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THE PRACTICAL RADIO JOURNAL

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Friday, August 4th, 1933.

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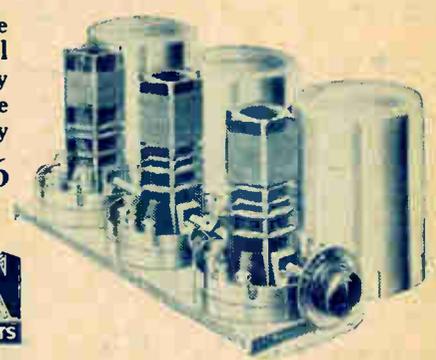


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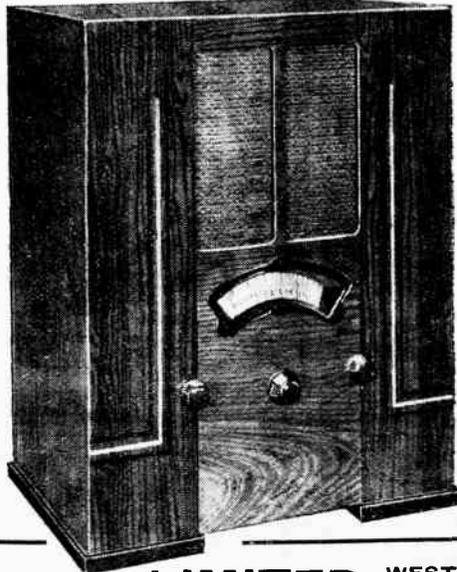
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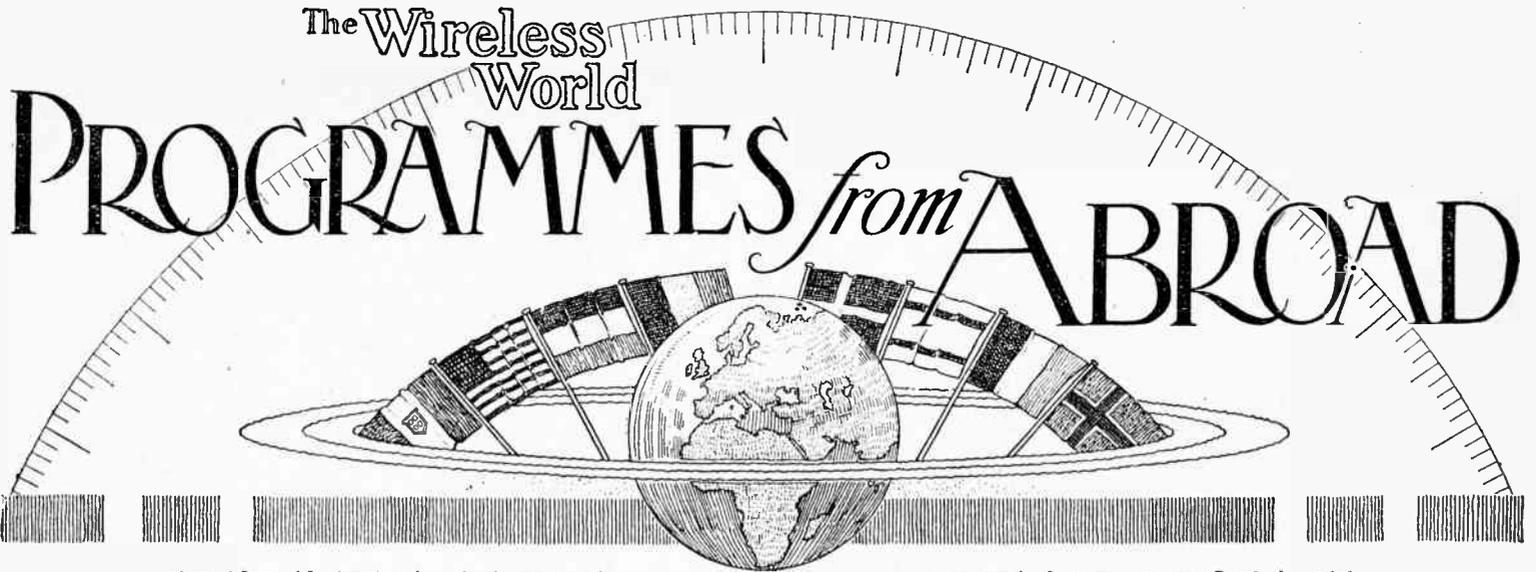
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**BROADCASTING STATIONS
ARRANGED IN ORDER
OF WAVELENGTH**

**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	4	Milan (<i>Experimental Relays Rome</i>)	
1875	160	50	Hilversum (Holland) (8.5 kW. before 4 p.m.)		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. (S.-W. Station, 2 RO on 25.4 m.)	
1635	183.5	60	Berlin (Deutschlandsender) (Germany). (S.-W. Stn. DJA on 31.28 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	Stockholm, S.A.S. (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)	
1481	202.5	500	Moscow, RV1 (Old Komintern) (Russia)		424.3	707	2	Moscow, Imini Stalina (Russia)	
1446	207.5	13	Eiffel Tower, FL, Paris		424.3	707	100	Berlin, Witzleben (Germany)	
1412	212.5	120	Warsaw 1 (Poland)		419.5	715	1.5	Rabat (Morocco)	
1380	217.5	100	Novosibirsk, RV6 (Russia)		418.4	720.5	5	Athlone (Irish Free State)	
1354.4	221.5	30	Motala (Sweden). (<i>Relays Stockholm</i>)		413	725	60	Katowitz (Poland)	
1350	222	0.5	Tunis-Kasbah (Tunisia)		408.7	734	16	Sottens (Radio Suisse Romande) (<i>Switzerland</i>)	
1304	230	100	Moscow, WZSPS (Trade Union) (Russia)		398.9	743	25	Midland Regional. (Daventry)	
1230	244	0.6	Boden (Sweden). (<i>Relays Stockholm</i>)		394.2	752	25	Bucharest (Roumania)	
1200	250	5	Stamboul (Turkey)		389.6	761	12	Leipzig (Germany)	
1200	250	21	Reykjavik (Iceland)		385.1	770	120	Toulouse (Radiophonie du Midi) (France)	
1190	252	200	Luxembourg		385.1	779	8	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)	
1154	260	15	Monte Ceneri (Switzerland)		372.2	806	1.5	Hamburg (Germany)	
1117	268.5	40	Moscow, Popoff RV58 (Russia)		370.1	810.5	0.8	Radio, L.L., Paris	
1083	277	60	Oslo (Norway)		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).	
1071	280	35	Tiflis, RV7 (Russia)		363.1	815	0.7	Fredriksstad (Norway). (<i>Relays Oslo</i>)	
1035	290	36	Kiev, RV9 (Russia)		364.1	824	1	Bergen (Norway)	
1000	300	100	Moscow (Russia) (S.-W. Stn. on 50 m.)		363.6	825	13	Algiers (Algeria)	
938	320	20	Kharkov, RV4 (Russia)		360.6	832	60	Mühlacker (Stuttgart) (Germany)	
857	350	100	Leningrad (Russia)		355.9	843	50	London Regional (Brookmans Park)	
840	357	18.5	Budapest (Hungary)		352.1	852	7	Graz (Austria). (<i>Relays Vienna</i>)	
825	363.6	50	Sverdlovsk, RV5 (Russia)		348.8	860	7.8	Barcelona, EAJ1 (Spain)	
760	395	1.3	Geneva (Switzerland). (<i>Relays Sottens</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). (S.-W. Stn. on 43.75 m.)	
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, IFL (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	Huizen (Holland). (7 kW. before 4.40 p.m.)	
465.8	644	15	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, 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.) 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>)	
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).

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 call signs and transmission times.

FOREIGN SUNDAY PROGRAMMES

AUGUST THE SIXTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Portsmouth Navy Week. Address by Rev. T. H. Masters from H.M.S. Victory.
- LONDON REGIONAL** Service from Coventry Cathedral with address by Rev. R. T. Howard.
- MIDLAND REGIONAL** Military Band programme.
- NORTH REGIONAL** Service from St. Cuthbert's, Southport, with address by Canon Blakeney.
- SCOTTISH REGIONAL** Service from St. Cuthbert's, Edinburgh, with address by Rev. T. Ratcliffe Barnett.
- BELFAST** Service relayed from New Row Presbyterian Church, Coleraine.

ABROAD

- BARI** 8.40 p.m. Concert of songs and operetta music.
- BRUSSELS (No. 2)** 6.30 p.m. Brahms' Sonata in E Minor (Op. 38) for 'Cello, played by Marcel Rassart.
- MUNICH** 4.0 p.m. Bayreuth Festival. Opera: "The Mastersingers," by Wagner.
- PITTSBURGH** 8.0 p.m. National opera concert.
- PRAGUE** 4.0 p.m. Promenade concert by the Municipal Orchestra, from Teplice Saurov.
- STRASBOURG** 3.30 p.m. Orchestral concert from the Casino, Vichy.
- TURIN** 8.30 p.m. Opera: "Don Giovanni," by Mozart.
- VIENNA** 11.0 a.m. Salzburg Festival programme. Symphony concert by the Vienna Philharmonic Orchestra. 8.30 p.m. Rossini's "Stabat Mater," by the Salzburg Cathedral choir and orchestra.
- WARSAW** 12.15 p.m. The Philharmonic Orchestra and soloists.

3.30, Radio Report from a Stud Farm. 4.0 to 10.20, Bayreuth Festival Programme; See **Munich**. 10.20, Weather, News, and Sports Notes. 10.45 (approx.), Dance Music from the Eden Hotel. In the interval at 11.0, Topical Review.

BERNE.—See *Schweizerischer Landessender*.

BEROMUNSTER.—See *Schweizerischer Landessender*.

BODEN.—See *Stockholm*.

BODO.—See *Oslo*.

BORDEAUX-LAFAYETTE 9.65 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal, relayed from **Paris (Ecole Supérieure)**, 671 kc/s, 447.1 metres. 8.0, Sports Talk. 8.15, Pianoforte Recital by Edward Fountaine. 9.0, Gramophone Music. 9.30, La fille bien gardée (Comedy (Laliche). After the Comedy, Amusements' Guide and Time Signal.

BRATISLAVA 1,076 kc/s, 279 metres; 14 kW.—6.10 p.m., Gramophone Music. 6.55, Report for the Housewife. 7.0, See **Brno**. 7.35, 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.—10.0 a.m. (from **Gleiwitz**), Catholic Service. 11.0, German Service for the Hitler Youth. 11.40, Reading (Robert Hohmann). 12 Noon, Concert by the Silesian Philharmonic Orchestra, conducted by Ernst Hoffmann. 2.0 p.m., Announcements. 2.10, Talk: The Silesian Master Bakers' Exhibition at the Messhof. 2.25, Talk. 2.40, Talk: The Catalonian Dispute in Spain. 3.0, Programme for Children. 3.30, Songs to the Lute. 4.0, Bayreuth Festival Programme; See **Munich**. In the interval at 5.20, Concert by the Landeck Municipal Orchestra, relayed from **Bad Landeck**, at 6.0, Reading (Johannes Sehlaf), at 7.30, Sports Results, and at 8.0, Programme in Connection with the Great German Master Bakers' Exhibition, relayed from the Jahrhunderthalle. 10.20, Time and News. 10.50, Dance Music relayed from **Berlin (Witzleben)**. 12 Midnight (approx.), Close Down.

BRNO 878 kc/s, 342 metres; 35 kW.—6.0 p.m., German Transmission: Concert by the Drahok Schrammel Trio. 7.0, Drinking Songs from Slovakia—Recital by A. Vondracek. 7.35, See **Prague**. 11.0 (approx.), Close Down.

(Moretti); Sweet and Low (Baraby); Rumba, Mama Inez (Gilbert); Tiger Rag (La Rocca); Waltz, Le gran via (Valverne); How am I doin' hoy, hoy, Italian Waltz (Ardit); Selection from Blue Roses (Carter); Ol' Man River (Kern); Selection from White Horse Inn (Benatzky). 8.45, Recitation. 9.0, Concert, relayed from the Kursaal, Ostend. After the Concert, Le Journal Park and Dance Music, relayed from the Kursaal, Ostend.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Seidmann Jazz Band. In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Dance Music on Gramophone Records. 7.40, Educational Talk. 8.0, Musical Saw Solos. 8.20, Recitations. 8.40, Talk. 8.55, Popular Romanian Music by the Fania Luca Orchestra. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—8.30 a.m., News. 8.45, Report from the World Jamboree. 9.0, Catholic Service. 11.15, Protestant Service, followed by News and Orchestral Concert. 2.0 p.m., Gramophone Music. 3.0, Agricultural Talk. 3.45, Report from the World Jamboree. 5.15, Concert. 6.0, Microphone Reports by English Scoutmasters. 6.20, Tiro-Gato Concert. 6.50, Humorous Talk. 7.30, Gül Baba—Operetta (Martos-Iuszká), followed by Cigány Music by the Toll Band. 9.15, A Hungarian Mother Greets the Parents of Foreign Boy Scouts in Various Languages. 11.30, Report from the International Jamboree.

CASSEL.—See *Frankfurt*.

COPENHAGEN

1,067 kc/s, 291 metres; 0.75 kW. Relayed by **Kalundborg**, 260 kc/s, 1,153.8 metres.—8.27 a.m., Weather Forecast. 8.30, Morning Gymnastics. 9.0, Talk. 9.30, Interval. 10.0, Divine Service from a Church. 11.30, Weather and News. 12 Noon, Time and Chimes from the Town Hall, followed by Weather Forecast. 12.5 p.m., Concert by the Station Orchestra, conducted by Emil Reeson. 1.30, Accordion Duets. 2.0 (also relayed by **Skamlebaek**, on 31.51 metres), Divine Service relayed from Hilmens-Kirke. 3.15, Relay of a Summer Festival from Bramminge. 4.15, Orchestral Concert relayed from a Park. 6.0, Interval. 6.20, Talk. 6.50, Weather and News. 7.15, Time Signal and Sports Results. 7.30, Talk: Modern English Literature. 8.0, Chimes from the Town Hall. 8.5, Concert by a South Jutland Workers' Choral Society, relayed from the Theatre Hall, Aabenraa. After the Concert, Weather Forecast. 9.0, Dr. Moller—Radio Play (Rausch). 9.30, Song Recital by Carl Fischer. 9.50, News. 10.0, Orchestral Concert conducted by Walter Meyer-Radon. Soloists, Carl Bloch (Bassoon), and Louis Prell (Violin): Overture, Titus (Mozart); Rondo from the Bassoon Concerto (Weber); Sonnernat paa Fjorden (Schelderup); Humoresque (Sjogren); Morning from the Peer Gynt Suite (Grieg); Rondo capriccioso for Violin and Orchestra (Saint-Saens); Finlandia (Sibelius). 11.0, Danco Music relayed from the Wivex Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Monday), Close Down.

CORK.—See *Athlone*.

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. Special Programme for South Coast Listeners. 2.0, Vocal and Orchestral Concert: I kiss your Lips (Rudolphe); Songs: (a) I Bring a Love Song (Rouberg). (b) For You Alone (Geel); Charming Episode (Ormandy); The Valley of Poppies (Ancliffe); Songs: (a) You will remember Vienna, (b) Because (d'Hardelet); A Birthday Serenade (Lincke). 2.30, Gramophone Concert: By the Sleepy Lagoon (Coates); by Albert Sandler and his Orchestra; The Moment I saw you (Grey and Gay); by Cicely Courtneidge; Louise; by Maurice Chevalier; Now I'm in Love (Shapiro); by Len Fillis; The Match Parade (Wehle); by Pat Rossborough and Rudy Starita; The Porter's Love Song (Johnson); by Elsie Carlisle; The Garden of Sleep (de Lara); by Beatrice Harrison; Under Heaven's Blue (Payan), by Albert Sandler and his Orchestra. 3.0, Concert: Overture, Die Fledermaus (Strauss); One Fine Day, from Madame Butterfly (Puccini); Song, Red Devon by the Sea; Pianoforte Selection from Rigoletto (Verdi); Waltz Song from La Boheme (Puccini); Song, O Mistress Mine (Quilter); Polonaise in A (Chopin); Hungarian Dance No. 1 (Brahms). 3.30, Concert of Light Music: Charming Episode (Ormandy); Love me to-night (Crosby); Selection from The Desert Song (Rouberg); Some of these Days (Brooks); Gipsy Song (Baldi); Cloze Props (Charlès); Japanese Sunset; Aphrodite. 4.0, Judge Rutherford's Address. 4.15 (approx.), Programme for

BRUSSELS (No. 1)

L.N.R., 590 kc/s, 509 metres; 15 kW.—9.45 a.m., Talk: August in the Garden. 10.0, Concert by the Small Station Orchestra, conducted by Emile Lauwers. 11.0, Gramophone Concert. 12 Noon, Orchestral Concert, conducted by André Fellemann, relayed from the Grand Hotel, Antwerp: Overture, The Bird Fancier (Zeller-Bauckner); Potpourri of Popular Songs of the Nations (Intrator); Violin Solos: (a) Serenade (Delaflaille), (b) Tambourin chinois (Kreisler); Tangolita (Abraham); Song (Abraham); Tango, No se porque (Gardel); Selection from Der Bettelstudent (Milbeker). 1.0 p.m., Le Journal Parle. 1.10, René Demaret in a Recital of his own Songs. 1.30, Supporters—Sketch (Lanville). 1.45, Gramophone Music: Fifty Years of Operetta (Misraki); Selection from The Gipsy Baron (Joh. Strauss). 5.0, Dance Music by Mickey's Club Band, relayed from the Casino, Knoeke. 5.30, Foot-Ball Results. 6.15, Pianoforte Recital by M. Brennet: Ballad in G minor, Op. 23 (Chopin); Polonaise in E (Liszt). 6.30, Gramophone Records: Leonora's Aria from Fidelio (Beethoven); Italian Serenade (H. Wolf). 6.45, Programme for Children. 7.0, Gramophone Records: Extracts from L'enfant prodige (Debussy); Concert Polonaise (Vidal); Largo (Veracini-Corti). 7.15, Religious Address. 7.30, Music Review. 8.0, Gramophone Records (cont.): Overture, William Tell (Rossini), on Gramophone Records. 8.15, Poetry Reading: A. de Vigny, Edgar Poe, Leconte de Lisle, Baudelaire, and Richepin). 8.30, Salzburg Festival Programme. See **Vienna**. After the Programme, Le Journal Parle, followed by Dance Music by the Mickey's Club Band, relayed from the Casino, Knoeke.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—10.0, Gramophone Concert. 11.0, Concert by the Small Station Orchestra, conducted by Emile Lauwers. 12 Noon, Concert by Sykes' Orchestra, relayed from the Scala, Ostend. 1.0 p.m., Le Journal Parle. 1.10, Concert, relayed from the Grand Hotel, Antwerp: Soloists: Carl Franck (Songs) and A. Zwysen (Pianoforte). In the interval at 1.30, Gramophone Record. 5.0, Dance Music, relayed from the Kursaal, Ostend. 5.30, Sports Results. 6.0, Quintet in G minor (Mozart) on Gramophone Records. 6.30, Sonata in E minor, Op. 38, for 'Cello (Brahms), played by Marcel Rassart. 7.0, Gramophone Records: Selection from The Windmill Man (Holles); Flute Solo, Carnaval de Venise (Gerin); I call upon thee Jesus (Bach). 7.15, Religious Talk. 7.30, See **Brussels No. 1**. 8.0, Gramophone Concert: Selection from Trois jeunes filles nues

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by **Cork**, 1,337 kc/s, 224.4 metres.—8.30 p.m., Time Signal. 8.31, Carillon Recital by Dr. Staf Gebruers, relayed from St. Columba's Cathedral, Colh. 8.45, Concert by R. Kiernan's Instrumental Trio. 9.5, Pianoforte Recital by May Johnson. 9.25, Trio Concert (cont'd.). 9.45, Gaelic Song Recital by Muiris MacLinnraic. 10.0, Traditional Fiddle Solos by Neil Boyle. 10.15, Gaelic Songs by Maire Ní Scolaidhe. 10.30, Concert by the Siamsa Gaelic Band. 11.0, Time Signal, News, Weather Report and Close Down.

BARCELONA

EAJ1, 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, with Gramophone Records. 5.0 to 6.30, Interval. 6.30, Agricultural Talk in Catalan and Gramophone Music. 7.0, Concert by the Station Orchestra: March, Good Luck (Vieth); Selection from La marchenera (Moreno Torroba); Waltz (E. Strauss); Dance of the Tumblers (Rimsky-Korsakov); Polonaise (Tchaikovsky). 7.30, 'Cello Recital by Juan Roca: The Emigrant (Vives); Le Cygne (Saint-Saens); La de los ojos azules (Padilla); Moment musical (Schubert). 8.0, Concert by the Station Orchestra and Concepción Collao (Songs). 9.0, Dance Music, relayed from Hollywood Bar Dance Hall. 10.0, Vicente Diez de Tejada reads from his own Works. After the Reading, Musical Comedy Music on Gramophone Records. 11.45, Chess Lesson. 12 Midnight (approx.), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—10.35 a.m., Agricultural Talk. 11.5, 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 Music. 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 Notes and Giornale Radio. 8.30, Time and Announcements. 8.40 (approx.), Concert of Songs and Operetta Music; Soloist, Michele Montanari (Tenor); Dance Fantasia (Malderto); Waltz, Bionda svedese (Cortopassi); Orientale (Armandola); Tango, Jana (de Serra); Melody (Brodsky); Selection from Fior de Siviglia (Cuseini); Canzone a rumba (Rampoldi-Borella); Sotto l'ombrellino come (Marti-Mascherini); Selection from Napoli Canta (de Curtis); Melody (d'Anzi); Selection from Die Bajadere (Kálmán); Tango, Recuerdo (Salocchi); Melody (Caslar); Sivigliana (Manno); Lala, tu (Cilotta). 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. 7.0, National Music by the Pobjeda Orchestra. 7.50, Talk. 8.20, 'Cello Recital by Alexander Slatin. 9.10, Radio Play. 9.40, National Song Recital by Milan Timotic. 10.10, News and Time Signal. 10.30, Cigány Band Concert, relayed from the Potrosacka Zadruga Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—6.0 a.m., Gymnastics from **Berlin (Witzleben)**. 6.15, Review of Saturday's News. 6.30 (approx.), The Day's Motto, followed by Harbour Concert from **Hamburg**. 8.0, Agricultural Programme. 8.55, Divine Service from Trinity Church. 9.30, Interval. 10.5, Weather Report from **Berlin (Witzleben)**. 11.0, Reading (Karl Maertin). 11.15, Weather. 11.30, A Village Inn Entertainment. 12 Noon, Nazi Band Concert relayed from **Heringsdorf**: March, Heil, deutsche Flieger (Beulshausen); Waltz, Stunden, die wir nie vergessen (Grösel); Overture, Dem deutschen Volke (Zimmer); Souvenir (Lenschner); Paraphrase on the Song, Horeh die alten Eichen rauschen (Rhode); Romance (Tchaikovsky); Overture, The Princess in the Golden Slippers (Kust); March Potpourri, Alle mit uns (Röbrecht). 12.55 p.m., Time Signal. 1.0, Gramophone Concert of Light Music. 2.0, Programme for Children. 2.30, Humorous Talk on Gramophone Records. 3.10, Berthold Otto Memorial Programme. 3.30, Talk: Bayreuth under the New Regime. 4.0-10.30, Bayreuth Festival Programme; See **Munich**. 10.35, Weather and News. 10.45, Weather Report for Shipping and News. 11.0, Dance Music from **Berlin (Witzleben)**. 12.30 a.m. (Monday), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—11.30 a.m., Divine Service and Sacred Concert from the Garrison Church, Potsdam. 12 Noon, Concert by the Station Orchestra, conducted by Waldemar von Vuttée. 2.0 p.m., Programme for Garden City Dwellers.

AUGUST 6th

SUNDAY

continued

Children. 4.45 (approx.). Concert: Busy Bee (Bendix); Pack of Hounds; Descriptive Pieces: (a) Wind howling, (b) Wind and Sea, (c) Rain and Wind, (d) Sea Effects; Running Brook; The Valley of the Poppies (Lincke); Grasshoppers' Dance (Bucalossi). 5.0, Tango Band; Cara Mucha; Espana (Cani); Flora Castellana; Mandoline Solo, Capriccio Mazurka (Aricenzo); Adios Muchachos; Mia Cara; Mandoline Solo, Mandoline (Thome); Luz de Grandia. 5.30, Home Radio (Lowestoft) Concert: Signature Tune; Jolly Good Company (Wallace); Marche Iorraine (Ganne); Waltzes from Vienna; Stormy Weather (Koehler); I travel the Road; Serenade (Heykens); Strauss Potpourri (Weber); Song, That's my Home (Ellison); Selection of Old Time Songs (arr. Peacorini). 6.0, Club Concert for Edinburgh Listeners. Part I.—Scottish Music. Signature Tune; The Chum Song; Scotland's Pride; Songs: (a) Caller Herrin' (Traditional), (b) Touch not the Nettle (arr. Geel); Fighting Mac (Traditional); Song, A Fond Kiss (Scott-Gatly); Fantasia, Flowers of the Forest (arr. Henderson); Song, Shetland Lullaby (arr. Geel); Regimental March of the Royal Scots Regiment. Part II.—Orchestral Concert. Overture, Mignon (Thomas); Violin Solo, Poème (Fibich); Slav Dance No. 10 (Dvorak); My Darling (Heymann); Intermezzo, from Cavalleria rusticana (Mascagni); Liebestraum (Liszt); Marta (Simons); Selection from I Pagliacci (Leoncavallo). 7.0 Organ and Violin Recital: Just Humming along (Myers); Schön Rosmarin (Kreisl); Violin Solo, The Song of Songs (Moya); A Brown Bird singing (Haydn Wood); Suite, Sylvan Scenes (Fletcher); Violin Solo, Because (d'Harlelot); Rhapsody in Blue, Part I (Gershwin); Waltz Suite No. 3 (Cole-ridge-Taylor). 7.30, Concert: Rhapsody in Blue; Xylophone Solo, The Huntsman (Nelson); Song, A Letter to my Mother (Gilbert); Jungle Drums Patrol; The Ghost Walk; Song, A Boy and Girl were dancing (Revel and Gordon); Xylophonia (Green); Song of the Islands (King). 8.0, Programme in French. 9.0 till Close Down. Programme in English by the I.B.C. 9.0, Military Band Concert with Songs: The Mad Major (Alford); Song, If I were King (Coslow); Down South (Myddleton); Cupid's Army (Drier-Jbanez); Cornet Solo, Carnival in Venice (Briccialdi); Selection from The Geisha (Jones); Song, A Bachelor Gay (Fate); On the Quarter Deck (Alford). 9.30, Concert: The Wedding of the Birds; 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). 10.0, Gramophone Records: Wiener Praterleben (Translatour), by Marek Weber and his Orchestra; We just couldn't say Goodbye, by the Boswell Sisters; Fiddlesticks (Fredericks), by Harry Robbins; Street of Dreams (Lewis and Young), by the Serenaders; Get Along (Austin), by the Mills Brothers; The Flies crawled up the Window, by Jack Hulbert; In a Clock Store (Ortl), by J. B. Phillips; Donauwellen (Ivanovici), by Marek Weber and his Orchestra. 10.30, Concert of Dance Music: Hiawatha's Lullaby; Castles in the Sand; When it's Lamplight Time in the Valley; I can't remember; Hallehujah, I'm a Bum; Goodnight but not Goodbye; Lay me down to Sleep; Spanish Eyes; That's what Life is made of. 11.0, Vocal and Orchestral Concert: Sweetheart (Miller); Song, Nirvana (Adams); Valse Septembre (Godin); Spanish Gipsy Dance (Marayun); Song, Mountain Lovers (Squire); Woodland Peace (Favilla); Ke-Ka-Ko (Chapuis); Potpourri of War Marching Songs. 11.30, Concert by the I.B.C. (Ireland), Ltd. Signature Tune, Come back to Erin; Sphärenklänge (Jos. Strauss); Dance of the Nymphs (Birch); Song, Danny Boy (Weatherley); Anita's Dance (Grieg); Duec, Come to Arcady (German); Old Spanish Song (Aubert); Duet, Come to the Fair (Easthope Martin); Vienna Maidens (Ziehrer); Signature Tune. 12.5 a.m. (Monday), News Bulletin in English. 12.10 (approx.), Choral and Orchestral Music: Good News, Charlot's Coming; Comrades in Arms; Mignonette (Friml); Who is Sylvia? (Schubert); Waltz, Roses from the South (Strauss). 12.30, Dance Music: Signature Tune, Bells of Normandy; My Extraordinary Gal (Shand); Young and Healthy (Dubin); I guess I'll have to change my Plan; I wake up Smiling; Sharing (Lombardo); Waltzing in a Dream (Crosby); You're getting to be a Habit with me (Dubin); Stormy Weather (Koehler); And so I married the girl (Wendling); Signature Tune. 1.0, Concert of Light Music: The Way to the Heart (Lincke); Song, My Old Shako (Trotter); Liebesständchen (von Blon); Spring Blossoms awaken (Lühr); Xylophone Solo, The Dripping Well (Abbey); Song, The Yagabond (Vaughan Williams); Romance (Lühr); The Valley of the Poppies (Ancliffe). 1.30, Dance Music: Signature Tune, Bells of Normandy; Good Evening (Hargreaves); Moon Song (Coslow); Picanninies' Heaven (Coslow); When my little Pomeranian met your little Pekinese; Memories of You (Barelay); Something came and got me in the Spring (Schell); Castles in the Sand (Sandford); Don't be Late in the Morning (Le Clerq); Signature Tune. 1.57, I.B.C. Goodnight Melody. 2.0, 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.—11.0 a.m., Guitar Trio (concert). 12 Noon, Reading (Adolf Schmittener). 12.30 p.m., Gramophone Concert. 2.0, Talk arranged by the Wiesbaden Board of Agriculture. 2.10, Rural Programme. 3.0, See Stuttgart. 4.0-10.20, Bayreuth Festival Programme: See Munich. 10.20, Time and News. 11.0, Serenade, from Munich.

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

Gall 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.—6.15 a.m. (from Bremen), Bremen Harbour Concert by the Blitz Postal and Telegraphic Song Society of Cologne. 8.15, Time and News. 8.30, Physical Culture. 9.0, Religious Address by a German Christian Parson. 9.15 (from Bremen), East Friesland Programme. 10.55 (from Kiel), Divine Service, relayed from the University Church. 12.15 p.m., Concert from Breslau. 12.55, Time and Weather. 2.0, Programme for Children. 2.30 (from Bremen), East Friesland Programme—Aurich: Addresses and Literary and Musical Programme. 3.45, Programme to be announced. 4.0 to 10.20, Bayreuth Festival Programme: See Munich. 10.20, Time and News. 10.40, Sports Notes. 10.55, Hamburg, Bremen and Lübeck—Review of Political, Educational, and Artistic Events in the Three Hanseatic Free Cities. 11.10, 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., Pianoforte Recital by Ernst Rudolph; Romance in A flat (Mozart); Three Graceful Dances (Mozart); Six Ecossaises (Beethoven); Bagatelles Op. 33, Nos. 1, 2, 3 and 7 (Beethoven). 12 Noon, See Breslau. 2.0 p.m., Chess Lesson. 2.30, Programme for Young People. 3.0, Folk Song Recital by Helene Herbst (Soprano). 3.30, Poetry Recital. 3.45, Introductory Talk to the following Transmission. 4.0, Bayreuth Festival programme—See Munich. 5.20, Horse-racing Results. 5.30, Talk: East Prussia under Russian Rule. 5.50, Talk with Pianoforte Illustrations; Romantic Pianoforte Music. 6.30, See Munich. 7.30, Talk: The Honest Millers of East and West Prussia. 8.0, Sports Notes. 8.5, Talk: A Sound Film Journey through Yugoslavia. 8.30, See Munich. 10.20, News and Sports Notes. 10.45, See 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.).—8.10 a.m., Religious Programme of the Christian Radio Society (N.C.R.V.). 9.10 to 4.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 9.10, Mass, relayed from a Church in Gemert. 10.10, Gramophone Music. 11.40, Talk. 11.55, Concert by the Harmonie Royale of Bois-le-Duc. 1.50, Recitations. 2.10, Choral and Orchestral Concert. 3.40, Programme for Invalids. 4.40, N.C.R.V. Programme. Divine Service, relayed from Leiden, followed by Sacred Music on Gramophone Records. 7.25 till Close Down, K.R.O. Programme. 7.25, Football Results. 7.30, Talk. 7.55, Orchestral Concert: Potpourri, Hurrah! die Musik kommt (Zimmer); Overture, Light Cavalry (Suppe); Waltz Potpourri No. 1 (Robrecht); Potpourri, Notenzen (Urbach). 8.40, News. 8.45, Recitations. 9.0, Concert (contd.); In a Chinese Temple Garden (Kettelby); Selection from Die Puppenfee (Bayer); By the Blue Hawaiian Waters (Kettelby); Potpourri, Song and Wine (Armandolati); The Skaters' Waltz (Waldfenfel). 9.40, Recitations. 9.55, News. 10.0, Orchestral Concert (contd.); Overture, Der Karneval in Rom (Joh. Strauss); Waltz, Künstlerleben (Joh. Strauss); March of the Cadets (Souza). 10.20, Epilogue by the Small Choir. 10.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced. HILVERSUM; 160 kc/s, 1,875 metres; 8.5 kW.—8.40 to 9.40 a.m., Pro-

gramme of the Workers' Radio Society (V.A.R.A.). 8.40, Horticultural Talk. 9.10, Gramophone Music. 9.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). Divine Service, relayed from Utrecht. 11.40 to 4.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time. 11.41, Gramophone Music. 12.10 p.m., Concert by Pierre Palla (Organ), Henk Viskil (Tenor), and Boris Lensky (Violin). 1.40, Book Review. 2.10, Gramophone Music. 2.40, Concert by the Hague Orchestra, conducted by Ignaz Neumark, relayed from the Kurhaus, Scheveningen. Soloist: Martha Stam (Songs). In the interval: Gramophone Music. 4.10, Gramophone Music. 4.40 to 7.40, V.A.R.A. Programme. 4.40, Concert by the Tivoli String Orchestra, conducted by A. van Heiden. 5.40, Concert by a Chamber Orchestra, conducted by W. Drukker; Overture, Rosamunde (Schubert); Hofballtänze (Lanner); Nuit d'étoiles (Debussy); Granados (Albeniz); Minuet (Bolzoni); Selection from William Rateliff (Mascagni); Selection from Milenka (Blockx); Extracts from Carmen (Bizet); Overture, The Barber of Seville (Rossini); Waltz, Weanermäddin (Ziehrer); Haupt-Strasse (Benatzky); Selection from Love in the Snow (Benatzky); Wiener Tanz (Friedmann-Gärtner); Träumerei (Schumann); Blumengebüster (Blom); Lehr Potpourri (Hrnly). In the interval at 6.30, Talk: The Adventures of Messrs. Wakker and Tropicant. 7.40 till Close Down. A.V.R.O. Programme. 7.40, Time and News. 7.55, Concert of Light Music. In the interval at 8.40, Gramophone Music. 9.40, Gramophone Music. 10.10, Light Music by Kovacs Lajos and his Orchestra. 11.40 (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, Radio Concert. In the interval at 9.0, News. 10.0, Listeners Half Hour. 10.30 to 1.0 a.m. (Monday), Programme in English by the I.B.C. 10.30, Light Music: Jollity on the Mountains (Fttras); You are my Heart's Delight, from the Land of Smiles (Lehar); The Grasshopper's Dance (Bucalossi); Waltz, Estudiantina (Waldfenfel); Song, in the Valley of the Moon (Burke); Violin Solo, Souvenir (Drday); Melodious Memories (Finck); Pianoforte Solo, Serenade (Heykens). 11.0, Organ Recital: Song (Burke); Caprice viennois (Kreisl); Song, Yeomen of England, from Merrie England (German); Pianoforte and Organ Duet, Marigold (Mayerl); La Serenata (Braga); Kashmiri Love Song (Woodford-Finden); La Paloma (Yradier); Drifting down the Shalimar (Monaco). 11.30, Gramophone Concert: Xylophone Solo by Teddy Brown; The Sisters Waltz; Song by John McKenna, My Darling (Heymann); Pedro Miguel and his Tango (Orechyma, Little Lady); Welsh Guards Band, Gaiety Echoes; Hawaiian Guitar Solo, Hawaiian Love; Leyton and Johnstone, On a little Balcony in Spain; Marek Weber and his Orchestra, Waltz, Très jolie (Waldfenfel). 12.0 Midnight, Orchestral Music: Les Trésors de Colombine (Drigo); Roses from the South (Strauss, arr. Atzler); Song, Vienna City of my Dreams (Sieczynsky, arr. Lopsky); Czardas from Coppélia (Delibes); Gipsy Moon (Borganov, arr. Eyton); Song, Absent (Metcalfe); Selection from The Maid of the Mountains (Fraser-Simson). 12.30 a.m. (Monday), Dance Music: Moon Song (Johnston); I can't remember (Berlin); When my little Pomeranian met your little Pekinese (Schuster); Waltzing in a Dream (Young); Maybe I love you too much (Berlin); Put a little Springtime in the Winter of their Lives. In the Valley of the Moon; Hold me (Schuster). 12.57, I.B.C. Goodnight Melody. 1.0 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—10.30 a.m., Two Thousand Apostles—A Review of the Early Days of the Nazi Movement. 10.50, Concert of Old Prussian Marches. 11.30, Dialogue: The Protection of Animals. 12.15 p.m., Concert by the Eppen Choral Society: Soloist: Hans Haass. 1.0, Concert of Light Music, conducted by Eysoldt. 2.0, Talk: Wors in the Small Garden in August. 2.15, A Journey into the Blue. In an interval, Topical Talk. 2.40, Reading: Goethe Anecdotes—Mignon (Wilhelm Schüfer). 3.0, Chamber Music. 3.30, See Berlin (Deutschlandsender). 4.0-10.20, See Munich. In the interval at 5.20, Light Interlude, at 7.30, A Running Commentary on the International Light Athletic Championship—West Germany versus East Holland, relayed from Krefeld, and at 7.45, Sports Report. 10.20, News and Sports Notes. 10.45, Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon, Concert by the Sebnitz Municipal Orchestra, conducted by Erwin Köhler. In an interval, Talk: The Sebnitz Artificial Flower Industry. 1.10 p.m., Concert by the Station Orchestra, conducted by Theodor Blumer. 2.0, Weather and Time. 2.5, Programme Announcements. 2.25, Agricultural Hints. 2.35, Reading. 3.5, String Quartet No. 3 in E Flat, Op. 21 (Kleemann), by the Bohmhardt Quartet. 3.35, Gramophone Records. 4.0, Bayreuth Festival Programme. See Munich. 5.30 to 6.30, Interval. 6.30, See Munich. 7.30, Report on the German Swimming Championship. 8.30, See Munich. 10.20, News. 10.30 (approx.), Concert of Johann Strauss Waltzes by the Station Orchestra, conducted by Hilmar Weber; Seid unschlingen, Millionen; Wo die Zitronen blühen; Waltz from The Gipsy Baron; Künstlerleben; Emperor Waltz; Du und Du; Wiener Blut. 12 Midnight, Close Down.

LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. English Programme.—7.30 p.m., Symphony, From the New World (Dvorak), on Gramophone Records. 8.10, Weather Report. 8.15, Concert by the Station Orchestra, conducted by Heuri Pensis; Soloist, E. Perbal (Violin); Overture, Prometheus (Beethoven); Violin Concerto in A Minor (Bach); Eine Kleine Nachtmusik (Mozart). 8.50, News in French. 9.0, Song Recital. 9.25, Orchestral Concert. 9.50, News in German. 10.0, Concert (contd.). 10.20, Dance Music on Gramophone Records.

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, Theatre Notes and Popular Concert. 5.0 to 8.0, Interval. 8.0, Chimes, Radio Journal and Dance Music. 9.30 to 11.0, Interval. 11.0, Chimes, Time and Talk on Astronomy. 11.30, Municipal Band Concert, relayed from Rosales. 1.30 a.m. (Monday), Close Down.

MALMO.—See Stockholm.

MILAN

662 kc/s, 453.2 metres; 4 kW.—8.30 p.m. till Close Down, See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.0 p.m. See Brno. 7.35 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., Literary Programme. 3.0, Song Recital and Talk. 4.0, Talk. 4.30, Readings from the Works of Orlovsky, Tchekov and Gorky. 5.30, Request Opera Arias. 6.30, Concert by the Symphony Orchestra, conducted by Orlov, relayed from a Park; Soloist, Gr. Ginsburg (Pianoforte).

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.—12 Noon, Military Band Concert relayed from the Feldherrnhalle. 1.0 p.m., Time and News. 1.10, Agricultural Talk. 1.30, Gramophone Concert. 2.30, Talk on the National Revolution. 2.50, Programme for Children. 3.20, Talk: Bayreuth under the new Regime. 4.0, Bayreuth Festival Programme: Act I of The Mastersingers—Opera in Three Acts (Wagner). 5.20-6.30, Franco-German Programme. 6.30, Act II of The Mastersingers. 7.30, Report in German, English, French, and Italian: The Origin of the Bayreuth Festival. 8.30, Act III of The Mastersingers—Opera (Wagner). 10.20, Time and News. 11.0, Serenade by the Station Orchestra, 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.—10.50 a.m., Chimes and News. 11.0, Divine Service relayed from Røros. 1.0-2.0 p.m., Orchestral Promenade Band Concert, relayed from the Students' Park. 5.0, Talk: The Miners' Day, and Concert of National Music and Recitations, relayed from Røros. 6.15, Sacred Song Recital by Johannes Berg Hansen. 6.45, Viola Recital by Hugo Kramm. 7.15, Weather and News. 7.30, Talk: Voices of the Desert. 8.0, Time. 8.1, Concert by the Station Orchestra, conducted by Hugo Kramm. 9.40, Weather and News. 10.0, Topical Talks. 10.35 Dance Music on Gramophone Records. 11.30 (approx.), Close Down.

OSTERSUND.—See Stockholm.

AUGUST 6th

SUNDAY

continued

News and Announcements. 12.20, Orchestral Music: Juomenparade (Eilenberg); Valse poudrée (Popy). 12.30 (approx.), Close Down.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—10.25 a.m., Bible Reading. 10.40, Sacred Music. 11.5, Talk. 12.45 p.m., Giornale Radio. 1.0 to 2.0, Concert of Light Music. In an interval at 1.30, Time, Announcements, and Weather. 5.30 to 6.30, Gramophone Music. 8.0, Dopolavoro Notes, Giornale Radio, and Sports Notes. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Symphony Concert, conducted by A. La Rosa Parodi; Soloist, G. Scala (Pianoforte); Symphony in C (Boccherini); Suite, Le donne di Lion unore (Searlatti-Tommashini); Pianoforte Concerto in A (Grieg); First Symphony in C Minor (Brahms). In the interval, Talk: Arnaldo Mussolini and the New Italy. 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 Bos and his Orchestra; Soloist: Mlle. Boni (Singer); Extracts from: La Bohème (Puccini), Tosca (Puccini), Madame Butterfly (Puccini), Cavalleria rusticana (Mascagni), Rigoletto (Verdi) and La Traviata (Verdi). 6.45, Le Journal Parlé. 8.30, Gramophone Music: Extracts from Mignon (Thomas); Harlequin Doll (Darcy); Melody (Szale); Parade of the Marionettes (Kuhn); Leucht-käferchen Stelldichein (Siede); Selection from The Land of Smiles (Lehár); La légende du Baiser (Vert); Three o'clock in the morning (Robledo); Polka des Pierrettes (Allier); Jalous et Coquette (Cobin); March of the Foreign Legion (Wilhem); Marche de la Clique. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—10.0 a.m., Fanfare of Trumpets and Roll of Drums. 10.20, Press Review. 10.30, Sponsored Concert. 11.0, Sponsored Gramophone Concert. 11.30, Gramophone Music. 12.15 p.m., Sponsored Concert of Sound Film Songs. 12.45, Sponsored Programme. 12.50, Half-an-hour of Fantasy, by Paul Weill. 1.30, Sponsored Programme. 2.0 to 7.0, Interval. 7.0, Le Journal Parlé. 7.5, Sports Talk. 7.15, Gramophone Music. 7.30, Catholic Review. 8.0, Gramophone Music. 8.30, Concert. 9.15, Concert by the Ray Ventura Orchestra, relayed from the Casino, Beauville. 10.45, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—7.45 a.m., Gramophone Records: Selection from L'Anvergnate (Ganne); Waltzes from Gipsy Love (Lehár); Chasse aux Cailles (Paradis); Polka (Strobl). 8.0, Press Review and Weather. 8.30, Physical Culture. 12 Noon, Religious Address. 12.20 p.m., Sacred Music; Dialogue (Clémabault); Fantasia in G Minor (Bach). 12.30, Bilboquet. 12.45, Gramophone Concert. The Retreat of the Tartars (Sellenick); Melody (Strauss); Mazurka (Popper); Le Cor (Flegier); Des femmes, des Roses (Grothe); Air (Green); Sillietta (von Blon); Les Myrtes sont fleuries (Faure); Selection from Gretina Green (Guindard); Selection from O. Kay (Gershwin); Hungarian Tango (Gosag); The Whistler and his Dog (Pryor); Piccolo (Damere); L'oisie du bonheur (Lemoir); Bells across the Meadow (Keteibey); Canzonetta (Pierne); Je t'aime (Waldteufel); Tu m'as juré (Mathis-Lenoir); Selection from Rose Marie (Friml); Marche des petits pierrots (Bose). 5.30, Gramophone Concert. Announcements in the interval. 6.0, Popular Concert. 7.0, Variety Concert. 8.0, to 10.30, Radio Paris Music Hall. In the intervals at 8.30, News and Weather; and at 9.15, Press Review and News. 10.30 to 11.0, Programme in English by the I.B.C. Orchestral Concert: Colonel Bogey (Alford); Selection from Florodora (Leslie Stuart); Lanesville Clogs (Grimsshaw); Selection, Sham rockland (arr. Stoddon); Waltz, Come out, Vienna, from Waltz Time (Joh. Strauss). 11.0 (approx.), Close Down.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relay 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, The Boys of Wynecastle. 7.15 to 11.0, New York Relay. 7.15, William Hard from London. 7.30, Variety Programme. 8.0, National Opera Concert. 9.0, Gould and Sheffer. 9.15, Symphonette. 9.30, Organ Recital. 10.0, Vesper Services. 11.0, Press News-Reeler. 11.15, Weather and Sports. 11.30, L'Heure Exquis, from New York. 12 Midnight, Jack Pettis' Orchestra. 12.15 a.m. (Monday) to 1.30, New York Relay. 12.15, William Hard from London. 12.30, Wisdom of the Ages. 1.0, Concert. 1.30, Pathé News of the Air. 1.45 to 4.0, New York Relay. 1.45, Floyd Gibbons. 2.0, Gulf Headliners. 2.30, Goldman Band. 3.0, Mountain Music.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.0 p.m., Promenade Concert by the Municipal Orchestra, relayed from Telpice Sanov; Homage March from Sigurd Jorsalfar (Grieg); Overture, Oberon (Weber); Ave Verum (Mozart); Selection from Cavalleria rusticana (Mas-

cagni); Three Slav Dances, Op. 46 (Dvorák); Czech Dances (Ruzek); Song from The Mastersingers (Wagner); Waltz from The Arabian Nights (Joh. Strauss). 5.30, Gramophone Music. 6.0, German Transmission: Review of the Musical Programme of the Czechoslovak Broadcasting Stations. Talk and News. 7.0, See Brno. 7.35, Brass Band Concert. 8.20, Topical Programme. 9.0, Concert by the Station Orchestra, conducted by O. Jeremias; Soloist: Anitta Kubelik (Violin); Overture, Schwanda the Piper (Weinberger); Violin Concerto No. 4 in B (Kubelik). 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.—9.40 a.m., Chimes. 9.45, Protestant Service, relayed from the Cathedral. 11.0, Gramophone Music. 12.30 p.m., News. 12.40, Gramophone Music. 2.0, Interval. 3.30, Concert by the Radio-Lausanne Orchestra, conducted by Moser. 5.0, Dance Music on Gramophone Records. 5.30, Interval. 7.0, Catholic Address. 7.40, Sports Notes. 8.0, Cello Recital by Gabriel Bise. 8.30, Salzburg Festival Programme (See Vienna). 10.0, News. 10.15, 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, from 5.30 p.m.—10.0 a.m., News and Amusement Guide. 10.30, Agricultural Report. 10.45, Bible Reading. 11.0, See Turin. 12.30 p.m., Orchestral Concert. 1.30 to 2.30, Orchestral Concert. In the interval at 2.0, Time and Announcements. 4.45 (from Naples), Programme for Children, Weather, and Sports Notes. 5.0, Concert by the Rome Quartet; Soloists, Emilio Livi (Tenor), Dina Fiumana (Soprano), and A. Dalmonte (Bass); Quartet in G Minor, Op. 27 (Grieg); Songs and Duets from L'Elisir d'amore (Donizetti); Scherzo from the Quartet in E Flat (Cherubini); Minuetto in rondo (Boccherini); Tenor and Soprano Aria from Mignon (Thomas); Gramophone Music. 5.30, Sports Notes. 6.20, Weather and Sports Notes. 7.30, News. 8.0, Time and Announcements. 8.25, Sports Notes. 8.30, See Turin. After the Programme, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relay at intervals by W2 XVAF on 31.48 metres; and by W2XAD, 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 Philosophy. 1.0 to 3.45, New York Relay. 1.0, Variety Programme. 2.0, Manhattan Merry-Go-Round. 2.30, American Album of Familiar Music. 3.0, Popular Programme. 3.15, Impressions of Italy. 3.45, Sunday at 80th Parker's, 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.—10.0 a.m., (from Zürich), Catholic Address. 10.45 (from Zürich), Chamber Music. 11.30 (from Zürich), Dr. Heinrich Hanselmann reads from his Novel, Jakohli. 12 Noon (from Zürich), Gramophone Music. 12.30 p.m., Time and News. 12.40 (from Zürich), Concert by the Radio Orchestra, conducted by H. Neppach. 1.30 (from Zürich), Variety Programme. 2.30, Interval. 5.0 (from Zürich), Light Music on Gramophone Records. 6.0 (from Zürich), Talk on Stamp Collecting. 6.30 (from Zürich), Talk in Spanish. 7.0 (from Zürich), Time and Sports Notes. 7.5 (from Zürich), Concert by the Radio Orchestra, conducted by Neppach. 8.0 (from Zürich), Reading. 8.30, See Vienna. 10.0, News. 10.10 (from Zürich), Sports Notes. 10.20 (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.—9.30 a.m., Rural Programme. 10.0, Gramophone Music. 11.0, Catholic Service, relayed from Eskilstuna. 12.20 p.m., Report on the Grand Prix Motor Races at Norra Vram. In an interval at 12.45, Weather Report. 4.30, Gramophone Records. 5.30, Reading. 6.0, Even-song. 7.35 (from Östersund), Talk. 8.5, Military Band Concert, conducted by Grund-

ström; Overture, Alessandro Stradella (Rossini); Ballet Music from William Tell (Rossini); Waltz from The Merry Widow (Lehár); Ballad, Landerkenning (Grieg); Selection from The Desert Song (Romberg); March, The Star-Spangled Banner (Souza). 9.0, The Greater Law—a Play (Leonard White). 9.45, Weather and News. 10.0 (from Göteborg), Orchestral Concert. 11.0 (approx.), Close Down.

STRASBOURG

860 kc/s, 345 metres; 11.5 kW.—10.45 a.m., Protestant Service in French. 11.30, Catholic Service in French. 12 Noon, Gramophone Concert of Light Music. 12.45 p.m., News. 1.0, Time and Dance Music on Gramophone Records. 2.0, Variety Music on Gramophone Records. 3.0, Interval. 3.30, Orchestral Concert, conducted by Brouillac, relayed from the Casino, Vichy. Overture, Phèdre (Massenet); Serenade (Pierne); Orchestral Suite, Impressions d'Italie (Charpentier); Entracte from Cherubin (Massenet); Air from Don César de Bazan (Massenet); Selection from Hamlet (Thomas); Waltz, Amoretten-tänze (Gungl). 5.0, Choral Concert. 6.0, Medical Talk in French. 6.15, Sports Talk in French. 6.30, Popular Music on Gramophone Records. 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in French, Lottery Results and Announcements. 8.30, Alsatian Programme. Dr Milliongärtner—Dialect Play in Three Acts (F. Bastian). 10.30 (approx.), Press Review in French. 10.35 (approx.), 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.—8.30 a.m., Protestant Service. 9.20 (from Karlsruhe), Musical and Literary Programme by the Köble Quartet and Friedrich Priiter (Recitations). 10.10, Catholic Service. 11.0, Talk: Wagner's Opera, The Mastersingers. 11.30 (from Mannheim), Concert of Drinking Songs and Songs of the Open Road by the Landhäuser Quartet. 12 Noon, Concert by the Freiburg Kamphund Orchestra, conducted by Willy Döhrmann, relayed from Clotterbad. 1.0 p.m., Gramophone Concert of Classical Music. 2.0 (from Karlsruhe), Agricultural Talk. 2.25 (from Karlsruhe), Concert by the Eintracht Choir. 3.0, Programme for Children: A Hans Andersen Play by Blind Children. 4.0, Bayreuth Festival Programme; See Munich. In the interval at 5.20, In the Mountains and by the Sea Side—August Programme (arr. Martin Lang). at 6.30, The Helmine of Spichenen—an interview with the octogenarian Charlotte Mettel, and at 7.30 (approx.), The German Countryside—Literary and Musical Programme by Else Dobler (Recitations) and Willy Hahn (Pianoforte). 10.0, Time and News followed by Gramophone Music. 11.0, See Munich. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—8.0 a.m., Accordion Recital. 8.15, News. 8.20, Light Music. 8.30, Dance Refrains. 12.15 p.m., News. 12.30, Concert: Selection from Pas sur la Bouche (Yvain); L'Accident (Duvvernois); Waltz, Très jolie (Waldteufel); Chorus from Mirella (Gounod); Melody (Chas). 1.0, Amusement Guide and Market Prices. 1.5, Light Music by a Viennese Orchestra. 1.15, Light Music. 1.30, Orchestral Music. 1.45, Arias from Opera: Boris' Aria from Boris Godunov (Mussorgsky); Aria from Tamhäuser (Wagner); Aria from La Favorita (Donizetti). 2.0, Instrumental Solos. 2.15, Orchestral Concert of Operetta Music: Le Voyage en Chine (Gabriel Marie); Selection from The Land of Smiles (Lehár); Selection from Les Mousquetaires au Couvent (Varney); Overture, Le Roi Pansole (Honegger); Selection from Eva (Lehár). 2.45, Agricultural Report. 3.0, Extracts from The Barber of Seville—Opera (Rossini). 3.45, Light Music by a Viennese Orchestra. 4.0, Light Orchestral Music. 4.15, News. 4.20, Sound-Film Music. 4.30, Arias from Operettas. 4.45, Light Music. 5.0, Dance Music. 5.30, Opera Music. 6.0, News. 6.5, Orchestral Music. 6.15, Opera Music: Airs from Manon (Massenet), Tosca (Puccini), Mirella (Gounod), Samson and Delilah (Saint-Saëns), and Pelléas et Mélisande (Debussy). 6.45, Choral Music. 7.0, Violin Solos, Spanish Dance (Marius); Melody (Tchaikovsky); Maria Mari. 7.15, News. 7.25, Local News. 7.30, Opera Music: Aria from Tamhäuser (Wagner); Soldiers' Chorus from Faust (Gounod); Aria from Boris Godunov (Mussorgsky). 7.45, Concert of Light Music by a Viennese Orchestra. 8.15, Sound-Film Music. 8.30, Military Music. 8.45, Accordion Recital. 9.0, Extracts from L'Arlesienne—Opera (Bizet), by the Symphony Orchestra. 9.30, Humorous Songs. 9.45, Popular Melodies. 10.0, Music by an Argentine Orchestra. 10.15, North African News. 10.30, Popular Programme. 11.0, Concert for Listeners in Morocco. 11.45, Instrumental Solos. 12 Midnight, Popular Songs. 12.15 a.m. (Monday),

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 Report. 11.40 till Close Down, Programme from 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.—9.49 a.m., Giornale Radio. 9.55, See Trieste. 10.40, Agricultural Report. 11.0, Mass from the Church of the Annunciation, Florence. 12 Noon, Bible Reading. 12.30 p.m., Orchestral Concert. In the interval at 1.0, Time and Announcements. 1.30, Sponsored Music. 1.45 to 2.30, Gramophone Concert. 4.30, Orchestral Concert; Sports Notes in the interval. 6.15, Weather Forecast and Gramophone Music. 6.30, Giornale Radio and Sports Notes. 7.0, Time Signal and Dopolavoro Announcements. 7.10, Gramophone Music. 8.0, News. 8.20, Talk on the following Transmission. 8.30, Don Giovanni—Opera in Two Acts (Mozart). Talk in the interval. After the Opera, Giornale Radio.

VIENNA

581 kc/s, 517 metres; 100 kW. Relay by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,085 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.—11.0 a.m., Salzburg Festival Programme. Symphony Concert of Italian Music by the Vienna Philharmonic Orchestra, conducted by Vittorio Gui, relayed from the Mozartium, Salzburg. 1.0 p.m., Concert by the Wiener Symphoniker, conducted by Josef Holzer. Overture, A Midsummer's Night Dream (Mendelssohn); Emperor Waltz (Joh. Strauss); Viennese Song, Der stadt der Lieder (Hoffmann); Barcarolle (Offenbach); Potpourri, Vindobona (Leopold); Heimatgedanken (Grasser); Styrian Dances (Grasser); Waltz, Der Himmel voller Geigen (Ziehrer); Violin Solos: (a) Wiegeliendchen (Schumann), (b) Schön Rosmarin (Kreisler); Overture, Lieben schaffst Rat (Fetras). 2.0, Report of the Austrian Swimming Championship, relayed from Graz. 2.35, Time and Announcements. 2.45, Agricultural Talk. 3.5, Book Review. 3.30, Talk with Folk Song Illustrations: The Erzgebirge and their Inhabitants. 3.55, String Quartet in G, Op. 106 (Dvorak), by the Sedlak-Winkler Quartet. 4.30, Robert Michel reads from his own works. 5.0, Report of the International Motor-Boat Regatta, relayed from the Wörther See; Final of the Austrian Championship, and Final for the Blue Ribbon of the Austrian Motor Yacht Club. 5.40, Concert by the Eduard Pfleger Wind Instrument Orchestra. 6.50, Time, Sports Notes and Announcements. 7.0, Concert by a Military Band, relayed from Graz. In the interval, Report on the Austrian Swimming Championship. 8.30, Salzburg Festival Programme, Stabat Mater—Oratorio (Rossini), by the Cathedral Choir and Orchestra, conducted by Joseph Messner, relayed from Salzburg Cathedral. Soloists: Ritter-Clampi (Soprano), Rutschka (Contralto), Jonat (Tenor), and V. Manowarda (Bass). 10.0, News. 10.15, Report on Gramophone Record of the World Clay-Pigeon Shooting Championship in Vienna. 10.35, Results of the Austrian Swimming Championship. 10.40, Concert by the Wiener Symphoniker, conducted by Josef Holzer.

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. 12.15, Concert for the Twenty-Fifth Anniversary of the Rifle Club, relayed from the Philharmonic. The Warsaw Philharmonic Orchestra and Soloists. 2.40, Weather for Farmers. 2.45, Talk. 3.5, Concert of Popular and Soldiers' Songs, by the Society of Youth. In the interval, News and Announcements. 4.0, Topical Review for Young People. 4.15, Programme for Children. 4.30, Song Recital by Mme. M. Kaupé. 5.0, Talk: Sports and the Worker. 5.15, Concert of Polish Music by the Station Orchestra, conducted by Oziminski. Soloist: A. Dobosz (Tenor). 6.0, Soldiers' Songs on Gramophone Records. 6.35, Programme Announcements. 6.40, Miscellaneous Items. 7.0, Polish Music on Gramophone Records. 7.40, Answers to Technical Correspondence. 8.0, Recital of Pankiewicz's Songs by Mme. S. Argasinska. 8.20, Cello Recital by Casimir Wilkomirski. Polish music from Die Gräfin (Moniuszko); Nocturne in E Flat (Chopin); Trypich (Maklakiewicz); Mazurka and Poem (Wilkomirski). 8.50, Radio Journal. 9.0, Humorous Programme, relayed from Lwow. 788 kc/s, 381 metres. 10.0, Dance Music, relayed from the Europa Café, Cichocinek. 10.25, Sports Notes. 10.40, Aviation, Weather Report and Police Notes. 10.45, Dance Music Relay (contd).

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., Concert by the Metropolitan Garda Band. 7.0, News. 7.15, Gramophone Music. 7.30, Time Signal. 7.31, The Station Orchestra. In an interval at 7.45, Tenor Solos by Joseph O'Neill. 8.10, Soprano Solos by Cecily Kenny. 8.20, A Revue by Dorothy Day and Company. 9.20, Musical Programme. 9.45, Sponsored Programme. 10.45, News, Weather Report and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. Selection from Il Trovatore (Verdi); Aubade (Pierné); Gavotte (Bortkiewicz); Largo from Quartet No. 12 (Haydn); Serenade (Donizetti); Barcarolle (Mendelssohn); Selection from The Mastersingers (Wagner). 8.0, Request Gramophone Concert. 8.20, Sports Notes. 8.30, Exchange and Talk in Catalan. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations and Market Prices. 10.5, Humorous Review of the Week in Verse. 10.15, Concert of Sardanas. 11.0, Concert by the Station Orchestra. Danzas montañesas (Gorostiaga); Semidillas del velatorio (Barrios); Slav Dance (Glazunov). 11.30, Orchestra Concert, relayed from the San Sebastian Casino. 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. 8.30, I Carnasciali—Opera in Three Acts (Lacetti). In the interval, Theatre Notes and Literary Review. After the Opera, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—5.55 p.m., Time and Programme Announcements. 6.0, National Song Recital by Vitomir Stankovic. 6.30, A Discussion. 7.0, Gramophone Music. 7.45, Salzburg Festival Programme (See Vienna). 10.10, News and Time, followed by Dance Music on Gramophone Records.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Gramophone Concert of Opera Music. 3.0, Talk for Women. 3.30, Weather and Exchange. 3.45, Book Review. 4.0, See Breslau. 5.0, Educational Talk. 5.35, Concert of Contemporary Music. Part I: Siegmund von Haussegger; Irma Drannner (Songs); Songs with Viola and Pianoforte Accompaniment: (a) Liebesklage, (b) Der Falke, (c) Liebeslied; Songs with Pianoforte Accompaniment: (a) Bienségen, (b) Tanzliedchen. 6.0, A Poem. 6.5, Concert of Contemporary Music (contd.). Part II: Sonata for Violin and Pianoforte (Hans Ottele), played by Bruno Saenger with the Composer at the Pianoforte. 6.30, Programme for Young People. 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Today's Motto, followed by Talk for the Radio Jubilee Exhibition. Radio since January 30th. 8.10, Recital of Old Popular Songs. 10.0, Weather and News. 10.30, Talk: Mankind and the Stars. 10.45, Weather Report for Shipping. 11.0, See Langenberg. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.0 p.m., Brahms Song Recital by Margarete Richter Wagenitz (Soprano). 4.15, Talk: A Twelve Days' Tramp from Canada to Mexico. 4.30, Orchestral Concert, relayed from the Zoo. 5.30, Talk: The Lighter Side of Kant's Philosophy. 5.50, Reading. 6.10, Schubert's Song Recital by Karl Dittmer (Baritone). 6.40, Announcements. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.5, Reading. 8.35, An Address (Baldur von Schirach). 8.55, Radio Report. 9.5, Beethoven Concert by the Station Orchestra. 10.5, News. 10.30, Topical Talk. 10.45 (approx.), Dance Music. In an interval at 11.0 (approx.), Talk: What they are saying in Berlin.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—7.30 p.m., News, Exchange and Market Prices. 7.35, Talk: Bordeaux a Century ago. 7.50, News and Weather. 8.0, Gramophone Concert. 8.45, Wagner Concert, relayed from the Casino, Vichy. After the Concert, Time Signal.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—7.10 p.m., See Brno. 8.10, Talk: Slovak Journalism.

MONDAY

AUGUST THE SEVENTH

PRINCIPAL EVENTS OF THE DAY:

	AT HOME
NATIONAL	Act II of "Orpheus and Eurydice," by Gluck, relayed from Saizburg. Orchestral concert.
LONDON REGIONAL	Band programme.
MIDLAND REGIONAL	Orchestral Programme.
NORTH REGIONAL	Scottish concert of song and dance.
SCOTTISH REGIONAL	An Irish programme; instrumental concert.
BELFAST	
BARI	8.30 p.m. Opera: "I Carnasciali," by Lacetti.
BRUSSELS (No. 2)	9.0 p.m. Orchestral concert from the Casino, Knocke.
EIFFEL TOWER	8.45 p.m. Wagner Festival concert, from the Casino, Vichy.
HEILSBURG	9.5 p.m. Schumann's Pianoforte Quartet in E flat (Op. 47), by the Königsberg Chamber Music Society.
HUIZEN	7.55 p.m. The Haarlem Orchestral Society, conducted by F. Schuurman.
LEIPZIG	9.30 p.m. Schubert's Symphony No. 1 in D, by the Symphony Orchestra, conducted by W. Steffen.
RADIO PARIS	8.0 p.m. Opera: "La Serva Padrona," by Pergolesi; and comic opera: "Le Maître de Chapelle," by Paer.
STRASBOURG	8.30 p.m. Festival concert of contemporary British music.
VIENNA	7.45 p.m. The Salzburg Festival. Opera: "Orpheus and Eurydice," by Gluck.

8.25, See Prague. 8.45, See Brno. 9.5, See Moravska-Ostrava. 10.0, See Prague. 10.15 (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., Gramophone Concert of Hunting Songs and Music. 1.45, Time and News. 2.0, Gramophone Concert: Beim Holderstranch (Kirchner); Song of a Prisoner of War (Massey); Paraphrase on the Song, Untern Lindenbaum (Krause); Weiss' du noch, wie damals war gewesen, from Der Trompeter von Säckingen (Nessler); Russian Romance (Bakaleinikov); Marching Song, Rheinlandmädel (Ostermann); Edelweiss (Penschel); Alle Tage ist kein Sonntag (Clewing); Sei gegrüsst, du mein schönes Sorrent (Waldmann); La Paloma (Yradier); Maria Wiegand (Reger). 3.0, Agricultural Prices. 3.20, Review of Books for the Holidays. 3.40, Talk: River and Canal Transport in Silesia. 4.0, Concert by the Silesian Philharmonic Orchestra, conducted by Dr. Herbert Lindner: March, Unter deutscher Flagge (André); Overture, Le Roi d'Yvetot (Adam); Waltz, Gruss an Wien (Baussner); Nutsackeri Polka (Bayer); Minnet in E flat (Bocherini); Selection from Martha (Flotow); Dance Suite from Nell Gwynn (German); A Norwegian Bridal Procession (Grieg); Waltz, Tales from the Vienna Woods (Joh. Strauss); March, Die Regimentskinder (Fucik). 5.30, Agricultural Prices. 5.35, Talk: German Culture. 5.50, Topical Programme (to be announced). 6.10, Talk: The National Movement and Sport. 6.30, symphonic Poem, Don Juan (Richard Strauss), on Gramophone Records. 6.60, Weather, News and Market Prices. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, From the Landsknechte to the Storm Troops—Radio Sequence of Soldiers' Songs. 9.0, News. 9.10, A Garland of Roses—Poetry of the Rococo Period. 10.0, News. 10.20, Talk on Austria. 10.40, Wireless Hints. 11.0, Serenade from Langenberg. 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—7.10 p.m., Variety Programme with Gramophone Records. 8.10, See Bratislava. 8.25, Song Recital by Jitka Krejstova. 8.45, Radio Play (Beran). 9.5, See Moravska-Ostrava. 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 Small Station Orchestra, conducted by Emile Lauwers.

1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert. Selection from Les Saltimbanques (Ganne); Le Comique voyageur (Moy); Potpourri of the Works of Joh. Strauss. 5.0, Dance Music by the Mickey's Club Band, relayed from the Casino, Knocke. 6.0, Talk: Careers in the Colonies. 6.15, Pianoforte Recital by Mlle. Bernard. Sonata in A (Mozart); Romance in F sharp (Schumann); Gretchen am Spinnrad (Mendelssohn); Scherzo in C sharp minor (Chopin). 6.45, Sacred and Popular Jewish Music on Gramophone Records. 7.0, Cinema Notes. 7.30, See Vienna. In the interval at 9.15, Gramophone Music. Overture to the 28th Cantata (Bach); Sielienne and Rigaudon (Francyour-Kreiser). 10.10, Le Journal Parlé. 10.20, Gramophone Music. Men of England (Kytelbey); The Canary (Polakker); Selection from Wonder Bar (Katscher); Overture, Di ballo (Sullivan); Le petit âne blanc (Ibert); Czardas (Dowell); Selection from Folly to be Wise (Gay-Graham-Edis).

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Emile Lauwers. March (Armandolo); Eine kleine Nachtmusik (Mozart); Waltz, Spährenklänge (Jos. Strauss); Serenade (Moszkowsky); Selection from Madame Butterfly (Puccini); Violin Solo: Legend (Caludi); Three Dances from Tom Jones (German); Pavane (Albeniz); Cordoba (Albeniz). 5.0, Dance Music by Robert de Kers and his Cabaret Kings, relayed from the Kursaal, Ostend. 5.45, Programme for Children. 6.30, Gramophone Records of the Berlin Philharmonic Orchestra. Air from the Suite in D (Bach); Ballet Music from Rosamunde (Schubert); Interlude and Dance from La Vida Breve (Falla); Polkas et Mélisande (Fauré); Pavane pour une Infante défunte (Ravel); Mazepa (Liszt). 7.15, Talk. 7.30, Pirreke Pirrewit. 8.0, Gramophone Records of Mengelberg and his Orchestra. Sinfonia (Bach); Scherzo and Finale from the Third symphony (Beethoven); Elegiac Melody No. 1 (Grieg); Overture, Post and Peasant (Suppe). 8.45, Talk on the Education of Boys. 9.0, Orchestral Concert, conducted by Karel Candael, relayed from the Casino, Knocke. Soloist: Yvette Thomas (Songs), and Theo van Hamburg (Cello). Prelude Intermezzo and March from Sigurd Jorsalfar (Grieg); Cello Solo: Russian Songs (Lalo); Salome's Song from Herodiade (Massenet); Eighteenth Century Suite (Goeyens); Aria from Le Cid (Massenet); March, Pomp and Circumstances (Elgar). After the Concert, Le Journal Parlé, followed by Dance Music by the Mickey's Club Band, relayed from the Casino, Knocke.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra. Florentine March (Fucik); Viennese Waltz Suite (Gillon); Overture, Cigale et Magali (Cassades); Selection from La Wally (Catalani); Selection from La Vie Parisienne (Offenbach); Suite (Amadei); Kol Nidrei (Bruch); Czardas (Alonti); Foxtrot on Themes from Johann Strauss' Die Fledermaus (Kochmann). In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Gramophone Music. 7.40, Educational Talk. 8.0, Chamber Music on Gramophone Records. 8.30, Talk. 8.45, Recital of Modern Music on Two Pianofortes by MM. Sibiccano and Koller. 9.15, Concert relayed from the Piccadilly Restaurant. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—5.0 p.m., Pianoforte Recital. 6.15, Recital of Hungarian Songs. 8.0, David Popper Memorial Programme. 9.10, Cigany Music by the Lajos Veres Band. 10.30, Chamber Music and Jazz Music by the Dezso-Karolyi Jazz Band. 11.30, Recital of Latvian Songs.

CASSEL.—See Frankfurt.

COPENHAGEN

1,667 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time and Weather Forecast. 12.5 p.m., String ensemble Concert relayed from the Hotel d'Angleterre. 2.0, Interval. 2.50, Talk for the Housewife. 3.0, Concert by Rydahl's Instrumental Ensemble: Soloist: Asta Lindelow (Songs); Rakoczy Overture (Kéla-Béla); Waltz (Brahms); Selection from Thais (Massenet); Intimite (Moszkowski); Overture, Adagio and Pantomime from Les petits riens (Mozart); Seven Swedish Folk Songs; Foxtrot (Nelson); Serenade (Rygaard); Nordlys Vals (Lambbye); Gavotte (Martini); Ballgæst (Meyer-Helmund); Torcador et Andalouse (Rubinstein); Tango, Kun et Ord (Andersen); March, Wien bleibt Wien (Komzak). 5.0, Gramophone Concert: Duet from The Dusk of the Gods (Wagner), by Lauritz Melchior and Friedrich Schorr; Aria from Martha (Flotow), by Richard Tauber; Adagio in E for Violin (Mozart), by Georg Kuhlentkaupff; Die Fuss reis (H. Wolff), by Josef von Manowarda; Tell me to-night (Spoliansky). By Jan Kiepara; Melody (Sylvain), by Sven-Olof Sandberg; Wer regiert die Welt from Katharina (Steffan), by Gitta Alpar; There's a Ricketty, Racketty Shack (Van-Selenick). 6.35, Exchange and Fish Market Prices. 6.20, Talk on the Unemployed. 6.50, Weather and News. 7.15, Time Signal. 7.30, Introductory Talk to the following Transmission. 7.45, See Vienna. In the interval, Talk on Glück. After the Programme, Weather. 9.50, News. 10.5, Readings (Heise). 10.30, Dance Music relayed from the Nimb Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Tuesday), Close Down.

GORK.—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. 4.30, Programme for Children: Music, a Story and Birthday Greetings. 5.0, Concert for Children and Bognor Listeners: Bank Holiday by the Sea; Signature Tune. Night by the Sea; I do like to be beside the Seaside (Kind); Get Happy; Castles in the Sand (Sandford); When I met Sally at the Seaside (Tilsey); Letting in the Sunshine (Pola); The Jolly Sailor (Cartel); I want to be happy (Yonanus); Don't be late in the Morning (Mendoza). 5.30, Concert for Hastings and Eastbourne Listeners: Military Band Music; Marche Iorraine (Ganne); A Frangosa (Costa); Song, Sing no more (Aitken); Distant Greeting (Loring); Song, Until (Sanderson); Songs my Mother Sang; Light of Foot (Lofann); Selection from San Toy (Monckton); Signature Tune. 6.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music: Signature Tune, Bells of Normandy; Chansonette (Friml); Someone to care for (Warren); Body and Soul (Green); Won't you stay to tea? (Revel); That's my Home (Rene); No more Love (Lombard); Conté (Turk); Waltzing in a Dream (Crosby); A Ghost of a Chance (Washington); Hiawatha's Lullaby (Donaldson); Au over Italy (Butler); Maria my own (Gilbert); Picaninies! Heaven (Coslwo); You've got me crying again (Jones); You're getting to be a Habit with me (Dubin); Look what you've done (Kalmar); Signature Tune. 11.0, Club Concert for Dalkeith Listeners: Part I—Signature Tune. The Chum Song; Selection from Wild Violets (Stolz); Song, My Mother (Marsden); Violin Solo, Scottish Ballads: The Foulie Reel; Meg Merrilies (arr. Diack); When the kye comes home; Bonnie Banks of Loch

AUGUST 7th

MONDAY

continued

MADRID

EAJ7 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange and Radio Journal. 8.20 (approx.), Guitar Recital by España Serrano and América Martínez Serrano. 9.15, News. 9.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW. 8.30 p.m. till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.10 p.m., See Brno. 8.10, See Bratislava. 8.25, Piano-forte Recital by Mitzi Markowitzova: Ballad in G minor, Op. 118 (Brahms); Jardine sous la pluie (Debussy); Moment musical, Op. 44, No. 5 (Reger); Schmetterling, Op. 43 (Grieg). 8.45, See Brno. 9.5, Concert by the Station Orchestra, conducted by Musil: Symphonie Suite, II Convento veneziano (Casella); Slav Rhapsody in G minor, Op. 45, No. 2 (Dvorák); Bagatelle (Suk); Overture to a Marionette Play (Kricka). 10.0, See Prague. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—3.0 p.m., Kreisler and Caruso on Gramophone Records. 4.0, Talk: Irrigation in the Steppe District. 4.30, Extracts from Russian Literature. 5.30, Programme Announcements. 5.45, News. 6.30, Dance Music. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes.

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: Overture, Fatherland (Ailbott); Suite for Small Orchestra (Potgiesser); Village Scene (Ippolitov-Ivanov); Selection from Hansel and Gretel (Humperdinck); Waltz, Uthenhorsterkinder (Fetras); Miniature Suite (Coates); Chaconne (Durand); The Merry Postillion (Pesse). 5.45, Youth at Work: A Talk by a Printer's Apprentice. 6.5, Song Recital by Olga Maria Wismler (Soprano); Im Haine (Schubert); Mittags (Reger); Blauer Sommer (R. Strauss); Der Sommerfaden (Trunk); Im Kahne (Grieg); Cherry Ballad (Sinding). 6.25, Book Review. 6.45, Time and News. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Concert by a Nazi Orchestra, conducted by Georg Lange: March, Germanentreue (Blankenburg); Overture, The Golden Cross (Brill); Selection from La Bohème (Puccini); Spanish Rhapsody (Richard); Viennese Melodies (Strauss-Kliement); Melody; Waltz, Roses from the South (Strauss); Military March (Rixner). 9.0, Talk on Austria. 9.30 (from Nürnberg), Summer Night Festival. 10.20, Time and News. 11.0, Concert of Chamber Music by Hedwig Fassbaender (Violin), Hanns Rohr (Piano-forte), and Margarethe Burkhardt-Rohr (Soprano). 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., Chamber Music by the Radio Ensemble: Polonaise in D (Svendsen); Summer Melody (Gründahl); Waltz, Morgenblätter (Joh. Strauss); Three Pieces (Glinka); La Toupie (Gillet); Neapolitan Serenade (d'Ambrosio); Suppé Potpourri (Moraña); Gallop (Langley). 6.30, Political Review. 7.45, Announcements. Weather and News. 7.45 (approx.), Salzburg Festival Programme: See Vienna. In the intervals, Weather, News, and Topical Talk.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Notes, Tourist Report, Agricultural Notes. Report of the Royal Geographical Society and Giornale Radio. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Gramophone Concert of Variety Music. 9.45, Concert of Chamber Music. Hella Helt Di Gregorio (Soprano), A. Grignani (Tenor), and M. Diamante (Flute). Soprano Solos: (a) Mignon (Beethoven), (b) Maggioletta (Cimara); Tenor Solos: (a) Nella notte d'April Tosti, (b) Serenade (Maseagni); Flute Solos: (a) Intermezzo (Walterhuber), (b) Sarabande and Gigue (Zipoli); Soprano Solos: (a) Lullaby (Gretchaninov), (b) Variations on Carnevale di Venezia (Benedict); Tenor Solos: (a) Donna, vorrei morir (Tosti), (b) Aria from Lohengrin (Wagner); Flute Solos: Pavane and Rigaudon (Lauber). 10.55, News.

3.30, Puzzles for Children. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilken: Overture, Prometheus (Beethoven); Wiener Musik (Ziehrer); Gipsy Song (Königsberger); Waltz from Der Opernball (Heuberger); Gavotte, Op. 82, No. 5 (Reger); Overture, Oberto (Verdi); Ballet Music from Sicilian Vespers (Verdi); Overture, Ten Maids and No Man (Suppe); Selection from The Dunbarry (Müllbacher-Mackeben); Deutscher Frühling (Noack). 6.0, Book Review. 6.15, Agricultural Prices. 6.25 (from Danzig), Reading: Plaudereien des Rentiers Pogutke (Fritz Jaenicke). 6.50, Weather. 7.0, Transmission for all German Stations relayed from Stuttgart. 8.0, Weather and News. 8.5, Songs to the Lute from Des Knaben Wunderhorn. 8.35, Short Story: Mozart auf der Reise nach Prag (Eduard Mörike). 9.5, Piano-forte Quartet in E flat, Op. 47 (Schumann), by the Königsberg Chamber Music Society. 9.45, Elementary English Lesson. 10.15, Weather, News and Sports Notes.

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.).—11.55 a.m., Gramophone Music. 12.10 p.m., Organ Recital by J. Zwart. Potpourri (Zwart); Prelude and Fugue in E Minor (Bayer); Canon (Harblan); Trost (Harblan); Tocata in D Minor (Reger); Fugue in D (Reger); Potpourri (Zwart); Prelude and Fugue in F (Bach); Madrigal (Karg Elert); Canzone (Karg Elert); Choral No. 3 (Franck); Potpourri (Zwart). 1.40, Gramophone Music. 2.15, Talk on Horticulture. 2.55, Gramophone Music. 3.25, Interval. 3.40, Bible Reading, followed by Baritone Song and Organ Recital. 4.40, Concert. Mlle. A. Herines (Contralto), G. Beths (Violin), and P. Halsema (Piano-forte). In sanfter Weisen, from Jephtha (Handel); Sonata in A (Handel); Jesus macht mich geistlich reich (Bach); Christi Glieder (Bach); Gramophone Music; Gesang Weylas (H. Wolf); Gesegnet sei das Grün (H. Wolf); Starke Einbildungs-frei (Mähler); Irlandaise (Schelling-Kreisler); Prelude and Rondo (Stravinsky); Minuet (Bavcl); Polichinelle Sérénade (Kreisler); Les Roses d'Isphahan (Fauré); Clair de lune (Fauré). 5.40, Concert by the Norland Castle Band of the London Salvation Army. War March of the Priests from Athalie (Mendelssohn); Variations on Home, sweet Home (Leiden); Cornet Solo; West Indian Negro spirituals for Male Voice Choir; March: Largo (Handel); Melody (Ball); Hymn Times: (a) Stracathro, (b) Wallington, (c) Niece; Halle-lujah Chorus from the Messiah (Handel). 6.40, Police Announcements. 6.55, Religious Information. 7.10, The Letter Box. 8.10, Quartet Concert, with Gramophone Records. 8.55, Talk. 9.25, Organ Recital by Mlle. L. Lauenroth. Potpourri, Melodien aus alter Zeit (Rhode); Op. de Veluwe (Siep); Fantasia, Goldene Musik (Frbach). In the interval at 9.50, News. 10.25, 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 Workers' Radio Society (V.A.R.A.). 11.40, Concert of Light Music by The Ramblers, conducted by Theo Uden Masman. In the intervals, Gramophone Records. 1.40, Recitations. 2.10, Gramophone Music. 3.40 to 3.55, Interval. 3.55, Programme for Children. 4.40, Orchestral Concert, conducted by J. Helden. Selection from La Princess Jaune (Saint-Saëns); La fin du sonze (Bose); Ke-Sa-Ko (Chapuis); Chanson (d'Ambrosio); Sérénade Morisca (Chapi); Ballet du cour (Thomé); Javanese Rhapsody (Seeling); Waltz, Seid unschlungen millionen (Strauss); Salome (Lorraine); Nocturne (Paray); Selection from The Merchant of Venice (Sullivan). In the interval at 5.20, Recitations. 6.40, Orchestral Concert (cont'd.): Toika (Tchaikovsky); Gwendoline (Chabrier-Ridd); Waltz (Moszkowsky); Melody (Giordano); Spanish Scenes (Mulder). 7.10, Gramophone Music. 7.40, S.O.S. Messages and News. 7.55, Concert by the Haarlem Orchestral Society, conducted by F. Schuurman. Overture, Egnont (Beethoven); Eine kleine Nachtmusik (Mozart); Symphony in G, No. 11 (Haydn). 8.40, Dramatic Programme. 9.0, Concert (cont'd.). Overture, The Bartered Bride (Smetana); Humoresque and Slav Dance (Dvorak); Selection from Rosamunde (Schubert); German Dances (Schubert); Finlandia (Sibelius); Valse triste (Sibelius). 9.45, Gramophone Music. 10.0, Concert (cont'd.). Overture, Die Fledermaus (Joh. Strauss); Waltz from Der Rosenkavalier (R. Strauss); Siamesische Wachtparade (Lincke); Waltz, Frühlingsstimmen (Joh. Strauss); Selection from The Merry Widow (Lehar). 10.40, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, Announcements. 1.15, Radio Concert. 8.0,

Amusement Guide and News. 8.10, Sports Notes. 8.25, Press Review. 8.30, Radio Concert. 8.45, News and Weather Report. 9.0, Un Châle brodé—Play (M. Mauciant).

