances (Brahms); Waltz, Wienerblut (Joh. Strauss). In the intervals at 8.25, News; and at 9.0, Weather. 9.30, News and Gramophone Concert. 10.30 (approx.), Close Down.

RJUKAN. See Oslo.

ROME

1RO; 680 kc/s, 441 metres; 50 kW. Relay by Naples, 941 kc/s, 319 metres; and 2RO, 1180 kc/s, 25.4 metres, from 5.30 p.m.—1.0 to 2.15 p.m., Orchestral Concert: Bolero, Sivigliana (Manno); Waltz, Sogno di stelle (d'Achiardi); Foxtrot, Dance Motive (Barzizza); Oriental Dance (Grieco); Tango, Zigenner (Grothe); Selection from A Waltz Dream (Oscar Strauss); Serenata all'angiolotta (Rostano); Notturmo argentino (Lattuada); Selection from Manon Lescaut (Puccini); Pasodoble (Salter); Foxtrot (Papanti). In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange, Report of the Royal Geographical Society, and Giornale Radio. 5.30 to 6.15, Orchestral Concert of Light Music. 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 6.57, Report of the International Institute of Agriculture (in English and Italian). 7.10, Tourist Report. 7.50, Announcements in Different Languages. 7.40, Giornale Radio. 8.0, Time, Announcements, and Gramophone Records. 8.15, Medical Talk. 8.30, Giornale Radio and Sports Notes. 8.45, Dafni—Opera in Three Acts (Mule), conducted by the Composer. In the intervals, Topical News in Dialogue Form, and Reading of Poems. Giornale Radio after the Opera.

SALZBURG.—See Vienna.

SCHENECTADY

WGY; 790 kc/s, 379.5 metres; 50 kW. Relay at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 p.m., Business and Professional Women. 9.10 to 10.0 (approx.), New York Relay. 9.10, Pop Concert. 9.30, Texas Cowgirl. 9.45, Lady Next Door. 12.45 a.m. (Thursday), Stock Reports. 1.0 to 2.15, New York Relay. 1.0, Variety Programme. 1.30, Popular Concert. 2.0, Ferde Grofe's Orchestra. 2.15, Talk. 2.30, Popular Programme. 3.0, Variety Programme from New York. 3.30, Musical Programme from New York, followed by Programme Résumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; BASLE, 1,229 kc/s, 244.1 metres; and BERNE, 1,220 kc/s, 245.9 metres.—6.15 a.m. (from Berne), Gymnastics. 6.35 (approx.), Interval. 11.59, Time Signal from Neuchâtel Observatory and Weather Forecast. 12 Noon (from Berne), Gramophone Music. 12.30 p.m., Time, Weather and News. 12.40, Gramophone Records of Caruso, Galli-Curci and Toscanini. 1.25 (from Berne), Exchange, Time and Weather. 5.0 (from Zürich), Programme for Children. 5.30 (from Zürich), Gramophone Music. 6.30 (from Zürich), Programme for Women. 7.0 (from Zürich), Time, Weather and Market Prices. 7.10 (from Zürich), Gramophone Music. 7.30 (from Zürich), Elementary English Lesson. 8.0, (from Zürich), Music from Viennese Operettas. 8.30, Book Review. 9.0, Weather and News. 9.10 (from Zürich), Talk with Illustrations: The History of Organ Music from 1550 to 1700. 10.15, Close Down.

SEVILLE

(EAJ5), 815 kc/s, 368.1 metres; 1.5 kW.—9.30 to 10.0 a.m., News. 3.0 to 4.0 p.m., Concert by the Station Orchestra, followed by Flamenco Songs. 10.0, News, Exchange and Weather. 11.0 (approx.), See Madrid (EAJ7). 1.0 a.m. (Thursday), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relay by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Programme for Children. 5.30 (from Göteborg), Light Music. 5.50 (from Göteborg), Reading. 6.15, Gramophone Music. 7.30, Talk from Karlstad, 1,382 kc/s, 217 metres. 8.0 (from Sundsvall), Military Band Concert, conducted by Axel Eek. 9.0, A Comedy (Henri Bordeaux). 10.0, Dance Music. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—7.45 a.m., Report of the Cycle Tour of France. 8.0-11.30, Interval. 11.30, Gramophone Music. 12.30 p.m., Report of the Cycle Tour of France. 12.45, News. 1.0, Time and Exchange. 1.5, Light Music on Gramophone Records. 2.0-3.30, Interval. 3.30, Concert conducted by M. Brouillard relayed from the Casino, Vichy. In the interval at 4.0, Report of the Cycle Tour of France. 5.0, Talk on Electricity. 5.15, Orchestral Concert conducted by Roskam: Overture, The Nuremberg Doll (Adam); Waltz (Robrecht); The Tango (Lander); Selection from Miss Decima (Andran); Bonheur capricieux; Song on Johann Strauss Themes (Bürger); Oriental Suite (Popy); March, Toledo (Kalkman). 6.0, Trio Concert from Lille, 1,130 kc/s, 265.4 metres. 7.0, Legal Talk in French. 7.15, Talk: The Wage Question. 7.30, Time and News. 7.45, Report of the Cycle Tour of France. 8.5, News in German. 8.45, Concert by the Municipal Orchestra relayed from the Orangerie: Suite for Two Trumpets, Horn and Two Trombones (Pezel); Divertimento (Mozart); Prelude and Fugue in E (Bach-Munch); Rondino (Beethoven); Andante, Op. 7 (R. Strauss); Petite Suite Gantoise, Op. 90 (Gouvy). News in the interval. 10.30, Dance Music from the Savoy. 12 Midnight (approx.), Close Down.

STUTT GART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relay by Freiburg, 527 kc/s, 570 metres.—12.30 p.m., Gramophone Concert of Hans Pfitzner Music. 1.15, Time and News. 1.30, Concert from Langenberg. 2.0, Programme arranged by the Post Office. 2.15 to 3.30, Interval. 3.30, Programme for Children. 4.30, Concert by the Station Orchestra, conducted by Gustav Görlich; Soloist, Ursula Lohse (Mezzo-Soprano): Overture, Die Schweizerfamilie (Weigl); Two Arias from La finta giardiniera (Mozart); Ballet Music (Beethoven); Overture, Rakoczy (Kéler Béla); Fantasia on Russian Folk Songs (Lindemann); Spanish Waltz (Metra). 5.45, Talk: The German Saar. 6.10, Talk on Labour Service. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Concert by the Mannheim Chamber Orchestra, relayed from Mannheim; Conductor, Hellmut Schlawing; Soloist, Margarete Bäumer (Soprano): Concerto grosso No. 8 in C Minor (Handel); Solo Cantata, Herr auf dich traue ich (Buxtehude); Symphony No. 1 in G (Frederick the Great); Two Arias from Iphigenia in Tauris (Gluck). 9.0, Talk: Things you should know. 9.20, Dance Music. 10.5, Literary Programme. 10.20, Time and News. 11.0, See Munich. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions uncertain owing to recent fire.—11.30 p.m. till Close Down, Programme in English by the I.B.C. 11.30, Old Time Dance Memories. 11.57, I.B.C. Goodnight Melody. 12 Midnight (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m., Chamber Music. Laura Margon (Pianoforte) and Letizia Lutta (Soprano). Pianoforte Solos: (a) The Harmonious Blacksmith (Händel). (b) Rondo capriccioso (Mendelssohn); Soprano Solos: (a) Song (Tchaikovsky), (b) Es blinkt der Tau (Rubinstein), (c) Alte Liebe (Brahms), (d) Ständchen (Brahms); Pianoforte Solos: (a) Song without Words (Tchaikovsky), (b) Etude (MacDowell), (c) Toccata (Dreschcock); Soprano Solos: (a) Lirica (Giugliemmetti), (b) Five Japanese Songs (Setacchioli), (c) Serenade (Massenet). 6.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relay by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 p.m., Soprano Song Recital. 6.0, Weather Report. 6.5 to 6.55, Interval. 6.55, Giornale Radio and Announcements. 7.0, Time, Tourist Talk, and Gramophone Music. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, An-

nouncements. 8.15, Medical Talk. 8.30, Comedy in Three Acts. After the Comedy, Orchestral Music. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning); and 5,969 kc/s, 50.26 metres (Evening); 10 kW. 11.0 to 11.15 a.m., Religious Information in Spanish. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relay by Graz, 652 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—12 noon, Concert by the Vienna Symphony Orchestra, conducted by Josef Holzer. In an interval at 1.0, Time and News. 2.0 to 3.0, Interval. 3.0, Time and News. 3.20, Talk: Poultry Rearing. 3.30, Anecdotes about Animals. 3.55, Variety Music on Gramophone Records. 4.35, Talk on Collecting. 5.0, Talk: The German Schools in Banat, South Hungary. 5.25, Concert of Walter Bruch Music by the Galimir Quartet. Soloists: Anton Tausche (Baritone), and Paul Wittgenstein (Pianoforte); String Quartet in B Minor Op. 14, Pianoforte Pieces for the Left Hand Only: (a) Lied ohne Worte, (b) Intermezzo, (c) Etude; Song: (a) Der einsame Christus, (b) Nachtwandler, (c) Sklavennormal, (d) Träume. 6.10, Talk on the Fourth Centenary of the Death of Veit Stoss. 6.35, Talk: The Pros and Cons of the Voluntary Labour Service. 7.0, A Walk through Vienna—Part I. Concert by the Vienna Symphony Orchestra, conducted by Josef Holzer. Soloist: Josef Bergauer (Humorous Songs). Part II. Light Music, relayed from the Kahlenberg im Kahlenberger Dörfel (Fahrbach); Viennese Song, 's Glückel (Stolz); March, Mein Herz, das ist ein Bienenhaus. Part III. Military Music, from the Rathausplatz. Part IV. Light Music from the People's Garden: Waltz, Pikanterien (Lehur); Das macht die Liebe (Lerens); Das war nur a Weana (Sely); Violin Solo: Souvenir (Drlla); Selection from Lilac Time (Schubert-Berte). Part V. Johann Strass Music, from the Municipal Park: Overture, The Gipsy Baron; Waltz, Roses from the South; Operetta Potpourri. Part VI. Light Music from the Prater: Ja, in im Prater (Bergauer); Im Prater blihn wieder die Bäume (Stolz). Part VII. Gipsy Music, relayed from the Bar. Part VIII. Light Music, from Grinzing: Grinzing March (Drescher); Wiener Herz and Wiener Wein (Bergauer); Gelohn' im Lichtenthal (Rosenzweig); Potpourri, Wiener Spaziergänge (Komzak). In an interval at 7.30, Time and News. 8.50, Topical Report. 8.45, Bunte Stunde. 10.10, News. 10.25, Talk in French: A French Citizen's Youthful Impressions of Austria's Charm. 10.35, Concert by a Schrammel Trio and Soloists, relayed from the Krantz Ambassador Hotel.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Gramophone Music. 12.25, Polish Press Review. 12.35, Weather. 12.40, Gramophone Symphony Music. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.10, Announcements. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Records. 3.45, Announcements. 4.0, Popular Concert, relayed from Ciechocinek: The Poznan Opera House Orchestra, conducted by Tilia and I. Gieraltowska (Soprano). 5.0, Topical Talk. 5.15, Talk: Can Touring be considered a Sport? 6.35, Violin Recital by Mme. L. Knita: Allegretto (Boccherini-Kreisler); Minuet (Mozart); Romance (Sinding); Humoresque (Aulin); Albumblatt (Wagner-Wilhelmi); Spanish Serenade (Chaminade-Wilhelmi); Nocturne in D (Chopin-Wilhelmi); Waltz (Prokazyuk); La Capricieuse (Elgar). 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Reading from Travel in India (Goettl). 8.0, Concert of Chamber Music. 8.50, Radio Journal. 9.0, Answers to Agricultural Correspondence. 9.10, Pianoforte and Violin Recital: Sonata (Beethoven); Sonata in D Minor (Brahms). 10.0, Talk in English: The Protection of Wild Life in Poland. 10.15, Dance Music from the Europa Café. Ciechocinek. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music (cont'd.).

WILNO

533 kc/s, 563 metres; 16 kW.—7.20 p.m., Lithuanian Review. 7.35, Programme Announcements. 7.40, See Warsaw. 8.0, Request Gramophone Concert. 8.50, See Warsaw. 9.0, Miscellaneous Items. 9.10, See Warsaw. 10.0, Talk. 10.15, See Warsaw. 11.0 (approx.), Close Down.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—7.55, Talk in French. 8.10, Announcements. 8.30, Choral Concert, relayed from the National Theatre. 10.30, Programme Announcements, News and Weather. 10.40, Dance Music. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music, Stock Exchange Quotations and Weather Report. 6.0, Programme for Children. 6.45, News Bulletin. 7.0, French Lesson. 7.15, Talk. 7.30, Time Signal. 7.31, Concert of Irish Music with Pipe Solos by E. Potts. 7.45, Violin Recital of Irish Music by Mary Collins. 8.0, Anglo-Irish Songs by Mamie Dingle. 8.15, Irish Music by the Station Orchestra. 8.30, J. O'Dowda Wade (Enter-tainer). 8.45, Organ Recital by J. O'Brien, relayed from Gardiner Street Church. 9.45, Sponsored Programme. 10.45, Time, News, Weather and Close Down.

BARCELONA

EAJ1; 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Records. 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes, Weather Exchange and Market Prices. 10.5, Concert by the Station Orchestra: March (Bayer); Waltz, Lune de miel (Waldteufel); De Huelva (Romero); Gopak (Mussorgsky); La Voix des Cloches (Luigini); Minuet (Brémond); Selection from Samson and Delilah (Saint-Saëns). 11.0, Cancó d'amor I de guerra, Musical Comedy in Two Acts (Valls). In the interval at 12 Midnight, News. 1.0 a.m. (Friday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk and Popola-ry Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), Military Band Concert, conducted by Salvatore Rubino. Extracts from Iris (Mascagni); Second Part of Act III of Don Carlos (Verdi); Selection from Madame Butterfly (Puccini); Prelude to Omaggio a Perosi (Castellani); March, Bianca Brigata Regina (Rubino). In the interval, Talk. 10.30, Dance Music, relayed from the Gran Caffè del Levante. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—7.0 p.m., Talk. 7.30, Concert by the Radio Orchestra. 8.30, See Ljubljana. 10.30, Time and News. 10.45 (approx.), Cigány Music from the Potrosacka Zadruga Restaurant.

BERLIN

DEUTSCHLANDSEND, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert of Ballet Music. 2.45, Programme for Children. 3.10, Literary Talk for Young People. 3.30, Weather and Exchange. 3.45, Reading of a School Story. 4.0, See Heilsberg. 5.0, Talk for Women: A German Housewife in Shanghai. 5.45, Recital of Contemporary Music, with the composers at the Piano: (a) Frech und froh, (b) Alpenpuss, (c) An die Schönheit, (d) Der Gleichmütige, (e) Der Student, (f) Wechseltell der Tanz; Lyric Suite for Soprano and Six Instruments (Hans Chemin-Petit). 6.0, Poems. 6.5, Erlenspiegelein—Variations on a Theme for Piano: (a) Six Songs (Justus Hermann Wetzel); (b) Capriccio; Serenade and Waltz (Blumer); Hungarian Fantasia (Doppler); Pizzica-Pizzica (de Lorenzo). 6.0, Programme to be announced. 6.20, Talk by Workers and Workers' Leaders. 6.50 Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, An Axiom. 8.5, Abel mit der Mundharmonika—Radio Play from the Novel by Manfred Hausmann (arr. Otto-Zehn Jahm), on Gramophone Records. 9.20, Light Music and Dance Music by the Hansheirich Dransmann Orchestra. 10.0, News. 10.45, Weather. 11.0, Concert from the National Gaststätten. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—8.10 p.m., Talk: The Lady Companion. 6.30, Talk on Magdeburg. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Munich. 8.10, Talk on the Cinema. 8.30, Folk Songs. 9.0, Dance Music by the Gerhard Hoffmann Band, the Idealisten-Quartet, Carl de Vogt (Songs to the Lute), and Erwin Hartung (Tenor). In the intervals at 10.0, News, and at 11.0 to 11.5, Talk: What they are talking about in Berlin. 1.0 a.m. (Friday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.25, Talk arranged by the International Labour Bureau. 7.40, Lottery Results. 7.45, Report on the Cycling Tour of France. 8.5, Talk on Wine. 8.20, News. 8.30, La Brouille—Comedy in Three Acts (C. Vildrac).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—8.0 p.m., Gramophone Music. 7.0 till Close Down, See Prague. 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

THURSDAY

JULY THE SIXTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Song and Harpsichord recital.
LONDON REGIONAL "Flags on the Matterhorn," a play by B. Gasbarra in collaboration with Dr. C. Pfeil.
MIDLAND REGIONAL Orchestral programme.
WEST REGIONAL Proclamation Ceremony of the Royal National Eisteddfod of Wales, relayed from Neath.
NORTH REGIONAL Orchestral programme from the Pavilion Gardens, Buxton.
SCOTTISH REGIONAL "Links Jinks," some light-hearted variations on the topical theme of golf.
BELFAST An Irish programme.

ABROAD

BARCELONA 10.5 p.m. Concert by the Station Orchestra.
BRUSSELS 8.0 p.m. German music by the Station Symphony Orchestra.
BUCHAREST 8.0 p.m. Symphony concert.
COPENHAGEN 8.0 p.m. Franz Schubert and Johann Strauss, concert by the Station Orchestra.
LANGENBERG 10.30 p.m. Dance Music through the Centuries. The Station Orchestra, conducted by Kuhn.
PALERMO 8.45 p.m. Operetta music.
RIGA 7.30 p.m. Symphony concert, conducted by E. Mehlich.
TURIN 8.30 p.m. Opera: "Sly," by Wolf-Ferrari (relayed by Florence, Genoa, Milan and Trieste).
WARSAW 8.0 p.m. Concert by the Station Orchestra.

Trumpet Voluntary (Purcell). 9.55, Evening Prayer. 10.0, Le Journal Parlé. 10.10, Gramophone Records of Descriptive Music.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Budala Orchestra. In an interval at 6.0, Radio Journal. 7.0, Educational Programme. In an interval at 7.20, Gramophone Music. 8.0, Symphony Concert by the Station Orchestra, conducted by T. Rogalsky; Soloist, L. Mendelsohn (Violin); Suite for Quartet and String Orchestra (Rosaria Scalerò); Violin Concerto in B Minor (Händel); Symphony No. 4 in B Flat (Beethoven). In an interval at 8.40, Song Recital. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 8.20 p.m. till Close Down.—5.30 p.m., Concert by the Alexander Bura Cigány Band. 6.30, Wireless Notes. 7.10, Market Prices. 7.20, Violin and Song Recital by Paul Kernacs and Paul Ferher. 8.20, A Radio Play. 10.20, News. 10.30 (approx.), Gramophone Music.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, conducted by Max Skalka, relayed from the Hotel d'Angleterre. 2.0 to 3.15, Interval. 3.15, Concert by the Radio Orchestra, conducted by Launy Grøndahl: March from Paradis-fuglen (Silber); Prelude to the Fourth Act of William Ratcliff (Mascagni); A Summer's Evening Idyll (Merikanto); Melody (Deit-mas); Waltz, La Jeunesse dorée (Waldteu-fel); Prelude to Iris (Mascagni); King Frederick VII March (Lundbye). 4.15, Song Recital by Gudrun Knudsen. 4.35, Reading. 5.0, Gramophone Music. 5.35, Exchange and Fish Market Prices. 6.20, Talk: Bad Manners in Children. 6.50, Weather Forecast. 7.0, News. 7.15, Time Signal. 7.16, Talk by Sir Eric Drummond on the League of Nations. 8.0, Chimes from the Town Hall. 8.5, Schubert and Johann Strauss Concert by the Radio Orchestra, conducted by Walter Meyer-Radon: Part I: Schubert Overture in B Flat; Selection from Rosamunde; Minuet and Finale from the Fifth Symphony in B Flat; Part II: Strauss Waltz, Morgen-blatter; Overture, Die Fledermaus. 8.50, Reading from the Works of Nicolai Gogol, with Introductory Talk. 9.50, Extracts from the Second Act of Il Trovatore (Opera (Verdi), on Gramophone Records. 10.5, News. 10.20, Ballet Music by the Radio Orchestra, conducted by Walter Meyer-Radon: Ballet Music from Alcina (Handel); Selection from Les petits riens (Mozart); Dance from Bromthues (Beethoven). 11.5 (approx.), Close Down.

GORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—6.35 p.m., Gramophone Music. 7.10, The Letter Box. 7.25, Miscellaneous Items and News. 7.35, Programme Announcements. 7.40, See Warsaw. 10.0, Light Music, relayed from the Pavilion Restaurant. In the interval at 10.25 (approx.), Sports Notes and Weather Report. 11.0, Fanfare from the Tower of St. Mary's Church.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Ronald and B. McNabb. 4.30, Programme for Children. 5.0, Light Orchestral Concert for Working and Littlehampton Listeners. Selection from No No Nanette (Youmans); Love sends a little Gift of Roses (Openshaw); Song, Wine, Women and Song (Strauss); Southern Rhapsody (Hoerner); Princess Pat (Herbert); Song: The Doll's Song (Offenbach); My Hero, from The Chocolate Soldier (O. Strauss); Some of these Days (Brooks). 5.30, Gramophone Concert for Brighton and Hove Listeners. Selection from The Belle of New York (Kerker); The Moment I saw you (Grey and Gay); Mazurka (Wieniawski); Piano-forte Solo: When Day is done (de Sylva-Katscher); When my little Pomeranian met your little Pekinese (Oppenheim and Schuster); What Aloha means (Alphin); Play, fiddle, play (Lawrence); Don't be late in the Morning (Leclery and Mendoza). 6.0, Programme in French. 10.0 (approx.) till Close Down. Programme in English by the I.B.C. 10.0, Dance Music by the Bacolians. I can't write the Words (Marks); Isn't it romantic? (Hart); The Lady I love (Young); Ain't cha coming out To-night? (Carson-Robison); When they're on the Love Parade (Hogan); Roll along Kentucky Moon (Halley); Willow weep for me (Ronell); Her name is Mary (Ramsay); Look what you've done (Kalmar); When you've fallen in love (Waller); Moon Song (Coslow); My Heart's to let (Waller); Pickaninnies' Heaven (Coslow); Maybe I love you too much (Berlin); My Romance

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—2.20 p.m., New Gramophone Records. 3.0, Market Prices. 3.30, Tourist Talk. 3.40, Review of Books. 4.0, Song Recital by Elise Schölzel (Soprano). Ich bin ein deutsches Mädchen (Glück) Mailed eines Mädchens (Schulz); Mignon (Beethoven); Two Songs (Weber): (a) Die fromme Magd. (b) Unbefangenheit; Two Songs (Brahms): (a) Das Mädchen spricht, (b) Stand das Mädchen; Seit ich ihn gesehen (Schumann); Der Vogel im Walde (Taubert); Mädchenlied (Meyer-Helm-mund); Das Mädchen und der Schmetterling (d'Albert). 4.30, Programme for Children. 5.0, Talk: Loneliness in Magura. 5.25, Market Prices. 5.30 (approx.), Flute Recital: Two Pieces (Zanke): (a) Idée musicale, (b) Capriccio; Serenade and Waltz (Blumer); Hungarian Fantasia (Doppler); Pizzica-Pizzica (de Lorenzo). 6.0, Programme to be announced. 6.20, Talk by Workers and Workers' Leaders. 6.50 Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Workers—Stand firm! (Hans Krieger and Rudolf Mirlit). 9.0, News. 9.10, Request Concert by the Station Orchestra, conducted by Bruno Janz. 10.10, News. 10.30, Dance Music from Berlin (Witzleben). 1.0 a.m. (Friday), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—5.0 p.m., Variety Concert. 6.0, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12.0 Noon, Gramophone Concert. Cadet March (Souza); Trois bananes sour un franc (Maurey-Fanhard); Waltz, A boy and girl were dancing (Gordon-Revel); Slow Foxtrot, Standing on the Corner (Pola); 42nd Street: (a) Foxtrot, Young and Healthy, (b) Foxtrot, You're getting to be a habit; Hush, hush, here comes the bobby man (Lowton); Potpourri, Von Wien duret die Welt (Heny); Algerian scene (Kettelhey); Pas des patrenes (Jouve); Hungarian Rhapsody, No. 6 (Liszt); Der Obersteiger (Zeller); The Phantom Melody (Kettelhey); Selection from Virginia (Walter); Kleinerwiener Marsch (Kreiser). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans. One Step, Toledo (Kalkman); Spanish Waltz (Mascheroni); Melody (Mueller-Mel-born); Selection from The Dance of the Dragonflies (Lehár); Humorous Pieces for Violin: (a) Coq et poules, (b) La Sérénade du lapin belliqueux, (c) L'âne et l'âneur (Desprez); Sérénade à Gracziella (Desprez); Tango (Mendes-Scholar); Caravane hindoue (Popy). 5.0, Gramophone Concert of Viennese Waltzes. 5.30, Programme for Children.

6.0, Theatre Notes. 6.15, Gramophone Concert: Overture, Gwendoline (Chabrier); Selection from Manon (Massenet); Andaluza (Falla); Passepied (Debussy-Gruenberg); Les deux ménestriers (Durand); Polka d'Auvergne (Bouscatel); La chanson des nids (Bout); Tango (Albeniz-Dushkin); Waltz, Op. 64 ("Chopin-Taffanel); Schottische (Mewes); Waltz (Jonasson); Japanese Mazurka, La mousme (Ganne); Pierrot Schottische (Lamotte); Polka, Coq et poule (Paradis); Foxtrot (Breaux); Jazz Inter-mezzo (Rust). 7.15, Talk for Workers. 7.30, Sports Review. 8.0, Offenbach Concert on Gramophone Records: Overture, Orpheus in the Underworld; Drinking Song and Finale from La Vie Parisienne; Selection from La belle Héloïse; Air from The Tales of Hoffmann; Air from Les Brigands; Selection from The Drum-Major's Daughter; Air from La Pêrèche; Selection from La Vie Parisienne. 8.45, Talk for Peasants. 9.0, Concert of Mandoline Music and Walloon Songs relayed from Verviers: March, Wien bleicht Wien (Schrammel); Selection from The Caliph of Bagdad (Boieldieu); Selection from The Merry Widow (Lehár); Oriental Suites (Popy); Extracts from Les Saltimbanques (Ganne); Melodies from Faust (Gounod-Tavau); American March (Souza); Walloon Songs. 10.0, Le Journal Parlé. 10.10, Dance Music relayed from the Kursaal, Ostend.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish. 12 Noon, Concert of Spanish Music by the Little Station Orchestra, conducted by P. Leemans: Oriental March (Granados); Two Dances (Granados); (a) Danza gitana, (b) Danza aragonesa; Spanish Caprice, Moraima (Espinosa); Gipsy Scenes (Infante); Three Spanish Pieces for Violin (Falla); Spanish Songs (Albeniz): (a) Asturias, (b) Sevilla; The Mosque (Turina); Habanera (Turina); Cordova (Turina); Danzas fantásticas (Turina). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert of Spanish Music. 5.0, Scheherazade (Rimsky-Korsakov), by the Station Symphony Orchestra, conducted by Jean Kumps. 5.45, Programme for Children. 6.30, Concert by the Little Station Orchestra, conducted by P. Leemans; Soloist, Yvonne Verbeeck (Songs); Procession flamande (Leemans); Three Songs, Suite, The Nursery (Ingebrecht); Reading; Waltz, The Blue Danube (Joh. Strauss). 7.15, Talk. 7.30, Talk for Women. 8.0, Concert of German Music by the Station Symphony Orchestra, conducted by Jean Kumps: Overture, Coriolanus (Beethoven); Eine kleine Nachtmusik (Mozart); The Ride of the Valkyries from The Valkyries (Wagner); Overture, A Mid-summer Night's Dream (Mendelssohn). 8.45 Talk. 9.0, Song Recital by J. Sterkens (Tenor). 9.15, English Music on Gramophone Records; Selection from Maritana (Wallace);

JULY 6th

THURSDAY

continued

(Young); It's within your Power (Gordon and Revel). 11.0, Club Concert for Mablethorpe Listeners. Part I: Light Orchestral Music. Lovin' you; Pianoforte Solo: Jack o' Clubs (Steele); The Kiss Waltz (Burke); Duet: Poor Man's Heaven (Robinson); It seems to be Spring; Trio To-night (Kennedy); Serenade (Toselli); The Moon is Low. Part II: Gramophone Records. Clapham and Dwyer: A Day's Broadcasting; My ain folk (Lemon); Xylophone Solo: Snappy Sticks, Part I (Robbins); Who is Sylvia? (Schubert); The Poet's Song, from La Bohème (Puccini); Poor Man's Garden (Russell); Xylophone Solo: Snappy Sticks Part II (Robbins). 12.5 a.m. (Friday), I.B.C. Late News Bulletin, in English. 12.10 (approx.), Pianoforte and Song Recital. Selection from Words and Music (Coward); Song: In a Cloister Garden (Edgar and Morgan); Selection of Popular Melodies; Song: Street of Dreams (Lewis and Young); Keyboard Kapers (Steele). 12.30, Dance Music by the Icolians. Over-night (Alter); Well! Well! Well! (Donaldson); Cheerful little carol (Rose); Jack in the Box (Shand); Balloons (Yellow); To-night (Valerio); Always in my heart (Turk); Play, fiddle, play (Lawrence). 12.57, I.B.C. Goodnight Melody. 1.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres, and Trier, 1,157 kc/s, 259.3 metres.—6.0 p.m. (from Trier), Talk: By Acropolis from Frankfurt to Trier. 6.45, To-day's News. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, See Stuttgart. 8.45, Concert with Variety Interludes. 10.15, Time and News.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.10 p.m., Concert by a Nazi Band. 6.45, Frankfurt Exchange. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Greta—Play in Three Acts (Heinrich Heiter). 9.30, Pianoforte Recital by Georg von Harten. Seven Bagatelles, Op. 33 (Beethoven); Impromptu, Op. 142, No. 2, in A Flat (Schubert); Moment Musical, Op. 91, No. 3, in F Minor (Schubert); Arabesque, Op. 18 (Schumann). 10.0, Time and News. 10.20, Topical Talk. 10.30, Dance Music by the Station Chamber Orchestra, conducted by Gerhard Maasz.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., German Music on Gramophone Records. In the intervals at 1.20 and 2.0, News. 2.30, Programme arranged by the Post Office with Gramophone Records. 3.0, Agricultural Prices and Exchange. 3.30, Talk for Young People. 4.0, Concert by the Königsberg Opera House Orchestra, conducted by Karl Hrubetz: Spanish March, Bolero (Bizet); Overture, Fra Diavolo (Auber); Waltz from Ritter Pasman (Joh. Strauss); Potpourri, Kéler-Béla Perlen (Rhode); Overture, Czardas and Carpenter (Lortzing); Waltz, Liebesgellüster (Bayer); Selection from Das Fürstentkind (Lehár); Capriccio, Divioletta (Lindemann); Intermezzo, Schritte im Zweierteltakt (Kockert); March, Ehre das Handwerk (Hrubetz). In the interval at 4.50 (approx.), Book Review. 5.30, Reading of Legends and Ballads (Herbert Menzel). 5.45, The Peasant in Song—Song Recital with Lute, Oboe and Bassoon Accompaniment. 6.15, Agricultural Prices. 6.25, Agricultural Talk. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Munich. 8.0 (from Danzig), Minna von Barnhelm—Comedy (Lessing). 9.15, News. 9.20, Dance Music, relayed from Berlin (Witzleben). 10.20, News.

HILVERSUM

Announced HUIZEN, 1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.55 a.m. to 1.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 11.55 a.m., Concert by the K.R.O. Orchestra, conducted by J. Gerritsen. 1.40 p.m. till Close Down, Programme of the Christian Radio Society (N.C.R.V.). 1.40, Handwork Lesson. 2.40, Gramophone Records. 3.10 to 3.40, Interval. 3.40, Bible Reading and Sacred Songs. 4.40,

Handwork Lesson for Children. 5.10, Song Recital by F. Meijseer (Baritone). Gramophone Records in the intervals. 6.25, Dress-making Lesson. 6.40, Police Notes. 6.55, Talk. 7.10, Press Review. 7.40, Concert by the N.C.R.V. String Orchestra, conducted by P. van de Hurk. Soloist: L. Blaauw (Organ). Suite for Organ and String Orchestra (Blauw); Melody (Siep); Dutch Song (Tobé); Sacred Songs; N.C.R.V. Songs; Overture, Joseph (Alghul); Nocturne (Field); Adagio cantabile (Tartini); Selection from Isoline (Messenger); Simple avenu (Thomé); Ballet Suite (Popy); Oriental Suite (Popy). In the interval at 8.40, Talk; and at 9.40, News. 10.10, Gramophone Music. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 160 kc/s, 1,875 metres; 8.5 kW.—Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—11.40 a.m., Time Signal. 11.41, Concert by the Wireless Orchestra, conducted by Nico Treep. In the intervals: Gramophone Music. 1.55 to 2.10 p.m., Interval. 2.10, Gramophone Music. 2.40, Talk. 3.10, Gramophone Concert. 3.40, Programme for Hospitals. 4.10, Song Recital by Hans Merx. 4.40, Programme for Children. 5.20, Concert by the Wireless Orchestra, conducted by Nico Treep: March, Anora (Jesse); Suite saharienne (Ackermans); Waltz (Gilbert); Mendelssohn Potpourri (Urban); Rhapsody Rag (Lenzberg). 6.10, Sports Talk. 6.40, Concert (cont'd.): March Potpourri (Ciere); Waltz, Ueber den Wellen (Rosas-Pachernegg); Gaukler im Orient (Lindemann); Krakowiak (Leopold). 7.10, Talk. 7.40, Time and News. 7.45, Gramophone Music. 7.55, Concert by the Amsterdam Concertgebouw Orchestra: Overture, Semiramis (Rossini); Aria from The Barber of Seville (Rossini); Ballet Music from Faust (Gounod); Aria from La Traviata (Verdi); French Military March (Saint-Saëns); Overture, Ein Opernball (Heuberger); Arias from Die Fledermaus (Joh. Strauss); Waltz, Perlen der Liebe (Jos. Strauss); Songs by Gitta Alpar; Air from The Duharry (Millöcker); Air from Katharina; Hungarian Song; Overture, Das Modell (Suppe). 10.10, Gramophone Music. 10.40, News. 10.50, Dance Music by The Ramblers, relayed from the Hotel Handorff, Laren. 11.50 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—6.35 p.m., Choral Concert of Silesian Music. 7.10, Sports Talk. 7.25, Announcements and Gramophone Music. 7.40 till Close Down, See Warsaw.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—7.35 p.m., Song Recital. 7.55, Violin Recital. 8.20, Recitations. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Concert from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Wolf, Soloist: Andreas Holzer (Baritone). Two Pieces: (a) Peer Gynt's Homecoming, (b) Svalveig's Song; Dances Nos. 1, 3 and 7 (Brahms); Selection from Gianni Schicchi (Puccini); Waltz, Samt und Seide (Ziehrer); Selection from Bocaccio (Suppe); March, Der Tausendkünstler (Blauknburg). In the interval at 2.0 (approx.), News. 2.30 to 3.0, Interval. 3.0, Programme for Children. 3.30, Economic Notes and Time. 3.50, Topical Talk. 4.0, Talk on Theodor Litt. 4.20, Talk: Church Taxes. 4.30, Military Band Concert, relayed from the Rheinholdt, Dreese, Bad Godesberg. Germania-Marschen (Kell); Concert Overture, Friederichian (Zimmer); Des Kurfürsten Reiternarsch (v. Moltke); Potpourri of German Folk Songs (Hannemann); Badenweiler-Marsch (Fürst); Duppeler Sturmarsch (Pfeffe); Parade im Märchenwald (Noack); Waltz, Münchner Kindl (Komzak); Potpourri, Deutsche Marscherlein (Blauknburg); March, Unsere Marine (Thiele). 5.50, Talk: The German Settlements. 6.10, Book Review. 6.20, French Lesson. 6.45, Weather, Time, Economic Notes, and Sports Report. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, News. 8.5, Paul Keller Programme on the Sixtieth Anniversary of his Birth. 9.0, See Berlin (Witzleben). 10.0, News. 10.30, Dance Music through the Centuries—The Station Orchestra, conducted by Kühn. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12.5 p.m., Concert: Eily Hartwig-Currens (Contralto), Frieda Langendorff-Träncker (Pianoforte), Heinrich Kreutz (Bass), Margarete Stahl (Harp), and Fritz Kirtuse (Violin) and Arnold Matz (Viola). Pianoforte Pieces, Op. 41 (Reger); Bass Solos: (a) Der Gärtner (Pfitzner). (b) Sehnsucht (Pfitzner). (c) Nachtgang (R. Strauss). Harp Solos: (a) Sonatina in D Minor, (Naderman). (b) Am Springbrunnen (Zabel). Songs (Hausegger) for Contralto, Viola and Pianoforte: (a) Liebesklage, (b) Der Falke, (c) Liebeslied. Contralto Solos (Haus): (a) Das Glück, (b) Stilles, kleines Kämmerlein, (c) Du und ich. Violin Solos: (a) Spanish Dance (Saraste), (b) Tambourin chinois (Kreisler). 1.0, News. 1.15, Concert by a Scharnuel Quartet, followed by News. 2.10 to 2.40, Interval. 2.40, Song Recital on Gramophone Records. Part I. Arias. Part II. Folk Songs. 3.0, Programme for Young People. 3.35, Economic Notes. 4.0, Gramophone Concert of Light Music. 5.50, Economic Notes, Weather and Time. 6.0, Talk: From Voluntary to Compulsory Labour Service. 6.25, Beautiful Thuringia—Radio Report. 6.45, Programme to be announced. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Political Talk. 8.5, Military Band Concert, conducted by Max Löhbel: March, Flamme empur (Harkentzer); Cavalry March (von Moltke); Overture, Der Wildschütz (Lortzing); Kreuzer Potpourri (Kreutzer); March, Das neue Deutschland (Koch); March Potpourri (R-land); Waltz, Golden Rain (Waldteufel); March Potpourri, O Deutschland, hoch in Ehren (Lindemann); March, Germania (Kell). In the interval, Talk: From the Dreispits to the Stahlhelm. 9.35, Aus der Siedlung Jezogin—Old Humorous Stories in Prose and Verse. 10.5, News. 10.10 (approx.), Dance Music from Berlin (Witzleben). 1.0 a.m. (Friday), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—5.30 p.m., Concert by the Station Orchestra. 7.30, Programme for Women. 8.0, Topical Talk. 8.30, Flute Solos. 9.15, Time and News. 9.30, Vocal Quartet Concert. 10.0, Concert of Popular Music by the Station Orchestra. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—German Programme.—7.30 p.m., Programme for Children. 7.45, Gramophone Music: The Brandenburg Concerto No. 2 in C (Bach); Suite from Der Rosenkavalier (R. Strauss). 8.50, German Songs on Gramophone Records, followed by Light Gramophone Music and News.