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

LAHTI

167 kc/s, 1,796 metres; 40 kW. Relayed by Helsinki, 815 kc/s, 368.1 metres.—6.50 p.m., Piano-forte and Cello Sonata in A Minor (Grieg); by Arvi Valkonen and Georg Harpp. 7.20, Play (Hälme). 8.10, Concert by the Radio Orchestra. Teufelsmarsch (Suppe); Waltz, Golden Rain (Waldteufel); Hungarian Fantasia (Padouk); Overture, Isabella (Suppe). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Music from the Kappell Restaurant.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—11.10 a.m., William of Orange Memorial Programme for the Fourth Centenary of his Birth, relayed from Siegen—Address and Laying of Wreath on his Grave. 11.58, Programme from the Rathaus, Münster, 12.10 p.m., Concert from Stuttgart. 12.50, News. 1.0, Concert of Light Music, conducted by Eysoldt. News in the interval. 2.30, Market Prices. 3.30, Economic Report and Time Signal. 3.50, Programme for Young People: The Youth of Beethoven, Mozart and Goethe. 4.30, Political Address. 4.40, Talk: The Woman and the New German Stage. 5.0, A Gramophone Medley. 5.30, German for Germans: The Technique of Speech. 5.45, Reading: Feuerspruch 1933 (Hermann Stehr). Zwölf Grundsätze (Walter von Molo). 6.0, Light Concert by the Fröhliche Fünf. 6.45, Weather, Sports and Economic Notes. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, News. 8.5, Concert by the Massed Male Voice Choirs of West Germany, at the Stadthalle, Cologne-Mühlheim (on Gramophone Records). 8.35, Talk, with illustrations: Brahms in Detmold. 10.10, News. 10.30, Serenade by the Small Station Orchestra and the Cologne Singakademie Choir.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon, Concert from Stuttgart. 1.0 p.m., News and Programme Announcements. 1.15, Folk Music on Gramophone Records. 2.0, News. 2.10, Art and Film Review. 2.20, Talk: Forty Years of Welfare Work. 2.40, Musical Programme. 3.10, Talk for Women. 3.35, Economic Report. 4.0, Concert by the Weissenfels Municipal Orchestra, conducted by Ernst Schwassmann: Overture, Die Fledermaus (Joh. Strauss); Intermezzo, Das getanzte Festmahl (Schettler); Melody from Der Wildschütz (Lortzing); Waltz in A, Op. 54 and Waltz in D Flat, Op. 54 (Dvorák); Hungarian Suite, Op. 16 (Hofmann); Selection from Frühlingsluft (Joh. Strauss-Reiterer); Javanese Rhapsody (Schäfer); Waltz from Der Betseludent (Müllbacher); March, Siegesfanfare (Zinke). 5.30, Talk: The Legend of Kriemhild. 5.50, Economic Notes, Weather and Time. 6.0, Talk. 6.25, Guitar Recital by Heinrich Albert: Solleggiotto (P. E. Bach); Andante (Mozart-Sor); Overture (Legnani); Dance of Death (Parrega); Scharwache (Albert); Tango (Lobes). 6.50, Topical Talk. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Gramophone Music. 8.30, Variety Programme. 9.15, Talk on Psychology. 9.30, Symphony No. 1 in D (Schubert) by the Leipzig Symphony Orchestra, conducted by Willy Steffen. 10.5, News. 10.15 (approx.), Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen: Frühlingsouverture (Goetz); Pan and Syrinx (Nielsen); Five Mimes (Schubert); Suite in G (Ambrosius); Three Lyric Pieces (Keller); Karnevalstrieche (Richter); Deutsches Rokoko (Günther); Two Pieces for Small Orchestra (Schreveder). 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. Italian Programme.—7.30 p.m., Gramophone Music. 8.10, Weather Report. 8.15, Selection from Rigoletto—Opera (Verdi) on Gramophone Records. 8.50, News in French. 9.0, Variety Concert on Gramophone Records. 9.45, News in German. 9.55, Dance Music on Gramophone Records.

LWOW

788 kc/s, 381 metres; 16 kW.—6.35 p.m., Gramophone Music. 6.50, Miscellaneous Items. 7.10, See Warsaw. 7.45, Programme from Vienna. In the intervals at 9.0, Talk, and at 9.10, Radio Journal from Warsaw. 9.50, Gramophone Music. 10.0, See Warsaw. 10.40, Gramophone Music. 11.0 (approx.), Close Down.

Lomond (arr. Collingwood); Lassic, look before you leap; Part II—Members' Request Half-hour; The Grasshoppers' Dance (Bucalossi); Vienna, City of my Dreams (arr. Reeve); At Dawning (Cadman); By the Swanee River (Myddleton); Piano-forte Solo. Butterflies in the Rain (Myers); For you alone (O'Reilly); Ginger Snaps (Bourdon); Lazy Pete (Kersten); Signature Tune. 12.5 a.m. (Tuesday), The I.B.C. Late News Bulletin. 12.10 (approx.), Gramophone Concert: War Marching Songs, Part I—I'm the Landlord of the Inn in Aberfoyle (Roberts and Fyffe); El Dia Que Me Quieras (Donato); The Song of the Nightingale (Ailbott); Entrance of the little Fauns (Piercé). 12.30 a.m., Dance Music by Jack Payne and his Band (Electrical Transcriptions); Signature Tune, Bells of Normandy; All over Italy (Munroe); Farewell to Arms (Wrubel); Something came and got me in the Spring (Rich); Let bygones be bygones (Gilbert); How'm I doin'? (Fowler); Stormy Weather (Arlen); Say it isn't so (Berlu), When the wild, wild Roses bloom (Brown); Signature Tune. 1.0, Hawaiian Band: On the Beach at Waikiki; He's my Secret Passion (Young); Tomi Tomi; Lonely Little Vagabond (Seely); Reef of Stars (Watts); Somewhere in Hawaii (Nelson); That's my Love Song (Colville); Sweetheart Lane (Rockwell). 1.30, Dance Music: Signature Tune, Bells of Normandy; Let me explain (Towers); Oh you sweet thing (Waller); Rosa Mia (Potter); Deep Forest (Hines); If I ever get a Job again (Lewis); What did I get in return? (Young); The Girl in the little green Hat (Rich); Hold up your Hands (Robinson); Signature Tune. 1.57, I.B.C. Goodnight Melody. 2.0 a.m. (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., A German Almanac. 6.10, Variety Item. 6.25, Talk. 6.45, To-day's News. 6.50, Time and Announcements. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Violin and Piano-forte Recital by Gottfried Stank and Reinhold Merten. 8.30, Nazi Programme. 9.30, Chamber Music: Serenade in G, Op. 141a (Reger); Serenade in D, Op. 25 (Beethoven). 10.25, Time and News. 10.50, Concert from Leipzig.

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. 6.45, Frankfurt Exchange. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0 (from Hanover), Concert by a Mandoline and Guitar Ensemble and the Hanover Station Orchestra. Prelude to Der Spielmann (Schade); Paraphrase on the Folk Song Spinn, spinn (Wormsbacher); The Chimes of Potsdam Garrison Church (Steger); Zither Solo: Aus dem Isarwinkel (Fischl); Tanz unter der Dorflinde (Reinecke); Guitar Solo: Old Italian Song with Variations (Mozzani); Mandoline Quartet: Intermezzo (Salvetti); Folk Song and Fairy Tale (Koznak); Mandoline and Guitar Ensemble, Festival March (Schuppe); Mandoline Solo: Tarentella (La Scala); Concert Polka for Two Piccolos, Die beiden kleinen Finken (Kling); Zither Solo: concert Waltz, Schweizerkinder (Chunsky); Daheim (Kann); Kirames (Kann); Guitar solo: Lied ohne Worte (Lauenstein); Mandoline and Guitar Ensemble: Potpourri of Folk Songs; Mandoline Quartet: Loreley Paraphrase (Nesvadba); Waltz, Vibrationen (Joh. Strauss); Mandoline and Guitar Ensemble: March, Frisch voran! (Muschter). 10.0, Time and News. 10.20, Topical Talk. 10.30 (from Kiel), Concert by the Kiel Orchestra of Unemployed Musicians, conducted by Hans Döring. March, Die Ehrenwache (Lehnhardt); Overture, The Bohemian Girl (Balfé); Tränmerci (Jensen); Slav Rhapsody (Friedmann); Waltz, Frühlingsblüten (Rau); Gallop, Ulanen-Attacke (Bohm); Die Heinzelnännchen (Eilenberg); Selection from Hansel and Gretel (Humperdinck); Waltz, Am Schönen Rhein gedenk' ich dein Keler-Bela); Selection from Casanova (Linke); Hungarian Triumphant March (Fueik).

HANOVER.—See Hamburg.

HEILSBERG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert, relayed from Königsberg. In the intervals at 1.20 and 2.0, News. 2.30 (from Danzig), Exchange and Market Prices. 3.0, Agricultural Prices.

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. 8.45, Wagner Festival Concert relayed from the Casino, Vichy. Conductor: Paul Paray. Overture, Rienzi; Prelude and Recitative from Lohengrin; Overture, The Master-singers; Prelude and The Death of Isolde from Tristan and Isolde; Forest Murmurs from Siegfried; Good Friday Magic from Parsifal, The Ride of the Valkyries and Love Song from The Valkyrie; Funeral March from The Dusk of the Gods; March from Tannhäuser. 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, Musical Programme, by M. and Mme. Adeline-Dangerville. 8.30, La main leste—One-Act Comedy. 9.15, Sponsored Concert. 10.15, News.

PARIS

RADIO PARIS (CFR), 174 kc/s, 1,725 metres; 75 kW.—7.30 a.m., Weather and Physical Culture. 7.45, Gramophone Music: March of the Tin Soldiers (Pierce); Overture, Veronique (Messager); Selection from The Cat and the Fiddle (Kern). 8.0, Weather and Press Review. 12.0 Noon, Gramophone Concert: Overture, Euryandis (Weber); Extracts from Der Freischütz (Weber); Selection from The Force of Destiny (Verdi); Arias from L'Elisir d'amore (Donizetti); The Ride of the Valkyries, from The Valkyrie (Wagner); The Death of Isolde, from Tristan and Isolde (Wagner); Aria from Parsifal (Wagner); Extracts from Louise (Charpentier); La Mer (Debussy); Selection from The Fair at Sorotchinsk (Musorgsky); Mandy Thursday Scene from the Suite Sevilla (Turina); Marine (Delannoy); Rugby (Honegger). 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. 4.30, Fauré Festival Programme relayed from the American Conservatoire, Fontainebleau: Mrs. Roosevelt (Songs), Mlle. Boynet (Pianoforte), André Pascal (Violin), Jacques Desestre (Viola), and Paul Bazelaire (Cello); Quartet with Pianoforte Accompaniment: Songs: (a) Chanson du pêcheur, (b) Silvia, (c) c'est l'extase, (d) Tonjours, (e) Mandoline; Pianoforte Solos: (a) Nocturne, No. 4, (b) Impromptu No. 3. Second Pianoforte Quartet. 7.10, Book Review. 7.30, Gramophone Concert: Selection from H Guarany (Gomez); Les Baiguenses (Ganne); Arioso (Delibes); Aria from Lakmé (Delibes); Chinese Serenade (Siede); Cockney Suite (Ketelbey). 7.50, Commercial Prices and News. 8.0, La Serva Padrona—Opera (Pergolesi), followed by Le Maître de Chapelle—Comic Opera (Paer). In the intervals at 8.30, News and Weather, at 8.40, Review by Paul Reboux, and at 9.15, Press Review and News.

PITTSBURGH

KDKA, 960 kc/s, 306 metres; 50 kW. Relayed by WXXK 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, Words and Music, from New York. 8.45, Human Values. 9.0, Radio Guild, from New York. 10.0, Rhythm Kings. 10.15, Tarzan of the Apes. 10.30, Programme to be announced. 10.45, Little Orphan Annie. 11.0, News-Reeler. 11.15, Weather Report and I Bring a Song. 11.30, Pittsburgh Spotlights 11.45, To-day's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy, from New York. 12.15 a.m. (Tuesday), Programme to be announced. 12.30, Meyer Davis' Orchestra, from New York. 1.0, Programme to be announced. 1.30 to 3.0, New York Relay. 1.30, Potash and Perlmutter. 1.45, Phil Cook. 2.0, Sinclair Minstrels. 2.30, Melody Moments. 3.0, Silver Toppers.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by Parik: Overture, Hansel and Gretel (Humperdinck); Caucasian Suite (Ivanov); Suite from The Lazy John (Nedbal). 3.55, Exchange. 4.0, Interval. 5.45, Gramophone Music. 5.55, Talk. 6.5, Agricultural Talk. 6.10, Gramophone Music. 6.15, Talk. 6.25, News in German. 6.30, German Transmission: Talks: (a) The Fair at Liberec, (b) Danish Broadcast Language Lessons. 7.0, Chimes and News. 7.10, See Brno. 8.10, See Bratislava. 8.25, Clarinet Solos by F. Povolny. 8.45, See Brno. 9.5, See Moravská-Ostrava. 10.0, Time and News. 10.15, German Report: The Czechoslovak State Railways. 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., Sports Talk: Swimming. 7.30, News. 7.32,

AUGUST 7th

MONDAY

continued

Talk on Charles le Goffic. 8.0, Chamber Music. 8.50, Readings. 9.10, Organ Recital by M. Nater. 9.50, News. 10.0, Choral Concert with Yodels. 10.30, Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme. 9.30, Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News. 10.30, Reading. 11.0, Popular Music by the Radio Quartet with Songs.

RJUKAN.—See Oslo.

ROME

Call 1RO, 630 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres and 2RO, 11,610 kc/s, 25.4 metres from 5.30 p.m.—1.0 to 2.15 p.m., Gramophone Music. In the intervals at 1.30, Giornale Radio and Exchange and at 2.0, Time and Announcements. 4.45, Giornale Radio and Exchange. 4.55, Programme for Children. 5.10, Weather. 5.15, Vocal and Instrumental Concert. Bruno Vitoli (Cello), Maria Williams (Mezzo-Soprano) and Vella Capuano (Soprano). (Cello Solos: (a) Adagio (Vivaldi), (b) (Valentini), (c) Canzonetta (de Laserna-Cassado); Mezzo-Soprano Solos: (a) Nella fatal di Rimini, from Lucrezia Borgia (Donizetti), (b) Aria from Don Carlos (Verdi); Cello Solo: Adagio and allegro from the Sonata in A (Boccherini); Soprano Solos: (a) Aria from Zémire et azor (Grétry), (b) Waltz, Parla! (Arditi). 6.40 (from Naples), Shipping and Sports Notes. 6.50, Agricultural Report and Dopolavoro Announcements. 7.10, Tourist Talk. 7.20, News in Foreign Languages. 7.40, Giornale Radio. 8.0, Time, Announcements and Gramophone Music. 8.15, Giornale Radio and Sports Notes. 8.20, Talk on the following Transmission. 8.30, Don Giovanni—Opera in Three Acts (Mozart). In the intervals, Talk and Miscellaneous 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 19.56 metres.—9.0 p.m., Book News by Levers Fuller. 9.15, Soloist, from New York. 9.30 to 10.0 (approx.), Radio School of the Theatre. 12.45 a.m. (Tuesday), Stock Reports and Baseball Scores. 1.0 to 3.30, New York Relay. 1.0, Socio-land Sketch. 1.30, World Economic Conference. 1.45, Ferde Grofe's Orchestra. 2.0, A. and P. Gypsies. 2.30, Musical Programme. 3.0, Contested Programme. 3.30, Paul Whiteman's Orchestra, 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 to 6.35 a.m. (from Basle), Gymnastics. 11.59, Time Signal from Neuchâtel Observatory. 12 Noon (from Basle), Cinema Organ Solos, Xylophone Solos, and Songs 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), Time, Weather, and Exchange. 1.45 (approx.), Interval. 5.0 (from Basle), Programme for Women. 5.30 (from Basle), Chamber Music on Gramophone Records. 6.30 (from Zürich), Astronomical Talk. 7.0, Time and Weather. 7.5 (from Zürich), Light Music on Gramophone Records. 7.30 (from Zürich), Elementary English Lesson, followed by Relay from the World Jamboree at Gödöllö. 8.40 (from Zürich), Concert by the Swiss Radio Orchestra. 9.0, News. 9.10 (from Zürich), Organ Recital. 9.40, Concert by the Swiss Radio Orchestra. 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 Östersund), Reading and Folk Music. 5.40 (from Boden), Sketch. 6.5 (from Boden), Talk. 6.25, Gramophone Music. 7.15, Weather and News. 7.30, Introductory Talk to the following Relay. 7.45, Salzburg Festival Programme. See Vienna. In an interval at 9.0, Talk. 9.50, Weather and News. 10.5, Light Orchestral Music, relayed from Malmö, 1,301 kc/s, 231 metres; Overture (Hans Spialek); Lagunenwälder (Joh. Strauss); Ballet Suite, La Source (Delibes); Twilight (Friml); Selection from Gri-Gri (Lincke); Espagnole (Mascheroni); March (Nowowiecki). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—10.45 a.m., Festival Concert of Russian and Finnish Contemporary Music, relayed from the Conservatoire. The Municipal Orchestra and Soloists. Conductor: Hermann Scherchen. Airs (Miaskowski); Pieces for Pianoforte (Prokofiev); Air (Schostakowitch); Concerto grosso (Burrini); Pianoforte Concerto (Nabokov); Airs (Kilpinen); Pieces for Pianoforte (Silvius); Two Pieces. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Talks in French and German: The Meaning and Importance of Strassbourg's Musical and Dramatic Sessions, followed by Violin Solos by Rudolf Bergmann. 2.0 to 3.30, Interval. 3.30, Orchestral Concert, conducted by Brouilhat, relayed from the Casino, Vichy. Overture, Artevelde (Guiraud); Selection from Ariane (Massenet); Air from Roma (Massenet); Orchestral Suite from Le collier de saphirs (Pierne); Melody; Allegro appassionata (Lalo); Selection from La Bohème (Puccini); March of the Nobles from Tannhäuser (Wagner). 5.0, Light Music on Gramophone Records. 6.0, Literary Talk in French. 6.15, Review of the Week in German. 6.30, Song and Pianoforte Recital by Mlle. Schmidt-Derkum (Contralto) and Lisbeth Eschrich. Pianoforte Solos (Searlatt): (a) Pastorale, (b) Caprice; Two Arias from Persée (Lully); Pianoforte Solo: Sonata in A (Mozart); Two Arias from Amadis (Lully); Pianoforte Solo: Kinderszenen (Schumann); Five Poems (Wagner). 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in French. Lottery Results and Announcements. 8.30, Festival Concert of Contemporary English Music, relayed from the Conservatoire. The Municipal Orchestra, conducted by Hermann Scherchen, and Soloists. Sinfonietta for Fourteen Instruments (Britton); Sonata for Viola and Pianoforte (Leigh); Suite for Pianoforte (Dartton); Pianoforte Concerto (Ireland); Sonnet for Tenor and Orchestra (Van Dieren); Second Movement from the Pianoforte Concerto (Bax); Oboe Quintet (Bliss); Overture, Portsmouth Point (Walton). 10.0, Press Review in German.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12 Noon, Concert by the Municipal Orchestra, relayed from Baden Baden. Conductor: Karl Assmus. March, Freiheitsjubel (Blankenberg); Prelude to Melusine (Graunau); Selection from Die Königskinder (Humperdinck); Hymn to St. Caecilia (Gounod); Siegfried's Rhine Journey from The Twilight of the Gods (Wagner); Selection from La Bohème (Puccini); Tarantella (Liszt); Waltz, Wiener Blut (Joh. Strauss). 1.15, Time and News. 1.30, Organ Recital by Fritz Ries, relayed from the Ffa Palast; Der Blumen Pracht (Klose); Idyll, The Forge in the Forest (Michaelis); Die Chinesische Strassenszene (Siede); Dance Intermezzo, Puppe and Humpelmann (Siede); Schmetterlingswalzer (Friml); Die deutsche Meereswacht (Lincke). 2.0, Concert arranged by the Post Office. 2.30, Spanish Lesson. 3.0, Elementary English Lesson. 4.30, See Munich. 5.45, Talk: Good Military Books and Periodicals. 6.10, Talk: With the Benedictines in Hirsau. 6.35, Time and News. 7.0, Transmission for all German Stations: Christian Dietrich Grabbe—the Life-Story of a Great German Dramatist told in the Form of a Play (Curt Elwenspoek). 8.0, See Berlin (Deutschlandsender). 9.30, Max von Schillings Memorial Concert (died July 24, 1933), conducted by Ferdinand Drost: Prelude to Act II of Ingweld; Two Symphonic Fantasias, Meergruss and Seemorgen; Prelude to Act III of Der Pfeifertag. 10.30, Time and News. 10.35, Programme to be announced. 11.0, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.0 p.m., News. 6.5, Instrumental Solos. 6.15, Light Music. 6.30, Orchestral Music. Swanee River (Mylleton); Prelude (Bordi); Medley (Bordi); Hungarian March (Berlioz). 6.45, Opéras-comique Music Extracts from: Manon (Massenet), Le chémeun (Leroux), Carmen (Bizet), and Don Quixote (Massenet). 7.0, Accordion Music. 7.15, News, Racing Results, and Market Prices. 7.25, Local News. 7.30, Operetta Music. Selection from: (a) Louis XIV (Parès-Van Parys), (b) Kadubeek (Yvain), (c) Bégonia (Mercier). 7.45, La Péri (Dukas). 8.0, Hawaiian Guitar Music. 8.15, Extracts from Sound Films. 8.30, Opera Music. Selection from William Tell (Rossini); Betrothal Scene from Lohengrin (Wagner); Polonaise from Boris Godunov (Musorgsky). 8.45, Military Music. 9.0, Neapolitan Music. Aria from Rigoletto (Verdi); Venetian Vision (Broggi); Aria from Cavalleria rusticana (Mascagni); Un pen d'amour (Silvius); O from The Barber of Seville (Rossini); O Marcariello (Gambardella); Aria from La Traviata (Verdi); Serenade (Toselli); Song

from Tosca (Puccini). 9.30, Instrumental Solos. 9.45, Chansonnettes. 10.0, Accordion Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.15, Popular Concert. 11.30, Variety Programme. 12 Midnight, Light Orchestral Music. 12.15 a.m. (Tuesday), News, Weather and Announcements. 12.20, Musical Programme. Variations on a Theme for Two Pianofortes (Beethoven); Overture, Poet and Peasant (Suppé). 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 to 8.30 p.m., See Turin. 8.30 till Close Down. See Rome.

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., Concert by the Station Orchestra. 6.0 to 6.5, Weather. 6.35, News. 7.0, Time Signal and Tourist Report. 7.10, Gramophone Records, Fiorentina (Neri-Mancini); Mamma sei sempre tu (Rusconi-Bruno); Canzone innamorata (Neri-Mancini); Lena (Culotta-Bracchi). 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News. 8.20, Talk on the following Transmission. 8.30, See Rome. After the Programme, 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, 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 Wiener Symphoniker, conducted by Josef Holzer. Overture, Mariutana (Wallace); Waltz-Intermezzo, Blütenreigen (Spörr); Romantic Suite, In der Walpurgisnacht (Lillig); Legend for English Horn (Netsch); Song, Vindabona, Stadt voller Pracht (Stefanini); Song (Flemming); Serenade to Toscanini (Muzilli); Selection from The Maid of the Black Forest (Jessel). 1.0 p.m., Time and News. 1.10, Concert (cont'd). Waltz, Estudiantina (Waldteufel); Serenade for the Lute (Wetatschek); Grossmütterchen will tanzen (Wetatschek); Japanese Parade (Vollstedt); Song, Ein stilles Glück from Sissy (Kreiser); A Vision (Lehár); Tarantella from Gasparone (Müllbeck); Selection from Der Orlov (Graničstaden). 2.0, Interval. 3.0, Time and News. 3.20, Practical Hints. 3.30, Programme for Children. 3.55, Gramophone Records of Operetta Music. 4.35, Programme for Young People. 5.0, Talk: German and Italian Ideals of Opera. 5.25, Song Recital by Jella Braun-Ferwald (Alto) and Franz Frankl (Baritone). 6.5, Talk: An Excursion through the Loban. 6.25, Books and Publications in connection with the Week's Talks. 6.30, Talk: The Mariabrunn. 6.45, Topical Talk. 7.0, Recital of Viennese Songs by Ernst Arnold. 7.35, Time and News. 7.45, The Salzburg Festival 1933. Orpheus and Eurydice—Opera (Glück). The Wiener Philharmoniker, conducted by Bruno Walter. 9.50, Time and News. 10.5, 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., Chamber Music on Gramophone Records. 12.25, Polish Press Review. 2.33, Weather. 12.35, Gramophone Records (cont'd). 12.55, Radio Journal. 1.0, 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, Concert by the Poznan Opera House Orchestra, conducted by Tyllia, relayed from Ciechocinek. 5.15, Song Recital by Mme. Mathilde Lewicka. 5.45, Light Music on Gramophone Records. 6.15, Talk on Economics. 6.35, Gramophone Music. 6.50, Miscellaneous Items. 7.5, Programme Announcements. 7.10, Literary Talk. 7.25, Talk on the following Relay. 7.45, See Vienna. In the intervals at 9.0, Agricultural Talk, and at 9.10, Radio Journal. 9.50, Gramophone Music. 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., French Songs on Gramophone Records. 6.50, Talk in Lithuanian. 7.5, Programme Announcements. 7.10, See Warsaw. 7.45, See Vienna. In an interval at 9.0, Sports Notes. 9.50, See Warsaw. 11.0 (approx.), Close Down.

ZÜRICH.—See Schweizerischer Landessender.

TUESDAY

AUGUST THE EIGHTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL LONDON Variety programme. Orchestral concert. Act II of "The Magic Flute," by Mozart, relayed from **Munich**.
REGIONAL MIDLAND REGIONAL WEST REGIONAL NORTH REGIONAL SCOTTISH REGIONAL BELFAST Chamber music.

ABROAD

HAMBURG 10.30 p.m. The Philharmonic Orchestra.
HEILSBERG 9.0 p.m. The Königsberg Opera House Orchestra.
MORAVSKA-OSTRAVA 8.30 p.m. Haydn's String Quartet in D (Op. 76, No. 5).
MUNICH 8.40 p.m. Act II of "The Magic Flute," by Mozart, from the Residenz Theater.
PALERMO 8.45 p.m. Opera: "Don Pasquale," by Donizetti.
STRASBOURG 8.30 p.m. Festival concert of contemporary Czech music.
STUTTGART 8.0 p.m. The Station Orchestra.
TURIN 9.0 p.m. Opera: "Il piccolo Marat," by Mascagni, relayed from Livorno (Leghorn).
VIENNA 7.0 p.m. "Round the World in Ninety Minutes," concert by the Wiener Symphoniker.

Hamburg. In an interval at 11.0 (approx.). Talk: What they are saying in Berlin. 12 Midnight (approx.). Close Down.
BERNE.—See Schweizerischer Landessender.
BERGMUNSTER.—See Schweizerischer Landessender.
BODEN.—See Stockholm.
BODO.—See Oslo.

BORDEAUX-LAFAYETTE 9.26 kc/s, 304 metres; 13 kW.—7.30 p.m., News and Exchange Quotations. 7.40, Talk: The Legal Rights of Married Women. 7.55, Gramophone Music. 8.15, News and Weather. 8.30, See Paris (Eiffel Tower). After the Programme, Time Signal.

BRATISLAVA 1.076 kc/s, 279 metres; 14 kW.—6.25 p.m., Gramophone Music. 6.45, Talk: The Cinema and Culture. 6.55, Report for Housewives. 7.0, See Prague. 7.10, See Brno. 7.45, 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.—1.0 p.m., Sound Film Music on Gramophone Records. 1.45, News. 2.0, Waltzes of the Nations on Gramophone Records. Germany: (a) Moonlight on the Alster (Fetras), (b) O Frühling, wie bist du so schön (Lincke); Italy: (a) Tesoro mio (Brenucci), (b) Monte Christo (Kotlar); Hungary: Memories of Herulesbad (Pazeller); Spain: Valse español (Metra); England: Mimosa Waltz from The Geisha (Jones); France: (a) Quand l'amour meurt (Cremieux), (b) Valse bleue (Margis); Russia: Troica (Bottari); Germany: Roses from the South (Joh. Strauss). 3.0, Agricultural Prices. 3.15, Review of War Books. 3.35, Programme for Children: In an Aeroplane over Breslau. 4.0, Song and Cello Recital by Elsa Ollner-Wallner and Pepo Eiselt: Song from Figaro (Mozart); Three Songs (Schumann): (a) Der Nussbaum, (b) Du bist wie eine Blume, (c) Mondnacht; Three Songs (Schubert): (a) Ave Maria, (b) Death and the Maiden, (c) An die Musik. 5.0, Talk: The Problem of Capitalism—eliminating competition. 5.30, Agricultural Prices. 5.35, Reading of Modern Ballads (Herybert Menzel). 5.45, Pomeranian Wit and Humour. 6.0, Choral Concert of Sacred Music, relayed from the Hassitz Youth Hostel. 6.50, Weather, News and Market Prices. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Sommerliches Missvergnügen—Radio Comedy (Edgar H. Satt), with Music by Johannes Rietz. 9.0, News. 9.10, Radio

Reports from the Sports Grounds of Breslau. 9.40, Mandoline and Guitar Concert: Overture in D Minor (Köhler); Frühlingsträume (Siegmund); Maiglöckchen lauet (Siegmund); Paraphrase on Aennchen von Tharau (Schanno); March, Amazonenritt (Ritter). 10.20, News. 10.40, Sports Talk. 11.0, Concert (contd.): Marionetten; Overture, Mignouette (Baumann-Huber); Polka-Mazurka, Frankenherz (Strauss-Löschel); Spanish Rhapsody (Salvetti); Concert Piece (Wälki); Waltz, White Chrysanthemums (Wilhelm). 11.50, Close Down.

BRNO 878 kc/s, 342 metres; 35 kW.—6.15 p.m., Talk for Workers. 6.25, German Transmission News, Talk for Mothers and Agricultural Talk. 7.0, See Prague. 7.10, Report from a Farm. 7.45, See Prague. 8.0, Concert by the Foerster Vocal Union. 8.35, Recitations. 9.0 till Close Down, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1) 1.1.N.R.; 590 kc/s, 509 metres; 15 kW.—12 Noon, Military Music on Gramophone Records: Overture, 1914; March (Chomel); Extract from the Huguenots (Meyerbeer); Radetzky March (Strauss). 12.20 p.m., Piano-forte Recital by Frances Duquenois: Ballad in F Minor (Chopin); Etude in F Minor (Jongen); Scherzo in E Flat (Turina). 12.40, Request Gramophone Records. 1.0, Le Journal Parlé. 1.10, Extracts from Il Seraglio (Mozart) on Gramophone Records. 1.25, Song Recital by Edith Uythorek (Contracto); Appassionata (Busser); Romance (Bruch). 1.45, Suite No. 2 for Flute and Strings (Bach). 5.0, Cello Recital by René Ronseele: Adagio and Allegro (Bocherini); Finale of the Concerto (Lalo); Capriccio (Hindemith). 5.30, Programme for Children. 6.5, Talk: The Great Religious Orders—The Redemptorists. 6.15, Violin and Piano-forte Recital by M. Putters and Mlle. Culot; Andante from the Spanish Symphony (Lalo); Prelude in A Minor (Debussy); Sonata (Vreulsi). 6.45, Orchestral Concert: Overture, The Secret Marriage (Cimarosa); Selection from Gretia Green (Guiraud); First Serenade (Widor); Second Seherzetto (Godard); Staccato Waltz (Godard); March of the Lead Soldiers (Pierné). 7.15, Weekly Review and Cinema Notes. 7.30, Talk for Women, and Art Notes. 8.0, Concert by a Small Orchestra: Serenade (Rachmaninov); Violin Solos: Seherzo and Tarantella (Ravel); Suite, La Source (Debibes). 8.30, Programme for Young People. 8.45, Talk. 9.0, Concert relayed from the Kursaal, Ostend. After the Concert, Le Journal Parlé, followed by Piano-forte Sonata in E Flat, Op. 81—Les adieux, l'absence et le retour (Beethoven), played by Robert Casadesu. 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, Gramophone Concert: Wedding March (Mendelssohn); Valse romantique (de Sévère); Barcarolle, from The Tales of Hoffmann (Offenbach); Intermezzo, from Cavalleria rusticana (Mascagni); Ave Maria (Schubert); A Trumpet Voluntary (Purcell); Dear, when I met you (Brown); Melody (Fragson); Souvenir (Drdla); Hindu Song from Sadoo (Rimsky-Korsakov); Dreaming the Waltz away (Lohntman); Melody (Bandy); In a Chinese Temple Garden (Kettelbey); Potpourri (Heymann). 1.0, Le Journal Parlé. 1.10, Concert by the Little Station Orchestra, conducted by Emile Lauwers: Overture, Martha (Flotow); Waltz, Du und du (Waldfuehl); Olga's Love Song (Gibson); Slovak Idyll (Lotter); Selection from Phi-Phi (Christiné); Two Hindu Pictures (Hansen-Lotter); Gipsy Romance (Baldi); Selection from The Merry Peasant (Fall); Foxtrot, Gnaidige Frau, komm und spiel mit mir (Heymann). 5.0, Extracts from Maritana—Opera (Wallace), on Gramophone Records. 5.45, Programme for Children. 6.30, French Operetta Music on Gramophone Records: Selection from The Girl in the Taxi (Gilbert); Waltz from Les Saltimbanques (Ganne); Quand le dragon, from Les Dragons de Villars (Mailart); Couplets d'entrée, from Véronique (Messager); Il y a des gens se disent espagnols, from Les Brigands (Offenbach); Selection from Hans, the Flute Player (Ganne). 7.0, Instrumental Solos: Minuet (Bocherini); Hymn to the Sun (Rimsky-Korsakov); Humoresque (Dvorák); Minuet (Paderevski). 7.15, Talk: Review of International Affairs. 7.30, Le Journal Parlé. 8.0, Gramophone concert, with Items by A. Rab (Entertainer); March from Prince Igor (Borodin); Prelude No. 3 (Rachmaninov); Scherzo Waltz (Chabrier); Tarantelle and Dance from La Gira (Casella); Humorous Songs; Invitation to the Waltz (Weber). 8.55, Radio Play (van Duin), followed by Gramophone Concert (contd.): Selection from Marietta (O. Straus); Jungle Drume (Kettelbey); Humorous Songs; Selection from Follow a Star (Yellen). 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 Motoi Orchestra. In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Romanian Music on Gramophone Records. 7.40, Educational Talk. 8.0, Baritone Solos. 8.20, Concert by the Station Orchestra: Overture, Flotte Bursche (Suppé); Suite, Scènes alsaciennes (Massenet); Frühling in Wiener Wald (Ascher); Almbüttel (Wagner); Two Slav Dances. In an interval at 9.0, Talk. 9.45, Radio Journal.

BUDAPEST 545 kc/s, 550.5 metres; 18.5 kW.—5.0 p.m., Orchestral Concert, relayed from the Café Dunakorzó. 6.30, Violin Recital. 7.0, Gramophone Music. 8.0, Round the Camp Fire—Report from the World Jamboree. 9.50, Cigány Music, relayed from the Café Emke. 10.25, Orchestral Concert. 11.30, Report from the World Jamboree.

CASSEL.—See Frankfurt.

COPENHAGEN 1.007 kc/s, 281 metres; 0.75 kW. Relayd by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time and Chimes from the Town Hall and Weather. 12.5 p.m., String Ensemble Concert, relayed from the Bellevue Strandhotel. 2.0, Interval. 3.30, Orchestral Concert, conducted by Emil Reesen: Overture, Euryanthe (Weber); Waltz from Pan Twardowski (Rozycki); Selection from the Lyric Suite (Grieg); Waltz, Tales from the Vienna Woods (Joh. Strauss); Reading: March (Schubert); Selection from La Bohème (Puccini); The Flight of the Bumble Bee (Rimsky-Korsakov); Prelude to Act Two and Bridal Chorus from Lohengrin (Wagner); Overture, Flotte Bursche (Suppé). 5.35, Exchange and Fish Market Prices. 6.20, Talk. 6.50, Weather and News. 7.15, Time Signal. 7.30, Talk: Trade Protection. 8.0, Chimes from the Town Hall. 8.5, A Visit with the Microphone to the Jamboree at Gäddö. After the Programme, Weather. 9.0, Landsbyens Magdalene—Comedy in Three Acts (Anker-Larsen and Egil Postup). 10.30, News. 10.45, Jazz Songs on Gramophone Records: Melody (Wayne-Rotter) by the Ahels; Mine (de Sylva-Bianly) by the Merry-makers; Good-night Moon (Donaldson), by the Pickens Sisters; In a little back alley (Towers), by Bert and Bob; Don't sing ahoia when I go (Smith-Moret), by the Four Aristocrats. 11.0 (approx.), Close Down.

CORK.—See Athlone.
DANZIG.—See Heilsberg.
DRESDEN.—See Leipzig.

FECAMP 1.328 kc/s, 225.9 metres; 10 kW.—4.30 to 6.0 p.m., Programme in English by the I.B.C. 4.30, Programme for Children. 5.0, Concert of Light Music for Torquay and Exeter Listeners: Signature Tune: Night by the Sea; Cinderella's Wedding Day (Traumbauer); Brideside, from La Traviata (Verdi);

ATHLONE 725 kc/s, 413 metres; 60 kW. Relayd by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.30 p.m., Time Signal, Weather Report, Stock Exchange Quotations and Gramophone Music. 6.0, Programme for Children. 6.40, News. 7.0, Gaelic Reading. 7.15, Talk by T. J. Ellis: Heralding. 7.30, Time Signal. 7.31, Organ Recital by George Harrison, relayed from St. George's Church. 8.0, Cello Solos by Mme. K. A. Pollaky. 8.15, The Station Orchestra. 8.45, Variety Programme by the Fairmaons. 9.15, Traditional Fiddle Solos by G. O'Laidhig. 9.30, Contralto Solos by Joan Allgood. 9.45, Sponsored Programme. 10.45, News, Weather Report and Close Down.

BARCELONA EAJ1; 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert: Selection from La Bohème (Puccini); Reverie (Luigini); Love Song (Buré); Selection from Le Roi de Lahore (Massenet); Melody (Delille); Extracts from Samson and Delilah (Saint-Saëns); Military Polonaise (Chopin). 8.0, Request Gramophone Concert. 8.30, Exchange. 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, Concert by the Station Orchestra, followed by Concert relayed from the Café Español. 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., Agricultural Notes, Tourist Talk, and Dopolavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.45, Gramophone Concert: Waltz Song, Virginia (Kennedy and Tait); Waltz Song (Benatzky and Ramo); One-Step, Equador (di Lazzaro and Bruno); Hawaiian Song (Onda, Petralia and Veldes); Vecchia Castiglia from Cioa, Cioa (Ravasini and Frati); One-Step, Se prendiamo un buon caffè (Moleti and Galdieri); Tango (Rebner and Rebner Stein); Foxtrot, Ein Lied, ein Kuss, ein Mädel (Stolz and Gilbert); Tango, Mezz'ora con voi (Muscheroni-Mari); Storselli d'oro (Mazzucchi and Gatti); Waltz Song, Dove siete voi il mio destino (Raffaelli and Sterbini); Song from Voce lontana (Montanaro and Bonelli); Waltz from Al buio insieme (Celani and Neri); Io sogno un pupo rosa (Mariotti-Borella). 9.30, Art Notes. 9.45, 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.—5.55 p.m., Time and Programme Announcements. 6.0, National Dance on Gramophone Records. 6.30, Symphony Music on Gramophone Records. 7.0, Song Recital by Mlle. Ljubica Toth and Mr. G. Schönberger. 7.50, Humoresques. 8.30, Concert, relayed from Zagreb. 9.77 kc/s, 307 metres. 10.30, News and Time, followed by Cigány Band Concert, relayed from the Rudineain Restaurant.

BERLIN DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Gramophone Concert. 2.40, Schubert Piano-forte Recital by Leni Knauth: Scherzo in B Minor; Impromptu in A Flat. 3.0, Programme for Young People. 3.30, Weather and Exchange. 3.45, Travels of Famous Writers. From Breslau to Berlin a Hundred Years Ago (Eichendorf). 4.0, See Leipzig. 5.0, Programme for Women. 5.25, Topical Review. 5.35, Concert of Overtures on Gramophone Records. 6.0, A Poem. 6.5, Talk: Building up the New State. 6.30, Political Press Review. 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Today's Motto, followed by Talk for the Radio Jubilee Exhibition. 8.10 (approx.) Concert of Classical Music by a Nazi Chamber Orchestra, conducted by Hans Steinkopf. Soloist: Rudolf Schulz (Violin). Violin Concerto in E (Bach); Divertimento for Six Wind Instruments and Two Violins (Haydn); Symphony in G Minor (Mozart). 9.0, The Sea Shore, the Mountains and the Pine Forests—Literary and Musical Sequence (arr. Fritz Laukisch). 10.0, Weather and News. 10.45, Weather Report for Shipping. 11.0, Concert from Hamburg. 12 Midnight (approx.), Close Down.

BERLIN WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.30 p.m., Concert of Light Music, relayed from Bad Freienwalde. 5.10, Lotbar Windsperger Song Recital by Inge Broderstein (Soprano). 5.30, A Scholar's Life in 520—Radio Sequence (Bruno Weilenkamp). 5.0, Readings. 6.15, Book Review. 6.40, Announcements. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.5, Community Singing, relayed from the Markplatz, Bad Freienwalde. 8.20, Wagner Concert by the Swinebünde Orchestra, relayed from the Kurhaus, Swinebünde. 9.30, Spreewald Costume Festival—Radio Report, relayed from Vetchau. 10.0, Weather and News. 10.30, See

AUGUST 8th

TUESDAY

continued

My Granny's Lullaby (Gilbert); Where is this lady? (Rotter); Ragamuffin Romeo (Wayne); To-night (Valerio); The Children's Home (Cowen); On the Banks of Allen Water (arr. St. Denis). 5.30, Concert for Plymouth and Devonport Listeners: Octets: (a) Spring Song (Mendelssohn), (b) Hungarian Dance in D (Brahms), (c) Hungarian Dance in A minor (Brahms); Songs: (a) Because (d'Mardelot), (b) The Second Minuet (Besky); Octets: (a) Torcadore and Andalous (Rubinstein), (b) Ave Maria (Schubert), (c) Romance (Rubinstein); Signature Tune. 6.0, Programme in French. 10.0 till Close Down. Programme in English by the I.B.C. 10.0, Dance Music: Signature Tune; Bells of Normandy; Old Father Thames; The Knave of Diamonds; I wonder how the Old Folks are To-night; Let's all dance the Polka; I've told every little Star (Kern); The Song is you (Kern); A Bedtime Story (Nicholls); My Romance (Young); My Darling; Stormy Weather; Shuffle off to Buffalo (Dubin-Warren); Willow, weep for me (Ronell); Roll along Kentucky Moon (Halley); Three Wishes; I'm one of the Lads of Valencia; Night shall be filled with Music; Put a little Springtime in the Winter of their lives; Signature Tune. 11.0, Club Concert for Leith Listeners. Part I, Military Band Music: Signature Tune; The Chum Song; Selection, Shamrockland (arr. Stoddon); Bonnie Scotland (arr. Pether); Song: A Good Old Fashioned Chorus (Amos); Varsity March; Songs: (a) Beware of the Maidens, (b) The Arrow and the Song (Balfe); Fighting Mac (Traditional); Selection of Irish Melodies (arr. Stoddon). Part II, Light Music: Beautiful Lady (Caryl); Mama (Denes); Bless this House (Taylor); Alice Blue Gown (Tierney); Violets (Wright); Tell me To-night (Spoliarsky); Night aboard the Saucy Sue; After the Ball (Harris); Signature Tune. 12.5 a.m. (Wednesday), I.B.C. News in English. 12.10 (approx.), Pianoforte Solos: Keyboard Kapers (Steele); Jack o' Clubs (Steele); A Shower of Notes (Steele); Slippery Joe (Steele); Why waste your Tears? (Holstein). 12.30, Dance Music: Signature Tune; Bells of Normandy; My Heart's to let; Her Name is Mary; One little Word led to another; Young and Healthy; While we danced at the Mardi Gras; Love is the Sweetest thing; Same Old Moon; Sing a New Song; Signature Tune. 1.0, Light Music: Old Medley; Shoo the Hoodoo away; Song: You're still my Sweetheart (Yellen); The Japanese Sandman; The Moon is low; Song: A Ghost of a Chance (Washington); Laifin' at Life; Friend o' mine. 1.30, Dance Music by Jack Hylton and his Orchestra (Electrical Transcriptions); Signature Tune; Bells of Normandy; That's my Home (Ellison); Hyde Park Corner (Evans); Sittin' in the Dark (Greer); What a Lady Josephine must have been (Pola); Moon Song (Oslow); I sigh for you, Rio Rita (Winn); Pickaninies' Heaven (Johnston); They all do the Rumba (Pola); Signature Tune. 1.57 a.m., I.B.C. Goodnight Melody. 2.0 (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, 1,167 kc/s, 259.3 metres.—6.0 p.m., Talk on Psychological and Technical Aspects of the Two Thousand Kilometre Tour through Germany, by a Competitor. 6.25, Talk: Motor Roads and the Motor Industry. 6.45, To-day's News. 6.50, Time and Announcements. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, See Stuttgart. 9.0, Topical Programme. 10.5, See Stuttgart. 10.15, Time and News. 10.50, See Stuttgart. 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.—2.10 p.m., Gramophone Concert: Potpourri, Auf Fahrt und Waltz; Mein Heimatland; Potpourri, Kirchweih in Oberbayern; Third Waltz Potpourri (Robrecht); Russian Waltz (Mahr); Hoch sollt du leben (Caros); Munich Picture Book; Minuet Waltz (Meissner) Accordion Polka (Pörschmann); Mit Pauken und Trompeten (Kermbach). 3.0, Exchange. 3.40, Shipping and Aviation Notes. 4.10, See Langenberg. 4.30, Concert from Leipzig. 5.0 (from Kiel), Talk: The North-Friesian Character, as shown in Local Humour. 5.30, Talk: The Armies of other Countries. 5.50, The Nuremberg Doll—Comic Opera in One Act (Adam). 6.45, Frankfurt Exchange and Hamburg Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Political Talk. 8.10, See Berlin (Deutschlandsender). 9.15, The Bridge of Pao—A

Dramatic Episode of the Boxer Rising (Heinrich Maass). 10.0, Time and News. 10.20, Topical Talk. 10.30, Concert by the Hamburg Philharmonic Orchestra, conducted by José Eibenschütz: Overture, Peter Schmolli (Weber); Serenade for Strings (Haydn); Selection from Die toten Augen (d'Albert); Scene from Der Evangelinam (Kieszl); Four Old Pieces for Strings (Niemann); Slav Dances (Mrazek); Carnaval à Paris (Svendsen); Suite from Der Rosenkavalier (R. Strauss); Waltz from Waldmeister (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., Gramophone Concert. In the intervals at 1.20 and at 2.0, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Agricultural Prices. 3.30, Musical Improvisations for Children. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Suite from The Arabian Nights (Bortkiewicz); Selection from Die KönigsKinder (Humperdinck); Overture, Ribezahl (Weber); Fairy Romance (Grams); Her first Dance (Heykens); Rondo Humoresque, The Bashibazouks (Gabriel-Marie); Waltz, Im schönen, grünen Holsteinland (Fotras); March, Deutschland voran (Rust). 5.30, Short Story: Amanda Blaszius wandelt sich (Helene Creutzburg). 5.45, Concert of Chamber Music by the Weimar String Trio. 6.15, Agricultural Prices. 6.25, Talk for Workers. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, See Breslau. 9.0, Concert by the Königsberg Opera House Orchestra, conducted by Erich Bärschel: Overture, Le Corsaire (Géneré); Idillio concertino for Oboe and Small Orchestra (Wolf-Ferrari); Romanian Folk Dances (Bartok); Selection from Undine (Lortzing); Overture, Othello (Verdi); Military March (Kaun); Perpetuum mobile (Joh. Strauss). 10.15, Weather, News and Sports Notes.

HILVERSUM

Announced HUIZEN, 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 Catholic Radio Society (K.R.O.). 11.40, Police Notes. 1.25 to 1.40 p.m., Interval. 1.40, Programme for Women. 2.40, Gramophone Music. 3.0, Recital by E. Koopmans (Baritone) and H. Nieland (Pianoforte). 4.20, Gramophone Music. 4.55, Concert by the Amsterdam Symphony Orchestra, conducted by J. Smit: March, Ernst August (Blankenburg); Waltz, Die Werber (Lauer); Overture, Jean de Paris (Boieldieu); Prelude, Op. 3, No. 2 (Rachmaninov); Selection from Tiefland (d'Albert); Torch Dance of the Brides of Kashmir (Rubinstein); Waltz, Donausagen (Fueck); Siamesische Wachtparade (Lincke); Selection from The Maid of the Black Forest (Jessel); Fantasia on Grün ist die Heide (Blum-Lilling); Overture, Venus auf Erden (Lincke); March (Lincke). 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 M. van 't Woud: San Lorenzo (de Silva); Overture, The Black Domino (Auber); Suite from The Sleeping Beauty (Tchaikovsky). 8.10, News. 8.15, Talk. 8.40, Concert (contd.): Jubelouvertüre (Weber); Overture, Das Nachtlager von Granada (Kreutzer); Waltz, Freut euch des Lebens (Strauss) Torcadore and Andalous (Rubinstein); Rossini Potpourri (Urbach); The Forge in the Forest (Michaëls); Heizenmännchens Wachtparade (Noack). 9.40, Gramophone Music. 9.55, Concert (contd.): Selection from Die Feschingsfee (Kälmin). 10.10, News. 10.15, 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.).—10.10 a.m., Recital by Eghert Vos (Organ) and Willem Schansman (Tenor): Prelude, Fugue and Variations (César Franck); Tenor Solos: Bist du bei mir (Bach), and Meine Seele lass es gehen (Bach); Prelude of Cantilène (Pierre); Tenor Solos: Es ist vollbracht (Bach), Two Songs (Andriessen); Choral in A minor, No. 3 (César Franck). In the interval at 10.40, Talk on Cookery. 11.40, Time. 11.41, Light Orchestral Concert. Gramophone Records in the interval. 1.40 p.m., Talk. 2.10, Gramophone Music. 2.40, Programme for Children. 3.25 to 3.40, Interval. 3.40, Pianoforte Recital by Gerard Bunk: Variations, Op. 54 (Mendelssohn); Prelude, Choral and Fugue (César Franck). 4.10, Concert by a Children's Choir. 4.40, Readings for Children. 5.10, Light Music by Kovacs Lajos and his Orchestra. In the interval at 6.40, Talk on Spies. 7.40, Time and News. 7.45, Gramophone Concert. 7.55, Concert of Light Music (contd.). 8.40, The Singing Babies. 9.0, Gramophone Music. 9.10, Dance Music by Roy Fox and his Band. 9.55, The Singing

Babies (contd.). 10.10, Gramophone Music. 10.40, News. 10.50, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, Announcements. 1.15, Radio Concert. 8.0, Amusement Guide and News. 8.10, Agricultural Report. 8.20, Press Review. 8.30, Radio Concert. 8.45, News and Weather Report. 9.0, Song Recital by Mme. Victoria Fer. 10.30, Jazz Music.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

LAHTI

167 kc/s, 1,796 metres 40 kW. Relayed by Helsinki, 815 kc/s, 368.1 metres.—6.40 p.m., Extracts from Tosca—Opera (Puccini) by the Station Orchestra. 7.0, Talk. 7.25, Concert by the Station Orchestra: Zorahayde (Svendsen); Solveig's Song (Grieg); Wiener Bonbons (Strauss). 8.0, Humorous Items. 8.20, Violin Recital by Sulo Hurstiainen: Andantino melancolico (Achrou); Spanish Dance No. 8 (Sarasate); Caprice in E Flat (Paganini). 8.45, News in Finnish and Swedish. 9.15, Light Music, relayed from the Kappell-Restaurant.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Gramophone Concert of Light Music. 12.50 p.m., Announcements. 1.0, Concert by the Fröhliche Fünf. In an interval at 2.0 (approx.) Announcements. 2.30 to 3.0, Interval. 3.0, Programme for Children: With the Microphone in a Children's Hospital. 3.30, Economic Notes and Time Signal. 3.50, Talk on Unemployment Assistance Schemes. 4.10, Talk: Educational Administration in the Country. 4.30, A Shopping Expedition to a Bagdad Bazaar—Travel Talk with Gramophone Illustrations. 4.55, Topical Tales. 5.0, Gramophone Concert. Concerto grosso in D minor (Handel); Concerto grosso in A minor (Vivaldi); Concerto grosso in D (Handel); Serenade No. 6 (Mozart). 5.30, What is That?—Technical Radio Sequence (Ihorst Slesina). 6.0, Song Recital by Young People. 6.40, Italian Lesson. 6.50, Announcements. 7.0, Transmission for all German Stations: The German Armourer—Alfred Krupp—a Biographical Radio Sequence (Theo Rausch). 8.0, Announcements. 8.5, Variety Programme. 9.0, Chamber Music. Trio Op. 1 (Beethoven); Sonata in F Op. 24 (Beethoven). In an interval, Talk: The Old Cemetery in Bonn. 10.0, Announcements. 10.20, Review of the Week.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon, Song and Pianoforte Recital by Kläre Spengler (Soprano) and Ellen Dressler: Three Intermezzi, Op. 117 (Brahms); Songs: (a) Mädchenlied (Smigelski), (b) Bitte an den Hund (Keller), (c) Der Schmeigel (Andrene), (d) Das Huhn und der Karpfen (Martiniussen); Fantasia in C Minor (Mozart); Songs (Jürgens): (a) Das mitleidige Mädel, (b) Auf dem Maskenball, Albumblätter, Op. 124 (Schumann); Impromptu (Schubert). 1.0 p.m., News and Programme Announcements. 1.15, German Songs and Choral Music on Gramophone Records. 2.0, News. 2.30, Book Review for Young People. 3.0, Programme for Invalids—Accordion Solos by Friedbert Sammler and Readings (Max Mehl). 3.35, Market Prices. 4.0, Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer; Soloist, Willy Hofmann (Pianoforte): La Melodia germanica (Stamitz); Elegiac Suite for Strings (Rangström); Danse macabre for Pianoforte and Orchestra (Liszt); Ballet Music from Les petits riens (Mozart); Selection from Eugen Onegin (Tchaikovsky); Waltz, Soirées de Vienne (Schubert-Liszt). In the interval at 4.10, Talk from Langenberg. 5.50, Economic Notes, Weather, and Time. 6.0, Talk: The German Conception of History. 6.25, Agricultural Talk. 6.50, To-day's News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Dance Music by the Endé Band. 9.0, See Stuttgart. 10.15, News. 10.20 (approx.), Concert by a Nazi Band, conducted by Bruno Schestak: Overture, The Thieving Magpie (Rossini); Russian Dance No. 5 (Rullieran); Romantic Suite, Schloss Durande (Niemann); Eine Sängerfahrt nach Wien (Silving); Siamesische Wachtparade (Lincke); Selection from Le postillon de Longjumeau (Adam); Waltz, Lustige Brüder (Vollstedt); Intermezzo, Die kleine Patrouille (Siede); Erotika (Grieg); Selection from Bacchusnacht (Grälichstädten); March, Unter dem Grillenbanner (Lindemann). 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.30 p.m., Orchestral Concert. 7.30, Talk on Religion. 8.0, Gramophone Music. 8.30, Programme relayed 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. Belgian Programme.—7.30 p.m., Symphony No. 6 (Beethoven) on Gramophone Records. 8.15, Weather Report. 8.20, Song Recital. 8.50, News in French. 9.0, Orchestral Concert of Belgian Music, conducted by Henri Pénis. 9.45, News in German. 9.55, Orchestral Concert of Light Music. 10.20, Dance Music on Gramophone Records.

LWOW

788 kc/s, 381 metres; 16 kW.—7.20 p.m., Miscellaneous Items. 7.40, See Warsaw. 10.40, Gramophone Music. 11.0 (approx.), Close Down.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal and Request Gramophone Records. 8.30, Talk by Joaquín España (Cantos and Request Gramophone Records (contd.)). 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time, and Political Review. 11.15 (approx.), Mañon Lescaut—Opera (Puccini) on Gramophone Records. 1.15 a.m. (Wednesday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN

Vigentino, 662 kc/s, 453.2 metres; 4 kW.—8.45 p.m., till Close Down, See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11.5 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by Plichta. 3.55 to 4.0, See Prague. 5.45, Gramophone Music. 5.55, See Prague. 6.5, Talk: Newspapers in Silesia in the Nineteenth Century. 6.15, See Brno. 7.0, See Prague. 7.10, See Brno. 7.45, See Prague. 8.0, Song Recital. 8.20, Readings. 8.30, String Quartet in D, Op. 76, No. 5 (Haydn). 9.0, See Prague. 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—3.0 p.m., Trio Concert. 4.0, Talk. 4.30, Literary Programme. 5.30, Programme for Children. 6.30, Rinsky-Korsakov and Balakirev Concert; The Symphony Orchestra, conducted by Ippolitov-Ivanov; Soloists: Karwitsch (Violin) and Amatova (Soprano). 9.0, News. 9.30, Programme Announcements. 9.55, Chimes.

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: Overture, Turandot (Puccini); Serenade Melancolique (Tchaikovsky); Selection from The Flying Dutchman (Wagner); Solveig's Song from Peer Gynt (Grieg); Selection from The Czarevitch (Lehar); Ländler (Pacherberg); Slav Dance (Dvorak); Persian March (Strauss). 5.45, Talk: What do we know of the Old German Civilisation? 6.5, Gramophone Concert of Soldiers' Songs. 6.25, Talk: The New Worker. 6.45, Time and News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, New Dance Music by the Station Band. 8.30, Introductory Talk to the following Transmission. 8.40, Mozart Festival Programmes. Act Two of The Magic Flute—Opera (Mozart), relayed from the Residenz Theatre. 10.30, 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.—2.0 p.m., Military Band Concert, relayed from the Students' Park. 5.15, Violin and Accordion Recital of Popular Music. 6.0, Two Talks for Housewives. 6.45, Banjo Solos by Norman Olsen. 7.0, Announcements, Weather and News. 7.30, Pianoforte Recital, Sonata Op. 10, No. 3 (Beethoven); Rondo capriccioso (Mendelssohn). 8.0, Time. 8.4, Recitations. 8.20, Concert by the Station Orchestra, conducted by Hugo Kramm. Symphony No. 1 in D (Svendsen); Pianoforte Concerto in A Minor (Grieg); Norwegian Rhapsody No. 3 (Svendsen). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Concert by a Cornet Ensemble. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

AUGUST 8th TUESDAY continued

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopulavoro Notes, Tourist Talk, Agricultural Notes, and Giornale Radio, 8.30, Gramophone Music. In an interval at 8.20, Time and Announcements, 8.45, Don Pasquale—Opera in three Acts (Donizetti). In the intervals, Talk and Announcements. After the Opera, 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 Notes, 7.0, Le Journal Parle, 8.30, Le mystère de la chanteuse jaune—Play in Five Acts (Leroux). 10.30 (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, Sponsored Gramophone Concert, 7.45, Song Recital by M. Amourier, La Fanchette (Bofrel); Les sables (Dupont); Au clair de lune (Marinier); Les chimeres (Privas). 8.30, Orchestral Concert, conducted by Aimé Lauchance; Selection from Les folies amoureuses (Pessard); Selection from The Siege of Troy (Berlioz); Noce Villageoise (Godard); Berceuse and Carillon from Jocelyn (Godard); Entr'acte from La Colombe (Gomod); Cigari March (Reyer); Selection from The Fair Maid of Perth (Bizet); Waltz from Scaramouche (Messager); Intermezzo from The Tales of Hoffmann (Offenbach); Suite from Le timbre d'argent (Saint-Saëns); La Jota from Guernica (Vidal). 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; Bourrée Fantastique (Chabrier); Arab Melody (Glagunov); Turkish March (Mozart), 8.0, Weather and Press Review, 12 Noon, Gramophone Concert; Scene from Isoline (Messager); L'invitation au voyage (Dunare); Marionette (Glagunov); Prelude to Act I of Perseus of India; Scherzo (Borin); Selection from Le Colibri (Chausson); ament and Tarantella for Clarinet (Grieg); Bachelane from Samson and Delilah (Saint-Saëns); The Field Marshal (Mussorgsky); Zephyr (Hubay); Le Chausseur naïf (Franck); La ronde des Saisons (Busser); Two Dances from The Three-berned Hat (Falla); Soir de Printemps (Bernheim); Tambourine (Leclair); Catalana-Muricene (Nin); Mephisto-Waltz (Liszt); Solvieg's Song (Grieg); Music from Tosca (Schubert); Septet (Saint-Saëns). In the interval at 1.0 p.m., Exchange, News and Weather, and at 1.30, Exchange, 2.0, Exchange and Announcements, 3.45, Exchange and Market Prices, 4.0, Market Prices, Weather, Agricultural Report, Exchange and Racing Results, 7.10, Gramophone Music; Espanita (Mosey); Tell us to-night (Spoliansky); La ultima milonga (Lucchesi); Melody (Oberfeld); Votre Image (Ferrari); Et le reste (Lattes); La chasse aux cailloux (Paradis); Lousia (Loyraux); Finelles (Waldteufel); Autour du moulin (Fénel); Naranjos (Grant); Happy Days are ere again (Milton). 7.50, Exchange and News, 8.0, Gramophone Music, 8.15, News and Weather, 8.30, Le Mystère de la hantre jaune—Play (Gaston Leroux).

PITTSBURGH

OKA, 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, The Mills Play Bridge, 8.30, Words and Music, 8.45, Congress of Clubs, 9.0, Meredith Wilson's Orchestra, from New York, 9.15, Jack Dalton's Orchestra, from New York, 9.30, News and Markets, 9.45, Baseball Scores, 10.0, Rhythm Kings, 10.15, Tarzan of the Apes, 10.30, Programme to be announced, 10.45, Little Orphan Annie, from New York, 11.0, News-Reeler, 11.30, Pittsburgh Spotlights, 12 Midnight to 1.0 a.m. (Wednesday), New York Relay, 12.0, Amos 'n' Andy, 1.15, Advisory Council, 12.45, Ray Heatherstone, 1.0, Programme to be announced, 3.0 to 4.0, New York Relay, 1.30, Adventures in Health, 1.45, Floyd Gibbons, 2.0, Philharmonic Orchestra, 3.0, Musical Encores.

DRSGRUND.—See Oslo.

POZNAN

6 kc/s, 335 metres; 1.9 kW. 6.0 p.m., vation Report, 6.15, See Warsaw, 7.20, Miscellaneous Items and News, 7.35, Theatre Notes and Programme Announcements, 7.40, See Warsaw, 10.0, Time Signal, Sports and Police Notes, 10.15, Dance music, relayed from the Esplanade Café, 10 (approx.), Close Down.

PRAGUE

4 kc/s, 488.6 metres; 120 kW.—2.50 p.m., e Moravská-Ostrava, 3.55, Exchange, 4.0, Interval, 5.45, Gramophone Music, 5.55, tk, 6.5, Market Prices, 6.15, Talk for orkers, 6.25, News in German, 6.30, German Transmission; Recital of Neo-romantic songs, 7.0, Chimes and News, 7.10, See no. 7.45, Talk: A Walk through Old agne, 8.0, Song Recital by Hilda Raave, 8.0, Concert by a Zither Quartet, 8.45, amophone Music, 9.0, Military Band Con-

cert, relayed from the Kralovska Obora, 10.0, Time and News, 10.15, Dance Music on Two Pianofortes by the Prague Piano Duo, 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., Talk on Films, 7.30, News, 7.32, Talk on the Painter Bosshardt, 8.0, Concert by the Amati Trio, 9.0, Concert by the Radio-Lausanne Orchestra and Mme. Nicod-Burnens (Songs), 9.50, News, 10.0, Concert by the Radio-Lausanne Orchestra, conducted by Moser, 10.30, Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme, 9.30, Weather Report, 9.50, Musical Programme and Announcements, 10.0, Chimes and News, 10.30, Reading, 11.0, Cello Solo by Thorhallur Arason, followed by Quartet in D minor (Schubert) 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 from 5.30 p.m.—12.30 p.m., Gramophone Music, 1.0 to 2.15, Orchestral Concert. In the intervals at 1.30, Giornale Radio and Exchange and at 2.0, Time and Announcements, 4.45, Giornale Radio and Exchange, 4.55, Programme for Girls, 5.10, Weather, 5.15 to 6.0, Orchestral Concert; Piece (Albion); Lady (Abel); The Harvest Festival (Chenoweth); Pampiro (Borghesano); Selection from Cavalleria rusticana (Mascagni); Follia di naechere (Bettinelli); Patinggine notturne (Montamario); Pikanterien (Lehar), 6.40 (from Naples), Shipping and Sports Notes, 6.50, Agricultural Report and Dopulavoro Announcements, 7.0, Tourist Talk, 7.20, News in Foreign Languages, 7.40, Giornale Radio, 8.0, Time and Announcements, 8.15, Sponsored Music, 8.30, Sports Notes, 8.45, See Turin. In the intervals, Talk and 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 19.56 metres.—12.45 a.m. (Wednesday), Stock Reports and Baseball Scores, 1.0 to 3.30, 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, 3.30, National Radio Forum, 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, 245.6 metres.—6.15 to 6.35 a.m. (from Basle), Gymnastics, 11.59, Time Signal from Neuchâtel Observatory and Weather, 12 Noon (from Basle), Mandoline and Guitar Music on Gramophone Records, 12.30 p.m., Time and News, 12.40 (from Basle), Concert conducted by Carl Thomas, 1.25 (from Basle), Time, Weather and Exchange, 1.45 (approx.), Interval, 5.0 (from Zurich), Concert by the Little Radio Orchestra conducted by Max Scherbaum, 6.0 (from Zurich), Gramophone Music, 6.30 (from Basle), Werner Wilk reads from his own Works, 7.0 (from Basle), Time, Weather and Traffic Report, 7.10 (from Basle), Spanish Music on Gramophone Records, 8.15 (from Basle), Tessa Songs on Gramophone Records, 8.30 (from Basle), Viola Music, 9.0, News, 9.0 (from Zasilie), Two Musical Plays: (a) Das alte Lied—a Biedermeier Comedy (Helene Fischer and Dr. Erich Fischer) with Music by Mozart, (b) Das Engagement—Farce (Dr. Erich Fischer), 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 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 Boden), Programme for Children, 5.35 (from Boden), Song Recital by Greta Rutqvist, 5.50 (from Boden), Talk on the Plague of Insects, 6.15, Gramophone Music, 7.15, Weather and News, 7.30 (from Östersund), Talk: Gold-Digging in Alaska, 8.0, Concert of Popular Music by the Station Orchestra, 9.15, Literary Review, relayed from Malmö, 1,301 kc/s, 231 metres, 9.45, Weather and News, 10.0, Chamber Music, relayed from Malmö, Quartet in F minor (Nielsen), Quartet in G (Mozart), 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—10.45 a.m., Festival Concert of Contemporary Italian and Spanish Music, relayed from the Con-

servatoire, The Municipal Orchestra and Soloists. Conductor: Herrmann Scherchen. Variations and Fantasia for Pianoforte and Strings (Tagliapietra); Suite for Wind Instruments (Casella); Orchestral Suite (Respighi); Song with Quartet Accompaniment (Pizzetti); First Movement from the Second String Quartet (Labroca); Pianoforte Pieces (Telesco); Melodies (Alfano); Melodies (Halfter); Pianoforte Pieces (Gerhard); Harpsichord Concerto (Falla). 12.45 p.m., News, 1.0, Time and Exchange, 1.5, Song Recital, Part I: Popular Dutch Songs by Rê Koster (Soprano), Part II: Italian Opera Arias by Fritz Lechner (Bariitone), 2.0 to 5.0, Interval, 5.0, Talk and Readings: French Authors who died during the War, 5.15, Gramophone Concert: Overture, William Tell (Rossini); Overture and Figaro's Aria from The Barber of Seville (Rossini); Clair de lune from Werther (Massenet); Extract from Scènes alsaciennes (Massenet); Two Guitars (arr. Salabert); Chant sans paroles (Tchaikovsky); Melody (May); Chanson d'une nuit (Poliansky); Memories of Museov (Fietter), 6.0, Historical Talk in French, 6.15, Topical Talk in French, 6.30, Pianoforte Recital by François Chodé; Fantasia in C minor (Mozart); Concerto in B (F. Bach); Sonata Op. 27 No. 2 (Beethoven), 7.30, Time and News, 7.45, Gramophone Music, 8.0, Press Review in French, Lottery Results and Announcements, 8.30, Festival Concert of Contemporary Czech Music, relayed from the Conservatoire, The Municipal Orchestra and Soloists. Conductor: Herrmann Scherchen. Overture (Muekovic); Divertimento (Marie); Trio for Wind Instruments (Schulhoff); Pianoforte Concerto (Reiner); Duet from The Brothers Karamasov (Jeremias); Symphonic Fragment (Poncs); Nonette (Haba), 10.0, Press Review in German.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12 Noon, Opera Music on Gramophone Records, 1.15 p.m., Time and News, 1.10, Concert from Langenberg, 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: Journalism as a Profession, 4.30, See Munich, 5.45, Talk by Albert Schweizer: The Origin of German Surnames, 6.10, A Discussion between Two Allment Holders, 6.35, Time and News, 7.0, Transmission for all German Stations, relayed from Langenberg, 8.0, Concert by the Station Orchestra, conducted by Gustav Görlich; Overture, La Gerentolita (Rossini); Serenade and Duet from Don Pasquale (Donizetti); Ballet Music from William Tell (Rossini); Selection from Don Carlos (Verdi); Quartet from Rigoletto (Verdi); Intermezzo sinfonico from Cavalleria rusticana (Mascagni); Triumphal March from Aida (Verdi), 9.0, William of Nassau—Radio Ballad (Curt Elwenspoek), after the Novel by Wilhelm Kotzde-Kottenrodt, 10.5 (from Mannheim), Concert by the Stolz Quartet: String Quartet in D (Dittersdorf); String Quartet, No. 1 in E, Op. 3 (Haydn), 10.30, Time and News, 10.50 (from Freiburg), Concert by the Freiburg Mandoline and Guitar Society, conducted by E. H. Köhler; March, Per aspera ad astra (Erbach); Prelude to La Traviata (Verdi); Serenade from H. Trovatore (Verdi); Siciliana from Cavalleria rusticana (Mascagni); The Emperor Waltz (Joh. Strauss); Tarantella (Müllacker); O sole mio (di Capua); Capriccio, Sogno bizzarro (Sartori); Interlude, Der späte Gast (The Belated Guest)—Short Opera (Brugger); March, Deutschlands Ehre (Köhler), 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.15 p.m., Songs from Operettas; Songs from Deshabillez-vous (Mercier); Le jour où tu te marieras, from Le petite mariée (Lecocq); C'est un garçon de bonne mine, from Fortunio (Messager), 6.30, Orchestral Pieces, 6.45, Military Music, 7.0, Medical Talk, 7.15, News and Racing Results, 7.25, Local News, 7.30, Accordion Solos, 7.45, Music from The Three-Cornered Hat (Falla), 8.0, Opera Music: Aria from The Magic Flute (Mozart); Song from Sigurd (Reyer); Le jour tombe from L'Attaque du moulin (Bruneau), 8.15, Instrumental Solos, 8.30, Balalaika Music and Russian Songs, 8.45, Accordion Music, 9.0, Extracts from Tannhäuser—Opera (Wagner), 9.45, Military Music, 10.0, Sound Film Songs, 10.15, North African News, 10.30, Concert for Listeners in Morocco, 11.15, Popular Choruses, 11.30, Popular Programme, 12 Midnight, Orchestral Music: Melody (Gavely); Seduction (Cazes); Waltz from Die Puppenfee (Bayer); Extase (Ganne); Potpourri of Lehar Music, 12.15 a.m. (Wednesday), News, 12.20, 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 p.m., Dance Music from the Select Savoia Dance Hall, 6.0 to 6.5, Weather, 6.35, Giornale Radio, Agricultural Report, and Dopulavoro Announcements, 7.0, Time Signal and Report of the Royal Geographical Society, 7.5 (approx.), Gramophone Music: Fairy Tale (Cilotta); Mazurca serpiantina (Gentili); Sempre (Cavigliachippio), 7.20, News in Foreign Languages, 7.40, Gramophone Music (contd.), 8.0, News and Gramophone Music, 8.45, Talk on the following transmission, 9.0, Il piccolo Marat—Opera in Three Acts (Mascagni), relayed from Leghorn. In the intervals, Talk and Literary Notes. 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 11.15 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, 218.5 metres.—12 Noon, Concert by the Wiener Philharmoniker, conducted by Josef Holzer; March, Das Herzklopfen (Kronegger); Overture to an Operetta (Lineke); Suite No. 2 from L'Arlesienne (Bizet); Schummerlied (Wagner); Song and Casards from The Gipsy Baron (Strauss); Waltz, Grazer Juristenballtänze (Ziehrer); French Polka, Das Herzklopfen (Kronegger); Ballad and Polonaise (Vieuxtemps), 1.0 p.m., Time and News, 1.10, Concert (contd.): Intermezzo, In der Taverne (Neumann); Waltz, Je t'aime (Waldteufel); Selection from Die Landstreicher (Ziehrer); Intermezzo, Schattenspiele (Fink); March Song from the Farce, Antolielchen (Gilbert); Italian Serenade (Wolf); Song, Frennenz, du bist ein kleiner Schmetterling (Lehar); Boston, Elegant and Charmant (Weinberger); March, Es lebe das Leben (Ischpold), 2.0, Interval, 3.0, Gramophone Concert of Music from Sound Films, 3.20, Talk on Photography, 3.30, Joys and Struggles of the Garden Lover, 4.35, Talk: The Eisriesenwelt in the Tennengebirge, 5.0, Felix Rinner, one of the Olympic Team, talks about his World Tour, 5.20, Recital by Lotti Anny and Piroka, 6.5, Talk: Old Styrian Peasant Holdings, 6.35, Talk: Plant Life in the Mountains, 7.0, Round the World in 90 Minutes—Concert by the Wiener Symphoniker, conducted by Josef Holzer, 8.30, Radio Report of the World Jamboree at Gödöllő. In the interval, Time and News, 9.0, Concert by the Wiener Symphoniker, conducted by Kurt Pahlen; Soloist: Schönfeld (Flute), 10.15, News, 10.30, Sponsored Programme, 10.45, Programme to be announced.

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., Concert of Popular Music, relayed from the Bagatela Café, 12.25, Polish Press Review, 12.33, Weather, 12.35, Concert Relay (contd.), 12.55, Radio Journal, 1.0, 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, 3.55, Announcements, 4.0, Song Recital by Mlle. L. Szczętter; Aria from a Cantata (Bach); Alleluja (Mozart); Aria from Figaro (Mozart); Two Songs (Meyer-Helmond); Nostalgia (Bettinelli); Il Bacio (Arditi), 4.25, Instrumental Music on Gramophone Records, 5.0, Answers to Correspondence, 5.15, Light Music, 6.15, Talk, 6.25, Violin Recital by F. Oziminski; Concerto in D minor (Tartini); Fantasia appassionata (Vieuxtemps); Allegretto (Porpora-Kreisler); Canzonetta (Godard); Mazurka (Zarzycki), 7.20, Miscellaneous Items, 7.35, Programme Announcements, 7.40, Topical Talk, 8.0, Concert by the Station Orchestra, conducted by Rybicki. Soloist: A. Michalowski (Bass). Selection from Bajka (Moniuszko); Two Preludes (Pybicki); Three Songs; Symphonic Dances (Grieg). Songs: (a) Aria from Iolanthe (Tchaikovsky), (b) Night (Tchaikovsky), (c) The Midnight Review (Glinka); Les Préludes (Liszt); Waltz and Elegy from the Serenade for Strings (Tchaikovsky); Overture, Flys (Moniuszko); Mountain Dances from Halka (Moniuszko). In the intervals at 8.50, Radio Journal, and at 9.0, Agricultural Notes, 10.0, Dance Music, relayed from the Europa Café, Ciechocinek, 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.—5.15 p.m., See Warsaw, 7.20, Topical Talk in Lithuanian, 7.35, Programme Announcements, 7.40, See Warsaw, 10.30, Literary Programme, 11.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

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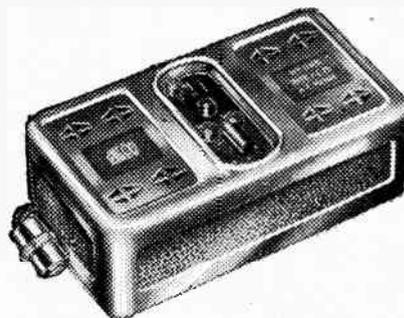
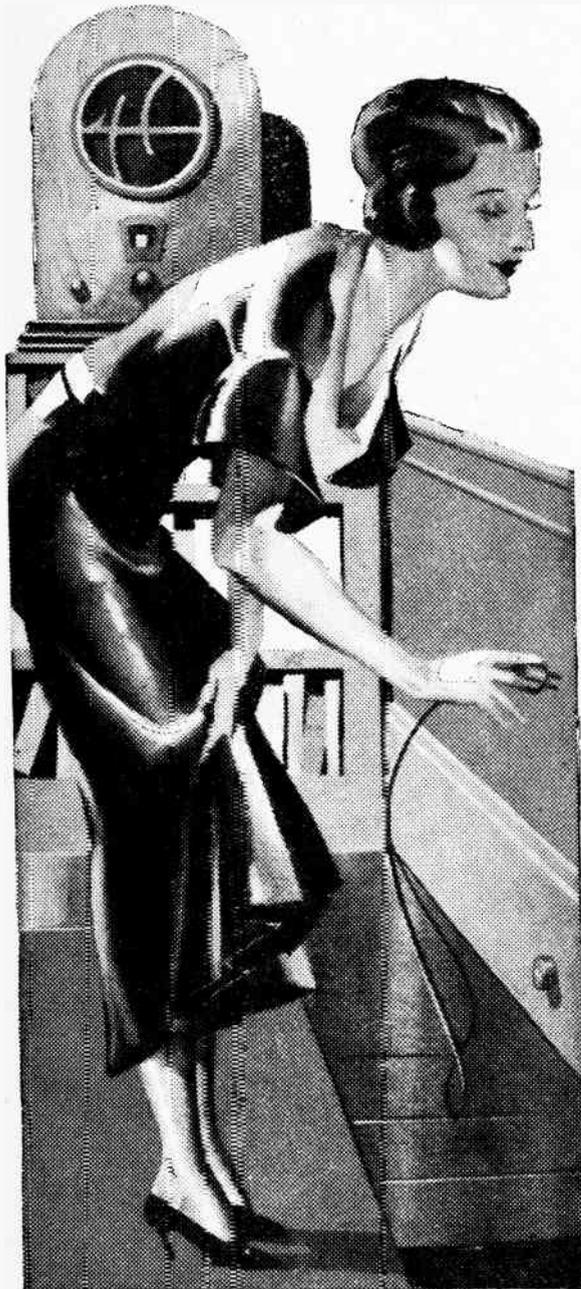
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The Wireless World

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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

Electricity and Wireless

Remove the Restrictions

AS readers are now well aware, *The Wireless World* over a long period has urged the necessity for legislation as the only effective means of controlling and eliminating electrical interference with wireless reception. We recommended that it was essential that the various electrical bodies themselves should be in agreement as far as possible on the form which this legislation should take, and *The Wireless World* made a direct invitation to the Institution of Electrical Engineers to appoint a Committee of the electricity interests to investigate the whole problem and to help in the framing of legislation which, whilst providing a satisfactory basis for the elimination of interference, would, at the same time, not be unreasonable in its requirements from the manufacturers and installers of electrical equipment.

The Institution of Electrical Engineers promptly responded to the invitation, the Committee has been set up, and is now sitting.

It has been put to us by some correspondents that the manufacturers of electrical apparatus, as the offenders, ought to have been dictated to in the matter and that the Committee to decide what steps should be taken ought to have been composed mainly of wireless, rather than electrical, interests.

We cannot agree with this point of view. So long as the Committee now sitting realises, as we are sure is the case, that legislation has got to be, we feel confident that they will not be influenced by their own immediate interests to put forward inadequate recommendations. The electrical interests are now sufficiently well aware that wireless is far too much a national

concern to be treated lightly. Again, the popularity of wireless is a most valuable asset to the electrical industry. Thousands of consumers have changed their homes in order to be in a district supplied by electricity, primarily influenced by their desire to have an electrically operated wireless set, and thousands more have been influenced in their final decision to have electricity installed for the same reason. Once there is electricity in the home almost every branch of the electrical industry profits as a result of its extended use for other domestic requirements.

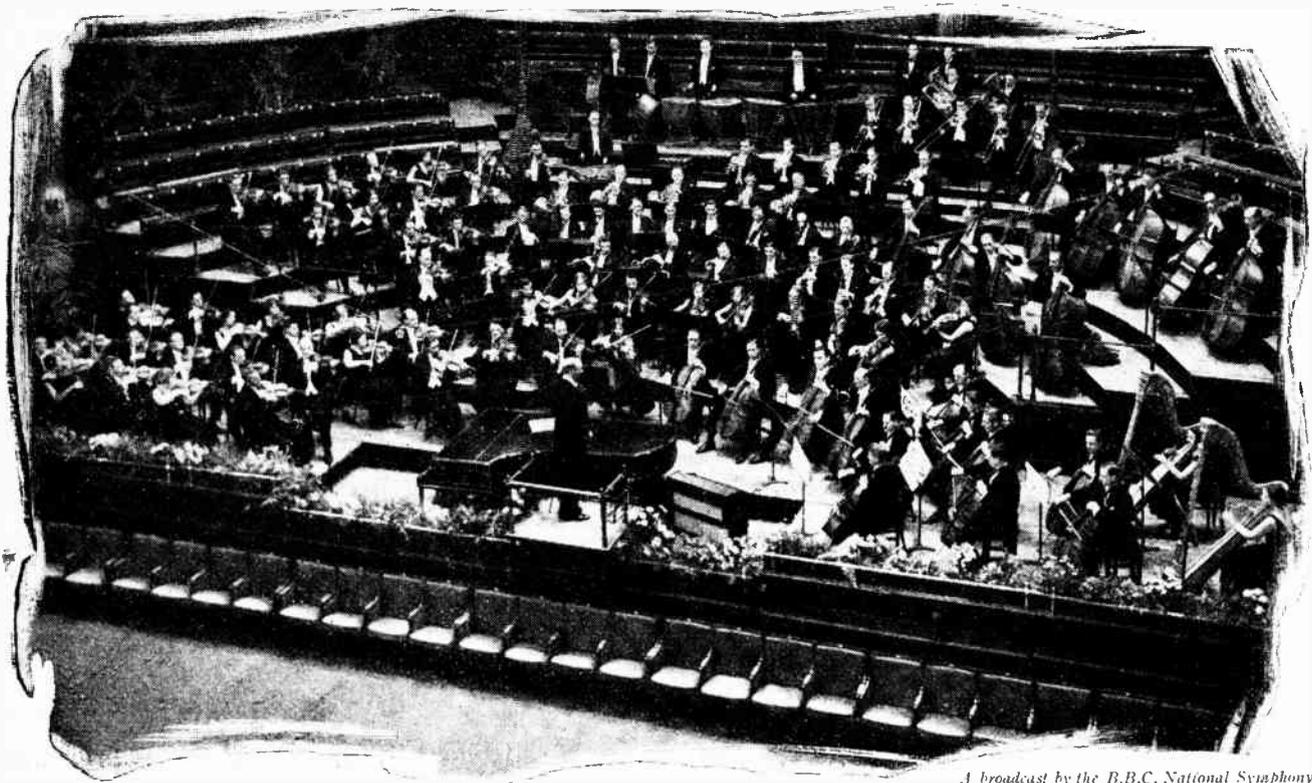
Valves or Stages?