LWOW

788 kc/s, 381 metres; 16 kW.—5.35 p.m., Pianoforte Recital. 7.0, Gramophone Music. 7.20, Miscellaneous Items. 7.40, See Warsaw. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South East. 8.30, Concert: Part I: Humorous Programme by an Orchestra, conducted by Daimierick, and Soloists: Mlle. Michèle Dupucelle (Soprano) and M. Berthaud (Humorous Items). Part II: Music by an Orchestra, conducted by Gaston Bilet. Introduction and Barcarolle from The Tales of Hoffmann (Offenbach); Phyllice (Duparc); Valse très lente (Massenet); Die Prinzessin (Grieg); Miniature Suite (Eric Coates); Soir (Fauré); Danse persane (Guiraud). After the Concert, News.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, News, and Programme for Children. 8.15, News. 8.30 to 11.0, Interval. 11.0, Chimes, Time, and Political Review. 11.15 (approx.), Argentine Songs with Guitar Accompaniment by Angel Lasheras, followed by Municipal Band Concert, relayed from the Paseo de Rosales. 12.15 a.m. (Friday), News. 12.50 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.0 p.m. till Close Down, See Prague. 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—2.15 p.m., U.S.S.R. Literary Programme. 2.45, Weather Forecast. 3.0,

Dramatic Programme. 4.0, Agricultural Talk. 4.30, Sound Film. 5.30, Extracts from Die Fledermaus—Opera (Joh. Strauss). 6.30, Concert of Music by Schechter, Dawidenko, and Kabalevsky. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 233 metres.—4.30 p.m., Orchestral Concert, conducted by Quirin Huber. 5.45, Agricultural Talk. 6.5, Talk: The Position of the World Economic Conference. 6.25, Talk on Modern German Authors—Reberg. 6.45, Time, Weather and Agricultural Notes. 7.0, Transmission for all German Stations; Concert relayed from the Cathedral at Passau; The Passau Cathedral Choir and the Station String Orchestra, conducted by Hans A. Winter; Soloists, Martha Martensen (Soprano), Marius Andersen (Tenor), Georg Hann (Bass), and Otto Dunkelberger (Organ); Prelude and Fugue in C for Organ (Buxtehude); Concerto grosso in D Minor for Strings (Handel); Improvisation for Organ on the Hymn Ein Haus voll Glorie schauet; Mass in G for Soloists, Choir, Orchestra and Organ (Schubert). 8.0, Dance Music through the Centuries, by the Small Station Orchestra, conducted by Erich Kloss; Bourbon Gavotte (Couperin); Bourrée (Bach); Siciliana (Pergolesi); Rigaudon (Rameau); Gavotte Musetto (Rameau); Ouchementuet (Haydn); Famous Minuet (Boccherini); Gavotte (Gossec); Gigue (Mozart); Ecossaises (Beethoven); Tanzpseion (Schubert); Waltz, Accelerationen (Joh. Strauss); Mazurka (Chopin); Hungarian Dance No. 6 (Brahms); Russian Dance (Tchaikovsky); Slav Dance (Dvorak); Norwegian Dance (Grieg); German Dances (Regger); Bohemian Dance (Debussy); Spanish Dance (Fallá); Waltz from Der Rosenkavalier (R. Strauss); Gestampfter (Pachernegg); Tango (Rixner); Boston (Niemann). 9.15, Discussion: A Handful of Determined Men—the Beginning of the National Socialist Movement. 9.30 (from Nürnberg), In einem kühlen Grunde—Musical Radio Sequence by a Double Quartet and Soloists. 10.20, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.15 p.m., Saxophone and Pianoforte Recital. 6.0, Agricultural Talk. 6.30, Divine Service. 7.0, Advertising Notes. 7.15, Weather and News. 7.30, Accordion Recital. 8.0, Time Signal. 8.1, Operetta Music and Dance Music by the Walter Schubert Ensemble. Soloist: Hans Brodal (Baritone). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Gramophone Music. 11.0 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements, Agricultural Report and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time and Announcements. 8.45, Concert of Operetta Music. Selection from: (a) La Mascotte (Audran) and (b) Il re di Chez Maxim (Costa). 9.30, A Superman—Comedy in One Act (Luigi Capuana). 10.0, Concert (cont'd.). Selection from: (a) The Count of Luxembourg (Lehár), (b) Cin-Ci-La (Ranzato). 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., News. 7.0, Le Journal Parlé. 8.30, Gramophone Concert. Part I: Beethoven Music; Part II: Variety Music. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Programme for Children. 7.15, Concert by the Station Orchestra: Overture, Madame Marlborough (Lac-haume); Sicilienne from Armida (Gluck); Ballet de cour (Piermé); Two Songs (Hahn); Danse villageoise (Chabrier); Fantasia, Arsène Lupin (Lattès); Suite, Dances de chez nous (Jacquet); Violin Solo: Réverie (Vieuxtemps); Song (Messenger); Selection from La Béarnaise (Messenger); Spanish Dance from La vida breve (Fallá); Wedding March of a Doll (Lecocq). In the interval at 9.40, Talk on Fashions. 10.30, News.

PARIS

RADIO PARIS; Call CFR; 174 kc/s, 1,725 metres; 75 kW.—7.30 a.m., Weather and Physical Culture. 7.45, Gramophone Music.

JULY 6th

THURSDAY

continued

8.0, Weather and Press Review. 12 Noon, Protestant Address. 12.30 p.m., Gramophone Concert: The Toy Symphony (Romberg); Choral Selections: (a) Il était une bergère, (b) Les lauriers sont coupés, (c) Marlborough s'en va-t'en guerre; Souvenir de cirque (Peter); The Musical Box and Pianola (Artiga); La villanelle des petits canards (Chabrier); Le petit rentier (Pierné); Pièces (Bach-Laverne: (a) Au restaurant, (b) The American Dentist; The Nursery (Inghelbrecht); Pieces from Une petite femme dans le train (Romans); (a) La tête qu'il faut faire, (b) L'attrait du danger; Pieces from Il est charmant (Moretti): (a) Histoire de voir, (b) En parlant un peu de Paris; Tout là-bas; Salut la terre; Melody (Greig); Oh Papa (Yvain); Selection from Passionnément (Messager); Les pompons rouges (Mercier). In the interval at 1.0, Exchange, News and Weather, and at 1.30, Exchange, 2.0, Exchange. 3.45, Exchange and Market Prices. 4.45, Concert by the Calvet Quartet, relayed from the American Conservatoire at Fontainebleau: Quartet No. 3 (Beethoven); Quartet No. 2 (Borodin); Quartet in F (Ravel). 7.0, Market Prices and News. 7.10, Gramophone Concert: Dinah; Tango d'amour El Gaucho; Waltz, L'heure exquise; Venez avec moi; Sur l'accordion; Waltz, Pluie d'or; Son parfum; Tesoro mio; My little Sunny Boy; Plegaria; Une larme. 7.50, Commercial Prices and News. 8.0, Gramophone Concert: Stenka Razin (Glazunov); Four Pieces from Iberia (Albeniz); Symphonie classique (Prokofiev); Viennese Rhapsody (F. Schmitt); Pacific No. 231 (Honegger); Nocturne (C. Franck); Mater Dolorosa (C. Franck); Ballade for Piano and Orchestra (Faure); Oh peut-on être mieux (Gretry); Hymne à la nuit (Rameau); La mer (Debussy); Olav Trygvason (Reissiger); Chanson circassienne (Tcherepnine); Intermezzo (R. Strauss); The Ride of the Valkyries (Wagner). In the interval at 8.30, News and Sports Notes; at 8.40, Review by Christophe and at 9.15, News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relay by W8XK on 48.85 metres and 25.27 metres.—7.30 p.m., The Pioneers, from New York. 7.45, KDKA Home Forum. 7.55, Care of the Garden, by Alfred C. Hottes. 8.0, Betty and Bob, from New York. 8.15, Radio Troubadours, from New York. 8.45, State Federation of Pennsylvania Women. Programme under Direction of Department of American Citizenship. 8.58, Baseball Scores. 9.0, Thursday Special, from New York. 9.30, Business News and Market Reports. 9.45, Southeastern Revue, from New York. 9.58, Baseball Scores. 10.0, Rhythm Kings. 10.15, Dr. Curtis Howe Springer. 10.30, Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal and Press News-Reeler. 11.5, Bert Lown and his Park Central Hotel Orchestra. 11.15, Weather Report. 11.16, Sport Review. 11.23, I Bring a Song. 11.28, Announcement. 11.29, Temperature Report. 11.30, Pittsburgh Spotlights. 11.45, To-day's News by Lowell Thomas, from New York. 12 Midnight, Amos 'n' Andy, from New York. 12.15 a.m. (Friday), Concert Footlights. 12.30 to 4.0, New York Relay. 12.30, Variety Programme. 12.45, Merle Thorpe Talks. 1.0, Captain Diamond's Adventures. 1.30, Aldo Ricci and his Phantom Strings. 1.45, Floyd Gibbons—World's Fair Reporter. 2.0, Death Valley Days. 2.30, Wayne King's Orchestra with Lady Esther. 3.0, Time Signal and Century of Progress Festival Orchestra.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—6.35 p.m., Agricultural Talk. 6.50, Agricultural Letter Box. 7.5, Talk. 7.20, Miscellaneous Items and News. 7.35, Theatre Notes and Programme Announcements. 7.40, See Warsaw. 7.58, Time Signal. 8.0, Pianoforte and Violin Recital by Mme. Gertruda Konatkowska and M. Zdzislaw Jahnke. Gavotte (Gluck-Brahms); Selection from Alceste (Gluck-Saint-Saëns); Sicilienne (Bach); Gigue in D Minor (Haesler); Momento capriccioso (Weber); Rondo brilliant in E Flat (Weber). 9.0 (approx.), Concert from Warsaw. 9.10, Choral Concert. 10.0, Talk. 10.15, Time Signal, Sports, and Police Notes. 10.30 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—5.0 p.m., Sec Brno. 6.0, German Transmission: The Works of the Concert-Opera Conductors of the German Theatre in Prague. News after the Programme. 7.0, Talk. 7.15, Literary Programme: Tabor and its Literature. 7.55, Festival Concert, relayed from Tabor. 9.0, Military Band Concert, relayed from Kralupy. Oboro: Overture, Poet and Peasant (Suppé); Selection from The Bartered Bride (Smetana); Czech Song (Hasler); Lehár Potpourri (Hrubý); Potpourri of Slovac Songs, Our Tatra Mountains (Stolc); Military March (Pesta). 10.0, Time and News. 10.15, Concert of Light Music. 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—4.20 p.m.

(from Geneva). Concert by the Broadcasting Serenaders. 5.0 (from Geneva). Programme for Children. 5.30 to 7.0, Interval. 7.0 (from Geneva). Talk. 7.30 (from Geneva). News. 7.35 (approx.) (from Geneva). Radio Interview. 7.45 (from Geneva). Talk: Esperanto and the Tourist Industry. 8.0 (from Lausanne). Pianoforte Recital by Paul Goldenhorn: Rondo in G, Op. 51 (Beethoven); Thirty-two Variations in C Minor (Beethoven); Sonata in A Minor, Op. 143 (Schubert). 8.30 (from Lausanne). Violin Recital by Andrée Alvin. 9.0 (from Geneva). Concert. 9.50, News. 10.0 (from Geneva). Variety Programme. 10.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.30 p.m., Programme of Songs and Music from Operetta. 7.0, Weather Report. 7.3, Talk on Swimming. 7.30, Symphony Concert, conducted by E. Melchik, relayed from Bulduri; Symphony No. 8 in F, Op. 93 (Beethoven); Prelude to Lohengrin (Wagner); Till Eulenspiegel's Merry Pranks (R. Strauss); Les Préludes (Liszt). In the intervals at 8.15, News, and at 9.0, Weather Report. 9.30, News and Dance Music. 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

170, 680 kc/s, 441 metres; 50 kW. Relay by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres, from 8.30 p.m.—1.5 to 2.15 p.m., Orchestral Concert. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30 to 6.30, Concert. Gabriella Leonardi (Pianoforte), Vittorio Sensi (Baritone), Margherita Cossa (Soprano). Pianoforte Solos: (a) Melody (Schumann), (b) Die Nachtigall (Liszt); Baritone Solos: (a) Aria from Don Pasquale (Donizetti), (b) Aria from Khovantchina (Mussorgsky), (c) Rinaldo's Aria from L'Amica (Mascagni); Three Songs for Soprano (Castelluovo-Tedesco): (a) Ninna-nanna, (b) La pastorella, (c) Serenata Indiana; Pianoforte Solos: (a) Improvisation (Chopin), (b) Invitation to the Dance (Weber); Soprano Solos: (a) Aria from Melenis (Zandonani), (b) Mattinata (Breschi). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Doppolavoro Notes. 7.10, Tourist Report. 7.20, Announcements in Different Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Giornale Radio and Sports Notes. 8.30, See Turin. In the intervals, Talk and Literary Notes. Giornale Radio after the Programme.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relay at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—12.45 a.m. (Friday), Stock Reports. 1.0 to 3.0, New York Relay. 1.0, Variety Programme. 2.0, Captain Henry's Show Boat. 3.0, Musical Programme, from New York, followed by Programme Résumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—6.15 a.m. (from Berne). Gymnastics. 6.35 to 10.20, Interval. 10.20, Broadcast for Schools: Ballads. 10.50, Interval. 11.59, Time Signal from Neuchâtel Observatory, and Weather. 12 Noon (from Zurich), Gramophone Music. 12.30 p.m., Time, Weather and News. 12.40 (from Zurich), Concert (contd.). 1.25 (from Zurich), Exchange, Time and Weather. 5.0 (from Zurich), Concert by the Small Swiss Radio Orchestra. 6.0 (from Berne), Gramophone Music. 6.30 (from Zurich), Talk: Ariosto and the Orlando Furioso. 7.0 (from Zurich), Time, Weather and Market Report. 7.10 (from Zurich), Italian Music. 7.45 (from Basle), Elementary Italian Lesson. 8.30 (from Zurich), Concert of Light Music by the Swiss Radio Orchestra. 9.0, Weather and News. 9.10 (from Zurich), Radio Report from the Aviation Exhibition in the Tonhalle. 10.15, Close Down.

SEVILLE

UNION RADIO (EAJS), 815 kc/s, 368.1 metres; 1.5 kW.—9.30 to 10.0 a.m., News. 3.0 to 4.0 p.m., Concert by the Station Orchestra, followed by Dance Music. 10.0, Variety Concert. In the interval, News, Exchange and Weather. After the Concert, Dance Music. 12.0 Midnight (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relay by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257

metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m. (from Göteborg). Divine Service. 5.30, German and Swedish Songs by the Stockholm Madrigal Choir, conducted by Felix Saul; Songs (Brahms); Abschiedslied (Brahms); In stiller Nacht (Brahms); Three Songs (Saul); Songs (Wüllner): (a) Dornröschen, (b) Mein Schatz der ist auf die Wanderschaft hin, (c) Innsbruck, ich muss dich lassen (Isaac). 6.0, The Practical Corner. 6.15, Gramophone Music. 7.30, Talk from Uppsala, 662 kc/s, 453.2 metres. 8.0, Songs by Karin and Niels Juel: Dixie Land; Ellie Rhee; Old Folks at Home; Good old Jeff; Campton Races; Polly-Wolly-Noodle; Sailors' Songs; Sailor Song, 10's Years and Years. 8.30 (from Göteborg), Reading. 9.0, Orchestral Concert: Suite (Akerberg); Two Melodies for Strings (Haquinus); A Country Wedding (Ohlsson). 10.0, Concert of Opera and Operetta Music. Soloist: Hermann Hubl (Violin). Overture, Hobanet and Seguidilla from Carmen (Bizet); Selection from Tiefland (d'Albert); Selection from The Bartered Bride (Smetana); Songs from Frederica (Lehár); Songs from Paganini (Lehár); Overture, The Gipsy Baron (Joh. Strauss). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—7.45 a.m., Report of the Cycle Tour of France. 8.0-11.30, Interval. 11.30, Gramophone Music. 12.45 p.m., News. 1.0, Time and News. 1.5, Report of the Cycle Tour of France. 1.30, Orchestral Concert conducted by Koskam. 2.0, Programme for Children. 3.30, Concert conducted by M. Brouillac, relayed from the Casino, Vichy. 4.45, Report of the cycle Tour of France. 5.0, Recitations. 5.15, Dance Music. 6.0, Talk in German: French Poetry of the Renaissance. 6.15, Talk for Women. 6.30, Chamber Music: Quartet No. 3 for Strings (Beethoven); Sonata in A (Brahms). 7.30, Time and News. 7.45, Report of the Cycle Tour of France. 8.5, News in German. 8.30, Military Band Concert conducted by Captain Granger, relayed from the Esplanade, Metz; Overture, Mirella (Gounod); Rigaudon des Petits Pages (Delauany); Gavotte and Farandole (Pierné); Prologue to I Pagliacci (Leoncavallo); Ballet Suite, Néron (Hirschmann); The Unfinished Symphony (Schubert); Aria from Thais (Massenet); Selection from Carmen (Bizet); March (Lotteric). News in the interval. 10.30, (approx.) Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relay by Freiburg, 527 kc/s, 570 metres.—12 Noon, Promenade Concert relayed from the Schlossplatz. 1.0 p.m., German Folk Songs on Gramophone Records. 1.15, Time and News. 1.30, Concert from Langenberg. 2.0, Concert arranged by the Post Office. 2.30, Spanish Lesson. 3.0, Elementary English Lesson. 3.30, Programme for Children. 4.30, Orchestral Concert relayed from Badenweiler: Overture, Mater Dolorosa (Scasola); Waltz, Geheime Anziehungskräfte (Jos. Strauss); Concert Piece for Cello and Orchestra, Op. 35, Tunkred (Brandts-Buys); Selection from Lohengrin (Wagner); Fantasia on the Song, Aus der Jugendzeit (Friedemann); Selection from Schön ist die Welt (Lehár); Johann Peter Hebel-Marsch (Rudel). 5.45, Talk: German Faith and German Achievements. 6.10, Talk with Illustrations: Teaching a Child to speak. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Variety Concert relayed from the Charlottenplatz. 8.45, Orchestral Concert, conducted by Ferdinand Drost. Soloist: Hermann Hubl (Violin). Overture, The Bartered Bride (Smetana); Violin Concerto in G (Mozart); Suite, Rossiniana (Respighi). 10.0, Time and News. 10.20, Dramatic Programme. 10.50 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

778 kc/s, 385 metres; 8 kW.—Transmissions uncertain owing to recent fire.—11.30 p.m. till Close Down.—Programme in English by the I.B.C. 11.30, Dance Music. 11.57, I.B.C. Goodnight Melody. 12 Midnight (approx.) Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m. till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relay by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 p.m., Orchestral Concert. 6.0, Weather Report. 6.5 to 6.35, Interval. 6.35, Announcements. 7.0, Time, Tourist Talk, and Gramophone Music. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News and Gramophone Music. 8.20, Talk on the following Transmission. 8.30, Sly—Opera in Three Acts (Wolf-Fer-

rari). In the intervals, Talk and Literary Notes. After the Programme, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,469 kc/s, 50.26 metres (Evening); 10 kW.—9.0 to 11.15 a.m., Religious Information in French. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relay by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,198 kc/s, 283 metres; Klagenfurt, 662 kc/s, 456.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—12 Noon, Concert by the Vienna Symphony Orchestra, conducted by Josef Holzer. 1.0 p.m., Time and News. 1.10, Concert (contd.). 2.0 to 3.0, Interval. 3.0, Time and News. 3.20, Talk on Vegetable Growing for Profit. 3.30, Programme for Children. 3.55, Opera Music on Gramophone Records. 4.45, Talk: Modern Sports Buildings. 5.0, Talk: Women's Professions in Vienna in the Olden Days. 5.5, Recital by Arthur Preuss (Tenor) and Hermann Zechner (Pianoforte): Sonata in F, Op. 53 (the Waldstein) (Beethoven); Songs from (a) Louise (Charpentier), (b) Djamil (Bizet), (c) Figaro (Mozart), and (d) The Mastersingers (Wagner). 6.5, Talk: Austrian Spas. 6.30, Talk on Byzantine Architecture. 7.0, Concert by the Vienna Symphony Orchestra, conducted by Josef Holzer: Overture, Tantalusquale (Suppé), Ständchen (Jos. Strauss); Ave Maria (Schubert); Intermezzo from The Arabian Nights (Jos. Strauss); Waltz, Les Fleurs (Waktenfel); Air from Ein Opernball (Heuberger). 7.5, Time and News. 7.40, Concert (contd.): Selection from Das Heimen am Heide (Goldmark); Waltz, Künstlerleben (Jos. Strauss); Selection from Schön ist die Welt (Lehár); Overture, La Princesse de Trébizonde (Offenbach). 8.15, Reading (Kossak-Raytanen). 8.40, In Praise of Country Life—Literary and Musical Programme; the Vienna Symphony Orchestra and Opera House Choir, conducted by Karl Audieth; Soloists: Wanda A. C. S. (Soprano), Jella Braun-Ferwald (Contralto), Oskar Jölli (Baritone), and Otto Löwe (Recitations). 10.20, News. 10.25, Gramophone Music: Waltz, Alt Wien, played by Marek Weber's Orchestra (Kremer); Foxtrot, Sing a New Song (Wever-Ager); English Waltz, A boy and a girl were dancing (Gordon), played by Jack Payne and his Orchestra; Foxtrot, Butterflies in the Rain (Keaves), played by the B.B.C. Orchestra; Foxtrot, Always in my Heart, played by Jack Payne's Orchestra; Tango, Hora (Roman); Tango, Ob du mich wirklich lieb hast; Waldteufelreigen (Weinger); Tango, Giannitta; Foxtrot, Sittin' in the dark (Adamson), played by the B.B.C. Orchestra; English Waltz, Tripoli; Tango, Du schwarze Zigeuner; Foxtrot, Too Many Tears (Dubin); Foxtrot, Good Evening (Harkreaves), played by the B.B.C. Orchestra; Schatzwalzer (Johann Strauss).

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.5 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Gramophone Music. 12.25, Polish Press Review. 12.33, Weather Report. 12.35, Gramophone Music. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.10, Announcements. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.45, Boy Scouts' Review. 3.50, Gramophone Music. 4.0, Programme for Children; Part I relayed from Wilno, 533 kc/s, 563 metres; Part II, relayed from Lwów, 788 kc/s, 38 metres. 4.30, Concert by the Poznan Opera House Orchestra, relayed from Ciechocinek. 5.0, Talk for Women. 5.15, Concert (contd.). In the intervals, Duets. 6.15, Talk. 6.35, Gramophone Music. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Reading. 8.0, Concert by the Station Orchestra, conducted by St. Navrot. Soloists, M. Bojar-Przemieniecka (Soprano) and A. Wisniewski (Baritone): Overture, Sparacus (Scassola); Selection from Werther (Massenet); Aria from A Masked Ball (Verdi); Aria from Aida (Verdi); Bacchanale from Samson and Delilah (Saint-Saëns); Aria from Zaza (Leoncavallo); Credo from Otello (Verdi); Italian Suite (Kostal); Aria from Hérodiade (Massenet); Aria from Turandot (Puccini); Romance (Luigini); Three Songs for Baritone; March from Aida (Verdi). In the interval, Radio Journal and Agricultural Notes. 10.0, Dance Music. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music.

WILNO

533 kc/s, 563 metres; 16 kW.—6.35 p.m., Dance Music on Gramophone Records. 7.5, Programme Announcements and Miscellaneous Items. 7.20, Answers to Correspondence. 7.40, See Warsaw. 9.0 (in an interval), Topical Talk. 11.0 (approx.), Close Down.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—8.10 p.m., Announcements. 8.30, Programme from Ljubljana. 10.30, News and Weather. 10.40, Dance Music. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Gramophone Music. Stock Exchange Quotations, and Weather Report. 6.0, Programme for Children. 6.45, News Bulletin. 7.0, Gardening Talk by G. O. Sherrard. 7.15, Literary and Dramatic Talk by Aodh de Blacain. 7.30, Time Signal. 7.31, Violin and Pianoforte Recital by Lorna Thompson and Mrs. Miley. 8.0, Soprano Solos by K. Fagan. 8.10, Orchestral Music. 8.30, Songs (contd.). 8.40, Short Sketches by Fay Sargent and Company. 9.20, The Station String Orchestra. 9.30, Tenor Songs by Peter Dunn. 9.45, Sponsored Programme. 10.45, Time, News, Weather, and Close Down.

BARCELONA

EJAJI, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert: March (Smetana); Minuet (Massenet); Berceuse (d'Ambrosio); Selection from Philemon et Baucis (Gounod); Serenata (Haydn); Selection from Mignon (Thomas). 8.0, Request Gramophone Records. 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral, Weather, Messages to Seamen, Exchange and Market Prices. 10.10, Concert by the Station Orchestra: March (Smetana); Dance of the Tumblers (Rimsky-Korsakov); Waltz Serenade (Drigo); Pavane (d'Ambrosio). 10.30, Dance Music. 11.15, Dance Music, relayed from the Casa Llibre. In the interval at 12 Midnight, News. 1.0 a.m. (Saturday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk, and Dopplero Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), Concert of Opera Music: Soloists: Maria de Santis Bruno (Soprano) and Franco signorile (Tenor); Overture, Il Guarany (Gomez); Soprano Solo from Lucia di Lammermoor (Donizetti); Tenor Solo from La baronessa di Carini (Mule); Soprano Solo from La Traviata (Verdi); Tenor Solo from The Pearl Fishers (Bizet); Overture, Joan of Arc (Verdi); Soprano Solo: Aria from La Sonnambula (Bellini); Tenor Solo: La donna è mobile from Rigoletto (Verdi); Act II of Madame Sans-Gêne (Giordano); Soprano Aria from Louise (Charpentier); Tenor Aria from Cavalleria rusticana (Mascagni); Selection from Le maschere (Mascagni). In the interval, Theatre Notes. 10.30, Dance Music from the Gran Caffè del Levante. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—7.0 p.m., Concert by the Radio Orchestra. 7.50, Folk Songs. 8.30, Songs and Folk Music, relayed from Skopje. 10.30, Time and News. 10.45 (approx.), Cigany Music from the Rudnicain Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert of Unfamiliar Opera Music. 3.0, Talk for Girls. 3.30, Weather and Exchange. 3.45, Bernd Böhle reads from his own Works. 4.0, See Leipzig. 5.0, Educational Talk. 5.25, Topical Talk. 5.35, Song Recital by Grete Thürkow: Five Songs (Paul Graener): (a) Das bitterste Lied, (b) Erwartung, (c) Verspruch, (d) Winter, (e) Der König; Four Songs (Wilhelm Berger): (a) Die stille Stadt, (b) Bäumerei, (c) Einsamkeit, (d) Der Waldsee. 6.0, Poems. 6.5, Mouth Organ and Accordion Recital: Ave Maria (Schubert); Träumerei (Schumann); Mattinata (Leoncavallo); Violetta's Aria from La Traviata (Verdi); You are my Heart's Delight, from The Land of Smiles (Lehár); Hab' ein blaues Himmelbett (Lehár); Tango Variations (Luciano); New Cigany Melodies (Luciano). 6.30, Radio Report of the Training for the Avus Motor Cycle Races. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, An Axiom. 8.5, Concert by the Station Chamber Orchestra, conducted by Edwin Lindner: Ballet Music from Iphigenia in Aulis (Gluck); Suite in Old Style for Violin and Pianoforte (Reger); Concerto for Small Orchestra (Ferdinand Scherbert). 9.0, Programme from the Works of Peter Rosegger. 10.0, News. 10.45, Weather. 11.0, Serenade from Frankfurt. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—1.0 p.m., Gramophone Concert. Overture, The Secret Marriage (Cimarosa); Overture, Nebuchadnezzar (Verdi); Extracts from L'elisir d'amore (Donizetti); O kumm im Traum (Liszt); Es muss ein Wunderbares sein (Liszt); Dein gedenk ich, Margaretha (Meyer-Helmund); Grüsst mir das blonde Kind an Rhein (Heiser); Heimathal (Kistenschmager); Dir sing ich mein Lied (Lehár); Im Prater blühen wieder die Bäume (Stolz). In the interval at 2.15 (approx.), News. 3.0, Berlin Exchange and Agricultural Prices. 3.20,

FRIDAY
JULY THE SEVENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** "Flags on the Matterhorn," a play by B. Gasbarra in collaboration with Dr. C. Pfeil.
- LONDON REGIONAL** Relay from the Empire Theatre, York.
- MIDLAND REGIONAL** The Music of Cyril Scott, pianoforte recital.
- WEST REGIONAL** Famous Ballet Music, orchestral programme.
- NORTH REGIONAL** Relay from the Empire Theatre, York.
- SCOTTISH REGIONAL** Harry Gordon and his company, relayed from Aberdeen.
- BELFAST** A string orchestral concert.

ABROAD

- BUDAPEST** 8.40 p.m. The Opera House Orchestra.
- HAMBURG** 8.10 p.m. Wagner programme. The Station Orchestra, conducted by Wach.
- HUIZEN** 9.10 p.m. The Meyerbeer Orchestra.
- LANGENBERG** 9.30 p.m. Mozart concert by the Station Orchestra, conducted by Buschekötter.
- PALERMO** 8.45 p.m. Concert of opera music.
- POST** 8.30 p.m. Opéra-Comique: "Galathée," by Masse.
- PARISIEN** 9.15 p.m. Chamber music.
- ROME** 8.0 p.m. Opera: "Carmen," by Bizet, relayed from Mannheim.

Talk for the Housewife. 3.35, Talk: The Feas and Moors around Berlin. 4.15, Talk on Art Criticism. 4.30, Song Recital by Hermann Gees (Baritone). Im Hom (Anders); Deutschland, du darfst nicht untergeh'n (Höser); Deutsches Herz (Gees); Neues Deutschland, werde (Kampmann-Gross). 4.45, A Musical Sequence with Commentary. 5.30, "One Language—One Country"—a Literary and Musical Symposium from the Works of Austrian Poets. 6.0, Talk: The Romance of Stamp Collecting. 6.15, Report with Gramophone Records on the June Sports Events. 6.45, The Witzleben Station informs its Listeners... 6.50 (approx.), Topical Talk. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.10, Symphony Concert, conducted by Prof. Gustav Havemann: Variations and Fugue on a Theme of Beethoven Op. 86 (Reger); Academic Festival Overture (Brahms); Symphonic Poem, Death and Transfiguration (R. Strauss). 9.0, Have and Transfiguration (R. Strauss). The you heard... 9.10, A Discussion: The Brown Shirts. 9.30, From the German Rhine: Tone Poem (Max Burkhardt), by the Berlin Chamber Orchestra, conducted by the Composer. 10.0, News. 10.15, Dance Music, relayed from the Europa-Pavillon. In the interval at 11.0 (approx.), Talk: What they are talking about in Berlin. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.15, News. 7.30, Film Review. 7.45, Report on the Cycling Tour of France. 8.5, Spanish Lesson. 8.20, News. 8.30, Symphony Concert.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.25 p.m., Song Recital by Vera Borska (Contralto). 6.55, Talk for Housewives. 7.0, See Prague. 7.10, Reading. 7.25, See Prague. 8.45, See Brno. 9.30, Programme to be announced. 10.0, See Prague.

EREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 263 metres.—1.0 p.m., Gramophone Concert: The Philadelphia Symphony Orchestra, conducted by Leopold Stokovky: Toccata and Fugue (Bach); Adolf Busch (Violin); Suite in A (Vivaldi); The Berlin Philharmonic Orchestra, conducted by Leo Blech: Overture, The Secret Marriage (Cimarosa); Lucie Caffaret (Piano-

forte); Tic, Toc, Choe ou les Maillotins (Cooperin); Karin Brunzell (Soprano): Aria from Orpheus and Eurydice (Gluck); The Budapest String Quartet: Minuet from the Quartet No. 6 (von Dittersdorf); Edwin Fischer (Pianoforte): Chromatic Fantasia and Fugue in D minor (Bach); The Philadelphia Symphony Orchestra, conducted by Leopold Stokovky: Pastorale from The Messiah (Handel); John Amadio (Flute): Finale from the Flute Concerto (Mozart); Alfred Sittard (Organ): Prelude and Fugue in G minor (Buxtehude); The Philadelphia Symphony Orchestra, conducted by Leopold Stokovky: Prelude in B minor from the Wohltemperiertes Klavier (Bach). 2.0, Time and News. 2.20, Gramophone Concert of Opera Choruses. The Boys' Choir of the Vienna Hofburgkapelle: Selection from Das Nachtlager von Granada (Kreutzer); The Choir and Orchestra of the Milan Scala: Selection from Don Pasquale (Donizetti); The Berlin State Opera House Choir and Orchestra: Chorus of the Bells, from I Pagliacci (Leoncavallo); The Chorus and Orchestra of the Milan Scala: Selection from Carmen (Bizet); The Berlin State Opera House Choir with Horn Quartet: Hunting Chorus from Der Freischütz (Weber); The Milan Scala Chorus: Soldiers' Chorus from Faust (Gounod); The Berlin State Opera House Chorus, with Orchestra: Selection from The Force of Destiny (Verdi); The Milan Scala Chorus, with Orchestra: Drinking Song from Ernani (Verdi); The Chorus and Orchestra of the Bayreuth Festspielhaus: Song of the Valkyries from The Valkyries (Wagner). 3.0, Market Prices. 3.30, Programme for Young People. 4.0, Concert by the Station Orchestra, conducted by Bruno Janz: Selection from Marieke von Nymwegen (d'Albert); A la Gavotte (Schütt); Csardas, Ma bien-aimée (Gabriel-Marie); Suite, An Evening in St. Petersburg (Meyer-Helmund); Waltz, Die Schwalben (Joh. Strauss, Sen.); Flotte Postillon (Rathke); Overture, La Princesse de Trébizonde (Offenbach). 5.0, Talk on Music: Classic Songs which have become Universal. 5.25, Songs (contd.): Overture, Light Cavalry (Snippe); Ballet Scene, Piazza del Popolo (Juel-Frødrichsen); Intermezzo, Komm zu mir (Ganglbauer); Polka, Die Blumen (Ziehler); Gallop, Petersburger Schlittenfahrt (Eilenberg). 5.50, Reading (Hans von Hülsen). 6.10, Programme to be announced. 6.30, Talk: Plagiariisms. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.5 to 10.0, See Langenberg. 10.0, Time and News. 10.20, Talk: The Royal Castles of Spain. 10.45, Concert of Chamber Music: Trio in D for Violin, Viola and Guitar (Brand); Quartet in A, Op. 4, No. 3, for Violin, Viola, Cello and Guitar (Paganini); Quartet in G for Flute, Viola, Cello and Guitar (Schubert). 11.45 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by Jan Janota: Small Comedy Overture (Sehempflug); Romantic Suite (Bullerian); Selection from Lohengrin (Wagner); March (Hrimaly); Cossack Lullaby (Jiracek); Selection from Rose Marie (Friml-Stothard). 3.55 to 4.0, See Prague. 5.35, Talk for Women. 5.45, Gramophone Music. 5.55, See Moravská-Ostrava. 6.5, Gramophone Music. 6.15, Talk for Workers: Hussitism and its Social Ethics. 6.25, German Transmission: News, Sports Notes, and Talk: Wireless in the Service of Czechoslovak Aviation. 7.0, See Prague. 7.10, See Bratislava. 7.25, Recital of Mountain Folk Songs. 7.35, Village Band Concert of Folk Music. 8.20, See Prague. 8.45, A Comedy. 9.30, Programme to be announced. 10.0, See Prague.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 12 kW.—12 Noon, Selection from Les cloches de Corneville (Planquette), on Gramophone Records. 1.0, Journal Parlé. 1.10 p.m., Concert by the Small Station Orchestra, conducted by P. Leemans. 5.0, Concert by the Station Symphony Orchestra, conducted by A. Meulemans: Symphony (Haydn); Andante for Flute (Mozart); Spring Song (Mendelssohn); Spinning Song (Mendelssohn); Two Hungarian Dances (Brahms); Liebestraum (Liszt); Rhapsody (Liszt). 6.0, Topical Talk. 6.15, Quintet, Op. 81 (Dvorák), on Gramophone Records. 6.45, Schubert Pianoforte Recital by Oscar Delvigne: Moments musicaux, Op. 94, No. 1 in C, No. 2 in A Flat, No. 5 in F Minor; Sonata, Op. 120, in A; Serenade to Shakespeare in B Flat. 7.15, Political Talk. 7.30, Legal Talk and Literary Review. 8.0, Concert by the Radio Orchestra, conducted by Frensz André; Soloist: Lambrecht (Tenor): Overture, Zampa (Herold); Songs and Dances (Petras); Songs: (a) Le drapeau vengé (Lambrecht); (b) Franco-Belgian Song (Lambrecht); Oriental Suite (Popy); Selection from Czár and Carpenter (Lortzing); Selection from The Chocolate Soldier (O. Strauss). 8.45, Talk on Dinant. 9.0, Concert, relayed from the Kursaal, Ostend. 10.30, Journal Parlé. 10.40, Dance Music, relayed from the Kursaal, Ostend. 11.0, La Brabançonne.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans, with Gramophone Introduction. 1.0 p.m., Le Journal Parlé. 1.10, Flemish Songs and Choruses on Gramophone Records. 5.0, Concert by the Radio Orchestra, conducted by Franz André. 5.45, Programme by Pallieter. 6.30, Concert by the Small Station Orchestra, conducted by Leemans. 7.15, Talk: Our Ancestors. 7.30, Wireless Notes. 8.0, Programme in Commemoration of the Battle of the Golden Spurs; The Station Symphony Orchestra, conducted by Meulemans, and the Antwerp Studio voor Toonkunst; Soloist: Mme. De Backer (Songs and Violin), Mlle. Bozaert (Pianoforte) and Franz Even (Tenor). M. Rosquin (Pianoforte). 8.45, Topical Talk. 9.0, Talk and Announcements. 9.5, Commemoration Programme (contd.). 10.0 (in an interval), Le Journal Parlé.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: March, El Capitán (Souza); Waltz, Tout Paris (Waldteufel); Overture, Flotte Bursche (Snippe); Selection from Zaza (Leoncavallo); Melody from the Algerian Suite (Kettelby); Chinese Intermezzo (Dicker); Madrigalesca (Alberoni); Selection from Die gelbe Jacke (Lehar); Selection from Die Puppenfee (Bayer). 11 an interval at 6.0, Radio Journal. 7.0, Educational Programme. 7.40, Opera Music on Gramophone Records. In the intervals, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.40 p.m. till Close Down.—5.0 p.m., Concert, conducted by L. Nowak. 5.45, Reading. 6.15, Gramophone Music. 7.0, Talk for Workers. 7.30, Market Prices. 7.40, A Music Congress in the Grand Hotel—Radio Play (Moesányi and Lakos). 8.25, Political Review. 8.40, Concert by the Opera House Orchestra, conducted by Ernst Dohnányi. Soloist: Edmond Zathureczky (Violin). Overture, Abu Hassan (Weber); Violin Concerto (Tchaikovsky); Scottish Symphony (Mendelssohn). 10.10, News. 10.20 (approx.), Concert by the Karl Brna Cigany Band, relayed from the Ketter Restaurant.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Town Hall Chimes. 12.1 to 2.0 p.m., Concert from the Bellevue Strand Hotel. 3.10, Recital of Karl Nielsen Songs. 3.30, Concert by the Otto Lington Jazz Band. Reading in the Interval. 5.35, Exchange and Fish Market Prices. 6.0, Town Hall Chimes. 6.1 (from the Aarhus Studio), Talk: Old Aarhus. 6.50, Weather and News. 7.15, Time Signal. 7.20, Talk: Collaboration between the Scandinavian Churches. 7.50, Programme by Per Knutzen. 8.0, Town Hall Chimes. 8.1, Soldaterløber—A Musical Play

JULY 7th

FRIDAY

continued

In One Act (C. Hostrup) (arranged for Radio). 8.0, Music of Hawaii by the Assmann Hawaiian Quartet. 9.30, Reading. 9.55, News. 10.15, Concert of Music by Danish Composers: The Radio Symphony Orchestra, conducted by Launy Gröndahl and the Gerhard Raft Quartet; Symphony in One Movement (Launy Gröndahl); String Quartet in D Minor, Op. 10, for two Violins, Viola and 'Cello (N. O. Raasted). 11.15, Dance Music from the Wivex Restaurant. In the interval at 12 Midnight, Town Hall Chimes. 12.30 a.m. (Saturday), Close Down.

GORK.—See Athens. DANZIG.—See Heilsberg. DRESDEN.—See Leipzig.

FECCAMP

328 kc/s, 225.9 metres; 10 kW.—4.50 to 6.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Ronald and B. McNabb. 4.30, Programme for Children. 5.0, Military Band Concert for Southampton and Winchester Listeners: L'Entente cordiale (Allier); Selection from Mariama (Wallace); Jolly Fellows March (Vollstedt); Selection from The Geisha (Sidney Jones); Der Rosenkranz (Jessel); Wood Nymphs (Coates); March, The Washington Post (Souza). 5.30, Tango Band Concert for Bourneouth and Weymouth Listeners: Adios Argentina; Will you dance through life with me? (Swabach); Violin Solo, Valse Bluette (Drigo); There was a Poor Musician (Schwartz); Te finiste ja ja (Matos); Violin Solo, Caprice basque (Sarasate); Corazon (Ghirlanda); Plegaria (Bianco). 6.0, Programme in French. 10.0 (approx.) till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Icolians: Put that Sun back in the Sky; Sailing on the Robert E. Lee; Where's Bill Bailey?; Gettin' Sentimental (Kehu); Love, you funny thing (Turk); Too Many Tears (Warren); I got Rhythm (Gershwin); We all wanna know why (Harkreaves); Is I in love? I is (Robinson); Sweet Sixteen and never been kissed (Gillert); Wherever you are (Kahu); We just couldn't say Goodbye (Woods); Bahama Mama (Gilbert); You're my Everything (Warren); If you were only mine (Newman); Moonlight, the Danube and You (Towers). 11.0, Club Concert for Skeneys Listeners. Part I, Orchestral Music: Selection from The Flower of Hawaii (Abraham); Stonecracker John (Coates); Souvenir de Capri (Bece); Whistling Solo, Stars and Stripes March (Souza); Song, Marching through Georgia (Work); The Capricious Music Box (Fresco); Selection of Stephen Foster Melodies. Part II, Request Half Hour: Selection from The Maid of the Mountains (Fraser-Simson); Tell me To-night (Eyton); The Blind Boy (Moore); Waltz, The Blue Danube (Strauss); Just an Echo in the Valley (Woods); The Grasshoppers' Dance (Bucalossi); Medley of Regimental Marches (arr. Peary); Play, fiddle, Play (Lawrence). 12.5 a.m. (Saturday), I.B.C. Late News Bulletin in English. 12.10 (approx.), Sea Chanties: Nautical Moments (arr. Winter); Blow the Man down; The Merchant Ship; One Dollar Fifty a Day; One more Day; On the Banks of Sacramento; More Nautical Moments (arr. Winter). 12.30, Dance Music by the Icolians: What more can I ask? (Noble); I may never pass your way again (Dubin); Brighter than the Sun (Noble); A Boy and Girl were dancing (Revel); The King's Navee (Leslie); How are you? (Pola); Toasts (Sarony); Leave a little for me (Abraham). 12.57, I.B.C. Goodnight Melody. 1.0 (approx.), Close Down.