The New Designation

WE congratulate Messrs. E. K. Cole on being the first wireless manufacturers to discontinue the practice of designating their receivers in terms of the number of valves in the set. This firm has now announced that, commencing with this season, they will drop the misleading title of "so many valves" and will in future indicate their sets by the number of "stages," a stage being regarded as equivalent to a single valve in the days before the "complications" of multiple valves set in.

The change over to stages will also be facilitated by the new comprehensive licence now available to manufacturers from the "patents pool." Royalties will in future be based on the number of "stages" instead of "valveholders" as heretofore, the stage being here defined as an anode to cathode electron stream. Valves employed as rectifiers will no longer be regarded as a valve stage for the purposes of this calculation, so that there will be no excuse in the future for manufacturers to describe as a five-valve set one which employs only four stages and a valve rectifier.

SIMULTANEOUS BROADCASTING



A broadcast by the B.B.C. National Symphony Orchestra, seen above, demands line transmission of the highest quality.

The Technique of a Regional Network

That "wireless" uses wires is one of the oldest paradoxes connected with the radio art, yet many listeners would be puzzled if asked to describe the workings of the vast network of wires which compose a national broadcasting system. This article explains in simple terms the general principles on which "S.B." is conducted and how quality is kept unimpaired over great distances.

By J. S. LYALL,

B.Sc., A.M.I.E.E., A.C.G.I.

THE average radio enthusiast is very often in comparative ignorance of the part played by land circuits in the distribution of radio programmes.

Although it may sound paradoxical, it is not possible to utilise radio communication to its maximum advantage without employing land lines, and a brief consideration of the various problems presented by a national broadcasting network, particularly in regard to music transmission, will enable this to be appreciated.

The rapid growth of broadcasting in a thickly populated continent like Europe has necessarily resulted in a large number of transmitters. The wavelength bands allocated for broadcasting are comparatively narrow, and, in consequence, it is impossible to give satisfactory service by means of relatively few very high power transmitters on account of mutual interference. This situation has given rise to the "regional" scheme, the general features of which are well known.

An essential part of any country's regional system is a comprehensive arrangement of permanent connecting links between the various studios and transmitters in the network, quite apart from an occasional need for connections for broadcasts of items of particular national or international interest. Without this interconnecting means every separate

station would have to provide its own programme material, and the cost of such a proceeding would be prohibitive if the present varied programmes were to be maintained simultaneously at all stations.

The Wireless Link

Two methods are available for establishing these connections:—

(i) The programme can be sent out from a central transmitter, picked up and re-radiated from other stations.

(ii) The studio responsible for the programme can be connected by land lines to any desired number of transmitters.

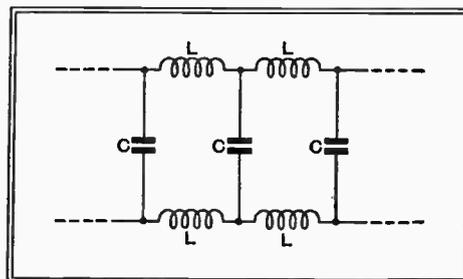


Fig. 1.—An elementary filter circuit illustrating the effect of "loading" a cable. L denotes the loading coils and C the capacity between conductors.

The first method is at present impracticable, mainly on account of fading and atmospheric disturbances. Readers will remember early attempts to re-radiate American and Continental programmes in this way, and, while it must be recognised that the results were highly creditable in view of the attendant difficulties, these transmissions served to indicate that the solution of the problem was not to be found in this way. The second method, on account of its much greater reliability and flexibility, has, therefore, been adopted all over the world in countries possessing a commercial telephone system, and tens of thousands of miles of special circuits are at the present time in constant daily use.

In order fully to appreciate the problem of making telephone circuits capable of transmitting music efficiently, it is necessary to consider briefly the history of the development of the modern circuit used for speech transmission.

The popular conception of a long-distance telephone circuit rarely involves more than a pair of wires slung from an unsightly pole or contained in an underground cable. It is true that the earliest circuits consisted of thick copper conductors carried on insulators, but these have now been almost entirely replaced by underground cable circuits on account of their greater reliability in bad weather.

Simultaneous Broadcasting—

As a result of bringing the two conductors close together in a cable, the capacity between them has been increased, and, owing to the loss caused by the shunt capacity, it was still necessary to employ comparatively thick wires in order to limit the loss and ensure satisfactory transmission.

The next step was to add series inductance at intervals along the circuits to compensate for the shunt capacity, this being called "loading." It was then found to be more economical to provide thinner conductors and to amplify the weakened speech currents at intervals.

It will readily be appreciated that the inductance added to the circuit, in conjunction with the distributed capacity, gives the circuit a characteristic somewhat similar to that of an ordinary simple type of low-pass filter, as shown in Fig. 1, and that, at a certain point in the frequency range, the attenuation increases rapidly. Since a frequency range of from 200 to 3,000 cycles per second suffices for satisfactory commercial speech transmission, circuits intended for this purpose are designed in such a way that the cut-off occurs at a frequency near the upper end of this range. On account of this limitation a modern telephone circuit will not transmit music without considerable distortion, and special circuits and amplifiers must, therefore, be provided having a much wider frequency range.

The component parts of the latest radio transmitter and studio equipment cater for practically straight line response over a range of 50 to 8,000 cycles per second; this range is wider than that catered for in the majority of existing radio receiving

sets and should, therefore, meet the requirements for a considerable number of years. The same range has been adopted for permanent connecting land lines, since the capital cost involved in laying a tele-

mission, since, due to the absence of the cut-off effect, they transmit a wide band of frequencies without much distortion. They are, however, very unreliable in bad weather, and very liable to interference from power transmission lines. In some countries, where cable facilities are not yet fully developed, this type of circuit still continues to give adequate service.

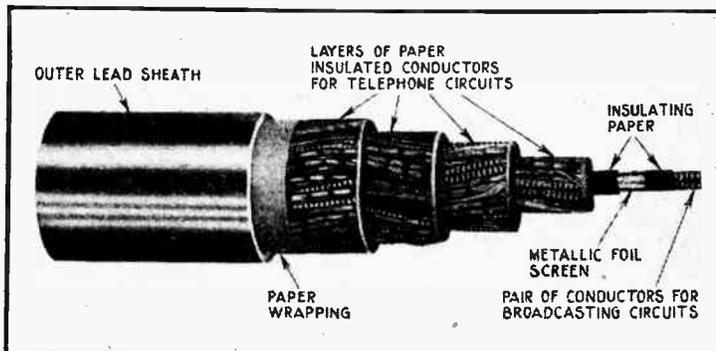


Fig. 2.—Photograph showing the usual arrangement of the broadcasting circuit in the cable.

phone cable is very large, and the facilities provided must remain adequate for a long period.

The Cable Circuit

The actual type of circuit used consists of a pair of paper-insulated conductors, each about 1 mm. in diameter, twisted together and provided with a screen consisting of a wrapping of copper or lead foil, which makes the circuit immune from interference from other circuits in the same cable. This screened circuit is usually located in the centre of the cable, and it is surrounded by a great many pairs used for ordinary telephone conversations. Fig. 2 shows a typical cable incorporating broadcasting facilities. "Loading" coils are added at intervals of just over a mile, these generally having an inductance of the order of 15 millihenrys or less.

Such circuits have come into general use only comparatively recently; early S.B. work was carried on over the old overhead circuits which had been discarded for telephone traffic in favour of new cable circuits. These circuits are in one way very suitable for music trans-

The Amplifiers

As has been mentioned previously, it is necessary to add amplifiers, usually called "repeaters," at intervals along the cable route. These are generally located in special buildings distant from each other by about 50 miles. Here again it is necessary to improve on the performance of the amplifiers used for ordinary speech in order to meet very stringent requirements, particularly as regards response characteristic, variation of amplification with input voltage, and ratio of harmonics to the fundamental. The latest amplifiers employed for S.B. work, of which one type is illustrated in Fig. 3, are usually capable of giving a flat amplification characteristic from 30 to 10,000 cycles per second within ± 0.5 decibel. The amplification must, of course, be variable to cater

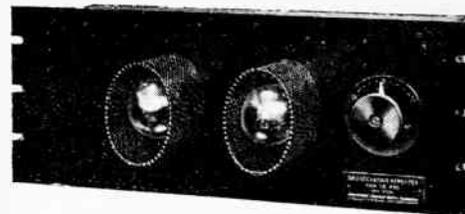


Fig. 3.—A typical amplifier used in "S.B." work.

for circuits having differing attenuations. Care is also taken to avoid interference with amplifiers carrying ordinary telephone conversations, screening being employed where necessary. Fig. 4 shows the circuit of a type of amplifier commonly used.

Associated with the amplifiers are equalisers which enable the overall characteristics of one section of line com-

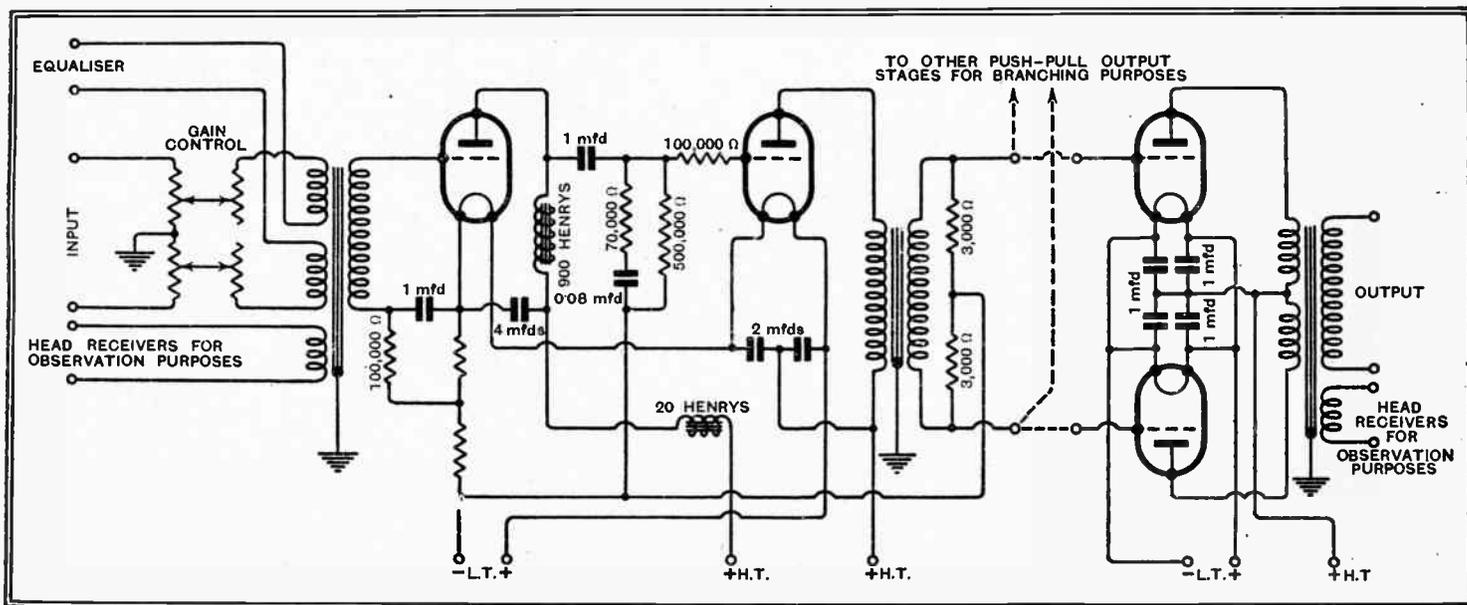


Fig. 4.—Circuit diagram of a typical amplifier.

Simultaneous Broadcasting—

combined with an amplifier to be made flat over the desired frequency range. The characteristic of an actual section measuring 42 miles is shown in Fig. 5.

The Overall Connection and its Control

The complete circuit between any two points, consisting of a number of equalised sections, should normally be perfectly satisfactory for transmission, but in the case of very long circuits it is sometimes necessary to compensate at a convenient point for slight irregularities or cumulative errors. Apart from this type of correction, known as attenuation equalisation, it is desirable in the case of extremely long

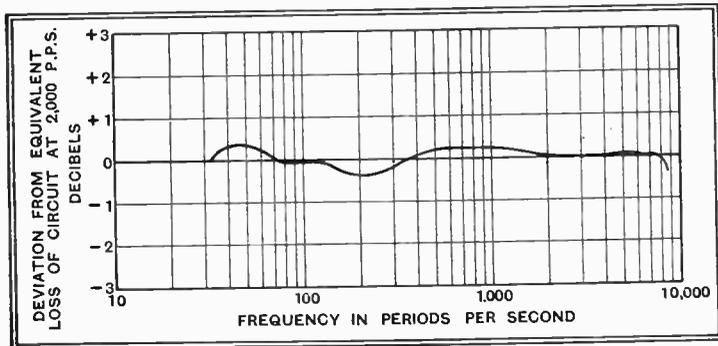


Fig. 5.—A typical response characteristic for a section of cable after amplification and equalisation.

circuits to install further correctors in order to compensate for phase distortion or the difference in the time taken for currents of different frequencies to travel along the circuit.

An important advantage of having the circuit split up into a number of completely equalised sections is that they may be switched together to form complete circuits as required without the necessity for any adjustments.

The actual method of utilising the lines for distributing programmes varies in different countries. In this country the principal studios and transmitters are permanently connected together by numbers of lines, and the direct control of the circuits is, therefore, in the hands of the British Broadcasting Corporation. In other countries each studio and transmitter is connected to the telephone network at the nearest station equipped with amplifiers, and all switching and branching at this and similar stations along the route is carried out under the supervision of the telephone administration staff. In the latter case it is necessary that facilities be provided at intermediate points for transmitting the same programme simultaneously in several directions. The amplifier itself is the most convenient point at which to effect this branching operation, and the method frequently employed is seen in Fig. 4. In some countries it is not unusual to have the same programme sent in this way to four or five branches.

The longest complete circuits in regular use in Great Britain measure about 600 miles, and contain nine or ten intermediate amplifiers. Transmission over

these circuits is now so perfect that the average listener to, say, London Regional, is unable to detect whether the programme comes from a studio in London or in Edinburgh, 400 miles away. It is unfortunate that such excellent results cannot also be obtained in all outside broadcasts, some of which are of definitely national interest, but in these cases it is often a matter of making the most of the lines available, which, for traffic reasons, may not even be handed over to the B.B.C. engineers until a short time before the actual broadcast.

For international broadcasts much larger distances are involved; for example, in the case of a concert relayed from Warsaw there were in use some 1,500 miles of special circuit containing over thirty intermediate amplifiers between Warsaw and London. In addition, branches were provided along the circuit for connection to the networks in Germany, Switzerland, Belgium, and other countries, involving many more hundreds of miles of cable and a great many more amplifiers.

In order that the circuits shall give continuous reliable service frequent tests are necessary.

Testing the Circuits

Each amplifying station is furnished with means for the measurement of amplification, and also the voltage level on the circuits themselves. Fig. 6 shows an accurately calibrated valve voltmeter which is very often employed for these measurements, while Fig. 7 shows a heterodyne oscillator suitable for use with it. The frequency of this oscillator is continuously variable from 20 to 11,000 p.p.s. by the rotation of a single knob.

At certain important points on the route peak voltage indicators are sometimes



Fig. 6.—Measuring apparatus for routine maintenance tests on amplifiers and circuits.

bridged across the circuit during transmission, their function being to detect any tendency to overload the amplifiers.

As regards the cable circuit, precision instruments are employed for periodic measurements of insulation and conductor resistance. These are so sensitive that incipient faults are in very many cases discovered and rectified before there is a risk of complete failure of the circuit.

Another important safeguard is obtained by making periodic tests to ensure that valves are discarded before they actually fail in service; in addition, a

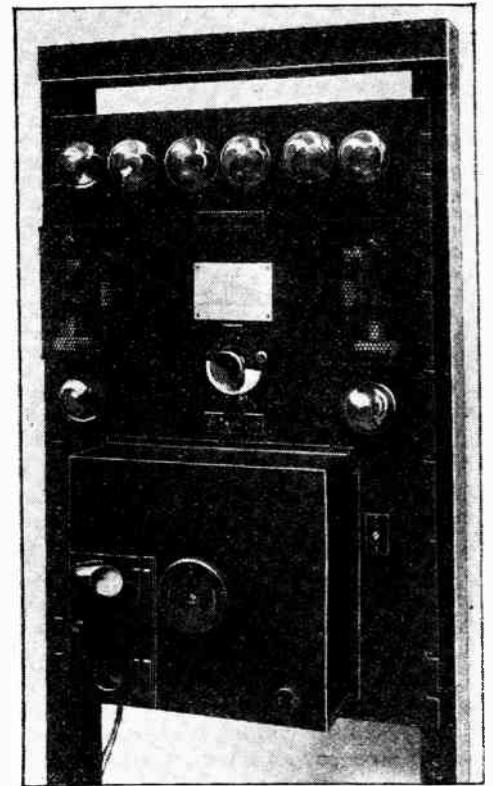


Fig. 7.—A heterodyne oscillator for testing purposes.

comprehensive system of alarms immediately calls attention to faults such as failure of L.T. or H.T. voltage in any particular amplifier.

The author is indebted to Standard Telephones and Cables, Ltd., for permission to reproduce the illustrations of apparatus.

BOOKS RECEIVED

The Autocar Handbook (12th Edition) by B. P. W. Twist, M.A., of *The Autocar*. Completely re-written in the light of the progress made in Automobile design during the past few years. Pp. 228 with 301 illustrations. Published by Hiffe and Sons Ltd., London. Price 2s. 6d.

Ray Controlled Mechanism, by Major Raymond Phillips, describing various methods of controlling mechanism, especially model aircraft, trains and boats, by wireless, sound, and light. Pp. 96, with 42 illustrations and diagrams. Published by Percival Marshall and Co., Ltd., London. Price 2s. 6d.

Elements of Engineering Acoustics, by L. E. C. Hughes, A.G.C.I., D.I.C., B.Sc., Ph.D. An account of the factors which influence the reproduction and distortion of sound, including the measurement of sound intensities, electro-acoustic measurements, microphones, amplifiers and reproducers. Pp. 150 + xi., with 32 diagrams and 4 plates. Published by Ernest Benn, Ltd., London. Price 8s. 6d.

PRACTICAL HINTS AND TIPS

Simplified Aids to Better Reception

IT is generally appreciated that a Class "B" output valve consists of two entirely separate valves enclosed in a single glass envelope. But when it comes to testing for defects this point is sometimes forgotten, and it is not appreciated that,

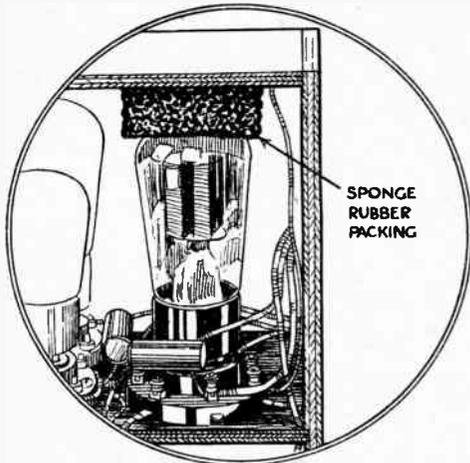
Testing Class "B" Valves

even if one section of the valve fails entirely, the other will still give results of a sort, although distortion will be serious, and volume will be reduced.

The simplest way of making a test is to insert a milliammeter in turn between each end of the output transformer primary winding and each anode. The absence of any current in one position will indicate a complete failure in the associated valve (or should it be half-valve?). A considerable difference between the two current readings will also suggest that something is wrong.

Secured Against Vibration

UNDER the influence of continuous vibration, the valves in a portable receiver sometimes show a tendency to work loose, and even to come right out of their holders. It is generally possible to prevent this by wedging the valve in position with the help of a block of sponge rubber, as shown in the accompanying illustration. Part of a cheap rubber sponge will serve the purpose admirably. A somewhat similar plan may be em-



Sponge-rubber packing for a loosely fitting valve in a portable set.

ployed when it is found desirable to mount the valve "anti-microphonically" in order to prevent acoustic reaction. In a portable, an attempt to mount the valve really freely will often lead to disaster

when the set is treated roughly. But an excellent shock-absorbing mounting can be made by placing one strip of sponge rubber under the valve holder, and another above the bulb in the manner shown.

GREAT improvements have taken place during the last year or so in the design and construction of small rotary H.T. generators, operating from a low-tension accumulator battery of anything up to 12 volts. A specialised and important application of these machines is the supply of anode current for car radio sets, but they have many other uses. For an L.T. consumption varying between less than 1/2 amp. and about 2 1/2 amps., an H.T. output considerably greater than can be economically derived from dry batteries is obtainable.

Another Source of H.T.

Apart from the topical question of "car radio," attention may be drawn to the fact that these small generators, driven from a car battery, provide in many cases for country dwellers an excellent solution of the problem of H.T. supply for the domestic set where there is no mains supply.

The ignition and lighting system of cars is usually maintained in a deplorable condition, but wirelessly-minded people can be expected to attend to their electrical equipment rather more sympathetically than does the average motorist. With a little extra care and perhaps occasional use of the starting handle for freeing the engine and "sucking-in," particularly during cold weather, there seems to be no doubt that the battery of the average car does not object to a little additional work. In many cases, indeed, it is all the better for it.

In Fig. 1 is shown an H.T.-from-the-car installation which has proved eminently practicable, and which, so far, has given no trouble whatsoever. In the garage one of the H.T. generators described above is installed permanently on the wall, and arrangements are made to connect it, via an on-off switch and flexible leads, through the dashboard sockets to the 12-volt car battery. A pair of lead-covered leads are used to pass the H.T. output from the generator to the receiver which is installed in the adjoining house; as a refinement, a simple remote-control relay is fitted for operation of the on-off switch.

When the car is out of the garage, the motive power for the H.T. generator is, of course, lacking, and so an emergency H.T. battery, thrown into use by a switch, is provided as an emergency source of anode current.

battery, thrown into use by a switch, is provided as an emergency source of anode current.

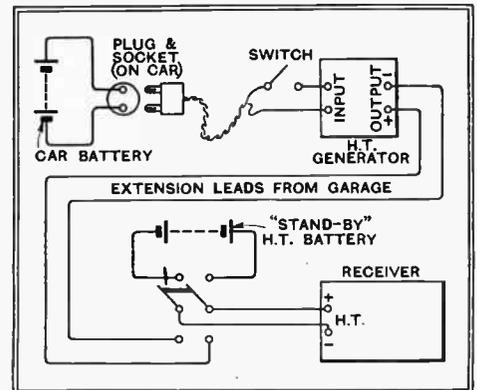


Fig. 1.—High tension supply from a car battery. Simplified diagram of a practical installation.

An alternative to this system would be to install the generator, not in the garage, but in the house; this would avoid the need for a remotely-controlled on-off switch, but would necessitate heavy connecting leads to avoid loss of voltage.

WHEN resistance-capacity coupling is employed in place of the more usual L.F. transformer, it is better to err on the side of over-biasing rather than under-biasing the amplifying and output valves. Even in the best regulated and most ambitious amplifiers, occasional overloads are likely to occur, and it is as well to take a little trouble to minimise their ill-effects.

R.C.C. Operating Conditions

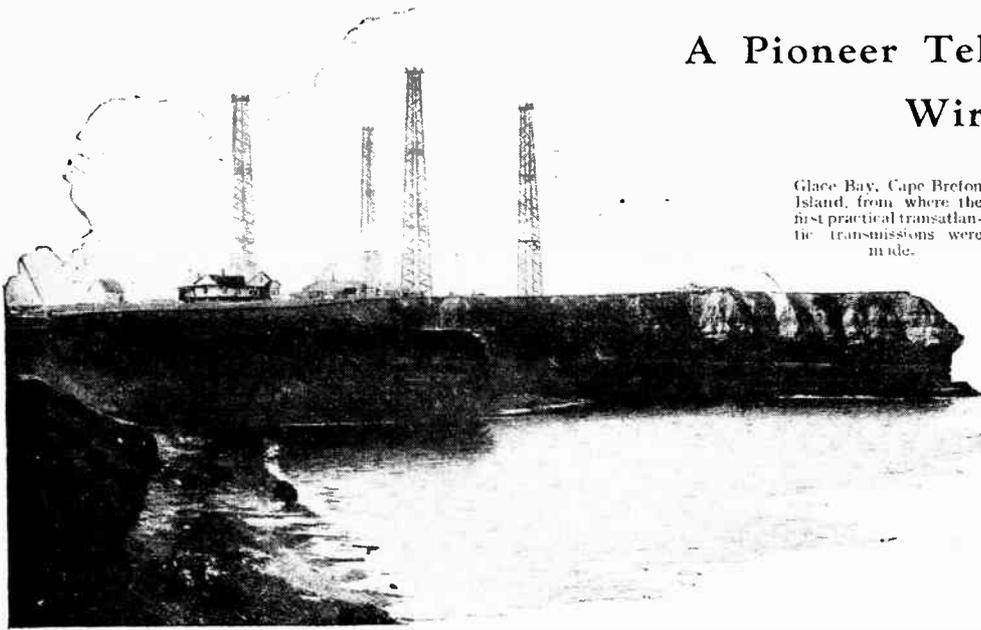
to minimise their ill-effects.

An over-biased amplifying valve will act as an anode-bend detector when it is overloaded, and if under-biased grid current will flow momentarily. Of these two evils, anode-bend rectification is by far the least harmful. When grid current is flowing the coupling condenser will acquire a charge, and the audible distortion resulting from a momentary overload will be prolonged until the charge leaks away.

It is not difficult to ascertain definitely what is happening provided that a milliammeter be inserted in series with the anode of the valve. If the meter needle kicks upwards we have an indication that bias is on the high side, as it should be. A downward deflection shows that grid current is flowing.

Conquering the Atlantic

A Pioneer Tells How Long-distance Wireless Began



Glace Bay, Cape Breton Island, from where the first practical transatlantic transmissions were made.

EXCEPT on those occasions—happily growing more rare—when reception is marred by Morse interference, the broadcast listener of to-day is blissfully unconscious that other wireless activities are afoot. He hardly realises that a large proportion of the world's telegraphic traffic, and all transoceanic telephony, is borne by wireless.

Anyone who would like to learn more of these things, and who is in any way interested in the development of wireless, should read a recently published book¹ by Mr. R. N. Vyvyan, who retired a short time ago from the position of Engineer-in-Chief to the Marconi Company.

Adventure in the Ether

Mr. Vyvyan, in his working life, has seen every stage of practical development, and more, has borne a distinguished part in it. Unlike many engineers, he can write for the layman without appearing to be condescending, and at the same time without omitting matter that is of real interest to the technician. He tells a first-hand story of adventure in the ether, which, in its way, is just as thrilling as a tale of derring-do in other spheres of activity.

The author joined the Wireless Telegraph and Signal Company (later to become the Marconi Company) early in 1900, and was one of a band of seventeen technical assistants that Marconi had gathered round him for the purpose of putting his inventions on a commercial basis. "All were very enthusiastic, and realised that they were assisting in the development of a new industry."

Up to this time an induction coil and

accumulator were used for transmitting, while the coherer was the only practical receiver; the long-distance record stood at a mere 150 miles. Short as was this range, it was at least enough to show that the curvature of the earth did not present an insuperable barrier to wireless signals, and Marconi boldly decided to short-circuit intermediate stages of progress by attempting at once the transmission of signals between the Old World and the New across the Atlantic Ocean. Thousands of miles, instead of mere hundreds, were to be covered, and it was decided that some 25 kilowatts, discharging across a 2-in. spark gap, would be necessary.

Although little was then known about the propagation of electromagnetic waves, it was at least realised that they travelled better over sea than over land, and so in these early experiments the aim was to give them a good send-off by building the stations on the water's edge. A site was chosen at Poldhu, near Mullion, in Cornwall, and young Vyvyan, who had graduated from power-station engineering to wireless, was selected as the right man to build the station. This job finished, he crossed in 1901 to America to erect a corresponding station at Cape Cod.

At both stations the aerial system was supported by a ring of twenty wooden masts about 200 feet high, and the first set-back came when both mast systems promptly collapsed in the first breeze of wind. Impatient of delay, Marconi decided temporarily to abandon Cape Cod, to "jury rig" the Poldhu aerial, and proceed to St. Johns, Newfoundland, in the hope of being able to carry out reception tests of signals from England. It was here that the famous "S" signals were received with the help of a kite-supported aerial. One assumes that the letter "S" (•••) was used in place of the more distinctive and conventional test signal "V" (•••—) because the over-stressed transmitter was likely to break down under the strain of a prolonged dash!

No sooner had these encouraging results been achieved than further experiments were stopped summarily by the action of a cable company which claimed monopoly of all telegraphic communication in Newfoundland. At this juncture the Canadian Government played the fairy god-mother by offering to bear the cost of building a station in Canada. As recom-

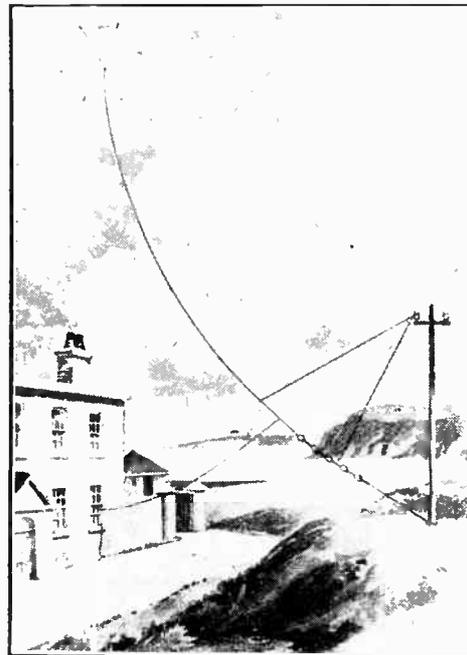
pense, Marconi undertook that the existing telegraphic rates between that country and England would be reduced if success were achieved.

Vyvyan, who had in the meanwhile completed the Cape Cod station, and managed to snatch a short holiday in England, was commissioned to erect the Canadian station at Glace Bay, from which the first really practical tests were conducted.

Glace Bay was completed in October, 1902, but early attempts to receive signals from Poldhu were unsuccessful,

nothing but weak and unintelligible signals being heard. It was accordingly decided to reverse the tests, and, larger power being available at Glace Bay, to let that station transmit to a receiver at Poldhu.

Then came a series of heartbreaking



Constant aerial capacity not guaranteed: the receiving station at Signal Hill, Newfoundland.

¹ *Wireless Over Thirty Years*. By R. N. Vyvyan. Pp. 256, with 16 illustrations and 12 diagrams. George Routledge and Sons, Ltd., London, 1933. Price 8s. 6d. net.

Conquering the Atlantic— reverses, with nothing but occasional and intermittent reception to encourage the pioneers. Imagine their difficulties; they had no wavemeters, little, if any, knowledge of wavelength and its effect on range; and, worst of all, no knowledge of varying conditions in the ether. As the author says, "an arrangement which gave good results one night gave indifferent results the next night, and it thus became difficult to state for certain whether any improvement or progress was being made."

It was, however, realised that signals travelled better by night than by day. Consequently, laborious days were devoted to adjusting apparatus and setting up new circuits and aerials, while weary nights were spent in slowly pumping out the messages that were seldom received at the other end. Many of the alterations were in the direction of increasing power and widening the spark gap to the limit of endurance of the condensers and other transmitting apparatus. A spark gap of 100 millimetres in length is mentioned by the author; the discharge across it must have been a truly awe-inspiring sight and sound.

After weeks of hard work, Poldhu first reported good signals on November 28th, 1902, and on December 15th a news bulletin for *The Times* was successfully transmitted; it was held up at the receiving station, however, in order that it might be preceded by messages to the Kings of England and Italy. Over-stressed by the transmission of *The Times* message, the gear broke down, and it was not till five days later that the loyal telegrams were safely despatched and received.

An Unfortunate Atmospheric

Communication was still very uncertain, and sometimes a message was repeated twenty-four times without success. The low croaking note of the spark transmitter was almost indistinguishable from atmospherics, often with unfortunate results. Vyvyan, who was still in charge of the station, sent a personal telegram reading:—

"Times London by transatlantic wireless Please insert in birth column Jan. 3rd wife of R. N. Vyvyan Chief Engineer Marconi's Canadian Station of a daughter."

It was received at the other end as "Jane third wife of . . ."; an atmospheric had supplied the superfluous "e."

Slowly progress was made, and, a measure of success having been achieved, Cape Cod joined Poldhu and Glace Bay in a triangular attack on the Atlantic, messages being relayed via Glace Bay from

the United States to England. Further evidence of the variability of the little-known medium through which these pioneer signals passed was afforded by the fact that messages from Cape Cod were occasionally well received by Poldhu direct, although they were inaudible at Glace Bay, the nearer station.

Encouraging as were these experiments, it was realised that a commercial tele-

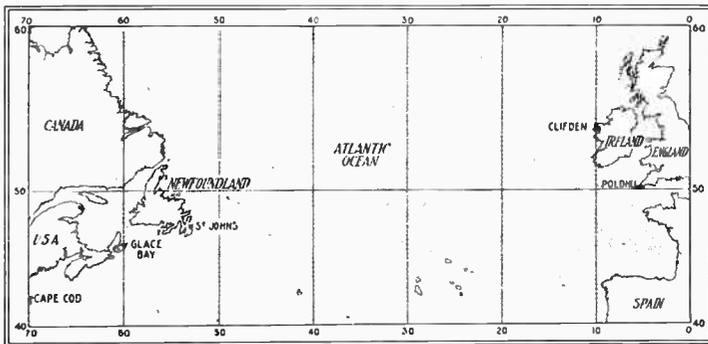
not until directional aerials, a musical spark discharger, and transmitting circuits designed to produce more persistent oscillations were evolved that a limited public telegraph service was opened in October, 1907. Crowning some six years of endeavour, an unlimited service began in 1908.

In the development of long-distance wireless communication, Great Britain was leading the whole world, and episodes illustrating international jealousy are described by the author. The culminating point of his own career probably came, after distance had finally been conquered in 1926, when "I myself saw signals sent from one of the Imperial beam stations recorded, not only once, but three times, at intervals between each record of one-seventh of a second, proving that the signals had made a complete circuit of the world three times, and had recorded themselves on each circular tour."

A Wireless History

Although the birth of transatlantic wireless has been described at length, it actually forms a small part of Mr. Vyvyan's book. Chapters are devoted to such subjects as the work of the earlier pioneers, to long-range stations other than those mentioned, and, of course, to the development of the beam system. Wireless in war, on land, sea, and in the air is treated, and space is devoted to various aspects of broadcasting and to research problems of the future.

Very wisely, purely technical matter is contained in an appendix, illustrated by circuit diagrams of early apparatus. The book makes a valuable contribution to wireless history, and, as much of it antedates even the earliest files of *The Wireless World*, will have an honoured place in our library.

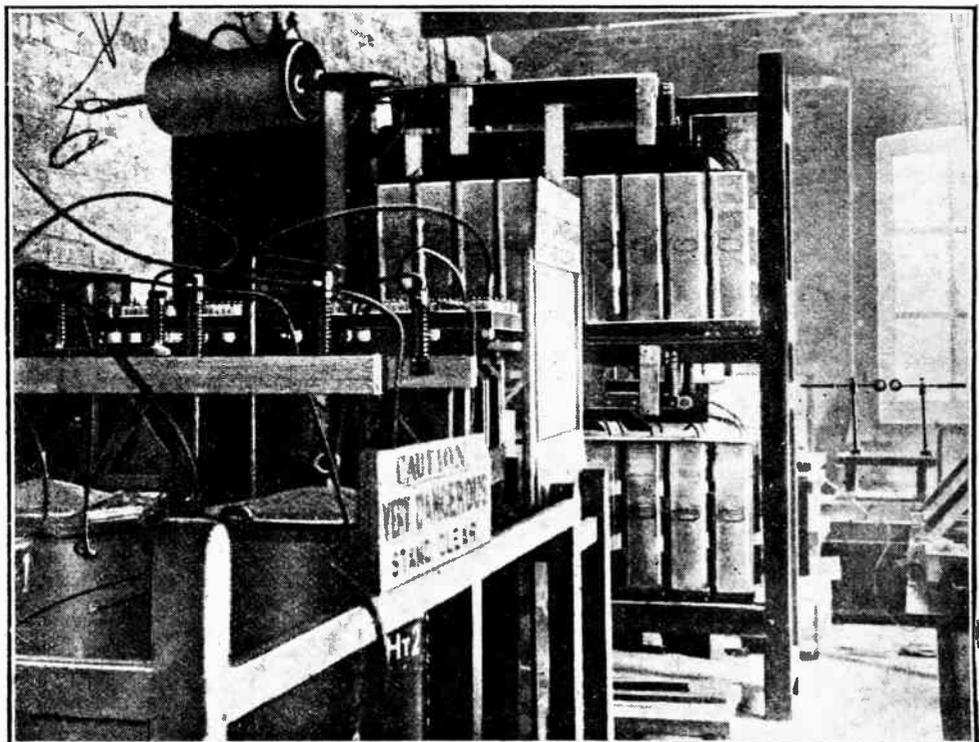


The North Atlantic Ocean was the cradle of long-distance wireless. This sketch map shows the positions of the early stations.

graph service was still a long way ahead. Greater power and bigger aerials seemed to be necessary, and so new stations were built, the old ones being made to earn their keep by transmitting news bulletins to the Cunard liners at £10 per hundred words received.

At this juncture Poldhu dropped out of the transatlantic trio, as the site did not permit of the erection of a large enough aerial. Its place was taken by a new station at Clifden, on the west coast of Ireland.

Although the new stations hardly gave results up to expectations, signals from Glace Bay were received in daylight, which was a notable advance. But it was



Original transmitting gear at Poldhu, showing the spark gap and condensers.

Why the Double-Hump?

Band-Pass Tuning Investigated

By G. W. O. HOWE, D.Sc., M.I.E.E.

IF a condenser be charged as shown in Fig. 1, and then connected in series with an inductive coil by closing the switch, the initial discharge current will be forced by the inductance of the coil to carry on until the condenser is charged in the reverse direction; the current then reverses, and the process goes on with decreasing amplitude until the energy has all been dissipated. The discharge is thus a

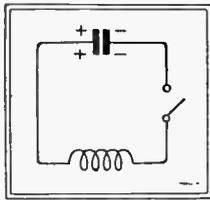


Fig. 1.—A simple oscillatory circuit.

damped oscillatory current of a certain frequency which we call the natural frequency of the circuit. This frequency is decreased by an increase of either the capacity of the condenser or the inductance of the coil; it is inversely proportional to \sqrt{LC} . The phenomenon is analogous to that which occurs if a pendulum bob is displaced and then released; in that case there is only one factor by which we can alter the frequency, viz., the length of the pendulum, because the other factor—the force of gravity—is beyond our control.

If a pendulum be subjected to a periodic impulse, such as a to-and-fro motion of its support, and the length of the pendulum be gradually varied, it will be found that a very large oscillation is set up when the natural frequency of the pendulum is about the same as the frequency of the impulses acting upon it, and the reason is fairly obvious, for the impulses are then always exerted at the moment when they

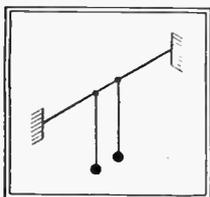


Fig. 2.—Pendulums coupled through a common support.

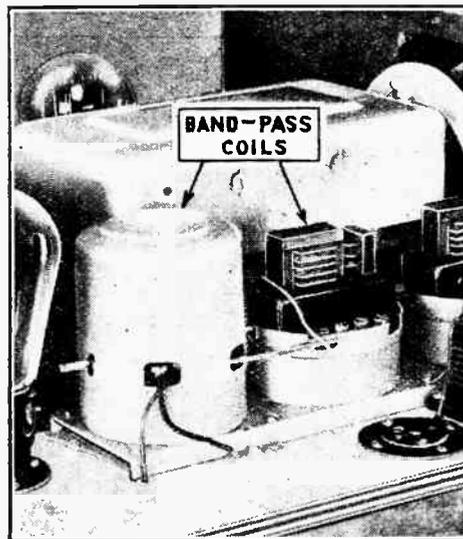
tend to increase the motion which the pendulum already has. In a similar manner the oscillatory electric circuit can be tuned until it gives maximum response to an alternating electromotive force acting upon it. This is done by varying either C or L, or both, until the natural frequency of the circuit is about the same as the frequency of the e.m.f. which is acting upon it.

If two pendulums of the same length are hung from a horizontally stretched cord, one cannot swing without moving

the support of the other; they are thus coupled together to an extent which can be varied by tightening or slackening the supporting cord. If one pendulum is set oscillating, it gradually builds up an oscillation in the other one, and goes on doing this, not—as one might expect—until they both oscillate equally, but until the first one comes to rest. The second one now returns the compliment, and builds up an oscillation of the first one, until the second one is once more at rest, and so they go on, first the one and then the other, until all the store of energy has been expended. In Fig. 3 the upper curve represents the oscillations of the first pendulum, and the lower one those of the second.

Two coupled pendulums can be made to oscillate without "beats"

An oscillation which varies in amplitude in this way can be analysed mathematically into two steady oscillations of slightly different frequencies. When two notes a semitone apart are played on an organ one hears the "beats" produced in the resultant sound. There is no need, however, to analyse these somewhat com-



The band-pass equipment of a modern receiver using Ferrocart iron-dust cored coils. The screening cover has been removed from one of the coils.

plex resultant oscillations of the two coupled pendulums, because we can easily arrange matters so that either the one or the other of the two components is produced. If both pendulums are held as in Fig. 4 (a) and then released, they

BAND-PASS filters have now become commonplace in wireless receivers yet the reasons for the double tuning hump of the filter and particularly the causes of uneven humps are often not clearly understood. These points are carefully explained in this article.

will swing together as one, and there will be no exchange of energy between them. The same is true if they are initially displaced in opposite directions and simultaneously released, as shown in Fig. 4 (b).

In Fig. 4 (a) they are always moving in the same direction, whereas in Fig.

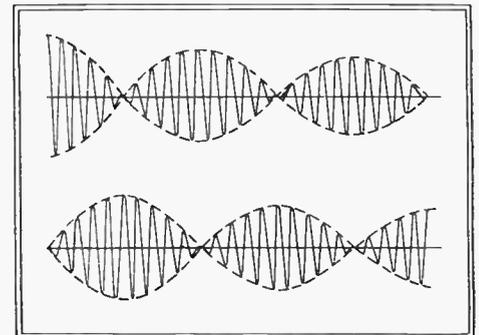


Fig. 3.—Showing the interchange of energy between two coupled pendulums.

4 (b) they are always moving in opposite directions. If the oscillations per minute be counted, it will be found that in Fig. 4 (a) they are slower than those of one of the pendulums above, whereas in Fig. 4 (b) they are faster. The reason for this is fairly obvious, for in Fig. 4 (a)

each pendulum moves the point of suspension of the other in such a direction that the effective length of the pendulum is increased, whereas the reverse is the case in Fig. 4 (b). This will be clear from Fig. 5. We see, then, that such an arrangement has two possible natural frequencies, and consequently, if it be subjected to a periodic impulse, the frequency of which can be varied, it will be found that there are two frequencies to which it gives a large response.

Let us now consider two similar oscillatory circuits tuned to have the same

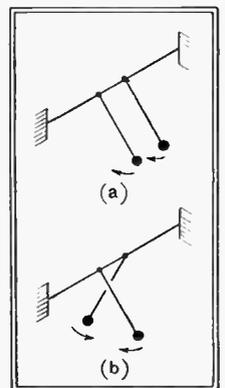


Fig. 4.—Coupled pendulums made to give a single frequency without "beats." (a) lower frequency, (b) higher frequency.

Why the Double-Hump?

natural frequency and coupled together—that is, so placed or connected that an oscillatory current in one tends to set up an oscillatory current in the other. Let us assume that the circuits can be opened by means of switches, the condensers charged, and the switches then closed at the same moment. If the condensers are

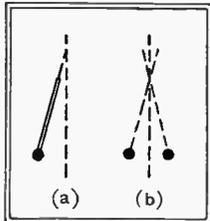


Fig. 5.—Showing that the effective length of the pendulum in 4 (a) is greater than in 4 (b).

charged, as shown in Fig. 6 (a), the oscillating currents will flow through the coils in the same direction at every moment, and the magnetic field of each will be increased, due to the proximity of the other, and, since they are assumed to be similar and carrying the same current, the effective self-inductance L of each coil is increased to $L+M$, where M is the mutual inductance of the two coils. Since the natural frequency is proportional to $1/\sqrt{L}$, the effect of the proximity of the other coil will be to decrease the frequency in the ratio $\sqrt{L/(L+M)}$. If, on the other hand, the initial charges of the condensers are as shown in Fig. 6 (b), on closing the switches the initial current rushes will be in opposite directions as shown, and at every moment the currents will be equal and opposite, thus decreasing the magnetic field of each just as if their self-inductions had been decreased from L to $L-M$. This will cause the natural fre-

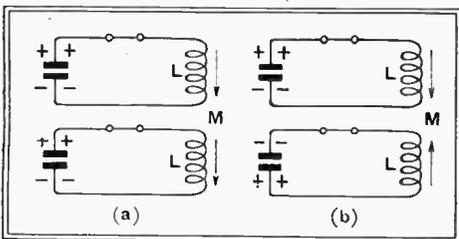


Fig. 6.—An electrical analogue of Fig. 4.

quency to be increased in the ratio $\sqrt{L/(L-M)}$. Two coupled circuits tuned to the same frequency have therefore two natural frequencies, and consequently if they are acted upon by an electromotive force, the frequency of which can be varied, it will be found that there are two frequencies at which exceptionally large currents are set up. If we call the higher frequency f_h and the lower one f_l , it will

$$\text{be seen that } f_h/f_l = \sqrt{\frac{L+M}{L-M}} = \sqrt{\frac{I+k}{I-k}}$$

where $k=M/L$; k is called the coupling coefficient. If the coils are not similar,

$$k = \frac{M}{\sqrt{L_1 L_2}}$$

There are many other ways in which two circuits may be coupled, but the two natural frequencies can always be found

by assuming the condensers to be charged in a certain way and simultaneously discharged. In Fig. 7 the two circuits are coupled by means of the inductive coil L_c which is common to both circuits. In Fig. 7 (a) the discharge currents of both condensers pass together through L_c , and if one imagines L_c to be replaced by two coils each of inductance $2L_c$ connected in parallel, one of them may be allotted to each circuit, making its total inductance $L+2L_c$. In Fig. 7 (b) the oscillatory current flows around the circuit as shown, and L_c plays no part whatever; it is like the galvanometer in a balanced Wheatstone bridge, since it connects two points between which there is no P.D. The effective inductance of each circuit is thus

$$\text{only } L. \text{ The ratio } f_h/f_l \text{ is thus } \sqrt{\frac{L+2L_c}{L}}$$

If the coupling is due to a common condenser C_c , as shown in Fig. 8, then in a similar manner it may be replaced in imagination by two condensers each of capacity $C_c/2$ in parallel, so that each circuit in Fig. 8 (a) will have an equivalent capacity equal to that of C and $C_c/2$ in series, that is, $C C_c / (2C + C_c)$, whereas the coupling condenser plays no part in the oscillation in Fig. 8 (b), and the effective capacity in each circuit is C . Hence the ratio of the two frequencies

$$f_h/f_l = \sqrt{\frac{2C+C_c}{C}}$$

A point to which we wish to draw special attention is that with the common inductance coupling it is the lower frequency oscillation that passes through the coupling element, whereas with the common condenser coupling it is the higher frequency oscillation that does so.

We see, then, the reason for the two

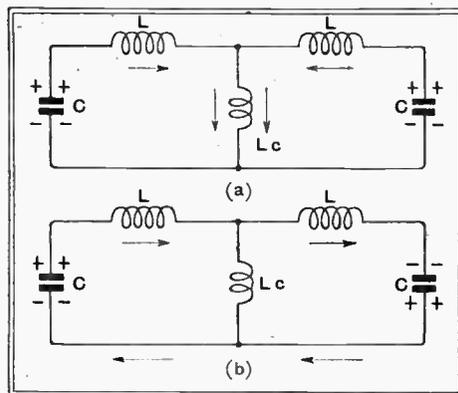


Fig. 7.—Here L_c replaces the horizontal cord in Fig. 4.

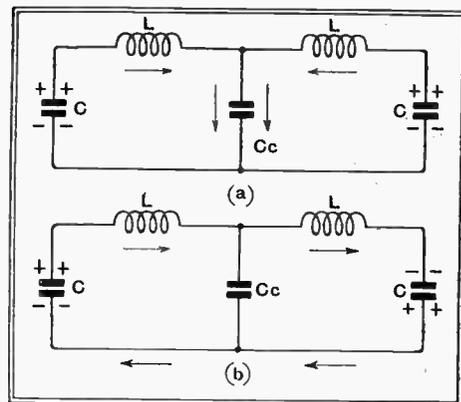
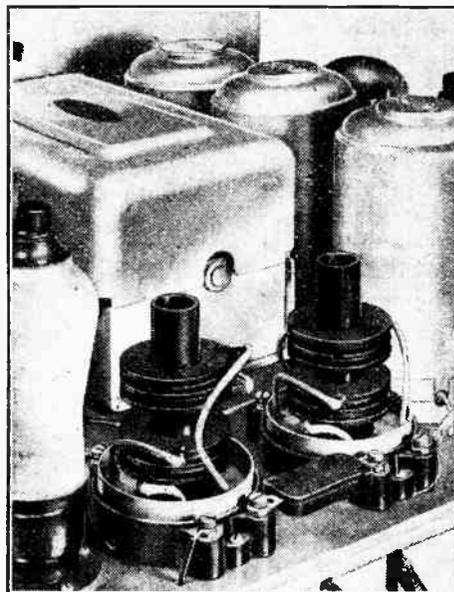


Fig. 8.—Here C_c acts as the connecting link between the two circuits.

humps that appear in the resonance curve of two coupled tuned circuits. They correspond to frequencies at which the currents in the two circuits are either exactly in phase or 180° out of phase. Now it is often observed that the two humps are not equal in height, that is to say, that

although the electromotive force acting on the circuit is the same, a much larger current is sometimes set up at the one resonant frequency than at the other, and the larger hump is sometimes at the higher and sometimes at the lower frequency. Now the reason for this will be made clear by a consideration of what we have just seen to be the paths of the currents in these two special cases. At a resonant frequency the effect of the inductance is neutralised by the effect of the capacity, and the current is deter-



The two coil units of a superheterodyne band-pass I.F. stage. The coils are screened by metal covers when in use.

mined by the magnitude of the electromotive force acting on the circuit and the total effective resistance of the circuit.

In Fig. 7 (a), for example, any resistance in the coupling link L_c will limit the current corresponding to this, the lower resonant frequency, whereas such resistance will be without effect in Fig. 7 (b), since for this higher resonant frequency no current passes through the coupling link. We see, then, that with this type of coupling any effective resistance in the coupling link will reduce the height of the lower frequency hump, but not of the higher.

With the type of condenser coupling shown in Fig. 8 it is at the higher resonant frequency that the current passes through the coupling link, and we shall therefore find that with this type of coupling it is the higher frequency hump that is reduced.

In some cases one of the humps may

Why the Double-Hump?

be so reduced as to be almost obliterated, giving the impression of a single-humped but distorted resonance curve.

With the arrangement of two distinct circuits shown in Fig. 6 there is no direct increase or decrease of resistance loss, whether the currents flow in conjunction or in opposition, but in the latter case the resultant magnetic field is less, and any losses due to the field might be reduced, thus causing the higher resonant frequency hump to be the more pronounced, although the stray fields might easily produce the reverse effect.

It must not be imagined, however, that inductive coupling always causes the shorter wave hump to predominate, and capacity coupling always the longer wave hump.

In Fig. 9 (a), where the initial charges of the condensers are such that there is no voltage across the coupling condenser, the initial discharge currents will be as shown, and there will at no time be any voltage across the coupling condenser, which consequently plays no part in the oscillation. The frequency is determined by L and C. In Fig. 9 (b), on the other hand, the initial charges are assumed to be such that the voltage across the coupling condenser is twice that across either of the main condensers. The point P will always be at a potential midway between that of the plates of the coupling condenser, and the introduction of a metal sheet as shown dotted would not affect the oscillation. The circuits on either side of this metal sheet can be considered separately, and, remembering that the capacity of either half of the coupling condenser is $2C_c$, it can be seen that the effective capacity is that of C and $2C_c$ in parallel, which is $C+2C_c$. Hence, in this case, it is the longer wavelength oscillation that utilises the coupling element and that will be reduced by any resistance in the coupling element. It can be seen that $f_h/f_l = \sqrt{\frac{C+2C_c}{C}}$.

If, in any of the cases considered, it is desired to reduce the sharpness of tuning by inserting resistance, it should be inserted in the main circuit, where it will affect both humps, and not in the coupling link, where it will reduce one and not the other, and thus cause distortion of the resonance curve.

The Output Circuit should be Screened from the Aerial

Resistance in the coupling element is not the only thing which will cause the two humps to differ in height. If, owing to defective screening, the aerial current induces E.M.F., not only in the input, but also in the output circuit of the filter, it is easily seen that the effect will be to increase the height of one hump and decrease that of the other. In Fig. 9, for example, it is seen that at the frequency corresponding to one hump, the currents in the two coils are flowing downwards at the same moment (Fig. 9a), whilst at the frequency corresponding to the other

hump the current in one is flowing down when that in the other is flowing up (Fig. 9b). If, now, the aerial is coupled in some way to both the filter circuits, it must be in such a way as to tend to set up currents either as in Fig. 9 (a) or as in Fig. 9 (b), one or the other, depending entirely on the nature of the fortuitous coupling between the aerial and the output circuit of the filter. In one case the

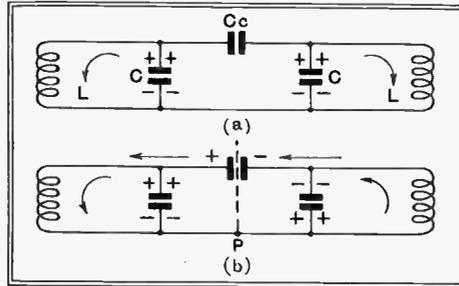


Fig. 9.—Another type of capacitive coupling.

two electromotive forces induced in the filter from the aerial will act in conjunction on the long-wave hump and in opposition on the short-wave hump, whereas in the other case the reverse will be true, but unless done intentionally to counteract other causes of inequality it will be pure chance which of the two humps will be increased and which decreased.

Mr. C. W. Oatley gives an experi-

mental curve showing dissymmetry due to this cause in Fig. 11 of his article in the November 1932 number of *The Wireless Engineer*.

Reaction—improperly applied—may cause distortion

When reaction is employed the output of the valve following the filter is coupled in some way with the filter circuit. Now the anode output will bear a fixed relation in magnitude and phase to the input to the grid, which is determined by the current in the output circuit of the filter. From what we have just seen with regard to Fig. 9, it is obvious that there is no such fixed relation between the anode output and the current in the input circuit of the filter. The phase relation between these are reversed on passing from one hump to the other, and any attempt to obtain reaction by coupling back to the input side of the filter or to the aerial would probably cause very pronounced distortion of the resonance curve. The results of our investigation may be summarised as follows: To obtain a symmetrically double-humped resonance curve from a two-circuit tuner, the coupling link should be as free from loss as possible, the aerial should be coupled only with the input circuit of the filter, and any reaction should be obtained by coupling with the output circuit only.

DISTANT RECEPTION NOTES**French Broadcasting Mysteries Explained**

As already stated in *The Wireless World*, the Luxembourg delegates left the Lucerne Conference some days before it drew to a close, packing up their traps and departing for home. Nor did they even trouble to appoint proxies to vote for them. This is a serious position, for a 200-kilowatt station, determined to grab a long wave, may wreck the long-wave position of the Plan unless strong steps are taken, and taken right early.

There is, I hear, no possibility that the St. Agnan station of Toulouse will eventually be taken over by the PTT under the Ferrié regional scheme for France. A brand new 120-kilowatt Government station is now under construction some twenty miles from Toulouse. St. Agnan will probably be limited to its present 8 kilowatts, and if it is allowed to broadcast at all after January 15th it may have to work on one of the French common-wave channels.

Recently I mentioned that Radio-Vitus had a complete high-power station in being, and only waits for permission to broadcast. I now hear that there is another huge silent station near Nice. It is difficult to see what could have been responsible for this epidemic of building unauthorised stations in France, but with Toulouse, Radio-Vitus, Nice and Lyons there are now at least four of them ready or almost ready for action. The only solution would seem to be to turn most of them into short-wave transmitters.

Toulouse, by the way, remained silent for a long time after the preliminary broadcast which I reported a week or two ago in these notes. The station is now at work again on 385 metres—at least, it was on the evening prior to the writing of this para-

graph, and I trust that a regular service is now in being once more. With a power output of only 8 kilowatts the St. Agnan station is very well received, and readers should not fail to tune it in.

Possibly you have heard the new 50-kilowatt Dutch station at Kootwijk, which is conducting tests on the long wave outside programme hours.

More Power at Week-ends ?

I wonder whether readers have noticed how many Continental stations are nowadays most strongly received on Saturdays and Sundays. Either new transmitters are given a testing run at the week-ends or the normal power is considerably increased at these times. Frankfurt, Moravska-Ostrava, Genoa, Bratislava, Vienna and Oslo are examples. In any event, one can usually make a much bigger bag of stations on Saturday or Sunday evening than at any other time during the week.

On the long waves Kalundborg is now quite unreceivable owing to interference from Monte Ceneri and Russian stations. The pick of the long-wave stations are Radio-Paris, Huizen, Zeesen, Warsaw and Motala.

Reception on the medium waveband is amazingly good at present, at least twenty-five stations being receivable with good quality and volume on most evenings. With so many to choose from it is difficult to make a selection of the best, but I would strongly recommend Rome, Lyons Doua, Strasbourg, Breslau, Heilsberg, Turin, Trieste, Florence, and Munich.

D. EXER.

UNBIASED By FREE GRID

How to Screen Your Aerial

WE have all heard of the very great advantages conferred by a screened aerial down-lead in cases where electrical interference of a certain type is rampant, and many of us can personally vouch for the fact that its virtues have not been exaggerated. I do not think, however, that even its makers could claim such marvellous properties for it as does the wireless scribe of a newspaper circulating in one of the landladies' paradises on the South Coast.

During some of his "experiments" with a down-lead of this type he has made the remarkable discovery that for "purely local interference" one of the best methods of using it is to dispense with the horizontal and simply use the screened down-lead as an aerial, the actual screening-cover being employed as an earth connection.

The only comment I have to make is that he must have a pretty poor opinion of the screening properties of the stuff if he thinks that signals can get through to the internal wire, and the manufacturers of the down-lead won't thank him for publishing the results of his experiments. Perhaps, however, he thinks that enough signal strength can get in through the hole at the top. If, as seems obvious, all the signal collecting is being done by the external screen, where does the screening come in?

Special Note

AN astonishing instance of the colossal ignorance of many listeners concerning the broad principles of radio communication and even of ordinary telephone work came my way the other day.



Should not put their mouths so close.

I happened to be taking tea with a lady of mature years, a nonagenarian in fact, who has built up quite a reputation for herself in the village near which I dwell owing to the fact that as a small girl she once saw Heinrich Hertz studying the waves at Margate.

Being somewhat hard of hearing, she finds that headphones are her mainstay.



All he had to do.

Disused Duckponds, Use of,

AS most people have discovered, the position which is most suitable for the easy manipulation of a receiver is seldom one that permits of anything but a long and straggling earth lead. But a correspondent, who recently put down the necessary half-crown as a deposit for a delightful suburban villa of the sort now springing up on the outskirts of our big cities, found an ingenious method of solving the earthing problem.

He discovered that underneath the floorboards of all ground floor rooms there was nothing but a quagmire instead of the concrete or brick such as you get in the five-bob houses. All that he had to do, therefore, was to drive an earth tube into the mud and pass the connecting wire through a small hole in the floorboard in the corner of the room in which the set was placed, and heigh presto! he had the shortest and most direct earth possible.

All went as merrily as the proverbial marriage bell for a few months until the disused duckpond, typical of the sort upon which these houses are usually built, dried up. Signals then fell off rapidly owing to the dryness of the earth, for, as those of you who read the article in *Wireless World* for June 2nd will know, experiments have shown that the resistance of dry soil is well over a thousand times that containing the normal amount of moisture.

My correspondent has written to me stating that he wishes to patent his earth-under-the-floorboards idea, but first wishes to perfect it, and he requests me to ask my readers to assist him in his project. At present he has bored a small hole in the floorboard to take the spout of a funnel down which he pours a bucket of water every morning, but he desires to have ideas concerning some less crude method of irrigation.

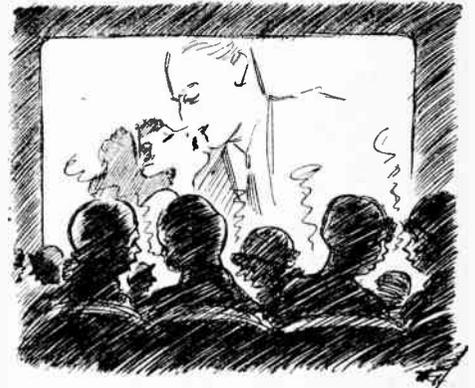
Personally speaking, I am of the opinion that most of the B.B.C. programmes have been so wet lately that all that should be necessary would be a receptacle to catch the drips from the loud speaker.

After complaining that no inventor had bothered to produce a really comfortable type of headphones, she added that people who broadcast should have better manners than to put their mouths so close to the microphone.

For the moment I could not imagine what she was driving at, and thought that she was merely referring to blasting; what was really in her mind flashed upon me only when she carefully unscrewed the caps of the earpieces and commenced wiping the accumulated moisture from the diaphragms.

Aid for the Deafened

I AM delighted to see that certain cinema magnates have taken the advice which I offered them some months ago (on March 24th, to be exact) and have caused certain of their seats to be fitted with headphones and volume controls. At a recent performance which I attended at a well-known London cinema results were all that could be desired. As regular

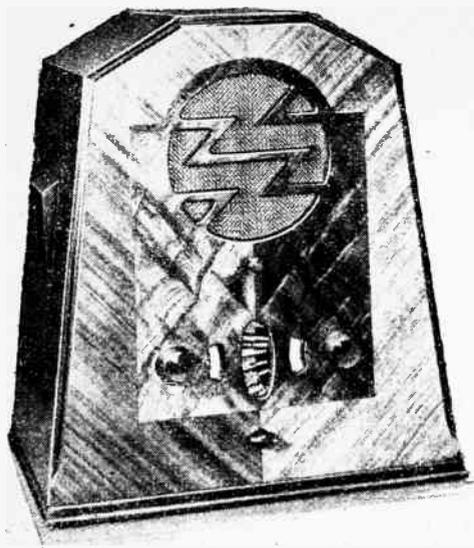


Heard clearly above the babble.

readers may remember, my purpose in seeking to have them fitted was to enable the speech from the screen to be heard clearly above the babble caused by the chattering of the garrulous females who are the mainstay of these gilded haunts of pleasure.

The managers of the cinemas which have taken my advice obviously did not wish to offend their best customers, however, and they have, therefore, shown infinite tact and diplomacy in announcing that these headphones are intended for the deaf; in fact, they have even gone so far as to have the installation carried out by a well-known firm of deaf-aid manufacturers.

Not only have the cinema magnates taken the idea up, however, but it has extended even to ecclesiastical circles; in the newly built church of St. Alban the Martyr at Golders Green, one of London's more luxurious suburbs, plug-in points and a volume control have been fitted in each pew. Single earpieces on a lorgnette handle are provided instead of the usual headphones.



Ferranti

"GLORIA" CONSOLE

A Superheterodyne Notable for its Advance Design and High Selectivity

A SUPERFICIAL comparison between the specification of the latest model Ferranti superheterodyne and the equivalent model of last year is sufficient to show that no pains have been spared to ensure that the new season's model shall be thoroughly up-to-date and include as many as possible of the technical advances which have proved their worth during the past year.

Probably the most important new feature is the introduction of automatic volume control in conjunction with a duo-diode-triode valve of Ferranti manufacture in the second detector stage. The control is delayed; that is to say, it does not come into operation until the signals picked up on the aerial reach a predetermined value. The advantage of this arrangement over simple A.V.C. is that the sensitivity of the set is in no way impaired when receiving weak signals. According to the maker's figures, the range over which the control is operative is from 100 microvolts to 250,000 microvolts in the aerial circuit, and it is stated that a good output is obtained from a signal of only 10 microvolts.

Another important feature is the introduction of an image rejector circuit between the aerial and grid circuit of the first H.F. valve. The function of this circuit is to reduce whistles due to second channel interference.

The valves in the first three stages are of the latest variable-mu pentode design and, like the second detector, are of Ferranti manufacture. The output valve is a triode capable of delivering an undistorted power output of $2\frac{1}{2}$ watts.

Externally, the set is very similar in appearance to last year's model, but there are one or two important additions to the controls which contribute to the efficiency and ease of handling of the set. A small meter movement has been introduced as a tuning indicator which not only gives an approximate idea of the strength of the incoming signal but also enables the set to be tuned accurately to the station being received. This is a matter of some importance when automatic volume control is used, as on powerful stations it has the effect of apparently flattening the peak of the resonance curve. In last year's model the tuning scale was calibrated alternatively in wavelengths or in stations, but in the present model both calibrations are given, the scale being divided into two sections, viewed through separate windows. Finally, a continuously variable tone control now takes the place of the switch-operated high or low tone control of last year.

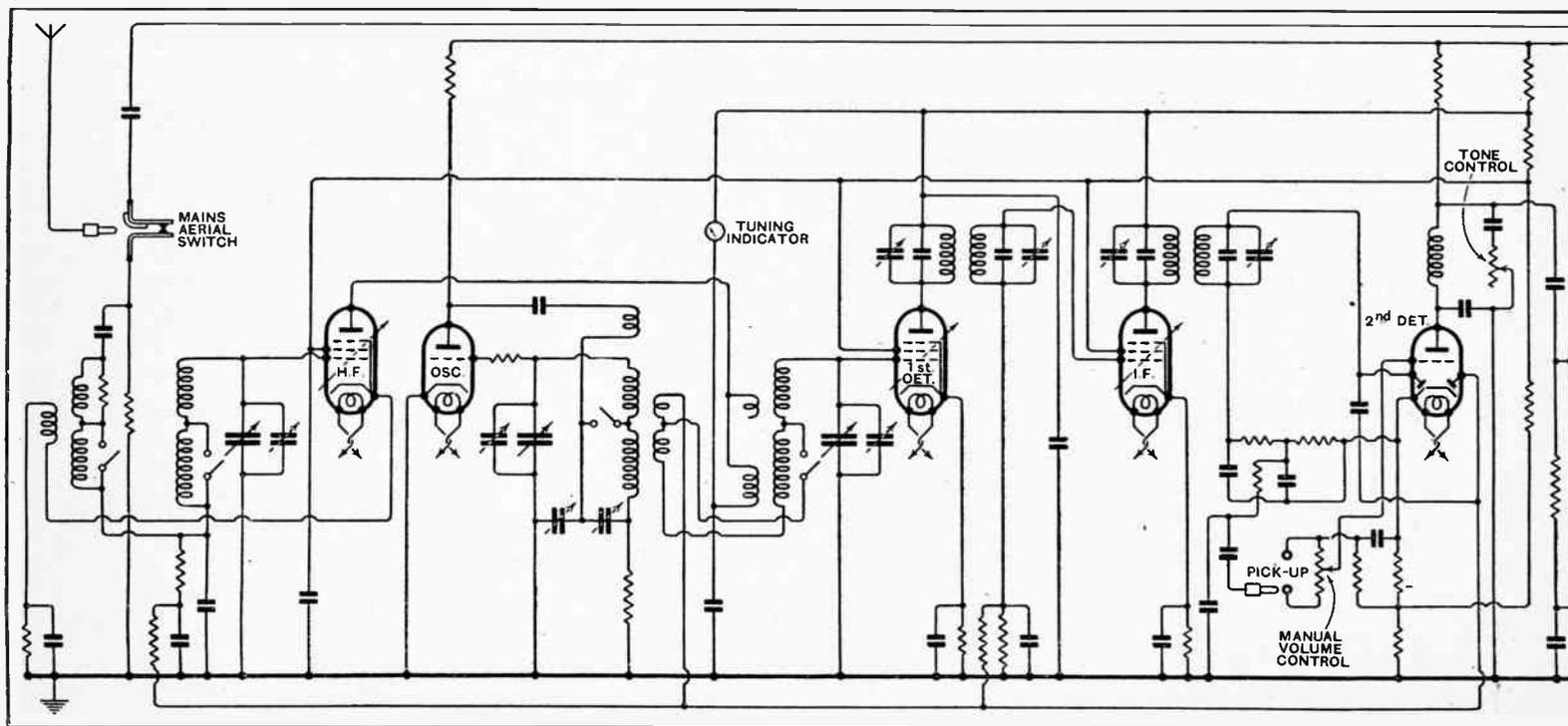
FEATURES

Type.—Six-stage mains-operated superheterodyne with delayed A.V.C. and tuning indicator. Internal moving-coil loud speaker. Provision for gramophone pick-up and external loud speaker (low impedance). **Circuit.**—Signal-frequency H.F. with image rejector—separate oscillator—first detector—I.F. amplifier—duo-diode-triode second detector—triode output valve. Full-wave valve rectifier. **Controls.**—(1) Main tuning with separate illuminated scales for wavelength and station calibration. (2) Manual volume control. (3) Wave-range and on-off switch. (4) Tone control. **Price.**—24 guineas. **Makers.**—Ferranti, Ltd., Hollinwood, Lancs.

The set gives good results from the pick-up on the mains leads and a special aerial plug and socket is fitted so that when the external aerial is disconnected from the set the mains aerial is automatically brought into operation.

The signal-frequency H.F. stage is coupled to the first detector by a tuned transformer designed to give uniform amplification over the wave-range. It will be noticed that the pick-up coils for the separate oscillator valve are included in the secondary circuit of this transformer. The intermediate frequency stage includes two

Complete circuit diagram of the Ferranti superheterodyne. The tuning indicator meter is connected in the anode circuit of the H.F. stage.



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

Components

MAY I add a few further words in reply to Mr. G. M. Mew's letter of July 7th, regarding component prices.

He is, of course, splitting hairs when he corrects my statement of cellulose "paint" for cellulose "enamel." It is quite immaterial what the "coating" is, but the fact remains that the spraying is an unnecessary extra cost to the article concerned.

Regarding Mr. Mew's other statement concerning transformer shrouding, etc., I can only ask him how he accounts for most of the manufacturers using "stripped and undecorated" parts for their receivers! Surely they would not do so if there was the slightest chance of the set going wrong and creating a bad name; besides, compare the size of a bought set to a home-constructed one of the same type! I have one particular set in mind which has the crudest and most unfinished appearance inside, but it "delivers the goods," and I have yet to hear another set which gives an equal performance at the same price. I still contend that component prices can easily be reduced.

E. J. B. CURTIS.

Bournemouth.

Television

PROPOS Mr. Wood's letter in your issue of July 21st.

It may interest Mr. Wood to know that television has been regularly broadcast by the B.B.C. since September, 1929, that it is regularly received in the North of England (by the intelligent people) and on the Continent, that public demonstrations have been given in most parts of the country (including a period of several months in Yorkshire) and at many of the Olympia Radio and other exhibitions.

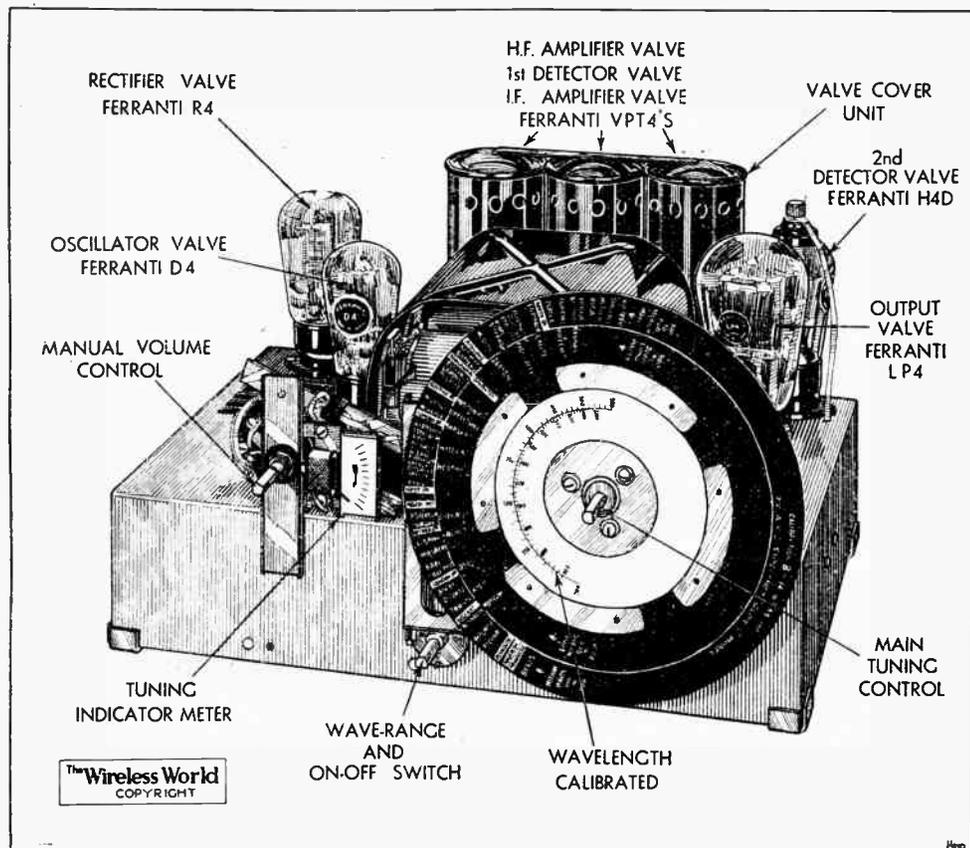
Having had a wide experience in wireless circles, it is strange that I have never yet heard of the Halifax Wireless Club, or, what is more strange, never seen or spoken to anyone who has seen or spoken to anyone who knows anyone who has heard of it!

T. H. BRIDGEWATER.

Sutton, Surrey.

WE are surprised to learn that a gentleman of Mr. Lewis Wood's experience and intelligence has not yet made an opportunity to investigate the possibilities of television, and can assure him that the trouble taken in fitting up the apparatus is amply repaid in the results obtained.

This company has been experimenting with the reception of television images by means of the Cathode Ray Tube for some months past, and is giving regular demonstrations of the reception of the Baird programme from the B.B.C. at the works at Ponders End. We extend a cordial invitation to Mr. Wood to visit the works if he is in the locality at any time, when we will



In addition to the controls shown in this view of the Ferranti "Gloria" chassis, there is a tone control which is mounted on the loud speaker unit.

transformers in which both primary and secondary are tuned, and it is in this stage and in the signal-frequency H.F. stage that automatic volume control is effected. A somewhat complicated system of resistances and condensers associated with the second detector is arranged to give the requisite threshold bias for the delayed A.V.C. and includes the manual volume control and the connections for introducing the output from the gramophone pick-up into the triode section of the valve. The pick-up must be removed before reverting to radio reproduction and a plug inserted in one of the pick-up sockets as indicated at the back of the chassis. The variable tone control, consisting of a condenser and resistance in series, is connected across the output from the second detector, which is resistance capacity coupled to the power valve. The moving coil loud speaker is of Ferranti manufacture and includes a hum-bucking coil. An external loud speaker of low resistance may be connected in parallel with the secondary of the output transformer. The power supply is derived from the full-wave rectifier and is

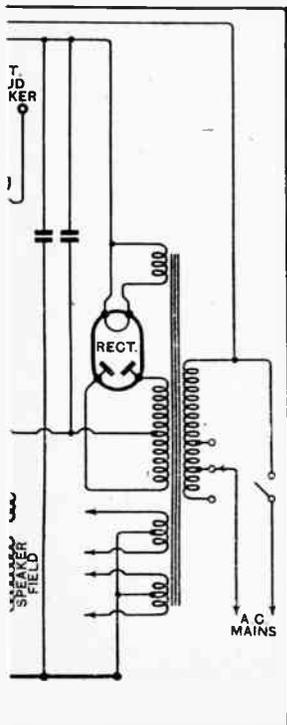
smoothed by the loud-speaker field winding from which the bias to the output valve is derived.

The set has exceptionally good range and power output, and at no time is there any feeling that the set is being throttled, as is sometimes the case with simple A.V.C. It is probably because of the general liveliness and sensitivity of the set that interference noises entering *via* the mains appeared to be rather high, but the normal 100 cycle mains hum was literally negligible.

Selectivity on medium waves is particularly good, and although in Central London the two local transmitters may suffer from side-band interference, the next channels on either side, *i.e.*, 18 kc/s from the local, are absolutely free from local interference of all types. On long waves Zeesen was received clear of Daventry, but with a slight background of side-band "splashing" from Radio Paris.

The quality is notable for the breadth of the response in the bass which, although it tends to make speech somewhat low-pitched, is a distinct asset in the reproduction of orchestral music. In view of the fact that the top cut-off appears to be in the region of 3,500-4,000 cycles, we found it preferable to keep the tone control in the maximum "high" position. This, however, is essentially a matter of personal taste. Although on technical grounds it is not a procedure which can be recommended, it is worth while noting that the general pitch of the response could be raised by operating the receiver slightly off-tune.

A good deal of thought has obviously been given to the mechanical design of the chassis, which is a thoroughly sound engineering job. The set, as a whole, is completely shock-proof, and the screening covers for the valves cannot be lifted until a safety lock plate in the base has been unscrewed.



endeavour to convince him that this branch of radio engineering offers great scope for the enterprising amateur.

We would be the first to admit that the reception of television by the Cathode Ray Tube has not yet attained perfection, but we are confident that the simplicity of control, noiselessness and economy in operation give this method of reception distinct advantages from the amateur's point of view.

We are taking the liberty of forwarding full particulars of the circuit to your correspondent, and hope that we shall hear of his conversion to the ranks of television experimenters in the future.

THE EDISON SWAN ELECTRIC
CO., LTD., RADIO DIVISION.

G. PARR,

Technical Service Department.

London, W.C.2.

AS an ordinary man in the street with some small experience of wireless and kindred matters I would like to inform your correspondent Mr. Lewis J. Wood that the science of television is actively studied by a far larger number of amateurs than seems to be appreciated in Yorkshire, the natural abode of the intelligent.

The popularity of television is, to the writer's personal knowledge, increasing very rapidly at the present time, and is likely to go on increasing, during the next few years, at a rate which will stagger the sceptical.

This is due very largely to the advent of the Cathode Ray oscillograph, which is now produced at a price that enables its interesting possibilities as a television reproducer to be explored by almost every amateur who so desires.

Personally, I am most grateful to the B.B.C. for their special transmissions of television, and perhaps Mr. Wood himself may also be indebted to them before long instead of adopting an attitude of (assumed?) ignorance and scorn as he now does.

R. McV. W.

London, W.C.1.

A Challenge to "Free Grid"

THE criticism made in your pages under the heading "Acoustics in Courts" cannot pass unchallenged, especially the remark that "one must infer that prior to this installation magistrates have been following the cases by lip-reading or some similar method."

When our sight begins to fail, and we take to spectacles, few would be unkind enough to suggest that we must have been incapable of attending to business previously. To take advantage of equipment to combat a slight infirmity due, in this case at least, to many years devoted to in the public's interests shows to my mind an appreciation of radio technique of which the readers of *The Wireless World* may well be proud.

Pp. RADIO-AID, LTD.,

CHARLES M. R. BALBI.

London, S.W.1.

Well Repaid

WHEN the filament consumption of valves first became O.I. you printed a letter from me asking the manufacturers to think more about reducing the H.T. consumption rather than to get anxious about my accumulator. I certainly felt that a lot could be done in that direction but never expected quite the reduction that can be accomplished by the intelligent application of Q.P.P. principles.

My expenditure on this year's *Wireless World* will certainly be well repaid.

I have been searching my files to see exactly how long ago I wrote that letter. I have not found it, chiefly because, I believe, I kept finding items of interest in the old numbers and my attention wandered.

And so, rather belatedly, but not from my

fault, I should like to thank our valve manufacturers for the interest they are putting into Q.P.P. and B. May I repeat to them your remarks about the cost of components, especially that of screen-grid valves.

WILLIAM B. WEST.

In Next Week's Issue :-

"The Wireless World"

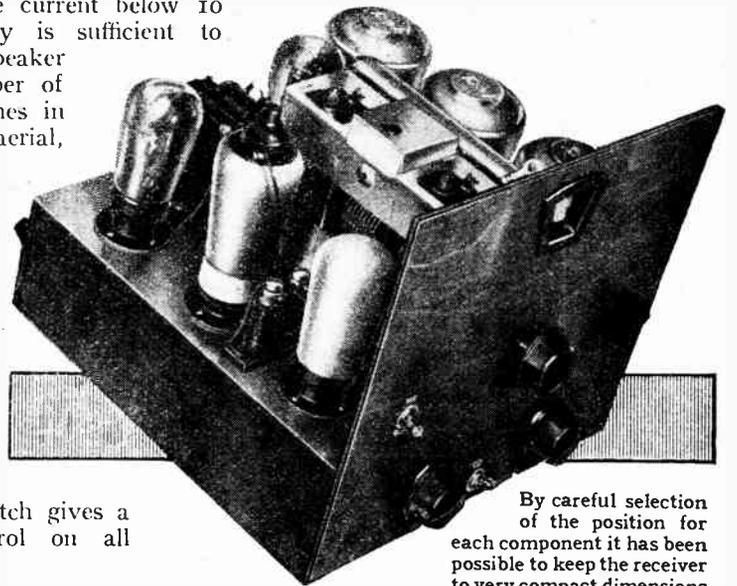
MODERN BATTERY FOUR

A Battery Set with "Mains" Performance

THE development of Class "B" amplification has rendered possible the production of this battery operated receiver with a performance closely approaching that obtainable from a mains set, and which is yet economical in its demands upon the batteries. In order to obtain adequate sensitivity and selectivity for modern conditions, a variable-mu type H.F. valve is used in conjunction with three tuned circuits employing iron-core type coils. Reaction on to the intervalve circuit is provided from the grid detector and this valve is transformer coupled to the driver stage. The Class "B" valve is fed through a step-down transformer and its output is taken to a high quality moving-coil loud speaker.

In spite of the essential simplicity of the arrangement, both electrically and mechanically, a very high standard of quality is assured while maintaining the total quiescent anode current below 10 mA. The sensitivity is sufficient to permit full loud speaker reception of a number of Continental programmes in daylight with a good aerial, and after dark dozens are available, while the selectivity largely removes the blanketing effect of the locals. No difficulty is experienced in receiving distant stations situated in wavelengths between the two locals, while the volume control in conjunction with the local-distance switch gives a full range of control on all stations.

- | | |
|--|---|
| 1 Reaction condenser, 0.0005 mfd. | Ormond No. 8 Semi-Circular type |
| | (Magnum) |
| 1 Resistance, 100 ohms 1 watt | Claude Lyons |
| 1 Resistance, 5,000 ohms 1 watt | Claude Lyons |
| 5 Resistances, 10,000 ohms 1 watt | Claude Lyons |
| 1 Resistance, 250,000 ohms 1 watt | Claude Lyons |
| | (Dubilier, Eric, Seradex.) |
| 3 5-pin Valve Holders | Clix Chassis mounting type |
| 1 7-pin Valve Holder | Clix Chassis mounting type |
| | (Goltone, Preh, W.B.) |
| 2 H.F. Chokes | McMichael Binocular Junior |
| | (Goltone, Kinva, Wearite.) |
| 1 L.F. Transformer, 3:1 | Ferranti AF8 |
| | (Igranite, R.L., Varley.) |
| 1 Driver Transformer | Varley D.P.41 |
| | (Benjamin, Bulgin, Ferranti, Igranite, Multitone, R.L., Telsen, W.B.) |
| 1 5-way Connector | Wilburn |
| 1 3-pin Plug complete with socket panel | Belling-Lee No. 1119 |
| | (Belling-Lee Type "B") |
| 4 Ebonite shrouded Terminals, aerial, earth, pick-up (2) | Belling-Lee Type "B" |
| | (Burton, Clix, Eclax, Igranite.) |
| 1 Wire-wound Volume Control, 5,000 ohms | Claude Lyons Type P.58 |
| | (Colvern, Haynes Radio, Watmel.) |
| 1 5-way Cable, 30in. with plugs and spade ends | Belling-Lee |
| | (Goltone, Harbros, Leweos.) |
| 1 G.B. Battery, 4½ volts | Siemens G.1 |
| | (Grosvenor.) |
| 3 G.B. Plugs | Clix Type "B" |
| | (Belling-Lee, Eclax.) |
| 1 G.B. Battery Clip | Bulgin No. 2 |
| | (Gripso.) |



By careful selection of the position for each component it has been possible to keep the receiver to very compact dimensions.

LIST OF PARTS

After the particular make of component used in the original model, suitable alternative products are given in some instances.

- | | |
|--|--|
| 1 Three-gang condenser, 0.0005 mfd. and dial | Utility W.314/3 |
| | (British Radiophone, Polar.) |
| 1 Assembly of three coils | Varley "Nicore" BP30 |
| 3 Fixed condensers, 2 mfd., 750 v. D.C. test | Peak Type A3 |
| | Peak Type "M" |
| 2 Fixed condensers, 0.1 mfd. tubular | Peak Type "M" |
| 2 Fixed condensers, 0.005 mfd. tubular | Peak Type "M" |
| | Graham-Farish |
| 1 Fixed condenser, 0.01 mfd. | Graham-Farish |
| 1 Fixed condenser, 0.0001 mfd. | Graham-Farish |
| 1 Fixed condenser, 0.0002 mfd. | Graham-Farish |
| | (Dubilier, Ferranti, Formo, Goltone, Helieseu, Igranite, Loewe, T.C.C., Telsen, Wego.) |

- | | |
|---|-------------------------------------|
| 1 Toggle Switch, make and break | Bulgin S.80 |
| 1 Toggle Switch, three-point | Bulgin S.87 |
| 1 Toggle Switch, single pole change-over | Bulgin S.81 |
| | (British Radiophone, Claude Lyons.) |
| 1 Dial Lamp, 2 volts | Bulgin Type H |
| 1 length Screened Slewing | Harbros |
| | (Goltone, Leweos.) |
| Wood Panel, 9in. x 10in. 3-ply | |
| Plymax Baseboard, 10in. x 10in. 3in. | Peto-Scott |
| | (Or metal chassis, Magnum) |
| 1oz. No. 22 Timed (copper Wire, 6 lengths Systollex, Wood, Wire, etc. | |
| Screws:—8 3in. No. 6 R/hd.; 30 3in. No. 4 R/hd.; | |
| 2 3in. No. 4 C/sk.; 4 3in. No. 4 C/sk.; 6 3in. No. 4BA R/hd | |
| Loud Speaker | W.B. |
| Valves:—1 Mullard PM12M; 1 Mazda HL2; 1 Mazda L2; | |
| 1 Mazda PD220 | |

News of the Week

Current Events in Brief Review

Six Million by Christmas ?

THE opening of the Olympia Radio Exhibition on Tuesday, August 15th, will mark the opening of a national campaign to secure half a million more listeners by the end of the year. It is hoped to reach the six million mark by Christmas.

For the Poor

WITH a kindly thought for the listener who is unable to afford a programme paper, the Leipzig broadcasting authorities give a short *résumé* of the day's programme after the midday news bulletin. A survey of the evening programme is given at 7 p.m. (B.S.T.).

Do Women Prefer Men ?

THE feminine population of France is gazing uneasily at the steady advance of the lady announcer in Europe. According to our Paris correspondent, even the most feminist of listeners prefer the manly voice at the microphone. Certain it is that many a wife shudders at the thought that her husband may spend his leisure hours, even if at home, listening to the voice of another woman.

"Ultra Shorts" at Hastings

ULTRA short-wave enthusiasts on the South Coast will have an opportunity to test their receivers on Sunday next, August 6th, when, between 11 a.m. and 1 p.m., 5-metre transmissions will be carried out from North Seat, the highest point in the district, using the call sign G2AX. Reports are asked for by Mr. Blackburn, 11, Sea Road, Bexhill-on-Sea.

Marconi's Micro-Wave Tests

MARCHESE MARCONI has started on a new cruise in his steam yacht *Elettra* for the purpose of carrying out further experiments in the transmission and reception of waves of less than one metre in length. Last year the Marchese transmitted and received micro-wave signals over the record distance of 168 miles.

Marconi's v. Philips

MR. JUSTICE MAUGHAM, in the Chancery Division last week, dismissed the action in which Marconi's Wireless Telegraph Company, Ltd., sought to recover damages from Philips Lamps, Ltd., for alleged infringement of Patent No. 1,3636 of 1913 granted to the plaintiffs and Charles Samuel Franklin.

The patent claimed for "a receiving system for electrical oscillations which contains a valve for magnifying the oscillations, and which is so arranged that the circuit in which are set up the magnified oscillations reacts on the circuit in which occur the oscillations to be magnified."

The Judge held that the patent was a valid one, but that it had not been infringed by the defendants, who were awarded four-fifths of the general costs of the action. The total costs exceeded £30,000.

A Voice Departs

THE familiar voice of one of the speakerines at Radio Paris has left the air for ever, its owner having entered a convent to become a Little Sister of the Poor. She was the announcer who broadcast most of the advertisements in the intervals in the Radio Paris programmes.

Talking Again

WELCOME to "Le Speaker de Radio Toulouse" who has returned to the microphone after his first interval of silence since 1925. M. Jean Roy, this popular announ-

The Photo Cell Show

THE special exhibition at the Science Museum, South Kensington, of photo-electric cells and their practical applications, described in *The Wireless World* of March 31st last, is to remain open till the end of September in consequence of public interest in the display.

While the essential features of the exhibition remain unchanged, there are several interesting additions. Prominent among these is a "Chart Analyser" lent by the Post Office Engineering Research Station. The charts to be ana-

these records are monitored by a photo-electric cell.

The automatic door-opener is now arranged so that the period of remaining open depends upon the speed at which a person approaches. It remains open long enough to allow a person to pass through slowly in comfort, yet it is not kept open unnecessarily long for a quicker walker.

The "Blancometer" also makes its appearance. This instrument accurately measures the departure from a standard whiteness of a surface such as paper.

Anti-static League

DETERMINED to put an end to interference from trolley buses, Nottingham residents have formed the "Radio Interference Prevention League." Membership is free, and a public meeting is to be called in the near future to decide what action shall be taken to overcome the prevailing disturbance caused by the corporation buses. The hon. secretary is Mr. H. P. Lynn, 32, Bath Street.

Listeners on the "Rock"

THERE are now over 700 licensed listeners at Gibraltar. The annual licence fee of 10s. is collected by the Colonial Office, it, however, is not disclosed how this yearly windfall of some £350 is spent!

Interference from land and ship morse stations is a continual source of trouble on the "Rock," but Daventry and most Continental stations are well received on ordinary valve sets.

FIVE-METRE TESTS ON SNOWDON

MOUNT SNOWDON, 3,570 feet high, is to be used as an ultra-short-wave transmitting base on Saturday, August 12th, when Messrs. H. L. O'Heffernan (G5BY) and H. E. Smith (G6UH) will operate two transmitters and receivers in an attempt to beat all records in ground-to-ground communication with ultra-short-waves. Both phone and modulated C.W. will be used.

Every effort will be made to effect two-way contacts, and all transmitters desirous of arranging schedules are asked to write immediately to G5BY at 2, Chestow Road, Croydon, Surrey, stating their proposed location, type of transmission, and times of operation. All owners of ultra-short-wave receivers will be cordially welcomed as participants in the test, and we understand that to encourage good reports the experimenters are offering a souvenir award for the best report from Northern Ireland or the Irish Free State and a similar award for the best report from either England, Scotland, Wales, or the Isle of Man. The distance at which the transmission is received together with the complete-

ness of the log submitted will determine the award.

Transmitting and receiving periods (except when two-way contacts are taking place) will be as follows:—

Transmission: 0-10, 20-30, and 40-50 during each hour.

Receiving: during the intervening periods.

Both transmitters on Snowdon will normally operate simultaneously (5BY on 60 m.c. and 6UH on 56 m.c.).

The following vantage points are actually visible from the summit of Snowdon:—

	approx. Miles Distant
Wicklow Hills I.F.S.	100
Galloway Hills, Scotland	140
Isle of Man (Snae Fell)	83
Cumberland Fells	100
Peak of Derbyshire	100
St. David's Head, S. Wales	100
The Wrekin, Shropshire	70
Lancashire & Yorkshire Hills	70/100

As Snowdon is so near to the Irish Sea, the whole of Ireland is considered to be very favourably situated for reception.

Fuller particulars of the test can be obtained on communication direct with Mr. H. L. O'Heffernan, 2, Chestow Road, Croydon, Surrey.

OLYMPIA RADIO SHOW

Tuesday, August 15th, to Thursday, August 24th.

NEXT WEEK'S ISSUE IS THE FIRST OF
THREE SPECIAL NUMBERS.

AUG. 11th.—Guide to the Show.

What to look for and where to look. A valuable "see-at-a-glance" forecast, with a full list of Stands and a pictorial plan. The issue will also contain full constructional details of *The Modern Battery Four*—a battery set with "maius" performance.

AUG. 18th.—Trend of Design.

The year's progress as revealed at Olympia. Well-illustrated articles discussing the new sets, components and accessories.

AUG. 25th.—Complete Show Report.

A full description, prepared by *The Wireless World* Technical Staff, of new apparatus shown by each exhibitor.

cer, claims to hold the world's record for the number of hours a man has spoken into a microphone. Since April, 1925, he has hardly missed a programme until the broadcasting station came to grief a few weeks ago, and, according to the Paris correspondent of *The Daily Telegraph*, his total of hours spoken is calculated at nearly 22,000.

"Lyons-Tramoyes"

A SILENT revolution is taking place in French broadcasting. One by one the giant stations scheduled under the Ferrié Plan are taking shape. On July 22nd the foundation-stone was laid for the 100 kW station at Lyons to replace Lyons la Doua. This "Lyons-Tramoyes" transmitter, as it will be called, occupies an excellent site dominating the entire region of Dombes.

Happy Tangier

NOW that the French have joined the ranks of paying listeners, there are few spots left in the Old World wherein citizens can tune in at no cost to themselves. One of the last remaining paradises must surely be Tangier. Across the Mediterranean, listeners on Gibraltar pay 10s. a year; in Spanish Morocco they pay (or should pay) 2s. 6d. a year, and in French Morocco the annual fee is about 12s. 6d. But in Tangier there is no licence fee, and there is no need to operate receivers quietly or to conceal or disguise your aerial.

LABORATORY TESTS

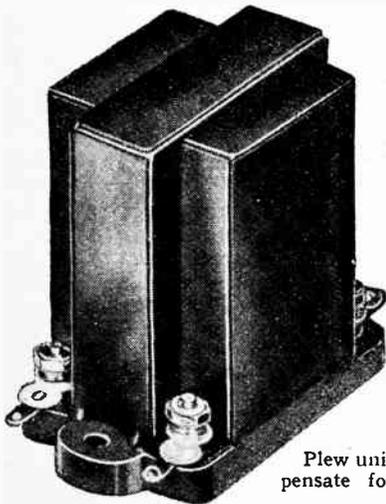
NEW RADIO PRODUCTS REVIEWED

PLEW ANTI-FADING UNIT

A UNIT has been placed on the market by Messrs. Plew & Dear, of 22, George Street, Hanover Square, London, W.1, for adding automatic volume control to an existing receiver. This anti-fading unit interconnects the anode of the detector valve with the screen-grids of the H.F. stages in such a manner that the screen voltage of the latter is derived from the detector anode supply. Owing to the presence of a high value resistance in the circuit and to the use of anode bend detection, the detector anode voltage, and hence the H.F. screen voltage, drops with an increase of signal input. The amplification thus varies inversely as the signal strength.

The supreme merit of the system is its simplicity, for it is merely necessary to break the detector anode circuit and insert the unit, and to feed the screen-grids from the terminal provided instead of from their usual point. Should the receiver employ grid detection, it is, of course, necessary to change to anode bend rectification, but this usually means a very simple alteration. This system of A.V.C., of course, offers no protection against overloading the H.F. stages by a strong signal, so that for local reception it is hardly possible to dispense with the ordinary volume control. Moreover, it may not always be considered desirable to use an anode bend detector.

Nevertheless, the unit will afford a measure of automatic volume control, and will greatly reduce the effects of fading on distant stations. Tested with a 1-H.F. set it functioned quite satisfactorily; although some reduction in sensitivity was evident in this particular case, doubtless due to the change to anode bend detection. The unit



Plew unit to compensate for fading.

can be confidently recommended as providing a simple means of reducing fading, and it will be found most readily applicable to those types of sets which already incorporate an anode bend rectifier and which have a volume control operating on the screen-grids of the H.F. valves.

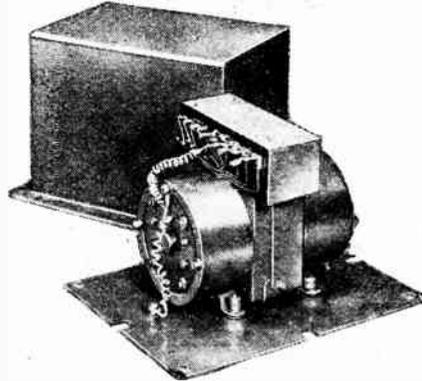
The unit is priced at 10s.

E.D.C.C. CAR RADIO H.T. CONVERTER

THIS small rotary converter made by the Electro-Dynamic Construction Co., Ltd., Devonshire Grove, London, S.E.15, has been designed especially for use with car

radio receivers. The motive power is taken from the car starter battery, and on full load amounts to about 15 watts, so that with a 12-volt battery it requires a current of 1½ amperes approximately. The rated output from the machine is 220 volts D.C. at a maximum load of 40 mA.

Particular care has been taken in the con-



Electro-Dynamic H.T. Converter for motor car radio sets.

struction to render the converter as fool-proof as possible, and very little attention is necessary to ensure a trouble-free service. Since the converter will be subjected to a certain amount of vibration, all nuts are either secured by the addition of locking nuts or sprung washers and thick rubber pads are interposed between the converter and its supporting plate. The general assembly is such that even on badly pot-holed roads the machine will ride comfortably and without undue vibration.

The converter embodies a double-wound armature running in ball bearings and having a commutator at each end. The brushes, which are of the box type, are self-compensating for wear, and, being of generous size, should require very little attention. Maintenance is thus limited to occasional lubrication of the bearings. A smoothing unit, which effectively removes all trace of ripple from the H.T. supply, is incorporated.

Measurements made with the specimen converter sent to us, which, incidentally, is wound for a 12-volt supply, show that an efficiency of over 50 per cent. is obtained on full load—a most satisfactory figure in view of its small dimensions.

The table gives in concise form the results

Input.			Smoothed D.C. Output.			Efficiency per cent.
Volts.	Current Amps.	Watts.	Volts.	Current mA.	Watts.	
12	0.340	4.1	306	1.5	0.46	11.1
12	0.425	5.1	297	5.0	1.48	29.0
12	0.550	6.6	285	10.0	2.85	43.2
12	0.670	8.0	273	15.0	4.1	51.3
12	0.792	9.5	260	20.0	5.2	54.8
12	0.925	11.1	248	25.0	6.2	55.8
12	1.06	12.7	235	30.0	7.0	55.5
12	1.19	14.3	224	35.0	7.84	54.8
12	1.32	15.8	216	40.0	8.63	54.6

of our measurements with various output loads.

The converter is totally enclosed in a

waterproof and dustproof sheet-iron container measuring 8½in. x 6in. x 6½in., which is intended to be sunk into the floor of the car so that the cover plate is flush with the floorboards.

Models are available for either six- or twelve-volt lighting sets, and the price is £6 4s. complete.

HAYNES VOLUME CONTROL

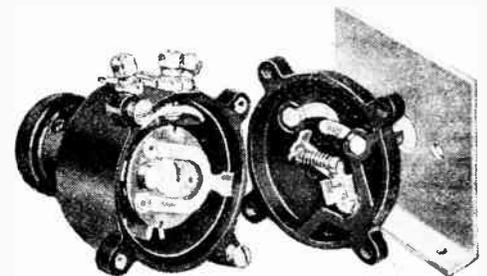
MADE by Haynes Radio, 57, Hatton Garden, London, E.C.1, this potentiometer has been designed to give noiseless control of volume under all conditions of working. It was developed in the first instance for use in their receivers, but it is now available as a separate component.

Silent operation is obtained, it is stated, by ensuring a uniform contact throughout between the moving brush and the resistance, and further, by guarding against lateral movement of the turns as the contact arm passes over them.

The use of a very thin former giving a small area of contact which, in conjunction with a suitably shaped contact brush, has achieved the desired silence in operation. This we are able to confirm by tests, for the specimen sent to us proved entirely satisfactory when used either in H.F. or L.F. circuits.

A light stirrup-type contact isolated electrically from the spindle is employed, this method of construction not only simplifies ganging, but enables the control to be connected with the variable contact "live" to H.F. without adding appreciable capacity to the circuit or introducing undesirable complications.

This volume control is made in a wide range of values up to 50,000 ohms, with or without a snap-action switch, which item,



Haynes volume control with switch cover removed.

when fitted, is embodied in the back cover-plate. The resistance is entirely enclosed in a moulded bakelite case, and the workmanship is of a very high standard. The price is 5s. in all values. Tapered or graded resistances are available at an extra charge of 1s., and the addition of the switch costs 1s. 9d. A fixing bracket is included.

Willings Press Guide, 1933 (60th Annual issue), containing particulars of over 6,000 newspapers and periodicals in Great Britain, and a list of the principal Colonial, Dominion, and foreign publications, together with their London addresses. In addition to the main alphabetical index of British publications they are also classified under the special subjects with which they deal, and there is a geographical list of provincial journals. Pp. 502 + viii. Price 2s. 6d.

Broadcast

Thanks to Lucerne

HOWEVER much we may grumble at the Lucerne Plan, we ought to take off our hats to Lucerne, for it is to Lucerne, indirectly, that we owe the appointment of Mrs. Giles Borrett, Britain's first woman announcer.

The innovation has been due to the initiative of Sir Charles Carpendale, the Controller of the B.B.C., who, during his stay at Lucerne for the Conference, was impressed by the popularity of women announcers on the Continent.

"A Man's Job"?

On his return Sir Charles sought and found the right person to fill a similar rôle at Broadcasting House. Several fair "possibles" were canvassed, but the majority seemed to feel that announcing was "a man's job"—why, I don't know.

Women seem to take quite naturally to announcing—when at home.

Listening to Television

I WONDER whether many readers without televisors listen to the "sound" side of the B.B.C. television programmes?

With all respect to television, I often find that these programmes yield a maximum of entertainment even on a "blind" set.

Rochdale is Watching

Mr. Robb, Television Programme Chief at Broadcasting House, was visited last week by an emissary of a big television colony in Rochdale, where, it appears, television is all the rage at the moment.

Despite the distance from the television transmitter at Brookmans Park, the Rochdaliens get very good results indeed, though atmospheric and heterodynes are inclined to break up the image at times.

A Televisionary

By the way, Rochdale claims to have the first public televisionary. This enterprising person has rigged up a mobile van as a television studio and theatre. For a small sum any member of the public may be "televiased"—i.e., have his or her features recorded on a wax disc.

When the disc is full the results are projected on to a screen to an audience which pays fourpence a seat.

There should be a good opening for this sort of entertainment at the seaside.

Fight in a B.B.C. Studio?

TO celebrate the first anniversary of B.B.C. television programmes, which occurs on August 22nd, it is suggested that a real boxing match should be staged in Studio Bb. Len Harvey and other prominent boxers may attend, if they do not participate.

Black Eyes

A running commentary would be given for the benefit of listeners without televisors, but the real thrill would be reserved for "lookers-in." To "receive" the first black eye by wireless would be a coveted honour. No doubt disfigurements of this sort would immediately be touched up with burnt cork in order that the maximum effect would be obtained on the ether. The cork would be concealed in the traditional lump of red steak



THE NEW VOICE. Mrs. Giles Borrett, who has just been appointed an announcer at Broadcasting House. As Sheila Stewart she has taken part in a number of radio plays.

By Our Special Correspondent

The Colonel Reconnoitres

I HEAR that Colonel Dawnay, who takes charge of the Output Branch of the B.B.C. activities on September 1st, has now visited headquarters for reconnaissance purposes.

There is no doubt that things are to be "pepped up" this coming winter. Let us hope that the machinery will not get too hot.

All or Nothing

EVEN now the title deeds of the site chosen for the Northern Ireland Regional station are not in the hands of the B.B.C. Apparently, as in the case of all the other station sites, the Corporation insists on owning the soil right down to the earth's central fires, just as it owns the Appleton and Heaviside Layers above.

Minerals?

The owners of the ground are dubious about parting with the mineral rights. This looks like an *impasse*, for the B.B.C. would never consent to mining operations beneath its own transmitters.

B.B.C. Dance Band in Public

HENRY HALL and the B.B.C. Dance Orchestra will be making their first stage appearance at the Olympia Radio Exhibition. The entertainment will be made up of a variety programme and a revue. The variety programme will be produced by John Sharman, who tells me that he is planning a grand *ensemble* with the B.B.C. Dance Orchestra as a background to a galaxy of radio stars in a final scene which should be memorable in the history of radio variety.

Variety Favourites

On the opening day of the Exhibition, August 15th, and on August 18th, the variety programme will be given from 6.30 to 7.45 p.m. and the revue from 8.25 to 9.40 p.m. On other days during the run of the show, the revue will be given in the earlier and the variety in the later period.

Brevities

The artistes in the variety will include Norman Long, Mamie Soutter, Horace Kenney, the Houston Sisters, and also Jass and Jessie. In the second week, the bill will include Flotsam and Jetsam, Clapham and Dwyer, the Carlisle Cousins, Julian Rose, Laurie Devine, and Sydney Baynes with his orchestra.

The Revue

The revue is devised and produced by John Watt and Harry Pepper, and among the leading artistes will be Anona Winn and Paul England.

The Theatre

The specially constructed theatre will occupy the Minor Hall at Olympia and hold an audience of 2,000. All or part of the programmes given each evening will be re-broadcast throughout the Exhibition by loud speakers, which will also distribute some of the ordinary programmes from Broadcasting House.

The Cafeteria

"If we 'ad 'am," said the soldier to his pal, as they reached their billet, "we could 'ave 'am and eggs, only we ain't got no eggs."

Similar thoughts are rushing through the minds of some of the patrons of the cafeteria in Broadcasting House. The "hours" have been extended, but this does not apply to the licence, for the simple reason that there isn't one.

A Twenty-four Hour Day

The cafeteria, however, is now a day and night concern, open at all times to cope with the Empire broadcasting arrangements under which artistes are generally to be found in the building throughout the twenty-four hours. Snacks are very popular at 3.0 a.m. when the Canadian programme ends.

The Wrong Voice

THE great French "O.B." describing the *Tour de France* cycle race was notable for several amusing incidents.

During the broadcasting from *Radio-Paris* the Post Office lines got mixed. According to my informant, the thrilling account was suddenly cut off and a strong Southern voice was heard saying: "Send a dozen more bottles immediately!"

Opera from the Continent

OPERA broadcasts continue to furnish programme items, even in the dog days of the holiday season. Following the relay of Act II from Salzburg, on August 7th, of "Orpheus and Eurydice," Munich will provide British listeners on August 8th with a relay of Act II of "The Magic Flute."

Trying to Split Hairs

THE B.B.C. have had a letter from a West Country listener who, while congratulating them on their success in synchronising West and London National transmitters, states that he cannot separate the two when he wants to.

READERS' PROBLEMS

Anode Feed Circuits

THE making of initial adjustments to a receiver fitted with A.V.C. is greatly simplified by the inclusion of a meter in the anode circuits of the controlled valves (those valves of which the grid bias is regulated automatically by the control system).

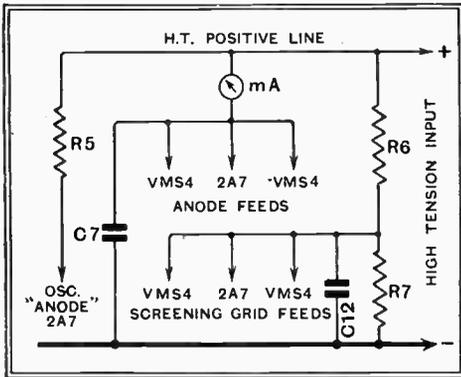


Fig. 1.—Dissecting the H.T. feeds for the earlier stages of the New Monodial receiver.

A reader who is about to build the New Monodial Super wishes to adopt this plan, but is not quite clear as to how the meter should be connected in order that it may read the total anode current of the controlled valves (H.F. amplifier, first detector, and I.F. amplifier). We are asked to give a circuit diagram explaining this matter.

As stated in the second part of the descriptive article, a better indication of what is happening in this particular case is afforded by the connection of a meter in the anode circuit of the double-diode-pentode second detector valve, which is also controlled automatically. In this respect the new set differs from those including the circuit arrangement with which we have of late become familiar.

However, it may in certain circumstances be an advantage to obtain a reading of the total anode current of the first three valves, or of individual valves, and we give in Fig. 1 a simplified skeleton diagram showing the anode and screening grid feed system, etc.; the position of a measuring instrument is indicated.

A.V.C. Increases H.T. Voltage

A QUERIST, who has just fitted automatic volume control to a comparatively ambitious A.C. superheterodyne receiver (which he describes in detail) is puzzled at finding that the anode current of the second I.F. amplifier, which is not controlled automatically, tends to rise when a strong signal is received. Otherwise the control system—and the set generally, for that matter—work excellently and accordingly to plan in every respect. We are asked to say what may be deduced from this change in current.

It is possible that the second I.F. valve, of which the anode current tends to rise, is over-biased or overloaded, and so anode bend rectification is taking place. We advise our querist to check the operating conditions of the valve, and particularly to make sure that its grid bias is not exces-

sive. But it is more likely that the effect described is quite normal and harmless. When a strong signal is received a considerable reduction in the current consumed by the controlled valves takes place, due to the action of the A.V.C., and so there is a general rise in H.T. voltage. This rise may be quite enough to cause a perceptible increase in the current consumed by the uncontrolled second-stage I.F. amplifier.

Without an Earth

THE user of an A.C. mains set has noticed that signals are slightly, but quite definitely, increased in strength as a result of removing the earth lead. It is realised that an earth terminal is not fitted merely as an ornament, and we are asked for comments on the unusual behaviour of the receiver.

As is well known, a mains-operated receiver is earthed more or less effectively through the mains themselves, and usually quite good signals are obtainable without a separate earth connection.

But an actual improvement in strength, as a result of removing the earth wire, is distinctly unusual. Occasionally it is found to be due to misganging of the aerial circuit; by disconnecting the earth wire, the amount of aerial capacity transferred to the first tuned circuit is sometimes reduced appreciably, and it may be that louder signals are due merely to a chance improvement in circuit alignment. This is easily checked by readjustment of the input circuit trimmer.

Again, it is not impossible that there is more incidental reaction when operating the set without an earth.

A.V.C. on D.C.

A READER, who wishes to adapt his Monodial D.C. Super for automatic volume control suggests tentatively that it might be possible to use the method of control described for the A.C. version of this set. If this scheme is impossible, he asks for suggestions.

We fear that it will be impracticable to adapt the method of control used in the A.V.C. Monodial to a D.C. set, if only because the H.T. voltage available will be inadequate. It is suggested that the simplest way of making this addition would

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.

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.

be to employ a Westector (Westinghouse copper oxide H.F. rectifier) as a second detector, and to convert the existing second detector into a first-stage L.F. amplifier. The Westector would be connected in the manner advised by the manufacturers, and it would be best to control the signal-frequency H.F. valve and the first detector; in order that the control may be effective the latter valve should be replaced by one of the variable-mu type. It is not recommended that the I.F. stage should be controlled automatically, as this valve would be overloaded by a strong signal.

Out of Centre

DESCRIBING the behaviour of his moving-coil loud speaker, a reader states that quality is quite good at low volume levels, but, on increasing strength, an unpleasant "comb and tissue paper" effect becomes noticeable. This is not a case of overloading the instrument, as it is designed to deal with more than twice the rated output of the valve which feeds it.

Our correspondent is probably correct in coming to the conclusion that this is due to imperfect centring of the moving coil, or possibly to warping of the coil former. For large movements of the coil (corresponding to full volume) it is probably rubbing against the sides of the magnet gap.

It is rather difficult to comply with the request that we should give full instructions for re-centring the coil. Various "tricks of the trade" are in common use, but few of them are universally applicable. We sug-

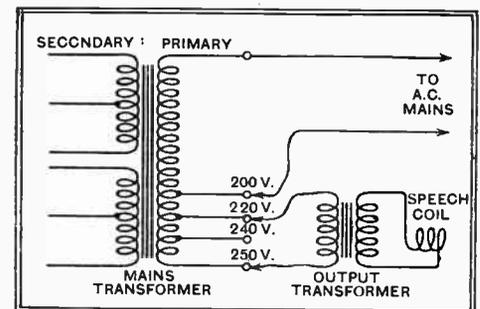


Fig. 2.—A source of low-voltage A.C. for testing purposes is available across the primary windings of a power transformer.

gest that the operation is best done by making slight experimental alterations in the position of the coil after slackening off the screw which holds the centring "spider." This operation needs a good deal of patience, and should be carried out while the loud speaker is reproducing a steady note of low pitch. A fairly well-known method of obtaining this note is illustrated diagrammatically in Fig. 2. Here the necessary A.C. voltage is obtained from the windings of the power transformer which feeds the set; various voltages are obtainable. Of course, if this method be adopted, the load on the power equipment should be maintained by joining together the leads which were originally connected to the primary.

NEW!

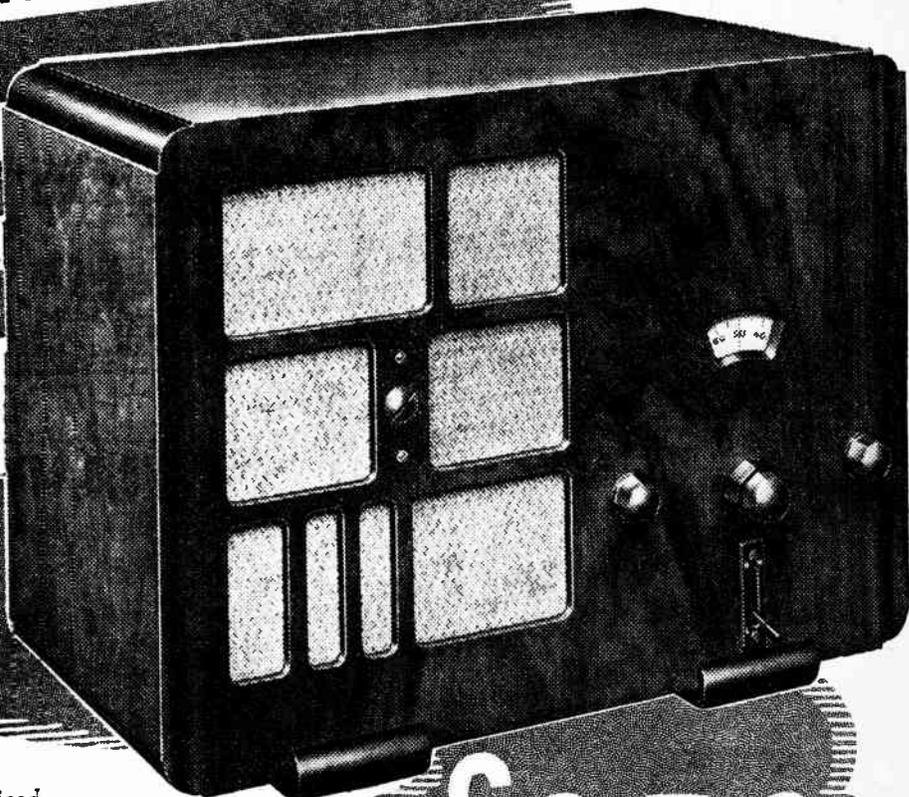
The **COSSOR Melody Maker**
MODELS 341 & 342

3-VALVES — PENTODE OUTPUT

VARIABLE-MU S.G. STAGE

ONE-KNOB TUNING

**SELF-CONTAINED
LOUD SPEAKER**



£6-7-6

You can now have all the advantages of a highly-priced Receiver for only £6. 7. 6.—the price of the Cossor Melody Maker (Model 341). This remarkable Set has Variable-Mu S.G. Stage giving "all-Europe" range and amazing selectivity—Pentode output for big, undistorted volume—all-metal chassis—combined volume control and "on-off" switch, etc.—every up-to-date feature of design. In spite of its many advantages the Cossor Melody Maker is so simple that you can assemble it yourself even if you know nothing about wireless. Send the coupon for a full-size Constructional Chart.

MODEL 341

Complete Kit of Parts for assembling Receiver as illustrated, including Cossor Variable-Mu Screened Grid, Cossor Detector, and Cossor economy Pentode Valves. Fully screened coils, Cossor Double-Gang Condenser, Blued, gun-finished all-metal chassis, and all the parts for simple home assembly. Handsomely finished cabinet 18½" x 13½" x 10" of modern design with space for batteries and accumulator. Balanced Armature Loud Speaker of the latest type: provision for gramophone Pick-Up Plug and Jack if required. Wave-length range 200/530 and 900/2,000 metres. Price **£6.7.6**

Hire Purchase Terms 16/- deposit and 10 monthly payments of 12/6 or, alternatively, 20/- deposit and 6 monthly payments of 20/-.

MODEL 342

Identical with Model 341 described above except that Permanent Magnet Moving Coil Loud Speaker is supplied. Price **£7.2.6**

Hire Purchase Terms 17/6 deposit and 9 monthly payments of 15/6.

**COSSOR
MELODY MAKER**

BATTERY MODELS 341 & 342

Prices do not apply in I.F.S.

To A. C. COSSOR LTD., Melody Dept., Highbury Grove, London, N.5.
Please send me free of charge a full size Constructional Chart C. 16, which tells me how to build the Cossor Melody Maker (Models 341 & 342).

Name.....
Address.....
W. W. 4833.

A. C. Cossor Ltd., Highbury Grove, London, N.5. Depots at Birmingham, Bristol, Glasgow, Leeds, Liverpool, Manchester, Newcastle, Sheffield, Belfast, Cardiff and Dublin.

♡ 3206

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; 286, 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 **LILFEE & 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 August Bank Holiday, the next issue of "THE WIRELESS WORLD" (dated August 11th) 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, August 4th.

RECEIVERS FOR SALE.

50% Discount off Pye Receivers, models M.M. and S.E.13. Q.M.T. only; sealed.—Broadway Radio, Ladywell. [3190]

MORE Part Exchange Receiver Bargains for Disposal; state approximate requirements for quotation. Courts, Wireless Engineers, Horley. [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 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]

A.C. Monodial, without cabinet, to specification; T.C.C. condensers, with Magnavox speaker, all as new, guaranteed perfect. £19.—H.L., 4, Denver Drive, off Stockport Rd., Timperley, Manchester. [3209]

WALNUT Transportable American 1933 Victor (H.M.V. America) 6-valve superhet, incorporating latest H.F. pentodes, output 3 watts undistorted, 200-500, and 1-000-2,000 metres; listed £24, at £12.—Mayfair Radio, 31, George St., Hanover Sq., W.1. [3186]

"WIRELESS WORLD" New Monodial, built and supplied as kits; your old Monodial converted, including components and valves, £11; trade supplied.—London Radio Development Services, Ltd., 56, Hazel Rd., Kensal Rise, N.W.10. Phone: Willesden 0385. [2987]

AMPLIFIER (12½ watts undistorted), built for quality without regard expense; must sell, going abroad; P.N.25s. push-pull, Epoch 1611s. Dennis A.C. Garrard turntable, Marconi pick-up, perfect! What offers?—81a, High St., Godalming. [3192]

MAINS EQUIPMENT

N.P. Battery Chargers for A.C. Mains, from 62/6.

N.P. Send New Trade List and Photographs, showing Range of Chargers up to £40.

N.P. Have a Few Slightly Soiled Instruments from £5/7/6 to £12; Westinghouse or valve rectification up to 3 circuits; bargains cannot be repeated.

N.P. Senior Two, £5/5; will do J.T. batteries up to 36. I.L.T. up to 120 volts ¼ amp.; highest value ever offered.

N.P. Exchange Charger as Business Grows; new trade lists now ready.—Nash Products, Ltd., Stechford, Birmingham, 9. [3112]

THE "MIRROR" REFLECTS TANNOY QUALITY

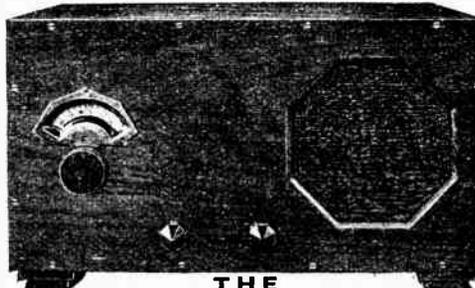
by again choosing Tannoy Power Amplifiers for the annual tour of the "Daily Mirror" Eight."

There are Tannoy Amplifiers for all purposes. Individually built—not mass produced.

TANNOY PRODUCTS

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London, S.E.27.
Manchester, Birmingham, Scotland, Ireland.

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THE "EQUATOR-SUPER" (Battery Model)

FOR TROPICAL USE
and Empire Station Reception

PRICE £33 plus £1. 1. 0 Royalty (Overseas)
Incorporating Westinghouse Metal Oxide Detector and Automatic Volume Control. Write for full details

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Radio Engineers

MUSWELL HILL, LONDON, N.10

Cables: "Tropiset, London."

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DEPOSIT SYSTEM.

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Mains Equipment.—Contd.

VORTEXION, Wimbleton, for 99.9% reliable transformers.

IF You Haven't Tried Them Yet Ask Someone who has, or call and inspect complimentary letters.

ALL Standard Models Delivery by Return; all second-hand centre tapped.

GUARANTEED 12 Months, and within 5% normal and 2½% super models, neat shrouding, with detachable feet, as used by Government Departments, etc., etc.

VORTEXION.—New monodial transformer, 200-250, 50 cycles, 425-0-425, 120 m.a., 4v. C.T., 3a., 4v. C.T., 1a., 4v. C.T., 1a., 4v. C.T., 6a., screened primary, open type, 20/-; shrouded, 22/-; super shrouded, 26/-; 10 henry choke, 5/6; 20 henry choke, 8/6.

VORTEXION.—Perrocant 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 I.L.T.8 or 9 or 10, 4v. 1 to 2, 4v. 2 to 4; open type 14/6, shrouded 16/6; 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 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 2½in. x 1½in., 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 200v. 30 m.a. Eliminators, 110 or 220 input with 4v. 4a. winding; 37/6.

VORTEXION.—Transformers made to your specification. All standards in stock. Phone all hours.

VORTEXION (S. A. Brown), 182, The Broadway, Wimbleton, Tel.: Liberty 2814. [3117]

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

A.C. Charging Plant (valve) unused; List £18/18; offered £6 18/6.—Jersey, Cumnor Hill Estate, Oxford. [3202]

PHILIPS A.C. Accumulator Charger, type 1370, 200-230 volts, 6 amp. D.C. output, charging 3-30 2v. cells; cost £30, sell 11 guineas.—Bond, 30, London Rd., Morden, Surrey. [3194]

Mains Equipment.—Contd.

SERADEX Battery Chargers.—New lists available shortly; fully guaranteed; excellent workmanship. SERADEX V.R.328a, reviewed by Scottish radio dealer, who says: "Unit is well made—should give good service." Output continuously variable from zero to 1.3 amps., charging from 1 to 11 cells, housed in attractive steel containers, fitted ammeter; £3.5 complete. SERADEX V.R. 1326a, similar in design to V.R.328a, but gives larger output, will charge up to 20 cells at 1.3 amps. max.; £4.4 complete. SERADEX V.R.367c, a massive job for charging 3 stations, garages, etc., 3 separate lines, 1 amp., 2 amp., 3 amps., each line will charge up to 18 cells, separate controls and meters for each line. SPECIAL Feature of V.R.367c is the economy switch, which reduces consumption when charging small quantity of cells. SERADEX V.R.367c, complete with all accessories; £9.10 only.

SERADEX Products are Obtainable from Your Dealer or direct from Trevor Pepper, Wakegreen Rd., Birmingham, 13. [3217]

ECO C.2A. Eliminator, as new, S.G., 60v., 120/150v. tappings, 20 m.a., 1.5-12v. G.B. tappings, 2-6v. L.T.; listed £10 17 6, sell 3 guineas.—Bond, 30, London Rd., Morden, Surrey. [3193]

A.C. to D.C. conversion units (valve rectification) 300 m.a. smoothed output, first class job, 1,500 volt test condensers; £8. Salisbury Transformer and Electrical Co., Devizes Road, Salisbury. [3204]

180 Accumulator Chargers, 1/2 amp., 2-6v., in ventilated metal case, with minus box (Westinghouse rectifiers), 10 8; 1 1/2 amp., 21; 7 days' trial.—Arden Agency, Wollaston, Wellingborough. [3201]

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 New Monoidal Super Model, 425-0-425v. 120 m.a., 4v. 3a., 4v. 1a., 4v. 1a., 4v. Ga., 17/6, post 1/3; super model, 24/6, post 1/3; chokes for same, 10h., 20h., 16/6 the pair, post 1/6.

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, Ferrocast III model.

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; 13/6, 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.19. Tel.: Liberty 3303. [3107]

CABINETS.

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

DYNAMOS, ETC.

ROTARY Converters, 220 volts D.C. to 200 volts A.C., capacities up to 0.44 K.V.A., cheap. Mibo Engineering Works, Mibo Rd., East Dulwich, S.E.22. Sydenham 4422. [3225]

LOUD-SPEAKERS.

B.T.H. RK 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., 30/6; also A.C. models.

£2.10; carriage paid, e.o.d., or cash with order; the best value in speakers obtainable to-day.—O. H. Seekamp, First Avenue House, High Holborn, London, W.C.1, 4th floor; office No. 581a. Phone No.: Holborn 6609. [1425]

GENUINE N. & K. Inductor Speakers; listed £3/10, our price 27/6; sealed cartons.—Broadway Radio, Ladywell, S.E.13. [3191]

"BAFFAMP."—New amplifying box baffle unit, latest invention for your speaker, greatly improves tone and power, without resonance; 12m., 12 6; 15m., 17 6; 18m., 21/6; 24m., 25/6; direct from factory, carriage paid, 2, Chatham St., Ramsgate. [3216]

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

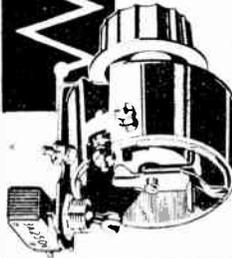
27/6.—6-volt D.C. speakers, as above; £2 7 6 speaker as above for 100-250 volts A.C., complete with field rectifier; carriage paid; cash with order or e.o.d.

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.5 400's in output, 6-watt type has 2 P.P.3 425's in output, 12-watt type price £15, 6-watt type £12 10; B.T.H. cinema type pickups, brand new, 17 6.—Ward, 12, Tredgar Rd., Bow, E.3. Advance 3668. [3207]

WATMEL POTENTIOMETERS GIVE THE BEST CONTROL



It is obvious that if a firm concentrates on one type of component it is going to turn out a better job than a firm that dabbles in many. This year we are concentrating on potentiometers, and you may rest assured that when you purchase a Watmel potentiometer you are obtaining the very best from a firm that specialises in this type of component.



Here is illustrated the Watmel Type 1 Potentiometer.

Any resistance up to 50,000 ohms (Standard Wiring).

Price 5/6

With quick break Switch

Price 7/6

Please write for free fully illustrated catalogue that will give you interesting information on Volume Control.

Special models made for manufacturers and for the Export Market. Please write for further particulars.

Watmel POTENTIOMETERS GIVE THE BEST CONTROL WATMEL WIRELESS CO. LTD., Imperial Works, High Street, Edgware. Telephone: Edgware 0223. (M.C.91)

RA REPRODUCERS for better reproduction There is a model to suit every output. Prices from 15/- to 70/-. Your dealer will demonstrate. REPRODUCERS & AMPLIFIERS, LTD., WOLVERHAMPTON.

Grippleshell Aerial Brackets are simple and economical to install and avoid unsightly poles. Write for leaflet to: PARTIDGE WILSON & CO., Dept. 29, Davenset Works, Leicester.

Famous Maker's Offer! £5 Radio-Gram CABINET for 65/- 7 DAYS' FREE TRIAL (OR 10/- MONTHLY). Piano built (Pat. 8122), the acoustic tone brings a fine thrill (Piano Oak). (Radio-Press, B.B.C., 3,000 clients.) Models from 35/- to £15. List FREE. Send for photographs, detail drawings. Picketts Piano-Tone Cabinets, Albion Rd. (w.w.) Bezzelbeath, Kent

Loud-Speakers.—Contd.

QUAL ELECTRIC offer Brand new boxed set manufacturers' surplus Rola Speakers, all fitted hum buckers, state if Power or Pentode Transformer F6 110-175v. D.C. (2,000 ohms); 90-130v. D.C. (2,500 ohms); 150-200v. D.C. (4,700 ohms); 200-250 D.C. (6,500 ohms) listed at 35/-, at 18/-; F7 voltages as above list, 47 6; at 25/- each; permanent magnets F6P.M. listed at 49 6; at 28/-; F7P.M. listed £3 at 33/-; Ultra 95P.M., a real hefty job with Power-Pentode transformer listed £4/15, at 47 6; Rola Dual Compensated (2) F6 list £3/10, at £2; (1) F6 and (1) F7 list £4 5; at 47 6. All goods Carriage Paid, Cash with Order, or C.O.D. Chas Electric, 6, Conduit St., London, W.1. [3221]

GREAT Bargain Offer:—Genuine N and K Inductor speakers, latest Ten Pas models; power or pentode, list £3 10, limited number offered at 25/- only; cabinet model, list £6 6 at £2. Secure the ideal speaker while supplies last an irrepeatable bargain. All brand new in sealed boxes. Also latest Magnavox Magna 6.5m. energised Moving Coil 2,500 ohms model D.C.144 Pentode Transformer, one only at 35/- only. Rola type F6 2,000 or 6,500 ohms; six only at 17/6. Also Polar latest triple gang Condensers complete with drive, cover, etc., at 16/-; British Radiophone 3-gang with cover, less drive 15/-. All goods brand new Set Manufacturers surplus, latest models. Carriage paid, Cash with Order, or C.O.D. Coldham, 16, Burligh Rd., Sutton, Surrey. Phone: Sutton 459. [3223]

VALVES.

NEW High Efficiency American, latest types, 7/6-10/-; 2A7, 15/-; sets serviced.—26, Moss Grove, Urmoston. [3219]

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, A.C.S.G. V.M.s, Pen. 4V.s, M.V.S.G.s, P.T.625s, V.M.S.4s, D.C.2 Pens, D.P.T.s, M.P.P.4s, V.M.4V.s, A.C.S.1 V.M.s, P.M.24B.s, D.C.28.G./V.M.s, 11/-; M.S.4, M.S.4B.s, A.C.S.G.s, 8.4V.s, 8.4V.B.s, M.S.G. L.A.s, D.S.B.s, A.C.S.2s, P.N.4s, D.C.28.G.s, 9/6; U.14s, 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, U.10s, U.C.60 250s, M.H.4s, M.H.L.4s, 7 6; V.S.2s, 215H.G.s, 220H.G.s, P.M.12s, P.M.12As, 9/-; 442B.U.s, D.V.3s, 8 6; 215P.s, 220P.s, L.P.2s, 4 9; P.2s, 6 6; P.T.2s, P.M.22As, 9/-; H.L.210s, H.210s, L.210s, 3 9.

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

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

OVER 5,000 Valves Always in Stock for Immediate Delivery; carriage paid; cash with order or e.o.d.—Ward, 12, Tredgar Rd., Bow, E.3. Advance 3669. [3206]

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.P.s, P.M.H.P.s, 4/9; 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, 1821s, 7/-; M.L.4s, A.C./Ps, 164V.s, 104V.s, P.M. 24s, 442B.U.s, 1807s, 7/6; 8.4V.B.s, 8.4V.s, M.S.4B.s, 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.P.41s, P.T.41Bs, L.P.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 cash or e.o.d.; prompt delivery.

NEWMAN, 303, Roman Rd., E.3 [2892]

COMPONENTS, ETC., FOR SALE.

R. RYALL'S RADIO Closed for Holidays Until August 18th; see our advertisement in these columns on that date.

R. [3198]

PREMIER Summer Sale.

10% Discount on All Orders of £1 or Over.

MANY Prices Reduced Apart from Discount.

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/-.

EBONITE Sheets for Charging Boards, 24in. x 24in. x 3/8in., 3/- each.

T.C.C. Condensers; 2 ml., 750v. working, 3 6; 4 ml., 6/-; 4 ml., 400v. D.C. working (300v. A.C.), 4/-.

1 MF., 500v. working, 1/6; 4 ml., 200v. working, 2 6; 0.5 ml., 1,500v. working, 1 6; 4 ml. Electrolytic (aqueous type), 440v. working, 3/-, 8 ml., 3 6.

DUBILIER Condensers, 0.01 mica, 6d.; 0.01 mica, 1.000v. working, 1/-, mica.

POLAR 3-gang, 0.0005 Condensers, split end vanes, totally screened, disc drive; 6/11.

AMSCO Triple gang 0.0005 Condensers, with trimmers; 4 11.

ORMOND 0.0005 Condensers, 1/3; 2-gang semi shielded, 2 6.

WESTERN ELECTRIC Mains Transformers, input 200-250 volt, output 500-500 volt, at 150 milliamperes, 4v. 4a., 4v. 2.5a., 4v. 2a., 4v. 1a., 4v. 1a., massive job; 19 6.

(This advertisement continued on next page.)

Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)

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; 200-0-200v., 4v. 1a., 4v. 3a., 4/6.

ALL Premier Guaranteed Mains Transformers have engraved terminal strips with terminal connections, input 20-250 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 Transformer, 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.

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.

FILAMENT Transformers, polished and engraved terminal boards, N.P. terminals 4v. 3-4a., 5 -; 10v. 3a., 6/6; 12v. 1a., 5 -; 4v. 4-6a., 6/6; 14v. 4a., 6/6; 22v. 1a., 6 -; 6v. 2a., 5 -; 9v. 1a., 5/-.

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, 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.

HEAVY Duty Variable Resistances, wound on slate, 2,000 ohms 1/2 amp., 500 ohms 1 amp., 250 ohms 1 amp., 50 ohms 2 amp., 20 ohms 4 amp., any value; 3/6, a real bargain.

BRITISH RADIOPHONE Wire Wound Potentiometers, with mains switch incorporated, 5,000 ohms, 10,000 ohms, 50,000 ohms, 100,000 ohms, 250,000 ohms, any value; 3/6.

SPECIAL Offer T.C.C. Condensers, type 121, 2 mfd., 1,500v. working; 5/-.

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., 12/6; 2, 4, and 6v. at 1 amp., 17/6; 12v. 1a., 27/6; 6v. 2a., 35/-; 12v. 2a., 35/-; 12v. 1.5a., 30/-; 6v. 3a., 39/6; 12v. 3a., 42/6.

AMPLION High Inductance Chokes, resistances 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; 8v. at 1/2 amp., 6/6; 6v. at 1 amp., 9/6.

KOLSTER BRANDES Electric Gramophone Motors, complete with turntables and automatic stop, 100-250v. A.C. and D.C.; list price 45/-, clear 42/-.

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.

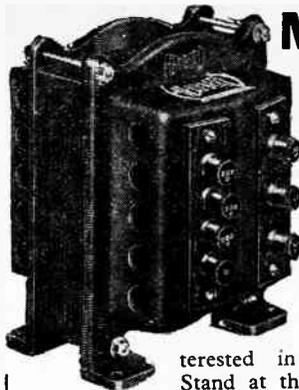
WESTERN ELECTRIC Condensers, 250v. working, 1 mfd. 6d., 2 mfd. 1/-; 500v. working, 1 mfd., 1/-; 400v. working, 3 separate 4 mfd. condensers, 8/6.

T.C.C. Condensers, 250v. working, 4x4x1 mfd., 3/6; 300v. working, 4x4x2x2 mfd., 6/-; 300v. working, 4x4x2x1 mfd., 6/-; 6x4x2x2 mfd., 375v. working, 6/11.

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 control, 50,000 ohms, 2/-; wire wound Clarostat Potentiometer, 50,000 ohms, 2/6; Colerstats, logarithmically wound Potentiometers, 6,000 ohms, 1/9.

(This advertisement continued in third column.)



MAINS?

If you are interested in Mains Power for Radio —

You will be interested in the Heayberd Stand at the Radio Exhibition—August 15th to the 24th. Mains Transformers, Mains Units, Assembled and Unassembled Kits, Battery Chargers, Portable Amplifiers, and all the small components necessary in mains working will be awaiting your inspection at Stand 16. New models have been added to the existing wide range of Mains Transformers. As usual, Heayberd are the first with NEW transformers for the NEW Westinghouse Rectifiers—H.T.12 and H.T.13. These will be shown together with the re-designed Home Battery Chargers and new Portable Amplifiers. Whatever your interests in mains working, you will be bound to find something to interest you on the Heayberd stand. We shall be happy to meet you.

Send 3d. stamps TO-DAY for special Handbook "Mains Power for your Radio" containing technical hints and diagrams.



WE ARE EXHIBITING AT

RADIOLYMPIA

AUG-15-24 1/6 DAILY

STAND NO 16

SILVER-GHOST

FARRAND

INDUCTOR 50% DYNAMIC

PREFERRED BY MUSICIANS

"WIRELESS WORLD SAID: 'WILL SUIT THE MOST HYPERCRITICAL EAR'"

LAMPLUGH RADIO

Silver Ghost Works, COVENTRY, ENGLAND.

EVERY PART FOR EVERY CIRCUIT

LEONARD HEYS FARADAY HOUSE

HENRY STREET, BLACKPOOL.

ELEVEN YEARS' EXPERIENCE IN THE WIRELESS TRADE

WHOLESALE DEPOT

For all standard makes of COMPONENTS, KITS OF PARTS, etc., as advertised in this Journal and elsewhere. All usual enquiries. SPEEDY & PAINSTAKING SERVICE. Personal Attention to all orders. Write for Cat. enclosing trade card (Don't hide Traders only).

PARIMA SELENIUM CELLS

FOR ALL PURPOSES.

Parima Light-Sensitive Resistances are constant mechanically strong, moisture proof and exceedingly sensitive. Fully guaranteed for 12 months.

Prices from 5/-

PARIMA MANUFACTURING CO.

21, BROMLEY ROAD, S.E.6. Hither Green 3629

Components, etc., for Sale.—Contd.

(This advertisement continued from first column.)

FOR Callers Only—The following values, guaranteed as new: P.T.625, N.P. P.E.N., D.C.S.G., V.D.S., V.M.S., S.4V.A., A.C.N.G., A.C.S.G.V.M., V.M.S.G., 41M.S.G., V.M.S.4, M.S.4B., U.S. 904V., M.S.G.L.A., M.S.G.H.A., M.H.L.4, M.I.4, M.H.4, U.14, S.4V.B., D.W.3, P.T.4, D.S., D.S.B., M.S.4, 41M.L.F., P.E.N.4V., 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 25/-, 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: Screened wire; 5-pin valve holders; Crabtree 5-amp. sunk switches; T.C.C. 0.1 mfd. condensers.

HARLEY Pick-ups with arm and volume control; 12/6.

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. [3224]

GILBERT INDUSTRIES Latest Parcel Offer—

COMPLETE Kit for 30 m.a. 150-180 volt A.C. Eliminator, comprising one "B" parcel as under, together with handsome cellulose finished steel case, engraved panel, plugs, wiring wire, sositolex, solder, nuts, bolts, flex, plug, etc., and blue print; a complete 45/5 eliminator ready for assembly, at 30/- post paid.

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

"B" PARCELS, containing one each of the following high grade components, suitable for building Class B or straight 30 m.a. 150-180v. A.C. eliminators: One Westinghouse rect., voltage doubler, one transformer, one condenser pack, 4+4+2+1+1+0.25, one choke, 50 h. 50 m.a., 4 resistances (please state mains voltage), complete parcel, post paid, 41/.

"D" PARCELS, containing all the following high grade components: One transformer, 350-0-350 at 60 m.a., 4v. 4 to 6a., C.T., 4v. 2a., one chassis and 3-valve holders, one H.M.V. 2-gang with trimmers, one 15 mfd. T.C.C. electrolytic, one 4+4 mfd. T.C.C. block, one volume control, 4 assorted resistances, 6 small assorted condensers, one Paxolin strip (10in. x 4in.), one packet of "Vareos" insulating sleeving, 6yds. heavy flex, complete parcel, post paid, 41/.

ONE "A," "B," or "D" Parcel, and one Paillard type 1504 gramophone motor, 100-250 volts a.c. input, complete with turn table, post paid; 42/.

CONDENSER Parcels—One 8 mfd. (tapped 4+4), one 4 mfd. T.C.C., one 15 mfd. electrolytic T.C.C., one decoupling pack, 2+0.5+0.5+0.5+0.1, 6 small useful condensers; all new and unused, post paid, 10/-.

TRADERS—Do you realise that these parcels, when split up, will realise 43 to 44 in the shop?

GILBERT INDUSTRIES, Ltd., 519, London Rd., West-cliff-on-Sea [3184]

GENUINE Manufacturers' Surplus by Leading Makers.

DOUBLE Smoothing Chokes Mounted, sound robust job, 120 m.a., 14-28 Henrys each; usual price 35/-, our price 6/6 each, 9d. postage; single ditto, 4/6 each.—See Below.

CHOKES, small iron cored, 2,000 ohms, for output or choke coupling; 1/6 each, 3d. postage.—Below.

65 Only, massive twin gang condensers, 0.0005, with drum drive, change over switch and trimmers; original cost 45/-, our price 7/6 each, postage 9d.—Below.

14 mfd. Block Condensers, 250v. A.C. working, 6-4-2-1-1; 2/6 each, postage 6d.—Below.

RESISTANCES, wire wound, finest quality at ridiculous prices: 3,000, 5,000, 8,000 ohms, 13,000, 15,000, 65,000 ohms, all 5 watt, worth 3/6 each; 6d. each; postage 3d.; wire wound potential dividers, 60 Watt wound 3 sections, 4,500 ohms, 3,000 ohms, 2,000 ohms, 1,6 each, postage 4d.; 5 Watt ditto, 20,000 ohms, 20,000 ohms, 20,000 ohms, 1/- each, postage 3d.—Below.

2 SEPARATE 60 Watt Resistances on One Tube, 2,500 ohms and 500 ohms, 1/6 each; L.F. transformers, in Bakelite case, ratios 3-1 and 5-1, 2/6 each.—Below.

3 SEPARATE 5 Watt Resistances on One Tube, 2,500 ohms, 1,000 ohms, 80 ohms; 1/- each, postage 3d.—Below.

100,000 ohms 1 Watt Resistances; 4 1/2d. each, postage 1 1/2d.—Below.

R.C. Coupling Units, 1/- each, postage 3d.—Below.

1 mfd. Condensers, 250 volt D.C. working; 6d. each, postage 2d.

4 mfd. Condensers, 250 volt D.C. working; 1/6 each, postage 4d.—Below.

METAL Screens (frost sprayed), with valve holders complete, suitable for adding S.G. valve; 1/6 each, postage 4d.

GOODS Order Value 20/- Carriage Free

EACH Article is Tested Before Despatch and Guaranteed First Class Manufacture.

CASH With Order, all goods despatched same day.

SURPLUS RADIO, 32, Queensway, Ponders End, Middlesex. [3147]

Components, etc., for Sale.—Contd.

"WIRELESS World" Components.
PEPPER Draws your Attention to Advert in This column Last Week.
SURPLUS List of Many Bargains Mailed for Stamp.
TREVOR PEPPER, Wakegreen Rd., Birmingham, 13. [3218]
MILDMAY RADIO EXCHANGE Offers the following, sound and perfect, post paid:—
FERRANTI A.F.6, 17; D.P.M.1c, 14; O.P.M.12c, 12; A.F.5c, 19; O.P.4c, 10; O.P.111, 7, 6.
VARLEY Pentamul Output, 9; B.T.H. Transformers, 2-1, 4, 6; Bulgin trans-couplers, 6; Hypocrite L.F. chokes, 8, 6.
COSSOR A.C. Mains Kits, type 235, 3-valve; listed £9 19. £4 15 each.
VARLEY Square Peak Coils, 7; H.F. coils, 4, 6; Polar 3-gang condensers, 12; 2-gang, 10; B.T.H. Junior pick-ups, 14; Edison Bell Sensor, 14.
KINGSTON Home Recorders for Making Records, 5 each.
PHONE: Clissold 5001.
24, Mildmay Grove, London, N.1. [3196]

SOUTHERN RADIO'S Wireless Bargains. Set manufacturer's guaranteed surplus:
VARIABLE Condensers.—British Radiophone 4-gang superhet type, fully screened and trimmers, 0.0005, 8/9 (list 45/-); Cylind 3-gang fully screened and trimmers, 0.0005, 7/- (list 32/-); Hydro block condensers, brand new, 16 mfd., 2:2, 2:1, 1,000 volt test (made for Canadian Marcomphone Co.), 8/9; 4 mfd., 2/6; 2 mfd., 1/9; 1 mfd., 1/-; all 750 volt.
GRAMOPHONE Motors.—Electric gramophone motors, working on all voltages and cycles, D.C. or A.C., non-interference type, absolutely dead silent, £2 2 (listed at £9 15); A.C. only, 27/6 (listed at £7 10).
SPEAKERS. Celestion Soundex permanent magnet, 16" (list 27/6); Rola F6 permanent magnet, 28" (listed 49/6); D.C. mains energised, 2,500 to 6,500 ohms, complete with humbucking coils and transformers, 16 6 (list 39/6); Peter Grassman dynamic speakers and chassis, 10 6 (list 35/-); G.E.C. Stork speakers, complete in magnificent cabinet, 19/6 (listed £5 15); Ormond speakers, complete in cabinets, 10/- (listed 25/-).
CONSTRUCTORS' KITS.—Ready Radio "303" battery 3-valve kits, less valves, 18/- each; complete with 5 Mullard valves (P.M.11.F., P.M.2, 2D.N.), 35/- each (list 70/-); Ready Radio Meteor screen grid 3-valve kit, less valves, 26/-; with 3 Mullard valves (P.M.12c, P.M.2D.N., P.M.2a), 49/- (list £3 10/-); Universal Radio 3-valve kits, ready assembled on chassis, 12/6 (listed 45/-).

READY RADIO S.T.400 Kits, as specified by Scott Taggart, £2 19/6 each (list £4 17/6).
READY RADIO Meteor Screen Grid 3-valve "A" Kit, complete with cabinet, permanent magnet speaker (less valves), £3 7/6, with 3 Mullard valves, £4 10 (list £8 17/6); Mullard Radio for Million 3-valve A.C. kit, complete with 3 Mullard A.C. valves (Pen. 4V, 354 V, 84V), £3 10 (list £6/10); all kit brand new, in original sealed cartons.

WE Have Purchased a small liquidated stock of brand new components and offer a limited quantity of Fifo Radiometers All-in-One latest type bakelite case, 8/9 (list 12/6), 6 only; B.T.H. Senior Pick-ups (1933) with volume control, 28/- (list 42/-); B.T.H. Junior Pick-ups, 17/6 (list 25/-); British General Band Pass tuning units, 10-K.C. aerial or mode, 5/- each (list 14/6).

ALL Goods Guaranteed Brand New and Perfect and Sent Carriage Paid.
PLEASE Note.—We have opened a branch at 271-275, High Rd., Willesden Green, N.W.10, where callers are cordially invited to inspect our large stocks of wireless bargains. Please send all post orders to 323, Euston Rd., N.W.1.

SOUTHERN RADIO, 323, Euston Rd., London, N.W.1 (near Warren St. Tube). Phone: Museum 6324 [3212]

SERVICE RADIO, 46, Lisle St., London, W.C.2, offer set manufacturers' guaranteed surplus:—

ROLA P.M. Speakers, F6, 23/- (listed 40/6); mains energised speakers, D.C., 2,500 to 6,500 ohms, Universal transformers and humbucking coils, 16/6 (listed 39/6); F7 D.C., 23/6 (listed 42/-); H.M.V. tone controls, 1/3 each (listed 12/6); Ultra 95 P.M. speakers, complete with transformer, 39/- (list 44 15/-).

CONSTRUCTORS' 3-valve Kits Completely Assembled on Chassis, 12/6 (list 45/-); Amplion loud-speaker units, 2/3 (list 12/6); headphones (slightly shop soiled, but perfect), 2/9 per pair; hundreds of bargains for callers; every article guaranteed and carriage paid. Service Radio, 46, Lisle St., London, W.C.2. Phone: Museum 6324. [3213]

MAYFAIR RADIO Offers Brand New Surplus Stock, all guaranteed, carriage paid, cash with order or card.

AUTOMATIC Record Changers, complete with pick-up, A.C. 200-250, A.C. Garrard; listed at £10 10, at £7 10 6 (16 only).

RADIO Gramophone Cabinets, H.M.V. flamed walnut, type 531, as used in the H.M.V. 76-gramme p.b. overall 40-27-20, take chassis up to 27-20; cost to make £12, at £5; carriage and packing 7/6 extra.

VALVES, Catkin, boxed, V.M.4, M.S.4B, M.P.T4, 11/- each; M.H.4, 8/6.

MOVING Coil Speakers, Rola's F.6 (2,600 and 2,500 ohms), listed 35/-, at 18/- each; F.6 P.M., listed 49/6, at 28/- each. All incorporate humbucking coils.

PICK-UPS, Harlie, complete with volume control; listed 27/6, at 15/-.

SMOOTHING Condensers, G.E.C. and Murphy, 800 test, 1 mfd., 1/1, 2 mfd., 1/9, 4 mfd., 2/6; the following 1,500 test, 500 A.C., working 800 peak, 1 mfd., 1/5, 2 mfd., 2/4, 4 mfd., 4/-; multiple blocks (separate tappings), 20 mfd., 2+2, 2+2, 2+2, 2+2, 1/-, at 11/-; 11 mfd., 4+2, 2+2, 1, at 6/9; 14 mfd. block, 4+4, 1/-, at 7/6; 9 mfd. block, 4+4, 1, at 5/-.

ASK for Special Quotations for All Your Requirements.
MAYFAIR RADIO, 31, George St., Hanover Sq., W.1. [3066]



German Jubilee Radio Exhibition Berlin 1933 August 18 to 27

All information and prospectus through the Gemeinnützige Berliner Ausstellungs-, Messe- und Fremdenverkehrs-Gesellschaft m. b. H., Berlin-Charlottenburg 9. / Reduced fees of trip to Berlin through the Offices of the "MER"

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.5a. It is free.
EPOCH RADIO MANUFACTURING Co. Ltd.
 Exmouth House, Exmouth St., London E.C.1
 At the junction of Rosebery Avenue and Farringdon Road.
 Phone: Clerkenwell 6666 (4 lines).

ELECTRADIX BARGAINS
 Write for Sale List "W"
ELECTRADIX RADIOS,
 218, Upper Thames Street, E.C.4.

SAVAGE FOR AMPLIFIERS
 58.58, CLERKENWELL ROAD, LONDON, E.C.1
 Phone: Clerkenwell 3068 4

RIEMER

Components, etc., for Sale.—Contd.

BARGAIN Bulletin Offering Readers Extraordinary Radio Component Values Sent Post Free.—Taylor, Macaulay St., Huddersfield. [3108]
SPECIAL Clearance Bargains.—Projectors (9, 16 and 35 mm.), 30/-; Cameras from 20/-; everything for Movies, Walkies and Talkies; inspection invited.
ILLUSTRATED ENTERPRISES, 159, Wardour St. (facing Film House), London, W.1. Phone: Gerrard 6889. [3004]
EPSON Leads Again! Radiophone Potentiometers, wire-wound (listed 4/6), 3,500, 4,000, 5,000, 10,000, 15,000 ohms, 2/6 (21/- dozen); 20,000, 50,000, 100,000 ohms, 2/9 (24/- dozen).
VALVES (as new); Reduced prices: 84V, 624B.17, 7/2; A.C.S.G. V.M., 220V.S.G., M.S.G.1.A., 9/6; A.C. Pen. 11—1821, A.C.H.L., A.C.211.L., 6/9; M.S.4B, D.W.3, P.M.26, P.M.24, 1650, 41M.P., 8/9; A.C.S.G. (metal top), 5/-; P.M.3, P.M.4, P.M.256A, 1625, 5/9.

EPSTON, 93, New Rd., Clingford, E.4. Cash with Order or C.O.D. [3211]
SAFETY from Lightning Guaranteed with "Peaves" Patent Combined Earth Switch and Lead-in Tube, 10in. 3/6, 1 1/2in. 4/-, postage paid; fix one to-day and be safe.—Stott's, Clare Hill, Huddersfield. [3189]

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]

CHAL. ELECTRIC Offers the surplus of a Set Manufacturer, all carriage paid, Cash with Order or C.O.D.; Variable condensers Polar 3 Star 1933, with covers, trimmers, disc drive, light, escutcheon, etc., list 30/6, at 18/-.

BRITISH Radiophone (10 only), fitted as above with full vision drive, Type 424a, at 33/-.

COILS (6 sets of each only) Colver Ferncroft F1, F2, F3, ganged, at 32/-; Varley Niore (1) B.P.30 V, (2) B.P.31, 28/- set ganged; Varley sets B.P.19 ganged, 25/6.—Thal Electric, 6, Conduit St., London, W.1. [3222]

COSSOR 240B and Holder, 9/-; Sound Sales Driver transformer, 5/-; R.I. Q.P.P. output choke, 7/6; Ferranti A.F.12(c), 9/-; A.F.7(c), 15/-; A.F.6, 15/-; O.P.1, 7/6; unused Colver 3-gang "Baby Superhet" coils, 16/6; all guaranteed perfect.—Hulbert, 24, Paragon Rd., Warley, Birmingham. [3214]

CONDENSERS, Special new Mullard oil condensers, 1 mfd., 6/-; 2 mfd., 9/-; 4 mfd., 1/6; 250 volt working, 4 mfd. working, 350-40v. ripple, 2/6; block condensers, 8 mfd. (2:2, 3:1), 2x0.25) and 9 mfd. (1x2, 4x1, 4-0.25), 250v. working, and 8 mfd. (1x4, 1x4) working 350-40v. ripple, 3/-; orders 2/6 and over post paid.—Below.

MULLARD Balanced Armature 4-pole Speaker Units, brand new; 3/6 post free.—Electric and General Distributors, 154, King's Cross Rd., W.C.1. [3220]

M.R.D. Co's Set Manufacturer's surplus; carriage paid, as new: D.C. 2 Pens., 8/-; D.C. 3 H.L.s., 6/6; 8.4V.R.s., 7/6; S.2158, 7/-; P.M.24A.s., 5/9; A.P.495, 5/2; 210 H.P.s., 2/11; L.210s., 2/11; A.C./S.G. V.M., 9/-; P.C. 2 mfd. 100v., electrolytic, 1/-; Benjamin 5-pin chassis V-holders, 1/3 half dozen; Pye 60 m.a., chokes, 4/11.—Mains Radio Development Co., 4-6, Muswell Hill Rd., London, N.6. [3181]

SET Colver Coils (K.B.L.C. (2), K.A.T.1, K.A.T.2), 17/6; Radiophone latest 4-gang, 15/-; W.W.3 components and cabinet, 45/-; Mazda D.C.2 S.G.V.M. 10/6, D.C.2 S.G. 10/6; B.C.2/Pen. 11/6; Sifam M.C. min. voltmeter, 0-20v., 17/6; A.F.5, 12/6; Multitone (with pot), 10/-; Magnavox "Magna" D.C.144, 5,000 ohms, 35/-; rotary converter (110 D.C., 110 A.C.), £2 offers.—Box 7633, c/o The Wireless World. [3195]

CLASS "B" COMPONENTS.

SOUND SALES, Ltd., for Class "B" Components, List "B.B." on request.—Tremlett Grove, Highgate, N.19. [0401]

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, Oct 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]

ELECTRIC CLOCKS.

SPECIAL OFFER.—Superior A.C. mains electric clock movements, rotor only 127 revs, drive up to 10-inch hands; 16/6, post 6d.—Write details, Ebury Bridge Radio Co., 33, Ebury Bridge Road, Sloane 8407. [3203]

PATENT AGENTS.

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]

REPAIRS.

REPAIRS to Loud-speakers, Transformers and headphones, 4/- each; Blue Spots or Wuffs, 5/-; mains eliminators, etc., quoted for; prompt service; satisfaction guaranteed; terms to trade.—Loud-speaker Repair Works, 5, Balham Grove, London, Battersea 1321. [0394]

GUARANTEED Repairs by Experts; specialists for repairs to S. G. Brown and Amplion radio apparatus, also loud-speakers, headphones, pick-ups, Blue Spots, any type rewound, remagnetised and adjusted; 4/-; post free; mains transformer repairs; terms to trade.—Howell, 91, Merley Hill, Enfield, Middlesex. [9718]

TUITION.

RADIO Engineering.—Day, evening, and postal courses. This school is fitted with most modern apparatus. Prospectus free. Valuable recommendations given to qualified students.—Northern Counties Wireless School, Preston. [3199]

R.T.I. Training Methods are Recognised; write for particulars of home study for radio appointments; secure "Certificate of Proficiency" and become "A.M.R.T.I."—Radio Training Institute, 85, New Oxford St., London, W.C.1. [2947]

EXCHANGE.

HIGH Allowances Made on Second-hand Goods in Part Payment for New Sets or Components; easy payments available; we have tremendous stocks tested second-hand goods; send list of your requirements for quotation.—Bostock and Stonnill, 1, Westbourne Terrace, S.E.23. [3208]

WANTED.

WANTED, all types of A.C. D.C. and battery valves, receivers, and any other new components in quantities.—Ward, 12, Treloar Rd., Bow, E.3. Advance 3668. [3205]

NEW or Second-hand wireless sets and parts bought, sold or exchanged; best part exchange allowances; prompt settlement.—R. Wigfield, Furlong Rd., Goldthorpe, Yorks. [3226]

WANTED, new mains and battery valves and modern components in quantities, must be cheap; also Ferranti C-5 milliamper, moving coil meter, flush type, cheap.—Please write, 21, Charnock Rd., London, E.5. [3210]

HIGH Class Radio Sets and Parts Wanted for Cash, no obsolete parts please; parcels may be sent, same receiving immediate attention.—Mildmay Radio Exchange, 24, Mildmay Grove, London, N.1. (Cissold 5001). [3197]

THE Publishers are Prepared to Purchase Copies of "The Wireless Engineer" dated May and June, 1933, at their face value, plus postage, and will forward remittance to senders on receipt of either or both these issues.—Address, The Publishers, Dorset House, Stamford St., London, S.E.1. [3227]

SITUATIONS VACANT.

IF You Wish to Enter the Wireless Profession with a Thorough Training, or if you wish to improve your present position, you will need the certificate issued by Britain's leading wireless college. This is not a correspondence college. Apparatus of all leading makes installed for instructional purposes. Boarders accepted. Training fees can be paid after appointment. Prospectus free.—Wireless College, Colwyn Bay. [3083]

SITUATIONS WANTED.

SERVICE ENGINEER, 23, ten years' practical experience, one year sea service, P.M.G. certificate, excellent references.—Box 7686, c/o *The Wireless World*. [3200]

IMPORTANT NOTICE



Cabinet Designs Competition

The winning designs in the above competition are now available for inspection at our Showrooms from 9.30 a.m. to 6 p.m. daily, and all "W.W." readers are cordially invited to pay us a visit.

CITY ACCUMULATOR Co., Ltd.
18-20 Normans Bldgs., (off) Central Street, E.C.1.

(Near St. Luke's Church, Old Street.)

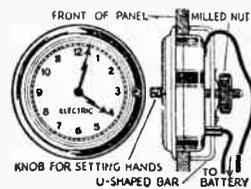
See our announcement on Back Cover.

Situations Wanted.—Contd.

ENGINEER, long practical and commercial experience, seeks responsible position with concern manufacturing radio and electro-mechanical apparatus; London or Southern Counties.—Box 7766, c/o *The Wireless World*. [3215]

BOOKS, INSTRUCTIONS, ETC.

"MOTOR Racing," by S. C. H. Davis ("Casque" of "The Autocar") A book of speed and thrills by a racing driver of international repute who secured notable successes at Le Mans in 1927, and in the 500 miles race in 1930. Demy 8vo., 320 pages, 6 maps, numerous illustrations from photographs, and pen sketches by the Author. Price 7/6 net, by post 8/., from the Publishers, Hiffe and Sons Ltd., Dorset House, Stamford St., London, S.E.1



FIT THIS ELECTRIC CLOCK TO YOUR SET!

NO MAINS NEEDED!
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WEDNESDAY

AUGUST THE NINTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Military Band concert. "Mr. Petre," a play, by Hilaire Belloc.
- LONDON REGIONAL** Chamber music. Orchestral concert.
- MIDLAND REGIONAL** Concert party, relayed from Cheltenham Spa.
- WEST REGIONAL** Orchestral programme, from Weston-super-Mare.
- NORTH REGIONAL** Brass Band concert.
- SCOTTISH REGIONAL** Variety programme.
- BELFAST** Orchestral concert.

ABROAD

- BORDEAUX-LAFAYETTE BRUSSELS (No. 1) COPENHAGEN** 7.50 p.m. Opera: "Aida," by Verdi, from the Opera House Paris.
- EIFFEL TOWER** 9.0 p.m. Orchestral concert from the Casino, Knocke.
- HEILSBURG HILVERSUM HUIZEN RADIO PARIS STRASBOURG** 8.5 p.m. Mozart's String Quintet in C, for two violins, two violas and cello.
- TURIN** 8.0 p.m. Opera: "Aida," by Verdi, from the Opera House.
- 8.40 p.m. Concert of Finnish music.
- 7.40 p.m. The Amsterdam Salon Orchestra.
- 7.55 p.m. The Amsterdam Chamber Orchestra.
- 8.45 p.m. Operetta music.
- 8.30 p.m. Festival concert of contemporary Austrian music.
- 8.35 p.m. Operetta: "The Merry Widow," by Lehár.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—5.55 p.m., Hungarian Transmission: Reading followed by Pianoforte Recital by Ilona Karasonyi, Etude in A Flat, No. 2 (Chopin); Rhapsody in G Minor, Op. 79, No. 2 (Brahms); Polonaise in E (Liszt); 6.55, Report for the Housewife. 7.0, See Prague. 8.0, See Moravska-Ostrava. 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., Gramophone Concert: Juchelouvertüre (Weber); Six German Dances (Mozart); Siegfried's Rhine Journey, from The Dusk of the Gods (Wagner); Scherzo capriccioso (Dvorak); Prelude to Der Pfeifertag (Max von Schillings); Movement from the Suite in D (Bach); Waltz, Morgenblätter (Joh. Strauss). 3.0, Agricultural Prices. 3.20, Talk. 3.40, Educational Talk. 4.15 (from Gleiwitz), Schubert Pianoforte Duets: Two Polonaises, Op. 75; Variations in E Minor, Op. 10; Military Marches in G and E Flat, Op. 51. 4.45, Readings from the Works of Upper Silesian Authors. 5.15, Agricultural Prices. 5.20 (approx.), Song Recital by Käthe Gross: Five Songs (Hans); (a) Das Glück, (b) Stille, kleines Kämmerlein, (c) Du bist die Nacht, (d) Trunk; Leidgekrönt Ich möchte still; Im Geheimen (Mars). 5.45, Talk. 6.5 (from Gleiwitz), Cello Recital, 6.30, Antek becomes an Inspector of Mines—Humorous Dialogue. 6.50, Weather, News—Market Prices. 7.0, Transmission for all German Stations, relayed from Munich. 8.10, Symphony in C, No. 97 (Haydn), by the Silesian Philharmonic Orchestra, conducted by Franz Marszalek. 8.25, Recital of Scandinavian Songs by Marianne Märner (Soprano), with Orchestral Accompaniment: Waldstille (Alvén); Du är stiller so (Alfvén); In weiter Ferne (Eriksson); Am stillen Dorfe (Jännefelt); Titania (Jännefelt); Auf dem Flusse (de Funerick). 8.50, News. 9.0, Concert by the Silesian Philharmonic Orchestra, conducted by Franz Marszalek: Romantic Ballet Suite (Reuss); Variations on Themes of Verdi (Heger). 9.50, News. 10.20, Talk on Austria. 10.40, Political Press Review. 11.0, Light Music and Dance Music, relayed from the Admirals-palast, Hindenburg. 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 25 kW.—6.25 p.m., German Transmission: News, Talk on Physical Culture, Broadcast for Workers, and Talk on the Crisis. 7.0, See Prague. 8.0, See Moravska-Ostrava. 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 Sykes Orchestra, relayed from the Scala, Ostend. 1.0 p.m., Le Journal Parlé. 1.10, Selection from the Barber of Seville (Rossini) on Gramophone Records. 5.0, Dance Music by Robert de Kers and his Cabaret Kings, relayed from the Kursaal, Ostend. 6.0, Talk on Excursions in Belgium: The Caves and Gorge of Comblain. 6.15, Gramophone Concert, Prologue to Il Pagliacci (Leoncavallo); Melody (Tchaikovsky); Mad Song from Hamlet (Thomas), Save, O Lord, thy People (Tschelnokov); Impromptu No. 4 (Schubert); Allegro vivacissimo from the Violin Concerto, Op. 35 (Tchaikovsky). 6.45, The Negroes—Sketch (Blaudin). 7.0, Gramophone Music. 7.15, Review of European Events. 7.30, Medical Talk. 8.0, Gramophone Music. 8.15, La folle journée—Comedy in one Act (Mazaud). 9.0, Orchestral Concert, conducted by Karel Candaal, relayed from the Casino, Knocke: Soloist: Minc, Delprat (Songs); Malagena from Babbil (Moszkowski); Paraphrase on God save the Queen (Guilmby); Aria from Louise (Charpentier); Algerian Suite (Saint Saëns); Elsa's Dream from Lohengrin (Wagner); Overture, 1812 (Tchaikovsky). After the Concert, Le Journal Parlé, followed by Dance Music by the Mickey's Club Band, relayed from the Casino, Knocke.

BRUSSELS (No. 2)

N.I.R., 987 kc/s, 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Gramophone Concert: Overture, La princesse jaune (Saint-Saëns); Bagatelle (Gatty); Selection from The Arabian Nights (Joh. Strauss); Selection from Piccolino (Guiraud); Kashmiri Love Song (Woodford Finlay); Variations (Ochs); Selection from La fille de Madame Angot (Lecocq); Romance, Op. 26 (Svendsen); Slav Rhapsody (Friedemann); The Forge in the Forest (Michaelis); March of the Boyards (Halvorsen). 1.0 p.m., Le Journal Parlé. 1.10, Concert, relayed from the Scala, Ostend. 5.0, Dance Music, relayed from the Continental Palace Hotel, Blankenburghe. 6.0, Gramophone Records: Ballad, Edward (Brahms); Sonata No. 2 (Debussis-Terzi). 6.15, Talk. 6.30, Gramophone Concert: Overture, The Crown Diamonds (Auber); Flute Solo: La volière (Donard); Waltz caprice (Rubinstein); Pastorale and Bourrée from the Lincolnton Rhapsody (Billant); Serenade (Luciani); Barcarolle No. 6 (Faure); Selection from Stand up and Sing (Ellis); First Waltz (Dranand-Mouton); Overture, The Grand Duchess of Gerstein (Offenbach). 7.15, Talk: The Economic Situation. 7.30, Horticultural Talk. 8.0, Fantastic Symphony (Berlioz) on Gramophone Records. 8.45, Recitations. 9.0, Concert, relayed from the Kursaal, Ostend. After the Concert, Le

ATHLONE

725 kc/s, 413 metres; 60 kW.—Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.30 p.m., Time Signal, Weather Report, Stock Exchange Quotations, and Gramophone Music. 6.0, Programme for Children. 6.45, News. 7.0, Gaelic Talk. 7.15, German Lesson. 7.30, Time Signal. 7.31, Concert by the Arlane Band. 8.30, Violin Solos by Richard Kiernan. 8.45, Concert by the Station Orchestra. 9.15, Soprano Solos by Mary Burke Collins. 9.30, Talk by T. W. Shaw: The Undeveloped Natural Resources of Ireland. 9.45, Sponsored Programme. 10.45, News, Weather Report, and Close Down.