FLENSBURG.—See Hamburg. FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres, and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., Concert by the Station Orchestra; Soloist: Fritz Kullmann (Pianoforte); Caprice (Concerto in A minor, Op. 16 (Grieg)); Marches. 5.45, Economic Notes. 6.0, Medical Talk. 6.25, Topical Programme. 6.45, Today's News. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, See Stuttgart. 10.15, Time and News. 10.45, Concert by the Station Orchestra, conducted by Dr. Reinhold Mertens; Waltz, Gruss aus Wien (Bausnern); Entr'acte, Seherzethno and Finale from The Tempest (Weingartner); Niccolo-Marsch from Das Modell (Suppe); Peter-Marsch from Der Generalkonsul (Reinhardt); Wäschermädel-Marsch (Raimann); Verliebte Brüder from Polenblut (Nedbal); Selection from The Czarevitch (Lehár); Waltz, Wiener Blut (Joh. Strauss). 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo. FRIEBURG.—See Stuttgart. GENEVA.—See Radio-Suisse Romande. GENOA.—See Turin. GLEIWITZ.—See Breslau. GÖTEBORG.—See Stockholm. GRAZ.—See Vienna. HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hannover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—5.30 p.m., 1933 Mecklenburg Week: Musical Programme

and Address from Rostock University. 6.15, Reading of an Idyll of the Valley of the Bode. 6.45, Frankfurt Exchange and Hamburg Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations: Sea-girt Schleswig-Holstein—Radio Sequence. 8.0, Topical Talk. 8.10, Wagner Programme: The Station Orchestra, conducted by Wach; Introductory Talk on Wagner and Hitler; Homage March; Address by Professor Dr. Wolfgang Golther; Prelude to Die Feen; Prelude and Death of Isolde, from Tristan and Isolde; Prelude to Act III of The Mastersingers; Siegfried Idyll; Prelude to Lohengrin; Prelude to Parsifal. 9.40, Das Lied von der Glocke (Schiller), by a Verse-speaking Choir of Young Hitlerites. 10.10, Time and News. 10.30, Topical Report. 10.40, Concert from Warnemünde—Programme in connection with Mecklenburg Week.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert of Variety Music. In the intervals at 1.20 and 2.0, News, 2.30, (from Danzig), Danzig Exchange and Market Prices. 3.0, Agricultural Prices and Exchange. 3.30, Programme for Children. 4.0, Programme for Women. 4.30, Concert by the Danzig Municipal Theatre Orchestra, conducted by Karl Tutein, relayed from the Kurgarten in Zoppot; Jubel-Ouverture (Flotow); Scandinavian Folk Music (Hartmann); Prelude to Act II of Die Königskinder (Humperdinck); Waltz, Sphärenklänge (Joh. Strauss); Mozart Fantasia (Kling); Overture, The Kiss (Smetana); Allegretto from Symphony No. 3 (Brahms). In an interval at 5.0 (approx.), Talk: Suggestions for Excursions. 5.45, Monthly Review of World Economics. 6.15, Agricultural Prices. 6.25, Violin Recital by Viki von Winterfeld; Prelude and Allegro (Puknani-Kreisler); La bandleine (Couperin); Cadenetta (d'Ambrosio); Nocturne (Scheinpflug); Hungarian Fantasia, Sarika (Winterfeld). 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, See Stuttgart. After the Programme, Weather and News.

HILVERSUM

Announced HILVERSUM, 1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.55 a.m. till Close Down, Programme of the Christian Radio Society (N.C.R.V.). 11.50, Gramophone Music. 12.10 p.m., Concert by the Van de Horst Trio and J. van Ginkel (Clarinet); Overture, Banditenstrolche (Suppe); Frühlingzauber (Translatenr); Schubert Potpourri (Fétras); Serenade (Rachmaninov); Gramophone Records; Overture, Crown Diamonds (Auber); Les Sirenes (Waldteufel); Selection from Where the Lark Sings (Lehár); Extracts from The Bartered Bride (Smetana); March, Heil Europa (von Blon). 1.40-2.10, Interval. 2.10, Religious Address. 2.40, Programme for Women. 3.10, Harp and Violin Recital by Mlle. Berghout and T. Berghout; Largo (Handel); Gavotte (Gossec); Air (Röntgen); Bizzaria (Röntgen); Melody (Eiehora); Duo (Nicolai von Wilim); Dances (Chapuis); Fantasia (Saint-Saëns). 4.10, Talk for Young Photographers. 4.40, Talk. 5.10, Concert by M. Dekker (Accordion), T. Verwey (Accordion) and J. Smit (Drum and Xylophone). 6.10, Talk on Horticulture. 6.40, Police Notes. 6.55, Religious Notes. 7.10, Literary Talk. 7.40, Concert by the Cantemus Women's Choir, conducted by Mme. de Vink-Verschoor. 8.40, Talk. 9.10, Concert by the Meyerber Orchestra, conducted by A. Bielen; Triumphal March (Bielen); Concert Overture, Freia (Mann); Scènes pittoresques (Massenet); Overture, Orpheus in the Underworld (Offenbach); Czardas (Grossmann); Parade of the Wooden Soldiers (Jessel-Bielen); Selection from De waark van het Regiment (Visser-Lucas); Finale. In the interval at 9.40, News. 10.40, Gramophone Music. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—7.40 to 9.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.); Gramophone Music. 9.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.); Religious Transmission. 9.55 to 11.40, Programme of the V.A.R.A. 9.55, Recitations. 10.10, Organ Music. 10.40, Gastronomic Talk. 11.10, Gramophone Music. 11.40 to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time and Gramophone Music. 12.10, Concert by Kovacs Lajos and his Orchestra: Song by Bob Scholte. 1.40, Talk. 2.0, Gramophone Music. 2.40, Talk. 8.10, Gramophone Music. 3.40 to 7.40, Programme of the V.A.R.A. 3.40, Orchestral Concert, conducted by Hugo de Groot; Overture, Czar and Carpenter (Lortzing); Four Pieces for Orchestra (d'Ambrosio); Andante (Mozart-Beudel); Tambourin chinoise (Kreisler). 4.10, Programme for Children. 4.40, Concert

(contd.): Rosy Dreams (Westy); Puppy und Humpelmann (Armaudola); La Bayadère (Christine); Chanson tzigane (Baldi); Discours de bal (Grieg); Serenade (Hekens); March from The Dollar Princess (Fall). 5.10, Concert by the Notenkrakers; Napoli (Mezzacapo); Moonlight in Abbazio (Valerio); Boston (Janbert); Potpourri, An Hour in a Russian Village (Artemiev). 5.30, Organ Recital. 5.50, Concert (contd.); Dutch Peasant Dances (Simp); Russian Dance (Tchaikovsky); Hungarian Dance (Brahms); Argentine Tango (Bianco); Spanish March (Garcin). 6.10, Recital of Songs. 6.20, Talk. 6.40, Concert (contd.). 6.55, Concert of Light Music by De Fierfreniters. 7.40 to 8.10 (approx.), Programme of the V.P.R.O. 7.40, Talk. 8.10 (approx.) to 9.55 (approx.), Programme of the A.V.R.O. Symphony Concert. 8.40, Talk, and at 9.40, Church Notices and News. In the interval at 9.55 (approx.) to 10.40, Programme of the V.P.R.O. 9.55, Recitation. 10.25, Gramophone Music. 10.40 till Close Down, Programme of the V.A.R.A. Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna. KALUNDBORG.—See Copenhagen. KIEL.—See Hamburg. KLAGENFURT.—See Vienna. KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—7.5 (from Helsinki), Pianoforte Recital. 7.30, Talk. 7.55 (from Helsinki), Concert by the Radio Orchestra. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Concert from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert by the Düsseldorf Symphony Orchestra, relayed from the Bach-Saal, Düsseldorf. Conductor: Hans Paulig. In an interval at 2.0 (approx.), News. 3.0, Talk: The Unemployment Problem To-day and Formerly. 3.30, Economic Notes and Time. 3.50, Programme for Young People. 4.30, Concert by the Station Choir and Orchestra, conducted by Brenner; Overture, Little Ida's Flowers (Klenau); Choir: (a) Hunter's Chorus from Der Freischütz (Weber), (b) The Spinner's Chorus from The Flying Dutchman (Wagner); Suite from Nell Gwyn (German). Choir: Bridal Chorus and Wedding Procession Music from Lohengrin (Wagner). Three Spanish Dances (Granados). Choir: Chorus from (a) Cavalleria rusticana (Mascagni), (b) I Pagliacci (Leoncavallo). Chromatic Gallop (Liszt); March and Chorus from Carmen (Bizet). After the Concert, Political Talk. 5.50, Talk: Karl Peters, the Founder of German East Africa. 6.10, Talk: German History in Tombstones. 6.20, English Conversation Lesson. 6.45, Weather and News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Announcements. 8.5, The Property of the Nation—Radio Sequence. 9.30, Mozart Concert by the Station Orchestra, conducted by Busch-kötter. 10.0, News. 10.30, Talk: The Hanseatic Canal and the Employment of Labour. 10.45, See Frankfurt. 11.30 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12.5 p.m., Concert by the Voss Orchestra, Dresden, conducted by Hans Voss. In an interval at 1.0 p.m., News. After the Concert, News. 2.0, Art Notes. 2.10, Reading of Lyric Poetry. 2.45, Pianoforte Recital by Rudolf Feigler; Fantasia and Fuge on the Theme B-A-C-H (Liszt); Grohschmiedvariationen (Handel); Two Pieces from Stimmungsbilder Op. 9 (R. Strauss). 3.15, Programme for the Country Woman. 3.35, Economic Notes. 4.0, Concert by the Chemnitz Orchestral Society, conducted by Philipp Werner; Overture, Loreley Op. 49 (Lachner); Adagio and Allegro vivace from the Symphony in D (Schubert); Ballet Music from Armide (Glück); Turkish March from The Ruins of Athens (Beethoven); Selection from Hans Heiling (Marschner); Six German Dances (Haydn); Overture and March to Schiller's Turandot (Weber); Selection from Ritter Pasman (Joh. Strauss); Selection from The Sunken Bell (Respighi); Extracts from In den Bergen Op. 35 (Schuler); Polka Mazurka, Erwachte Liebe (Müllcker). In an interval at 5.0, Book Review. 5.50, Economic Notes, Weather and Time. 6.0, Radio Report on Sonneberg. 6.30, Scientific Talk: Dust. 6.45, Programme to be announced. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Political Announcement. 8.5, Concert of Georg Vollerthum Music by the Leipzig Symphony Orchestra, conducted by the Composer: Soloist, Gerda Heuer (Soprano). 8.35, Talk: Building of the German Nation. 9.0, News. 9.10, Concert by the Dresden Soloist Ensemble: Hungarian March (Berlioz); Entr'acte and Ballet

Music from Ali Baba (Cherubini); Selection from Mona Lisa (Schillings); Movement from a String Quartet (Neubeck); German Dances Op. 10 (Reger); Dance (Gade); Extracts from the Romantic Suite (Armaudola). 10.30, News. 10.35 (approx.), Close Down.

LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—Dutch Programme.—7.45 p.m., Gramophone Concert: Sinfonia (J. C. Bach); Overture, Anacreon (Cherubini); Overture, Egmont (Beethoven). 8.20, Arias from Opera on Gramophone Records. 9.20, Talk in Dutch, followed by Gramophone Music and News.

LWOW

788 kc/s, 381 metres; 16 kW.—6.35 p.m., News. 6.40, Gramophone Music. 7.20, Miscellaneous Items. 7.35, See Warsaw. 11.0 (approx.), Close Down.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, News and Talk, by the President of the National Pharmaceutical Society: The Creation of the World according to Genesis. 8.30 (approx.), Gramophone Music. 9.15, News. 9.30 to 11.0, Interval. 11.0, Chimes, Time and Political Review. 11.20 (approx.), Symphony Concert on Gramophone Records. 12.15 a.m. (Saturday), News. 12.30 (approx.), Close Down.

MALMO.—See Stockholm. MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—5.55 p.m., Talk: Bicycle Excursions into the Country. 6.5, See Prague. 6.25, Gramophone Music. 7.0, See Prague. 7.10, See Bratislava. 7.20, Concert of Light Music by the Station Orchestra, conducted by V. Musil. 8.20 See Prague. 8.45, See Brno. 9.30 Programme to be announced. 10.0, See Prague.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 10 kW.—2.45 p.m., Weather. 3.0, Concert. 4.0, Talk: Weather and the Harvest. 4.30, Readings from Literature of the Past. In the interval: Musical Items. 5.45, Talk: New Ray Materials. 6.30, Dance Music. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5, Press Review.

MOTALA.—See Stockholm. MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 533 kc/s, 530 metres; and Nürnberg, 1,250 kc/s, 259 metres.—4.30 p.m., Concert by the Munich Orchestral Society conducted by Ernst Hagel. 5.45, Talk for the Younger Generation: Nietzsche's Hope and the Youth of Germany. 6.5, Talk: Germany's Raw Materials. 6.25 (from Nürnberg), Concert of Modern Canons, by the Boys' Choir and String Quartet of the New Nürnberg Grammar School, conducted by Max Böhm. 6.45, Time, Weather and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0 (from Nürnberg), Mandoline Concert conducted by Wolfgang Berghold. 8.40 Topical Talk. 9.0, Concert by the Station Orchestra, conducted by Hans A. Winter-Solost. Wolfgang Ruoff (Pianoforte); Romantic Overture (Thuille); Pianoforte Concerto in E Flat (Weber); Romantic Ballet Suite (Reuss). 10.20, Time and News.

NAPLES.—See Rome. NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.30 p.m., Gramophone Music. 6.30, Recital. 7.0, Weather and News. 7.30, Pianoforte Recital. 8.0, Time Signal. 8.1, Talk. 8.30, Concert, relayed from the Fagerborg Church; Mne. Signe Molin Hald (Mezzo-Soprano), M. Huns Hansen (Organ), and M. Leif Rustad (Cello); Largo (Händel); Arioso (Händel); Agnus Dei with Cello and Organ Obligato (Bizet); Die Ehre Gottes in der Natur (Beethoven); Sacred Melody (Sinding); Arioso and Canzonetta (Bach); Prayer (Händel); Cello Solo, Cradle Song (Barmester). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Dramatic Programme. 11.15 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 8 kW.—8.0 p.m., Dopolavoro Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.30, Gramophone Music. In the interval at 8.30, Time and News. 8.45, Concert of Opera Music, conducted by F. Russo. In the interval, Talk and Announcements. 10.55, News.

JULY 7th FRIDAY continued

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 18 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6 dot Signals).—6.45 p.m., News. 7.0, Le Journal Parle. 8.30, Musical and Literary Programme for Young People. 9.15, Orchestral Concert, conducted by Edouard Flament: Waltz, Ange d'Amour (Waldteufel); Fleur de lili (Lecocq); Canto d'amore (Malvezzi); Cello Solo: Moment musical (Schubert); Avril charmeur (Waldteufel); Violin Solo: Sérénade (Widor); Dance of the Tumblers (Rimsky-Korsakov). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music. 7.5, Sponsored Talk. 7.15, Journal Parle. 7.30, Radio Report on the Cycle Tour of France. 7.45, Gramophone Music. 8.15, Interlude. 8.30, Galathée—Opéra-Comique in Two Acts (Massé). 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—7.30 a.m., Weather and Physical Culture. 7.45, Gramophone Music: Estrellita (Ponce); Romance (Glinka); Waltz (Stange); Indian Love Call (Friml). 8.0, Weather and Press Review. 12 Noon, Address for Jews. 12.30 p.m., Gramophone Concert: March from A Midsummer Night's Dream (Mendelssohn); Mlle. Jeanne Lavelle; Le Temps des lilas (Chausson); Träumerei (Schumann); La Chinoise (Gabrieli-Marie); Pensée d'automne (Massenet); Rhapsodie, España (Chabrier); Potpourri of Waltzes (Irying Berlin); Légende de la Brise from Les Bouffons (Zanakis); Goyescas (Granados); Song, The Nightingale (Albini); Liebesliedchen (Benatzky); Honolulu (Yvain); Piece (Hasselmans); Amour platonique (Desprez); Entr'acte—Waltz (Hirschmann); Song, Partir avec vous (Bor-lère); Waltz, Golden Rain (Waldteufel); Les Roses d'Amour (Sabatier); Élégie (Vidal); Chaque souvenir d'amour, from Moineau (Louis Veydt); Suite carnavalesque (Thomé). In the intervals at 1.0, Exchange, News, and Weather, and at 2.0, Exchange. 3.45, Exchange and Market Prices. 7.0, Exchange, Market Prices, and Racing Results. 7.10, Social Assurance Societies' Report. 7.20, Gramophone Music: Overture, Patrie (Bizet); Mignonne amie (Fijan); Chante, rossignol chante (Fijan); Ginette (Paradis); Bourrée fantasque (Chabrier). 7.50, Commercial Prices and News. 8.0, Variety Programme on Gramophone Records: Dances from the First Act of La Bourgeoise gentilhomme (Lullu); Scene from Le médecin malgré lui (Molière); Les vieilles chansons (Nadaud); Les trois Hussards (Nadaud); Sur le Siège (Lavedan); Scene from Romanesque (Rostand). 8.30, News and Weather. 8.40, Gastronomic Review. 8.45, Pianoforte Recital by Mlle. Marcelle de Mayo: First Ballad (Chopin); Spanish Rhapsody (Liszt); Sur le rivage, from Silages (Aubert); L'Isle joyeuse (Debussy). In the interval at 9.15, Press Review and News. 9.30, Gramophone Concert: Mlle. Ritter Ciampi: Aria from The Magic Flute (Mozart); Chaliapin: Aria from Don Giovanni (Mozart); Toti dal Monte: Aria from La Sonnambula (Bellini); Ninon Vallin; Cavatina from Norma (Bellini); Guglielmotti: Two Arias from La Sonnambula (Bellini); Toti dal Monte: Le Carnaval à Venise (Henediet); Tito Schipa: Aria from Don Pasquale (Donizetti); Vincenzo Bellini and Galli-Curci: Two Arias from The Barber of Seville (Rossini); Lily Pons; Gilda's Aria from Rigoletto (Verdi); Maria Barrientos: Caro home from Rigoletto (Verdi); Quartet by Gigli, Galli-Curci, Homer and de Lucia from Rigoletto (Verdi).

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—4.0 to 5.0 p.m., U.S. Marine Band, from New York. 7.30, Utility Hall Programme. 7.45, KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, International Sunday School Lesson by Rev. S. Lappin. 8.30, Tenor Solos by John Dunlap. 8.45, Happy Jack, from New York. 8.55, Baseball Scores. 9.0, Vic Schilling and his Cosmopolitan Hotel Orchestra, from New York. 9.30, Business News and Market Reports. 9.45, Arcadians, from New York. 9.55, Baseball Scores. 10.0, Rhythm Kings. 10.15, Tom Gerum and Casino Orchestra. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal and Press News-Reeler. 11.15, Weather Report. 11.16, Sport Review. 11.23, I Bring a Song. 11.28, Announcement. 11.29, Temperature Report. 11.30, Pittsburgh Spotlights. 11.45, To-day's News by Lowell Thomas, from New York. 12 Midnight, Amos 'n' Andy, from New York. 12.15 a.m. (Saturday), Rondoliers. 12.30 to 1.15, New York Relay. 12.30, Pastoral. 1.0, The Old Bush. 1.30, Potash and Perlmutter. 1.45, Phil Cook and his Ingram Shavers. 2.0, Goldman Band. 2.30, Variety Programme. 3.0, Century of Progress Festival Orchestra.

FORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Brno. 3.55 to 4.0, Exchange. 5.55, See Moravská-Ostrava. 6.5, Agricultural Report. 6.15, Gramophone Music. 6.25, News in German. 6.30, German Transmission: Talk for Workers, Talk on Sports, and Agricultural Report. 7.0, Chimes and News. 7.10, See Bratislava. 7.25, Concert of Light Music. 8.20, Harpsichord Recital by Oldrich Kredba: Sonatas in G and D (Vanhul); Allegretto (Jelinek); Polonaises in A and G (Beevartovsky). 8.45, Violin Recital by Stefan Frenkel: Concerto in B, No. 1, Op. 4 (Vivaldi); Three Mazurkas (Fitzelberg-Frenkel); Canzonetta (Lopatnikov); Duet No. 1 in A Minor (Smetana). 9.30, Programme to be announced. 10.0, Time and News. 10.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and GENEVA, 395 kc/s, 750 metres.—3.30 p.m. (from Geneva), Gramophone Music. 4.30 (from Geneva), Programme for Women. 5.30 to 7.0, Interval. 7.0 (from Lausanne), Talk: How to Sumbathe. 7.25, News. 7.30 (from Lausanne), Political Review. 8.0, (from Geneva), Humorous Monologues. 8.45 (from Geneva), Variety Programme by the Broadcasting Serenaders. Soloist, from Mme. Marguerite de Reding. 9.20 (from Bulle), Popular Spanish Music, by the Bulle Mandoline Orchestra, with introductory Talk. 9.50, News. 10.40, Talk: The Work of the League of Nations. 10.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—7.5 p.m., Concert, conducted by A. Parups, relayed from Melluzi, Soloist: Mirza Bajars (Soprano). Overture, The Merry Wives of Windsor (Nicolai); Selection from Die Fledermaus (Joh. Strauss); Suite, A Fête in Aranjuez (Demersseman); Overture, Poet and Peasant (Suppé); Bolero (Verdi); Gipsy Song from Countess Maritza (Kalman); Selection from Viktoria and her Hussar (Abraham). In the interval at 7.55, News. 9.0, Weather, News and Dance Music. 10.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres, and 2RO, 11,810 kc/s, 25.4 metres from 5.30 p.m.—1.0 to 2.15 p.m., Orchestral Concert: Viaggio nel sogno (Luadi); Pallido luna (Luporini); Arabesque (Hamud); Foxtrot (Schwat); Selection from Frasquita (Lehar); A sera, in terra di Toscana (Limentra); Canzonetta nostalgica (de Micheli); Hawaiian Guitar Solo. Valzer di Tomini (Restano); Intermezzo, Il tamburino arabo (Ranzato); One Step, Suzur (Petralia). 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30, Concert: Mary Luisa Sardo (Violin), Elisa Capolino (Soprano) and Clara Sarro (Pianoforte); Violin Solos: (a) Tzigane (Ravel), (b) Fire Dance (Fala); Soprano Solos: (a) Mariella's Song from Il piccolo Marat (Mascagni), (b) Aria from Iris (Mascagni); Pianoforte Solo: Synopated Music (Billy Mayerl, Sam Coslow and Confrey); Soprano Solos: Two Arias from Madame Butterfly (Puccini); Soprano Solo: I tre petali (Tirindelli); Violin Solos: (a) Andalusian Romance (Sarasate), (b) Caprice (Paganini-Szymanowski). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 6.57, Report of the International Institute of Agriculture (in Spanish, German and French). 7.10, Tourist Report. 7.20, Announcements in Different Languages. 7.30, Sports Notes. 7.40, Giornale Radio. 8.0, Time and News. 8.15, Sponsored Gramophone Music. 9.15, Chamber Music: Mario Ceccarelli (Pianoforte), Uccia Cattaneo (Soprano); Variations on a Theme of Handel (Brahms); Soprano Solos: (a) Aria from Lo frate innamorato (Pergolesi), (b) Io son zitella (Perti), (c) Caro volto pallidotto (Mattei), (d) Rispetto (Benvenuti), (e) Vergebliches ständchen (Brahms); Pianoforte Solos: (a) Scherzo from the Sonata in A Flat (Weber), (b) Etude in E (Chopin), (c) La leggerezza (Liszt); Soprano Solos: Fêtes galantes (Plick-Mangiagalli). 10.0 (approx.), Dance Music. 11.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 p.m., Biblical Drama. 9.15, Popular Programme, from New York. 9.30, Talk: The Mind Age. 9.35 to 10.0 (approx.), South Sea Islanders, from New York. 12.45 a.m. (Saturday), Stock Reports. 1.0, Cities Service Concert. 1.30, WGY Farm Forum. 2.0 to 3.30, New York Relay. 2.0, Variety Programme. 2.30, Popular Programme. 3.0, Musical Programme. 3.30, Popular Programme, from New York, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Bern, 1,220 kc/s, 245.9 metres.—6.15 a.m. (from Bern), Gymnastics. 6.35 to 11.59, Interval. 11.59, Time Signal from Neuchâtel Observatory and Weather Forecast. 12 Noon (from Zürich), Concert of Light Music. 12.20 p.m., Time, Weather, and News. 12.40 (from Zürich), Concert (cont'd.). 1.25 (from Zürich), Exchange, Time and Weather. 5.0 (from Zürich), Programme for Children. 5.30 (from Zürich), Concert by the Small Swiss Radio Orchestra. 6.30 (from Bern), Talk on Mountaineering Accidents. 7.0 (from Bern), Time, Weather, and Market Prices. 7.20 (from Bern), Choral Concert of Marching Songs. 8.0 (from Bern), Talk with Illustrations: Jazz, The Music of Kurt Weill, Krenek and Gershin. 8.40 (from Bern), An Excursion with the Microphone. 9.0, Weather and News. 9.10, Concert by the Swiss Radio Orchestra. 9.30 (from Bern), Concert of Swiss Chamber Music. 10.0, Concert by the Swiss Radio Orchestra. 10.15, Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Song Recital by Bertil Bondeson. 5.40 (from Motala), Programme for Children. 6.0, Songs by Nea Hedberg-Granath, relayed from Malmö, 1,301 kc/s, 231 metres. 6.15, Gramophone Music. 7.30 Talk. 8.0, Concert by the Symphony Orchestra, conducted by John Kihlman. 9.0, Talk. 9.30, Song Recital by Ingeborg Ekblöf. 10.0 (from Sundsvall), Organ, Song, and Violin Recital by John Holt, Elin Törnqvist, and Ernst Törnqvist: Chaconne in F for Organ (Purcell); Song, Se ben erudele (Caldara); Violin Concerto in A minor (Vivaldi); Pastoral for Organ (Vierne); Violin Solos: (a) Adagio (Bossi), (b) Meditation (Glazunov); Three Songs, Marcia elegiaca for Organ (Lindberg). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—7.45 to 8.0 a.m., Report of the Cycle Tour of France. 11.30, Gramophone Concert: Vision (Taylor); Sérénade (Drigo); Plaisir d'amour (Martini); An clair de lune (Mauriner); Heather Song (Brown); Song of the Nile (Cryan-Meyer); (a) King's Horses (Gay); Tiddle (Brown); Chanson des heures (Privas); Dans le désert blanc (Albert); Monterey (Wayne); Dark Night (Sauer); Monterey (Wayne); Dark Night (Hoymann); With my Guitar (Murriss); Les trois Hussards (Nadaud); Le rêve passe (Helmer-Krier). 12.20 p.m., Radio Report of the Cycle Tour of France. 12.45, News. 1.0, Time. 1.1, Exchange. 1.5, Orchestral Concert, conducted by Maurice de Villers: Overture, Le luc des fées (Auber); Suite pittoresque (Poundrain); Selection from Scaramouche (Messager); Extracts from Les Fantoche (Lecocq); Florentine March (Fucik). 2.0 to 3.30, Interval. 3.30, Orchestral Concert, relayed from the Casino, Vichy. Conductor: M. Brouillette. Overture, Der Freischütz (Weber); Two Hungarian Dances, Nos. 5 and 6 (Brahms); Suite pastorale (Chabrier); Selection from Lohengrin (Wagner); Marche joyeuse (Chabrier). 5.0, Literary Talk. 5.15, Gramophone Music. 5.30 (approx.), Report of the Cycle Tour of France. 5.45, Gramophone Music. 6.0, Concert by the Station Trio, relayed from Lille, 1,130 kc/s (265.4 metres). 7.0, Topical Talk in German. 7.15, Gramophone Music. 7.30, Time and News. 7.45, Report of the Cycle Tour of France. 8.5, Press Review in German. Lottery Results. Announcements, and Gramophone Music. 8.30, Gala Concert, relayed from the Casino, Vichy. Conductor: Paul Paray. Soloist: M. Beneditti (Cello). Overture, Le Roi d'Ys (Lalo); Cello Solo: Psyché et Eros (César-Franck); Nocturnes (Debussy); (a) Nuages, (b) Fêtes; Les Préludes (Liszt). After the Relay, Press Review.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 827 kc/s, 570 metres.—12 Noon, Gramophone Concert. 1.16 p.m., Time and News. 1.30, Organ Recital by Kurt Albrecht. 2.0, Concert arranged by the Post Office. 2.30, Advanced English Lesson. 3.0 to 3.45, Interval. 3.45, Talk: Sunday Walks. 4.0 to 4.30, Interval. 4.30, Concert from Munich. 5.45, Talk: A German Regent. 6.10, Legal Talk. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Carmen—Opera in Four Acts (Bizet), relayed from the National Theatre, Mannheim. 10.15, Time and News. 10.20 (approx.), Gramophone Music. 11.0, Concert from Frankfurt. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—Transmissions uncertain owing to recent fire.—11.30 p.m. till Close Down. Programme in English by the I.B.C. 11.30, Organ Recital. 11.57, I.B.C. Good-night Melody. 12 Midnight (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 p.m. till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 908 kc/s, 331.5 metres; Genoa, 950 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.0 p.m., Chamber Music Concert. 6.0, Weather Report. 6.5 to 6.35, Interval. 6.35, Giornale Radio and Announcements. 7.0, Time, Geographical Report, and Gramophone Music. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News. 8.15, Sponsored Concert. 9.15, Announcements. 9.20, Symphony Concert, conducted by Alceo Toni. Talk in the interval. After the Concert, Dance Music. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in German. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—12 Noon, Concert by the Vienna Symphony Orchestra, conducted by Josef Holzner. In the interval at 1.0 p.m., Time and News. 2.0 to 3.0, Interval. 3.0, Time and News. 3.20, Talk: Records in Light Athletics. 3.30, Talk: Carl Maria von Weber and the Singer, Karolina. 3.55, Programme for Children. 4.25, Talk: Legends about Caves and their Scientific Explanation. 4.55, Concert: Else Kubie (Soprano); Josef Geringer (Violin), and Natalie Freundlich (Pianoforte); Sonata in A Minor, Op. 105, for Violin and Pianoforte (Schumann); Suite in E for Violin and Pianoforte (Goldmark); Soprano Solos: (a) Ich habe keine Mutter (Kienzl), (b) Zwischen dir und mir (Wetely), (c) Das grüne Blatt (Rinaldi), (d) Weit ist stille eingeschlafen (Korngold), (e) Meine weissen Aar (Vrieslander), (f) Wiegeliend (Pamer), (g) Die Wolke (Mittler), (h) Ringelreihen im Frühling (Kornaut). 5.50, Tourist Report. 6.5, Talk: Accidents through Electricity. 6.20, Weekly Sports Report. 6.30, Talk with Gramophone Illustrations: Danish Music. 7.5, An Austrian Peasant Wedding—Programme of Folk Songs, arranged by Raimund Zoder. 7.35, Time and News. 7.40, Folk Songs (cont'd.). 8.5, Der Wittber—a Peasant Tragedy (Ludwig Thuoma, arranged for Radio by Hanns E. Scropper). 9.55, News. 10.10, Dance Music by The Blue Boys, relayed from the Graben Café.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Gramophone Music. 12.25, Polish Press Review. 12.33, Weather Report. 12.35, Gramophone Music. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.10, Announcements. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.45, Aviation Report and Anti-Gas Drill. 3.50, Gramophone Music. 3.55, Naval and Colonial Report. 4.0, Popular Music by the Poznan Opera House Orchestra, relayed from Ciechocinek. 5.0, Book Review. 5.15, Recital by M. Kaloska (Soprano) and L. Dworakowski (Violin): Violin Concerto in G (Vivaldi-Na-héz); Aria from The Bartered Bride (Smetana); Gipsy Melody (Dvorak); Romance (Aubrosio); Cracovienne (Stankowski); Waltz (Brahms); Sérénade and Tarantella (Galkin); Two Songs (Rozycki); Three Songs (Nowowiejski). 6.15, Talk. 6.35, Concert by the Station Symphony Orchestra, conducted by G. Fitelberg. Soloist: J. Kalecki (Pianoforte). 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Topical Talk. 8.0, Concert. In the interval, Radio Journal and Review. 10.0, Dance Music. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music.

WILNO

533 kc/s, 563 metres; 16 kW.—6.35 p.m., Dance Music on Gramophone Records. 7.10, Miscellaneous Items. 7.20, Talk on Lithuanian Affairs. 7.35, Programme Announcements. 7.40, See Warsaw. 9.0, Hints for the Week-end. 9.10, Programme from Warsaw. 11.0 (approx.), Close Down.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—7.55 p.m., Sports, Talk. 8.10, Announcements. 8.30, See Belgrade. 10.30, News and Weather. 10.40, Dance Music. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Gramophone Music, Stock Exchange Quotations and Weather Report. 6.0, Gramophone Concert. 6.45, News Bulletin. 7.0, Talk. 7.15, Gaelic Talk. 7.30, Time Signal. 7.31, Excerpts from Madame Coquette, by Anthony Moffit and Mrs. Maguire. 8.0, Professor O'Dwyer in a Programme of his own Compositions. 8.30, Tenor Solos by W. Watt. 8.40, Orchestral Music. 9.5, Songs (contd.). 9.15, Uilleann Pipe Solos, by Leo Rowsome. 9.30, Contralto Solos, by S. Jameson. 9.45, Sponsored Programme. 10.45, Time, News, Weather and Close Down.

BARCELONA

(EAJ1), 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Records. 8.30, Exchange. 9.0, Gramophone Music. 9.15, Talk in Catalan: No More War, followed by News. 10.0, Chimes from the Cathedral, Weather, Exchange, and Market Prices. 10.5, Concert by the Station Orchestra: Pasodoble (Marquina); Selection from Bruniselda (Morera); Waltz, Manola (Waldteufel); Aria (d'Ambrosio); In a Chinese Temple Garden (Kettelhey); Melody (Rabey); Canzonetta No. 1 (Valls). 11.15, Talk in Catalan. 11.30, An Opera, on Gramophone Records. In the interval at 12 Midnight, News. 1.0 a.m. (Sunday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk, and Dopolaro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 9.30, I Pagliacci—Opera (Leoncavallo) on Gramophone Records. In the interval, Reading. After the Opera, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—7.0 p.m., Folk Songs. 9.0, Humorous Programme. 9.30, Rimsky-Korsakov Concert. 10.30, Time and News. 10.45 (approx.). (Cigany Music from the Potrosacka Zadruga Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW. 1.45 p.m., News. 2.0, Gramophone Music. 3.0, Handwork for Children. 3.30, Weather and Exchange. 3.45, Humorous Recitations. 4.0, Concert from Hamburg. 5.0, Sports Review, with Gramophone Records. 5.30, Concert by the Berlin Guitar Quartet: Allegro moderato (Sor); Quartet in C Minor (H. Albert). 6.0, Poetry Reading. 6.5, Song Recital by Fritz Zohsel: Arias from (a) The Magic Flute (Mozart), (b) Fidelio (Beethoven), (c) Carmen (Bizet), and (d) Aida (Verdi). 6.30, Talk: Experiences in the Stuttgart Workhouse. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Epigrams. 8.5, New German Dance Music, with Variety Interludes. 10.0, News. 10.15 (approx.), Report of the German Grand Prix for Motor Cycles, relayed from the Avus Speedway. 10.45, Weather Report for Shipping. 11.0, See Munich. 12 midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—1.0 p.m., Gramophone Concert. Part I—Dance Music: German Dances (Mozart); Norwegian Dances (Grieg); Scottish Dances (Lamotte); Two Old Bohemian Dances (Dvorak); Slav Dances (Dvorak); Trepak (Tchaikovsky); Bulgarian Dance, Ratschenitza (Vladigerov); Hungarian Dance; Spanish Dance (Grapados); Annen-Polka (Strauss); Kaiser-Walzer (Joh. Strauss). Part II—Operetta Music: Selection from Wiener Blut (Joh. Strauss); Two Airs from Der Page des Königs (Goetze); Wenn zwei sich lieben from Der Rastelbinder (Lehar); Duet from The Gipsy Baron (Joh. Strauss); Ach, ich hab sie ja nur auf die Schulter geküsst from Der Bettelstudent (Müllöcker). In the interval at 2.15 (approx.), News. 3.0, Berlin Exchange and Agricultural Report. 3.20, Programme for Children. 3.35, Lesson in First Aid. 4.0, Concert, relayed from the Krollgarten. 4.55, Talk: The German Gymnastic Display. 5.15, Songs. 6.0, Max Reger Song Recital by Fred Drissen (Baritone); Glück; Glückes genuss; In einem Rosengärtchen; Trost; Hans und Grete; Friede; Zweisprach; Abeguck; Der Schwur. 6.20, An Artist fights with a Jaguar—an Experience by Max Vollmberg. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.10, Humorous Stories. 8.20, With a Show-man through Berlin. 10.0, News. 10.15 (approx.), Dance Music, relayed from the Roof Garden

SATURDAY

JULY THE EIGHTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL Variety programme, Guards' Band concert.
LONDON REGIONAL Orchestral concert.
MIDLAND REGIONAL "Salt Water," orchestral concert.
WEST REGIONAL Devon in Song and Story, feature programme.
NORTH REGIONAL Extracts from the Military Tattoo, relayed from Knavesmire, York.
BELFAST "Miss White of Hollywood," a comedy by M. Shanks.

ABROAD

- BRUSSELS (No. 2) 5.0 p.m. Concert by the Station Symphony Orchestra.
COPENHAGEN 8.0 p.m. French opéra-comique music by the Station Orchestra.
FECAMP 11.0 p.m. English programme by the I.B.C.
HEILSBURG 4.5 p.m. The Königsberg Opera House Orchestra.
LYONS LA DOUA 8.45 p.m. Concert, conducted by Gaston Billet.
PALERMO 8.45 p.m. Operetta: "Clo-clo," by Lehar.
ROME 8.45 p.m. Italian operatic programme.
WARSAW 9.30 p.m. Chopin pianoforte recital.

of the Eden Hotel. In the interval at 11.0, Talk: What they are talking about in Berlin. 1.0 a.m. (Sunday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.30, Sports Notes. 7.35, News. 7.45, Report on the Cycling Tour of France. 8.5, English Lesson. 8.20, News. 8.30, Gramophone Music. 9.0, Variety Concert.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.25 p.m., Gramophone Music. 6.55, Talk for Housewives. 7.0, See Prague. 8.25, Variety Concert; Part I: Overture (Kostal); Elegy for Cello and Orchestra (Lilling); Violin Solo, Souvenir (Drvlla); Serenade for Violin, Cello, and Harp (Oelschlägel); Traumideale (Fueick); Serenade from Les Millions d'Arlequin (Drigo); Berceuse from Jocelyn (Godard); Serenade from Andersen (Nedbal); March (Fueick); Part II: A Musical Comedy in One Act (Piskacek). 10.0, See Prague. 10.15, See Brno. 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.0 p.m., Gramophone Concert of Variety Music. 2.0, Time and News. 2.20, Gramophone Concert (contd.). 3.0, Market Prices. 3.30, Programme to be announced. 3.50, Review of Song Books. 4.10, Dialogue: The Films of the Week. 4.25, Programme Announcements. 4.35, Concert from the Café Vaterland. 6.0, Literary Talk. 6.20, Programme to be announced. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Variety Programme (arr. Hans Weissbach); Music by Hans Sattler. 10.0, Time and News. 10.30, Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—7.0 p.m., See Prague. 8.25, See Bratislava. 10.0, See Prague. 10.15, Concert of Dances by the Station Or-

chestra, conducted by J. Polasek: Six Dances (Joh. Strauss); Moravian National Dance (Kaska); Polka (Rostislav); Czech National Dance (Heller). 11.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R.; 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Radio Orchestra, conducted by Franz André: Soloist, Conchita de Olivera (Songs). 1.0 p.m., Journal Parlé. 1.10, Concert by the Station Symphony Orchestra, conducted by J. Kumps: Caprice Italien (Tchaikovsky); Four Short Pieces (Delcroix); Selection from Lakmé (Delibes); Invitation to the Waltz (Weber). 4.45, Talk. 5.0, Dance Music from the Continental Palace Hotel, Blankenberghe. 6.0, Talk: The Chinese Theatre. 6.15, Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, The Secret Marriage (Cimarosa); Midnight on Maundy Thursday in Seville (Turina); Arabesque (Montagne-Phillips); Selection from Le jongleur de Notre-Dame (Massenet); Canzonetta for Clarinet (Pierne); Selection from Les Gueules (Godard); Ballet russe (Luigini). 7.15, Gardening Talk. 7.30, Journal Parlé. 8.0, Concert by the Radio Orchestra, conducted by Franz André: Soloist, Misson (Violin); Overture, Die Fledermaus (Joh. Strauss); Selection from La boutique fantasque (Rossini-Respighi); Violin Solo, Finale from the Spanish Symphony (Lalo); Extracts from La Reine de Cuisine (Martini); Fête polonaise from Le roi malgré lui (Chabrier). 8.45, Talk on Maurice Tumerelle and Readings from his Works. 9.0, Concert by the Coecilia Choir, conducted by Louis Bavoigt, relayed from Antwerp: Quand dans l'azur des cieux (de Monte); Al mormorar (Gastoldi); Ständchen (Schubert); Par la tempête (F. Schmitt); Trois beaux oiseaux du Paradis (Ravel); Three Songs (Akimenko); Summer (Reyland); Zeg kwezelke (de Vorht); Au clair de la lune (Gevaert). 10.0, Journal Parlé. 10.10, Dance Music from the Continental Palace Hotel, Blankenberghe.