BARCELONA

EAJI, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert: Selection from The Rhinegold (Wagner); Aria (d'Ambrosio); Dance from Die Puppenfee (Bayer); Cantabile (Cui); Selection from The Pearl Fishers (Bizet); Minuet (Bocherini); Melody (Scott). 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, Relay from the Ayuntamiento. In the interval at 12 Midnight, Press Review. 1.0 a.m. (Thursday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk and Duplo-lavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.40 (approx.), Chamber Music: Trio, Op. 49 (Mendelssohn); Trio, Op. 70, No. 1 (Bethoven). 9.40, Concert by the Station Quintet: Roman Rhapsody No. 2 (Caraballa); Selection from La donna perduta (Pietri); Tramoto (Pennati-Malvezzi); Extract from Act IV of André Chénier (Giordano); Carnival (Ländler); Fantasia (Michaelov-Suppé). In the interval: Art Notes. 10.30, Dance Music relayed from the Gran Caffè del Levante.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—7.0 p.m., Pianoforte Recital by Mlle. Jovanka Konjevic: Etude, Op. 104, No. 2 (Mendelssohn); Etude in A minor (Schumann-Paganini); Concert Etude (Sauer); Prelude and Fugue in G (Bach); Sonata, Op. 78, No. 24 (Beethoven). 7.30, Gramophone Music. 8.0, National Song Recital by Mine. Aleksandrovic. 8.40, Radio Play. 9.30, News and Time. 9.50, Brahms Concert on Gramophone Records. 10.20, Dance Music relayed from the Ratnicki Dom Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Zither Recital on Gramophone Records. 2.45, Programme for Children. 3.30, Weather and Exchange. 3.45, Travels of Famous Writers: Märkische Landschaft (Heinrich). 4.0, Concert from Hamburg. 5.0, Talk for Workers. 5.20, Two Divertimenti (Mozart), by the Berlin String Quartet. 6.0, A Poem. 6.5, Address and Organ Solos. 6.35, Technical Wireless Talk. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, To-day's Motto, followed by Talk for the Radio Jubilee Exhibition. 8.10, Max von Schillings Concert by the Augmented Station Orchestra, conducted by Prof. Reichwein; Ludwig Wüllner: Symphonie Prologue, Oedipus, Op. 11; Orchestral Music, Hexenlied, Op. 15, to words (Wildenbrück), spoken by Ludwig Wüllner; Prelude to Act 3 of Der Pfeifertag. 8.50, Winke, bunter Wimpel. . . .—a Ballad (Alfred Karasch), with Music by Walter Gronast. 10.10, 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.—4.30 p.m., Military Band Concert, relayed from the Spreegarten. Trepow. 5.15, Talk: The Cross of Christ and the Swastika. 5.35, Chamber Music. 6.5, See Berlin (Deutschlandsender). 6.40, The Witzleben Station informs its Listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Munich. 8.5, Literary Programme—In Praise of Gardening. 8.50, Concert by Members of a Nazi Band. 10.0, Weather and News. 10.15 (approx.), Dance Music, relayed from the Spreegarten, Trepow. In an interval at 11.0, Talk: What they are saying in Berlin. 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.—7.30 p.m., News and Market Prices. 7.35, Agricultural Talk, News, and Weather. 7.50, Aida—Opera (Verdi), relayed from the Opera House, Paris. After the Opera, Time Signal.

Journal Parlé, and Dance Music by Robert de Kers and his Cabaret Kings, and a Tango Orchestra, relayed from the Kursaal, Ostend.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: Soloist: D. Teodoru (Violin); March (Blankenburg); Acceleration-Walzer (Joh. Strauss); Overture, Searabée d'or (Chillemont); Second Suite from L'Arlesienne (Bizet); Plaisanteries musicales (Aston); Romanian Dances (Bartok); Violin Solo, Legend (Wieniawsky); Aubade (d'Ambrosio); Danse lente (Frauck). In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Gramophone Music. 7.40, Educational Talk. 8.0, Pianoforte Recital by R. Molnar: Toccata and Fugue in D Minor (Bach-Tausig); Pieces (Chopin); (a) Berceuse, (b) Two Etudes, (c) Waltz in E Minor, (d) The Nightingale (Liszt); Scherzo (Mendelssohn); En bateau (Debussy); Piece (Schumann-Tausig). 8.30, Talk. 8.45, Clarinet Recital. 9.15, Suite (Saint-Saëns) by J. Thaler (Cello). 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—5.0 p.m., Sea Rovers—Programme relayed from the World Jamboree. 6.0, Concert by the Budapest Glee Society. 7.15, Concert by the Station Orchestra. 8.45, Dramatic Programme, followed by a Concert by the New Brighton Boys Orchestra.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.—Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time and Chimes from the Town Hall and Weather Forecast. 12.5 p.m., String Ensemble Concert, relayed from the Wives Restaurant. 2.0, Interval. 3.0, Gramophone Concert: Hallelujah (Mozart), by Hedwig Debieka; Aria from Act II of Zaza (Leoncavallo); by Heinrich Schlusnus; Aria from The Mastersingers (Wagner), by Alexander Kipnis; Arab Melody for Cello (Spoliansky), by Michael Bohnen; April, April (Sylvain), by Sarah Leander; Potpourri of Irish Folk Songs, by the Big Four. 3.30, Orchestral Concert, conducted by Emil Reesen: March, Fairest of the Fair (Sousa); Overture, La Dame blanche (Boieldieu); Waltz, Roses from the South (Joh. Strauss); Fantasia on South Jutland Melodies (arr. Reesen); March from The Merry Widow (Lehar); Marche militaire from Suite algérienne (Saint-Saëns); Ballet Music from La Belle Hélène (Offenbach); Frühlingsglaube for Strings (Schnbert); Selection from Les Dragons de Villars (Mailart); March from The Dollar Princess (Faill). In the interval at 4.15 (approx.), Programme for Children. 5.35, Exchange and Fish Market Prices. 6.20, Talk: King Leopold II and the Congo Free State. 6.50, Weather and News. 7.15, Time Signal. 7.30, Agricultural Talk. 8.0, Chimes from the Town Hall. 8.5, String Quintet in C for two Violins, Two Violas and Cello (Mozart). 8.30, Talk and Weather Forecast. 9.0 to 2.0 a.m. (Thursday), Radio Ball. 9.0, Dance Music by Prell's Dance Band; Soloist, Vald, Davids. In the interval at 10.0, News. 11.15, Dance Music by the Valencia Orchestra. 12 Midnight, Time and Chimes from the Town Hall. 12.5 a.m. (Thursday), Concert, relayed from the Arena. 1.0, Dance Music from the Nimb 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. 4.30, Programme for Children. 5.0, Gramophone Concert for Portsmouth and Southsea Listeners. Signature Tune: Night by the Sea; Jimmy Rodgers; Everyone does it in Hawaii; Gracie Fields: It's nothing to do with you; Joseph Hislop; Bonnie Banks of Loch Lomond; Coram and Jerry: Jerry in the Army; Jack and Claude Hulbert: It always starts to rain; Wish Wynne: Blue Beard; Raie da Costa; Butterflies in the Rain. 5.30 Concert for Isle of Wight Listeners. That Tiny Teashop (Raymond); Xylophone Solo; Aeroplane Polka (Gaston); Highland Schottische; Song: Dance Away the Night (Stamper); Let me dream in your arms again; Argentina Amor (Blum); Xylophone Solo; Dance of the Marionettes; War March of the Priests, from Athalie (Mendelssohn); Signature Tune. 6.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music. Signature Tune: Bells of Normandy; Mad about the Boy; Night shall be filled with Music; Cabin in the Cotton; I don't know why; One little word led to another; On a Sunny Afternoon; Farewell to Arms; Hyde Park Corner; Night-Lull; The London Fire Brigade; Rosa Mia; Sweetheart; When Work is through; What makes you so adorable? (de Rose); Round the Bend of the Road; Gosh Dar; Signature Tune. 11.0, Songs and Orchestral Music. Selection of Songs by Wilfred Sanderson;

AUGUST 9th

WEDNESDAY

continued

Song of the Jolly Roger (Candish); The Sun is at my Window (Myer); Orchestra: Stephen Foster Medley; Victory March (Von Blon); Ready for the River (Buck); Comrades in Arms (Adams). 11.30, Concert by the I.B.C. (Ireland), Ltd. Signature Tune: Come back to Erin; Overture, Mignon (Thomas); Flower Song from Carmen (Bizet); One Fine Day, from Madame Butterfly (Puccini); Ireland, Mother Ireland (Loughborough); Selection from I Pagliacci (Leoncavallo); Chorus: The Dear little Shamrock; Waltz from La Bohème (Puccini); Scarf Dance (Chaminade); Signature Tune. 12.5 a.m. (Thursday), I.B.C. News Bulletin in English. 12.10 (approx.), Club Concert (for Inveresk Listeners. Part I: Mandoline Band Music. Signature Tune: The Chum Song; Loin du bal (Gillet); In Old Seville (Ege and Rosen); Capriccio Mazurka (Arlenzo); La Czarine (Ganne); Napolitana (Hay and Meisel). Part II: Dance Music. That's my Home; Forty-Second Street; You're my everything; Marching along together; And so I married the Girl; Farewell to Arms; Under my umbrella; Dreaming; Signature Tune. 1.0. Octet Concert. Ballet Music from Rosamund (Schubert); Mock Morris (Grainger); Take a pair of Sparkling Eyes, from The Gondoliers (Sullivan); Valse capricce; Waltz from Der Rosenkavalier (R. Strauss); The English Rose (German); Wiegengelied (Grieg); Golliwog's Cake Walk (Debussy). 1.30, Dance Music. Signature Tune: Belles of Normandy; Moon Song; After To-night we say goodbye; A Bedtime Story; You've got me in the Palm of your hand; Castles in the Sand; All over Italy; I shall still keep smiling along; Something came and got me in the Spring; Signature Tune. 1.57, I.B.C. Goodnight Melody. 2.0 (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: The Literature of the Hidden Germany. 6.25, Topical Talk. 6.45, Today's News. 6.50, Time and Announcements. 7.0, Transmission for all German Stations, relayed from Munich. 8.5, Roadmakers in Revolt—A Literary and Musical Programme. 9.20, See Stuttgart. 10.30, Time and News. 11.0, Concert from Langenberg.

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.—2.10 p.m., Paul Lincke Gramophone Concert: Overture, Nakhir Hochzeit; Lincke Potpourri; Ein kleines bisschen Liebe; Song from Im Reiche des Indra; Waltz from Frau Luna; Potpourri; Musicalisches Wandelpanorama; Siamesische Wachtparade; Verschmülte Liebe; Baumbliuten Marsch; Birthday Serenade; Vom Rhein der Wein; Die Märkische Heide. 3.0, Exchange. 3.40, Shipping and Aviation Report. 4.0, Concert by the Hamburg Philharmonic Orchestra, conducted by Gerhaard Maass: Overture in D (Bach); Mödlige Tänze (Beethoven); Extracts from the Serenade in D (Brahms); Ballet Suite (Reger). 5.0, Talk: The Cultivation of Local Patriotism. 5.30, Hamburg, Bremen and Lübeck—Report on Events in the Senates and Houses of Burgesses of the Hanseatic Free Cities. 6.0, Variety Programme. 6.40, Frankfurt Exchange and Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations relayed from Munich. 8.0, See Berlin (Deutschlandsender). 8.5, De Dörpdokter—Dialect Play in Three Acts (Jan Fabricius), translated from the Dutch. 9.35, Hans Fischer: Piano-forte Recital by the Composer and Willi Christiansen: Prelude for Piano-forte; Five Dances for Piano-forte, Op. 10; Serenade for Two Piano-fortes, Op. 90. 10.5 News. 10.25, Topical Talk. 10.35, 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.—1.5 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilken. Overture, Le Maschere (Mascagni); Waltz, Op. 55, No. 2 (Dvorak); Dance (Dvorak); Suite from As you like it (Wetzlar); Festival Overture (Kéler-Béfi); Melody (Toselli); Italian Bacarolle (Czibulka); Waltz, Künstlerträume

(Vollstedt); Das treue deutsche Herz (Weniger); 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 for Parents. 4.30, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky, relayed from the Tiergarten, Königsberg. Overture, The Magic Flute (Mozart); Finale from Symphony No. 13 in G (Haydn); Entr'acte and Ballet Music from Rosamund (Schubert); Overture, The Gipsy Baron (Joh. Strauss); Waltz, Tales from the Vienna Woods (Joh. Strauss); Mein Lebenslauf ist Lieb und Lust (Jos. Strauss); Bahn frei (L. Strauss); Pöster-Walzer (Lanner); Waltzes (Zeller) from (a) The Bird Fancier and (b) Der Obersteiger. 5.50 (from Danzig), Recital of Songs to the Lute by Paula Momber. 6.15, Agricultural Prices. 6.25, Talk: Magazines and Reviews. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, See Berlin (Deutschlandsender). 8.10, Talk: The Modern State. 8.40, Concert of Finnish Music by Ina Grasslin (Soprano), August Hewers (Violin), and Rudolf Winkler (Piano-forte). Three Songs of Summer and Epilogue (Kkonen); Sonata in G Minor for Violin and Piano-forte (Kkonen); Songs (Kilpinen); Sonatina in E for Violin and Piano-forte (Sibelius); Songs (Sibelius). 9.25 (from Danzig), Stine—Radio Play (Hans Ulrich Köhl). 10.15, News. 10.30 (approx.), Concert by the Small Station Orchestra, conducted by Eugen Wilken. Overture, La battaglia di Legnano (Verdi); Dramatic Suite (d'Albert-Bece); Waltz, Wo die Zitronen blüh'n (Joh. Strauss); Variations (Ritzer); Violin Solos (Sarasate): (a) Andalusian Romance, (b) Spanish Dance No. 8; Turkish Suite (Gauwin); Waltz (Lehar); Overture, The Italian Girl in Algiers (Rossini). 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.). 10.40 a.m., Concert by the v.d. Horst Trio; Soloist, Mme. C.v. Ravenzwaay-Möllenkamp (Songs). 11.40, Police News. 11.55, Gramophone Music. 12.10 p.m., Organ Recital by S. Visser: Solemn Prelude in G (Pollitt); Largo appassionato (Beethoven); Andante (Beethoven); Theme with Variations (Fischer); War March (Mendelssohn). 12.55, Trio Concert (contd.). 1.40, Interval. 2.10, Gramophone Music. 2.40, Religious Address. 3.10, Concert by a Children's Choir, conducted by A. Kiehoff. In the interval at 3.40, Gramophone Music. 4.40, Programme for Children. 5.40, Gramophone Music. 6.10, Talk. 6.40, Police News. 6.55, Religious Report. 7.10, Recitations. 7.40, Concert by the Amsterdam Salon Orchestra, conducted by M. Piekens: Overture, Poland (Urbach); Siren Magic (Waldteufel); Potpourri, Aus Mozarts Reich (Urbach); Geisterreigen (Glück-Berge); Prelude and Mazurka (Delibes); American Patrol (Meacham); Selection from Les Saltimbanques (Ganne). 8.40, Talk. 9.10 (Concert (contd.)); Overture, Die schöne Galathée (Suppé); Piece (Esslinger); Potpourri: Inu Rosengarten Mendelssohns (Urbach); March, Per aspera ad astra (Urbach). In the interval at 9.55, 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.—11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.K.A.). 11.40, Concert by the Amsterdam Chamber Orchestra, conducted by D. Kiekens: Overture, The Caliph of Bagdad (Baldien); Selection from La Bohème (Puccini); Dance of the Dervishes (Bendix); Gramophone Records; Weber Potpourri (Urbach); Italian Serenade (Caludi); Emperor Waltz (Strauss); Japanese Lantern Dance (Yoshitomo); Four Indian Love Lyrics (Woodforde-Findon); Selection from The Daughter of the Regiment (Donizetti); Waltz, Die Romantiker (Lanner); March (Holzmann). 1.40, Gramophone Music. 2.10, Programme for Children. 3.40 to 3.55, Interval. 3.55, Gramophone Music. 5.10, Concert by a Mandoline Orchestra, conducted by J. Kok: March from Bocaccio (Suppé); Selection from Mignon (Thomas); Minnet (Paderewski); Toredor et Andalouse (Rubinstein). 5.25, Song Recital by A. de Booy. 5.40, Concert by a Mandoline Orchestra (contd.): Spiegelgavotte (Lincke); Juliska (Kok); Loin du bal (Gillet); Fortuna (Siede). 5.55, Song Recital (contd.). 6.10, R.V.U. Programme. 6.40, Talk. 6.55, Organ Recital by J. Vogel. 7.5, Talk: Anti-Semitism. 7.25, Organ Recital (contd.). 7.40, S.O.S. Messages. 7.42, News. 7.50, Accordion Music by the Three Harrison. 8.5, Announcements. 8.10, Accordion Music (contd.). 8.20, Song Recital by Henry Marchand. 8.40, Concert by the Eddy Wallis Ensemble: Waltz, Dolores (Waldteufel); Une larme (Mussorgsky); Kiss in the Dark

(Micheli-Haensch); Selection from The Tales of Hoffman (Offenbach-Moreua); Selection from Manzelle Nitouche (Hervé); Don't ask (May-Ayn); La lettre de Manon (Gillet); Selection from The Czarevitch (Lehar-Raip); Lolita (Buzzi-Peccia). 9.40, Song Recital (contd.). 9.55, Concert (contd.): Zigeunersehnsucht (Kempner); Souvenirs; Poranek (Lindsay); Two Mazurkas (Wieniawsky); Selection from Tell me To-night (Spoliansky-Borchert); Wien, sterbende Märchenstadt (Leopold-Uhl); Strauss Waltz Potpourri (Lorens); Dort wo die Wälden grün (Brodsky-Weinger). 10.40, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, Announcements. 1.15, Radio Concert. 8.0, Amusement Guide and News. 8.10, Press Review. 8.20, Literary Review. 8.30, Radio Concert. 8.45, News and Weather Report. 9.0, Concert, relayed from Cannes.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW. Relayed by Helsinki, 815 kc/s, 368.1 metres.—6.50 p.m., Programme for Boys. 7.0, Talk. 7.25, Song Recital. 7.45, Readings. 8.0, Concert by a Military Band. 8.45, News in Finnish and Swedish. 9.15, Light Music, relayed from the Kappeli Restaurant.

LANGENBERG

635 kc/s 473 metres; 60 kW.—12.50 p.m., News. 1.0, Orchestral Concert, conducted by Eysoldt: Overture, Prinzess Goldschuh (Rust); Melody from Hansel and Gretel (Humperdinck); Paraphrase on the Song, Aus der Jugendzeit (Friedemann); Polka and Czardas from Ritter Pasman (Strauss); Selection from William Tell (Rossini); Der gelbe Tango (Nieman); Ländler (Pacher-egg); Suite, Im Zirkus (Lautenschläger); Die Walzer der Welt (Bobrecht). In the interval at 2.0 (approx.), News. 2.30, Interval. 3.0, Handwork for Children. 3.30, Economic Notes and Time. 3.50, Programme for Children. 4.30, Political Address. 4.40, Dialogue: Students with limited Means. 5.0, Chamber Music on Gramophone Records. 5.30, Talk arranged by the Nazi Women's Society. 5.50, Reading. 6.0, Concert by the Fröhliche Fünf. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, News. 8.5, See Berlin (Witzleben). 9.0, The German Dance—Programme of Literature and Music by the Fröhliche Fünf, Else Pfaff, Paul Henn and Hans Herten (Recitations). 10.0, News. 10.30, Light Music 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. Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon, Weather and Time. 12.5, Concert by the Emde Orchestra: March, Grenzmarkklänge (Schmidt); Overture, Das süsse Mädel (Reinhardt); Paraphrase on the Song, Der Spielmann (Sommer); Selection from Rigoletto (Verdi-Bassi); Waltz, Ein Sommerabend an der Nordsee (Döring); Suite, Am Golf von Neapel (Eilenberg); Idyll, Frühlingszauber (Heims); Potpourri of Nazi Songs (Seidel); Idyll, Frühlings zauber (Pretsch); Song, Da draussen in der Wälden (Arnold); Potpourri of Strauss Music (Lindemann); Serenade, Florida (Blume); Rhapsody, A Gipsy Fête (Heykens); Idyll (Röhrlich); March-Potpourri, Alte Deutsche Treue (Frantzen). In the interval at 1.0, News and Programme Announcements. After the Programme, News. 2.15, Talk: Traffic Regulations for Motorists. 2.45, Talk: Birthplaces of famous Thuringians. 3.0, Gramophone Concert. 3.35, Exchange and Market Prices. 4.0, Programme for Young People. Part I, Humorous Play; Part II (at 5.0), Demonstration of the Hitler Youth; Part III (at 5.25), Folk Song Concert. 5.50, Economic Notes, Weather, News and Time. 6.0, Review of Books about Women. 6.20, Talk on Economics. 6.50, Review of the Day's Events. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, The Dancing Wave—Grand Dance Potpourri by the Station Orchestra, the Emde Orchestra, and Soloists. In the interval at 9.0, Agricultural Talk, and at 10.5, News. 10.45 (approx.), Serenade from Langenberg. 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.30 p.m., Programme for Children. 7.0, Gramophone

Music. 8.0, Song Recital. 8.30, Literary Talk. 8.45, Orchestral Concert. 9.30-10.0, Programme in English by the I.B.C. 9.30, International Broadcasting Club Concert: Someone to care for; This is no dream; Play fiddle, play; I'll never have to dream again; The Night was made for love; Tomorrow night we'll meet again; How are you?; When they're on the Love Parade. 10.30, Concert of English Gramophone Records. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—Luxembourg Programme. 7.30 p.m., Orchestral Concert on Gramophone Records: Piano-forte Concerto (Saint-Saens); Overture, 1812 (Tchaikovsky). 8.15, Weather Report. 8.20, Song and Violin Recital. 8.50, News in French. 9.0, Concert of Military Music relayed from the Place d'Armes. In an interval at 9.20, Catholic Address. 9.45, News in German. 9.55, Concert of Light Music by the Station Orchestra. 10.25, Dance Music on Gramophone Records.

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.), Le Roi s'amuse—Play (Victor Hugo, arr. Pacheco) with Incidental Music and Introductory Talk. 1.15 a.m. (Thursday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.45 p.m. till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., Concert of Music by Karel Koleta, relayed from Radvanice. 7.0, See Prague. 8.0, Variety Programme. Part I, Concert by the Station Orchestra and Soloists: L. Havlik (Song); V. Rjepkova (Piano-forte); R. Blaha (Accordion). Part II, Broken Windows—Comedy in Two Acts. 10.0, See Prague. 10.30 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—3.0 p.m., Concert of Light Music. 4.0, Talk: Six Months' Political Propaganda Work. 4.30, Radio Play (Oreynsky). 5.30, Programme Announcements. 5.45, Topical Talk. 6.30, Popular Concert relayed from a Park. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes.

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 Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert by the Aljo Eckl-Pollstein Orchestra: Overture, Venus auf Erden (Lincke); Selection from The Hermit's Bell (Mailart); Romance, Nach Jahren (Rivelli); Waltz, Träume auf dem Ozean (Gungl); Fantasy, Hülson (Siede); March, Soldatenleben (Schmelung). 5.45, Dialogue: A Floating Island—The Westfalen, the Auxiliary Ship of the German Luftflanz, 6.5, Georg von Franksberg—A Recital of Landsknecht Songs (Zenga), by Otto Goebel (Bass). 6.25, Talk: Constructive and Destructive Revolutions. 6.45, Time and News. 7.0, Transmission for all German Stations; The Hidden Reich—Radio Play (Lipp), Music by Werner Ekg. 8.0, See Leipzig. 9.5, Talk on Austria. 9.25, Summer Holidays—A Humorous Radio Sequence (Hormann). 10.20, Time and News. 11.0, Serenade from Langenberg. 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., Gramophone Concert. 6.30, Talk for Girls: Floral Decorations. 7.0, Announcements, Weather and News. 7.30, Gunnar Teiss reads from his own Works. 8.0, Time, 8.1, Concert by the Station Orchestra, conducted by Ingo Kramm. 9.0, Talk on Verdi. 9.30, Agricultural Report, Weather, and News. 10.0, Topical Talk. 10.15, Songs and Humorous Review of the Week. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

AUGUST 9th WEDNESDAY continued

PALERMO 558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Notes, Tourist Report, Agricultural Notes and Giornale Radio. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Il soldato millantatore—Play in Three Acts (Plato). In the intervals, Gramophone Music. 10.05, 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 Parle. 8.0, Aida—Opera in Four Acts (Verdi), relayed from the Opera House. 10.0 (approx.). Close Down.

PARIS POST PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music. 7.15, Le Journal Parle. 7.30, Sponsored Programme. 8.0, Talk on Economics. 8.20, Concert. 9.15, Concert by the Ray Ventura Orchestra, relayed from the Casino, Deauville. 10.45, News.

PARIS RADIO PARIS, CFR, 174 kc/s, 1,725 metres; 75 kW.—7.30 a.m., Weather and Physical Culture. 7.45, Gramophone Records. Le joyeux Trompette (Allier); Waltz from The Dolls Princess (Fall); Perruche et Perroquet (Corbin); March (Alartus). 8.0, Weather and Press Review. 12 Noon, Educational Talk. 12.15, Through Foreign Lands, on Gramophone Records. Spain: Goyescas (Granados); Ronda aragonese (Granados); Clavelitos (Valverde). Russia: Italian Caprice (Tchaikovsky); Cradle Song from Sadko (Rimsky-Korsakov); Prelude to Khovanstchina (Mussorgsky). Poland: Peasant Dance, Chindia (Michalovier); Dzianado; Pianka Dzielwicka; Jak Taneka Gorale; Wesde Gorale. Italy: Hymn to the Sun from Iris (Mascagni); Resurrection (Alfano); Neapolitan Melody; Torna a Sorrento (Debutti); Czechoslovakia: Moldavia (Smetana); Dance of the Nymphs (Smetana); Melody (Smetana). Scandinavia: Olaf Trygvason (Grieg); Norwegian Dances (Grieg). In the interval at 1.0, Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 7.0, Market Prices, Weather, Agricultural Notes, Exchange and Racing Results. 7.10, Gramophone Concert. Overture. Si jetais roi (Adam); Song of the Volga Boatmen (arr. d'Amor); Joyeuse marche (Chabrier); O Sole mio (di Capua); Maria Mari (di Capua); Two-Step, Espana (Blanco); Selection from The Three Musketeers (Friml). 7.50, Commercial Notes and News. 8.0, Recitation: The Trial of Joan of Arc, on Gramophone Records. 8.30, News and Weather. 8.40, Fashion Review. 8.45, Operetta Music. Overture, Orpheus in the Underworld (Offenbach); Duet and Rondo from La Petite mariee (Lecocq); Selection from Le jour et la nuit (Lecocq); Song and Duet from Miss Decima (Andran); Gramophone Records: Selection from La Mascotte (Andran); Extracts from The Merry Widow (Lehar); Overture, Countess Maritza (Kalmann). In the interval at 9.15, Press Review and News.

PITTSBURGH KDKA, 980 kc/s, 306 metres; 50 kW. Relayd by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., KDKA Home Forum. 8.0 to 9.30, New York Relay. 8.0, Betty and Bob. 8.15, Words and Music. 8.30, Happy Days in Dixie. 9.0, Southern Symphonies. 9.30, News and Markets. 9.45, Dance Masters, from New York. 10.0, Rhythm Kings. 10.15, Tarzan of the Apes. 10.30, Programme to be announced. 10.45, Little Orphan Annie, from New York. 11.0, News-Reeler. 11.15, Weather and Sports Notes. 11.30, Pittsburgh Spotlights. 11.45 to 1.0 a.m. (Thursday), New York Relay. 11.45, Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, Annie, Judy and Zeke. 12.30, String Symphony. 1.0, Programme to be announced. 1.30 to 3.30, New York Relay. 1.30, Potash and Perlmutter. 1.45, Phil Cook. 2.0, Philharmonic Orchestra. 3.0, Willard Robinson's Orchestra.

PORSGRUND.—See Oslo.

PRAGUE 614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by Miloslav Kabelac; Overture (Mominzko); Polonaise from Eugene Onegin (Tchaikovsky); Selection from Dalibor (Smetana); Overture, Wanda (Dvorak); Selection from Jenufa (Janacek). 3.55, Exchange. 4.0, Interval. 5.45, Gramophone Music. 5.55, Talk. 6.5, Agricultural Report. 6.10, Gramophone Music. 6.25, News in German. 6.30, German Transmission: Talk on the Labour Market. 7.0, Chimes and News. 7.10, Greetings to our Countrymen beyond the Frontier—Pianoforte Solos and Songs. 7.45, Talk: The Heavens in Summer. 8.0, See Moravská-Ostrava. 10.0, News and Sports Notes. 10.15, News in French. 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., Radio Interview. 7.25, Agricultural Report

and Weather. 7.30, Talk: Belgian Architecture. 8.0, Cabaret Concert. 9.5, Tourist Programme. 9.15, Concert by the Lyrette de Montreux, conducted by Otto Held. 9.50, News. 10.0, Gramophone Dance Music. 11.0 (approx.). Close Down.

REYKJAVIK 250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme. 9.30, Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News. 10.30, Reading. 11.0, Violin Solo by Thorarinn Gudmundsson, followed by Secherezade (Rimsky-Korsakov), on Gramophone Records.

ROME Call IRO, 680 kc/s, 441 metres; 50 kW. Relayd by Naples, 941 kc/s, 319 metres, and 2RO, 11,810 kc/s, 25.4 metres, from 5.30 p.m.—12.30 p.m., Gramophone Music. 1.0, Orchestral Concert: Anna Maria (Llossas); Glow-worm Idyll (Lincke); Day by Day (Nicholls); Canta Chiquita (Barziza); Festa di maggio (Colotta); Danubiana (Kapper); Occhi neri (Ferraris); Pattuglia di zingani (Ranzato). In the intervals, Giornale Radio and Exchange and Announcements. 4.45, Giornale Radio, Exchange, and Report of the Royal Geographical Society. 4.55, Programme for Girls. 5.10, Weather. 5.15, Orchestral Concert: Oh, Saponico (Gargiulo); Fantasia, Pearls of the Dumbie (Uhl); Visioni di danza (Valdis); Geni, o saxofono (Fiorello); Serenata d'inverno (Bettinelli); El Sermuelico (Escobar); Fantasia africana (Donati); Alcantara (Avtabile). 6.40 (from Naples), Shipping and Sports Notes. 6.50, Agricultural Report and Dopolavoro Announcements. 6.57, Report of the International Institute of Agriculture in Italian and English. 7.10, Tourist Talk. 7.20, News 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, Wind-Band Concert, conducted by Andrea Marchesini; Overture, Norma (Bellini); Selection from La Bohème (Puccini); Scherzo from L'apprenti sorcier (Dukas); Talk: Symphonic Poem, Feste romane (Respighi); Selection from William Ratcliff (Mascagni). 9.30 (approx.), Il viale dei pioppi—One-Act Comedy (de Stefani). 10.0 (approx.), Concert (cont'd.); Prelude and Finale from La Resurrezione di Cristo (Perosi); L'italiana in Oriente (Marchesini); Trumpet Solo (Neumann). 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY WGY, 790 kc/s, 379.5 metres; 50 kW. Relayd 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 Cowgirl. 9.45 to 10.0, Lady Next Door. 12.45 a.m. (Thursday), Stock Reports and Baseball Scores. 1.0 to 2.15, New York Relay. 1.0, Variety Programme. 1.30, Life and Songs of Stephen Foster. 2.0, Ferde Grofe's Orchestra. 2.15, Popular Programme. 2.30, Variety Programme. 3.0, Popular Programme. 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 to 6.35 a.m. (from Basle), Gymnastics. 11.59, Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from Zurich), Gramophone Concert. In the interval at 12.30 p.m., Time and News. 1.25 (from Zurich), Time, Weather and Exchange. 1.35 (approx.), Interval. 5.0 (from Zurich), Programme for Children. 5.30 (from Zurich), Light Music on Gramophone Records. 6.30 (from Zurich), Talk: Alchemy New and in the Past. 7.0 (from Zurich), Time, Weather and Market Prices. 7.10, Gramophone Concert. 7.30 (from Zurich), English Lesson. 8.0 (from Zurich), Recital of Yodels. 9.0, News. 9.10 (from Zurich), Concert by the Radio Orchestra. 10.15 (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.—5.5 p.m. (from Östersund), Accordion Music. 5.45 (from Östersund), Song Recital by Olle Alund. 6.0, Gramophone Music. 7.0 (from Boden), Talk on Hunting. 7.15, Weather and News. 7.30, A Play (Ragnar Josephson). 9.0, Cello Recital by Jean Brizard: Elegy (Faure); Habanera (Ravel); Rondo (Bocherini); Largo (Bach); Salta (Nin); Grandine (Nin). 9.20, Talk. 9.45, Weather and News. 10.0, Modern Dance Music relayed from the 2-ernis Salonger. 11.0 (approx.). Close Down.

STRASBOURG 869 kc/s, 345 metres; 11.5 kW.—10.45 a.m., Festival Concert of Contemporary Hungarian Music, relayed from the Conservatoire. Suite for Harpsichord (Hernani); Sonata for Cello (Jemnitz); Pianoforte Concerto; Duet for Violin and Cello (Harsanyi); Choruses for Women's Voices (Kodaly); Pianoforte Concerto No. 2 (Bartok). 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Song Recital of Classical Duets by Berthe de Vigier (Soprano) and Dora Witz-Wyss (Contralto). 2.0 to 3.30, Interval. 3.20, Orchestral Concert, relayed from the Casino, Vichy; Conductor, Brouillac; Overture, The Barber of Seville (Rossini); Pastorale mystique from Le jongleur de Notre-Dame (Massenet); Ständchen (Schubert); Orchestral Suite, Aphrodite (Férier); Songs; Two Arabesques (Debussy); Selection from L'Africaine (Meyerbeer); Theresen-Walzer (Faust). 5.0, Talk in German on Electricity. 5.15, Gramophone Concert of Variety Music. 6.0, Talk in French on Commerce. 6.15, Gramophone Music. 6.30, Song Recital by Jean Hazart and Ré Koster (Soprano). 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in French, Lottery Results and Announcements. 8.30, Festival Concert of Contemporary Austrian Music, relayed from the Conservatoire; The Municipal Orchestra and Soloists; Conductor, Hermann Scherchen; First Movement from the Symphony Music for Nine Solo Instruments (Krenek); Concert Piece for Violin (Wellesz); Sonata for Pianoforte (Zenk); Three Melodies for Soprano and Orchestra (Brand); March for a Small Orchestra (Reti); Symphony (Webern); Serenade (Schönberg). 10.0 (approx.), Press Review in German. 10.15 (approx.), Orchestral Concert relayed from the Grand Kieher Tavern; Conductor, Jemine; March, Die Regiment-skinder (Fuecik); Donauwaller (Ivanovic); The Parade of the Tin Soldiers (Jessel); En parcourant mon album à musique (Baillon); Fantasia on Past Popular Austrian Tunes, Fox-Cocktail (Salabert); Potpourri, Old Alsace (Meyr). 11.0 (approx.). Close Down.

STUTTGART MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayd by Freiburg, 527 kc/s, 570 metres.—1.0 p.m., Gramophone Music. 1.15, Time and News. 1.30, Gramophone Concert of Richard Strauss Music. 2.0, Concert arranged by the Post Office. 2.30, Interval. 2.45, Talk on Training in Citizenship. 3.30, Programme for Children. 4.30 (from Badenweiler), Orchestral Concert, conducted by Albert Hitzig; Soloist, Paul Bormann (Violin); Overture, Britannicus (Scassola); Waltz, Wiener Bürger (Ziehrer); Violin Concerto (Bach); Selection from The Barber of Seville (Rossini); Hungarian Dances in G Minor and D (Brahms); Dornröschen Brautfahrt (Rhode); Selection from The Merry Widow (Lehar); Florentine March (Fuecik). 5.45, Talk with Gramophone Illustrations: Gramophone Recording. 6.10, Dialogue: Military Training in Other Countries. 6.40, Time and News. 7.0, Transmission for all German Stations, relayed from Munich. 8.5, See Frankfurt. 9.20, Orchestral Concert, conducted by Willy Hahn, relayed from Cannstatt; Overture, Die schöne Galathée (Suppé); Selection from Eva (Lehar); Suite from Carmen (Bizet); Die Wachtparade kommt (Eilenberg); Waltz, Wiener Bürger (Ziehrer); Annapolka (Joh. Strauss); Overture, Die Fledermaus (Joh. Strauss). 10.30, Time and News. 10.50, Talk on Austria. 11.10, Concert from Langenberg. 12 Midnight, Close Down.

STUTTGART (cont'd.) SUNDSVALL.—See Stockholm.

TOULOUSE 779 kc/s, 385 metres; 9 kW.—6.0 p.m., News. 6.5, Dance Music. 6.15, Sound Film Music. 6.30, Instrumental Solos. 6.50, Talk. 7.15, News. Horse Racing Results and Market Prices. 7.25, Commercial Notes. 7.30, Suite, Iberia (Albeniz) by the Symphony Orchestra. 7.45, Programme by a Viennese Orchestra. 8.15, Operetta Airs from Comte Otilgado (Moretti), La Périole (Offenbach) and La Poupée (Andran). 8.30, Hawaiian Guitar Solos. 8.45, Opera Music: Selections from Le Roi Dagobert (Ponceanu); Mirelle (Gounod) and Rigoletto (Verdi). 9.0, Maudoline Concert. 9.30, Music by an Argentine Orchestra. 9.45, Opera Music: Airs from Tamhäuser (Wagner), Boris Godunov (Mussorgsky) and The Tales of Hoffmann (Offenbach). 10.0, Orchestral Music: Les fleurs (Waldfenfel); Chavelitos (Valverde); The Canary (Poliakoff); Se tonne naeere (Mascheroni). 10.15, News. 10.30, Concert for Listeners in Morocco. 11.15, Light Music. 11.30, Popular Programme. 12 Midnight, Orchestral Music. 12.15 a.m. (Thursday), News. 12.20, Military Music. 12.30, Close Down.

SUNDSVALL.—See Stockholm.

TRIESTE 1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m., Vocal and Instrumental Concert: Letizia Gi-z-u (Pianoforte), Stanislaw Podgorski

(Baritone), and Bianca Zoratti (Soprano); Pianoforte Solos (Chopin): (a) Two Preludes, (b) Waltz in D Flat; Baritone Solos; Two Polish Songs; Soprano Solos: (a) Nebbie (Respighi), (b) Eaux de printemps (Rachmaninov); Pianoforte Solos: (a) Ballade (Debussy), (b) Etude (Linden); Baritone Solos: (a) La strada bianca (Fratella), (b) Visione veneziana (Broggi); Soprano Solos: (a) Fiocca la neve (Timara), (b) Waltz Song, Il bacio (Arditi). 6.0, till Close Down, see Turin.

TRONDHEIM.—See Oslo.

TURIN 1,096 kc/s, 273.7 metres; 7 kW. Relayd by Milan, 905 kc/s, 331.5 metres; Genova, 959 kc/s, 312.8 metres; and Florence 599 kc/s, 500.8 metres.—5.10 p.m., Soprano Song Recital. 6.0-6.5, Weather. 6.35, Giornale Radio, Agricultural Report and Dopolavoro Announcements. 7.0, Time Signal and Tourist Report. 7.5, Gramophone Music: Perché? (Lesso-Valerio); Taratapatiti (Caslar); Esperanza (Galdieri-Mancini); Melody (Mackeben-Willy). 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News. 8.15, Medical Talk. 8.30, Talk on the following Transmission. 8.35, The Merry Widow—Operetta in Three Acts (Lehar). In the intervals, Talk and Miscellaneous Notes. After the Operetta, Giornale Radio.

VATICAN CITY

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

VIENNA

RADIO WIEN, 581 kc/s, 517 metres; 100 kW. Relayd 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 Wiener Symphoniker, conducted by Josef Holzer; Overture, Ball bei Hof (Ziehrer); Harlequinade (Ganne); Andalusian Bolero (Fechner); Selection from The Geisha (Jones); Air in old style (Gillett); Waltz, Neues Leben (Komzak); Viennese Song (Köbl); Polka, Brennende Liebe (Strauss); Canonetta (Friml-Artok); Parade Militaire (Massenet). 1.0 p.m., Time and News. 1.10, Concert (cont'd.); Humorous Potpourri (Schreiner); The Musical Snuff-Box (Liadov); Viennese Song, Gold and Silver (Krakauer); Teufelchen's Geburtstag (Krome); Waltz, Wiener Bonbons (Strauss); Song, Mit uns is' lang net vorbei (Hofschmid); Overture, Morning, Noon and Night (Suppé); March, Frischvoran (Fahrbaeh). 2.0, Interval. 3.0, Time, Weather, and Exchange. 3.20, Practical Hints for the House-Wife. 3.30, Talk: Life on the Alm. 3.55, Famous Love Duets on Gramophone Records. 4.35, Programme for Young People. 5.0, Talk: Dangers of Summer Excursions in the Mountains. 5.20, Recital by Rudolf Bandler (Bass) and Helene Bath (Pianoforte). 6.0, Discussion: Why are so many people drowned? 6.15, Talk: A Journey to Baden. 6.35, Talk: Masculine and Feminine Reasoning. 7.0, The Fortunes of the Stage—Variety Programme; Soloists: Maria Gerhard (Soprano), Heinz Kräger (Tenor) and Igon Gorin (Bass). In the interval, Time, Weather and Exchange. 8.40, Topical Talk. 8.55, The Nightingale's Song—Radio Sequence (Binder). 9.40, News. 9.55, Concert by the Wiener Symphoniker, conducted by Josef Holzer.

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 a.m., Light Music on Gramophone Records. 12.25, Polish Press Review. 12.33, Weather. 12.35, Gramophone Music. 12.55, Radio Journal. 1.0, 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 the Poznan Opera House Orchestra, conducted by Tyllia, relayed from Cielochocinek. 5.0, Topical Talk. 5.15, Concert by the Harfa Choir, conducted by Lachmann. Soloist: A. Wisniewski (Baritone). 6.15, Talk: Poles in America. 6.35, Song and Pianoforte Recital by Mme. J. Turczynska and S. Nadrzyzewski. Songs: (a) Fragment (Wielhorski), (b) The Arrival (Wielhorski); Parle-moi encore (Karłowicz); J'aix cru voir (Poplawski). Pianoforte Solos (Liszt): (a) Sonetto del Petrarca, (b) Liebestraum, (c) Mephisto-Walzer. Songs: (a) Weeping Willow (Rachmaninov), (b) Why? (Tchaikovsky). (c) Oh, si mon (Chagrin (Gièrre), (d) Aria from The Prodigal Son (Debussy), (e) Aria from La cena delle beffe (Giordano). 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Reading. 8.0, Trio Op. 40 (Brahms) by Mme. M. Wikomirska (Pianoforte); J. Kaminski (Violin) and B. Szulc (Viola). 8.50, Radio Journal. 9.0, Agricultural Notes. 9.10, Light Music. 10.0, Dance 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 2.30 p.m., Time Signal, Weather Report, Stock Exchange Quotations and Gramophone Music. 6.0, Programme for Children. 6.40, News. 7.0, French Lesson. 7.15, Talk on Dogs by D. J. Smyth. 7.30, Time Signal. 7.31, Concert by the Station Orchestra. 8.0, Baritone Solos by F. Jinks. 8.15, The Marriage will not take Place—Sketch, by The Mystics. 8.45, Instrumental Solos and Songs by May Fogarty and Marion Joyce. 9.10, Orchestral Music. 9.25, Jack MacGarvey, Entertainer. 9.45, Sponsored Programme. 10.45, News, Weather Report and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert of Spanish Music. In the interval, Literary Programme. 8.0, Request Gramophone Records. 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. 10.5, Orchestral Concert: March (Lincke); Waltz, Etincelles (Waldteufel); Popular Romanian Dance (Bela-Bartok); In the Mystic Land of Egypt (Ketelbey); Gipsy Caprice (Fiorini); Canto de amor (Pennati-Malvezzi); Concert Polonaise (Jiménez). 11.0, Tal Farás tal Trobarás—Comedy in Three Acts (J. Vidal and Valenciano). 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 Dopolavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.40 (approx.), Concert of Songs and Operetta Music. Soloists: Clara Demitri (Soprano), and Michele Montanari (Tenor): Exotic March (Pennati-Malvezzi). Soprano Solo: Suona, fanfara mia (Moleti). Tenor Solo: Cicala (Marf-Borella); Piece (Hentze); Tango, Ich bin in dein Parium verliebt (Fall). Tenor Solo: Gareonniere (D'Anzi); Il re della réclame (Bettinelli). Tenor Solo: Casetta mia (Stocchetti). Soprano Solo: Se prendiamo un buon caffè (Moleti-Galdieri); Liuba (D'Anzi). Soprano Solos: (a) Piccola Edelweiss (Sassoli), (b) Song (Stransky). Tenor Solos: (a) Signora felicità (Moleti), (b) Rumba (D'Anzi); Selection from Viktoria and her Hussar (Abraham). Soprano Solo: Ninnoli d'Amore (Stocchetti). Tenor Solo: Spagna encantadora (Ricci); La fiera dell'Impruneta (Allegri). In the interval: Agricultural Talk. 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., Physical Culture. 6.30, Song Recital by Xenia Aleksandrovic-Muraviev. 7.5, Talk. 7.35, Gramophone Music. 8.30, See Ljubljana. 10.30, Time and News, followed by Dance Music on Gramophone Records.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Gramophone Concert. Selection from Cavalleria rusticana (Mascagni); Faust (Gounod); Tosca (Puccini); Carmen (Bizet); La belle Hélène (Offenbach); Il Trovatore (Verdi); Die Fledermaus (Joh. Strauss); and The Gipsy Baron (Joh. Strauss); Potpourri, Wiener Operetten Revue (Robrecht); Selection (Lelhar) from: (a) The Merry Widow and (b) Frederica. 2.45, Programme for Children. 3.10, Talk for Young People. 3.30, Weather and Exchange. 3.45, Travels of Famous Writers: Darfling ins Sudetendeutsche Land (Heinrich v. Kleist). 4.0, See Heilsberg. 5.0, Talk for Housewives. 5.20, Talk: The danger of using an Electric Current. 5.35, 'Cello and Pianoforte Recital of Contemporary Music by Armin Liebermann and Walter Weisch. Terpsichore (Rausnerner); Pieces (Kaun): (a) Idyll, (b) Minuet, (c) Waltz, (d) Intermezzo. 6.0, A Poem. 6.5, Recital of Gipsy Songs by Reinmann-Thiele. Three Songs (Dvorak): (a) Alt die alter Mutter, (b) Rings ist der Welt so stumm und still, (c) Derf des Falkens Schwinge Zigennerliedchen (Schumann); Eight Songs (Brahms): (a) He, Zigeuner, (b) Hochgelächerte Rinnafut, (c) Wisst ihr wann mein Kindchen, (d) Lieber Gott, du weisst, (e) Brauner Bursche, (f) Röslein dreie, (g) Kommt dir manchmal in den Sinn, (h) Rote Abendwolken. 6.30, Agricultural Programme. 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, To-day's Motto, followed by Talk for the Radio Jubilee Exhibition. 8.10, Programme from Hamburg. 9.25, The Outbreak of War—Radio Sequence from the Works of Ernst Stadlers (killed 1914), for the Fiftieth Anniversary of his Birth. 10.0, Weather and News. 10.45, Weather Report for Shipping. 11.0, Dance Music from Hamburg. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.30 p.m., Recital of Violin Sonatas. 5.0, Accordion Music. 5.30, Reading. 5.50, Pianoforte Sonata in F (Sibelius). 6.10, Talk: Walther von der Vogelweide. 6.30, Talk:

THURSDAY

AUGUST THE TENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL LONDON REGIONAL MIDLAND REGIONAL WEST REGIONAL NORTH REGIONAL SCOTTISH REGIONAL BELFAST

Eisteddfod concert, relayed from Wrexham. "Music in Store," a revue. Orchestral concert.

Light Music by British composers.

Presidential address by Mr. David Lloyd George and Chairing of the successful Bard, relayed from the Eisteddfod, Wrexham. Orchestral concert.

Band concert.

Musical comedy. Instrumental concert.

ABROAD

BARCELONA BUCHAREST HEILSBURG LAHTI PRAGUE ROME STRASBOURG TOULOUSE WARSAW

7.0 p.m. Trio concert of Spanish music.

8.20 p.m. Symphony concert by the Station Orchestra.

8.10 p.m. The Königsberg Opera House Orchestra. 8.10 p.m. Sibelius pianoforte recital.

8.30 p.m. Pianoforte recital of British music by Anthony Baldwin.

8.30 p.m. Opera: "Nozze istriane," by Smareglia.

8.30 p.m. Opera: "Othello" (Verdi), by members of the Milan Scala Opera Company, relayed from Vichy.

9.0 p.m. Extracts from Opera: "La Basoche," by Messager.

9.10 p.m. Violin recital by M. R. Totenberg.

Pomerania. 6.40, Programme to be announced. 6.45, Topical Talk. 7.0, Transmission for all German Stations: The Examination—Radio Play (Rudolf Presber), with Music by Karl Krauer. 8.5, Concert of Folk Music, relayed from Pankow. 8.40, Political Review. 9.0 to 1.0 a.m. (Friday), Dance Music. In the interval at 10.0, Weather, News and Sports Notes, and at 11.0, Talk: What they are saying in Berlin. 1.0 a.m. (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.—7.40 p.m., Talk arranged by the International Labour Bureau. 7.55, Lottery and Charade Results. 8.0, Talk on Wines. 8.15, News and Weather Forecast. 8.30, See Strasbourg.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—7.10 p.m., See Brno. 7.25, See Prague. 7.45, See Brno. 8.30, See Prague. 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 14 kW.; and Gleiwitz, 1,184 kc/s, 253 metres.—12 Noon, Concert by the Small Silesian Philharmonic Orchestra. Academic Festival Overture (Brahms); Der Kampf der menschlichen Leidenschaften (Dittersdorf); Gavotte (Gossec); Styrian Dance (Lanner); Ballet Music from Faust (Gounod); Waltz, Künstlerleben (Strauss). 1.45 p.m., Time and News. 2.0, Popular Marches on Gramophone Records. 3.0, Agricultural Prices. 3.30, Talk: An Excursion for Holiday Excursions. 3.40, Review of Books on China and Japan. 4.0, Song Recital by Hildegard Bilke (Soprano); Three Songs (Beethoven): (a) Lieder des Klären, (b) Die Trimmel gerühet, (c) Freudvoll und leidvoll; Mignon's Song (Schubert); Solveig's Song (Grieg); Therese (Brahms); Two Songs (Wolf): (a) Agnes, (b) Philine. 4.30, Programme for Children. 5.0, Sports Talk. 5.20, Recital of Pastoral Songs by Gerda Specht (Contralto). 5.45, Brahms Song Recital by Alfred Stöckel (Tenor). 6.10, Talk for Workers. 6.30, Programme to be announced. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Community Singing from the Schlossplatz. 9.0, Talk for Workers: Working Women and the Everyday Struggle. 10.0, Time and News. 10.20, Talk on the German Rowing Championship. 10.40, Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—5.25 p.m., Programme for Children. 5.45, Gramophone Music. 5.55, See Prague. 6.5, Gramophone Music. 6.25, German Transmission: News. Talk: Wireless Sets on Ships, and Tourist Talk. 7.0, See Prague. 7.10, Political Talk. 7.25, See Prague. 7.45, Reading. 8.30, Harp Recital by Jaroslav Klínka. Nocturne (Snoor); Arabesque (Debussy); Legend (Tchaikovsky); Forest Brook (Spindler); Fantasia on Schubert Themes (Trnacek). 9.0, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Gramophone Concert: Dance (German); Chanson triste (Tchaikovsky-Stewart); Love, your spell is everywhere (Janis); Mouvement perpétuel (Ries); Vidalia (Pallenaerts); Anade (Lyschakov); Barn Dance (Lutz); Polka (Grossmith); La voix des cloches (Luigini); Pagan Love Song (Freed and Brown); Cramignons liégeois (Monron); Selection from Ariane (Mascnet); Souvenir (Drda); Romanian Dance (arr. de Racz); Carillon breton (Drey); Selection from The Maid of the Mountains (Fraser-Simson). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Emile Lauwers: Two Step (Luochés); Overture, Figaro (Mozart); Aquarellewalzer (Jos. Strauss); Violin Solo: The Londonderry Air (arr. Kreisler); Selection from Carmen (Bizet); Chiffon (Byford); Orientale (Albeniz); Popular Spanish Serenade (Albeniz); Two Irish Dances (Finucane). 5.0, Gramophone Concert of Waltzes: Invitation to the Waltz (Weber); Valse triste (Sibelius); Waltz, Op. 61 (Chopin-Taitanel); Frühlingsstimmen (Joh. Strauss); Mephisto Waltz (Liszt). 5.30, Literary Programme for Children. 6.0, Talk: Holiday Camps. 6.15, Gramophone Concert. Part I: Opera Music: Selection from The Black Domino (Auber); L'Africaine (Meyerbeer); and Faust (Gounod). Part II: Operetta Music: Selection from La cocarde de Mini Pinson (Goublier); Song from Hans the Flute Player (Ganne); Overture, Les Cloches de Corneville (Planquette). Part III: Dance Music. 7.15, Talk for Workers. 7.30, Sports Talk. 8.0, Offenbach Concert on Gramophone Records: Extracts from: Orpheus in the Underworld; La vie Parisienne; La belle Hélène; The Tales of Hoffmann; Les Brigands; The Drum Major's Daughter; La Périole; and La vie parisienne. 8.45, Talk: Brussels in Summer. 9.0, Concert, relayed from the Kursaal, Ostend. After the concert, Le Journal Parlé and Modern Spanish Music. Concerto for Harpsichord Flute, Oboe, Clarinet, Violin and 'Cello (Fallal); Extracts from Nights in the Gardens of Spain (Fallal).

BRUSSELS (No. 2)

I.N.R., 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Gramophone Concert:

Overture, Benvenuto Cellini (Berlioz); Schubert Potpourri (arr. Meliehar); Selection from La Bohème (Puccini); Lullaby (Mozart); Selection from Hansel and Gretel (Humperdinck); Hopak (Mussorsky); Overture Tancredi (Rossini). 1.0 p.m., Le Journal Parlé. 1.10, Dance Music on Gramophone Records. 5.0, Dvorak and Smetana Music on Gramophone Records: Overture, The Bartered Bride (Smetana); Slav Dances, Nos. 1, 2, 3, and 4 (Dvorak); Overture, Die Moldau (Smetana); Carnival Overture (Dvorak). 5.45, Programme for Children. 6.30, Programme of the V.J.V.K.A. 7.15, Film and Book Review. 7.30, Talk for Housewives. 8.0, The Annual Pilgrimage to the Tombs of Yser—Gramophone Concert, with Addresses: Leonora Overture (Beethoven); Talk; Yzerbedevaartliederen (van Hoof); Extracts from the Eroica Symphony (Beethoven); Address: Vlaanderen (Veremaus); De Vlaamse leeuw (Miry). 8.45, Caprice italien (Tchaikovsky) on Gramophone Records. 9.0, Concert, conducted by Karel Caudael, relayed from the Casino, Knocke. Soloist: Marcel Journet (Bass). Coronation March (Saint-Saëns); Melancolia (Mortelmans); Avondlied (Mortelmans); Bass Solo: Prologue to I Pagliacci (Leoncavallo); Two Basque Melodies (Kumps); Bass Solo: Monologue from Boris Godunov (Mussorsky); Dances from Prince Igor (Borodin). After the concert, Evening Prayer, followed by Le Journal Parlé and Gramophone Music.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Iordacheo Orchestra. In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Gramophone Music. 7.40, Educational Talk. 8.0, Baritone Solos. 8.20, Symphony Concert by the Station Orchestra, conducted by T. Rogalski. Two Symphonies (Mihail); Norwegian Songs for String Orchestra (Grieg); Piedmontese Dances (Sinigaglia); and Second Symphony in D (Beethoven). In an interval at 9.0, Talk. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—5.0 p.m., Cigány Music by the Jeno Pertis Band. 6.30, Concert by the Waldbauer-Kerpely String Quartet. Quartet in F flat (Beethoven); Serenade for String Trio (Dohnanyi). 8.0, Concert by the Station Orchestra relayed from the Zoological Gardens. 11.0, Cigány Music by the Bura Band relayed from the Ketter Restaurant. 11.30, Report from the World Jamboree.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time and Chimes from the Town Hall, and Weather. 12.5 p.m., String Ensemble Concert relayed from the Hotel d'Angleterre. 2.0, Interval. 2.40, Pianoforte Recital by Carl Worm: Fugue in A minor (Bach); Sonata in D (Mozart). 3.0, Orchestral Concert relayed from the Wivex Restaurant. 5.0, Reading. 5.35, Exchange and Fish Market Prices. 6.20, Talk. 6.50, Weather and News. 7.15, Time Signal. 7.30, Educational Talk. 8.0, Chimes from the Town Hall. 8.5, Orchestral Concert, conducted by Emil Reesen: Overture, The Bohemian Gri (Balfe); In a Persian Market (Ketelbey); Selection from The Drum Major's Daughter (Offenbach); Prelude to Eva (Lelhar); A Midsummer Night's Serenade (Albeniz); Dance of the Marionettes (Gillet); Marche Lorraine (Ganne). After the concert, Weather. 8.50, A Visit with the Microphones to a Farm. 9.20, Vocal Trio Concert: Two Danish Folk Songs (arr. Toft); Korunodislausen (Lange-Müller); Danish Folk Song, I Skoven skulde være Gilde. 9.40, Readings. 10.0, News. 10.15, Symphony No. 1 in D (Svendens) by the Station Symphony Orchestra, conducted by Emil Reesen. 11.0, Dance Music, relayed from the National Scala. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Friday), 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. 4.30, Programme for Children. 5.0, Concert of Songs and Orchestral Music for Working and Littlehampton Listeners: Signature Tune: The Night by the Sea; Orchestra: O Frühling wie bist du so schön (Lincke); My Darling (Heymann); I wish I knew a bigger word than love (Pola); Orchestra: Black Eyes (Ferraris); Deep Water (Brian); Have you ever been lonely? (Brown); My Lover (Yellen); Orchestra: Gipsy Moon (Borganov). 5.30, Concert for Brighton and Hove Listeners: Quintet: Minuet from Berenice (Handel); Pianoforte Solo: Arabesque (Debussy); Quintet: (a) My Curly-Headed Baby (Clutsum), (b) The Song of the Nightingale (Ailbott); 'Cello Solo: Harlequinade (Squire); Quintet: On Wings of Song (Mendelssohn); Pianoforte Solo: Rustle of Spring (Sinding); Quintet: Melody in F (Rubinstein); Signature Tune. 6.0, Programme in French. 10.0 till Close

AUGUST 10th **THURSDAY** continued

Down, Programme in English by the I.B.C. 10.0, Light Music: Signature Tune: Bells of Normandy; Moon (Miles); Dixiana (Caldwell); My Heart's to let (Waller); Three Wishes (Posford); All over Italy (Butler); Something came and got me in the Spring (Scholl); Castles in the Sand (Sandford); Masquerade (Webster); Somebody loves you; Put that Sun back in the Sky; Watch the Navy (Nowell); Old Father Thames; The King's Navee; How do you do, Mr. Brown?; They all start whistling Mary (Keyes); The Cabin in the Cotton (Parish); Land of Love and Laughter (Gottler); Signature Tune. 11.0, Club Concert for Penicik Listeners. Part I: Light Orchestral Music: Signature Tune; The Chum Song; Humoresque (Dvorak); March from Sylvia (Delibes); The Fortune-Teller (Herbert); In Absence (Buck); Pulcinello (Aletier); Serenade (Herbert); AY, AY, AY (Freire); Waltzes from A Waltz Dream (O. Strauss). Part II: Organ Recital with Songs: A Palace of Dreams (Waller); Songs: (a) Poor Man's Garden (Russell); (b) Tired Hands (Sanderson); Indian Love Lyrics (Woodford-Finden); Song: Love's Old Sweet Song (Molloy); The Hills of Home (Fox); Bird Songs at Eventide (Coates); Signature Tune. 12.5 a.m. (Friday), I.B.C. News Bulletin in English. 12.10 (approx.), Waltz from The Gipsy Princess (Kalmán); After the Ball; Two Little Girls in Blue; Invictus (Kühne); Waltz, Tales from the Vienna Woods (Joh. Strauss). 12.30, Dance Music: Signature Tune; Bells of Normandy; When work is through (Sherman); Love is the sweetest thing (Noble); I didn't know why (Alfert); A Bedtime Story (Towers); Blue turning Grey over you (Waller); Stormy Weather (Kochler); Shuffle off to Buffalo (Dubin-Varren); Put a little Springtime in the Winter of their Lives (Pickard). 1.0, Songs and Orchestral Music: Musical Comedy Motley (arr. Hall); Boats (McCall); Song: The Gay Highway (Drummond); The Smuggler's Song (Mortimer); Spanish Serenade (Herbert); Chinese Serenade (Herbert); Song: Down Vauxhall Way (Oliver); By the Swance River (Myddleton). 1.30, Dance Music: Signature Tune; Bells of Normandy; I'm one of the Lads of Valencia; Farewell to Arms; The World is so small; Twentieth Century Blues; Little Nell; Just a Little Home for the Old Folks; I've told every little Star; The Song is you; Signature Tune. 1.58, I.B.C. Goodnight Melody. 2.0 (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: Contemporary German Philosophy. 6.35, Talk on the Theatre. 6.45, To-day's News. 6.50, Time and Announcements. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, See Munich. 9.50, Schumann Piano Recital by Reinhold Merten. 10.20, Time and News. 11.0, Programme of Dance Music from Berlin (Witzleben). 1.0 a.m. (Friday), Close Down.

FREDRIKSSTAD.—See Oslo.
FREIBURG.—See Stuttgart.
GENEVA.—See Radio-Suisse Romande.
GENOA.—See Turin.
GLEIWITZ.—See Breslau.
GOTTEBERG.—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.—2.10 p.m., Gramophone Concert, Part I: Music from Sound Films about Frederick the Great; Parade March from Frederick Rex; Flute Music from The Flute of Sans-Souci (P. Graener); Sound Sequence from Der Choral von Leuten. Part II: Music from the Time of Frederick the Great; Allegro from the Flute Solo per il flauto No. 122 (Frederick the Great); Largo from the Second Concerto (Frederick the Great); Brandenburg Concerto No. 2 in G (Bach); Frederician, Potpourri of Marches by Frederick the Great. 3.0, Exchange. 3.40, Shipping and Aviation Report. 4.0, Concert. 5.0, Programme for Young People. 5.30, Variety Programme. 6.0, Talk: Pond Life. 6.20, Review of Important Nazi Books. 6.45, Frankfurt Exchange. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Der Instige Krieg—Operetta in Three Acts (Joh. Strauss). In the Interval, News. 10.15, News. 10.25, Topical Talk. 10.35 (from Hanover), Dance Music by the Station Orchestra conducted by Ebel von Sosen.

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 Young People. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilken. Overture, Der Wildselditz (Lortzing); Suite, The Sleeping Beauty (Tchaikovsky); Selection from Le Villi (Puccini); Dramatic Suite (d'Albert-Beece); Nocturne No. 3 (Liszt); Polonaise No. 2 (Liszt); Overture, Die Felsenmühle (Reissiger). In an interval at 5.0 (approx.), Book Review. 5.50, Talk: New Characteristics in East Prussian Youth. 6.15, Agricultural Prices. 6.25, Agricultural Talk. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Weather and News. 8.30, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky. Soloist: Fritz Just (Pianoforte). An men detisches Land (Zilcher); Pianoforte Concerto in D (Haydn); Prelude to Act III and Dance of the Apprentices from The Master-singers (Wagner); Finale from the Pathetic Symphony (Tchaikovsky); Hungarian Dance (Brahms); Selection from Indigo and die vierzig Räuber (Joh. Strauss); Waltz, Roses from the South (Joh. Strauss). 9.40, Elementary English Lesson. 10.10, Weather and 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, Concert by the K.R.O. Orchestra, conducted by M. van't Woud. March, The Cadets (Sousa); Overture to a Revue (Lincke); Liebeswalzer (Moszkowsky); Schubert Potpourri (Furtas); Mazurka, Arm und Arm (Strauss); Polka (Strauss); Melody in F (Rubinstein). Gramophone Records. Selection from The Merry Peasant (Fall); Serenade (Moszkowsky); Waltz, Seid umschlungen, Millionen (Joh. Strauss); Potpourri, Musical Soap-bubbles (Urbach). 1.40 till Close Down. Programme of the Christian Radio Society (S.C.R.V.). 1.40, Gramophone Music. 3.10 to 3.40, Interval. 3.40, Bible Reading and Sacred Music. 4.40, Quartet Concert. Sonata in A (Corelli); Divertimento (Mozart); Sonata (Haydn); Minuet (Mozart). Gramophone Music. Second Movement from Tello Concerto (Boccherini); Sonata (Parelli); Sonata (Locatelli); Mozart Potpourri (Urbach). 6.10, Talk. 6.25, Dressmaking Lesson. 6.40, Police Notes. 6.55, Religious Notes. 7.10, Press Review. 7.40, Concert by the Vivezza Women's Choir, conducted by Mme. Verhooff-Torn. Soloists: M. Verhoeff (Flute) and W. Bloemendaal (Pianoforte). 8.40, Talk. 9.10, Popular Music or Gramophone Records. In the interval at 9.40, News. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN
Announced HILVERSUM, 160 kc/s, 1,875 metres; 8.5 kW.—Programme by the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40 a.m., Time. 11.41, Gramophone Music. 12.10 p.m., Light Music by Kovase Lajos and his Orchestra. 1.55, Gramophone Music. 2.10, Recitations. 2.40, Gramophone Music. 3.25 to 3.40, Interval. 3.40, Programme for Hospitals. 4.10, Gramophone Music. 4.40, A Radio Play for Children. 5.10, Light Orchestral Concert (cont'd.). 6.10, Sports Talk. 6.40, Light Orchestral Concert (cont'd.). 7.10, Talk on Spain. 7.40, Time. 7.41, News. 7.45, Orchestral Concert conducted by Frieder Weissmann. Soloists: Marcel Witttrisch (Tenor) and Henri Temianka (Violin). Overture, The Thieving Magpie (Rossini); Tenor Arias from: (a) L'Africaine (Meyerbeer); (b) Carmen (Bizet); Eight Russian Melodies (Liadov); Tenor Arias from Martha (Flotow); Overture, A Waltz Dream (O. Strauss). Tenor Solos: (a) Aria from The Gipsy Baron (Joh. Strauss). (b) Arias from Eine Nacht in Venedig (Joh. Strauss) (c) Song from The Czarevitch (Lehar); Overture, Die Fledermaus (Joh. Strauss); Violin Concerto in B minor (Saint-Saëns); Tesoro mio (Beucler); Träume auf dem Ozean (Gungl); Waltz (Krieger); Selection from Les Millions d'Arlequin (Drigo); Die Hydrophoben (Gungl). In the intervals at 8.30 and at 9.10, Gramophone Music. 10.10, Gramophone Music. 10.40, News. 10.50, Dance Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN LES PINS
1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, Announcements. 1.15, Visite de Riquette—Sketch (R. Polak). 8.0, Amusement Guide, Exchange and News. 8.15, Fashion Review. 8.25, Radio Concert. 8.45, News and Weather Report. 9.0, Concert, relayed from Monte Carlo.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLagenfurt.—See Vienna.

LAHTI
167 kc/s, 1,736 metres; 40 kW. Relayed by Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Concert by the Station Orchestra. 7.10, Talk. 7.35, Violin Recital. 7.55, Humorous Programme. 8.10, Sibelius Piano Recital. 8.45, News in Finnish and 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 Felix Oberdorbeck. 12.50 p.m., News. 1.0, Concert, conducted by Eysoldt: March, Westfalengrüsse (Schürmann); Overture, Vivat Academia (Zimmer); Hungarian Dances Nos. 1 and 7 (Brahms); Selection from Der Waffenschmid (Lortzing); serenade, Erinnerung (Bayer); Barcarolle, Mitternacht in Venedig (Braz); Potpourri of Russian Gipsy Songs, Dubnitschka (Schürmann); Waltz, Am Wörther See (Kosehat). In the interval at 2.0 (approx.), News. 2.30, Interval. 3.0, Programme for Children. 3.30, Economic Notes and Time. 3.50, Topical Talk. 4.0, Reading. 4.30, Thunder and Lightning—a Radio Picture dealing with Superstitions and Queer Customs (Goshwin P. Gath). 5.0, Gramophone Music. 5.30, Talk on Taxation. 5.50, German History in Tombstones. 6.0, Concert by the Small Station Orchestra, conducted by Eysoldt: Overture, Wiener Frauen (Lehar); Czardas No. 8 (Michels); Intermezzo, Im Tempel der Schönheit (Hummel); Nareissel (Nevin); In a Clock Store (Müller-Gärtner); Viennese Dance No. 2 (Friedmann-Gärtner); Old Anna Gavotte (Liding); Intermezzo, Nadia Anna (Lincke); Intermezzo from Nadia (Delibes-Doppler). 6.45, Announcements. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, News. 8.5, Variety Concert. 9.0, William Tell—Play (arr. Rudolf Mibt). 10.0, News. 10.30, Serenade by the Fröhliche Fünf. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG
769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon, Gramophone Concert. 1.0 p.m., News. 1.15, Chamber Music. 2.0, News. 2.10, Art and Film Notes. 2.20, Talk: Excursions on Land and Water. 3.35, Market Prices. 4.0, See Heilsberg. 5.30, Talk on Electricity. 5.60, Economic Notes, Weather and Time. 6.0, Talk: A Journey by Air to Tripoli. 6.25, Talk: Genealogical Trees. 6.50, To-day's News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Agricultural Talk. 8.20, Concert by the Dresden Orchestra, conducted by Herbert Nedlich. Soloist: Gustav Fritzsche (Violin); Overture, The Siege of Corinth (Rossini); Japanese Suite (Hals); Romance in F and G for Violin (Beethoven); Selection from The Miracle (Humperdinck); Waltz, Nordseebilder (Strauss); Ballad in the Form of Variations on a Flemish Folk Song (de Greef); Scandinavian Caprice in A minor (Donisch); Two Gipsy Dances (Heidingsfeld). 9.45, Talk: Building up the New German State. 10.10, News. 10.30, News.

LINZ.—See Vienna.

LJUBLJANA
522 kc/s, 574.7 metres; 7 kW.—6.30 p.m., Concert by the Station Orchestra. 7.30, Gramophone Music. 8.0, Talk on Slovak Literature. 8.30, Song Recital. 9.15, A Boy's Choir. 10.0, Orchestral Concert. 10.30, Weather and News. 11.0 (approx.), Close Down.

LUXEMBOURG
252 kc/s, 1,191 metres; 200 kW. German Programme.—7.30 p.m., Richard Strauss Concert on Gramophone Records. 8.15, Weather Report. 8.20, Song Recital. In an interval at 8.30, Talk in German. 8.50, News in French. 9.0, Orchestral Concert. In an interval at 9.50, News in German. 10.20, Dance Music on Gramophone Records.

LYONS
LA DOUA (PTT), 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South East. 8.30, Concert conducted by M. Fusier. Per Aspera ad Astra (Urbach); Selection from The Count of Luxembourg (Lehar); Extracts from White Horse Inn (Stolz-Benatzky); Song (Poppy); Idylle passionelle (Razigade); Selection from Manon (Massenet); Song, La chanson d'une nuit; The Musical Box (Antiga); Louis XIIIth Song and Pavana (Kreiser); The Canary (Poliakoff); Extracts from Paganini (Lehar); 'Cello Solo: Chants russes (Lalo); In the Mystic Land of Egypt (Kettelbey); Selection from A Waltz Dream (O. Strauss); Sunshine (Berlin); Melody (Gungl); Air (Profess). After the Concert, News.

MADRID
EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, and Programme for Children. 9.15, News and Political Review.

9.30 to 11.0, Interval. 11.0, Chimes, Time, and Political Review. 11.15 (approx.), Song Recital by Luisa Osma. 11.30, Municipal Band Concert relayed from Rosales. 1.15 a.m. (Friday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN
VIGENTINO, 662 kc/s, 453.2 metres; 4 kW. 8.30 p.m. till Close Down. See Rome.

MORAVSKA-OSTRAVA
1,137 kc/s, 263.8 metres; 11 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by Plichta. 3.55 to 4.0, See Prague. 5.25, See Brno. 5.45, Gramophone Music. 5.55, See Prague. 6.5, Talk: Across Carpathian Russia. 6.15, See Prague. 7.10, See Brno. 7.25, See Prague. 7.45, See Brno. 8.30, See Prague. 11.0 (approx.), Close Down.

MOSCOW
TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—3.0 p.m., Liszt, Bartok, and Brahms Concert; Soloists: Weinschanker (Pianoforte), Logostajowa (Mezzo-Soprano), and Leinski (Bass). 4.0, Talk on the Grain Harvest. 4.30, Talk, followed by Literary Programme. 5.30, Young Authors and Poets before the Microphone. 6.30, Haydn, Beethoven, Wagner, and Liszt Concert by the Symphony Orchestra, conducted by Tschervenkens; Soloist: M. Grimberg (Pianoforte). 9.0, News. 9.30, Programme Announcements. 9.55, Chimes.

MOTALA.—See Stockholm.

MUNICH
563 kc/s, 533 metres; 40 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 Lorenz Jais Orchestra: Overture, Der Erlenkönig (Kühnau); Ballet des parfums (Poppy); Waltz, Red Roses (Lehar); Grizing Potpourri (Dauter); Waltz-Intermezzo, Träume der Nacht (Schmalstiel); March, Unsere Reichswehr (Blankenburg). 5.45, Agricultural Talk: This Year's Harvest. 6.5, The Shoe Shop—A Radio Sequence (Althaus), with Music by Turina; Ludwig Kusche (Pianoforte) and Ingo Schrader (Recitations). 6.25, Talk by Captain Dietrich: The Privatereing Exploits and Homecoming of the Auxiliary Cruiser, Wolf. 6.45, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Concert by the Small Station Orchestra, conducted by Erich Kloss: Overture, Lucio Silla (Mozart); Extracts from the Violin and Viola Concerto (Mozart); Ballet Suite from Undine (Lortzing); Two Pieces (Grieg): (a) Herzwunden, (b) Ewiger Frühling; Suite from Der Rosenkavalier (R. Strauss); Hungarian Rhapsody No. 2 (Liszt); Scherzo for Tello (van Goens); A Bavarian Radio Rondo (Kusche). 9.20, The Kieferfelden Play—Radio Sequence. 9.50, Concert of Modern Chamber Music: Cassation, Op. 11 (Mehler); Three Songs for Contralto, Violin, Viola, and Cello, Op. 6 (Fehres); String Quartet No. 2 (Beckerath). 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 p.m., Military Band Concert, relayed from the Students' Park. 5.0, Orchestral Concert, relayed from the Grand Hotel: Overture, Si j'étais roi (Adam); Concert Waltz (Moszkowsky); Scottish Songs (Lamplé); Finlandia (Sibelius); Scherzo (Schubert); Melody (Sperber); Melody (Solvig-Lindberg). 6.0, Talk on St. Thomas' Church. 6.30, Religious Address. 7.0, Announcements, Weather and News. 7.30, Old Dance Music. 8.0, Time. 8.1, Agricultural Talk. 8.30, Organ Recital by Arild Sandvold, relayed from St. Saviour's Church. 9.15, Talk: The Scandinavian School at Geneva. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Cello Recital by Sverre Krövel; Prelude (Chopin); Ave Maria (Schubert); Dance (Popper); Melody (Davidov); Hungarian Rhapsody (Popper). 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO
558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavore Notes, Agricultural Notes and Giornale Radio. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Vocal and Orchestral Concert: Tago (Gneco). Tenor Solo: Tutta pe' me (Lana-Fiore). Soprano Solo: Rumba delle Luciane (Franco). Tenor Solo: Italiana (Lai). Soprano Solo: Rimpianto (Bonvoletti); Canzone gialla (Franco-Bracchi); Ungarland (Abraham-Zozzo). Tenor Solo: Mattinata primaverale (Martino-Zerbi). Tenor Solo: Serenata alla luna (Mancino-Gaddieri). Soprano Solo. Di amori ne ho tre (Mariotti); Si chiamava Lola (Stocchetti Bruno); Canzoniere No. 2 for Orchestra

AUGUST 10th

THURSDAY

continued

(Tagliaferri); Cuban Love Song (Hugh); L'isola della rumba (Barzizza-Franco). Tenor Solo: Ombra d'amore (Figarola). Soprano Solo: L'Amore sei tu (Ferretto-Glorioso). Tenor Solo: Non ti scorder di me (De Curtis-Fagiolo). Soprano Solo: Rose d'Inverno (Franco). Tenor Solo: Casetta mia (Stocchetti-Mariotti); Se non mi vuoi più bene (Franco-Leticia). Tenor Solo: Feuesta oscura (Bracco-Pizzaroni). Soprano Solo: Torna, Minnie (Garricci-D'Ilba); Era fatta così (Ruscini-Bruno); Mascheroni Fantasia. 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).—6.45 p.m., Theatre Notes. 7.0, Le Journal Parlé. 8.30, Gramophone Concert. Part I: Extracts from Coriolanus (Beethoven); Symphony in D (Beethoven). Part II: Light Music; Selection from Rose Marie (Friml); Co sont des mots (Gey); Jamais (Cazes); The Vision of Fuji San (Ketelbey); Melody (Sylviano); Concert (Jonasson); Japanese Lantern Dance (Yoshitomo); Melody (Fletcher); Parle-moi d'autre chose (Delattre); J'ai laissé mon cœur (Enor); Anne-Marie (Bochmann); Vieoldy (Evans); March (Marin); Le Père la Victoire (Ganne). 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. 7.50, Talk on France. 7.55, Gramophone Music (cont'd.). 8.30, Concert. 9.15, Concert, relayed from the Restaurant de la Forêt, Le Touquet. 11.0, News.

PARIS

RADIO PARIS (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 News. 12 Noon, Protestant Address. 12.30 p.m., Gramophone Concert. Part I, Glazunov Music; Stenka Razin; Interlude in the Old Style; Waltz; Oriental Romance; Marionettes. Part II, Light Music; Selection from The Gipsy Princess (Kálmán); Song from Die Bayadere (Kálmán); Two Songs from Choulette (Hahn); Song from Madame l'Arlequin (Offenbach). Song from The Drum-Major's Daughter (Offenbach); Hollywood Revue; Dragelaine (Jolson); Selection from The Show of Shows; Old Man River, from Show Boat (Kern); Ragat Love Song (Brown and Freed); Selection from Gold Diggers of Broadway (Burke); Ballet Music from Harlequin Doll (Darcy). In the intervals at 1.0, Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 4.30, Recital, Marcel Dupré (Organ) and Mlle. Marguerite Dupré (Pianoforte), relayed from the American Conservatoire, Fontainebleau; Prelude and Fugue in C (Bach); Four Short Chorals (Dupré); Concerto in G minor (Handel); Ballad for Pianoforte and Organ (Dupré); Symphonic Pieces (Franck); Variations on the Gothic Symphony (Widor); Improvisation on a given Theme. 7.0, Market Prices, Weather, Agricultural Notes, Exchange and Racing Results. 7.10, Gramophone Music; Suite algérienne (Saint-Saëns); D'une prison (Hahn); Les étoiles (Hahn); Ballet Music from Sylvia (Delibes). 7.50, Commercial Prices and News. 8.0, Gramophone Music. 8.30, See Strasbourg. In the interval, Press Review and News.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayd by **W8XK** on 48.86 metres and 25.27 metres.—7.30 p.m., The Pioneers, from New York. 7.45, KDKA Home Forum. 8.0 to 9.45, New York Relay. 8.0, Betty and Bob. 8.15, The Smiths Play Bridge. 8.30, Words and Music. 8.45, State Federation. 9.0, Thursday Special. 9.30, News and Markets. 9.45, Thursday Special. 10.0, Rhythm Kings. 10.15, Tarzan of the Apes. 10.30, Programme to be announced. 10.45, Little Orphan Annie, from New York. 11.0, News and Piano Classique. 11.15, Weather and Sports Notes. 11.30, Pittsburgh Spotlights. 11.45, Lowell Thomas, from New York. 12 Midnight, Amos 'n' Andy, from New York. 12.15 a.m. (Friday), Concert Footlights. 12.45, Pathé News of the Air. 1.0 to 3.30, New York Relay. 1.0, Captain Diamond's Adventures. 1.30, John Fogarty. 1.45, Floyd Gibbons. 2.0, Death Valley Days. 2.30, Wayne King's Orchestra. 3.0, Goldman Band.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Moravská-Ostrava. 3.55, Exchange. 4.0, Interval. 5.25, See Brno. 5.45, Gramophone Music. 5.55, Talk. 6.5, Agricultural Report. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission; Talk and Agricultural Report. 7.0, Chimes and News. 7.10, See Brno. 7.25, Jara Benes Song Recital by Jara Pospisil, with the Composer at

the Pianoforte. 7.45, See Brno. 8.30, Pianoforte Recital of British Music by Anthony Baldwin. The Island Spell (Ireland); Four Preludes (Ireland); (a) The Undertone, (b) Obsession, (c) The Holy Boy, (d) Fire of Spring; The Yug (Goossens); Three Preludes (Delius); Lotus Land (Scott); Welsh Folk Dances (Davies); Shepherd's Hey (Grainger). 9.0, Concert by the Station Orchestra, conducted by Adolf Heller. Symphony in B (Bach); Symphony in B (Mozart); Suite, Nicotina (Novak). 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.—7.0 p.m., Talk on Films. 7.30, News. 7.31, Songs on Gramophone Records. 8.0, Concert by the Radio Lausanne Orchestra, conducted by E. Moser. Soloist: Marguerite Rosset (Songs). 9.0, Violin Recital by M. Hoenich. 9.30, Mandoline and Guitar Concert by the Carmen Mandoline Club. 9.50, News. 10.0, Songs of Yesterday and To-Day.—Programme arranged by Gervai. 10.30 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme. 9.30, Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News. 10.30, Reading. 11.0, The Radio Trio, followed by Icelandic Songs on Gramophone Records.

RJUKAN.—See Oslo.