BRUSSELS (No. 2)

I.N.R.; 887 kc/s, 338.2 metres; 15 kW.— Programme in Flemish.—12 Noon, Concert by the Station Symphony Orchestra, conducted by Kumps; Joyeuse Marche (Chabrier); Pièces pour mes petits amis (Pierne); Selection from Hérodiade (Massenet); Le Cygne (Saint-Saens); Serenade (Elgar); Ballet Music (Luigini). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Radio Orchestra, conducted by Franz André: Soloists, Conchita de Olivera (Songs); Military March (Schubert); Waltz, Wine, Woman and Song (Strauss); Goodbye New York (Aurie); Spanish Folk Songs; Selection from Dalibor (Smetana); Cello Concerto (Saint-Saens); Slav Dances (Dvorak). 4.45, Readings, with Commem-

tary. 5.0, Concert by the Station Symphony Orchestra, conducted by Kumps; Selection from Tosca (Puccini); Three Pieces (Gultraud); Selection from Louise (Charpentier); Ballet Music (Delibes); Romance (Rubinstein); Ballet Music from Milevka (Blockx). 6.0, Pianoforte Music: Fantasia Impromptu Op. 66 (Chopin); Baigueses au Soleil (de Sévèrac). 6.15, Talk: The Italian Lakes. 6.30, Gramophone Music. 6.45, Music with Commentary. 7.30, Film Review. 8.0, Concert by the Small Station Orchestra, conducted by Leemans: Overture, Lucio Silla (Mozart); Adagio for Clarinet and String Quintet (Wagner); Dance of the Elves (Henriques); Selection from Index (Gounod); Violin Solos (Szymanowski): (a) Nocturne, (b) Tarantella; Potpourri, Echoes of Romania (Dauber). 8.45, Recitations. 9.0, Concert relayed from the Kursaal, Ostend. 10.30, Le Journal Parlé. 10.40, Dance Music relayed from the Kursaal, Ostend.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Sibiceanu Orchestra. In an interval at 6.0, Radio Journal. 7.0, Educational Programme. In an interval at 7.20, Gramophone Music. 8.0, Concert of Military Music. 9.0, Dramatic Programme. 9.20, Programme relayed from a Restaurant. 10.0, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres 18.5 kW. Also relayed on 840 metres from 7.20 p.m. till Close Down.—5.30 p.m., Concert by the Losonczy Oscar Schweiter Orchestra. 6.35, Answers to Correspondence. 7.10, Market Prices. 7.20, Hungarian Folk Song Recital by Margarete Bodán, with Accompaniment by the Bela Racz Cigany Band. 8.30, News. 8.45, Two One-Act Plays. 10.30, Weather. 10.55 (approx.), Dance Music by the Bachmann Band, relayed from the Rujnapark Restaurant; Soloist: Paul Fekete.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—12 Noon, Concert from the Wivex Restaurant. 2.0, Orchestral Concert, conducted by Walter Meyer-Radon: Prelude to Vblund Smed (Henriques); Suite No. 1 from L'Arlésienne (Bizet); Romanes in C for Strings (Sibelius); Entry March of the Boyards (Halvorsen); Reading; Overture, Mignon (Thomas); Minuet (Bocherini); Selection from The Circus Princess (Kálmán); Waltz from The Dollar Princess (Fal); Overture, A Night in Venice (Joh. Strauss). 5.0, Gramophone Concert: Villanella (del'Acqua); Toreador Song from Carmen (Bizet); Yehudi Menuhin—Violin Solo: Seherzo tarantella (Wieniawsky); Selection from Der husige Krieg (Joh. Strauss); What more can I ask? (Noble); Balloons (Shawn and Maguire); I'm sure of everything but you (O'Flynn); Tout pour Emilie (Meskill and Conrad). 5.15, Exchange and Market Prices. 6.20, Talk on Standardisation. 6.50, Weather and News. 7.15, Time Signal. 7.30 (from the Randers Studio), The Work of the Agricultural Commission. 8.0, Town Hall Chimes. 8.1 to 12.0, Variety Programme. 8.1, French Opéra-Comique Music by the Radio Orchestra, conducted by Walter Meyer-Radon: Overture, La dame blanche (Boieldieu); Rondo from Les deux Avores (Grétry); Overture, L'épreuve villageoise (Grétry); Selection from The Black Domino (Auber); Overture, Queen for a Day (Adam). 8.40, Reading. 9.0, Recital of Folk Songs, with Introductory Talk. 9.25, Serenades by the Station String Orchestra, conducted by Walter Meyer-Radon: Serenade in F (Julius Klengel); Serenade in E Minor (Elgar). 10.0, News. 10.5, Marimba Recital: Der Holzmann (Gustav Rüdiger); Melody (Bachaleinikov); Ne dis pas toujours (Jean Lenoir); Gallop (Dorté). 10.30, Light Music by the Station Orchestra, conducted by Walter Meyer-Radon: Overture, Don Pasquale (Donizetti); Waltz, Dolores (Waldteufel); Selection from The Gipsy Princess (Kálmán); Polonaise from Les Millions d'Arlequin (Drigo). 11.0, Dance Music from the Lodberg Restaurant. In the interval at 12 Midnight, Town Hall Chimes. 12.15 a.m. (Sunday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Ronald and S. McNabb. 4.30, Programme for Children. 5.0, Concert for Tunbridge Wells and Isle of Thanet Listeners. Beautiful Lady (Caryll); Songs: (a) My Old Shako (Trotter), (b) Bless this House (Taylor); Pianoforte Solo: When Day is done (de Sylva); Alice Blue Gown (Tierney); Song: Violets (Wright); Pianoforte Solo: Still I love her (Gaskill); Egyptian Serenade, Amina (Lincke). 5.30, Con-

JULY 8th

SATURDAY

continued

brity Concert on Gramophone Records for Dover and Folkstone Listeners. The Mills Bros.: Coney Island Washboard; The Basswell Sisters: Down among the Sheltering Palma; Billy Mayerl; Selection from The Desert Song (Romberg); Layton and Johnston: Same Old Moon; Sir Harry Lauder: Saturday Night; Cicely Courtneidge: There's Something about a Soldier (Gay); Raie da Costa: Sweetheart, I'm dreaming of you (Carter); The Mills Brothers: It don't mean a thing (Ellington). 6.0, Programme in French. 11.0 till Close Down. Programme in English by the I.B.C. 11.0, Club Concert for Lincoln Listeners. Part I: Dance Music. Don't be late in the Morning (Le Clerq); Maybe I love you too much (Berlin); Talk by G. H. Banwell, Esq., Town Clerk of Lincoln; When my little Pomeranian met your little Pekinese (Oppenheim); All over Italy (Butler); Castles in the Sand (Sandford). Something came and got me in the Spring (Rich); I shall still keep smiling along (Wallace); I can't remember (Berlin); No more love (Lombardo). Part II: Orchestral Music and Songs. Selection from The Gipsy Princess (Kalmán); Hungarian Dance No. 6 (Brahms); Old Spanish Song (Aubert); Song: The Hills of Home (Fox); Selection from Les Millions d'Arlequin (Drigo); Song: Over the Dark, Still Silence (Rizza); Spärenklünger (Joh. Strauss). 12.5 a.m. (Sunday), I.B.C. Late News Bulletin in English. 12.10 (approx.), I.B.C. Members' Request Concert. (Slivek's Song from the Peer Gynt Suite (Grieg); Speak to me of Love (Lenoir); Woodland Peace (Cavilla); Love's Old Sweet Song (Molloy); Bells across the Meadow (Kettelbey); Granny's Photo Album (Greer). 12.20, Dance Music by the Ibcolians. I wake up smiling (Aldert); Someone to care for (Warren); Sylvia (Scollard); Won't you stay to Tea? (Revel); That's my home (Rene); London Bridge is falling down (Bleyer); Contented (Ellison); I sigh for you, Rio Rita (Santeizini). 12.57, I.B.C. Goodnight Melody. 1.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 246.9 metres, and Trier, 1,157 kc/s, 259.3 metres.—3.30 p.m., Programme for Children. 4.25, Economic Notes. 4.30, See Langenberg. 5.45, Economic Notes. 6.0, Reading by Bruno Nolissen-Baken. 6.30, Weekly Review. 6.45 (approx.), To-day's News. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Programme to be announced. 8.20, See Berlin (Witzleben). 10.0, Franz Völker sings on Gramophone Records; Opera Potpourri (Markgraf); Spielmanns Lied (Geibel); Von Wien durch die Welt (Marischka). 10.20, Time and News. 11.0, See Munich. 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—4.0 p.m., Concert by a Nazi Band, conducted by Puls-Hartmann, relayed from the Jungfernstieg. 5.0, Talk on Eugenics. 5.30 (from Hanover), Scharzfeld—the History of the Harz Mountains in Stone—Radio Sequence. 6.10 (from Hanover), Vitzthum von Eckstädt—Radio Play of the Holstein. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0 to 10.0, See Berlin (Deutschlandsender). 10.0, Time and News. 10.20, Topical Talk. 10.30, 1933 Mecklenburg Week; Radio Report of a Night Journey up the River Warnow to Rostock. The Rostock Men's Choral Society, the Water Sports Society, and the Municipal Orchestra.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—11.20 a.m. (from Danzig), Concert by a Police Band, conducted by Ernst Stiebertz. Parade March (Möllendorff); Ballet Music from Rosamunde (Schubert); Rocooco Serenade (Meyer-Heimund); Ständchen (Heykens); Triumphant March from Aida (Verdi); Two Norwegian Dances (Rubel); March (Piefke). 1.5, Gramophone Concert. In the intervals at 1.20 and 2.0, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Agricultural Prices. 3.30

(from Danzig), Song Recital by Hanni Ringenwald (Soprano), and Paul Kleinwächter (Baritone). Baritone Solos (Schubert): (a) Das Wandern, (b) Heideröseln, (c) Der Lindenbaum; Duets for Soprano and Baritone (Berger): (a) Der alte Gott, der lebet noch, (b) Es steht ein Lind', (c) Hans und Liesel; Soprano Solos (Brahms): (a) Auf die Nacht in der Spinnstube, (b) Dort in den Weiden, (c) Guten Abend, gute Nacht; Ballads (Schubert): (a) Death and the Maiden, (b) Erbkönig; Duets for Soprano and Baritone (Berger): (a) Schmitter Tod, (b) Es waren zwei Königskinder, (c) Schmitterzelpfützhausel. 4.5, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetzky, relayed from the Königsberg Zoological Gardens. Prelude to Das Liebesverbot (Wagner); Rhapsody No. 2 (Liszt); Air from La Traviata (Verdi); Hungarian Comely Overture (Kéler-Béla); Waltz from Faust (Gounod); Ukrainian Sketches (Dreyer); Waltz, Morgenblätter (Joh. Strauss); Mosella March (Sitt). In an interval at 4.50, Traffic Report. 5.45, Programme in Dialect. 6.25, Talk on Physical Exercises. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Reading (Paul Krauß). 8.20, See Berlin (Witzleben). 10.0, Weather and News. 10.10 (approx.), Dance Music from Berlin (Witzleben). 12.30 a.m. (Sunday), Close Down.

HILVERSUM

Announced HUIZEN, 1,013 kc/s, 296.1 metres; 20 kW. (7 kW up to 4.40 p.m.).—11.55 a.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Sextet. Melody (Lake); Serenade (Heykens); Marchenpauzer (Staf); Cards (Monti); Strauss Potpourri (Morera); Melody (Raynes); Gramophone Records, Waltz, from Frau Luna (Lincke); Im Wandel der Zeiten (Morera); Lolita (Buzzi-Pecora); Finale. 1.25 p.m. to 1.40, Interval. 1.40, Programme for Young People. 2.10, Programme for Children. 3.40, Concert by the K.R.O. Orchestra, conducted by M. van 't Woud. Overture. Au printemps de la vie (Moulton); Ballet Fantasia (Pares); Slav Dances (Dvorak); Grand galop romantique (Liszt); Grieg Erinnerungen (Urbach); March, Adartia (Simon); Algerian Song (Kettelbey); Rusticarella (Cortopassi); Das ist die Liebe (Kaltman); Melody (Bullerian); Appassionata (Filippucci); Dance of the Marionettes (Gilbert); Küssen ist keine Sünd (Eysler); Elfentanz (Henriques); Spanish Gipsy Dance (Marquina); Caravane; Waltz, Golden Rain (Waldteufel); March Medley (Blankenburg). In the intervals at 4.10, Sports Talk, and at 4.55, Sports Report and at 6.0, Press Review. 6.40, Police Notes. 6.55, Talk. 7.15, Gramophone Music. 7.30, Talk on Esperanto. 7.45 (approx.), Variety Concert by the K.R.O. Boys, J. Mossel, Jeanne Horsten and Henri Theunisse (Songs). In the intervals at 8.10 and at 9.10, News. 10.40, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 160 kc/s, 1,875 metres; 8.5 kW.—Programme of the Workers' Radio Society (V.A.R.A.). 11.40 a.m., Concert by the Small Station Orchestra, conducted by H. de Groot. Overture. Si j'etais roi (Adam); Parisiana (Leopold); Minuet (Beethoven); Serenade (Haydu); Suite, The Dolls' House (Engelmann). 12.25 p.m., Organ Recital by J. Jong; Melody (Taffiers); Selection from The Bird Faucier (Zeller); Hobonoko Serenade (Toselli); Chinese Street Serenade (Siede); Miners' Song (Heerspink). 12.55, Orchestral Concert (contd.); Potpourri of Mendelssohn's Music (Foulds); Three Romantic Waltzes (Chabrier); Two Lyric Pieces (Grieg); Melody (Zeller); Potpourri of Tosti's Songs (Godfrey). 1.40, Interval. 1.55, Gramophone Music. 2.30, Talk. 2.40, Concert by the Amsterdam Chamber Orchestra; Overture, Polen (Urbini); Wiener Bonbons (Strauss); Humoresque (Dvorak); Spring Song (Mendelssohn); Selection from Marotte (Pugni-Bernards). 3.20, Literary Talk. 3.40, Concert (contd.); Overture, Pique Dame (Suppé); Waltz, Ma bien-aimée (Waldteufel); Jealousy (Gade); Meyerbeer Potpourri (Urbach); Moment Musical (Schubert); Melody (Kettelbey); Selection from The Cockney Suite (Kettelbey). 4.25, Concert by De Fierclruiters. 5.10, Programme for Children. 6.10, Concert by the Clio Double Quartet. 6.25, Organ Recital by C. Steyn. 6.40, Quartet Concert (contd.). 6.55, Organ Recital (contd.). 7.10, Agricultural Talk. 7.39, SOS Messages. 7.40, Concert by the V.A.R.A. Orchestra conducted by H. de Groot: Semper fidelis (Sousa); Gold and Silver (Lehar); Mandoline Serenade (Eilenberg); Crazy Dance (Haines); Melody (Bust); Rocooco Serenade (Helmund); Spring Song (Round); Melody (Round); Potpourri of Strauss Operetta Music (Schlößel); Overture, Poet and Peasant (Suppé); Variations on the Song Ich hab' mein Herz in Heidel-

berg verloren (Suppé); Gavotte from Der Gasogner (Suppé); Polka from Donna Juanita (Suppé); Gelbe Rose (Suppé); Selection from Boccaccio (Suppé); Overture, The Grand Duchess of Gerolstein (Offenbach); Selection from La fille de Madame Angot (Lecocq); Selection from The Tales of Hoffmann (Offenbach); Polka from La fille de Madame Angot (Lecocq); Quadrille from La belle Helène (Offenbach); Selection from Les saltimbanques (Ganne). In the intervals at 8.25, News, and at 8.40 and 9.40, Songs at the Pianoforte by M. B. Snook. 10.40, Gramophone Music. 11.40, Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert by Die Fröhlichen Fünf. In an interval at 2.0 (approx.), News. 2.30, Gramophone Music. 3.0, Programme for Children. 3.30, Economic Notes and Time. 3.50, Reading (Hans Hesse). 4.10, Talk: Touring in the Rhineland and Westphalia—Wied. 4.30, Concert by the Station Orchestra, conducted by Wilhelm Buschköttler. Short Suite for Strings (Niemann); German Folk Song Fantasia (Blumer); Suite from the Music to Shakespeare's Measure for Measure (Krohn); Dance Fantasia (Wiesmann). In an interval, Talk on Amateur Photography. 5.50, Talk for Women. 6.10, Reading of an Old Rhineland Legend. 6.20, English Reading Lesson. 6.40, Topical Talk. 6.50, Weather, Time, Economic Notes and Sports Report. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, News. 8.15, A Visit with the Microphone. 8.15, Paderborn—Radio Sequence (Rudolf Predeck). 9.30, A Village Gala Concert by the Small Choir of the Cologne Singakademie and the Station Orchestra. Soloists: Gerta Schmitz (Soprano), Hoersch (Tenor), and Rood (Baritone). Commentary by Franz Kürten. Abendglocken; Der Köhling röt!; Beim Erenndrieve von de Höhner; Noh der Enfnahrt; Op der Bank vürn Hus; No spill en Leed!; Verzälleher!; Vürm Dantz!; Der Düvelsspillmann!; Dantz em Dörpshus!; Got Naach!; Der Naachwächter röt! 10.15, News. 11.0, See Munich. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12.5 p.m., Gramophone Concert of Soprano and Alto Songs. 1.0, News. 1.15, Gramophone Records of German Dances and Marches. In an interval at 1.45, Wireless Hints. 2.0, News. 2.10, Wireless Talk. 2.20, Gramophone Concert: Sonntag ist's (Bren); O wie schön ist ein Feiertag (Stalz); Potpourri of Ramlbers' Songs; Wandern mit Gesang; Melody (Percy); Mädcl kommt mit mir den Rhein entlang (Osternann); Beim Becherklang (Ueschmann); Selection from Glückliche Reise (Künneke). 2.45, Programme for Children. 3.30, Book Review. 3.45, Economic Notes. 4.0, Programme for Young People. 4.30, Programme from Berlin (Witzleben). In an interval at 5.0, Talk on Music. 6.0, German for Germans. 6.20, A Modern Dictionary. 6.30, Radio Report of the Dresden Military Sports. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Political Announcement. 8.5, Radio Report of a Festival at Halle. 8.50, Marine—We guard the German Sea Routes—Radio Sequence (Carl-Georg Philipp). 10.20, News. 10.25 (approx.), Serenade. 12 midnight (approx.), Close Down.

LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—7.45 p.m., Gramophone Concert: Pianoforte Concerto in G Minor (Saint-Saëns); L'apprenti sorcier (Dukas). 8.15, Talk with Illustrations: French Songs of Lorraine. 9.20, Humorous Programme. 9.30, Concert by the Differdange Municipal Orchestra, followed by Gramophone Music and News.

LWOW

788 kc/s, 381 metres; 16 kW.—7.5 p.m., Gramophone Music. 7.20, Miscellaneous Items. 7.40, See Warsaw. 7.55, Racing Notes. 8.0, Gramophone Music. 8.30, See Warsaw. 10.40, Concert by the Hejnal Mandoline Orchestra, conducted by Adam Epler. In the interval at 11.30, News for Members of the Polish Polar Expedition, relayed from Cracow. 12 Midnight (approx.), Close Down.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, News and Talk. 8.15 (approx.), Gramophone Music. 9.15, News. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal and Song Recital, with Sextet Accompaniment. 12.15 a.m. (Sunday), News. 12.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., Popular Music by a Schrammel Quartet with Songs by K. Malina. 7.0, See Prague. 8.25, See Bratislava. 10.0, See Prague. 10.15, See Brno. 11.30 (approx.), Close Down.