ROME

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.—1.5 to 2.15 p.m., Orchestral Concert. In the intervals at 1.30, Giornale Radio and Exchange, and at 2.0, Time and Announcements. 4.45, Giornale Radio and Exchange. 4.55, Children's Radio Review. 5.10, Weather Forecast. 5.15, Concert. Maria Flori (Violin), Neomi Raimondi (Soprano), Gino Conti (Bass), and Antonio Dominici (Guitar); Violin Solos: (a) Largo (Veracini), (b) Burlesca (Sonima); Soprano Solos: (a) Ich liebe dich (Grieg), (b) Mignons Lieder (Schumann); Bass Solo (Verdi): (a) A te l'estremo addio from Simon Boccanegra and (b) Filippo's Aria from Don Carlos; Violin Solos: (a) Capriccio (Versee), (b) Polonaise (Vieuxtemps); Soprano Solos: (a) Die Lotoblume (Schumann), (b) Puppillette (Falconieri); Guitar Solos. 6.40 (Naples), Shipping News and Sports Notes. 6.50, Agricultural Report and Dopoiavoro Announcements. 7.10, Tourist Report. 7.20, News in Foreign Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Gramophone Music. 8.25, Giornale Radio and Sports Notes. 8.30, Nozze istriane—Opera in Three Acts (Smaraglio). In the intervals, Literary and Art Notes and Recitations. After the Opera, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relayd at intervals by **W2XAF** on 31.48 metres and by **W2XAD** on 19.56 metres.—12.45 a.m. (Friday), Spok Reports and Baseball Scores. 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 to 6.35 a.m. (from Basle), Gymnastics. 11.59, Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from Zürich), Concert of Light Music. In the interval at 12.30 p.m., Time and News. 1.25 (from Zürich), Exchange, Time and Weather. 1.35 (approx.), Interval. 5.0 (from Zürich), Concert by the Little Radio Orchestra, conducted by Max Scherbaum. 5.30 (from Basle), Animals in Music—Gramophone Concert. 6.30 (from Basle), Talk for Children. 7.0, Time and Weather. 7.5 (from Basle), Gramophone Records of Famous Singers and Speakers. 7.30 (from Basle), Italian Lesson. 8.0, Radio Report from a Factory in Brissago. 8.30 (from Basle), Recital of Songs and Arias by Alice Neudegg-Teichner (Soprano). 9.0, News. 9.10 (from Zürich), Symphony Concert by the Swiss Radio Orchestra, conducted by Neppach. 10.15 (approx.), Close Down.

SOTTENS.—See Radio Suisse Romande.

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. Relayd 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 Forecast. 6.5, Interval. 6.35, Giornale Radio, Agricultural Notes, and Dopoiavoro Announcements. 7.0, Time Signal and Tourist Report. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, Announcements, Giornale Radio, Sports Notes and Weather. 8.20, Talk on Smaraglia's Opera, Nozze istriane. 8.30, See Rome. After the Programme, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning); and 5,969 kc/s, 50.26 metres (Evening); in 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. Relayd 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 Wiener Symphoniker, conducted by Josef Holzer. Overture, Der Struwwelpeter (Heuberger); Gedenkballett (Böhme); Dream Pantomime from Hansel and Gretel (Humperdinck); Habanera, La chilena (Grenade); Waltz, Märehen aus Wien (Ziehrer); Selection from Das Modell (Suppé); Muschelrauschen (Wagner); Song from Der Teufelsreiter (Kálmán); Tyrolese Cavalry March (Müllhölzer); Lullaby, Klindlein schlaf (Wagner); Waltz from Der Rosenkavalier (R. Strauss); Réve angélique (Rimsky); French Polka, Mein Liebchen (Komzak); Selection from Eva (Lehar); In an interval at 1.0 p.m., Time and News. 2.0, Interval. 3.0, Time and News. 3.20, Talk; Gymnastics and Christian Ethics. 3.30, Programme for Children. 3.55, Gramophone Concert of Variety Music. 4.35, Travel Talk: Through the Montafon. 5.0, Talk for Women: Women's Position in Finland. 5.23, Contralto and 'Cello Recital by Dora With and Hilde Duckett. 6.5, Talk: The Hot Springs of Windischgarsten. 6.30, Talk: In the Crater of Nimrod Dagh. 7.0, Leo Fall Concert by the Wiener Symphoniker. 8.30, Reading (Ernst Lissauer). 9.0, Symphony Concert by the Sedlak-Winkler Quartet and the Wiener Symphoniker. 10.15, News. 10.30, Sponsored Talk. 10.45, 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., Orchestral Concert, relayed from the Bagatela Café. 12.25, Polish Press Review. 12.33, Weather. 12.35, Orchestral Concert (cont'd.). 12.55, Radio Journal. 1.0 to 2.55, Interval. 3.5, News. 3.10, Announcements. 3.15, Gramophone Music. In the Interval at 3.25, Economic Notes, and at 3.45, Scouts' Report. 4.0, Programme for Children. 4.30, Instrumental Music on Gramophone Records. 5.0, Reading—The Tale of an Opera Hat (Slaska). 5.15, Recital of Slav Songs by Mme. Ori-Wasilewska. 5.40, Song Recital by Antoine Izyskowski. 6.0, Light Music on Gramophone Records. 6.15, Talk relayed from Lwow, 738 kc/s, 381 metres. 6.35, Concert by the Station Orchestra: Polonaise (Kurpinski); Selection from La Traviata (Verdi); Mountain Dance (Noskowski); Little Overture (Za-ludek); Ballet Music from La Gioconda (Ponchielli). 7.20, Miscellaneous Announcements. 7.35, Programme Announcements. 7.40, Reading. 8.0, Concert by the Station Orchestra, conducted by Oziminski; Soloist, Mme. Tisserant (Mezzo-Soprano); March (Rapakki); Ballet Music from The Demon (Rubinstein); Songs: (a) Aria from The Demon (Rubinstein), (b) Seguidilla, from Carmen (Bizet); Suite No. 12 from Carmen (Bizet); Songs, (a) Aria from Aida (Verdi), (b) Serenade (Mascagni). (c) L'ombra di Carmen (Tirindelli); Rhapsody, Second Hungarian (Liszt). 8.50, Radio Journal. 9.0, Agricultural Notes. 9.10, Violin Recital by M. R. Totenberg; Prelude, Bourrée and Gavotte, from the Partita in E (Bach); Rondo (Mozart-Kreisler); La hile aux cheveux de lin (Debussy); Caprice (Paganini-Szymanowski); Allegro non troppo (How); Rondo brillant (Schubert). 10.0, Dance Music from the Europe Café. (Czechoslovak). 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.—7.10 p.m., News and Programme Announcements. 7.20, The Letter Box. 7.40, See Warsaw. 9.0, Recitations. 9.10, See Warsaw. 11.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

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.—5.5 p.m. (from Östersund), Divine Service. 5.30 (from Östersund), Talk. 6.0 (from Östersund), Folk Songs. 6.15, Gramophone Music. 7.15, Weather and News. 7.30 (from Sundsvall), Talk. 8.0 (from Östersund), Military Band Concert. 9.0, Technical Talk. 9.25, Piano-forte Sonata No. 4, Op. 59—the Keltie (MacDowell). 10.0, Concert by Martin Johanson (Organ), Carl Erik Kempendall (Songs) and Roman Duktulsky (Cello). 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 Exchange. 1.5, Violin and 'Cello Duet Recital by Zoltan Szekely and M. Hermann. 2.0, Programme for Children. 3.0 to 3.30, Interval. 3.30, Orchestral Concert, relayed from the Casino, Vichy; Overture, Zampa (Hérold); Zino-Zina (Vida); Orchestral Suite from Hansel and Gretel (Humperdinck); Melodies; Romance for Violin (Kunc); Nocturne for Horn (Kunc); Selection from Cavalleria rusticana (Mascagni); Waltz, Morgenblätter (Joh. Strauss). 5.0, French Eloquence Lesson. 5.15, Gramophone Concert; Orchestral Suite from Coppelia (Delibes); Puccini Potpourri No. 1 Ballad and Song from Die Dreigroschen Oper (Weill); Suite pastorale (Scassola); Song and Ballad from Die Dreigroschen Oper (Weill); Johann Strauss Potpourri (Mackeben). 6.0, Talk in German; Géricault and Delacroix, Leaders of the Romantic Movement. 6.15, Talk for Women in French. 6.30, Talk on Mozart, with Gramophone Illustrations. 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in French, Lottery Results, and Announcements. 8.30, Othello—Opera (Verdi), by Members of the Milan Scala Opera Company, relayed from the Casino, Vichy. After the Opera, Press Review in German.

STUTTART

MUHLACKER, 832 kc/s, 360 metres; 60 kW. And **Freiburg**, 627 kc/s, 570 metres.—12 Noon, German Overtures on Gramophone Records. 12.30 p.m., Music by the Choir of St. Thomas, Leipzig, on Gramophone Records. 1.0, Bach Music by the Philadelphia Symphony Orchestra, on Gramophone Records. 1.15, 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. 3.30, Programme for Young People. 4.30, See Munich. 5.45, Talk: Life in the Canary Islands. 6.10, Talk: Flying in the High Alps. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, See Hamburg. 10.15, Time and News. 10.40, Six Intermezzi for Pianoforte, Op. 45 (Reger), played by Else Herold. 11.10, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.0 p.m., News. 6.5, Saxophone Solos. Pavane pour une Infante défunte (Ravel); Sérénade (Saint-Saëns); Pour vous les larmes (Chopin); Andante molto (Bizet). 6.15, Music from Opera. Good Friday Magic from Parsifal (Wagner); Selection from Il Trovatore (Verdi); Prayer and Chorus from Lakmé (Delibes); Toi qui mi la pitié dans nos âmes from Thais (Massenet); Dieu qui fit l'homme à son image from Romeo and Juliet (Gounod); Barcarolle from The Tales of Hoffmann (Offenbach). 6.45, 'Cello Solos. Prelude, Le Déluge (Saint-Saëns); Agnus Dei (Bizet); Le Cygne (Saint-Saëns). 7.0, Balalaika Music and Russian Songs. 7.15, News. 7.25, Commercial Notes. 7.30, Light Music. 8.15, Petite Suite (Debussy) by a Symphony Orchestra. 8.30, Readings. 8.45, Instrumental Solos. 9.0, Extracts from La Basoche—Opérette (Messager). 9.45, Concert. Trännerrei (Schumann); The Angels' Serenade (Braga); Chanson triste (Tchaikovsky); Clair de lune (Massenet); Chanson d'avril (Bizet); Le passeur du printemps (Goublier); Melody (Beethoven). 10.15, News. 10.30, Concert for Listeners in Morocco. 11.15, Organ Recital. Indian Love Call (Friml); Serenade (Toselli); The Mill in the Forest (Eilenberg); Serenade (Drigo). 11.30, Popular Programme. 12 Midnight, Operetta Music. Selection from The Desert Song (Romberg); La Poupee (Audran) and Les Saltimbanques (Ganne). 12.15 a.m. (Friday), News. 12.20, Orchestral Music, Concerto in A Minor (Rossi); Overture, Zampa (Hérold). 12.30, Close Down.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.30 p.m., Time Signal, Weather Report, Stock Exchange Quotations and Gramophone Music. 6.0, Programme for Children. 6.45, News. 7.0, Gardening Talk by G. O. Sheppard. 7.15, Literary and Dramatic Talk by Aodh de Blacain. 7.30, Time Signal. 7.31, Classical Music by the Station Orchestra. 8.0, Pianoforte Recital by Sidney Green. 8.15, Soprano Solos by Gladys MacNevin. 8.30, The Station Orchestra. 8.45, All Ireland Traditional Trio. 9.0, Gaelic Song Recital. 9.15, Traditional Trio (contd.). 9.30, Readings. 9.45, Sponsored Programme. 10.45, News, Weather Report and Close Down.

BARCELONA

EAJ1; 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert: Polonaise in B Flat (Schubert); Adagio, from the Pathetic Sonata (Beethoven); Minuet from the Divertissement in D (Mozart); Selection from Robert le Diable (Meyerbeer); Spring Song (Mendelssohn); Intermezzo (R. Strauss); Selection from The Twilight of the Gods (Wagner). 8.0, Request Gramophone Records. 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral. Weather Forecast, Programme for Seamen, Exchange Quotations, and Market Prices. 10.10, Orchestral Concert. 11.15, Song Recital of Tyrolean Music. 11.30, 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 Dopolavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.40 (approx.), Concert of Opera Music. Soloists: Andrea Mongelli (Bass) and M. de Santis Bruno (Soprano). La festa del Corpo dei Tiratori (Bologna); Bass Solo from Don Carlos (Verdi); Soprano Solo from Il piccolo Marat (Mascagni); Selection from Il Re (Giordano); Bass Solo from The Barber of Seville (Rossini); Soprano Aria from Luisa Miller (Verdi); Interlude from Dafni (Mulg); Bass Solo; Recitative from Fedora (Giordano); Soprano Aria from Manon Lescaut (Puccini); Selection from Act I of Fama (La Rotella); Bass Solo; Prologue to Mephistopheles (Boito); Soprano Aria from Lakme (Delibes); Selection from Il carillon magico (Pick-Mangiarulli). 10.30, Dance Music, relayed from the Gran Calle del Levante. 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, Recital of Yugoslav Songs. 7.30, Talk. 8.0, Gramophone Music. 8.30, Choral Concert. 9.30, Radio Play. 10.0, Saxophone Recital. 10.30, Time and News, followed by Gypsy Music relayed from the Potrosacka Zadruga Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert. 2.40, Chopin Recital by Ursula Bogdan-ki (Pianoforte); Waltzes (a) in A Minor, (b) in C Sharp Minor, (c) in G Flat; Mazurkas (a) in G Sharp Minor, (b) in B Minor. 3.0, Programme for Girls. 3.30, Weather and Exchange. 3.45, Reading from Kleine Reise (Alverdes). 4.0, See Leipzig. 5.0, Talk: Hitler Youth and the Teaching Profession. 5.25, Topical Talk. 5.35, Classical Music for Oboe; Sonata in G Minor, Oboe and Harpsichord (Telemann); Trio No. 8 for Oboe, Violin and Harpsichord (Handel). 6.0, A Poem. 6.5, Light Music by the Nera Monti Orchestra; Waltz, Accelerationen (Strauss); Overture, Gri-Gri (Lincke); Paganini Potpourri (Strauss). 6.30, Talk. 6.50, Weather and News. 7.0, Transmission for all German Stations; German Ballads. 8.0, Today's Motto, followed by Talk for the Radio Jubilee Exhibition: Women and Radio. 8.10 (approx.), Readings for Workers. 8.30, Orchestral Concert. In the interval, Schatzvogel-Gezwitscher—Humorous Play (Mihlen-Schulte), followed by New German Light Music by the Sonntag Orchestra. 10.0, Weather and News. 10.45, Weather for Shipping. 11.0, Dance Music. 11.30 (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.10 p.m., Talk on the Pomeranian Gymnastic Society. 4.25, Beethoven Music by the Station Orchestra. 4.50, Orchestral Concert. 5.10, Talk: Trips by Water. 5.30, Harvest—Radio Sequence (Gert Schmaldauer). 6.0, Talk: Small Pleasures. 6.15, Hohenstaufen-Play (Grabbe), relayed from the Jungfernhof. 6.40, Announcements. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.5, Reading from Unpublished Documents from Soviet Russia. 8.40, A Musical Baedeker: Italy. 9.30, Topical Talk. 9.40, Violin Concerto, Op. 22 (Hans Klaus Langer). 10.0, Weather and News. 10.15 (approx.), Dance Music, relayed from

FRIDAY

AUGUST THE ELEVENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** "Music in Store," a revue. Pianoforte recital.
- LONDON** "Mr. Petre," a play by Hilaire Belloc.
- REGIONAL**
- MIDLAND** A Summer evening programme: Gramophonic entertainment.
- REGIONAL**
- NORTH** Orchestral concert.
- REGIONAL**
- SCOTTISH** "All on a Summer's Day," feature programme by A. Black.
- REGIONAL**
- BELFAST** "The Two Kings," a play by Wilfred E. Shine.

ABROAD

- BRUSSELS** 9.0 p.m. Concert from the Casino, Knoeke.
- (No. 1)**
- BUDAPEST** 9.45 p.m. The Opera House Orchestra, conducted by E. Dohmanyi.
- COPENHAGEN** 10.20 p.m. Concert by the Station Orchestra.
- HEILSBERG** 8.10 p.m. Ludwig Laschetizky Farewell concert, by the Königsherg Opera House Orchestra.
- LANGENBERG** 6.0 p.m. The Station Chamber Orchestra.
- LEIPZIG** 8.40 p.m. Italian music by the Symphony Orchestra.
- POSTE** 8.30 p.m. Concert by the Station Orchestra.
- PARISIEN**
- STRASBOURG** 8.30 p.m. Festival concert of Contemporary French Music.
- TOULOUSE** 9.0 p.m. Gounod concert.
- WARSAW** 8.0 p.m. Symphony concert by the Station Orchestra, conducted by Fitelberg.

the Zoo. In the interval at 11.0, Talk: What they are saying in Berlin.

BERNE.—See *Schweizerischer Landessender*.

BEROMUNSTER.—See *Schweizerischer Landessender*.

BODEN.—See *Stockholm*.

BODO.—See *Oslo*.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—7.30 p.m., News. 7.40, News and Weather. 7.55, Lottery Results. 8.0, Gramophone Concert. 8.30, Concert by a Symphony Orchestra. Symphony (Mozart); Divertissement on Russian Songs (Habaud); Ballet Music from The Cid (Massenet); Overture, Fidelio (Beethoven). In the intervals, Recitations. After the Concert: Amusement Guide and Time Signal.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—2.50 p.m., Concert by the Bratislava Salkol Band. 3.55 to 4.0, See Prague. 5.45, See Prague. 6.25, Gramophone Music. 6.40, Sports Report. 6.55, Report for Housewives. 7.0, See Prague. 8.50, See Brno. 9.10, See Prague. 10.30 (approx.), Close Down.

BREMEN.—See *Hamburg*.

BRESLAU

923 kc/s, 325 metres; 60 kW. and Gleiwitz, 1,184 kc/s, 253 metres.—1.0 p.m., Gramophone Concert. 1.45, Time, News and Exchange. 2.0, Gramophone Concert. 3.0, Agricultural Prices. 3.20, Programme for Young People. 4.0, Concert, relayed from the Café Vaterland. 4.40, Reports by Veterans of the National Socialist Movement. 5.0, Song Recital by Lotte Neumann (Mezzo-Soprano). 5.25, Agricultural Prices. 5.30, Talk: An Account of the Glass-making Villages. 5.50, Chamber Music Concert from Breslau Castle: String Quartet in B (Mozart); Sonata for Flute and Harpsichord (Frederick the Great); Quartet in B Minor for Flute, Viola, Cello and Harpsichord (Telemann). 6.50, Weather for Farmers, News and Exchange. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Topical Radio Report: The Rowers in Training for the German Championship. 8.30, Ludwig Thoma Programme; Two Comedies: (a) The Branch Line, (b) The Little Relations. 10.0, Time and News. 10.30, Theatre Plans for the coming season. 10.50 (from Gleiwitz), Dance Music. 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: News, Sports Notes, Topical Talk and Talk on Ethnography.

7.0, See Prague. 8.50, Violin Sonata (Janacek). 9.10, 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 Emile Lauwers. 1.0 p.m., Le Journal Parle. 1.10, The Sun—Gramophone Concert. 5.0, Dance Music by Mickey's Club Band, relayed from the Casino, Knoeke. 6.0, Talk on the Development of Trade. 6.15, Overture, Rienzi (Wagner), on Gramophone Records. 6.30, Recitations by Mlle. Gilberto. 6.50, Gramophone Music: Overture, The Thieving Magpie (Rossini); Mexican Rhapsody (Briceno); Waltz, Mimosa (Hennel); Song of New Zealand; Hochzeitszug in Lilliput (Translater). 7.15, Medical Talk. 7.30, Legal Talk and Literary Review. 8.0, Gramophone Concert, with Songs by Mme. Ramboux (Soprano), Overture, Le Cheval de Bronze (Auber); Selection from The Master-singers (Wagner); Selection from La Dame blanche (Boieldieu); Soprano Solos: (a) Aria from Xeres (Handel), (b) Se tu non torni (Tosti), (c) J'ai pleuré en rêve (Hiné), (d) Paysage (Hahn). 8.45, Talk: Loans to Ex-Servicemen. 9.0, Concert conducted by K. Candael, relayed from the Casino, Knoeke. Soloist: Mme. Baidia (Soprano), Grand Slay March (Tchaikovsky); Intermezzo from L'amico Fritz (Mascagni); Aria from La Traviata (Verdi); Danse macabre (Saint-Saëns); Soprano Solo; Waltz from Romeo and Juliet (Gounod); Waltz, Künstlerleben (Joh. Strauss). After the Concert, Le Journal Parle, and Dance Music by Mickey's Club Band, relayed from the Casino, Knoeke. 11.0, La Brabançonne.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parle. 1.10, Concert by the Small Station Orchestra, conducted by Emile Lauwers; March (Bader); Overture, La Norma (Bellini); Melody (Gershwin); Songs on Gramophone Records; Waltz, Vibraphone (Löhr); Tango (van Welzel); March, Germanenblod (Blankenburg). 5.0, Gramophone Music: Overture, Martha (Flotow); Selection from The Nuremberg Doll (Adam); Waltz (Gilbert); Melody (Botrel); Regrets d'Anvers; Boston (Gazes); Neapolitan Caprice (de Pace); One Step, Madrid (Speyer); Rubens March (Benoit). 5.45, Popular Programme. 6.30, Chopin Pianoforte Recital on Gramophone Records: Polonaise in E flat minor; Waltz in C sharp minor; Nocturne in F, Op. 15, No. 1; Polonaise in A flat, Op. 53; Ballade in F; Nocturne in F, sharp, Op. 15, No. 2; Mazurka in A minor, Op. 68, No. 2; Polonaise, Op. 40, No. 1; Valse brillante in E flat, 7.15, Talk. 7.30, Wireless Notes. 8.0, Schubert Concert on Gramophone Records: Finale from the Symphony in C; Anfechtung; Der Doppel-

gänger; Rondo; Wiegenlied; Die Biene; Der Lindenbaum; Am Meer; Ave Maria. 8.45, Talk. 9.0, Visions of Yser—Mystery Play (Verachtert). 9.20, Announcements. 9.25, Gramophone Concert. 10.0, Le Journal Parle. 10.10, Recital by Yehudi Menuhin (Violin) on Gramophone Records. 10.25, Wind Instrument Concert on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: Spanish March (Gyldenmark); Overture, Martha (R. Strauss); Selection from Madame Butterfly (Puccini); Selection from White Horse Inn (Stolz-Benatzky); Romanian Potpourri (Pachelbel); Song of the Boatmen (Artok); Romance and Cossack Dance (Tchaikovsky). In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Talk on Music. 7.40, The Twilight of the Gods—Opera (Wagner) on Gramophone Records. In the intervals, Radio Journal. After the Opera, Concert relayed from the Lido.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—5.0 p.m., Talk arranged by the Hungarian Swimming Club. 5.30, Orchestral Concert, relayed from the Angol Park. 6.45, Gramophone Music. 7.45, Talk on Politics. 8.0, Round the Camp Fire—Report from the World Jamboree. 9.45, Concert by the Opera House Orchestra, conducted by Ernst Dohmanyi. Soloist: Jenő Kerpely (Cello), Overture, Romeo and Juliet (Tchaikovsky). Cello Concerto (G. Albert); Selection from Les petits riens (Mozart); Lorelei—Rheinklänge (Joh. Strauss); Rhapsody No. 1 (Liszt). 11.15, Talk on the City of Budapest, followed by Gypsy Music by the József Rácz Band, relayed from the Emke Café.

CASSEL.—See *Frankfurt*.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time, Chimes from the Town Hall, and Weather. 12.5 p.m., String Ensemble Concert, relayed from the Bellevue Strandhotel. 2.0, Interval. 3.0, Orchestral Concert, conducted by Walter Meyer-Radon. Soloist: Vadborg Hansen (Songs). Overture, Der Freischütz (Weber); Andante from the Surprise Symphony (Haydn); Selection from Herodiade (Massenet); Waltz and March from The Veil of Pierrette (Dohmanyi); Polonaise in A (Chopin); Danish Songs: (a) Asul and (b) Danish Folk Song (Rosenfeld), (c) Jeg laeger mig saa trygt til Ro and (d) Jez ved en Laerekræde (Nielsen), (e) Areturus, (f) Kirsebærtræerne and (g) Lykke (Hiss-Magnussen); Overture, Der Operibald (Heuberger); Spanish Dance No. 5 for Strings (Granados); Selection from La Vie parisienne (Offenbach); Viennese Music from The Duchess of Chicago (Kálmán); Intermezzo from Cavalleria rusticana (Mascagni); Invitation to the Dance (Weber); March from Sunny (Kern). 5.0, Reading (Lauersen). 5.35, Exchange and Fish Market Prices. 6.20, Talk: Old Buildings in Aarhus. 6.50, Weather Forecast. 7.0, News. 7.15, Time Signal. 7.20, English Lesson. 7.30, German Lesson. 7.40, French Lesson. 7.50, Programme by Per Knutzon. 8.0, Chimes from the Town Hall. 8.5, Talk for Girls. 8.30, Concert by the Station String Orchestra, conducted by Walter Meyer-Radon. Overture, Theodora (Handel); Two Preludes (Oragozi); March (Grétry). 8.50, Gramophone Music. Halleluja from The Messiah (Handel); Folk Song; In stiller Nacht (Brahms). 9.0, Gaestebud—Play (Aage Hertel) after Plato's Symposium, with incidental Music on Greek Themes. 10.0, Press Review. 10.20, Concert by the Station Orchestra, conducted by Walter Meyer-Radon. Overture, Orpheus in the Underworld (Offenbach-Binder); Skaters' Waltz (Waldteufel); Suite, Summer Days (Coates); Selection from La Bohème (Puccini); Perpetuum Mobile (Strauss); Gallop (Lumbye). 11.0, Dance Music relayed from the Arena. 12 Midnight, Time and Chimes from the Town Hall.

CORK.—See *Athlone*.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.5 p.m., Talk: The Watery Places of Silesia. 7.20, Miscellaneous Items and News. 7.35, Programme Announcements. 7.40, See Warsaw. In the intervals at 9.0 and 10.25, Sports Notes and News. 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. 4.30 p.m., Programme for Children. 5.0, Concert of Hawaiian Duets for Southampton and Winchester Listeners: Signature Tune; The Night by the Sea; Sing something simple (Hupfeld); Bone Festa (Traditional); Three little words (Check); O Sole mio (di Capua-Whidden); Alma mia (Whidden); Kamshamola (Traditional); Goodnight, Sweetheart (Nobel); Hawaiian Twilight (Traditional). 5.30, Variety Concert for Bournemouth and Weymouth Listeners: Sons les loits de Paris (Moretti); Hope Brothers (Wright); Handbell Solo, Happy Days

AUGUST 11th

FRIDAY

continued

(Whitlock); Songs made famous by Vesta Victoria; I'm fading away (Gifford Inns); Handsaw Solo, Someone like you (Flynn); You can't see the Sea to-day, Sir; My Sunshine is you (Stolz); Signature Tune. 6.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music; Signature Tune; Bells of Normandy; How deep is the Ocean (Berlin); One little Quarrel (Hoffman); Just an Echo in the Valley (Woods); The younger Generation (Coward); For you, just you, my Baby (Connelly); Chansonette (Friml); Mediterranean Madness (Nesbit); Three Wishes; I'm one of the Lads of Valencia; I've told every little Star (Kern); Let's all dance the Polka (Benson); While we danced at the Mardi Gras; My Heart's to let; Can't we talk it over (Washington); Holding my Lady's Hand (Goerling); Moon (Aleo); I can't believe it's True (Newman); Signature Tune. 11.0, Club Concert for Musselburgh Listeners. Part I, Gramophone Music: Signature Tune; The Chum Song; Softly awakes my Heart, from Samson and Delilah (Saint-Saëns); by Albert Sandler and his Orchestra; Paris, stay the same, by Maurice Chevalier; Play, Fiddle, Play, by Gracie Fields; All about Archibald, by the Late Will Evans; Violin Solo, Souvenir (Drlla); Rockin' Chair, by Paul Robeson; Love me to-night, by Greta Keller; Love Scene from Private Lives, by Noel Coward and Gertrude Lawrence. Part II, Vocal and Instrumental Music: 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 (Haugney); Banjo Solo, In the Moonlight (McLugh-Kriss); Here in my Heart (Campbell); Sunshine, won't you shine for me? Guitar Solo, Picking my way (Kris); Signature Tune. 12.5 a.m. (Saturday), I.B.C. Late News Bulletin. 12.10 (approx.). Variety Concert: I've got a Girl (Milton); Mazurka, Lido Lady (Diero); Singin' in the Rain (Brown); Marine March (Kirzer); Up in Archie's Aeroplane (Cliff). 12.30, Dance Music: Signature Tune; Bells of Normandy; Butterflies in the Rain (Myers); Young and Healthy (Warren); Farewell to Arms (Wrubel); Little Nell (Dawner); In the dim, dim dawning (Hoffmann); When my little Pomeranian met your little Pekinese (Little); A Boy and Girl were dancing (Level); Horses carry tales (Redman); Signature Tune. 1.0, Gramophone Concert: The Mills Brothers; Coney Island Washboard; The Boswell Sisters Down among the Sheltering Palms; Billy Mayerl Selection from The Desert Song (Romberg); Leyton 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). 1.30, Dance Music: Signature Tune; Bells of Normandy; Horses carry Tales; Brighter than the Sun; The Lady I love; Isn't it Romantic; The Grass is getting greener all the Time; I wake up smiling; When my little Pomeranian met your little Pekinese; Moon Song (Calow). 1.57, I.B.C. Goodnight Melody. 2.0 (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.—6.25 p.m., Topical Questions. 6.45, To-day's News. 6.50, Time and Announcements. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Variety Items. 8.20, See Stuttgart. 9.45, Talk: The Joy of Travel. 10.15, Time and News. 10.45, Concert by the Darmstadt Chamber Orchestra, conducted by Hans Simon; Soloist, Maria Maser-Schilling (Contralto); Concerto for String Orchestra, Two Violins, and Cello (Handel); Rhapsody for Strings, Pianoforte and Contralto, Op. 53 (Graener); Music for Seven Stringed Instruments (Stephan). 12 Midnight (approx.), Close Down.

FREDRIKSTAD.—See Oslo.

FRIEBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBERG.—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., Orchestral Concert, relayed from the Rathaus, Bremen: March, Wallensteins Lager (Becker); Overture, Pique Dame (Suppe); Waltz, Donauwellen (Ivanovic); The Helmsman's Song and Sailors' Chorus from The Flying Dutchman (Wagner); Selection from The Magic Flute (Mozart); Chinese Street Serenade (Siede); Vlneta-Glocken (Lindsay-Thiemer); March, Von der Lanke (Schulz); Strauss Potpourri (Fligel); Tanz der Zwergen um Mitternacht (Kuhnke); Au der Wesser (Pressel); March (Erlich). In the interval at 12.10 p.m., Time and Announcements. 1.0, Exchange and Market Prices. 1.10, Weather. 1.15, Gramophone Concert.

2.0, News. 2.10, Gramophone Concert. 3.0, Exchange. 3.40, Shipping and Aviation Notes. 4.0, Concert from Leipzig. 5.0, Hans Friedrich Blunck Dialect Programme—Introductory Talk, Reading and Songs. 5.30, Hamburg, Bremen and Lübeck—Reports on Events in the Senate and Houses of Burgesses of the Hanseatic Free Cities. 6.0, Variety Programme. 6.45, Frankfurt Exchange and Hamburg Egg Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Concert of Music by Rhensish Composers—The Hamburg Philharmonic Orchestra, conducted by José Eibenschütz. Soloist: Karl-Hermann Pillney (Pianoforte). Old Hamburg Opera Suite (Unger); Eine kleine Serenade, Op. 55, for Strings (Trunk); Epilogue (Klusmann); Divertimento for Pianoforte and Orchestra (Pillney). 9.30, Gerhard Menzel reads from his own Works. 9.50, Topical Talk. 10.0, Time and News. 10.20, Military Band Concert, relayed from the Bierhaus Bertram.

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 Light 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. 3.30, Programme for Children. 4.0, Talk for Women. 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Overture, Le cheval de bronze (Auber); Diavolletta (Lindemann); Pierrot's and Pierrette's Liebested (Lindemann); Ballet Music from Undine (Lortzing); Waltz, Marienklänge (Jos. Strauss); Suite from Kassya (Delibes); Mondnacht am Rheinberger See (Blon); Zambeki-Czardas (Gungl); Extracts from The Swan Lake (Tchaikovsky); Violin Solo; Sch-nu-cht (Schmalstich); Overture, I due Bruschini (Rossini). In an interval at 5.0 (approx.), Talk: Suggestions for Excursions. 6.0, Reading (Lotte Steinger). 6.15, Agricultural Prices. 6.25, Bass Song Recital by Paul Freibel. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Weather and News. 8.10, Ludwig Leschetzky Farewell Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetzky. Soloist: Rosalind von Schirach (Soprano). Symphony No. 4 in B Flat (Beethoven); Aria, Dieu tenere Halle, from Tannhäuser (Wagner); Agatha's Aria from Der Freischütz (Weber); Prelude to Lohengrin (Wagner); Songs with Orchestra (Wagner): (a) Engel, (b) Schmerz, (c) Träume; Dance of the Seven Veils from Salome (R. Strauss). In an interval at 8.50 (approx.), Reading (Egon v. Kapherr). 10.0, Weather and News. 10.30, Humorous Items. 11.0, Dance Music by the Small Station Orchestra. 12.30 a.m. (Saturday), 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 Catholic Radio Society (K.R.O.). 11.55 a.m., Concert by the Amsterdam Orchestra, conducted by D. Kiekens. In the intervals, Gramophone Music. 1.40, Organ Recital by E. Haak; Concerto No. 6 (Mendelssohn); Pastorale (Guilmant); Three Pieces (Pierne). Gramophone Music; Allegretto (de Jong); Piece (Bonset). 3.5, Violin and Pianoforte Recital by Myra Meyer-Verhoeven and F. Boshart; Aria (Benda); Allegro (Puccini); Sonata in E Minor (Mozart); Gramophone Music. Canzonetta (Tchaikovsky); Hindu Song (Rimsky-Korsakov); Canzonetta (d'Ambrosio); La Gitana (Kreisler). 4.0, Gramophone Music. 5.10, Gardening Talk. 5.40, Gramophone Music. 6.40, Police Notes. 6.55, Talk. 7.15, Gramophone Music. 7.25, Concert by the K.R.O. Orchestra, conducted by P. Reinards; Selection from Iphigenia in Aulis (Gluck); The Unfinished Symphony (Schubert); Overture, Don Giovanni (Mozart). 8.15, News. 8.20, Dramatic Programme. 8.40, Concert (contd.): From the Fields and Groves of Bohemia (Smetana); Rhapsody (Anrooy); Finlandia (Sibelius). 9.25, Dramatic Programme. 9.40, Concert (contd.): Overture, Die Fledermaus (Joh. Strauss); Waltz, The Blue Danube (Joh. Strauss). 10.0, Gramophone Music. 10.5, News. 10.10, Concert by the K.R.O. Orchestra, conducted by M. van 't Woud; Viennese Melodies (Drescher); March, Old Comrades (Teike). 10.25, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

(Announced HILVERSUM), 160 kc/s, 1,875 metres; 8.5 kW.—11.40 a.m. to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Orroep (A.V.R.O.). 11.40, Time Signal. 11.41, Gramophone Music. 12.10 p.m., Concert of Light Music by Kovaes Lajos and his Orchestra. In the interval, Gramophone Music. 1.55, Gramophone Music. 2.10, Talk: Garden Pests. 2.30, Gramophone Music. 2.55, Song Recital by Franz Toutenai. 3.25,

Gramophone Music. 3.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 3.40, Organ Recital by J. Vogel. Valse tendre (Ganne); Verschmähte Liebe (Lincke); Melody (Vogel); Selection from The Student Prince (Rouberg); Somewhere a Voice is calling (Tate); Cuban Serenade (Aletter). 4.10, Programme for Children. 4.40, Gramophone Music. 5.40, Concert by De Fliere-fluiters, conducted by Ray Forest. In the intervals, Gramophone Music. 6.20, Talk. 6.40, Concert (contd.). 7.40, Talk arranged by the Liberal Protestant Radio Society (V.P.R.O.). 8.10 to 9.55, A.V.R.O. Programme. 8.10, Concert by the Hague Orchestra, relayed from the Kurhaus, Scheveningen. Conductor, Carl Schuricht. In the interval at 8.40, Talk arranged by the V.P.R.O. 9.55 till Close Down, V.A.R.A. Programme. 9.55, Recitations. 10.25, Gramophone Music.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, Announcements. 1.15, Radio Concert. 8.0, Amusement Guide and News. 8.15, Esperanto Lesson. 8.30, Press Review. 8.45, News and Weather Report. 9.0, Concert, relayed from La Pinède.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW. Relayed by Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Programme for Children: Humorous Items. 6.40 (from Helsinki), Concert by the Station Orchestra; Selection from Madame Butterfly (Puccini); Overture, The Barber of Seville (Rossini). 7.15, Talk in Swedish. 7.40 (from Helsinki), Song Recital by Welcke Piittti; Arietta and Variations; Concert Aria (Mozart); Aria from Il seraglio (Mozart); The Maid and the Bird (Benedict); Recitative and Aria from Ariadne auf Naxos (R. Strauss). 8.15 (from Helsinki), Dance Music by the Rainbow Band. 8.45, News in Finnish and 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 Fröhliche Fünf. In an interval at 2.0 (approx.), Announcements. 2.30 to 3.0, Interval. 3.0, Talk on Unemployment Insurance. 3.20, Agricultural Talk. 3.50, Programme for young People. 4.30, Heinz Steguweit reads from his own Works. 5.0, Pianoforte and Song Recital by Hans Haas and Else Loock (Mezzo-Soprano); Songs: (a) Abschied (Franz), (b) Liebeten ist da (Franz); Pianoforte Solo, First and Third Movement from the Fantasia in C (Schumann); Songs: (a) Abends (Franz), (b) Gute Nacht (Franz). 5.30, Political Talk. 5.45, Ernst Stadler Memorial Programme—Talk and Readings from his Works. 6.0, Concert by the Station Chamber Orchestra, conducted by William Keiper; Soloist, Hildegard Pappmüller (Soprano); Overture, Abu Hassan (Weber); Albumblatt (Humperdinck); Melody (Drlla); Soprano Solos: (a) Ist der Himmel darum im Lenz so blau (Pfitzner), (b) Frieden (Pfitzner), (c) Sehlagende Herzen (R. Strauss), (d) Ständchen (R. Strauss); Variations on the Song O du lieber Augustin, in the Style of Various Nations (Homann-Webau); Krolls Ballklänge (Lumbye). 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Announcements. 8.5, Variety Programme. 9.30, Talk: Friedrich Ludwig Jahn, the Pioneer of the German Gymnastic Festivals. 10.0, News. 10.30, Concert of Chamber Music. 11.30 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.5 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—1.0 p.m., News. 1.15, Gramophone Concert. 2.0, News. 2.10, Art Report. 2.20, Lyrics (Walter Richter-Ruhlund). 2.45, Sonata Op. 30 for Violin and Pianoforte (Haydn); by Hans Riphan and Karl Weiss. 3.15, Talk for the Country Woman. 3.35, Market Prices. 4.0, Concert by the Dresden Ensemble; Overture, Abu Hassan (Weber); Allegretto from the Divertimento, Op. 67 (Graener); Suite, In the Norwegian Fjords (Juel-Fredericksen); Extract from the Walzermärchen for Pianoforte, Violin and Cello (Sehütt); Serenade, Eine kleine Nachtmusik (Mozart); Dance Idyll (Caylor); Spanish Intermezzo, Tintorello (Koekert); Waltz-Intermezzo, Pavlova (Meyer-Helmund); Das getanzte Festniahil (Schettler); Two Viennese Dances (Fuchs); Festival March (R. Strauss). In the interval at 5.0 (approx.), Book Review. 5.50, Market Prices, Weather and Time. 6.0, The Matinee of Objects—a Radio Sequence. 6.50, To-day's News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Agricultural

Talk. 8.5, See Berlin (Witzleben). 8.40, Concert of Italian Music by the Leipzig Symphony Orchestra, conducted by Theodor Blumer; Soloist, Kurt Hermann (Pianoforte); Suite No. 3 for Strings, Antiche danze ed arie (Respighi); Idyll for Oboe, Strings and Two Horns (Wolf-Ferrari); Symphony in B Flat for Pianoforte, Two Violins, Viola, Cello, Double Bass, Flute, Oboe, Clarinet, Bassoon and Horn (Wolf-Ferrari); Extracts from La Donna Serpente (Casella). 10.10, News. 10.15 (approx.), Vocal and Instrumental Concert. 12 Midnight, Close Down.

LINZ.—See Vienna

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—Dutch Programme. 7.30 p.m., Gramophone Music: Suite, Alcina (Handel); Overture, Egmont (Beethoven). 7.55, Concert by the Station Orchestra, conducted by Henri Pensis. Soloist, Madeleine Beicht (Pianoforte); Carnival Overture (Dvorak); Andante cantabile (Tchaikovsky); Nocturne No. 3 (Liszt); Polonaise in A flat (Chopin); L'Oiseau bleu (Spies); Prelude No. 5 in G minor (Rachmaninov); Ségúidillas (Albeniz); Rhapsody No. 14 (Liszt). In the intervals at 8.10, Weather Report, and at 8.25, Talk in Dutch. 8.50, News in French. 9.0, Orchestral Concert relayed from Mondorf-les-Bains. In an interval at 9.45, News in German. 10.20, Dance Music on Gramophone Records.

LWOW

788 kc/s, 381 metres; 16 kW.—7.5 p.m., Gramophone Music. 7.20, Miscellaneous Items. 7.40, See Warsaw. 10.40, Gramophone Music. 11.0 (approx.), Close Down.

LYONS

LA DOUA (PTT), 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South East. 8.30, Quintet Concert: Selection from (a) Pique Dame (Suppe) and (b) La Princesse de Frebzone (Offenbach); La Cinquantaine (Gabriel Marie); Selection from The Drum Major's Daughter (Offenbach); Sicilienne (Pergolesi); Le rapped des oiseaux (Rameau); Soprano Solo: Ave Maria (Fleuret); Two Pieces for Violin and Cello; Chanson d'amour (Hollman); Piece (Ravel); Turkish March (Mozart); Selection from (a) Il Trovatore (Verdi), (b) La Bohème (Puccini), and (c) The Barber of Seville (Rossini). After the Concert, News.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal and Request Gramophone Records. 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time and Political Review. 11.15 (approx.), Symphony Music on Gramophone Records: Overture, Iphigenia in Aulis (Gluck); Nocturnes (Debussy); (a) Nuages, (b) Fêtes; Symphony from the New World (Dvorak); La oracion del torero (Turina); Hindu Song (Rimsky-Korsakov); La valse (Ravel). 1.15 a.m. (Saturday), News and Programme Announcements for Listeners Abroad. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.15 p.m., See Rome. 9.15, See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., See Prague. 8.50, See Brno. 9.10, See Prague. 10.30 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—3.0 p.m., Gramophone Concert. 4.0, Talk on Agricultural Machinery. 4.30, Talk on Modern Soviet Literature. 5.30, Programme Announcements. 5.45, Topical Talk. 6.30, Dance Music. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes.

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 Ernst Hagel; Overture, Le brasseur de Preston (Adam); Selection from Fedora (Giordano); Albumblatt (Wagner); Oriental Suite (Lüling); Air from The Queen of Spades (Tchaikovsky); Air (Reger); Eisblumen (Leuschner); March, Unter dem Doppeladler (C. Wagner). 5.45, Talk: Romanticism and the Napoleonic Wars. 6.5, Recital by Fritz Mühlhölzl; Fantasia, Venice (Kollmanek); Das Vöglein (Mozart-Reigersdorf); Andante (Pugli). 6.25, Talk: The National Labour Service Schemes. 6.45, Time, Weather, and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Flotte Bursche—One Act Opera (Suppe). 9.0, Topical Talk. 9.20, (from Nürnberg), Symphony Concert by a Nazi Band, conducted by Willy Böhm; Overture, Manfred (Schumann); Melody (Bruch); The London Symphony (Haydn). 10.20, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

477 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.—6.0 p.m., Gramophone Music. 6.40, Recitation of Poems (Stub Wiberg). 7.0, Announcements, Weather and News. 7.30, Light Music by a Reed Instrument Quartet. 8.0, Time. 8.1, Talk. 8.30, Song Recital by Mme. Sofli Schønning (Soprano). 9.0, A Comedy in Five Acts (Stiewers). 9.30, Agricultural Notes, Weather, and News. 10.0, Topical Talk. 10.15, Jazz. 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 Report, Giornale Radio and Report of the Royal Geographical Society. 8.20, Gramophone Music. In the interval at 8.30, Time and Announcements. 8.45, Opera Programme: I Dispettosi Amanti—Opera in One Act (Parelli); Act Three of Chopin (Officiale); Selection from L'Amore medico (Wolf-Ferrari). In the interval, Talk: The Ancient Palaces of Palermo. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (at 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. 8.30, Symphony Concert, conducted by M. Flament; Soloists, M. Charron (Violin), M. Krabansky (Cello), and Manouvier (Flute); Impressions Sakalaves (Landeroin); Cello Solo; Selection from Phi-Phi (Christine); Flute Solo; Selection from The Tales of Hoffmann (Offenbach); Valse romantique de Sévère. 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, Le Journal Parlé. 7.30, Gramophone Music. 8.0, Agricultural Talk. 8.10, Gramophone Music. 8.30, Concert by the Station Orchestra, conducted by Aimé Laehaume; Soloist: Mme. Domiau Blanc; Overture, The Crown Diamonds (Auber); Waltz (Strauss); Romance sans paroles (Urgel); Entr'acte Gavotte from Mignon (Thomas); Selection from Madame Favart (Offenbach); Dance Suite (Godard); Page d'amour (Lafly); Tableaux villageois (Février); Frissons d'Ames (Landeroin); Ballet Music from Hérodiade (Massenet); Ronde de nuit (Witkowski). 10.30, News.

PARIS

RADIO PARIS (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 News. 12.30 p.m., Gramophone Concert. Les cadets de Brabant (Turine); Moment Musical (Schubert-Kreisler); Glow-Worm Idyll (Lincke); Melody (Fysher); La Cinquantaine (Gabriel-Marie); La violette doublée (Gospierre); Ronde villageoise (Charbrier); Amarilli; Gavotte for Guitar (Bach); Suite (Stravinsky); Scènes humoristiques (Leonard); Divertissement on Russian Songs (Rabaud); Melody (Rubinstein); Ballet Music from La Gioconda (Ponchielli); Sons bois (Staub); Melody (Zamaçois); Clair matin (Jean-Jean); The Divine Lady (Shilkret); La Mousmé (Ganne); Il faut bien rire un peu; Tiger Rag (Dixieland). In the intervals at 1.0, Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange and Announcements. 3.45, Exchange and Market Prices. 7.0, Market Prices, Weather, Agricultural Notes, Exchange and Racing Results. 7.10, Insurance Societies' Report. 7.20, Gramophone Music. Breakfast with the one I love (O. Strauss); L'heure exquise (Crémieux); Joyeuse marche (Charbrier); Love's Garden of Roses (Wood); Masquerade (Lacôme). 7.50, Commercial Notes and News. 8.0, Recitations of Poems on Gramophone Records. 8.30, News and Weather. 8.40, Review by Pierre Seize. 8.45, Symphony Music on Gramophone Records. Marche Coossais (Debussy); Impressions d'Italia (Charpentier); Four Suites for Strings from Die Dreigroschen-Oper (Weill); Le temps des lilas (Chausson); Polovstian Dances from Prince Igor (Borodin). In the interval at 9.30, Microphone Report: The Ancient Districts of Nice.

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 p.m., KDKA Home Forum. 8.0 to 9.30, New York Relay. 8.0, Betty and Bob. 8.15, Words and Music. 8.45, Happy Jack Turner. 9.0, Gene Quay and Orchestra. 9.30, News and Markets. 9.45, Arcadians, from New York. 10.0, Rhythm Kings. 10.15, Tarzan of the Apes. 10.30, Singing Lady, from New York. 10.45, Little Orphan Annie, from New York. 11.0, News-Reeler. 11.15, Sports Review. 11.30, Pittsburgh Spotlights. 11.45 to 1.15 a.m. (Saturday), New York Relay. 11.45, Lowell Thomas. 12 Midnight, Amos 'n' Andy.

AUGUST 11th

FRIDAY

continued

12.15, Rondoliers. 12.30, Pastoral. 1.0, Jack Pettis and his Orchestra. 1.15, Silver Toppers. 1.30 to 3.45, New York Relay. 1.30, Potash and Perlmutter. 1.45, Phil Cook. 2.0, Let's Listen to Harris. 2.30, Variety Programme. 3.0, First Nighter.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Bratislava. 3.55, Exchange. 4.0, Interval. 5.45, Gramophone Music. 5.55, Talk. 6.5, Market Prices. 6.15, Gramophone Records. 6.25, News in German. 6.30, German Transmission: Two Talks and a Radio Report. 7.0, Chimes and News. 7.10, Reminiscences of Podskali and its People—Programme arranged by J. Waltner. 8.35, Talk: A Walk through Old Prague. 8.50, See Brno. 9.10, Talk: Leos Janacek. 9.25, See Zapsnik smizeleho (The Day-Book of one who vanished)—Song Cycle (Janacek) for Tenor, Contralto, and Three Women's Voices. 10.0, Time and News. 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., Nature Talk. 7.30, News. 7.40, Answers to Correspondence. 8.0, Talk: Boats of the rue Ravignin-Apollinaire, Salmon, Max Jacob, etc. 8.30 to 10.15, See Schweizerischer Landessender (Beromünster). 10.15, News. 10.30 (approx.). Close Down.

RJKUKAN.—See Oslo.

ROME

680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2R0, 11,610 kc/s, 25.4 metres, from 5.30 p.m.—1.0 to 2.15 p.m., Orchestral Concert. Liebesgruss (Strauss); Selection from The Little Dutch Girl (Kabán); Zingara (Raffaelli); Hawaiian Melody (Kamiki); Prelude (Rachmaninov); La stracivendola milanese (Cicutta); Arabesco (Montano); Melody (Gray). In the intervals at 1.30, Giornale Radio and Exchange, and at 2.0, Time and Announcements. 4.45, Giornale Radio and Exchange. 4.55, Children's Radio Review. 5.10, Weather Forecast. 5.15, Concert. Germano Arnaldi (Pianoforte), Carlo Platania (Baritone), and Nilda Gerunda (Soprano); Pianoforte Solos: (a) Sonata (Scarlatti), (b) Tocata (Bachmann); Baritone Solos: (a) The partite (Alvarez), (b) Aria from Dinorah (Meyerbeer); Soprano Solos: (a) Aria from Manon (Massenet), (b) Anna's Aria from Le Villi (Puccini), (c) Stornellatrice (Respighi); Pianoforte Solos: (a) Le vieille boîte à musique (de Sévère), (b) Polka (Sauer); Baritone Solos: (a) Di provenza il mare il suol, from La Traviata (Verdi), (b) Aria from Carmen (Bizet). 6.0, Interval. 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural Report and Dopplavoro Announcements. 6.57, Report of the International Institute of Agriculture (in Spanish, German and French). 7.10, Tourist Report. 7.20, News in Foreign Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Sponsored Musical Programme. 9.15, See Turin. In the intervals, Talk and News. 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 19.56 metres.—9.0 p.m., May We Present, from New York. 9.15, Musical 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 and Baseball Scores. 1.0, Cities Service Concert, from New York. 1.30, WGY Farm Forum. 2.0, Variety Programme, from New York. 2.30, Popular Programme, from New York. 3.0, WGY Players, Dramatic Programme. 3.30, Musical Programme, from New York.

SCHWEIZERISCHER LANDESENDER

BEROMÜNSTER, 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. In the interval at 12.30 p.m. to 1.25 (from Zürich), Time, Weather, and Exchange. 1.35, Interval. 5.0 (from Zürich), Programme for Children. 5.30 (from Zürich), Concert by the Little Radio Orchestra, conducted by Max Scherbaum. 6.30 (from Zürich), Legal Talk. 7.0 (from Zürich), Time, Weather, Market Prices, Tourist Notes, and Traffic Report. 7.20 (from Zürich), Concert of Light Music. 8.0 (from Zürich), Talk: Castle Hegi at Winterthur and its Museum. 8.30, Concert by the Radio Orchestra. 9.0, News. 9.10, Talk: The Years 1914-1918 in Switzerland. 10.15 (approx.), Close Down. SOTTENS.—See Radio Suisse Romande.

STOCKHOLM

669 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 Boden), Talk. 5.30, Variety Programme. 6.15, Gramophone Music. 7.15, Weather and News. 7.30 (from Östersund), Report on a Visit to Jamtli. 8.15, Concert by the Station Orchestra; Soloist, S. Ribbing (Pianoforte); Overture, King Stephen (Beethoven); Piano-forte Concerto in B, Op. 19 (Beethoven); Serenade (Borodin); Scènes alsaciennes (Massenet). 9.25, Reading. 9.45, Weather and News. 10.0, Light Orchestral Concert. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—10.45 a.m., Festival Concert of Contemporary Polish and Romanian Music, relayed from the Conservatoire. The Municipal Orchestra and Soloists, Conductor: Hermann Scherchen. Suite for Violin and Orchestra (Rathaus); Quartet No. 2 (Szymanowski); Sonata for Pianoforte and Violin (Fitzberg); Melodies (Hannenheim); Solo for Double Bass (Lazare); Romanian Suite for Orchestra (Yora). 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Saxophone and Song Recital by S. Rascher and Albert Peters (Tenor). 2.0 to 3.30, Interval. 3.30, Orchestral Concert, conducted by Brouillac, relayed from the Casino, Vichy; Overture, Raymond (Thomas); Pavane, Sarabande and Bourrée (Bonis); Orchestral Suite from La Maladetta (Vidal); Songs; Eclogue (Brun); Selection from The Valkyrie (Wagner); Waltz (Lumbye). 5.0, Literary Talk in French. 5.15, Selection from La Mascotte—Opera (Audran), on Gramophone Records. 6.0, Topical Talk in German. 6.15, Talk for Workers in French. 6.30, Violin and Pianoforte Recital by M. and Mme. Pohl; Variations for Violin and Pianoforte, La Folia (Corelli); Sonata in G (Mozart); Fantasia, Faust (Sarasate); Introduction and Tarantella (Sarasate); Berceuse nègre (Pohl); Goliwog's Cake Walk (Debussy); Tambourin chinois (Kreisler); Zigeunerweisen (Sarasate). 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in French, Lottery Results and Announcements. 8.30, Festival Concert of Contemporary French Music, relayed from the Conservatoire. The Municipal Orchestra and Soloists, Conductor: Hermann Scherchen. Overture (Tailleferre); Trois Poésies by Mallarmé (Ravel); Quartet, Op. 121 (Fauré); Air from Antony and Cleopatra (Florent Schmitt); Cinq grâmes (Satie); Variations (Francis); Serenade (Ferrand); Fête de printemps (Roussel). 10.0 (approx.), Press Review in German.

STUTTGART

MUHLACKER, 832 kc/s, 360 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—12 Noon, Programme from Munich. 1.15 p.m., Time and News. 1.30, Respighi Music on Gramophone Records. 2.0, Concert arranged by the Post Office. 2.30, Advanced English Lesson. 3.45, Summer Excursions—Talk by a Member of the Black Forest Society. 4.30, Concert by the Pforzheimer Symphony Orchestra; Overture, Das Nachtlager in Granada (Kreutzer); Selection from Der Wallfenschmid (Lortzing); Clarinet Concertino in E Flat (Weber); Verdi Polpourri (Rhode); Waltz, Roses from the South (Strauss); March, Soldatenblut (Blon). 5.45, Legal Talk. 6.10, Medical Talk. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Talk: Things one should know. 8.20, Symphony Concert by the Station Orchestra: The Unfinished Symphony in B Minor (Schubert); Symphony No. 1 in C Minor, Op. 68 (Brahms). 9.45 (from Freiburg), Reading of Travel Tales of Madagascar (Friedrich Schnack). 10.0, Time and News. 10.45, Serenade from Frankfurt. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.0 p.m., News. 6.5, Hawaiian Guitar Music. 6.15, Opera Music: Selection from Mirella (Gounod); Die Bayadere (Kálmán); Romeo and Juliet (Gounod); Werther (Massenet). 6.30, Dance Music. 6.45, Operetta Music. 7.0, Ballet Music from Sylvia (Delibes). 7.15, News, Racing Results and Market Prices. 7.25, Local News. 7.30, Chansonnettes. 7.45, Accordion Music. 8.0, Light Orchestral Concert. 8.30, Opera Music: Arias from La Favorita (Donizetti), Hamlet (Thomas), and La Dame blanche (Boieldieu). 8.45, Military Music. 9.0, Gounod Concert: Arias from Philémon et Baucis; Selection from Faust; Cavatina from The Queen of Sheba; Selection from Mirella; Arias from Romeo and Juliet. 9.45, Popular Melodies by a Viennese Orchestra: Blumengefűster (Blon); Narcissus (Nevin); Serenade (Heykens); Quand l'amour meurt (Crémieux). 10.0,

Humorous Items. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.15, Operetta Music. 11.30, Variety Programme. 12.0 Midnight, Jazz Music. 12.15 a.m. (Saturday), News, Weather and Announcements. 12.20, Dance Songs. 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 p.m., Concert of Chamber Music. 6.0, Weather Forecast. 6.5, Interval. 6.35, Giornale Radio, Agricultural Notes and Dopplavoro Announcements. 7.0, Time, Report of the Royal Geographical Society, and Songs on Gramophone Records. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, Announcements, Giornale Radio, Sports Notes and Weather. 8.15, Sponsored Musical Programme. 8.30, News. 8.45, Variety Concert. 9.15, A Comedy, followed by Dance Music. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.94 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in German. 7.0 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 Wiener Symphoniker conducted by Josef Holzer; Overture, Die kausche Barbara (Nedbal); Selection from Madame Butterfly (Puccini); Berceuse (Randegger); Waltz, Die Schwalben (Joh. Strauss); Entr'acte Music from The Pollar Princess (Fall); Sieliana (Jessel); Das Lied vom Zusehaun (Graniachstaeden); Wenn die Veilchen wieder spriessen (Ascher); Norwegian Folk Melodies (Svendisen); Selection from The Gypsy Baron (Joh. Strauss). Violin Solo: Chant sans paroles (Tchaikovsky-Kreisler); Two Scottish Dances (Langley); Liebe auf den ersten Blick, from Der blaue Klub (Kapeller); March from Der Kellermeister (Zeller); Gavotte from Fische Geister (Ziehrer); So süß wie ein Bonbon ist Ihr Mund (Flemming); Waltz from Brüderlein fein (Fall); March, Lustiges Wien (Fahlbach). In the interval at 1.0, Time and News. 2.0, Interval. 3.0, Time and Announcements. 3.20, Talk on Margarete Mautsattel. 3.55, Opera Music on Gramophone Records: Selection from Louise (Charpentier); Carmen (Bizet); Tieffand (d'Albert); Rigoletto (Verdi); and Martha (Flotow). 4.25, Travel Talk: From Gösing to Mariazel. 4.50, Tourist Report. 5.5, Pianoforte Recital by Gisela Springer. 5.55, Sports Talk. 6.10, Talk: The Radio Exhibition at the Vienna Autumn Fair. 6.20, Sports Report. 6.30, Talk: Bali Island. 7.0, Concert by the Wiener Symphoniker conducted by Josef Holzer. In the interval at 7.35, Time and Announcements. 8.45, Topical Talk. 9.0, Song Recital by Serge Benoni. 9.45, News. 10.0, Sponsored Talk. 10.15, Programme to be announced.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.47 a.m., Time and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Light Music on Gramophone Records. In the interval at 12.25, Polish Press Review. 1.0 to 2.55, Interval. 2.55, Gramophone Music. In the intervals at 3.5, News, at 3.25, Economic Notes, at 3.45, Aviation Report and Ant-Gas Drill, and at 3.55, Naval and Colonial Report. 4.0, Symphony Concert, relayed from Cichocinek. 5.0, Review of Publications. 5.15, Song and Viola Recital by Anne Wyszak (Soprano) and E. Szajderman. 6.15, See Wilno. 6.35, Song Recital by Marie Czekotowska. 7.5, Light Music on Gramophone Records. 7.20, Miscellaneous Announcements. 7.35, Programme Announcements. 7.40, Topical Talk. 8.0, Symphony Concert by the Station Orchestra conducted by Fitzberg. Soloist: L. Muenzer (Pianoforte). Prelude to The Mastersingers (Wagner); Pianoforte Concerto in C Minor (Beethoven); Andante cantabile (Tchaikovsky); Hindu Dances (Jacobi); Suite (Rudnicki). In the interval at 8.50, Radio Journal and Hints for the Week-End. 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.—6.15 p.m., Talk on the Timber Trade. 6.35, See Warsaw. 7.5, News and Gramophone Music. 7.20, Lithuanian Review. 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.

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 2.30 p.m., Time Signal, Weather Report, Stock Exchange Quotations, and Gramophone Music. 6.0, Gramophone Concert. 6.45, News. 7.0, Poetry Recital by Dora Sheridan. 7.15, Gaelic Talk. 7.30, Time Signal. 7.31, Concert of Professor O'Dwyer's Music by the Station Orchestra, conducted by the Composer. 8.0, Tenor Solos by Sean Rodgers. 8.15, Violin Solos by Noreen O'Connor. 8.30, Songs of County Wicklow by John Brennan. 9.0, Extracts from an Opera by the Station Opera Company. 9.30, Gaelic Song Recital by Kitty O'Flaherty. 9.45, Sponsored Programme. 10.45, News, Weather Report, 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, followed by Programme for the Centenary of the Renaissance of the Catalan Language, by the Barcelona Language Association. 9.0, Gramophone Music. 9.15, Talk on Disarmament, Gramophone Music and News. 10.0, Chimes, Weather, Exchange and Market Prices. 10.5, Concert by the Station Orchestra: March (Ackermans); Selection from La Gitana blanca (Vives); Fantastic Waltz (Glazunov); Alt Wien (Drdla); A Night on the Volga (Russo); Selection from Las Golondrinas (Usandizaga); Russian Dance, Gopak (Musorgsky); Csardas, Katerina (Michiels). 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 Dopolavoro Announcements. 8.20, Giornale Radio, Sports Notes, and Weather. 8.30, Time and Announcements. 8.40 (approx.), The Geisha—Operetta in Three Acts (Jones). In the interval, Announcements. After the Operetta, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.0 p.m., Gramophone Music. 7.15, Salzburg Festival Programme (See Vienna). 10.0, Time and News, followed by Dance Music on Gramophone Records

BERLIN

DEUTSCHLANDSENDER; 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert. 3.0, Programme for Children. 3.30, Weather. 3.45, Travels of Famous Poets: With Goethe in Switzerland. 4.0, See Hamburg. 5.0, Review of the Week's Sport. 5.15, Review of the Week. 5.30, Songs from Operetta—Recital by Käthe Jöken-König and Viktor Norbert, with Orchestral and Piano-forte Accompaniment: Love Song (Genée); Fesche Geister (Zihrer); Schunkel Waltzer (Schmidt); Heimatlied (Arnold); Vagabond (Zeller); Frauenwaller (Lehr); Duet from The Man with Two Wives (Lehr); Wenn die Garde marschert (Raymond); Duet from Der Hofnarr (Müller); Wenn zwei sich lieben (Lehr); Song from Der Rastelbinder (Lehr). 6.30, Talk: The German Student of To-day. 6.50, Weather and News. 7.0, Transmission for all German stations, relayed from Heilsberg. 8.0, Talk for the Radio Jubilee Exhibition. 8.5, See Langenberg. 8.15, Holiday Talk. 9.0, Berlin (Deutschlandsender) and Langenberg Exchange Programme: Dance Music by the Robert Gaden Band and the Langenberg Small Station Orchestra. In the intervals at 10.0, Weather and News; and at 10.45, Weather for Shipping. 11.30 (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW. 1.0 p.m., Gramophone Concert: Polka, Bitte schön (Joh. Strauss); Ballad, Prince Engen (Loewe); Bavarian Folk Song, O du mein Edelweiss (Röhmlich); March, King Ludwig (Seifert); Dragons Abschied (Heilborn); Durch die Stadt mit frohem Lied (Lissmann); March, Mein Regiment (Blankenburg); March, In treue allezeit (Pöhlend); Folk Song, Schwarzbraun ist die Haseluss; Folk Song, Nun sing mir ein Lied, dass ich scheiden muss; Waltz, Moonlight on the Alster (Petras); Song, Die Sonne hat den Rhein geküsst (Schmalstich); Straus Potpourri; Potpourri of Songs of the Open Road; Waltz, Lustige Brüder (Vollstedt); Waltz, Sorgenfrei (Ueschmann); Heckenrosenlied (Kamm); Grüsse an die Heimat (Kromer); Der Weg zum Herzen (Freundorfer); Der Uebermut-Marsch (Freundorfer); Selection from Der Obsteiger (Zeller); Fantasia (Lumbye); Waltz, Lustiges Wien (Meisel); Polka, Tritsch Tritsch (Strauss); Finale from Act II of Die Fledermaus (Joh. Strauss). In an interval at 2.15 (approx.), Weather and News. 3.0, Agricultural Prices. 3.20, Programme for Young People. 4.0, Light Music and Dance Music, relayed from the Krollgarten. 5.20, Sports Talk: The Rowing Championships. 5.30, Radio Report: Tagermünde. 6.0, Richard Wagner Song Recital by Maria Dalhmen (Soprano). 6.20, Talk. 6.40, Programme to be announced. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.5, Variety Programme. In the intervals at 10.0, Weather, News and Sports

SATURDAY

AUGUST THE TWELFTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL LONDON REGIONAL** Promenade concert from Queen's Hall, opening night. Variety programme. Military Band concert.
- MIDLAND REGIONAL** From the Musical Comedies, Orchestral and Choral programme.
- WEST REGIONAL** Concert from the Eisteddfod Pavilion, Wrexham.
- NORTH REGIONAL** The Bouquets Concert Party, from the Spa Theatre, Scarborough.
- SCOTTISH REGIONAL** An Excerpt from Sunny Days, relayed from the Barfields Pavilion, Largs.
- BELFAST** Band concert.

ABROAD

- BARI** 8.40 p.m. Operetta: "The Geisha," by Jones.
- BRUSSELS (No. 2)** 6.30 p.m. Schumann's Sonata in D Minor for Violin and Pianoforte.
- BUCHAREST** 8.45 p.m. Popular Rumanian Music by the Faunica Luca Orchestra.
- COPENHAGEN** 9.0 p.m. National Dances by the Station Orchestra 10 p.m. The Vienna Guitar Trio.
- HAMBURG POSTE** 4.0 p.m. Orchestral concert.
- PARISIEN STRASBOURG** 8.30 p.m. Festival concert of Contemporary German music.
- VIENNA** 7.15 p.m. Salzburg Festival Programme. Opera: "The Magic Flute," by Mozart.
- WARSAW** 6.35 p.m. Old and Modern Music by the Station Orchestra. 9.30 p.m., Chopin Pianoforte Recital,

Notes: at 10.20, Report on the Pankow Tournament, and at 11.0, Talk: What they are saying in Berlin. 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.—7.40 p.m., Sports Talk. 7.45, News, Exchange, Market Prices, and Lottery Results. 7.55, Gramophone Music, News, and Weather. 8.30, La Vida breve—Opera (Fallá) and The Pearl Fishers—Opera (Bizet), relayed from Vichy. After the relay, Amusements Guide and Time Signal.

BRATISLAVA

1,076 kc/s, 276 metres; 14 kW.—4.0 p.m., Opening Ceremony of the Industrial and Agricultural Exhibition relayed from Nitra. 5.45, See Prague. 6.25, Gramophone Music. 6.40, Reading. 6.55, Report for Housewives. 7.0, See Prague. 7.25, Relay from the Exhibition at Nitra (contd.). 10.0, See Prague. 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. In the interval at 1.45, Time and News. 3.0, Agricultural Prices. 3.15, Book Review. 3.35, Talk: The Upkeep of Monuments. 3.55, Dialogue: Films of the Week. 4.10, Orchestral Concert, relayed from Bad Flinsberg. 5.50, Programme Announcements. 6.0, Programme to be announced. 6.30, Pianoforte Recital by Ilanna Wandzik: Italian Concerto in F (Bach); Scherzo in D Minor, Op. 31 (Chopin). 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Old and New Dances and Songs—Concert by the Station Orchestra, conducted by Franz Marszalek. Soloists: Hellmut Hallendorf (Tenor) and Bruno Jagielski (Tenor). In the interval at 9.0, News. 10.0, Time and News. 10.30, Radio Report from the Silesian Sporting Exhibition in Breslau. 10.50, Gramophone Concert: Maschinen heraus (Carlos); Intermezzo, Der Zirkus kommt (Rust); Andalusian Serenade, The Blue Pavilion (Armandola); Waltz, Liebesmährchen (Oschelt); Potpourri of Hungarian, Russian, and Viennese Music: Giovinetta (Blanc); Foxtrot, Anno dazumal war's nicht anders (Dostal); Mädel sei Lieb, mach's Fenster auf (Rust); Trübsünde (Glocken) (Krome); Kleinbahnfahrt (Rathke); The Blue Danube (Joh. Strauss); Potpourri, Kehraus beim Schwoof (Kerm-

bach); English Waltz (Brown-Gordon-Clifford); Marching Song, 's wird schöne Maderin zeben (Gruber); Intermezzo, Die frechen Spatzen (J. Löhner); Stalhelmarsch No. 2 (Reinhold); Potpourri, Deutscher Kampf im Lied; Badenweiler Marsch (Fürst). 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: Russian Song Recital by Nina Freimuth (Soprano) and W. Windholz (Baritone). 7.0, See Prague. 7.25, See Bratislava. 10.0, See Prague. 11.30 (approx.), Close Down.

BRUSSELS (No. 1)

1.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by Emile Lauwers: Suite, Izely (Pierne); Transaktionen-walzer (Jos. Strauss); Violin Solo: Zigeunerweisen (Sarasate); Overture, Les Hirondelles (Hirschmann); Si mes vers avaient des ailes (Hahn); Ideale (Tosti); Selection from Gipsy Love (Lehar); Serenade (Eyre); The Love Letter (Hickey); Foxtrot, Wer hat euch erdacht (Kálmán). 1.0 p.m., Le Journal Parlé. 1.10, Concert, relayed from the Grand Hotel, Antwerp. 4.45, Talk: The International Tourist Association. 5.0, Dance Music relayed from the Continental Palace Hotel, Blankenberghe. 6.0, Talk on Pierre-Paul Rubens. 6.15, Layton and Johnstone Duets on Gramophone Records: Deep Night (Valee); I'll Never ask for More (Turk); Honey (Simons); Walking with Susie (Gottler); Breakaway (Gottler). 6.30, Le Journal Parlé. 7.5, See Vienna. In the intervals: Scenes from Polyette—Play (Cornéille), and Gramophone Records: (a) Quintet, Op. 108 (Mozart), (b) Allegro from the Pianoforte Concerto in G, No. 17 (Mozart). After the Relay, Le Journal Parlé, and Dance Music relayed from the Continental Palace Hotel, Blankenberghe.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—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 Emile Lauwers: Overture, Raymond (Thomas); Waltz, Flots de joie (Waldfenfel); Violin Solo; Czardas (Monti); Selection from Sylvia (Delibes); Morisca (Granados); Mallorea (Albeniz); Rondella aragonese (Granados); Selection from Dédé (Christine); Foxtrot (Kálmán). 4.45, Book Review. 5.0, Dance Music by Robert de Kers and his Cabaret Kings, relayed from the Kursaal, Ostend. 6.15, Talk. 6.30, Sonata in D minor (Schumann) by M. Likoudy (Violin) and Mme. Likoudy-Passet (Pianoforte). 7.0, Gramophone Records: Hungarian March (Schubert-Liszt); Faust Overture (Wagner). 7.15, Reading. 7.30, Agricultural Review. 8.0, Gramophone Records: Overture, Le Carnaval de Venise (Thomas); Act 1 of Aida

(Verdi). 8.45, Recitation. 9.0, Concert, relayed from the Kursaal, Ostend. After the Concert, Le Journal Parlé, and Dance Music by Robert de Kers and his Cabaret Kings, and a Tango Band, relayed from the Kursaal, Ostend.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Rumanian Music by the Sibiceano Orchestra. In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Gramophone Music. 7.40, Educational Talk. 8.0, Concert by the Morski Viennese Quartet. 8.30, Talk. 8.45, Popular Rumanian Music by the Faunica Luca Orchestra. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—5.0 p.m., Cigány Music by the Károlyi Bura Band. 6.45, Relay of an Orchestral Concert. 8.0, Concert relayed from the World Jamboree. 9.0, Gramophone Music. 11.15, A Hungarian Mother Greets the Parents of Foreign Boy Scouts in Various Languages. 11.30, Report from the World Jamboree.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., Concert by the Bendix String Ensemble, relayed from the Wivex Restaurant. 2.0, Interval. 3.0, Concert by the Radio Orchestra, conducted by Walter Mayer Radon; Overture, Trillingebødrene fra Damaskus (Kullhan); Ochsennuennett (Haydn); Suite Ancienne (Halvorsen); Selection from L'Africaine (Meyerbeer); Waltz, Wienerblut (Strauss); Slav March (Tchaikovsky); Overture, The Caliph of Bagdad (Boieldien); Selection from Lakmé (Delibes); Waltz, Frühlingsstimmen (Strauss); Peer Gynt Suite, No. 2 (Grieg); Overture, Die schöne Galathée (Suppé). In the interval at 3.45 (approx.), Reading. 5.0, Gramophone Concert: Duet from The Force of Destiny (Verdi); Barcarolle from The Tales of Hoffmann (Offenbach); Ave Maria (Bach-Gounod); Waltz (Brahms); Two Melodies (Spoliansky); All through the Night; Shake and let us be Friends (Cochran and May); Der Onkel Boomba aus Kalumba tanzt nur Rumba (Hupfeld). 5.35, Exchange and Fish Market Prices. 6.20, Talk. 6.50, Weather. 7.0, Press Review. 7.15, Time. 7.30, Talk. 8.0, Chimes from the Town Hall. 8.30, Concert of Old Dance Music by the Station Orchestra, conducted by Meyer-Radon; In bunten Roch (Jessel); Mazurka, La lussarde (Ganne); French Polka (Vagvögyi); Waltz, Donauwellen (Ivanovici); Gavotte, Du und Ich (Czibulka); Hedwig Polka (Ramsøe); Pegasus Galop (Lumbye). 8.40, Reading, followed by Weather. 9.0, Concert of National Dances by the Station Orchestra, conducted by Meyer-Radon: Slav Dance (Dvorak); Norwegian Dance (Grieg); Rumanian Folk Dance (Bela Bartok); Spanish Dance (Granados); Irish Folk Dance (Grainger); Piedmontese Dance (Sinigaglia); Gopak (Mussorgsky). 9.45, Press Review. 10.0, Concert by the Vienna Guitar Trio; Albert Meißner (Violin), Leopold Brachar (Viola), and Otto Schädler (Guitar): Trio in D flat, Op. 95 (Debussy); Partita for Viola and Guitar (Wilhelmner); Oriental Fantasia (Skocic); Serenade (Bass); Biedermeyer Gavotte (Bass); Three Dances (Salmhofer); (a) Polinaise, (b) Valse lente, (c) Geister Trott. 11.0, Dance Music, relayed from the Lødbreg Restaurant. In the interval at 12 Midnight, Time 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.—6.15 p.m., Talk relayed from Wilno, 533 kc/s, 563 metres. 6.35, See Warsaw. 7.20, Miscellaneous Items and News. 7.35, Programme Announcements. 7.40, See Warsaw. In the intervals at 9.15, News, and at 11.30, News for Members of the Polish Polar Expedition. 12 Midnight (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. 4.30, Programme for Children: Music, Story, and Birthday Greetings. 5.0, Concert for Tunbridge and Isle of Thanet Listeners: Signature Tune, Night by the Sea; Paul Robeson; Negro Spiritual Medley; Marek Weber and his Orchestra; Sira Magic; Layton and Johnston; Happy-go-lucky-yon; Jeanette Macdonald; Goodnight; Sir Harry Lauder; Somebody's Waiting for me; Greta Keller; I'll never be the same; Marek Weber and his Orchestra; My Dream (Waldfenfel). 5.30, Concert for Dover and Folkestone Listeners: 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); My Beloved Swan, from Lohengrin (Wagner); Waltz from La Bohème (Puccini); Signature Tune. 11.0, Dance Music: Signature Tune, Bells of Normandy; London Fire Brigade (Towers); Rosa Mia (Potter); Nightfall. Hyde Park

AUGUST 12th **SATURDAY** continued

Corner (Hargreaves); The Girl in the Little Green Hat (Rich); Serenade (Toselli); Shuffle off to Buffalo (Dubin-Warren); Something came and got me in the Spring; Signature Tune. 11.30, Concert given by the I.B.C. (Ireland), Ltd.: Signature Tune, Come back to Erin; Waldteufel Memories (arr. Finck); Duet, My Life is Love (Fraser-Simson); Pizzicato from Sylvia (Delibes); The Irish Emigrant; Intermezzo, Fleurette (Fletcher); Duet, A Paradise for two (Tate); Killarney (Balfie); Moonlight on the Alstar (Petras); Signature Tune. 12.5 a.m. (Sunday), The I.B.C. Late News Bulletin. 12.10 (approx.), Club Concert for Roslin Listeners; Part I: Songs; Signature Tune, The Chim Song; Deep Water (Brian); Have you ever been lonely? (Brown); My Darling; I wish I knew a bigger Word than Love (Poka); My Lover (Yellen); Part II: Dance Music; Moonlight, the Danube and you; Mad about the Boy; Night shall be filled with Music; If you were only mine; There's something about a Soldier; Lawd, you made the Night too long; Forty-Second Street; The Lady I love; Signature Tune. 1.0, Vocal Concert: Wine, Women and Song (Joh. Strauss); The Lass with the delicate Air; One Morning very early; Dear old-fashioned thing; Modern Conception of Russian Melodies; When the House is asleep; Selection from New Moon (Romberg). 1.30, Dance Music: Signature Tune, Bells of Normandy; One Little Quarrel, Rose Room; I can't believe it's true; Night, fall; The Night when Love was born; The Clouds will soon roll by; Marching Song; Forty-Second Street; Signature Tune. 1.57, I.B.C. Goodnight Melody.

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.—3.30 p.m., Programme for Children. 4.25, Economic Notes. 4.30, See Stuttgart. 5.45, Economic Notes. 6.0, Reading (Johannes Tralow). 6.25, Time and News. 6.30, Review of the Week. 6.50, Today's News. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Gustav Erlemann Song Recital by Luise Gihstanz (Contract), with the Composer at the Piano; Arnes Mägdlein; Durch die mondetränkte Aechts; Nacht; Die Waiese; Will Laest sprossen; O wir' ich tot; Sei still; Dank Nachteschwätz; Im Arm der Liebe; Jugend; Schwesterlein; So ward es März. 8.30, Humorous Programme. 9.30, Frankfurt Tourist Report. 10.30, Time and News. 11.0, Dance Music from Berlin (Witzleben).

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, 56 metres; and Kiel, 1,292 kc/s, 232.2 metres.—2.10 p.m., Gramophone Concert: Overture, The Daughter of the Regiment (Donizetti); Two Arias from Rigoletto (Verdi); Aria from Il Trovatore (Verdi); Waltz, Morgenblätter (Joh. Strauss); Two Arias from Eine Nacht in Venedig (Joh. Strauss); Mir sagt dein Blumenstrauss (Stolz); Liebesbrief im Grammophon (Czernik); Viennese Operetta Revue (Brobrecht). 3.0, Exchange Quotations. 3.40, Navigation and Aviation Notes. 4.0, Orchestral Concert conducted by José Eibenschütz: Overture, The Barber of Bagdad (Cornelius); Ballet Music from Rosamunde (Schubert); Selection from Gaudemus (Humperdinck); Prelude and Introduction to the Third Act of Lohengrin (Wagner); Festival March, Op. 1 (R. Strauss); Waltz, Loreley-Rheinklänge (Joh. Strauss). 5.0, Radio Report of the German International Tennis Finals in Hamburg. 5.30, North German Humorous Dialect Programme. 6.0, Military Band Concert, relayed from the Winterhud Ferry. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Topical Talk. 8.10, See Berlin (Witzleben). 10.0, Time and News. 10.20, Topical Talk. 10.30, Dance Music, relayed 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 Small Station Orchestra conducted by Eugen Wilcken: Military March in D (Schubert); Festival Overture on a Thuringian Folk Song (Lassen); Selection from Preciosa (Weber); Dynamiden-Walzer (Joh. Strauss); Ballet Music from Prometheus (Beethoven); Rhapsody No. 4 (Liszt); Selection from Sniding Florence (Raftsch). 1.0 p.m., Time and Weather. 1.5, Gramophone Concert of Light 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. 3.30, Programme for Children. 4.0, Concert by the Zoppot Orchestra, relayed from the Kurgarten. Zoppot. Conductor, Karl Tuteln: Overture, Le roi Fa dit (Delibes); Suite, Ans Holbergs Zeit (Grieg); Grande valse brillante Op. 18 (Chopin); Allegretto from Symphony No. 3 (Brahms); Overture, The Taming of the Shrew (Goetz); Selection from The Pearl Fishers (Bizet). In an interval at 4.50 (approx.), Traffic Report. 5.15, Talk: Pasha Baron von der Goltz, Founder of the Modern Turkish Army. 5.30, Wilhelm Kempff Pianoforte Recital by Henriette von Pretzmann; Fantasia in D minor Op. 9; Lyric Suite in E in Five Movements Op. 17; Swedish Wedding Music. 6.5, Programme Announcements. 6.15, Agricultural Prices. 6.25, Talk: The Modern State. 6.50, Weather. 7.0, Transmission for all German Stations; East Prussian Gold—Pictures of the Amber District—Radio Sequence (du Bois-Reymond von der Burchard). 8.0, Weather and News. 8.10, Song Recital by Rosalind von Schirach. 8.40, Discussion between an Opera House Manager, a Housewife, a Worker and a Student. 9.0, See Berlin (Deutschlandsender). 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.).—Programme of the Catholic Radio Society (K.R.O.). 11.55 a.m., Concert by the Dutch Gentlemen Band conducted by E. van Zanten: Hoch Heidecksburg (Herzer); Overture, Ruy Blas (Mendelssohn); Suite from Flotte Bursche (Vollstedt); Selection from Fernarrns (Rubin-stein); Selection from Lilac Time (Schubert-Bertel); Selection from The Crown Diamonds (Auber); Waltz, Tounjours on jamais (Waldteufel); Selection from The Gipsy Baron (Joh. Strauss); La madelon de la victoire (Borel-Clerc). 1.40, Programme for Young People. 2.10, Programme for Children. 3.40, Gramophone Music. 4.5, Radio Report of the Dutch Swimming Championship. 4.45, Gramophone Music. 4.55, Esperanto News. 5.10, Concert by the K.R.O. Orchestra conducted by M. van't Woud: Russian March (Ganne); Overture, Fra Diavolo (Auber); Selection from Thais (Massenet); Minuet (Paderevsky); The Cockney Lover (Ketyby); Waltz, España (Waldteufel); Two Norwegian Dances (Grieg). 6.0, Journalistic Review. 6.25, Concert (cont'd.): Ernst und Scherz für's Wiener Herz (Komzak). 6.40, Police Notes. 6.55, Talk. 7.15, Gramophone Music. 7.25, Sports Talk. 7.40, Concert (cont'd.): March Potpourri (Blankenburg); Two Spanish Dances (Fallas); Waltz, Morgenblätter (Joh. Strauss); Andante cantabile (Tchaikovsky). 8.10, News. 8.15, Variety Concert relayed from the Pavilion Valkenburg. Mlle Dita Schmetterling and her Dutch Viennese Orchestra, with Mm. Tholen and van Lier (Songs) and J. Valk (Recitations). In the interval, News. 10.40, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 160 kc/s, 1,875 metres; 2.5 kW.—Programme arranged by the Workers' Radio Society (V.A.R.A.). 11.40, a.m., Concert by the Amicitia et Musical Chamber Orchestra conducted by W. Drunker: Overture, La dame blanche (Boieldieu); Aquarellen-Walzer (Jos. Strauss); The Wedding of the Rose (Jessel); Selection from La vie parisienne (Offenbach); Gramophone Music, Hungarian Comedy Overture Kela-Bela; Waltz, Dorfschwalben aus Osterreich (Jos. Strauss); Selection from Tosca (Puccini); Gramophone Music, The Bell from Chicago (Sousa); Charme (Rousseau); Du, alter Stefanuzer (Kreisler); In Schönbrunn (Benatzky); Stolz Potpourri (Dostal). 1.40 p.m., Gramophone Music. 2.25, Talk. 2.40, Concert by Eddy Walis and his Ensemble; March (Mozart-Benards); Sailors' Serenade (Amadei); Désir (Kark); Waltz, Tales from the Vienna Woods (Joh. Strauss); Sotto al verone (Micheli); Selection from Faust (Gounod-Tavan). 3.25, Interval. 3.40, Concert (cont'd.): Kleiner Wiener-marsch (Kreisler); Selection from Sissy (Kreisler); Air (May); Johann Strauss Potpourri (Schwarz); Il bacio (Micheli); Selection from The Girl in the Taxi (Gilbert-Petras). 2.20, Literary Talk. 4.40, Orchestral Concert (cont'd.): Das ist ein Wein (Engelberger); Wiener Flakerlied (Pieck); Gavotte, Russian Melodies. 5.10, Recitations. 5.25, Concert by De Flierhuters Orchestra conducted by Ray Forest; Selection from Viktoria and her Hussar (Abraham-Hayfish); Selection from Schön ist die Welt (Lehar); Selection from Comtesse Maritza (Kalman). 5.55, Concert by a Male Voice Quartet. 6.10, Orchestral Concert (cont'd.): Wenn die kleinen Veilchen blühen (Stolz); Du, du, du (Stolz); Selection from Yes, Mr. Brown (Abraham); Ich hab' einen Mann, der mich liebt (Abra-

ham); Selection from White Horse Inn (Benatzky); Selection from The Flower of Hawaii (Abraham). In an interval at 6.40, Quartet Concert (cont'd.). 7.5, News and Announcements. 7.15, See Vienna. In an interval at 8.20, Recitations. 10.30, 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.—12.30 p.m., Amusement Guide and Variety Items. 1.0, Announcements. 1.15, Radio Concert. 8.0, Amusement Guide and News. 8.15, Film Review. 8.45, News and Weather Report. 9.0, Concert relayed from Cannes.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

LAHTI

167 kc/s, 1,796 metres; 40 kW. Relayed by Helsinki, 815 kc/s, 368.1 metres.—6.40 p.m., Concert by the Station Orchestra. 7.15, Play (Telchekov). 7.45, Concert by the Station Quartet. 8.5, Concert of Waltzes by the Station Orchestra: Hydrotaphen (Gungl); Pesther Walzer (Lanner); Estudiantina (Waldteufel); Wienerblut (Strauss). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Music from the Kappeli-Restaurant.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert by the Fröhliche Fünf. 12.50 p.m., Announcements. 1.0, Concert by the Station Chamber Orchestra. In an interval at 2.0 (approx.), Announcements. 2.30, Gramophone Concert. 3.30, Economic Notes and Time Signal. 3.50, Talk: Pasha Baron Kolmar von der Goltz, the Maker of Turkey's Modern Army. 4.10, Topical Talk. 4.20, Anecdotes in Dialect. 4.35, Talk: Excursions in Rhineland and Westphalia. 5.0, Mozart Gramophone Concert: Divertimento No. 4 in B flat, for Flute, Clarinet and Bassoon; Divertimento No. 8 in F, for Flute, Oboe, Clarinet, Bassoon and Horn. 5.30, German for Germans. 5.45, An old Westphalian Saga. 6.0, Concert by the Fröhliche Fünf. 6.45, Announcements. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Announcements. 8.5, Report on the German Light Athletic Championship (Gramophone Records). 8.15, A Visit to a Rheinisch Skittles Club on the Moselle. 9.0, Dance Music: Berlin (Deutschlandsender) and Langenberg Exchange Programme. 10.15, News. 10.40, Chamber Music. 11.0, Dance Music (cont'd.). 10.30, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon, Weather and Time. 12.5 p.m., Gramophone Concert: Overture, The Barber of Bagdad (Cornelius); Drinking Song and Miserere from La Traviata (Verdi); Two Songs (Brahms): (a) Ich fahr' dahin, (b) In stiller Nacht; Extracts from Fidelio (Beethoven); Dance of the Marionettes (Winterthur); Serenade, Polichinello (Kreisler); Song from The Barber of Seville (Rossini); Campanella, Op. 7 (Paganini); Song from Martha (Elbow); Song from I Pagliacci (Leoncavallo). 1.0, News and Announcements. 1.30, Concert from Langenberg. 2.30, News. 2.45, Programme for Children. 3.30, Talk: The Woman in the House. 3.45, Economic Notes and News. 4.0, Concert. In the interval at 5.0, Music Notes. 5.55, German for Germans. 6.15, A Modern Dictionary. 6.25, Talk. 6.50, Review of the Day's Events. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Variety Programme. 8.20, See Berlin (Witzleben). 10.5, News. 10.15 (from Dresden), Dance Music by the Pletszsch-Marko Orchestra.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.30 p.m., Orchestral Concert. 7.30, Review of Foreign Affairs. 8.0, See Vienna. 10.30, Weather and News. 11.0 (approx.), Close Down.

LUXEMBURG

252 kc/s, 1,191 metres; 200 kW.—French Programme, 7.30 p.m., Symphony (Saint-Saens) on Gramophone Records. 8.10, Weather Report. 8.15, Recital of French Songs. In an interval at 8.30, Talk in French: Paul Gauquin. 8.50, News in French. 9.0, Orchestral Concert, conducted by Henri Pansis. In an interval at 9.45, News in German. 10.20, Dance Music on Gramophone Records.

LWOW

788 kc/s, 381 metres; 16 kW.—6.35 p.m., See Warsaw. 7.20, Miscellaneous Items. 7.40, See Warsaw. 9.15, Reading. 9.30, See

Warsaw. 10.40, Concert by the Hejnol Mandoline Orchestra. 12 Midnight (approx.), Close Down.

LYONS

LA DOUA (PTT), 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 relayed from Vichy: Extracts from La Vida brève (de Falla); Selection from The Pearl Fishers (Bizet). After the Concert, News.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal and Request Gramophone Records. 9.15, News. 9.30 to 11.0, Interval. 11.0, Chimes and Time. 11.5 (approx.), Song Recital with accompaniment by the Station Sextet, followed by Readings. 1.15 a.m. (Sunday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.30 p.m. till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., Schrammel Concert. 7.0, See Prague. 8.0, Programme from Bratislava. 10.0, See Prague. 11.30 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—2.15 p.m., Literary Programme. 3.0, Gramophone Concert. 4.0, Programme for Workers. 4.30, Actors and Actresses before the Microphone. 5.30, Concert for Young People. 6.30, Schumann and Schubert Song Recital, by Kusmira (Soprano). 9.0, News. 9.30, Programme Announcements. 9.55, Chimes.

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 of German Operetta Music by the Munich Chamber Orchestra conducted by Friedrich Rein: Overture, Die Fledermaus (Joh. Strauss); Barcarolle from Casanova (Joh. Strauss); Introduction and Chorus from Das Pensionat (Suppé); Overture, Banditenstrieche (Suppé); Selection from The Bird Fabrier (Zeller); Milläcker Polpourri; Waltz from The Merry Widow (Lehar). 5.45, Programme for Young People: Tales of Mountaineers. 6.30, Old German Songs to the Lute by Gretel Reinicke. 6.45, Wireless Notes. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Variety Concert. 10.20, Time and News. 11.0, Dance Music 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 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.—12.15 p.m., Report on the Departure of the liner Stavangerjord for America. 5.0, Gramophone Concert. 5.45, Programme for Children. 6.15, Hardanger Fiddle and Song Recital of Norwegian Music. 6.45, Economic Talk. 7.0, Announcements. Weather and News. 7.30, Talk. 8.0, Time. 8.1, Concert of Light Music by the Station Orchestra, conducted by Hugo Kramm. 9.10, Recitations. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Trio Concert of Old Dance Music. 10.45, Dance Music on Gramophone Records. 11.30 (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. 8.30, Time Signal and Announcements. 8.35, Gramophone Music. 8.45, Le tre lune—Operetta in Three Acts (Lombardo). 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 Notes. 7.0, Le Journal Radio. 8.30, Le Légataire universel—Play (Regnard). 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. 7.50, Talk: The Event of the Week. 8.0, Gramophone Music (cont'd.). 8.25, Weber Concert: Sonata for Pianoforte and Violin; Agatha's Aria and Cavatina from Der Freischütz (Weber). 9.10, Dance Music by the Sonora Radio Band, conducted by Fred Hoffmann. 11.0, News.

AUGUST 12th **SATURDAY** continued

PARIS

RADIO-PARIS (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 News. 12 Noon, Gramophone Concert: Je suis à la mode (Avignon); Mado (Vacher); Anatole, tu l'as connu (Bonsquet); La mantille espagnole (Guerrero); Les deux Bécauses; La vague (Metra); Saxophone Marmalade (Rognenthal); C'est peu de chose (Verdun); Ouf et poules (Paradis); Treky in Humorous Items; La valse des matelots (Loyraux); Le cornemuseux de Marmignolle; Parisette (Wolter); T'y dis t'y oui? (Sunday-Bonsquet); Three o'clock in the Morning (Robledo-Marchetti); Mon seul Paris (Lamor); Melody (Benatzky); Grog in his Repertoire; Waltz from Die geschiedne Frau (Fall); Place blanche (Méle). In the interval at 1.0, Exchange, News, and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 7.0, Market Prices, Weather, Agricultural Notes, Exchange, and Racing Results. 7.10, Gramophone Music: Mazepa (Liszt); L'Absence (Berlioz); Valse triste (Sibelius); Selection from Goyescas (Granados); Menuet antique (Ravel); The Trout Quintet (Schubert); Eclogue (Rabaud). 7.50, Commercial Prices and News. 8.0, Gramophone Concert. 8.15, News. 8.30, Two Operas, relayed from the Casino, Vichy: (a) La viola breve (Falla). (b) The Pearl Fishers (Bizet).

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relay by **W8XK** on 48.86 metres and 25.27 metres.—7.30 to 10.0 p.m., New York Relay. 7.30, Concert Echoes. 8.0, Words and Music. 8.30, Wealth of Harmony. 9.0, Dance Masters. 9.30, Concert Favourites. 10.0, Rhythm Kings. 10.15 to 11.0, New York Relay. 10.15, Tom Geran's Orchestra. 10.30, Neil Sisters. 10.45, Little Orphan Annie. 11.0, News-Reeler and Piano Classique. 11.15, Weather and Sports Notes. 11.30, A Keereo. 11.45 to 3.15 a.m. (Sunday), New York Relay. 11.45, Montclair Hotel Orchestra. 12 Midnight, Tax Payers' League. 12.15, Annie, Judy and Zeke. 12.30, Jack Pettis and his Orchestra. 1.0, Jack Benny and his Orchestra. 1.30, Stadium Concerts. 3.15, Behind the Law.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—7.20 p.m., Miscellaneous Items and News. 7.35, Theatre Notes and Programme Announcements. 7.40, See Warsaw. 10.0, Time Signal, Sports and Police Notes. 10.15, Dance Music relayed from the Esplanade Café. 11.0 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., Concert of Light Music. 4.0, Interval. 5.45, Talk. 5.55, Gramophone Music. 6.5, Market Prices. 6.10, Gramophone Music. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Talk on Danish Music. 7.0, Chimes and News. 7.10, Medical Talk. 7.25, Concert of Songs of the Road. 8.0, Programme from Bratislava. 10.0, Time and News. 10.15, Dance Music by J. Milinovsky and his Brass Band. 11.30 (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., Talk: Protecting Animals. 7.30, News. 7.31, Talk. 8.0, Carmen—Opéra-Comique in Four Acts (Bizet) (on Gramophone Records). In the interval at 9.50, News. 10.30, Dance Music relayed from **Montreux**. 11.30 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme. 9.30, Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News. 10.30, Reading. 11.0, The Radio Trio, followed by Dance Music. 2.0 a.m. (Sunday), Close Down.

RJUKAN.—See Oslo.

ROME

680 kc/s, 441 metres; 50 kW. Relay 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: Canzone della Radio (Alfano); Selection from La Fille de Madame Angot (Lecocq); Passione d'Amore (Yalisi); Hawaiianite (Restano); Romanian Rhapsody (Knuemann); La prima volta (Escobar). In the intervals at 1.15, Talk: The Art of Photography, at 1.30, Giornale Radio, and at 2.0, Time and Announcements. 4.45, Giornale Radio and Report of the Royal Geographical Society. 4.55, Children's Radio Review. 5.10,

Weather Forecast. 5.15, Orchestral Concert: Com'è bella la vita (Bixio); G'Invitati (Montanaro); Piano (Escobar-Feverich); Selection from Aida (Verdi); The Countess of Monte Cristo (Gray); La valse des Grisettes (Limenta); Melody (Stringfield); Milionario (Marriott). 6.0, Interval. 6.40 (**Naples**), Shipping and Sports Notes. 6.50, Agricultural Report and Dopolavoro Announcements. 7.0, Tourist Report. 7.10, Lesson in Morse. 7.20, News in Foreign Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Gramophone Music. 8.30, Relay of Act 2 of The Magic Flute—Opera (Mozart), from **Salzburg**. In the intervals, Talk and Announcements. 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.—12.45 a.m. (Sunday), Stock Reports and Baseball Scores. 1.0 to 4.0, New York Relay. 1.0, Musical Programme. 1.30, Variety Programme. 2.0, Musical Programme. 2.30, K-7, Secret Service Spy Story. 3.0, B. A. Rolle and his Terraplane Orchestra. 4.0, Programme Résumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 453 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 (**Basle**), Ländler and Vodels on Gramophone Records. 12.30 p.m., Time and News. 12.40 (from **Basle**), Gramophone Records. 1.25 (from **Basle**), Time, Weather and Exchange. 1.30, Wireless Notes. 1.45 (from **Basle**), Book Review. 2.15 (from **Basle**), Talk: Travelling in Switzerland. Gramophone Records in the intervals. 3.30, Interval. 5.0 (from **Basle**), Accordion Solos. 5.30 (from **Basle**), Light Music on Gramophone Records. 6.0 (from **Basle**), Talk. 6.30 (from **Basle**), Talk: Distinguishing Marks on Poisonous Fungi. 7.0, Chimes. 7.15 (from **Basle**), Time, Weather and Market Prices. 7.20 (from **Basle**), Balalaika Music. 7.50 (from **Basle**), Russian Music on Gramophone Records. 8.0 (from **Basle**), Dialogue: Pedestrians, Cyclists and Motorists. 8.30 (from **Basle**), How Papa Thoms spends the Weekend. 9.0, News. 9.10 (from **Basle**), The Prince—Dialect Play (Glettyse). 10.15 (from **Basle**), Gramophone Dance Music. 11.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romands.

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; **Ostersund**, 389 kc/s, 770 metres; and **Sundsvall**, 554 kc/s, 542 metres.—4.0 p.m., Concert by the Septiman String Band: Radetzky March (Joh. Strauss); Mazurka, Frauenherz (Jos. Strauss); Two Melodies (Sjögren); Serenade from Les Millions d'Arlequin (Brigo); Swedish Fantasia (Ek); Alinet (Udden); Waltz (Sinding); Erstes Begegnen (Grieg); Erotica (Grieg); Two Norwegian Dances (Raebell); Melody (Winter). 5.5 (from **Ostersund**), Programme for Children. 5.30, The Practical Corner, relayed from **Malmö**, 1,301 kc/s, 231 metres. 5.45, Gramophone Music. 6.45 (from **Boden**), Talk. 7.15, Weather and News. 7.30 (from **Ostersund**), Cabaret Programme. 8.30 (from **Boden**), Concert of Old Dance Music. 9.15 (from **Ostersund**), Provincial Programme. 9.45, Weather and News. 10.0 (from **Göteborg**), Modern 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. 1.1, Song, Violin and Piano Recital by Marya Freund (Contralto), Bronislaw Gimpel and Jakob Gimpel; Lamento (Monteverdi); Songs (Debussy); Classic Sonata for Violin. 2.0, Legal Talk in German. 2.15, Dance Music on Gramophone Records. 2.45, Talk in French on Music. 3.0 to 3.30, Interval. 3.30, Orchestral Concert conducted by Broullac, relayed from the Casino, Vichy; Overture Piccolino (Guiraud); Procession and Dance Air from L'enfant prodigne (Debussy); Suite from La farandole (Dubois); Songs; Waltz from Etienne Marcel (Saint-Saëns); Selection from Dinorah (Meyerbeer); Joyeuse marche (Chabrier). 5.0, Gramophone Music. 5.15, Piano-forte and Song Recital by Denise Sternberg and

Mlle. Grunenwald (Soprano); Waltz, Helvetia (d'Indy). Soprano Solos (d'Indy): (a) Lied maritime, (b) Attente, (c) Madrigal. Piano-forte Solos: (a) Jeux d'eau (Ravel). (b) Carillons de Campanile (Dupin). (c) Feux Follets (Philipp). Soprano Solos: (a) Harmonie du soir (Delmas). (b) Les elfes des bois (Pierne). Piano-forte Solos: (a) Humoresque (Bachelet). (b) Etude in Waltz Form (Saint-Saëns). Soprano Solo: L'attente (Saint-Saëns). 6.15, Gastronomic Talk in French. 6.30, Light Music on Gramophone Records. 7.0, Tourist Talk in French. 7.15, Agricultural Talk in German. 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in French, Lottery Results and Announcements. 8.30, Festival Concert of Contemporary German Music relayed from the Conservatoire. The Municipal Orchestra and Soloists, Conductor, Herrmann Scherchen; Concerto for Two Violins and Harpsichord (Kaminski); Concert Piece for Trumpet (Hartmann); Melodies (Jarnach); Concerto (Zillig); Chornes (Orff). 10.0 Press Review in German and Gramophone Music. 10.30, Dance Music from the Savoy. 12 Midnight (approx.), Close Down.

STUTT GART

832 kc/s, 360.5 metres; 60 kW. And **Freiburg**, 527 kc/s, 570 metres.—10.10 a.m., Organ Recital of Music by Robert Volkmann, relayed from the Ufa Palast: Improvisation in F, Op. 36, No. 1; Barcarolle in F minor, Op. 19; Ballad in F sharp minor, Op. 51, No. 3; Pastorale in C, Op. 21, No. 8; Andante in E flat minor, Op. 17, No. 8; Two German Dances: (a) Moderato serio, Op. 18, No. 3, (b) Allegro moderato, Op. 18, No. 1. 10.45, Trio in B (Schubert), played by Ida Reichardt (Piano-forte), Andrea Wendling (Violin), and Walter Reichardt (Cello). 11.10, Time, Weather and Programme Announcements. 11.45, Concert arranged by the Post Office. In the interval at 12 Noon, Weather. 12.20 p.m., Yesterday, Today and Tomorrow: Gramophone Concert with Commentary on Famous Singers. 1.30, Concert from **Langenberg**. 2.30, Time and News. 2.50, Swan Tales, told by Anna Försch. 3.10, Concert by the Schwabian Harmonica Orchestra. 3.30, Programme for Young People. 4.30, Concert by the Station Orchestra, conducted by Gustav Görllich: Overture, The Thieving Magpie (Rossini); Indian Suite (Lilling); Prayer and Temple Dance from Olav Trygvason (Grieg); Rusticella (Carpentass); Waltz Lullaby, Ninna Nanna (Michele); Potpourri of Lehar Operetta Music (Hrubý); March, New Germany (Trunk). 6.10, Discussion: The Renaissance of German Philosophy. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from **Heilsberg**. 8.5, See **Berlin (Witzleben)**. 10.0, Time and News, followed by Gramophone Records. 11.5, See **Berlin (Witzleben)**. 1.0 a.m. (Sunday), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.0 p.m., News. 6.5, Ensemble Music. 6.15, Military Music. 6.30, Instrumental Solos: Hungarian Pastoral Fanta-ia (Doppler); Le caudrie et la grenouille; La plus que lente (Debussy); Serenade (Saint-Saëns). 6.45, Accordion Music. 7.0, Opéra-Comique Music, Songs from: Sophie Arnould (Pierne), Manon (Massenet), and La Bohème (Puccini). 7.15, News, Racing Results and Market Prices. 7.25, Local News. 7.30, Suite, Masquerade (Lacôme). 7.45, Sound Film Music. 8.0, Popular Concert. 8.30, Music by a Viennese Orchestra. 9.0, concert by the Philharmonic Orchestra: Air on a Swiss Theme; Glow-Worm Idyll (Lincke); Richilde (Pares); Aubade indienne (Marcel); Hungarian Rhapsody No. 2 (Liszt); Le joyeux carillon (de Livray); Espana (Chabrier); The Ride of the Valkyries, from The Valkyrie (Wagner); Melody (Zimmer); Entry of the Gladiators (Fucik); Polka (Stolz). 9.45, Opera Music: Airs from The Magic Flute (Mozart); William Tell (Rossini); and Il Trovatore (Verdi). 10.0, Accordion Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.15, Musical Programme. 11.30, Popular Concert. 12.0 Midnight, Song Recital. 12.15 a.m. (Sunday), News, Weather and Announcements. 12.20, Orchestral Music: Sphärenklänge (Strauss); Die Moldau (Smetana). 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., Programme for Women. 5.40, Variety Music on Gramophone Records. 6.0, Weather Forecast. 6.5, Interval. 6.55, Giornale Radio, Talk, Agricultural Notes and Dopolavoro Announcements. 7.0, Time, Tourist Report and Songs on Gramophone Records. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, Announcements, Giornale Radio, Sports Notes and Gramophone Music. 8.30, Act II of The Magic Flute (Mozart), relayed from **Salzburg**. In the interval, Talk. After the Opera, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning); and 5,959 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Announcements in Various Languages. 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.—12 Noon, Concert by the Wiener Symphoniker, conducted by Josef Holzer: Carnival Overture (Zador); Scandinavian Dances (Hartmann); Song, Liebe, sel'ger Traum (Lehar); Ballet Suite (Gyldmark); Songs (Ziehrer); (a) Mein herzlicher Wau, (b) Sei gepriessen, du launliche Nacht; Waltz, Am Wörthersee (Koschlat); Selection from Das süsse Mädel (Reinhardt); Gamsjäger-Marsch (Trauner); Melancholy (Bullerian); Lachende Welt (Siede); Song, Ich glaub', in den Wein muss was drin g'wesen sein (Strecker); Petite Suite (Gilsen); Waltz, Donaubilder (Ertl); Selection from The Belle of New York (Kerker). In an interval at 1.0, Time and News. 2.0 to 3.0, Interval. 3.0, Time, Weather and Exchange. 3.15, Talk: Rauris, the Valley of Crystal. 3.30, French Lesson. 4.5, Concert by the Austrian Workers' Choral Society. 4.35, Recitations (Mathias Choudius). 5.0, Gramophone Concert of Light Music. 5.55, Talk with Gramophone Illustrations: The Rock of Gibraltar. 6.25, Topical Talk. 6.50, Today's Motto. 6.55, Topical Review. 7.5, Time and News. 7.15, Salzburg Festival Programme: The Magic Flute—Opera in Two Acts (Mozart). 10.20, News. 10.35, Dance Music relayed from the Café Palmhof.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time and Faufare from St. Mary's Church, Cracow. 12.5 p.m., Orchestral Concert relayed from the Bagatela Café. 12.25, Polish Press Review. 12.33, Weather. 12.35, Concert (cont'd). 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. In the interval at 3.5, News and Announcements, and at 3.25, Economic Notes. 4.0, Programme for Invalids relayed from **Lwow**, 788 kc/s, 381 metres. 4.30, Light Music on Gramophone Records. 5.0, Topical Talk. 5.15, Military Band Concert. 6.15, Talk relayed from **Wilno**, 533 kc/s, 563 metres by the Station Orchestra. Soloist, Louise Llewellyn Jarecka (Soprano): Seventeenth Century Dances (Mattheson-Appia); La Procession (Franck); Cantique Religieux (Franck); Paraphrase on Popular Themes (Lopatynski); Piece for Strings (Appia); Two Songs for Soprano and Orchestra (Jarecki); Presto Satirico from the Short Symphony (Jarecki); Sea Idyll (Jarecki). 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Reading. 8.0, Concert of Light Music by the Station Orchestra. Soloist, Zidowiecki (Songs): March Hollywood (Leopold); Waltz, Wo die Citronen blühen (Strauss); Three Polish Songs; Ballet Music from La Gioconda (Ponchielli); Two Songs, Gavotte der Königin (Strauss); Mazurka, Dawn (Lewandowski). 9.5, Radio Journal. 9.15, Gardening Notes. 9.30, Chopin Piano-forte Recital by Mme. Familier-Hepper: Polonaise in E flat minor, Op. 26, No. 2; Waltz in A flat, Op. 69, No. 1; Impromptu in A flat, Op. 29; Nocturne in G flat minor, Op. 9; Ecosaises, Op. 72, No. 3; Tarantella, Op. 43. 10.0, Dance Music from the Café Europa, Ciechocinek. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music (cont'd). In the interval at 11.30, News for Members of the Polish Polar Expedition.

WILNO

533 kc/s, 563 metres; 16 kW.—6.15 p.m., Talk: An Excursion on Polish Waters. 6.35, See **Warsaw**. 7.20, Weekly Review in Lithuanian. 7.35, Programme Announcements. 7.40, See **Warsaw**. 8.0, Concert of Request Gramophone Music. 9.5, See **Warsaw**. 12 Midnight (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

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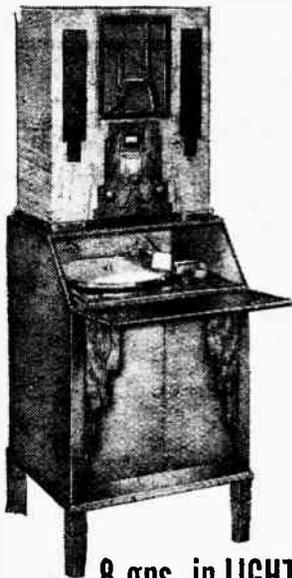
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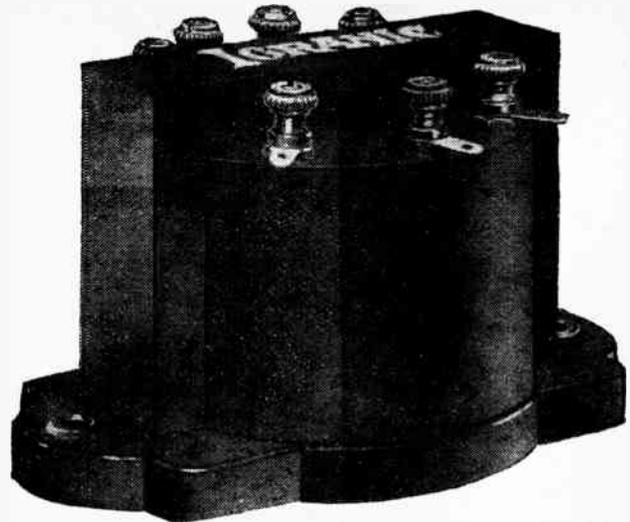
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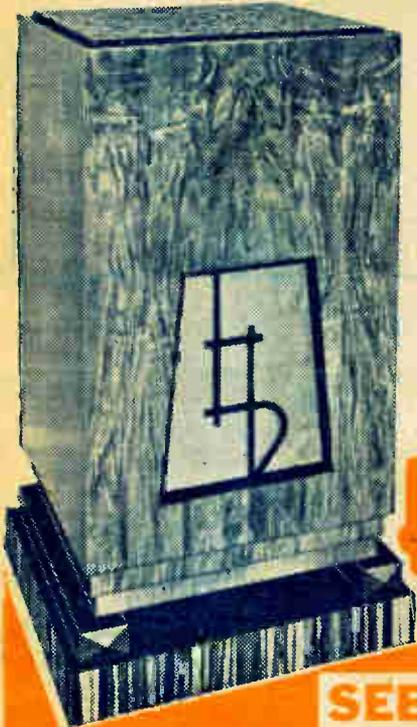
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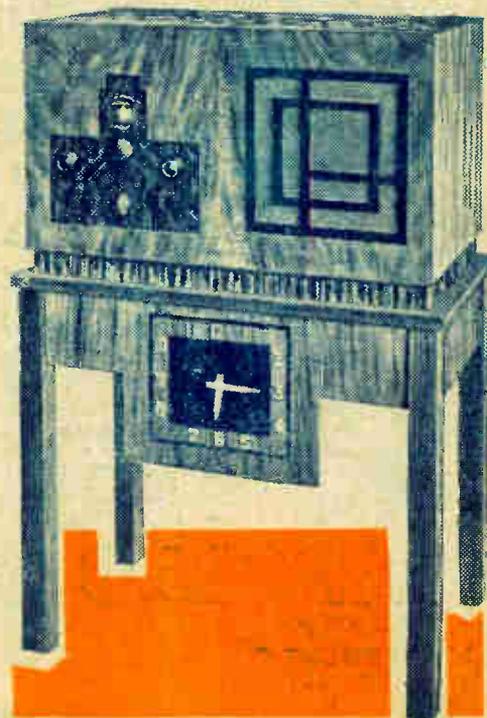
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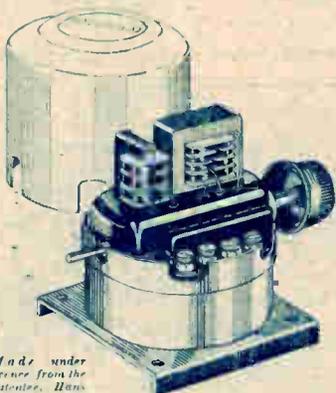
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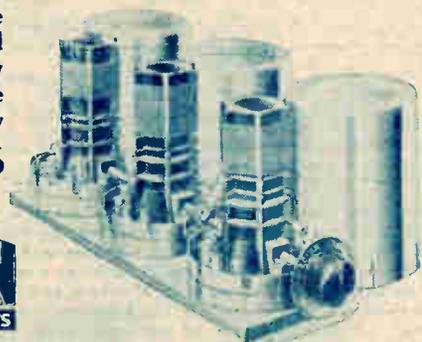
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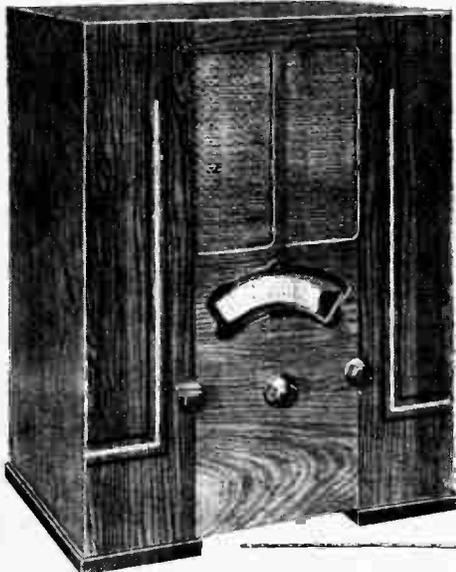
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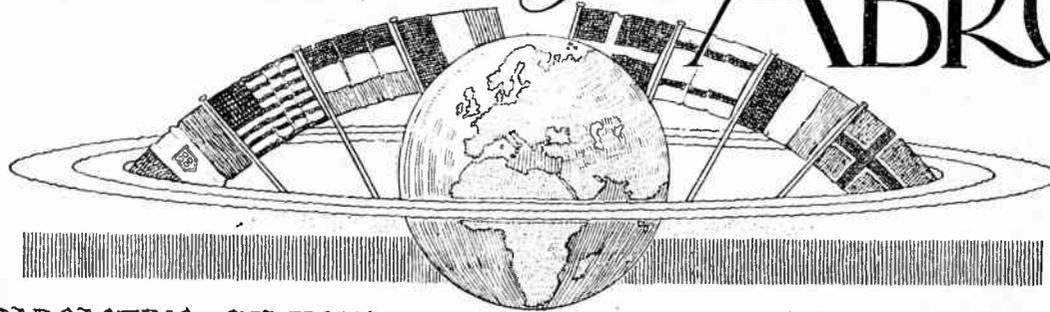
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TIMES AND DETAILS OF
FULL WEEK'S FOREIGN
TRANSMISSIONS

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	3.5	Hilversum (Holland) (<i>Kootwyk, experimental, 50 kW., after programme hours.</i>) .. .		453.2	662	4	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.); Rjukan (0.15 kW.); Notodden (0.08 kW.); Aalesund (0.35 kW.) (Norway) (<i>relays Oslo</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 16.86 m.</i>) .. .		441.2	680	50	Rome. IRO. (<i>S.-W. Station, 2 RO on 25.1 m.</i>) .. .	
1554.4	193	30	Daventry National		435.4	689	55	Stockholm, SASA (Sweden)	
1538	195	7	Ankara (Angora) (Turkey)		430.4	697	2.5	Belgrade (Yugoslavia)	
1481	202.5	500	Moscow, RVI (Old Komintern) (Russia) .. .		424.3	707	2	Madrid, EAJ7 (Union Radio)	
1446	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)	
1350	222	0.5	Tunis-Kasbah (Tunisia)		408.7	734	16	Katowitz (Poland)	
1304	230	100	Moscow, WZSPS (Trade Union) (Russia) .. .		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		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)	
1154	260	15	Monte Ceneri (Switzerland)		376.4	797	50	Scottish Regional (Falkirk)	
1117	268.5	40	Moscow, Popoff RV58 (Russia)		272.2	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		Seville, EAJ5 (Union Radio) (1.0 kW.); Galicia EAJ4 (0.2 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Helsinki (10 kW.) (Finland) (<i>relays Lahti</i>); Kharkov, RV20 (10 kW.) (Russia) .. .	
1035	290	36	Kiev, RV9 (Russia)		533.1	815	0.7	Fredriksstad (Norway). (<i>Relays Oslo</i>) .. .	
1000	300	100	Moscow (Russia) (<i>S.-W. Stn. on 50 m.</i>) .. .		334.1	824	1	Bergen (Norway)	
938	320	20	Kharkov, RV4 (Russia)		333.6	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>) .. .	
780	395	1.3	Geneva (Switzerland). (<i>Relays Sottens</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)		238.2	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	545	18.5	Kaiserslautern (Germany). (<i>Relays Munich</i>) .. .		321.9	932	10	Göteborg (Sweden). (<i>Relays Stockholm</i>) .. .	
542	554	10	Budapest No. 1 Lakihegy (Hungary) .. .		318.8	941	0.25	Dresden (Germany). (<i>Relays Leipzig</i>) .. .	
537.6	558	3	Sundsvall (Sweden). (<i>Relays Stockholm</i>) .. .		318.8	941	1.5	Naples, INA (Italy). (<i>Relays Rome</i>) .. .	
533	563	60	Palermo (Italy)		315.8	950	1.6	Marseilles, PTT (France)	
525	571	15	Munich (Germany)		312.8	959	0.7	Radio Vitus (Paris). (<i>S.-W. Stn. on 43.75 m.</i>) .. .	
517.2	580	100	Riga (Latvia)		312.8	959	1.7	Cracow (Poland)	
509	589	15	Vienna (Bisamberg) (Austria)		309.9	968	59	Genoa, IGE (Italy). (<i>Relays Turin</i>) .. .	
500.8	599	20	Brussels No. 1, Velthem (Belgium). (<i>In French</i>) .. .		307	977	0.75	West Regional (Washford Cross) .. .	
495.8	605	1.2	Florence, IFI (Italy). (<i>Relays Turin</i>) .. .		304	986	13	Zagreb (Yugoslavia)	
488.6	614	120	Trondheim (Norway)		301.5	995	50	Bordeaux Lafayette, PTT (France) .. .	
480	625	50	Prague, No. 1 (Czechoslovakia)		298.8	1004	11	North National (Manchester) .. .	
472.4	635	60	North Regional (Manchester)		296.1	1013	20	Tallinn (Esthonia)	
465.8	644	1.5	Langenberg (Germany)		293.5	1022	0.7	Huizen (Holland). (<i>7 kW. before 4.40 p.m.</i>) .. .	
459.4	653	60	Lyons la Doua, PTT (France)		293.5	1022	2.6	Limoges, PTT (France)	
			Beromünster (Schweizerischer Landessender) (Switzerland)		291	1031	13.2	Kosice (Czechoslovakia)	
			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>); Forsgrund (0.7 kW.) (<i>relays Oslo</i>); Tromsö (0.1 kW.) (0.5 kW.) (Norway); Uppsala (0.15 kW.) (Sweden) (<i>relays Stockholm</i>) .. .		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. 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 call signs and transmission times.

FOREIGN SUNDAY PROGRAMMES

AUGUST THE THIRTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Service from St. Martin-in-the-Fields; address by Rev. H. R. L. Sheppard. Choral programme.
- LONDON REGIONAL** Concert, relayed from Ostend.
- MIDLAND REGIONAL** Orchestral concert.
- WEST REGIONAL** Welsh service from St. Mary's Church, Dowlais.

ABROAD

- BRESLAU** 12.0 noon. The Silesian Philharmonic Orchestra.
- BRUSSELS (No. 1)** 9.0 p.m. Concert from the Casino, Knocke, conducted by Candaël.
- COPENHAGEN** 8.5 p.m. Concert of operetta music, by the Station Orchestra.
- HAMBURG** 8.0 p.m. The Philharmonic Orchestra, conducted by Adolf Secker.
- HUIZEN** 8.40 p.m. Song recital, by Richard Tauber.
- LANGENBERG** 6.30 p.m. Opera music. Jacopo Peri Tercentenary programme.
- PITTSBURGH** 8.0 p.m. National opera concert.
- PRAGUE** 9.0 p.m. Dvorak concert by the Station Orchestra.
- RIGA** 7.30 p.m. Wagner concert, by the Station Orchestra.
- TURIN** 8.30 p.m. Opera: "Nozze istriane," by Smareglia.
- VIENNA** 5.0 p.m. Concert by the Wiener Symphoniker.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—8.30 p.m., Time Signal. 8.31, Cecilia Instrumental Trio. 8.50, Concert by the Mixed Choir of the Augustinian Choral Society. 9.10, Pianoforte Recital by Maisie McCallagh. 9.25, Baritone Solos by Cecil O'Shaughnessy. 9.40, Traditional Fiddle Solos by Frank O'Higgins. 9.55, Soprano Solos by Chrissie Manning. 10.15, Instrumental Trio. 10.25, Vocal Duets by the Serenaders. 10.50, Instrumental Trio (contd.). 11.0, Time Signal, News, Weather Report and Close Down.

BARCELONA

EAJ1, 850 kc/s, 348.8 metres; 8 kW. 2.0 p.m., Gramophone Music. In the interval at 2.30, Theatre Notes. 3.0, Film Review. 3.5, Concert by the Radio Sextet. 4.0, Programme for Hospitals and Benevolent Institutions with Gramophone Records. 5.0, Interval. 6.30, Agricultural Report and Gramophone Records. 7.0, Concert by the Radio Orchestra. 7.30, Song Recital by Pascual Duarte (Baritone). 8.0, Song Recital by Entiqueta Noguera (Soprano) accompanied by the Radio Orchestra. 9.0, Dance Music from the Hollywood Bar. 10.5, Musical Comedy Music on Gramophone Records. 11.45, Chess Lesson. 12 Midnight (approx.). Close Down.

BARI

1,112 kc/s, 259.8 metres; 20 kW.—10.35 a.m., Giornale Radio. 11.5, Bible Reading. 11.55, Sacred Music, relayed 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 (approx.), Instrumental Concert: Hymn, Salve, bambiera (Jeva); Overture, Poet and Peasant (Suppé); Selection from Le campanie de S. Lucia (Sartorio); Barcarolle, Vltova a mare (Jeva); Selection from A Masked Ball (Verdi); Overture, The Italian Girl in Alghero (Rossini); Ave Mistina (Jeva); Selection from Rigoletto (Verdi); Overture, The Barber of Seville (Rossini). In the interval, Announcements. 9.30, Quintet Concert. In the interval, Announcements. 10.30, Gramophone Music. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BERLIN

(DEUTSCHLANDSENDER) REICHSENDER, 183.5 kc/s, 1,635 metres; 60 kW. 5.0 a.m., Gymnastics from Berlin (Witzleben). 6.15, Review of Saturday's News. 6.30 (approx.), The Day's Motto, followed by Harmonium Concert from Hamburg. 8.0, Agricultural Programme. 8.55, Divine Service, relayed from a Church in Charlottenburg. 9.30, Harvest Customs and Songs. 10.5, Weather Report from Berlin (Witzleben). 10.10, Programme to be announced. 11.0, Reading (Hans Schwarz). 11.15, Weather. 11.30, In the Village Inn. 12 Noon, See Breslau. 12.55 p.m., Time Signal. 1.0, Concert from Heilsberg. 2.0, See Hamburg. 3.0, Talk: The Care of Animals. 3.30, Programme for Children. 4.0, Orchestral Concert. 4.20, Orchestral Concert, conducted by Bruno Eckhardt, relayed from Swinemünde; Soloist: Viki von Wintertfeld (Violin). 6.0, See Langenberg. 6.30, Eberhard König reads from his own works. 7.0, Choral Concert of German Folk Songs. 7.30, Radio Report from the Kaiser Wilhelm Institute. 8.0, Talk: The Radio Exhibition. 8.15, Variety Programme. 10.0, News. 10.30, Radio Report from the Chicago World Fair. 10.45, Weather. 11.0, A Nazi Leader addresses himself to Austrian Nazis.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—11.30 a.m., Organ Recital by Helmut Banning: Prelude and Fugue in E (Lübeck); Extract from the Sonata in G (Bach); Tocatta in D minor Op. 29 (Bach). 12 Noon, Concert from Breslau. 2.0 to 3.0 p.m., Programme for Garden City Dwellers. 3.30, Radio Report of the Annual Swimming Competitions, relayed from Stettin. 4.0, Military Band Concert, relayed from the Zoological Gardens. 5.25, Humorous Programme. 6.0, See Langenberg. 6.30, Pianoforte Recital by Romald Wikar-ki. 6.55, Glück im Gemüseacker—Humorous Radio Play (Klaus Richter). 7.30, Sports Notes. 7.45, German National Day, relayed from the World Fair at Chicago. 8.45, Concert of Operetta Music: The Station Orchestra, conducted by Hans Steinkopf; Soloist, Else Kochmann (Soprano); Overture, Eine Nacht in Venedig (Joh. Strauss); Selection from Der Opernhall (Heuberger); Songs: (a) Florenz hat schöne Frauen, from Boccaccio (Suppé), (b) Aria from Wiener Blut (Joh. Strauss); Waltz from Die Landstreichler (Ziehrer); Klipp-Klapp-Galopp from Der Waldmeister (Joh. Strauss); Songs: (a) Aria from Die hellblauen Schwestern (Künneke), (b) Aria from Holheit, die Tänzerin (Goetze); Selection from Der Bettelstudent (Müllöcker); Overture, Banditenstriebe (Suppé). 10.0, News. 10.15

(approx.), Dance Music, relayed from the Eden Hotel. In the interval at 11.0, Topical Review. 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; 15 kW. 6.15 p.m., Radio Journal relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres. 8.0, Sports Notes. 8.15, Lottery Results. 8.30, Programme relayed from Vichy: La Vida Breve—Ballet (Falla), followed by The Pearl Fishers—Opera (Bizet). After the Programme, Amusement Guide and Time Signal.

BRATISLAVA

1,076 kc/s, 279 metres; 11 kW.—5.40 p.m., Gramophone Music. 6.0, Reading from New Books. 6.20, Gramophone Music. 6.55, Talk for Housewives. 7.0, See Prague. 7.35, See Brno. 8.35, 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.—12 Noon, Concert by the Silesian Philharmonic Orchestra, conducted by Erieh Peter. 2.0, Agricultural Talk. 2.15, Talk: A Silesian Peasant, Paul Gara, visits Adolf Hitler. 2.40, Talk: The Old-fashioned Cab. 3.0, Programme for Children. 3.40, Reading (Ludwig Finckh). 4.0, Concert by a Nazi Band, conducted by Oskar d'Agostin, relayed from Hirschberg. 6.0, Talk: Social and Agricultural Policy in the East. 6.20, Guitar Recital of Old and Modern Music by Heinrich Albert. 6.50, Talk: The Radio Exhibition in Berlin. 7.0, Weather for Farmers. 7.5 (approx.), Radio Report of the Twenty-second German Rowing Championship, relayed from the Stadium. 7.45, See Langenberg. 8.0, Wind Instrument Concert, conducted by Franz von Hoesslin. 9.0, News. 9.10, Concert of Light Music by the Fabrich-Ehmkh Orchestra, relayed from the Café Vaterland. 10.0, Time and News. 10.30, German National Day Programme, relayed from the World Fair at Chicago, on Gramophone Records. 11.30, Dance Music from Berlin (Witzleben). 12.30 a.m. (Monday), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—12.30 p.m., Second Country Band Competition. 1.30 to 1.45, See Prague. 4.0, See Moravská-Ostrava.

5.30, Song Recital. 5.45, Talk on Aviation in Poland. 6.0, German Transmission: Concert of Operetta and Musical Comedy Music. 7.0, See Prague. 7.35, Round the World—Comedy in Two Acts (J. Jurdik). 8.35, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 599 kc/s, 509 metres; 15 kW.—10.0 a.m., Concert by the Small Station Orchestra, conducted by Emile Lauwers. 11.0, Gramophone Music. 12 Noon, Concert conducted by Fellemann, relayed from the Grand Hotel, Antwerp. 1.0 p.m., Le Journal Parlé. 1.10, Concert by Sykes and his Band, relayed from the Scala, Ostend. 1.30 (in an interval), Monologues. 5.0, Dance Music relayed from the Kursaal, Ostend. In the interval at 5.30 (approx.), Football Results. 6.30, Programme for Children. 7.0, Gramophone Music. Overture, Ruy Blas (Mendelssohn); Romance, Op. 44 No. 1 (Rubinstein); Magnificat in D minor (Walmusley). 7.15, Religious Address. 7.30, Wireless Notes and Review of Music. 8.0, Acts II and IV of Carmen Opera (Bizet) on Gramophone Records. 8.45, Le Foyer de Voisin—Sketch (Godeaux). 9.0, Concert conducted by Karel Candaël, relayed from the Casino, Knocke. Soloists: Robert Casadesu (Pianoforte) and Edmond Harvart (Violin). Scherezade (Bimsky-Korsakov); Pianoforte Concerto in A (Liszt); Symphonic Poem, Le Rouet d'Orphale (Saint-Saëns); Concert-stück for Pianoforte and Orchestra (Weber); Overture, Leonora No. 3 (Beethoven). After the Concert, Journal Parlé, followed by Dance Music by Micky's Club, relayed from the Casino, Knocke.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish. 10.0 a.m., Gramophone Concert. 11.0, Concert by the Small Station Orchestra, conducted by Emile Lauwers. 12 Noon, Concert by Sykes and his Orchestra, relayed from the Scala, Ostend. 1.0 p.m., Le Journal Parlé. 1.10, Concert, relayed from the Grand Hotel, Antwerp. 1.30, Gramophone Concert. 5.0, Dance Music by Micky's Club Band, relayed from the Casino, Knocke. 5.30, Sports Results. 6.30, Violin Recital by Alle. Astrologie: Sonata, Les tombeaux (Leclair); Two Hungarian Dances (Brahms); Suite on a Theme of Pergolesi, Pincella (Stravinsky). 7.0, Extracts from the Suite in D (Bach) on Gramophone Records. 7.15, Religious Address. 7.30, Talk on Music. 8.0, Recital of Jazz Music (Hamy) on Two Pianofortes. 8.30, Gramophone Music: Mattinata (Leoncavallo); Selection from Edoarda (Ruthland-Clapham); Kunstlerleben (Joh. Strauss). 8.45, Recitations. 9.0, Concert, relayed from the Kursaal, Ostend. After the

Concert, Review of Periodicals, followed by Dance Music by Robert de Kers and his Cabaret Kings and a Tango Band, relayed from the Kursaal, Ostend.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Gica Ionasescu Orchestra. In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Light Music on Gramophone Records. 7.40, Educational Talk. 8.0, Airs from Operettas. 8.20, Concert by the Station Orchestra. Soloist: D. Teodoru (Violin). 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 6.0 p.m. till Close Down.—9.15 a.m., News. 9.40, Report from the World Ambrose. 10.0, Protestant Service. 11.0, Catholic Service. 12.10 p.m., Concert by the Bura Giganj Band, relayed from the Ketter Restaurant. 1.45, Gramophone Concert. 3.0, Agricultural Talk. 3.45, Report from the World Jamboree. 6.0, Concert by the Budapest Concert Orchestra, conducted by Bela Nagypal. 7.15, Humorous Talk. 7.45, Hungarian Song Recital by Bela Csoka. 9.0, Three One Act Plays. 10.30, News. 10.35 (approx.), Dance Music, relayed from the Rajnapark. 11.30, Report from the World Jamboree.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—8.27 a.m., Weather Forecast. 8.30, Morning Gymnastics. 9.0, Talk. 9.30, Interval. 10.0, Divine Service, relayed from the Cathedral, Maribo. 11.30, Weather and News. 12 Noon, Time and Chimes from the Town Hall, and Weather Forecast. 12.5 p.m., Concert by the Radio Orchestra, conducted by Emil Reeson. 1.0, Talk in English: Old London Bridge. 1.20, Talk in German: Poetry in Saxony and Silesia. 1.40, Talk in French. 2.0 (also relayed by Skamlebaek, on 31.51 metres), Divine Service. 4.0, Orchestral Concert, relayed from a Park. 5.50, Programme for Children. 6.20, Talk: A Pilgrimage to Rome. 6.50, Weather and News. 7.15, Time Signal. 7.30, Talk. 8.0, Chimes from the Town Hall. 8.5, Concert of Operetta Music. The Station Orchestra, conducted by Emil Reeson. Soloists: Kiss Greegers (Songs). After the Concert, Weather Forecast. 9.10, Reading (Hans Kaarsberg). 9.30, Swedish Song Recital by Karl Johans-Kören. In the interval, Swedish Recitations. 10.15, News. 10.25, Programme to be announced. 11.0, Dance Music, relayed from the Nimb Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Monday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—2.0-8.0 p.m., Programme in English by the I.B.C. 2.0, Special Programme for South Coast Listeners: Signature Tune; The Night by the Sea; Veterans of Variety; Selection from The Belle of New York (Kerker); The Skaters' Waltz (Waldfenfel); Marta (Simons); Sanctuary of the Heart (Ketelberg); Glow-Worm Idyll (Lincke); The Old Rustic Bridge by the Mill (arr. Wood); Veterans of Variety. 2.35, Light Orchestral Concert: Woodland Peace (Favilla); Song, Two Eyes of Grey (McGeogh); Siren Magic (Waldfenfel); Violin Solo: Indian Love Call (Friml); Spanish Gypsy Dance (Marquia); Once on the Rhine (Ostermann); Song: Trees (Rasbach); Ke-sa-ko (Chapman). 3.0, Celebrity Concert on Gramophone Records: Layton and Johnston: The Turning of the Tide; Renate Muller: To-day I feel so happy (Carter); Sir Harry Lander: Somebody's waiting for me; Whistling Solo: Stars and Stripes (Souza); Harry Dearth: The Fly be on the Turnups (arr. Wheatly); Pianoforte and Xylophone Duet: The Match Parade (Wehle); He wanted Adventure (Waller and Tunbridge). 3.30, Trio Concert: Pearl of mine (Fletcher); Friend o' mine (Sander-son); Cello Solo: Harlequinade (Squire); Even-song (Easthope-Martin); Cavatina (Raff); Cello Solo: Salut d'amour (Elgar); Pizzicato from Sylvia (Delibes); Love's Old Sweet Song (Molloy); Signature Tune. 4.0, Judge Rutherford's Address. 4.15, Programme for Children. 4.30, Variety Items, Descriptive Adventure Story; Aeroplane effects; The Capricious Musical Box (Fresco); Bugle Calls; Crowd Scenes; Selection from Les Millions d'Arlequin (Drigo). 5.0, Organ Recital: Mimese antique (Waltling); Song: The Hills of Home (Fox); Selection from Les millions d'Arlequin (Drigo); Waltz: Suite No. 3 (Coleridge-Taylor); Song: Poor Man's Garden (Russell); To a Wild Rose (Macdowell); The Match

AUGUST 13th

SUNDAY

continued

Parade (Wehle); The Kiss Waltz (Dubin Burke). 5.30, Lowestoft Concert: Signature Tune, Jolly Good Company; Song: Song of the Vagabonds, from The Vagabond King (Friml); Selection from The Country Girl (Monckton); Violin Solo: Indian Love Call, from Rose-Marie (Friml); Mad about the Boy (Coward); Selection from Chu Chin Chow (Norton); Song: Love will find a way, from The Maid of the Mountains (Fraser-Simson); Signature Tune. 6.0, Club Concert for Ipswich Listeners: Part I, Orchestral Music: Signature Tune; The Crum Song; Overture, Raymond (Thomas); Loin du bal (Gillet); Song: The Leader of the Town Brass Band (Longstaffe); Old Comrades (Teike); Selection from Ca' c'est Paris (Padilla); Song: Just keepin' on (Carter); March of the Mammikins (Fletcher); Part II, Light Music: Liebestraum (Liszt); Violin Solo: Capricieuse (Elgar); Song: The Old Superb (Stanford); Scarf Dance (Chaminade); Hungarian Dance No. 6 (Brahms); Violin Solo: Valse bluette (Drigo); March from Tannhäuser (Wagner); Signature Tune. 7.0, Military Band Concert with Songs; The Mad Major (Alford); Song: If I were king (Coslow); Down South (Myddleton); Cupid's Army (Siever Ibanez); Cornet Solo: Carnival of Venice (Briccialdi); Selection from The Geisha (Jones); Song: A Bachelor Gay (Tate); On the Quarter Deck (Alford). 7.30, Members Request Half Hour: Overture, Zampa (Herold); Hawaiian Love (Gaston); Song: The Mountains of Mourne (French); Shepherd's Dance (German); Song: O Dem Golden Slippers (Bland); Waltz from Bittersweet (Coward); Song: Father, O'Fynn (Traditional); Barcarolle, from The Tales of Hoffman (Offenbach). 8.0, Programme in French. 9.0 till Close Down, Programme in English by the I.B.C. 9.0, Orchestral Concert with Songs: The Child from Alsace (Lehar); Love in Cloverland (Peter); Song: I give my Heart (Mackeben); Selection from The Merry Widow (Lehar); Glowing Embers (Marsden); Song: Farewell (Fraser-Simson); Ich liebe dich (Grieg); Moonlight on the Alster (Fetras). 9.30, Light Music: Selection from Die Fledermäus (Joh. Strauss); St. Louis Blues (Hardy); War Marching Songs; Her name is Mary (Siever); I kiss your Lips (Rudolph); When day is done (de Sylva); Ballet Egyptian (Ligutti). 10.0, Instrumental Music: Old Folks at Home; I hear a Thrush at Eve (Cadmus); Song: Until (Sanderson); What Aloha means (Alphin); I can't write the Words (Marks); Banjo Solo: The Wedding of the Painted Doll (Brown); Accordion Solo: Tango de Paques (Cuvellier); Dream Girl of Yesterday (Hamper). 10.30, Concert of Dance Music: Look what I've got; Twenty million People; Blaze away; Waltz. Künstlerleben (Strauss); Selection from The Kid from Spain; Tango, My Heart was made for love; You're mine, you; I cover the Waterfront. 11.0, Light Orchestral Music: Hgr namo is Mary; Serenata (Tosoff); Piano-forte Solo: Selection from The Big Pond (Fain); I'm yours; Hittin' the Bottle; Piano-forte Duet: Selection from The Cat and the Fiddle (Kern); I lost my Girl from Memphis; Shoo the Hoodoo. 11.30, Concert by the I.B.C. (Ireland). Ltd.: Signature Tune: Come back to Erin; Morgenblätter (Strauss); Song: The Gay Highway (Drummond); Autumn Leaves (Pepper); Selection from "The Lily of Killarney" (Benedict); "Cello Solo: Salut d'amour (Elgar); Souvenir de Capri (Bece); Tipperary (Judge Williams); Selection from Waltzes from Vienna (Strauss); Signature Tune. 12.5 a.m. (Monday), I.B.C. Late News Bulletin in English. 12.10 (approx.). Light Orchestral Music: Amina (Lineke); Violin Solo: Chanson bohémienne (Baldi); Animal Antics (Wark). Violin Solo: Souvenir (Drilla); The Valley of the Poppies (Ancliffe). 12.30, Dance Music. Signature Tune, Bells of Normandy; Chansonnette (Friml); Someone to Care for (Warren); Body and Soul (Green); Won't you Stay to Tea? (Revel); That's my Home (Rene); No more Love (Lombard); Contented (Turk); Waltzing in a Dream (Crosby). 1.0, Light Music: Sing Something Simple (Hupfeld); Hawaiian Waltzes. Song: In the Valley of the Moon (Burke); Bone Festa (Traditional); Three Little Words (Check). Song: Having a good time (Fain); Mari Girl (Libronio); O solo mio (Di Capua). 1.30, Dance Music by the Blue Mountaineers (Electrical Transcriptions). Signature Tune, Bells of Normandy; All over Italy; When my little Pomeranian met your little Pekinese (Schuster); Moon; You've got me crying again; Let's put out the Lights; When it's Lamp-lighting Time in the Valley; You're my Everything (Dixon); Won't you Stay to Tea? (Revel); Moonlight, the Danube and You (Mannheimer); Signature Tune. 1.57, Goodnight Melody. 2.0 (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 a Nazi Band, relayed from Wiesbaden. 4.0 p.m., Gramophone Concert. 2.30, Agricultural Notes. 2.40, Rural Programme. 3.30, Programme for Young People. 4.30, Concert by

a Nazi Band, conducted by Werner. 6.0, See Langenberg. 6.30, Radio Report from the Enkheimer Ried Wild Life Preserve. 6.50, Sports Notes. 7.0, See Breslau. 7.45, German National Day, relayed from the World Fair at Chicago. 8.45, See Stuttgart. 10.25, Time and News. 11.0, See Munich. 12 Midnight (approx.). Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBERG.—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.—9.15 a.m. (from Hanover). Inaugural Programme of the New Hanover Wireless Station. 10.55, Divine Service, relayed from the University Church, Kiel. 12.15 p.m., Concert from Heilsberg. In the interval at 12.55, Time and Weather. 2.0 (from Kiel). Programme for the Hitler Youth, conducted by Balduur von Schirach, relayed from the Hochschule, Oldenburg. 3.0, Choral and Orchestral Concert, relayed from the Castle Square, Hanover. 3.45, Songs and Recitations. 4.30 (from Hanover). Inaugural Concert of the New Hanover Station. The Hanover Station Orchestra, conducted by Otto Ebel von Sosen, a Nazi Choir, conducted by Harry Schulze and August Grobecker (Baritone). 5.0, Radio Report of the Final of the German International Tennis Championship in Hamburg. 5.30, Military Band Concert in Honour of the New Governor of Mecklenburg. 6.45 (from Hanover). Orchestral Concert, conducted by Otto Ebel von Sosen. 7.40, Sports Report. 7.55 Weather. 8.0, Concert by the Hamburg Philharmonic Orchestra, conducted by Adolf Secker. Soloists: Eva Seljee (Soprano), Kurt Marburg (Baritone), and Bernhard Hanmann (Violin). Overture, Rosamunde (Schubert). Baritone Solo from Il Trovatore (Verdi). Invitation to the Dance (Weber); Dance of the Wooden Shoes, from Czar and Carpenter (Lortzing). Baritone Solo from Czar and Carpenter (Lortzing). Suite from Vasantasena (Halvorsen). Violin Solo: Paraphrase on Walter's Prize Song (Wagner-Wilhelm). Soprano Solos (Wagner): (a) Schmerzen, (b) Träume. Ballet Music from Carmen (Bizet). Baritone Solo from Carmen (Bizet). Soprano Solo from Tosca (Puccini). Soprano and Baritone Duet from Die Toten Aengen (D'Albert); Suite from Mona Lisa (Max von Schilling). 10.0, Relay of the Military Tattoo of Welcome for the new Governor of Mecklenburg. The Orchestra of the Lüneburg Schleswig-Holstein and Five Nazi Bands, conducted by O. Bismarck. 10.15, Time and News. 10.35, See Berlin (Deutschlandsender) Reichssender. 11.30, 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.—12 Noon, Orchestral Concert, relayed from the Kurgarten, Zoppot; Conductor, Karl Tuttein. In the interval, A Journey into the Blue. 2.0, Chess Lesson. 2.30, Programme for Young People. 3.0 (from Danzig). Song Recital by Paula Kielmann. 3.30, Talk: The Pomeranian Carpet Industry. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Willeken. 5.30, A Journey into the Blue. 5.50, Horse-Racing Results. 6.0, See Langenberg. 6.30, Talk, with Piano-forte Illustrations. 7.10, Readings, with Commentary (Rudolf G. Bindig), for the Author's Sixty-Sixth Birthday. 7.40, Des Knaben Wunderhorn—Songs to the Lute by Hermann Munk. 8.10, Sports Notes. 8.15, Concert by the Small Station Orchestra, conducted by Eugen Willeken: Overture, Boccaccio (Suppe); Waltz, Die Romantiker (Lanner); Serenade (Desprez); Tschon-Tschon (Neudo-Kalkmann); Fortissimo (Feigl); Suite, On the Banks of the Nile (Platen); Waltz, España (Waldteufel); Selection from The Mikado (Sullivan); Overture, Masaniello (Auber). In an interval at 9.10 (approx.), Poetry Reading (Hebert Schwartz). 10.0, News. 10.30, See Berlin (Deutschlandsender) Reichssender. 11.30 (approx.). Close Down.

HILVERSUM

(Announced HUIZEN), 1,013 kc/s, 296.1 metres; 20 kW. (7 kW up to 4.0 p.m.)—8.10, to 9.10 a.m., Religious Programme. The Catholic Radio Society (K.R.O.). 9.10 to 11.55, Programme of the Christian Radio Society (N.C.R.V.). 9.10, Sacred Music on Gramophone Records. 9.50, Divine Service relayed from the Stiftskirche, Biez, for the Fourth Centenary of the Birth of William of Orange. 11.55 to 4.0 p.m., K.R.O. Programme. 11.55, Orchestral Concert conducted by Mlle. Césarine Pool. 12.40, Liter-

ary Talk. 1.0, Concert (contd.). 1.40, Report on the Dutch Swimming Championships at Arnhem. 1.55, Literary Talk. 2.15, Concert by the K.R.O. Orchestra, conducted by Van 't Woud: Overture, Czar and Carpenter (Lortzing); Grieg Potpourri (Urbach). 2.40, Gramophone Music. 3.25, Report on the Swimming Championships at Arnhem (contd.). 3.55, Programme for Invalids. 4.40 to 7.25, N.C.R.V. Programme. 4.40, Organ Recital by Spanbroek. 5.10, Divine Service relayed from a Church at Pijnacker. 6.40, Organ Recital (contd.). 7.25 till Close Down, K.R.O. Programme. 7.25, Football Results. 7.30, Talk: The Gypsies. 7.55, Concert by the K.R.O. Orchestra conducted by van Gondever. Soloist, Mlle. Louise van Wijngaarden (Violin). In the interval at 8.40, News, at 9.30, Gramophone Music, and at 9.55, News. 10.20, Epilogue by the Small Choir. 10.40 (approx.). Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 160 kc/s, 1,875 metres; 8.5 kW.—9.10 to 11.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 9.10, Concert by the Eddy Wallis Ensemble. 9.40, Recitations. 9.50, Concert (contd.). 10.25, Film Review. 10.40, Concert (contd.). 11.10, Address: 11.40 to 4.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time. 11.41, Light Orchestral Concert, with Songs by a Male Voice Choir. 1.10, Gramophone Music. 1.40, Book Review. 2.10, Mandoline Music. 2.40, Orchestral Concert, conducted by Ignaz Neunmark, relayed from the Kurlians, Scheveningen. 4.10, Gramophone Music. 4.40 to 5.40, V.A.R.A. Programme. 4.40, Concert by a Workers' Choir and a Children's Choir. 5.40 to 7.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 5.40, Book Review. 6.25, Religious Programme, with Music by Mlle. Thylen (Soprano) and Möhringer (Piano-forte). 7.40 till Close Down, A.V.R.O. Programme. 7.40, Time and News. 7.55, Concert by the Wiener Bohème Orchester. 8.40, Song Recital by Richard Tauber. 9.0, Concert (contd.). 9.40, Song Recital by Richard Tauber (contd.). 9.55, Gramophone Music. 10.10, Concert of Light Music by Kovacs Lajos and his Orchestra. 11.40 (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, Radio Concert. 8.30, News. 8.50, Open Air Concert. 10.30 till Close Down, Programme in English by the I.B.C. 10.30, Military Band Concert: Parade of the Tin Soldiers (Jesse). Song: The Yeoman of England (German); El Abanico (Javaloyes). Xylophone Solo: Overture, Raymond (Thomas); Medley of British Songs. Song: Absent (Metcalfe); A Merry Hunting Day (Partridge); Carry On (Dundas). 11.0, Light Music: Roses from the South (Strauss). Song: My Darling (Heymann). Violin Solo: Souvenir (Drda); In the Valley of the Moon (Burke). Accordion Solo: Accordion Nights; Selection from Mother of Pearl. Piano-forte Solo: Selection from Bow Bells (Sullivan). 11.30, Gramophone Concert. Peter Dawson: Old Father Thames (Waddy and Hogan). Billy Caryl and Hilda Mundy, Scenes of Domestic Bliss; Breakfast Time and Midnight. Salon Orchestra: Ständchen (Schubert); Piano-forte Selection from The Cat and the Fiddle (Kern). Val Rosing: The Old Spinning Wheel (Hill). Marek Weber and his Orchestra: Waltz, Trés jolie (Waldteufel). Hawaiian Guitars: Hawaiian Love. 12.0 Midnight, Tango Band Concert: Rosa Mia (Guizot); La Camparsita (Rodriguez). Song: Kashmiri Love Song (Woodford-Pinden); Little Lady (Augustina); Zigeuner you have Stolen my Heart (Schwabach). Song: You are my Heart's Delight (Lehar). Xylophone Solo: The Skaters' Waltz (Waldteufel); Play Fiddle, Play (Lawrence). 12.30 a.m. (Monday), Dance Music: Standing on the Corner; My Heart's to Let; Waltzing in a Dream; The Old Spinning Wheel; Drifting Down the Shalimar; I Can't Remember; Sitin' in the Dark; Don't be Late in the Morning. 12.57, I.B.C. Goodnight Melody. 1.0 (approx.). Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

LANGENBERG

535 kc/s, 473 metres; 60 kW.—10.0 a.m., Protestant Service of the German Christian Movement. 11.0, Quintet in E Flat, Op. 44 (Schumann), on Gramophone Records. 11.30, Talk: Education under the Nazi Régime. 12 Noon, See Munich. 1.0 p.m., Concert of Light Music, conducted by Eysoldt. 2.45, Talk: The West German Cabinet-making Industry. 3.0, Legal Talk. 3.20, Concert by the Fröhliche Fänt. 4.0, A Journey to Majorca—Radio Sequence, with Gramophone Illustrations. 4.30, Chamber Music. Sonata in B Flat for Violin and Piano-forte (Mozart);

Sonata in C for Piano-forte (Mozart); Clarinet Trio in B Flat (Beethoven); Trio No. 5 in G (Haydn). 5.45, Talk on Göttinger Berliozingen. 6.0, Report on the German Light Athletic Championship, relayed from the Stadium, Cologne (on Gramophone Records). 6.30, Opera Music—Jacopo Peri Tercentenary Programme. 7.45, Sports Notes. 8.0, Concert of Light Music. 9.0, Der gestohlene Soldat—Radio Play (Gustav Herrmann). 10.0, News. 10.30, German National Day Programme, relayed from the World Fair at Chicago (on Gramophone Records). 11.30, Dance Music from Berlin (Witzleben). 12.30 a.m. (Monday), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—11.30 a.m., Josef Magnus Welner reads from his own Works. 12 Noon, Concert from Breslau. 2.0, Weather and Time. 2.5, Programme Announcements. 2.25, Agricultural Notes. 2.35, Song Recital by the Arion Male Voice Choir. 3.10, The German Landscape and the German People—Some Pictures of Peasant Life (Walther Eberhard Döhl). 3.30, Concert by the Dresden Nazi Band, conducted by Bruno Sehestak. 4.45, We want to Marry—a Radio Scene from a Marriage Assistance Office. 5.0, Songs to the Lute by Edmund Barczyk. 5.30, Meister Andrea—Comedy (Emanuel Geibel). 6.30, Sonata No. 2 in G, Op. 13, for Violin and Piano-forte (Grieg), by Franz Geuzel and Dr. Alf Nestmann. 7.0, Topical Programme on the Cologne Light Athletic Championship. (b) Radio Report of the Dresden Boat Races, (c) Radio Report of the Finals of the German International Tennis Championship in Hamburg. 8.0, Germans of the Sub-alp—Radio Sequence. 9.10, Orchestral Concert conducted by Gustav Mrazek, relayed from Dresden. 10.30, News. 10.40 (approx.). Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. English Programme. 7.30 p.m., Orchestral Concert on Gramophone Records. 8.10, Weather Report. 8.15, Concert by the Station Orchestra, conducted by Henri Pénis: Overture, The Magic Flute (Mozart); Violin Concerto in E Minor (Mendelssohn). 8.50, News in French. 9.0, Recital of Popular English Songs. 9.25, Concert of Light Music by the Station Orchestra, conducted by Henri Pénis: Operetta Overture (Lineke); Selection from Viktoria and her Hussar (Abraham); April's Lady (Ancliffe); Negro Lullaby (Clusam); Bells across the Meadows (Ketelbey); Dance of the Derivishes (Bendix). In an interval at 10.0 News in German. 10.25, Dance Music on Gramophone Records.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.45 p.m. till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—4.0 p.m., Concert by the Station Orchestra, conducted by M. Musil. Overture. The Secret (Smetana); Ballet Suite from Little Ida's Flowers (Klema); Piece, Op. 79, No. 2 (Foerster); Suite, Op. 95 (Poldini); Selection from The Three Musketeers (Friml); Waltz (Leopold); Serenade (Pesta); Polka (Moos); March (Ecker). 5.30, Gramophone Music. 6.0, See Prague. 7.35, See Brno. 8.35, 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.—12 Noon, Military Band Concert, relayed from the Feldherrnhalle. 1.0 p.m., Time and News. 1.10, Agricultural Discussion. 1.30, Gramophone Concert of Variety Music. 2.30, Talk on the National Revolution. 2.55, Musical Programme for Children by Children. 3.20, Talk: The Thirty-fifth German Light Athletic Championship. 3.40, Concert by the Augsburg Concert Orchestra, conducted by Schmidt-Bresten. 5.0, Introductory Talk to the following Relay. 5.10, Tannhäuser—Opera in Three Acts (Wagner), relayed from the Prince Regent Theatre. In the intervals at 6.10, Weather and Sports Notes; and at 7.50, Reading. 9.30, Austria. 9.50, Waltz Music by the Small Station Orchestra, conducted by Erich Kloss. 10.20, Time and News. 11.0, Serenade by the Small Station Orchestra. Conductor: 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.

AUGUST 13th

SUNDAY

continued

—10.15 a.m., Road Report and Weather Forecast. 10.20, Chimes and Divine Service from **Christiansand**, 1,274 kc/s, 235.5 metres. 5.0 p.m., Gramophone Music. 6.15, Recitations. 6.45, Sonata for Violin and Pianoforte (Frank). 7.15, Weather and News. 7.30, Popular Talk. 8.0, Time Signal. 8.1, Concert of Italian Music by the Station Orchestra, conducted by Hugo Kramm; Symphony in G (Pergolesi); Ballet Music from Anacréon (Herbini); Selection from The Barber of Seville (Rossini); Selection from Rigoletto (Verdi); Selection from Tosca (Puccini); Selection from Mell-stofeles (Boito); Selection from The Sunken Bell (Respighi). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Humorous Recitations. 10.30, 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 to 2.0, Concert of Light Music. In an interval at 1.30, Time, Announcements and Weather. 5.30 to 6.30, Gramophone Music. 8.0, Dopplavoro Notes, Giornale Radio and Sports Notes. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Symphony Concert, conducted by La Rosa Parodi; Three Chorales (Bach-Gui); Sevilla (Turina); Overture to a Shakespeare Comedy (Renato Parodi); Symphonic Poem, Don Juan (R. Strauss). In an interval, Talk: Elizabeth Barrett Browning. 10.20, 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 10.25 a.m. and 11.25 p.m. (Preliminary and Cadet Signals).—1.0 p.m., News. 1.15, Weather. 1.30, Concert by the Jean Bos Orchestra; Turkish March (Mussorgsky); Flower Waltz (Tchaikovsky); Scheherazade (Rimsky-Korsakov); Lullaby (Gretcheninow); Cello Solo; Spanish Serenade (Glazunov); Prelude (Rachmaninow); Serenade (Rachmaninow); Trepak (Mussorgsky). 6.45, Le Journal Parlé. 8.30, Gramophone Concert; Part I, Acts I and II of Carmen Opera (Bizet); Part II, Light Music. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW. 10.0 a.m., Fanfare of Trumpets and Roll of Drums. 10.20, Press Review. 10.30, Sponsored Concert. 11.0, Concert of Cigany Music by the Raymond Verney Band. 11.45, Gramophone Music. 12.15 p.m., Sponsored

Concert of Sound Film Music. 12.45, Sponsored Programme. 12.50 Half an Hour of Fantasy by Paul Weill. 1.30, Sponsored Programme. 2.0 to 7.0, Interval. 7.0, Journal Parlé. 7.5, Sports Notes. 7.15, Gramophone Music. 7.30, Catholic Review. 8.0, Gramophone Music. 8.30, Concert. 9.10, Concert by the Ray Ventura Orchestra and Soloists, relayed from the Casino, Deauville. 10.45, News.

PARIS

RADIO PARIS, CFR, 174 kc/s, 1,725 metres; 75 kW.—7.45 a.m., Gramophone Music: Souvenir de Rouen (Blondini); Mousquette (Peycelin); Melody (Cumbello); Parade of the Tin Soldiers (Jessel). 8.0, Press Review and Weather. 8.30, Physical Culture. 12 Noon, Religious Address. 12.20 p.m., Musical Programme: Andante from the Fourth Symphony (Widor); Improvisation (Viene); Fantasia in G minor (Bach). 12.30, Bilboquet on a Motor-Cycle. 12.45, Gramophone Concert of Scandinavian Music: Finlandia (Sibelius); Rustle of Spring (Sinding); Peer Gynt Suite (Grieg); Solvig's Song (Grieg); Valse triste (Sibelius); Romance (Svensen). Four Pieces (Grieg): (a) Ein raum, (b) Ich liebe dich, (c) Sonata in C for Pianoforte and Orchestra, (d) Norwegian Dances. 2.0, Interval. 5.30, Gramophone Concert: Triana (Albeniz); L'heure exquise (Hahn); Waltz, Pas des Fleurs (Delibes); La lettre de Manon (Gillet); Rondo brillant (Weber); Un peu d'amour (Slesin); Die Heizermädchen (Eilenberg); Entry of the Gladiators (Fucik). 6.0, Popular Concert. 7.0, Popular Concert. 8.0, Variety Programme on Gramophone Records. In the intervals at 8.30, News, Sports Notes and Weather, and at 9.15, News. 10.30, Programme in English by the I.B.C. 10.30, Orchestral Concert; Parade of the Tin Soldiers (Jessel); Selection from The Student Prince (Rouberg); Lancers, Marching; Waltz, The Pink Lady (Carrylarr, Deshon); Selection from A Waltz Dream (O. Strauss). 11.0 (approx.), Close Down.

PITTSBURGH

KDKA; 980 kc/s, 305 metres; 50 kW. Relay 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, Boys of Wyncastle. 7.15 to 10.0, New York Relay. 7.15, International Forum. 7.30, Variety Programme. 8.0, National Opera Concert. 9.0, Gould and Shetter. 9.15, Symphonette. 9.30,

Organ Recital. 10.0, Vesper Services. 11.0, News-Reeler. 11.15, Weather and Sports. 11.30, L'Heure Exquise, from New York. 12 Midnight, Jack Pottis' Orchestra. 12.30 a.m. (Monday), Wisdom of the Ages, from New York. 1.0, Concert, from New York. 1.30, Pathé News of the Air. 1.45 to 4.0, New York Relay. 1.45, Floyd Gibbons. 2.0, Gulf Headliners. 2.30, Goldman Band. 3.0, Mountain Music.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW. 12.30 p.m., See Brno. 1.30 to 1.45, Agricultural Talk. 4.0, See Moravská-Ostrava. 5.30, Gramophone Music. 6.0, German Transmission: Review of the Musical Transmissions of the Czechoslovak Broadcasting Stations, followed by Three One-Act Comedies (Molau) and News. 7.0, Schrammel Concert. 7.35, See Brno. 8.35, Programme of Songs. 9.0, Dvorak Concert by the Station Orchestra, conducted by Jeremias. Soloist: Heran (Cello). Overture, The Pig-headed Peasants; Cello Concerto in B Minor, Op. 101; Carnival Overture, Op. 92. 10.0, Time and News. 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.—9.40 a.m., Chimes. 9.45, Protestant Service relayed from Neuchâtel. 11.0, Salzburg Festival Programme (See Vienna). 12.30 p.m., News. 12.40 (from Lausanne), Gramophone Music. 12.40, Interval. 3.30 (from Lausanne), Faubäuser-Opera in Three Acts (Richard Wagner), on Gramophone Records. 7.0 (from Lausanne), Catholic Address. 7.40 (from Lausanne), Sports Notes. 8.0, Concert by the Radio-Suisse Romande Orchestra, conducted by Robert Echenard. 9.0 (from Lausanne), Bettine—Comedy in One Act (A. de Musset). 9.50, News. 10.0 (from Lausanne), Arias from Opera by Gustave Dutoit (Bass). 10.30 (approx.), Close Down.

RJKAN.—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 from 5.0 p.m.—10.0 a.m., News, Sports Notes and Amusement Guide. 10.30, Agricultural Report.

10.45, Bible Reading. 11.0, See Turin. 12 Noon, Interval. 12.30 p.m. to 1.30, See Turin. 1.30, Gramophone Music. In an interval at 2.0, Time and Announcements. 5.0 (from Naples), Programme for Children, Weather and Sports Notes. 5.15 to 6.30, Vocal and Instrumental Concert. Bruna Franchi (Violin), Alfredo Serucoli (Tenor), and Orlia Parisini (Soprano). Adagio and Finale from the Violin Concerto in G minor (Brahm). Tenor Solos: (a) Notturno (Cotogni), (b) La strada bianca (Pratella). Soprano Solos: Arias from (a) I compagni (Riccioli), (b) Thaïs (Massenet). Violin Solos: (a) Andante cantabile (Sgambati), (b) Polonaise brillante (Wieniawski). Tenor Aria from Gianni Schicchi (Puccini). Soprano Solo: Ave Maria from Othello (Verdi). Soprano and Tenor Duet from Le maschere (Mascagni). Gramophone Music. In the interval at 5.30, Sports Notes. 6.30-6.35, Weather. 7.30, Sports Notes, Dopplavoro Report and Announcements. 7.45, Soprano Solos. 8.0, Time and Announcements. 8.25, Sports Notes. 8.45, Gramophone Concert of Variety Music. 9.45, Comedy. After the Comedy, Dance Music. 10.55, Giornale Rdo.

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.—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 to 3.45 a.m. (Monday), New York Relay. 12.45, Russian Symphonic Choir. 1.0, Variety Programme. 2.0, Manhattan Merry-Go-Round. 2.30, American Album of Familiar Music. 3.0, Popular Programme. 3.15, Impressions of Italy. 3.45, Sunday at Seth Parker's, 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.—10.0 a.m. (from Zurich), Protestant Address. 11.0, Salzburg Festival Programme (See Vienna). 12.30 (approx.), Time, Weather and News. 12.40 (from Zurich), Gramophone Music. 1.0-5.50 Concert of Popular Music and Yodles, relayed from Appenzell. In the intervals at 1.15 and 5.30, Two Talks on Appenzell. 5.50, Light Music. 6.15, Talk. 6.35, Musical Programme. 6.50, Reading from Scheffel's Ekkehard. 7.0, Talk: The History of Appenzell. 7.30, Chimes from

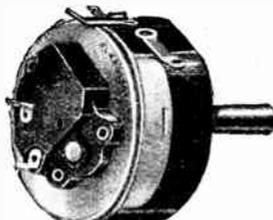
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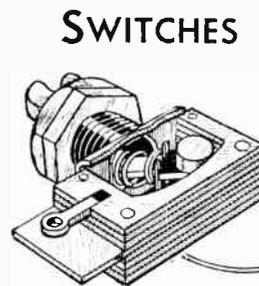
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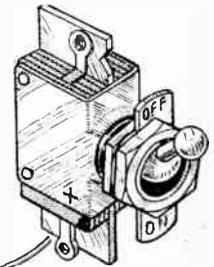
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AUGUST 13th

SUNDAY

continued

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Appenzell Churches, 7.40, Address, 8.0, Light Music and Songs by a Male Voice Choir. In the interval, Talk on Popular Customs, 9.0, News, 9.10, Concert of Appenzell Music, Yodels and Recitations in Dialect, 10.15, 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; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—9.30 a.m., Rural Programme, from Malmö, 1,301 kc/s, 231 metres. 10.0, Gramophone Music, 11.0 (from Boden), Divine Service, 12.45 p.m., Weather Report, 3.0 (from Boden), Choral Concert, conducted by Elov Rydberg, 3.30, Reading, 4.0, Gramophone Music, 5.5, Programme for Children, 5.30 (from Östersund), Talk, 6.0 (from Boden), Evensong, 7.35 (from Östersund), Peterson-Berger Programme, 8.30, Spelat förlorat—Play (Gerhart Pöhl), 9.15, Concert of Light Music: Military March (Halvorsen); Concert Waltz (Moszkowski); Du bist die Ruh' (Schubert); Selection from White Horse Inn (Stolzenmatzky), 9.45, Weather and News, 10.0, Light Music and Dance Music, relayed from the Berns Dance Hall, 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—9.30 a.m., Protestant Service in German relayed from St. Stephen's Church at Mulhouse, 10.30, Gramophone Concert, 11.30, Catholic Service in German, 12 Noon, Light Music on Gramophone Records, 12.45 p.m., News, 1.0, Time Signal, 1.7, Recital of Songs by Swiss Composers by Colette Wyss (Soprano), 2.0, Dance Music on Gramophone Records, 2.30, to 3.0, Interval, 3.0, Orchestral Concert, relayed from the Exhibition Fair at St. Die, 5.0, Gramophone Concert, 6.0, Medical Talk in German: Launess in Children, 6.15, Sports Talk in French, 6.30, Light Music on Gramophone Records, 7.30, Time and News, 7.45, Gramophone Music, 8.0, Press Review in German, Lottery Results and Announcements, 8.30, Talk with Gramophone Illustrations: The Music of the Past Generation, 9.0, Dramatic Programme, (a) L'annésie—Comedy in Two Acts (Picard), (b) Narcisse Ta échappe belle One Act Comedy (Noël Oudon), (c) La petite maison—One Act Drama (Henri Farnmont), (d) Les femmes savantes chez Madame Jourdain—One Act Comedy (Noël Oudon). In an interval at 9.30 (approx.), Press Review in French, 10.30, Dance Music relayed 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.—10.10 a.m. (from Freiburg), Protestant Service, 11.0 (from Karlsruhe), Songs and Duets to the Lute by Ada and Karlheinz Kögler, with Recitations by Elizabeth Bertram, 12 Noon, See Munich, 1.0 p.m., Discussion: The Swabian Colony in the Primeval Forests of Brazil, 1.25, Extracts from Fidelio (Beethoven), on Gramophone Records, 2.30, Concert by the Mergentheim Choir, conducted by Fleckenstein, relayed from Bad Mergentheim, 3.30, See Frankfurt, 4.30 (from Karlsruhe), Vocal and Orchestral Concert of Operetta Music, 6.0, See Langenberg, 6.30, Contemporary Literature: Prose and Poetry Readings from Baden and Württemberg Writers, 7.30, Sports Notes, 7.45, German National Days Programme, relayed from the World Fair at Chicago, 8.45, Concert of Operetta Music by the Station Orchestra, conducted by Gustav Gorch, Soloists: Gerda Hansi (Soprano), and Heinrich Kuppinger (Tenor), 10.25, Time and News, 11.0, See Munich, 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 779 kc/s, 385 metres; 8 kW.—8.0 a.m., Arias from Comic Opera, 8.15, News, 8.20, Symphony Concert, 8.30, Dance Refrains, 12.15 p.m., News, 12.30, Prelude to Act III of Parsifal (Wagner), 12.45, Operetta Music, 1.0, Amusement Guide and Market Prices, 1.5, Orchestral Concert: In a Chinese Temple Garden (Kotelbey); Spring Song (Mendelssohn); Selection from A Waltz Dream (O. Strauss); Solera fina (Marquina), 1.15, Arias from Opera: Aria from Patrie (Paladilhe); Aria from Il Trovatore (Verdi); Aria from Don Giovanni (Mozart); Aria from Il Seraglio (Mozart), 1.30, Violin Recital, 1.45, Recital of Popular Songs, 2.0, Music by a Viennese Orchestra, 2.15, Orchestral Music, 3.0, Concert Version of Werther—Opera (Massenet), 4.0, Accordion Recital, 4.15, News, 4.30, Military Music, 4.45, Cello Solos: Melody (Dunkler); Dolly (Paure); Gavotte (Lully);

Silienne (Pergolesi), 5.45, Arias from Opera: Aria from Faust (Gounod); Du from I Pagliacci (Leoncavallo), 6.0, No. 6.5, Hawaiian Guitar Solos, 6.15, Opera Music by an Orchestra: Selection from Bayadere (Kalmann); Selection from noes de Jeannette (Massé), 6.30, Son the Pyrenees, 6.45, Light Music by a nese Orchestra, 7.0, Music by an Argve Orchestra, 7.15, News, 7.25, Local No. 7.30, Popular Songs, 7.45, Accordion Music, 8.0, Trumpet Solos, 8.15, Arias from Comic Opera: Song from Carmen (Bizet); Aria from Manon (Massenet); Aria from Therese (Massenet), 8.20, Balalaika Music, 8.45, Popular Songs, 9.0, The Trout Quintet in A (Schubert), by a Symphony Orchestra, 9.30, Music by a Viennese Orchestra, 9.45, Extracts from Opera: Aria from The Prophet (Meyerbeer); Extract from William Tell (Rossini); Extract from Hamlet (Thomas), 10.0, Light Music, 10.15, News, 10.30, Concert for Listeners in Morocco, 11.0, Dance Music, 11.30, Popular Programme, 12 Midnight, Sound-Film Music, 12.15 a.m. (Monday), News, Weather, and Announcements, 12.20, Accordion Solos, 12.30, Close Down.