MOSCOW

TRADES UNION; 230 kc/s, 1,304 metres; 100 kW.—2.45 p.m., Weather Report. 3.0, Saint-Saëns and Glazunov Concert on Gramophone Records. 4.0, Talk: The First Fruits of the Grain Harvest for the State. 4.30, A Play (Ordynsky). 5.50, Programme for Children. 6.30, Concert of Music by Mozart, Mozart-Liszt, and Wagner. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5, Temperance Talk in German.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Orchestral Concert, conducted by Erich Kloss; Soloist, Josef Schindler (Tenor); Overture, Rosamunde (Schubert); Adagio from the Pianoforte Quintet (Mozart); Selection from Romeo and Juliet (Gounod); Three Tenor Songs from Samoa (Plank); (a) Du warst mein Frühling, (b) Tango, (c) Ich frag' den Stern; Potpourri, Munich Picture Book (Gulden); Spanish Waltz, Träume (Aibout); March, Augen rechts (Reich). 5.40, Programme for Young People. 6.10, Recital of Scottish Folk Songs by Nini Diell. 6.25 (from Nürnberg), Talk: Military Organisation in Charlemagne's Empire. 6.45, Wireless Notes. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Marzellinus Sturm—an Old Bavarian Dialect Author; Literary and Musical Programme. 8.20, Bunter Abend; Part I: Musical Programme by the First Munich Accordion Club, the Fritz Reithmeier Orchestra, conducted by Josef Hirtl and Soloists; Part II: Visit to a Cabaret—Radio Report (Hans Kiani). After the Programme, Light Music by the Reithmeier Orchestra. 10.20, Time and News. 11.0, Serenade by the Bavarian Station Schrammel Ensemble. 12 Midnight (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 315 kc/s, 368.1 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.30 p.m., Gramophone Music. 5.30, Programme for Children. 6.0, Concert of National Songs and Hardanger Fiddle Solos. 6.0, Advertising Notes. 7.15, Weather and News. 7.30, Talk. 8.0, Time Signal. 8.1, Orchestral Concert, conducted by Olvin Fjeldstad: Florentine March (Fueick); Overture, Light Cavalry (Suppé); Waltz, Gold and Silver (Lehar); The Nigger's Dream (Myddleton); Canzonette (Godard); Potpourri, Pudding (Morera); Reverie (Botpustini); Chant russe (Lalo); Serenade (Jensen); Chant, Massaryk (Obruca). 9.10, Recitations. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Concert of Sea Shanties by M. Magnus Samuelsen (Baritone) and the Lind Trio, relayed from Stavanger. 12.47 kc/s (240.6 m.). 11.0, Dance Music. 12 midnight (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements, Tourist Talk, Agricultural Notes, and Giornale Radio. 8.20, Sports Notes. 8.25, Gramophone Music. In the interval at 8.30, Time and Announcements. 8.45, Clo-cho—Operetta in Three Acts (Lehar). In the intervals, Review of New Books and Announcements. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (preliminary and six-dot signals).—6.45 p.m., News. 7.0, Le Journal Parlé. 8.30, Au téléphone—Play in Two Acts (de Lorde) followed by La peur des coups—Comedy in One Act (Courteline). 10.0 (approx.), Close Down.

JULY 8th

SATURDAY

continued

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music. 7.15, Journal Parle. 7.35, Report of the Cycle Tour of France. 7.50, Talk: The Event of the Week. 8.0, Answers to Correspondents. 8.5, Gramophone Music. 8.10, Interlude. 8.25, Concert of Chamber Music. 8.55, Interlude. 9.10, Dance Music by the Sonora Radio Band conducted by Fred Hoffmann. 11.0, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—7.30 p.m., Weather and Physical Culture. 7.45, Gramophone Music. 8.0, Weather and Press Review. 12 Noon, Operetta Music on Gramophone Records; Selection from La Mascotte (Audran); Melodies from Coups de Roulis (Messager); Duet from Les Braconniers (Offenbach); Songs from La Boulangère a des œufs (Offenbach); Overture, The Drum Major's Daughter (Offenbach). 1.0, Exchange, News, and Weather. 1.30, Exchange. 2.0, Exchange. 3.45, Market Prices. 7.0, Market Prices, Weather, Agricultural Report, Exchange, and Racing Results. 7.10, Dance Music on Gramophone Records. 7.50, Review of the Latin Press. 8.0, Les Cloches de Corneville—Operetta (Planquette), on Gramophone Records. In the interval at 8.40, Review by Bonnaud. 9.15, Press Review and News. 9.30, Dance Music.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 to 8.58 p.m., New York Relay. 7.30, Concert Echoes. 8.0, Radio Troubadours. 8.30, Wealth of Harmony. 8.58, Baseball Scores. 9.0, Mitchell Schuster and his Orchestra, from New York. 9.30, Concert Favourites, from New York. 9.55, Baseball Scores. 10.0, Rhythm Kings. 10.15, United States Government in Pittsburgh (subject to be announced). 10.30, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie, from New York. 11.0, Time Signal and Press News-Reciter. 11.5, Don Bestor and his Hotel Lexington Orchestra. 11.15, Weather Report. 11.16, Sports Review. 11.22, Press News-Reciter. 11.29, Temperature Report. 11.30, A Recreio by Bill and Alex of the Downtown Y.M.C.A. 11.45, Jack Pettis and his Orchestra. 11.50, Time Signal. 12 Midnight, American Tax Payers' League, from New York. 12.15 a.m. (Sunday), Benno Rabinot, Concert Violinist, from New York. 12.30, Songs of Melody. 1.0, Jack Denny and his Orchestra, from New York. 1.30 to 3.15, Stadium Concerts by the Philharmonic Symphony Orchestra, from New York.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50-4.0 p.m., Gramophone Music. 5.55, Talk for Tourists. 6.5, Agricultural Report. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Recitations. 7.0, Chimes and News. 7.10, Medical Talk. 7.25, Reminiscences of the Russian Legion. 8.25, See Bratislava. 10.0, Time and News. 10.15, See Brno. 11.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—6.15 a.m. (from Lausanne), Gymnastics. 6.30 to 12.28 p.m., Interval. 12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News. 12.40 (from Lausanne), Gramophone Concert of Sound-Film and Operetta Music. 1.0 (from Lausanne), Financial Report. 1.10 (from Lausanne), Popular Gramophone Concert. 2.0 to 3.28, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Geneva), Gramophone Music. 5.30 to 7.0, Interval. 7.0 (from Geneva), Talk. 7.30 (from Geneva), News. 7.35 (from Geneva), Radio Interview. 8.0 (from Geneva), Concert by the Horwood Balalaika Orchestra. 8.25 (from Geneva), Humorous Programme. 8.35, Concert by the Radio Suisse Romande Orchestra; Soloist, Roger Aubert (Pianoforte). 9.50, News. 10.0 (from Geneva), Dance Music by the Broadcasting Serenaders. 11.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—7.30 p.m., Concert relayed from Bulduri. Soloist: N. Graudans ('Cello). Overture, Figaro (Mozart); First Suite, No. 1, from L'Arlesienne (Bizet); Serenade (Mozart); Overture, Rosamunde (Schubert); Variations for 'Cello, Op. 33 (Tchaikovsky); Overture, The Flying Dutchman (Wagner). In the intervals at 8.30, News, and at 9.15, Weather. 9.30, News and Dance Music. 11.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,270 kc/s, 25.4 metres, from 5.30 p.m.—1.0 to 2.15 p.m., Orchestral Concert: Foxtrot (London); Tango, Giardino chiuso (Amadei); Dance of the Waves from Loreley (Catalani); Barcarolle, Canto d'Imera (Muller); Confidenze alla luna (Petralla); Casa mia, casa mia (Pietri); Selection from Tell me to-night (Spoliansky); Foxtrot (Dax); Valzer all'antica (Barzizza); One Step (Masccheroni). In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.30, Children's Radio Review. 4.45, Reading. 5.5, Report of the Royal Geographical Society and Giornale Radio. 5.15, Exchange and Announcements. 5.30 to 6.15, Orchestral Concert: Foxtrot (Villa); Medieval Suite (Amadei); Canto alla luna (Fragna); Interlude from Suor Angelica (Puccini); Pianoforte Solos: (a) L'isle joyeuse (Debussy); (b) Scherzo (Grieg); (c) Feux follets (Liszt); Foxtrot (Makarov). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 7.0, Tourist Report. 7.10, Lesson in Morse. 7.20, Announcements in Different Languages. 7.40, Giornale Radio and Sports Notes. 8.0, Time and Announcements. 8.15, Gramophone Music. 8.30, Giornale Radio and Sports Notes. 8.45, Italian Operatic Programme: Volpino il Calderaio—Lyric Comedy in One Act. (Renzo Bossi); Review of New Books; L'Arabesca—Lyric Drama in One Act (Domenico Monleone); Theatre Notes; Unastrotta di Colombina—Musical Comedy in One Act (Guido Zuffellato). Giornale Radio after the Programme.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—12.45 a.m. (Sunday), Stock Reports. 1.0 to 4.0, New York Relay. 4.0, Tenor Solos by Ortiz Tirado. 1.15, Gruen and Hall. 1.30, The Economic World Today. 2.0, Ferde Grofe's Orchestra. 2.15, Musical Programme. 2.30, K-7 Secret Service Spy Story. 3.0, B. A. Rolfe and his Orchestra. 4.0, Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—6.15 a.m. (from Berne), Gymnastics. 11.59, Time Signal from Neuchâtel Observatory and Weather Forecast. 12 Noon (from Berne), Gramophone Records of Chamber Music. 12.30 p.m., Time, Weather and News. 12.40 (from Berne), Gramophone Music. 1.25 (from Berne), Weather and Exchange. 1.30 (from Berne), The Listeners' Quarter-of-an-Hour. 1.45 (from Berne), Book Review. 2.15 (from Berne), Gramophone Music. 3.30, Interval. 5.0 (from Berne), Concert by a Hand Harp Circle. 5.30 (from Berne), Programme to be announced. 7.0, Chimes from the Zürich Churches. 7.15 (from Berne), Time, Weather and Market Prices. 7.20 (from Berne), Gramophone Music. 7.30 (from Berne), Concert by a Workers' Band. 8.0 (from Berne), Talk in Dialect. 8.30 (from Berne), Programme to be announced. 9.0, Weather and News. 9.10 (from Berne), Dialect Play. 9.45, Concert of Tessin Folk Music by a Mandoline Society. 10.25, Dance Music. 11.0, Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 592 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.0 p.m., Rural Programme by Ole Kjellberg and Folke Englund (Violin), Fritz Johansson (Viola), Bertil Carlsson (Clarinet), and Walborg Beer (Sings). 6.5, Programme for Children. 5.45, Gramophone Music. 6.45, Talk: Fifty Years ago. 7.30 (from Östersund), Choral Concert. 8.30, Microphone Report. 10.0, Dance Music. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Music. Les lanciers blancs (Marie); Waltz, Espana (Waldteufel); Ca prend toujours (Bos); Les lilas (Ducelle); Waltz, Oui (Gray); Tous les refrains d'amour (Gubaroché); Moi j'ai mon truc (Parès); Canary (Poliakine); Wienerblut (Strauss); Tango (Heintz); Si tu voulais; Schottisch

des pierrots (Lamotte); La Mousmée (Ganne); Pas des patineurs (Jouve); Berlin parisienne (Paul); Descriptive Piece on the Battle of Verdun; Sambre et Meuse. 12.45 p.m., News. 1.0, Time. 1.1, Dance Music on Gramophone Records. Je t'aime (Schell); C'est l'amour (James); Honorable March (Palakiko-Paalhu); The Whistler and his Dog (Pryor); Down South (Myddleton); Moonlight on the Colorado; Wasting (Leslie); Melody (Kohnson); Don't tell her (Dimpfeld); Lucky Seven (Dietz); Two Dances (Carmichael). 2.0, Legal Talk in German. 2.15, Gramophone Music. Cloches de fête (Fauchey); Vous (Mouffred); Melody (Moretti); La vraie Rumba (Sentis); Olé Carabela (Pizarro); Melody (Scotti). 2.45, Talk on Debussy. 3.30, Orchestral Concert, relayed from the Casino, Vichy. Conductor: M. Broullac. Overture, Le Cheval de Bronze (Anber); Strings and Harp: Atitude (Luigini); Air from Louis XIII (Glyss-Pierne); Ballet Music from Maladetta (Vidal); Polka (Godard); Mazurka (Godard); Selection from Madame Butterfly (Puccini); Waltz (Strauss). 5.0, Gramophone Music. 5.15, Orchestral Concert, conducted by Maurice de Villers. Symphonic Poem, Sauge Bourie (Vincent d'Indy); Suite, Schéhérazade (Pierné); Ballet Music from Le Miracle (Hüe); Medieval Suite (Casadesu); La Grotte (Moreau); Septet for Trumpet and Strings (Saint-Saëns). 6.15, French Lesson. 6.30, Orchestral Concert (cont'd.). 7.0, Talk: Touring in Northern Alsace. 7.15, Horticultural Talk in German. 7.30, Time and News. 7.45, Report of the Cycle Tour of France. 8.5, Press Review in German, Lottery Results, and Announcements. 8.30, Isoline—Fairy Opera in Three Acts (Messager). In the interval, Press Review. 11.0, Dance Music relayed from the Savoy. 12.0 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER; 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12.20 p.m., Gramophone Concert: Overture, Zaupa (Herold); Aria from L'elisir d'amore (Donizetti); Overture, Semiramis (Rossini); Arias from (a) La Traviata (Verdi); (b) Faust (Gounod); Selection from (a) Mignon (Thomas); (b) Schön ist die Welt (Lohéar); (c) White Horse Inn (Stolz-Bematzky-Dostal); and (d) Der arme Jonathan (Müllöcker); O mia bella Napoli (Stolz); Spiel mit mir, from Venus in Seide; Waltz Potpourri No. 2 (Rohrecht); Selection from The Bird Faucier (Zeller). 1.30, Concert from Langenberg. 2.30, Time and News. 2.50, Concert by the Holmer-Fruhde Mouth Organ Quintet. 3.10 (from Karlsruhe), Concert by a Trombone Quartet; Old German Madrigal (Schütz); Mailfisterl (Kreigel); Echo (Alschinsky); Ave Maria (Sonne); Spinn, spinn (Jürgsl); Annehmen von Tharau (Sileber); Das treue deutsche Herz (Ott). 3.30, See Frankfurt. 4.30, Gramophone Music. 5.45, Talk: The Care of Disabled Soldiers. 6.10 (from Freiburg), Talk on Amateur Carpentry. 6.35, Time and News. 7.0, Transmission for all German Stations: How the Swabian Sings and Plays—Concert by the Station Orchestra and Choir, a Peasant Orchestra, and Soloists: Fritz Mühlfenzl (Accordion), Heinz Mönch (Zither), and Willi Reichert (Comedian). 8.0, See Breslau. 10.0, Time and News. 10.15, (approx.), Gramophone Music. 11.0, See Munich. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—Transmissions uncertain owing to recent fire. 11.30 p.m. till Close Down. Programme in English by the I.B.C. 11.30, Organ Recital. 11.57, I.B.C. Good-night Melody. 12 Midnight (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres 10 kW.—5.40 p.m. till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 599 kc/s, 312.8 metres; and Florence, 599 kc/s, 508 metres.—5.40 p.m., Gramophone Music. 6.0, Weather Report. 6.5 to 6.35, Interval. 6.35, Giornale Radio and Announcements. 7.0, Time, Tourist Talk, and Gramophone Music. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News and Gramo-

phone Music. 8.30, Talk: Events and problems. 8.45, An Operetta in Three Acts. In the intervals, Book Review and Notes. After the Operetta, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 1,969 kc/s, 50.26 metres (Evening); 10 kW. 11.0 to 11.15 a.m., Religious Announcements in Different Languages. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—12 noon, Concert by the Vienna Symphony Orchestra, conducted by Josef Holzer. In the interval at 1.0, Time and News. 2.0-3.0, Interval. 3.0, Time and News. 3.15, Talk: The Daube Delta. 3.45, Der Weg—Song Cycle (Weingartner, to Poems by Carmen Süder), by Elizabeth Forini (Soprano) and Hans Duban (Baritone). 4.35, Talk with Gramophone Illustrations: Yodels and Mountain Music of Northern Spain. 5.0, Talk on Franz Kafka. 6.30, Concert, relayed from the Thermal Baths, Hof-Gastein. 6.30, Talk: The Unemployed. 6.55, Topical Programme. 7.5, Maxims. 7.10, Time and News. 7.20, A Gramophone Cabaret. 8.0, Hallstatt and the Dachstein Caves—a Radio Report. 9.10, Orchestral Concert, relayed from Hallstatt. 10.0, News. 10.15, Concert by the Vienna Symphony Orchestra, conducted by Josef Holzer: March, The Jolly Adler (Aehleiner); Waltz, Phantasia (Jos. Strauss); Flower Festival Overture (Fetras); I bin a Weanakind (Lehar); Ein stilles Gassel (Römsich); Waltz, Zwei Herzen, doch nur eins (Richter); Overture, Venus auf Erden (Lincke); Küssen ist keine Sünde from Bruder Straubinger (Epler); You are my Heart's Delight, from The Land of Smiles (Lehar); Waltz, Herr, ich tanz halt so gern (Ascher); Potpourri, Bei den Schrammeln (Ertl).

WARSAW

POLSKIE RADIO, 212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Gramophone Music. 12.25, Polish Press Review. 12.33, Weather Report. 12.35, Gramophone Music. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.1, Announcements. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 4.0, Programme for Invalids, relayed from Lwow, 788 kc/s, 381 metres. 4.30, Concert by the Station Orchestra conducted by S. Nawrot. Soloist: H. Zelaska (Soprano). Suite, Impressiones exotiques (H. Mouton); Waltz, Dona wellen (Ivanovici); Song, Le Joueur de cornemuse (Paderewski); Song (Karlowski); Song (Niewiadowski); Comedy Overture, Keder (Bela); Tango (Albeniz); Waltz, Tout Paris (Waldteufel); Songs (Tchaikovsky); (a) Anbal; (b) A la clarté du jour; Song (Costi); Indian War Dance (Lumbye); Spanish Dances Nos. 2 and 5 (Moszkowski); Gipsy Dances (Noskowski); Album des Tantes (Paderewski); Mazurka (Lewandowski). In a interval at 5.0, Topical Talk. 6.15, Programme from Cracow. 6.35, Pianoforte Recital by St. Staniewicz: Sonata in E minor, Op. 90 (Beethoven); Nocturne in A flat (Liszt); Oriental Caprice (Stojowski); Gavotte and Melody (Prokofiev). 7.5, Gramophone Music. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Recitation. 8.0, Gramophone Music. 8.30, Choral Concert of Sacred Jewish Music. Soloist: M. Kudewicki. 9.5, Radio Journal. 9.15, Agriculture Notes. 9.30, Chopin Pianoforte Recital by Mme. M. Wilkomirska. Scherzo in E, Op. 5; Nocturne in G minor, Op. 15; Polona e-Fantaisie, Op. 61. 10.0, Dance Music. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music. In the interval at 11.30 (approx.), News for Members of the Polish Polar Expedition.

WILNO

533 kc/s, 563 metres; 16 kW.—7.30 p.m., Miscellaneous Items. 7.20, Weekly Lithuanian Review. 7.35, Programme Announcements. 7.40, See Warsaw. 8.0, Request Gramophone Records. 8.30, See Warsaw. 9.15, Agricultural Press Review. 9.55, See Warsaw. 12 Midnight (approx.), Close Down.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—8.30 p.m., Announcements. 8.30, Concert by the Station Orchestra, conducted by Julie Grill. 10.30, News and Weather. 10.40, Dance Music. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landseender.

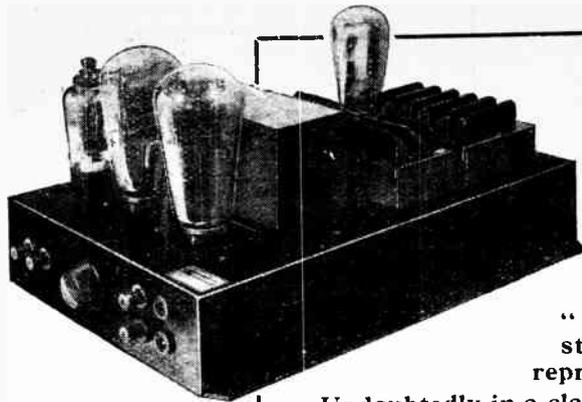


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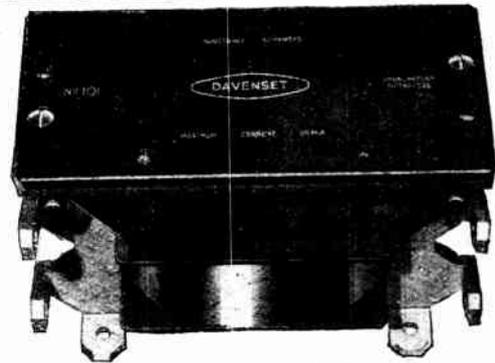


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