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 Report, 11.40, Interval, 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., Giornale Radio, 9.55, See Trieste, 10.40, Agricultural Report, 11.0, Mass from the Church of the Annunciation, Florence, 12 Noon, Bible Reading, 12.30 p.m., Orchestral Concert. In the interval at 1.0, Time and Announcements, 1.30, Sponsored Music, 1.45 to 2.0, Gramophone Music 4.30, Orchestral Concert. In the intervals, Sports Notes, 6.15, Weather Forecast and Gramophone Records, 6.30-6.45, News and Sports Notes, 7.0, Time Signal and Popolavero Announcements, 7.10, Gramophone Music, 8.0, News, 8.20, Talk on the following Transmission, 8.30, Nozze istriane—Opera in Three Acts (Smaeglia). In the interval, Theatre Notes. After the Opera, Giornale Radio.

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, 213.5 metres.—11.0 a.m., Johann Strauss Concert, by the Wiener Philharmoniker, conducted by Clemens Krauss, relayed from the Mozarteum, 12.40 p.m., Symphony Concert, conducted by Otto Egger, 2.0 to 2.20, Interval, 2.20, Time and Announcements, 2.40, Talk by Dr. Georg Strelsker, 3.10, Concert by the Graf-Kunz Quartet, 4.10, Microphone Report, relayed from Gauden, 4.35, Talk: Marcus von Aviano, 5.0, Concert by the Wiener Symphoniker, conducted by Josef Holzer, 6.0, Book Review, 6.30, Gramophone Records, 7.5, Talk by Dr. Bernhard Paungartner: The Music of the Faust Performance at the Salzburg Festival, 7.10, Concert of Light Music by the Wiener Symphoniker, conducted by Josef Holzer. In the interval at 7.20, Talk in connection with the Salzburg Festival: Faust and Paracelsus, 8.30, Der Jedge Hof—Play in Four Acts (Ludwig Anzenberger), 10.10, News, 10.25, Gramophone Concert.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.0, Salzburg Festival Programme, See Vienna, 12.40, Programme Announcements, 12.45, Weather, 12.50, Gramophone Music, 1.0, Gaia Concert for the Twenty-fifth Anniversary of the Rifle Club, relayed from the Philharmonie, 3.5, Agricultural Talk, 3.20, Gramophone Music, 3.40, Agricultural Talk, 4.0, Topical Talk for Young People, 4.15, Programme for Children, relayed from Lwow, 788 kc/s, 381 metres, 4.30, Song Recital by Rupert, 5.0, Talk: Sport and the Worker, 5.15, Concert of Polish Music by the Station Orchestra, conducted by Wilkomirski, with Vocal Interludes by Tuchowska, relayed from Wilno, 533 kc/s, 563 metres. In the interval, Report for Workers, 6.0, Instrumental Music on Gramophone Records. In the interval, News, 6.35, Programme Announcements, 6.40, Miscellaneous Items, 7.0, The Purloined Letter (Edgar Allan Poe), relayed from Lwow, 7.40, Answers to Technical Correspondence, 8.0, Concert by the Station Orchestra, conducted by Oziminski; Soloist, Witas (Tenor), 8.50, News, 9.0, Dramatic Programme, relayed from Lwow, 10.0, Dance Music, 10.25, Sports Notes, 10.40, Aviation Weather Report and Police Notes, 10.45, Dance Music (contd.).

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 2.30 p.m., Time Signal, Weather Report, Stock Exchange Quotations, and Gramophone Music. 6.0, Programme for Children. 6.45, News. 7.0, Gaelic Talk. 7.15, Talk by J. J. Kelly: Tobacco-Growing in Ireland. 7.30, Time Signal. 7.31, Concert by the Station (re-tel.). 8.0, Evening Dress Indispensable—by Letty Leven Players. 8.30, Pianoforte and Violin Recital by Mrs. Miley and Miss Thompson. 9.0, The Station Orchet (contd.). 10.15, Variety Programme by Tom Madden and Company. 9.45, Sponsored Programme. 10.45, News, Weather Report and Close Down.

BARCELONA
EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Radio Trio: Selection from The Valkyrie (Wagner); Minuet (Massenet); Canzonetta (Hammer); Pastorale Rondo on a Beethoven Theme (Tavani); Musical Snuffbox (Mammfred); Prelude No. 13 (Chopin); Selection from Philomène et Baucis (Gounod). 8.0, Request Gramophone Records. 8.20, Sports Notes. 8.20, Exchange and Talk in Catalan. 9.0, Gramophone Music and News. 10.0, Chimes, Weather and Exchange. 10.5, Humorous Review of the Week's Events in Verse. 10.15, Concert by the Radio Orchestra. 11.0, Song Recital by José Abella (Baritone). 11.30, Topical Review in Catalan. 12 Midnight, News. 12.10 a.m. (Tuesday), Concert from the Casino San Sebastian. 1.0 (approx.), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW. 8.0 p.m., Agricultural Notes, Tourist Talk and Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), I Carnasciali—Opera in Three Acts (Lacetti). In the interval, Theatre Notes. After the Opera, Announcements in Albanian and News. 10.55, News.

BASLE—See Schweizerischer Landessender.

BERLIN
DEUTSCHLANDSENDER (Reichssender), 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Instrumental Concert on Gramophone Records. 3.0, Talk for Women. 3.30, Weather and Exchange. 3.45, Book Review. 4.0, See Breslau. 5.0, Talk: Post-War German History in the Schools. 5.25, Topical Programme. 5.35, Werner Tränker Concert. The Station Trio and Maria Caroni (Songs), with the Composer as Accompanist: Trio in F minor Op. 16 for Violin, Viola and Cello. Songs: (a) Im Feld ein Mädchen singt, (b) Und was schief ich denn, (c) Wiegenlied, (d) Der Fiedler, (e) Du Mädchenbild, (f) Gänschert. 6.0, A Poem. 6.5, Two German Aviators describe their African Flights. 6.25, Variety Programme. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Talk: The Radio Exhibition. 8.15, Old Acquaintances. 8.35, See Langenberg. 10.0, News. 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.—6.10 p.m., String Quartet in E minor (von Schillings), by the Brunier Quartet. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Breslau. 8.5, Songs of the Baltic Fisherman on Gramophone Records, with Commentary. 8.35, Concert of Scandinavian Music by the Station Orchestra, conducted by Willy Hahn: A Summer Night on the Fiords (Schiedlerup); Melody from the Suite, From Finland (Palangren); Norwegian Rhapsody Op. 24 (Halvorsen); Two Swedish Dances (Anfin); Swedish Rhapsody; Midsonnarvaka (Miven). 9.30, Humorous Programme. 10.0, News. 10.15 (approx.), Dance Music, relayed from the Delphi Palace. In the interval at 11.0, 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
956 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 and Lottery Results. 7.35, Talk: Bordeaux a Century Ago. 7.50, Clarades and News. 8.30, Gramophone Music. 8.45, The Orchestre—Oratorio (Frank), for Choir, Orchestra and Soloists, relayed from the Casino, Vichy. After the Programme, Time Signal.

BRATISLAVA
1,076 kc/s, 279 metres; 11 kW.—6.40 p.m., Gramophone Music. 6.55, Talk for Housewives. 7.0, See Prague. 7.40, See Moravská-Ostrava. 7.55, See Prague. 9.5, See Moravská-Ostrava. 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.—1.5 p.m.,

MONDAY

AUGUST THE FOURTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Promenade concert from Queen's Hall.
LONDON	Songs of the Sea. Choral programme.
REGIONAL	
MIDLAND	Military Band programme.
REGIONAL	
NORTH	Songs of the Sea. Orchestral concert.
REGIONAL	
WEST	"The Little Shop," a play, by Cyril Maude.
REGIONAL	
SCOTTISH	The Silver Citizens present "Duty Works"; feature programme.
REGIONAL	
BELFAST	"Holiday Parade," feature programme.

ABROAD

BARCELONA	7.0 p.m. The Radio Trio.
BARI	8.35 p.m. Opera: "I Carnasciali," by Lacetti.
BRUSSELS	9.0 p.m. Concert from the Casino, Knocke.
(No. 2)	
COPENHAGEN	10.15 p.m. Orchestral concert, conducted by Launy Grøndahl.
RADIO PARIS	4.30 p.m. Harp recital, by Marcel Grandjean, from Fontainebleau.
STRASBOURG	3.30 p.m. Orchestral concert. 8.45 p.m. Oratorio: "The Beatitudes," by Franck, from the Casino, Vichy.
WARSAW	9.0 p.m. Operetta: "Die Teresina," by Oscar Straus.

Gramophone Concert of Fairy Music. 1.45, Time and News. 2.5, Gramophone Concert of Light Music. 2.40, Talk: Spain and the Nationality Question. 3.0, Agricultural Prices. 3.20 (from Gleiwitz), Talk: Woman's Position in the Old Germanic Tribes. 3.40, Book Review. 4.0, Concert by the Small Silesian Philharmonic Orchestra, conducted by Hermann Behr: Overture, Alessandro Stradella (Flotow); Selection from Aida (Verdi); Ballet Suite from Ritter Pasman (Joh. Strauss); Spanish Dances (Moszkowski); March, Fürs Vaterland (Müllbeker). 5.30, Agricultural Prices. 5.35 (approx.), Talk on German Culture. 5.50, Talk: The Life of Carl Maria von Weber. 6.20, Talk: The German Theatre and the National Movement. 6.50, Weather, News, and Market Prices. 7.0, Transmission for all German Stations; Concert of Music by Silesian Composers: The Station Orchestra and a Symphony Orchestra, conducted by Franz Marszalek; Fantasia on the Choral, Ein feste Burg ist unser Gott (Voelckel); Scherzo from the First Symphony (Buchal); Serenade for Strings (Suzuka); Upper-Silesian Dance Suite (Stricker). 8.0, Programme to be announced. 8.20, Schiff unter Dampf (A Ship under Steam) Propaganda Radio Play for Workers (Ludwig Lüttjohann). 9.10, Talk: The First National Socialist Radio Exhibition. 9.20, Pianoforte Recital by Franz Bollau. 10.0, Time and News. 10.25, Talk on Austria. 10.50, Wireless Hints. 11.0, Talk: Making Films under Difficulties. 11.20 (approx.), Close Down.

BRNO
878 kc/s, 332 metres; 35 kW. 6.25 p.m., German Transmission; News, Book Review and Talk. 7.0, See Prague. 7.40, See Moravská-Ostrava. 7.55, Pianoforte Recital. 8.20, See Prague. 8.45, Humorous Programme. 9.5, See Moravská-Ostrava. 10.0, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)
I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Gramophone Music. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Emile Lauwers. Overture, The Bohemian Girl (Falck); Waltz, Violets (Waldteufel); Suite, Woodland Sketches (Maedlowell); Liebestraum (Liszt); Rattle of Spring (Sinding); Selection from The Merry Widow (Lehar); Si j'étais jardinier (Chaminade); Nocturne (Faure); Melodie enchantresse (Ackermann). 5.0, Dance Music by Mickey's Club, relayed from the Casino Knocke. 6.0, Talk: Pisciculture. 6.15, Gramophone Records, L'heure espagnole (Ravel); Overture, The Grand Duchess of Gerolstein (Offenbach). 7.15, Talk: Authors and Music. 7.33, Film Review. 8.0, Gramophone Concert. Intermezzo from Cavalleria rusticana (Mascagni); Two Pieces from Paris-Madrid (Guerrero); Mazurka (Zarzycki); Barcarolle

from The Tales of Hoffman (Offenbach); Romanza andaluzza (Sarason); S'konte ein Vogel gelogen (Behl). 8.30, Le Personnage de Pierre—Radio Sketch (Tongel). 8.50, Overture, Di Balls (Sullivan), on Gramophone Records. 9.0, Concert relayed from the Kursaal, Ostend. After the Concert, Le Journal Parlé, followed by Dance by Robert Kers and his Cabaret Kings and the Orchestra tipica de tan gos argentinos, relayed from the Kursaal, Ostend.

BRUSSELS (No. 2)
N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish. 12.0 Noon, Concert by the Small Station Orchestra, conducted by Emile Lauwers: Gipsy Waltz (Ketteboy); Overture, The Bartender Bride (Smetana); Extase (Ganne); The Golden Spinning Wheel (Dvorak); Waltz, Hommage aux dames (Waldteufel); Selection from Le cœur et la main (Lecocq); Gipsy Song, Alma de Dios (Serrano); Serenade for Flute and Cello (Fili); Guitare (Bizet); Foxtrot (Katt). 1.0 p.m., Le Journal Parlé. 1.10, Extracts from Taubhäuser-Opera (Wagner), on Gramophone Records. 5.0, Dance Music by Robert Kers and his Cabaret Kings and a Tango Band, relayed from the Kursaal, Ostend. 5.45, Programme for Children. 6.30, Gramophone Music: The Scottish Symphony (Mendelssohn); Till Eulenspiegel's Merry Pranks (R. Strauss). 7.15, Talk. 7.30, Le Journal Parlé. 8.0, Overture, Egmont (Beethoven), on Gramophone Records. 8.10, Vromvenhart—Radio Play (Sabbe). 8.45, Talk on William of Orange. 9.0, Concert, conducted by Karel Candaal, relayed from the Casino, Knocke; Soloist, Joseph Bogatchevsky (Tenor); Overture, Le Roi des Aulnes (Benoit); Romance in F for Violin and Orchestra (Beethoven); Tenor Solos: (a) Aria from Act II of Werther (Massenet), (b) Serenade (Gounod); Scènes alsaciennes (Massenet); Tenor Solos: (a) Aria from The Queen of Spades (Tchaikovsky), (b) Aria from Orpheus (Glück); Spanish Rhapsody, España (Chabrier). After the Concert, Le Journal Parlé and Dance Music by Mickey's Club Band, relayed from the Casino, Knocke.

BUCHAREST
761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra. Turkish March (Beethoven); Valse d'amour (Moszkowski); Overture, Le Maschere (Mascagni); Italian Suite (Kostol); Selection from The Czardas (Lehar); Selection from Rigoletto (Verdi); Torch Dance (Meyerbeer); Souvenir de Bitolia (Karastoyanov); Valencia (G. de Mieloff). In an interval at 6.0, Radio Journal. 7.0, Reading. 7.25, Gramophone Music. 7.40, Educational Talk. 8.0, Chamber Music on Gramophone Records. 8.30, Talk. 8.45, Harp Recital. 9.15, Orchestral Concert, relayed from the Iordachescu Restaurant. 9.45, Radio Journal.

BUDAPEST
545 kc/s, 550.5 metres; 18.5 kW.—Also relayed on 840 metres from 7.50 p.m. till Close Down. 5.0 p.m., Talk. 5.30, Pianoforte Recital. 6.0, Talk. 6.30, Concert. 7.20, Reading. 7.50, Song Recital. 8.45, Concert by the Opera House Orchestra, conducted by Ernst Dohnanyi. 10.0, News. 10.10 (approx.), Concert by the Lajos Kiss Cigány Band, relayed from the Hotel Gelert. 11.15, Concert, relayed from the Café Simphon.

CASSEL—See Frankfurt.

COPENHAGEN
1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 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, Interval. 2.50, Hints for the Housewife. 3.0, Concert by the Radio Orchestra, conducted by Emil Reesen. Soloist: Elsa Sigfuss (Songs); Overture, Trillingsbrodrene fra Damaskus (Kuhlau); Orchestrenuett (Haydn); Selection from The Suite antique (Halvorsen); Selection from L'Africaine (Meyerbeer); Waltz, Wiener Blut (Joh. Strauss); Slav March (Tchaikovsky); Icelandic Songs, Overture, The Gallop of Bagdad (Delibes); Waltz, Frühlingsstimmen (Joh. Strauss); Peer Gynt Suite No. 2 (Grieg); Overture, Die schöne Galathee (Suppé). 5.0, Gramophone Concert. 5.35, Exchange and Fish Market Prices. 5.50, Talk. 6.20, Elementary English Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.30, Talk: Modern English Literature. 8.0, Chimes from the Town Hall. 8.5, Othello—Drama in Five Acts (Shakespeare). After the Programme, Weather. 10.0, News. 10.15, Orchestral Concert, conducted by Launy Grøndahl. March, The Gladiators' Farewell (Blankenburg); Waltz, Estudiantina (Waldteufel); Chant érepsculaire (Brusselmans); Selection from Tosca (Puccini); Three Dances from The Bartender Bride (Smetana); Dance of the Hours from La Gioconda (Ponchielli). 11.0 (approx.), Close Down.

CORK—See Athlone.

CRACOW
959 kc/s, 312.8 metres; 1.5 kW.—7.5 p.m., Talk: The Mystery of the Double Lake in the Tatras Mountains. 7.20, Miscellaneous Items and News. 7.35, Programme Announcements. 7.40, Dialogue, relayed from Lwów, 788 kc/s, 381 metres. 8.0, See Warsaw. In the interval at 10.25, 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. 4.30, Programme for Children. 5.0, Concert for Chichester and Bognor Listeners: Signature Tune; The Night by the Sea; Loin du feu (Gillet); Washboard Blues (Callahan); Xylophone Solo, Snappy Sticks (Arr. Robous); Kitty, my Love, will you Marry Me; Comme on fait son lit on se couche; I wish I knew a bigger Word than Love; My Baby just cares for me. 5.30 to 6.0, Concert for Hastings and Eastbourne Listeners: The Standard of St. George (Alford); Prælude (Jarnfeldt); March Past of the Brigade; Selection from The Belle of New York (Kerker); Vulcan's Song from Philémon et Baucis (Gounod); Valse triste (Sibelius); The Gay Highway (Drummond); Mons. Scar March; Signature Tune. 6.0, Programme in French. 10.0 (approx.) till Close Down. Programme in English by the I.B.C. 10.3, Dance Music: Signature Tune; Belles of Normandy; Sweetheart; Moon Song; Rosa mio; Ich liebe Dich, my Dear; Night shall be filled with Music; Mad about the Boy; You're my Everything; Let's all Dance the Polka; Moonlight, the Danube and You; Farewell Blues; Sing a new Song; Watch the Navy; You can make my life a Bed of Roses; Shuffle off to Buffalo; Fit as a Fiddle; Marching along together; Castles in the Sand; Signature Tune. 11.0, Club Concert for Felixstowe Listeners; Part I: Orchestral Music with Songs: Signature Tune, The Chum Song; Lovin' You; Song, Coming thro' the Rye (arr. Smart); Song, For You Alone (O'Reilly); The Dwarfs' Patrol (Batlike); Xylophone Solo, Spanish Dance (Moszkowski); Vienna, Vienna (Foss); Song, I hear a thrush at eve (Cudman); Oriental Serenade (Herbert); Part II: Music by a Tango Band: Will you dance through life with me? (Swabach); El canto della Nessa (Bixio); There was a poor Musician (Schwartz); Conchita (Mateo); A mia Rosa (Simons); Marion (Hollander); Farewell (Budy); Te fuiste je ja (Matos); Signature Tune. 12.5 a.m. (Tuesday), I.B.C. Late News Bulletin in English. 12.10 (approx.), Choral Concert: Japanese Sunset; The Hills of Home; Selection from The Gipsy Princess (Kalmán); Come where my Love lies Dreaming. 12.30, Dance Music: Signature Tune, Belles of Normandy; Where is this Lady? All over Italy; Forty-Second Street; I shall still keep Smiling along; Something came and got me in the Spring; A Boy and Girl were Dancing; Balloons; Willow weep for me; Signature Tune. 1.0, Light Music: The Capricious Musical Box (Presno); In Tulip Time beside the Water Mill (Albort-Niel); Wexford Lassies; Homing (del Riego); The Wedding of

AUGUST 14th

MONDAY

continued

the Painted Doll; Song; To You it's only Ireland (Stroud); Beautiful (Shay). 1.30, Dance Music; Signature Tune, Bells of Normandy; One Little Quarrel; You'll never get up to Heaven that Way; Forty-Second Street; The Grass is getting greener all the Time; The Lady I love; Isn't it Romantic? Brighter than the Sun; Signature Tune. 1.58, I.B.C. Goodnight Melody. 2.0, 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.—6.0 p.m., A German Almanac. 6.15, Variety Items. 6.25, Talk: The Skilled Trades in the New Educational Programme. 6.45, Today's News. 6.50, Time and News. 7.0, Transmission for all German Stations relayed from Breslau. 8.0, Concert by the Worms Chamber Music Society; Sonata in A No. 4 (Pachelbel); String Quartet in D Op. 2 No. 2 (Aspilmayr); String Quartet in C Op. 5 No. 1 (Richter). 8.45, Russian Anecdotes.—Humorous Programme with Songs. 9.30, Baritone and Pianoforte Recital by Eugen Schmidt-Carlen and Heinz Schröter: Three Songs (Schumann); Pianoforte Solos (Reger): (a) Episode in B minor, (b) Tagebuch in E, (c) Episode in D minor; Two Songs (H. Wolf); Five Etudes (Schröter); Two Songs (Reger). 10.20, Time and News. 10.45, Orchestral Concert relayed from Wiltz, Luxembourg.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBERG.—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., Hamburg, Bremen and Lübeck—Report on Events in the Hanseatic Free Cities. 6.0, Reading from the Works of Carl Budich. 6.25, Talk. 6.45, Frankfurt Exchange. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Political Talk. 8.10, Alfred Brühl Radio Play—on the Life of a Naturalist (Erik Brädt). 9.10, (from Kiel), Concert of Chamber Music. Kithie Trass (Soprano), August Schreihage Kithie (Violin), Karl Zaubitzer (Viola), Hans Hilbrand (Cello), and Hans Döring (Pianoforte). Serenade, Op. 126, No. 2 for Violin, Cello and Pianoforte (Reinecke); Soprano Solos (Rhode): (a) Des Kindes Gebet, (b) Mutterründe; Adagio from the Sonata, Op. 70 for Violin and Pianoforte (Niemann); Soprano Solos (Woysech): (a) Die schlankte Wasserlilie, (b) Weil auf mir du dunkles Auge; Quartet, Op. 272 for Violin, Viola, Cello and Pianoforte (Reinecke). 10.10, Time and News. 10.30, Topical Programme. 10.40, (from Kiel), Concert by the Kiel Orchestra of Unemployed Musicians. Conductor: Hans Döring. March, Mein Deutschland (Silwedel); Overture, Michel Angelo (Galle); Melody (Wolf-Ferrari); Serenade, Eine Kleine Nachtmusik (Mozart); Marin-Indes, Lütchen (Jensen); March (Reuss); Overture, Lisola desabitata (Haydn); Lyrical Melodies (Mascagni). Storehschnäbel-Galopp (Fahrbach); Selection from The Arabian Nights (Joh. Strauss); March, Hoch Rheinland (Montana).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 275.6 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert. 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, Songs to the Lute by Walter and Aenne Pudelko. 4.0, Wireless Talk. 4.20, Concert by the Königsberg Opera House Orchestra. In an interval at 5.0 (approx.), Anniversaries of the Week. 5.45, Talk: The Light Side of an East Prussian Soldier's Life. 6.0, Talk: The Work of the East German Fair. 6.15, Agricultural Prices. 6.25, (from Danzig), Talk: The Artushof of Danzig and its Art Treasures. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Weather and News. 8.10, Cello and Pianoforte Recital by Hermann Driehel and Richard Kirsch. Variations on Two Themes (August Franckhomm); Largo (Werkmeister); Minuet (Werkmeister); Valse Caprice (Werkmeister). 8.40, Dr. Heinrich Bauer reads from his Book, Oliver Cromwell. 9.15, Baritone Recital by Orwin Graber. 9.40, Elementary English Lesson. 10.5, Weather and 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.). 11.40 a.m., Police Announcements. 11.55, Gramophone Music. 12.10 p.m., Organ Recital by Jan Zwart. 1.40, Gramophone Music. 2.25, Gastronomical Talk. 2.55, Gramophone Music. 3.25, Interval. 3.40, Bible Reading, and Songs. 4.40, Gramophone Music. 4.55, Song Recital by Johannes de Heer, with Violin Accompaniment. 5.55, Gramophone Music. 6.10, The Letter Box. 6.40, Police Announcements. 6.55, Religious Information. 7.40, Gramophone Music. 7.55, Concert by the Amsterdam Salon Orchestra, conducted by Kicken; Overture, The Bohemian Girl (Balfe); Nocturne (Fleischmann); Selection from Hansel and Gretel (Humperdinck); Promenade (Beethoven); Selection from The Count of Luxembourg (Lehar); The Clock and the Dressed Figures (Kotzebue); March, Semprevanti (Telesing). 8.40, Talk. 9.10, Concert (cont'd.); Overture, Così tutti (Mozart); Minuet in G (Beethoven); Hungarian Dances Nos. 5 and 6 (Brahms); Mazurka (Godard); Selection from Lakmé (Delibes); Three English Dances (German); Extase (Ganne); Hungarian March (Fueck). In the interval 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. 11.40 a.m., Gramophone Music. 11.55, Concert of Light Music by Kovacs Lajos and his Orchestra. In the intervals, Gramophone Music. 1.40 p.m., Recitations. 2.10, Concert by the Arnhem Quartet; Quartet, Op. 77 No. 1 (Haydn); Quartet, Op. 3 (Rabaudi). 3.25 to 3.40, Interval. 3.40, Violin Recital by Harry van de Lijn. Concerto in D minor (Tartini); Spanish Serenade (Glazunov-Kreisler); Malaguena (Albeniz-Duskin); Der Nussbaum (Schubert-Auer); Waltz (Tchaikovsky-Auer). 4.10, Talk with Gramophone Illustrations: The Songs of Schubert. 5.10, Concert by the Wiener Bohème Orchestra. 6.10, Book Review. 6.40, Concert (cont'd.). 7.10, Pianoforte Recital by Gisela Binz; Chromatic Fantasia and Fugue (Bach); Nocturne, Op. 15 No. 2 (Chopin); Mazurkas (Chopin): (a) Op. 63 No. 3, (b) Op. 59 No. 3; Scherzo in B minor, Op. 31 (Chopin). 7.40, Time. 7.41, News. 7.55, Concert of Opera Music. Prelude to Loreley (Catalani); Cavatina from The Barber of Seville (Rossini); Act IV of Rigoletto (Verdi); Selection from The Force of Destiny (Verdi). 9.40, Gramophone Music. 9.55, Dance Music relayed from the Palermo. Scheveningen. 10.40, News. 10.50, Dance Music (cont'd.). 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 1.15, Radio Concert. 8.0, Amusement Guide and News. 8.10, Sports Notes. 8.25, Press Review. 8.30, Radio Concert. 8.45, News and Weather Report. 9.0, Literary and Musical Programme.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.5 p.m., Talk: The World Jamboree. 7.25, Announcements and Gramophone Music. 7.40, See Warsaw. Dialogue relayed from Lwow, 788 kc/s, 381 metres. 10.45 till Close Down, Dance Music.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

LAHTI

167 kc/s, 1,796 metres; 40 kW. Relayed by Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Talk. 6.25, Pianoforte Recital. 6.45, Humorous Programme. 7.0, Orchestral Music. Melodies from La Juvie (Halévy); Waltz, Barcarolle (Waldteufel). 7.25, Talk. 7.50, Song Recital. 8.15, Concert of Finnish Music. 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.—12.10 p.m., Concert of Light Music by the Fröhliche Fünf. 12.50, News. 1.0, Concert by the Aachen Orchestra of Unemployed Musicians conducted by Joseph Kreutz, relayed from the Kurhaus, Aachen. In an interval at 2.0 (approx.), News. 2.30, Market Prices. 3.0, Programme for Children. 3.30, Economic Notes and Time. 3.50, Programme for Young People. 4.30, Reading of Unpublished Works (Hilde Heisinger). 4.50, Political Address. 5.0, Gramophone Records. 5.30, Programme for Parents. 6.0, Orchestral Concert conducted by Eysoldt: Festival Overture (Lassen); Minuet (Beethoven); Improromptu in A flat (Schubert); Hungarian Rhapsody

No. 14 (Liszt); Waltz, Lullaby (Mielchi); March, Deutschlands Heldensöhne (Dürksen). 6.45, Announcements. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Announcements. 8.5, Lecture on International Law by Dr. Karl Schmitt. 8.35, The Trials of Great Composers, Past and Present—Literary Programme (arr. Adolf Raskin), with Gramophone Illustrations: Beethoven rejected; A Cat endangers Bossini's Fame; The Tamhäuser Uproar; Intrigues against Mozart; A Storm of Public Opinion against Puccini; Brahms hopes for Better Times, and so on. 10.0, A Flying Visit. 10.15, News. 10.30, Light Music 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. Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon, Orchestral Concert, conducted by Hermann Henkel. In the interval at 1.0 p.m., News. 2.0, News. 2.10, Art and Film Report. 3.0, Talk for Women. 3.35, Market Prices. 4.0, Humorous Programme. 4.30, Organ Recital by Arthur Eger, relayed from the cathedral, Freiberg: Prelude and Fugue in C (Bach); Two Choral Preludes (Pachelbel): (a) Wie schön leuchtet der Morgenstern, (b) Allein Gott in der Höh sei Ehr; Concerto in A Minor (Bach); Prelude and Fugue in C (Bach). 5.0, Reading. 5.20, Recital of New German Songs by Hans Fesl (Baritone). 6.0, Talk: The Kabbari Expedition. 6.15, Talk: Hugo Wolf and Richard Wagner. 6.50, Today's News. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Agricultural Talk. 8.20, Military Band Concert, conducted by Hermann Thiele. In the interval at 9.0, Radio Report of Military Manoeuvres. 9.45, All Kinds of Animals—A Radio Sequence (Hans Eiel). 10.20, News. 10.30 (approx.), Orchestral Concert, conducted by Theodor Blumer: Overture, Die beiden Schützen (Lortzing); Selection from Kulturgen (Kienzl); Suite for Small Orchestra (Rinkens); Piedmontese Dances Nos. 1 and 2 (Singaglia); Waltz Potpourri (Joh. Strauss); Selection from Der Feldprediger (Müllacker). 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—7.0 p.m., Concert by the Station Orchestra. 8.0, Esperanto Lesson. 8.30, Programme relayed from Zagreb, 977 kc/s, 307 metres. After the Programme, Weather and News. 10.30, Gramophone Music. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—Austrian Programme. 7.30 p.m., Recital of Italian Songs and Arias by Gustave Simon. 8.15, Weather Report. 8.20, Gramophone Music. 8.50, News in French. 9.0, Orchestral Concert, conducted by Henri Pensis: Overture, Die Fledermaus (Joh. Strauss); Waltz, Hofballtanz (Lanner); Selection from The Czarevitch (Lehar); Kleiner Wiener Marsch (Kreisler); Schön Rosmarin (Kreisler); Waltz, The Blue Danube (Joh. Strauss); O Jugend, wie bist du so schön (Abt); Potpourri, Servus Wien (Dostal). In an interval at 9.55, News in German. 10.25, Dance Music on Gramophone Records.

LYONS

LA DOUA (PTT), 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. 8.30, Lottery Results. 8.45, The Beatitudes—Oratorio (Franck), by Choirs, Orchestra and Soloists, relayed from the Casino, Vichy.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange and Radio Journal. 8.20 (approx.), Concert: Part I: Flamenco Songs by Angel Perez; Part II: Recitations by Carlos Muñoz Lopez; Part III: Asturian Songs and Recitations by Mariano Martinez, with Guitar Accompaniment. 9.15, News. 9.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.45 p.m. till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by J. Plichta. Polonaise (Dvorak); Selection from The Tales of Hoffmann (Offenbach); Waltz and March from Andersen (Sedba); Sicilian Suite (Marianuzzi); Humoresque (Smickek); March (Döfler). 3.55 to 4.0, See Prague. 5.45, Gramophone Music. 5.55, Talk: The Importance of Gymnastics. 6.5, Gramophone Music. 6.15, See Prague. 7.10, Bagpipe Music. 7.40, Talk: Burglars. 7.55, See Prague. 9.5, Concert by the Station Orchestra, conducted by Musil. 10.0, See Prague. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—3.0, Gramophone Concert. 4.0, Talk. 4.30, Russian Literary Programme. 5.30, Extracts from Operettas. 6.30, Symphony Concert, relayed from the Recreation Park. The Orchestra, conducted by Hamburg. Soloists: Djakov (Pianoforte) and Kusmina (Soprano). 9.0, News. 9.30, Programme Announcements. 9.55, Chimes. 10.5, Press Review.

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.—4.30 p.m., See Leipzig. 5.45, Two Nature Stories (Erich Kühne). 6.5, Concert of German Folk Songs. 6.25, Book Review and Reading (Carl Schmitt). 6.45, Time and News. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, A Farewell Concert by the Small Station Orchestra, conducted by Erich Kloss. Soloists: Martha Martensen (Soprano), Hugo Reker (Violin) and Georg Trübner (Cello). 9.0, White Coal in Bavaria—a Radio Picture of an Electrical Future (O. W. Gail and Kühne-Helmsen). 10.0, Serenade, Op. 25 (Beethoven), for Flute, Violin, and Viola. 10.20, Time and News. 11.0, Concert of Light Music. In the intervals, Humorous Items by Willy Hahn and Elsa Döhler. 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., Chamber Music by the Radio Ensemble. 6.30, Sports Talk. 7.0, Announcements and News. 7.30, Song Recital by Helene Salt; Plaisir d'amour (Martini); Printemps nouveau (Vidal); Night (Tchaikovsky); Aria from The Enchantress (Tchaikovsky); Berceuse (Gretchaninov); The Nightingale (Rimsky-Korsakov); Modersorg (Grieg); I Vaagledan (David Mourad Johansen); Kløveren (Backer-Grøndahl); Aria from Die teten Augen (d'Albert); Aria from Die Bohème (Puccini). 8.0, Time Signal. 8.1, Recitations. 8.30, Pianoforte Recital by Robert Riefling. 9.10, Political Talk. 9.45, Weather and News. 10.0, Topical Talk. 10.15, Classical Music on Gramophone Records. 11.0 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Notes, Tourist Report, Agricultural Notes, Giornale Radio, and Report of the Royal Geographical Society. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Concert of Chamber Music, Clara and Maria Boutivegna (Violin and Pianoforte); Emilia Russo (Soprano); Sonata in D for Violin and Pianoforte (Beethoven). Songs: (a) Il pescatore canta (Tosti), (b) Parlano d'amore il cielo e il mare (Avena); Toccata and Fugue for Pianoforte (Frescobaldi-Respighi); Violin Solos: (a) Zampognara (Remy Principo), (b) Berceuse (Favre), (c) Rondo (Mozart); Songs: (a) Vergebbelichs Ständchen (Brahms), (b) Melody (Donaudy); Neapolitan Rhapsody for Pianoforte (Castel-Tedesco). 10.15, 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., Theatre Notes. 7.0, Le Journal Parlé. 8.45, Les Beatitudes—Oratorio (César Franck), 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, Le Journal Parlé. 7.30, Hot Jazz on Gramophone Records. 8.0, Gramophone Music. 8.30, Song Recital by Fleischmann, Songs (Brahms): (a) Mainacht, (b) Alte Liebe, (c) Feldeinsamkeit. Songs (Hugo Wolf): (a) Anakreons Grab, (b) Verborztheit; Lo omus (Birnbaum); Schomerji-roel (Rosenblatt); Hebrew Songs, Hakotel (Engel). 9.10, Gramophone Concert: The Surprise Symphony (Haydn); Aria from Lakmé (Delibes); Song from The Gypsy Baron (Joh. Strauss); Selection from La vivandière (Godard); Aria from Tosca (Puccini). 10.10, 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 Concert: Arab Melody (Glazunov); Burlesque (Kreisler); La Capricieuse (Ries); Allegro (Piacco). 8.0, Weather and Press Review. 12 Noon, Opera Music on Gramophone Records: Overture, Il Seraglio (Mozart); Polissena's Song from Radamisto (Handel); Song from Armide (Gluck); Two Songs from

AUGUST 14th MONDAY continued

The Magic Flute (Mozart); Ballet Music from Faust (Gounod); Duet from Romeo and Juliet (Gounod); Prelude to Act 1 of Lohengrin (Wagner); Song from Valkyrie (Wagner); Song from Tannhauser (Wagner); Song, Prelude to Act III and Entry of the Apprentices from The Mastersingers (Wagner); Three Songs from Carmen (Bizet); Nocturne from La Navarraise (Massenet); Two Songs and Duet from Louise (Charpentier); Song from L'Attaque du moulin (Bruneau); Symphonic Extracete from Messidor (Bruneau). In the intervals at 1.0 p.m., Exchange, News and Weather, and at 1.30, Exchange, 2.0, Exchange, 3.45, Market Prices, 4.30, Harp Recital by Marcel Granjany, relayed from the American Conservatoire at Fontainebleau; Rhapsody (Granjany); L'Egyptienne (Rameau); Adagio (Mozart); Concerto in B flat (Handel); Sonata in G minor (Gretchaninov); Impromptu (Fauré); Largo (Bach); La comière (Cooperin); Minuet (Ravel); Two Popular Songs (Granjany); Souvenirs (Granjany); Children at Play (Granjany); Legende des Elfes (Rouff); 6.15, Interval, 7.0, Exchange and Racing Results, 7.10, Gramophone Concert: March (Charpentier); Masquerade (Lacôme); Song, Melancholy (Delmet); Spring Song (Mendelssohn); Die Spinnerin (Mendelssohn); Bonito d'Or (Pierce), 7.50, Commercial Prices and News, 8.0, Gramophone Concert: Overture, The Bartered Bride (Smetana); Song, Cordoba (Faluy); Spanish Dance (Granados), 8.30, News, 8.40, Review by Paul Reboux, 8.45, Les Beautés—Oratorio (Franck), relayed from the Casino, Vichy. In the interval at 9.15, News.

PITTSBURGH
KDKA, 980 kc s, 236 metres; 50 kW. Relayed by W8XK on 48.96 metres; and 25.27 metres.—7.30 p.m., Home Forum, 8.0, Betty and Bob, from New York, 8.15, Words and Music, from New York, 8.45, Human Values, 9.0, Radio Guild, from New York, 10.0, Programme to be announced, 10.15, Tazzan of the Ape, 10.30, Larry Larson, from New York, 10.45, Orphan Annie, from New York, 11.0, News Reeler, 11.15, Sports, A Song, 11.30, Pittsburgh Spotlights, 11.45, Lowell Thomas, from New York, 12 Midnight, Amos n' Andy, from New York, 12.15 a.m. (Tuesday), Programme to be announced, 12.30 to 3.0, New York Relay, 12.30, Meyer Davis' Orchestra, 1.0, Today and Yesterday, 1.50, Potash and Blumhutter, 1.45, Gould and Sheffer, 2.0, Sinclair Minstrels, 2.30, Melody Moments, 3.0, Silver Toppers.

PORSGRUND.—See Oslo.

POZNAN
656 kc s, 335 metres; 14 kW. 6.15 p.m., See Warsaw, 7.20, Miscellaneous Items and News, 7.35, Theatre Notes and Programme Announcements, 7.40, Dialogue relayed from Lwow, 7.88 kc s (381 metres), 7.59, Time Signal, 8.0, See Warsaw, 10.45, Time Signal, Sports and Police Notes, 11.0 (approx.), Close Down.

PRAGUE
614 kc/s, 489.6 metres; 120 kW.—2.50 p.m., See Moravská-Ostrava, 3.55 to 4.0, Exchange, 5.45, Gramophone Music, 5.55, Talk for Housewives, 6.5, Market Prices, 6.15, Talk: The Difference between Divorce and Separation, 6.25, News in German, 6.30, German Transmission: Talks; (a) Photography, (b) Book-keeping, 7.0, Chimes and News, 7.10, Concert by Vlnedráy Vocal Quartet, 7.40, See Moravská-Ostrava, 7.55, Serenade for Flute, Violin and Viola, Op. 11 (Reger), 8.20, Swedish Folk Song Recital by Dr. Zombat Zombatfalva, 8.45, Gramophone Music, 9.5, See Moravská-Ostrava, 10.0, Time and News, 10.15, German Talk, 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 6.20 a.m. (from Lausanne), Gymnastics, 12.28 p.m., Time Signal from Neuchâtel Observatory, 12.30, News, 12.40 (from Lausanne), Gramophone Music, 1.0 (from Lausanne), Financial Notes, 1.10 (from Lausanne), Gramophone Music (contd.), 2.0, Interval, 3.28, Time Signal from Neuchâtel Observatory, 3.30 (from Lausanne), Concert by the Radio Lausanne Orchestra, conducted by Almer, 5.0 (from Lausanne), Programme for Children, 5.20, Interval, 7.0 (from Lausanne), Talk of Camping, 7.15 (from Lausanne), Tourist Talk, 7.25 (from Lausanne), News, 7.30 (from Lausanne), Talk: In the Operator's Box at the Cinema, 8.0 (from Geneva), Violin and Mandoline Recital, 8.15 (from Geneva), L'Affaire de la Rue de Loureine Comedy (Labiche), 8.40 (from Geneva), Recital of Claude Debussy, Preludes by Marcel Mihaloff, 9.0 (from Lausanne), Concert by the Liege Trio, Trio No. 5 (Beethoven); Trio in G Minor (Chausson), 9.50, News, 10.0 (from Lausanne), Song/Recital, 10.30 (approx.), Close Down.

REYKJAVIK
250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme, 9.30, Weather Report, 9.40, Musical Programme and Announcements, 10.0, Chimes and News, 10.30, Read-

ing, 11.0, Popular Music by the Radio Quartet with Songs.

RIGA
572 kc/s, 525 metres; 15 kW. 6.30 p.m., Talk: Education in Modern Latvia, 7.0, Weather Report, 7.3, Humorous Programme, 7.30, Pianoforte Sonata (Janis Suchovs), played by the Composer, 8.0, News, 8.20, Humorous Programme (contd.), 8.40, Recital of Popular Romanian Songs, 9.0, Weather and News, 9.15, Humorous Programme, followed by Dance Music, 10.0 (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 from 5.15 p.m.—12.50 p.m., Gramophone Music, 1.50, Giornale Radio, 2.0, Time and Announcements, 4.30, Giornale Radio, 4.45, Children's Radio Review, 5.10, Weather, 5.15 to 6.0, Concert by the Rome Quartet, Soloists: Emilio Livi (Tenor), Dina Finmana (Soprano) and Dalmonite (Bass); Quartet in G Minor, Op. 27 for Two Violins, Viola and Cello (Grieg); Aria and Duets from L'elisir d'amore (Donizetti); Mânet in Rondo Form for String Quartet (Boccherini); Tenor and Soprano Solos from Mignon (Thomas), 6.40 (Naples), Shipping and Sports Notes, 6.45, Dopplvona Notes and Sports Notes, 6.45, Agricultural Notes and Tourist Report, 7.10, Languages, 7.40, Giornale Radio, 8.0, Time and Announcements, 8.5, Gramophone Music, 8.30, Giornale Radio and Sports Notes, 8.45, Don Giovanni—Opera in Two Acts (Mozart). In the intervals, Talk and Amusement Guide. 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., Book News by Levere Fuller, 9.15, Soloist, from New York, 9.30, Hill Billy Songs by Bradley Kincaid, 9.45 to 10.0 (approx.), Lady Next Door, from New York, 12.45 a.m. (Tuesday), Stock Reports and Baseball Scores, 1.0, Sonnyland Sketch, from New York, 1.30, Popular Programme, 1.45, Ferde Grofe's Orchestra, from New York, 2.0, A. and P. Gypsies, from New York, 2.20, Home Sense Philosophy, 2.45 to 3.53, New York relay, 2.45, Musical Programme, 3.0, Contented Programme, 3.30, Paul White-man's Orchestra, 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.—6.15 a.m. (from Basle), Gymnastics, 6.35, Interval, 11.59, Neuen Time Signal from Neuchâtel Observatory, 12 Noon (from Basle), Gramophone Records of Dajos Bela and his Band, 12.30 p.m., Time, Weather and News, 12.40 (from Basle), Sound Film Music on Gramophone Records, 1.25 (from Basle), Time, Weather and Exchange, 1.35 (approx.), Interval, 5.0 (from Zürich), Programme for Women, 5.30 (from Basle), Old and New Dance Music on Gramophone Records, 6.50 (from Zürich), Talk: Raw Silk, 7.0, Time and Weather, 7.5 (from Zürich), Gramophone Music, 7.50 (from Zürich), English Lesson, 8.0 (from Zürich), Concert by the Carmen Mandoline Orchestra, 9.0, Weather and News, 9.10 (from Zürich), Symphony Concert by Station Orchestra, 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 Boden), Dialogue, 5.30, Gramophone Music, 6.30 (from Östersund), Talk on Fishing, 7.0 (from Östersund), Violin Duets by Einar Persson and Arthur Johansson, 7.15, Weather and News, 7.30, Talk on Engineering, from Trollhättan, 1,193 kc/s, 252 metres, 8.3, Concert by the Station Orchestra, Soloist: Sven Nilsson (Songs), Nocturne, Elegy and Serenade from King Christian II (Sibelius); Aria from Eugene Onegin (Tchaikovsky); Recitative and Aria from Macbeth (Verdi); Serenade (Glazunov); Andante cantabile from Symphony No. 5, in E Minor (Tchaikovsky); Hagen's Aria from The Twilight of the Gods (Wagner); Wotan's Farewell from The Valkyrie (Wagner); Overture, Rienzi (Wagner), 9.15 (from Östersund), Talk on Archaeology, 9.45, Weather and

News, 10.0, Cabaret Programme, 11.0 (approx.), Close Down.

STRASBOURG
869 kc/s, 345 metres; 11.5 kW.—10.45 a.m., Festival Concert of Contemporary Belgian and Scandinavian Music, relayed from the Conservatoire; the Municipal Orchestra and Soloists; Conductor, Herrmann Scherchen; Piece for Organ (Leifs); Clarinet Concerto (Nielsen); Violin Concerto (Meigelberg); Scherzo from a Symphony (Malingreau); Ballad, A Voyage to America (Rosenberg); String Quartet (Presden); Chorus for Women's Voices (Laudré); Violin Solo, Sonata (Pijper); Song with Orchestral Accompaniment (van Lier); Fugue for Organ (Poot), 12.45 p.m., News, 1.0, Time, 1.1, Violin Recital by Dea Gombrieh; Sonata in G for Violin (Bach); Violin Concerto in A (Mozart), 2.0 to 3.20, Interval, 3.20, Orchestral Concert, relayed from the Casino, Vichy; Conductor, Brouillat; Overture, The Merry Wives of Windsor (Nicolai); Hymn to Saint Cecilia (Gounod); Meditation on a Prelude by Bach (Gounod); Ballet Music from Françoise de Rimini (Thomas); Song; Chant Laotien (Bourgaud-Duconray); Selection from Le jongleur de Notre-Dame (Massenet); Waltz, Jeunesse dorée (Gungl), 5.0, Lohr Gramophone Concert; Waltz from Schön ist die Welt; Selection from (a) The Merry Widow, (b) The Land of Smiles, (c) Paganini; Waltz, Gold and Silver; Waltz, Frühling wie bist dir so schön, 6.0, Film Review in French, 6.15, Talk in French: A Journey through Lorraine, 6.20, Pianoforte and Song Recital by Lisbeth Eschrich and Mme. Barth (Soprano); Sonata for Pianoforte (Gaboppi); Songs: (a) Chanson d'un papillon (Campra), (b) A Butterfly (Searlatt); Pianoforte Solos: (a) Tendre Nautette (Cooperin), (b) Mûsette in Rondo Form (Rameau); Two Songs (Nobokov); Pianoforte Solo, Under the Palms (Albeniz); Songs (Poulenc): (a) Air grave, (b) Air champêtre; Pianoforte Solo, Portraits d'enfants (Paray); Songs: (a) Echo (Labezy), (b) Berceuse triste (Lazzari), (c) Préséances (Barth), (d) Offrande (Barth), (e) Ton sourire (Barth), 7.30, Time and News, 7.45, Gramophone Concert of Light Music, 8.15, Press Review in German, Lottery Results, and Announcements, 8.45, The Beatitudes—Oratorio (Franck), by Choirs, Orchestra and Soloists, relayed from the Casino, Vichy; Conductor, Paul Paray. After the Programme, Press Review in French.

STUTTGART
MÜHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12 Noon, Concert by the Municipal Orchestra, conducted by Karl Assmus, relayed from Baden-Baden; Overture, The Barber of Bagdad (Cornelius); Suite in D (Bach); Ballet Music from The Merry Wives of Windsor (Nicolai); Selection from Die Pappene (Beyer); Military Fanfare (Ascher); Elfenreigen (Klose); Overture, Czar and Carpenter (Lortzing), 1.15 p.m., Time and News, 1.30, German Male Voice Choirs in Germany and America, on Gramophone Records, 2.0, Concert arranged by the Post Office, 2.30, Spanish Lesson, 3.0, Elementary English Lesson, 4.30 (from Mannheim), Concert by the Mannheim Philharmonic Orchestra, conducted by Hans Leger; Overture, Si j'étais roi (Adam); Waltz, Hofballzünge (Lanner); Selection from Martha (Flotow); Slav Rhapsody No. 2 (Friedemann); Waltz, Der Arme Jonathan (Müllcker); Overture, The Daughter of the Regiment (Donizetti); March, Unsere Gaidner (Förster), 5.45, Talk on Insects, 6.10, Käthe Kruse discusses her Career, 7.0, Transmission for all German Stations, relayed from Breslau, 8.0, The Brown Shirts on the March—Radio Sequence of Songs, Marches and Poems (arr. M. von Eyb and Fritz Gauss), 8.40, Radio Report from the Labour Service Camp near Pforzheim, 9.10, Ex-Soldiers' Anecdotes of the Great War, 9.30, Song Recital by Adelheid Holz (Soprano), 10.0, Time and News, 10.20, Gramophone Concert of Operetta Music, 11.0, See Munich, 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE
RADIOPHONIE DU MIDI, 779 kc/s, 385 metres; 8 kW.—6.0 p.m., Local News, 6.5, Pianoforte Solos, 6.15, Arias from Opera, Aria from L'Africaine (Meyerbeer); Aria from La Juive (Halévy); Aria from The Valkyrie (Wagner); Aria from Samson and Delilah (Saint-Saëns), 6.30, Instrumental Music, Serenade (Schubert); Erotica (Grieg); An den Frühling (Grieg), 6.45, Popular Songs, 7.0, Music by an Argentine Orchestra, 7.15, News, Racing Results and Market Prices, 7.30, Spanish Caprice (Rimsky-Korsakov), by a Symphony Orchestra, 7.45, Extracts from Opera, Aria from Philémon et Baucis (Gounod); Lament from I Pagliacci (Leoncavallo); Aria from Tosca (Puccini), 8.0, Music by a Viennese Orchestra, 8.30, Sound Film Music, 8.45, Violin Solos, 9.0, Concert Version of Aida (Verdi),

9.30, Concert by a Symphony Orchestra, Norwegian Dance (Grieg); Minuet in G (Beethoven), Overture, Idomeno (Mozart); Selection from Schwanda the Piper (Wienberger); Minuet (Schubert), 10.0, Bal musette, 10.15, North-African News, 10.30, Concert for Listeners in Morocco, 11.15, Popular Concert, 11.50, Orchestral Concert, Selection from The Duchess of Chicago (Kálmán); Extract from Pelléas et Melisande (Debussy); Cardas (Monti); Serenade (Toselli); The Musketeers (Riesentfeld), 12 Midnight, News, Weather and Announcements, 12.15 a.m. (Tuesday), Dance Music.

TRIESTE
1,211 kc s, 247.2 metres; 10 kW.—5.10 p.m., till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN
1,093 kc s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc s, 331.5 metres; Genoa, 985 kc s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 p.m., Orchestral Concert, 6.0 to 6.5, Weather, 6.40, Giornale Radio, Dopplvona Notes and Gramophone Music, 7.0, Time, Tourist Talk and Gramophone Music, 7.10, Market Prices, 7.20, News in Foreign Languages, 7.40, Gramophone Music, 8.0, News, Giornale Radio, Sports Notes and Weather Forecast, 8.15, Sponsored Concert, 9.15, A Comedy, 9.45, Chamber Music, 10.15, 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 Italian, 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 Wiener Symphoniker, conducted by Theodor Christoph. In an interval at 1.0 p.m., Time and News, 2.0 to 3.0, Interval, 3.0, Time and News, 3.20, Sports Talk, 3.35, Talk with Gramophone Illustrations: The Last Compositions of Great Masters, 4.35, Programme for Young People, 5.0, Talk: The Age of Speed, 5.25, Books of Reference in Connection with the Week's Talks, 5.30, Soprano and Baritone Recital by Milica Prica and Gustav Fikar, 6.10, Talk: Proverbs can prove Everything, 6.35, Talk: Mountaineering and Hiking, 7.0, Musical Landscapes, Concert by the Wiener Symphoniker, conducted by Rudolf Weirich: In the Steppes of Central Asia (Borodin); Overture, Fingal's Cave (Mendelssohn); Morning on the Moscow River (Mussorgsky); Ani der Campagna (R. Strauss); In the Tatras (Novak); Bulgarian Rhpsody, Vardar (Wladigrov). In an interval at 7.35, Time and News, 8.15, Topical Talk, 8.30, The Mikado—Operetta in Two Acts (Sullivan). In an interval at 10.0 (approx.), News, 10.45, Dance Music on Gramophone Records.

WARSAW
212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal from the Observatory and Fanfare from the Tower of St. Mary's Church, Cracow, 12.5 p.m., Popular Concert, relayed from the Café Bagatela; Overture, Mignon (Thomas); Waltz from Naila (Delibes); Bacchanale from Samson and Delilah (Saint-Saëns), 12.25, Polish Press Review, 12.33, Weather, 12.35, Concert (contd.); Selection from La Juive (Halévy); Violin Solo, Meditation, from Thaïs (Massenet); March foraine (Ganne), 12.55, Radio Journal, 1.0, 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, 4.0, Symphony Concert by the Poznan Opera House Orchestra, conducted by Tyllia, relayed from Crichocinek, 4.35, Song Recital by Luczaj (Bass); In questa tomba oscura (Beethoven); Aria from The Magic Flute (Mozart); The Two Grenadiers (Schumann); Stach (Kocembaum); Altes Lied (Grieg); Song (Rotoli), 5.0, Talk in French, 5.15, Concert of Light Music, conducted by Gorzynski, 6.15, Talk: The Reconstruction of the Agricultural System, 6.35, Song Recital by Roy (Tenor), 7.5, Gramophone Music, 7.20, Miscellaneous Items, 7.35, Programme Announcements, 7.40, Dialogue, relayed from Lwow, 7.88 kc/s (381 metres), 8.0, Die Teresina—Operetta in Three Acts (O. Strauss). In the intervals, Radio Journal, Answers to Agricultural Correspondence, Sports Notes, and Aviation and Police Report, 10.45, Dance Music on Gramophone Records.

WILNO
533 kc/s, 563 metres; 16 kW.—7.5 p.m., Miscellaneous Items, 7.20, Topical Talk, 7.35, Programme Announcements, 7.40, Dialogue relayed from Lwow, 7.88 kc/s (381 metres), 8.0, See Warsaw, In an interval at 9.20, Sports Notes, 12 Midnight (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

TUESDAY

AUGUST THE FIFTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL "Good Listening," relayed from the Theatre at the Radio Exhibition, Olympia.

LONDON REGIONAL Promenade concert from Queen's Hall.

BELFAST Light orchestral concert.

ABROAD

BRESLAU 5.0 p.m. The Station Orchestra, conducted by W. J. Dickow.

EIFFEL TOWER 8.30 p.m. Symphony concert, conducted by Flament.

HAMBURG 10.30 p.m. The Philharmonic Orchestra.

HEILSBURG 9.5 p.m. Extracts from operetta, "Lady Hamilton," by Künneke.

HILVERSUM 8.40 p.m. Concert by the K.R.O. Orchestra.

PALERMO 8.45 p.m. Opera: "Sly," by Wolf-Ferrari.

PRAGUE 4.0 p.m. Promenade concert by the Municipal Orchestra, from Teplice Sanov.

STRASBOURG 8.30 p.m. Festival concert of contemporary opera music, from the Municipal Theatre.

TURIN 9.0 p.m. Opera: "Il Trovatore," by Verdi, relayed from Verona.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.5 p.m. (approx.), Gramophone Concert of Classical Music. 1.45, Time and News. 2.0, Popular Music on Gramophone Records. 3.0, Agricultural Prices. 3.15, Book Review. 3.35, Programme for Children. 4.0, Soprano and Baritone Recital by Olly Stephan and Herbert Schröter. Songs (Loewe): (a) Heinrich der Vogler, (b) Fredericus Rex. Songs (R. Strauss): (a) Du meines Herzens Kränlein, (b) Wie sollen wir heimlich sich halten, (c) Befriet. Kleiner Haushalt (Loewe). Songs (R. Strauss): (a) Ruhe, meine Seele, (b) Zueignung, (c) Ständchen. Odins Meeresritt (Loewe). 4.40, Legal Talk. 5.0, Concert by the Station Orchestra, conducted by Werner Joachim Dickow: Overture, The Bartered Bride (Wagner); Fourth Movement from the Divertimento (Graener); Selection from Hansel and Gretel (Humperdinck); Scene from Der Evangelium (Kienzl); Valse des fleurs (Tchaikovsky). 6.0, Agricultural Prices. 6.5 (approx.), Talk: The Last Phase of the Capitalist Era. 6.20, Programme to be announced. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Concert by the Silesian Philharmonic Orchestra. Conductor: Fritz Lubrich. Soloist: Gertrud Gottschalk (Contralto). Symphony in G minor (Mozart); Overture, The Barber of Bagdad (Cornelius); Siegfried Idyll (Wagner); Two Songs: Marienloben for Contralto and Orchestra from Rilke's Marienloben (Lubrich); Patriotic Overture (Reger). 9.30, News. 9.40, Song Recital. 10.20, Time and News. 10.40, Political Press Review. 11.0 (from Gleiwitz), Light Music and Dance Music by the Emil Gleich Band. 12 Midnight (approx.). Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—5.30 p.m., Song Recital. 5.50, Gramophone Music. 6.0, German Transmission: August 15th—Radio Play (E. Smutnik). 7.0, See Prague. 8.0, Talk. 8.15, Recital of Slovak Folk Songs with Harpsichord Accompaniment. 8.40, See Prague. 11.0 (approx.). Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—10.0 a.m., Gramophone Concert. 12 Noon, Sacred Concert on Gramophone Records. 12.30 p.m., Violin Recital by Roger Heumant: Chaconne (Vivaldi); Poem (Crickboom). 12.45, Gramophone Music. 1.0, Le Journal Parlé. 1.10, Cello and Violin Recital by Lucien Degroot and Mlle. Broways: Piece (Gouperin); Habanera (Ravel); Intermezzo (Granados); Violin Sonata in D (Faure). 5.0, Report of a Religious Ceremony. 6.0, Literary Review. 6.15, Organ and Song Recital by Mme. Desfontaine-Persin and Frederic Anspach

(Tenor) for the Feast of the Assumption; Fantasia and Engine in G minor (Bach); La Procession (Frank); Choral in A minor (Abendtsolm); En priere (Faure); Ave Verum (Chausson); Choral (Bach). 7.15, Wireless Notes and Film Review. 7.30, Review for Women and Notes on Art. 8.0, Concert by a small Orchestra: Overture, La Dame blanche (Boieldieu); La veillée de l'ange gardien (Pierne); Chanson d'autrefois (Pierne); Serenade (Saint-Saens); Allegro appassionato for Violin (Prevost); Suite, Mother Goose (Ravel); Chopin Polpourri. 8.45, Talk: Religious Pilgrimages. 9.0, Concert relayed from the Kursaal, Ostend. After the Concert, Journal Parlé, followed by Concerto for Piano and Orchestra (Ravel) on Gramophone Records. 10.55, Christus Vincit (Liszt). 11.0, Dance Music relayed from the Kursaal, Ostend.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—10.0 a.m., Gramophone Concert. 12 Noon, Concert by the Small Station Orchestra, conducted by E. Lauwers. March from Athalie (Mendelssohn); Ave Maria (Gounod); Litany (Schubert); Prayer (César Franck); Prologue to Les Béatitudes (César Franck); Processional March (Wagner); Kleiner Wienermarsch (Kreisler); Suite from Les Brynnies (Massenet); Minnet (Bocherini). In the interval, Gramophone Music. 1.0 p.m., Le Journal Parlé. 1.10, Handel Concert on Gramophone Records. Overture, The Messiah; Gregorian Chants; (a) Assumpta est Maria, (b) Media Vita and (c) Urbs Jerusalem—O quam florifica; Selection from The Messiah. 5.0, Relay of the Service for the Sick from St. Walburga's Church, Antwerp. 5.45, Programme for Children. 6.30, Gramophone Music. Overture, Manfred (Schumann); Hymn (Kromolinsky); Ave Maria (Liszt); Nocturne (Chopin); Aria from Turandot (Puccini). 7.15, Talk: Games for Children. 7.30, Tourist Talk. 8.0, Rimsky-Korsakov Concert on Gramophone Records. The Easter Overture. Song from Sadko; Suite, Tsar Saltan; Dance of the Tumblers; Spanish Caprice. 8.45, Catholic Address. 9.0, Concert relayed from the Casino, Knocke. Conductor: Karel Candael. Soloist: Mme. Nespolos (Soprano). Dutch Rhapsody, Piet Hein (Van Anrooy); Piece for Trumpet and Orchestra from Der Trompeter von Säckingen (Nessler). Soprano Aria from Häkidiade (Massenet); The Nutcracker Suite (Tchaikovsky); Soprano Aria from Thais (Massenet); Waltz, Wiener Blut (Strauss). After the Concert, Evening Prayer, followed by Le Journal Parlé and Gramophone Music. 11.0, Dance Music by Mickey's Club Band, relayed from the Casino, Knocke.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Rumanian Music by the Motol Or-

ATHLONE

725 kc/s, 413 metres; 60 kW.—Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.30 p.m., Time Signal, Weather Report, Stock Exchange Quotations and Gramophone Music. 6.0, Programme for Children. 6.40, News. 7.0, Gaelic Reading. 7.15, Talk. 7.30, Time Signal. 7.31, Song and Pianoforte Recital by D. Jameson and D. Tresder. 8.0, Concert by the Station Orctel. 8.30, Tenor Solos by W. F. Watt. 8.40, Traditional Fiddle Solos by Patrick Clarke. 8.50, The Bend of the Road—a Play, by Jack Mac-Garvey and Company. 9.20, The Station Orctel (contd.). 9.35, Tenor Solos (contd.). 9.45, Sponsored Programme. 10.45, News, Weather Report and Close Down.

BARCELONA

EAJI, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Radio Trio. Selection from Fidelio (Beethoven); Eastern Romance (Haines); Entr'acte (Humphries); Selection from Le roi Fa dit (Delibes); An den Frühling (Grieg); Russian Song, Moskwa (Decker); Berceuse and Galop from Jeux d'enfants (Bizet). 8.0, Request Gramophone Music. 8.30, Exchange. 9.0, Gramophone Music and News. 9.15, Football Report and Gramophone Music. 10.0, Chimes, Weather, Messages for Seamen, Announcements and Exchange. 10.5, Sponsored Programme. 10.30, Concert by the Radio Orchestra. 11.15, Concert from the Café Español. 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., Agricultural Notes, Tourist Talk and Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), Concert by the Molfettese Quartet. Overture, Masaniello (Auber); Minuet (Licari); Il fascino di Bebé (Martingano); Selection from La Sonnambula (Bellini); Overture (Liprandi); Minuet (Beethoven); Tramonto d'estate sul monte Tonale (Salvetti); Moment musical (Schubert-Vizzosi); Bolero (Bonatti). In the interval, Talk. 10.30, Gramophone Music. 10.50, News in Albanian. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BERLIN

DEUTSCHLANDSENDER, R E I C H S -SENDER, 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Gramophone Concert. 3.0, Talk for Young People: How to Build a Boat. 3.30, Weather and Exchange. 3.45, Reading (Lena Christ). 4.0, See Leipzig. 5.0, Talk for Women. 5.20, Heinrich Sattler Song Recital by the Sattler Trio. Vorsprung; Hoffnung auf Gott; Sonntagssied; Lied der Vögelin; Durch Nacht zum Licht; Herbstmorgen; Murnelcher Bach; Wanderlied; Blauer Himmel; Vaterlandslied. 5.40, Suite, Op. 11 (Lichius) for Two Pianofortes, by Helmut Hildegert and Hermann Hoppe. 6.0, A Poem. 6.5, Talk: The Reformation of the Protestant Church in Germany. 6.30, Political Press Review. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Today's Motto. 8.5, Talk: Television at the Radio Exhibition. 8.15, Marches, Songs and Operetta Music on Gramophone Records. 9.15, Die Ferne—a Musical Journey (Text by Rossmann, with Music by Dombrowski). 10.0, News. 10.45, Weather. 11.0, Concert from Hamburg. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.25 p.m., Book Review. 6.40, The Witzleben Station Informs its Listeners... 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.5, Talk: A Flight over Africa. 8.25, Humorous Anecdotes from Old Prussia. 8.50, Talk: A Day in the School for National Leaders in Bernau. 9.0, Orchestral Concert, conducted by Paul Scheinping, relayed from the Kurhaus, Swinemünde. Soloist: Maria Peschken (Contralto); Selection from Orpheus (Gluck); Contralto Solo from Orpheus (Gluck); Suite, Op. 14 (Schubmann); Variations on a Theme of Haydn, Op. 56 (Brahms). 10.0, News. 10.30 (approx.). See Hamburg. In the interval at 11.0, Police Notes. 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). 6.71 kc/s, 447.1 metres. 7.30, News. 7.40, Lottery Results. 7.45, News. 8.0, Concert of Gramophone Music. 8.30, Soloist Concert. After the Concert, Time Signal.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.10 p.m., Gramophone Music. 6.55, Talk for Housewives. 7.0, See Prague. 8.15, See Brno. 8.40, See Prague. 11.0 (approx.). Close Down.

BREMEN.—See Hamburg.

chestra. In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Gramophone Music. 7.40, Educational Talk. 8.0, Song Recital. 8.20, Concert by the Station Orchestra: Overture, Rosamunde (Schubert); Ukrainian Suite (Morena); In the Mystic Land of Egypt (Ketelbey); Selection from The Little Dutch Girl (Kalman); Waltz, Dorfschwalben aus Osterreich (Jos. Strauss); Czeconienne (Leopold). 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 6.30 p.m. till Close Down.—3.0 p.m., Greetings from the World Jamboree. 4.15, Programme for Children. 4.50, Hungarian Folk Song Recital by Frau Bodan. 6.0, Talk. 6.30, Radio Report of the International Water Polo Championship. 7.10, Orchestral Concert. 8.0, Report from the World Jamboree. 9.50, Orchestral Concert, conducted by Polgar. 10.50, Cigány Band Concert, relayed from the Café Patria. 11.30, Greetings from the World Jamboree.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time, Chimes from the Town Hall, and Weather Forecast. 12.5 p.m., String Ensemble Concert, relayed from the Bellevue Strandhotel. 2.0, Interval. 3.0, Modern Danish Dance Music, by Sid Merriman's Soft Band. In the interval, Reading (Knut Poulsen). 5.0, Programme for Children. 5.35, Exchange and Fish Market Prices. 5.50, Talk: Chinese Opera in Singapore. 6.20, German Lesson for Beginners. 6.50, Weather and News. 7.20, Talk. 7.30, A Discussion. 8.0, Chimes from the Town Hall. 8.5, Programme relayed from the Tivoli. After the Programme, Weather and News. 11.0, Dance Music relayed from the Arena. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Wednesday), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—6.35 p.m., Programme Announcements. 6.40, Talk: Old Cracow. 6.55, Miscellaneous Items and News. 7.0, Dramatic Programme from Wilno, 533 kc/s, 563 metres. 7.40, See Warsaw. 10.0, Song Recital. 10.25, Sports Notes. 10.40, 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. 4.30, Programme for Children. 5.0, Concert for Torquay and Exeter Listeners: Signature Tune; The Night by the Sea; Sigh no more, Ladies (Sbvensen); Bonnie Mary of Argyll (Lauder); Accordion Nights; Come back to Erin (Claribel); Cello Solo: The Nightingale and the Rose (Rimsky-Korsakov); Soprano Solo: Ave Maria (Gounod); Selection from The Count of Luxembourg (Lehar). 5.30 to 6.0, Concert for Plymouth and Devonport Listeners: Princess Pat (Herbert); Serenata (Toselli); Violin Solo: Indian Love Call (Erml); My Hero, from The Chocolate Soldier (O. Straus); Song Melody; Violin Solo, Valse bleuet (Drigo); Selection from No. No. Nanette (Youmans); Lullie! at Life; Signature Tune. 6.0, Programme in French. 10.0 (approx.) till Close Down, Programme in English by the I.B.C. 10.0, Dance Music: Signature Tune, Bells of Normandy; Three Wishes; Put a Little Springtime in the Winter of their Lives; I'm one of the Lads of Valencia; On a Dreamy Afternoon; My Heart's to let; When You've fallen in Love; Her Name is Mary; One little Word led to another; Jack in the Box; Butterflies in the Rain; Old Father Thames; Well, well, well; Cheerful little Earful; The Jiggler; My Darling; The Grass is getting greener all the Time; I sigh for you, Rio Rita; Signature Tune. 11.0, Club Concert for Bury St. Edmund's Listeners: Signature Tune, The Chum Song; Overture, Mignon (Thomas); Pan and the Wood Godkins (Rathke); Pianoforte Solo: Liebersträume (Liszt); Song, Fairy Tales of Ireland (Coates); Pianoforte Solo: Rustle of Spring (Sinding); Hungarian Dance No. 11 (Brahms); Pianoforte Solo: Sonata in G (Searlatti); Song, The Crystal Spring (arr. Sharp); Balalika Solo, Caucasian Gipsy Song; Banjo Solo, St. Louis Blues; 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, Moonlight; Signature Tune. 12.5 a.m. (Wednesday), I.B.C. Late News Bulletin. 12.10, Variety Programme: The Ghost Walk; Vod-ling Mad; Sketch, The Tram Conductor; Rhapsody in Blue (Gershwin). 12.30, Dance Music: Signature Tune, Bells of Normandy; Sweetheart; Nightfall; The Girl in the little green Hat; A Bedtime Story; Same old Moon; Three Wishes; Put a little Springtime in the Winter of their Lives; Stormy Weather; Signature Tune. 1.0, Light Music: You're still in my heart

AUGUST 15th

TUESDAY

continued

(Dougherty); Just an Echo in the Valley (Woods); Try a little Tenderness (Woods); Paradise (Brown); Brother can you spare a Dime? (Hanbury); Sleep on (Korngold); I'm playing with fire (Berlin); A Ghost of a Chance (Washington). 1.30, Dance Music; Signature Tune, Bells of Normandy; Sylvia; That's my Home; Speak to me of Love; Under my Umbrella; Contented; How are You? What more can I ask? Roll along Kentucky Moon; Signature Tune, 1.58, I.B.C. Goodnight Melody, 2.0, 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.—6.0 p.m., The Nazi Regime in the Eyes of other Nations—a Book Review. 6.25 Talk on the Exchange. 6.45, Today's News, 6.50, Time and News, 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Songs to the Lute, by Hermann Munk. 8.45, Die Mörrchen—Peasant Radio Play (Josef Martin Bauer). 10.15, Time and News. 10.45, Concert from Hamburg.

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, 263.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—5.20 p.m., Military Band Concert. Coronation March from Die Folkinger (Kretschmer); Prelude to Lohengrin (Wagner); Extracts from The Master-singers (Wagner); Concert Overture in the Style of Frederick the Great's Time, Fredericiana (Zimmer); Cavalry March, The Grand Elector (Moltke); Finnish Cavalry March; Cuirassiers' Parade March (Halberstädter); March (Hirst); March, The Kaiser's Cavalry (Krüger); March (Pieke). 6.45, Frankfurt Exchange and Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations; Mockenberg a German Landscape—Radio Sequence. 8.0, Variety Programme by the Station Male Voice Choir and Quartet, and Soloists. 9.0, News. 9.10, Sien yerte Froo Dialect Play in One Act (Wroost). 10.0, News, Time and Weather. 10.20, Topical Talk. 10.30, Concert by the Hamburg Philharmonic Orchestra, conducted by Gerhard Maass. Wedding March (Bosch); Rhapsody in Swedish Folk Melodies (ATU-Berg); Serenade from Der Musikant (Bittner); Ballet Music from Ondine (Lortzing); Romance d'Amour (Schmalstich); Selection from Der Tenor der Herzogin (Künneke); Abendmusik (Förster); Dance (Nielsen); Styrian Dance (Kienzl); Nachtfalter (Strauss); March (Lorchner).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—11.50 a.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Overture, Faust (Spohr); Waltz (Bosoni); Selection from Die toten Augen (d'Albert); Bolero (Kienzl); Suite, In a Fairy Realm (Ketyl-bey); Transaktionen-Walzer (Jos. Strauss); Potpourri, Major and Minor (Schreiner); Overture, Yelva (S. Reissger). 1.5 p.m., Gramophone Concert: Part I, Max von Schillings, Composer and Conductor; Part II, Classical Arias and Chamber 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, Musical Improvisations for children. 4.0, Book Review. 4.30, Orchestral concert, relayed from the Kurgarten, Zoppot; Conductor: Karl Tutein; Overture, Checkmate (Brüll); Suite No. 1 from L'Arlesienne (Bizet); Minuet from Sonata No. 7 (Grieg); Suite from Esmeralda (Delizy); Bandonviller-Marsch (Förster); Selection from The Gipsy Baron (Joh. Strauss). 6.0, Talk: Agricultural Policy in the New Germany. 6.15, Agricultural Prices. 6.25, Dialogue: The Porter's Day. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Political Announcements and News. 8.5, Chamber Music: String Quartet in E flat (Haydn); String Quartet in C minor, Op. 18, No. 4 (Beethoven). 9.5, Extracts from Lady Hamilton—Operetta (Künneke), with Introductory Talk. 10.30, Weather and News.

HILVERSUM

Announced HUIZEN, 1,013 kc/s, 296.1 metres; 20 kW (7 kW up to 4.0 p.m.).—Programme of the Catholic Radio Society (K.R.O.). 7.40 a.m., Gramophone Music. 8.55, Inter-

val. 9.40, High Mass. 11.10, Gramophone Music. 11.40, Police Notes. 11.55, Gramophone Music. 1.25, Interval. 1.40, Gramophone Music. 2.0, Song Recital by Maria Hoving van Driel; Et (Chaminade); Aria from The Pearl Fishers (Bizet); Aria from Faust (Gounod). 2.20, Violin Sonata in A Minor (Boellmann). 2.35, Gramophone Music. 2.55, Song Recital (cont'd.): The Nightingale (Allabiev); Waltz, Frühlings-timmen (Joh. Strauss); Aria from Die Fledermaus (Joh. Strauss). 2.15, Violin Recital (cont'd.): Sonata in D Minor (Corelli); Symphonic Variations (Boellmann). 3.40, H.I.R.O. Programme. 4.57, Concert by Tom Celor and his Dutch Orchestra. 5.40, Gramophone Music. 5.55, Concert (cont'd.). 6.40, Police Notes. 6.55, Gramophone Music. 7.5, Talk on Films. 7.25, Talk. 7.43, Orchestral Concert. 8.40, Concert by the K.R.O. Orchestra, conducted by Marius van 't Woud; Overture, The Caliph of Bagdad (Boeldelin); Selection from Aida (Verdi); Meditation from Thais (Massenet); Selection from Isoleine (Messager). 9.20, 't Lammeken—Comedy in Three Acts (Ballings). 9.40, Concert (cont'd.): Two Melodies (Svendsen); Rhapsody, España (Chabrier); Valse triste (Sibelius); Two Spanish Dances (Falla); Overture, The Gipsy Baron (Joh. Strauss); Selection from A Waltz Dream (O. Strauss). In the interval, 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 Algemeene Vereeniging Radio Orchest (A.V.R.O.). 12.10 p.m., Concert by Pierre Palla (Organi), Bella Palla (Songs), and Willy Keyser (Songs). 1.47, Gramophone Music. 2.40, Programme for Children. 3.25-3.40, Interval. 3.40, Gramophone Music. 4.10, Concert by a Children's Choir. 4.40, Stories for Children. 5.10, Concert of Light Music by Kovaacs Lajos and his Orchestra. In the intervals, Gramophone Music. 7.10, Talk. 7.30, Gramophone Music. 7.40, Time. 7.41, News. 7.45, Light Music by the Wiener Boheme Orchestra; Lotoshumen (Ohlsen); Melody (Lindsay-Thiemer); Liebesleid (Kreisler); Du traumst schöne Perle (Abraham); Waltz from Eva (Lehár); Melody (Crimieux); Küssen ist kein Sünd (Eisler); Mondnacht in Sausouise (Rotho-Kaper); Johann Strauss Potpourri; Sons les ponts de Paris (Scott); Daisy (Daere); Air (Lindsay-Thiemer); Ballgiefister (Helmund); In lauslicher nacht (Zehrer). In the interval at 8.40, Songs by Louis Noiret. 9.40, Gramophone Music. 10.40, News. 10.50, Dance Music by Ray Noble and his Band. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,235 kc/s, 249 metres; 0.5 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.3, News. 1.15, Radio Concert. 8.0, Amusement Guide and News. 8.10, Agricultural Report. 8.20, Press Review. 8.30, Radio Concert. 8.45, News and Weather Report. 9.0, Concert by the Casino Orchestra, conducted by Marc César Scott, relayed from Monte Carlo. 10.30, Jazz Music.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 403 metres; 16 kW.—6.40 p.m., Announcements. 7.40 Talk. 8.0 till Close Down, See Warsaw.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,736 metres; 10 kW. Relayed by Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Music by the Saarinen Mandoline Quartet. 6.40, Humorous Programme. 7.0, Concert by the Station Orchestra: March, Picador (Oscheit); Waltz, Rose mousse (Bose); Schubert Potpourri; Hungarian Dance No. 6 (Brahms). 7.30, Recital of Finnish Songs. 7.50, Talk. 8.15, Concert by the Station Orchestra: Waltz, Pomona (Waldteufel); Serenade (Humphries); Dance of the Derivishes (Bendix); Souvenir of Capri (Beccis); Slav Dance, No. 8 (Dvorák). 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; Overture, Eine Kreuzer Etüde (May); The Nutcracker Suite (Tchaikovsky); Meditation (Coleridge-Taylor); Scenes from Lohengrin (Wagner); Waltz from Der Rosenkavalier (R. Strauss); Dance of the Fireflies (Berlioz); Potpourri, Lebariana (Geiger); March, Unser Marine (Thiele). In an interval at 2.0 (approx.), Announcements. 3.0, Programme for Chil-

dren. 3.30, Economic Notes and Time Signal. 3.50, Talk, with Gramophone Illustrations: The Origin of Europe's National Anthems. 4.10, Tales of the Youth of the German Painter, Wilhelm Leibl. 4.30, Topical Talk. 4.40, Dialect Reading. 5.0, Gramophone Records. 5.50, Reading (Ernst Wiechert). 5.45, German History on German Tombstones. 6.0, Concert by the Station Chamber Choir, conducted by Gustav Feger. Soloists: Klara Iden (Pianoforte) and Gertrud Kisselbach (Violin). Folk Songs for Mixed Choir (arr. Theo Schmitz): (a) Nun sei uns willkommen. (b) Ihr kleinen Vögelin; Folk Songs for Men's and Women's Choir: (a) Meersteru, ich dich grüße (arr. Schaller). (b) Maria durch ein' Dornwald ging (arr. Rein); Pianoforte Solo: Aus dem Kinderleben (Poller); Male Voice Quintet, with Soprano Solo: (a) Die Blümenlein sie schlafen (arr. Schausell). (b) Stimm' an, Frau Nachtigall (arr. Othegraven); Sonatina in D for Violin and Pianoforte (Schubert); Folk Songs for Mixed Choir (arr. Schmitz): (a) Mir ist ein feinsbrauns Maidelein. (b) Es ist ein Schnee gefallen. (c) Die Wollust in den Maiein (arr. Brahms). 6.40, Italian Lesson. 6.50, Announcements. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Announcements. 8.5, Concert by the Fassbender Trio: Trio in B flat, No. 4, Op. 11 (Beethoven); Trio in G, No. 7, Op. 16 (Mozart); Trio in G, Op. 26 (Haydn). 8.50, Ein Marienleben (The Life of the Virgin Mary); Poems of Ruth Schumann, Rainer Maria Rilke, Franz Johannes Weirich, and others, arranged in narrative form by Stefan Andros, with incidental Music by Wilhelm Maler. 10.15, News.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—1.15 p.m., Songs and Ballads on Gramophone Records. 2.0, News. 3.0, Three Little Talks (von Masson). 3.15, Gardening Talk. 3.35, Market Prices. 4.0, Orchestral Concert, conducted by Willy Steffen. In the interval at 5.0, Talk: German Game Preserves. 5.50, Market Prices, Weather and Time. 6.0, Dialogue: National Labour Service for Women. 6.30, Talk: The German Radio Exhibition. 6.50, Today's News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Wireless Cabaret. 8.30, Peter Marquardsen's Twenty-Fifth Aerial Victory—Radio Play of the Great War (Paul Jessen). 9.40, Trio in B, Op. 8 (Brahms) by the Weiner Trio. 10.15, News. 10.30 (approx.), Light Music and Dance Music on Gramophone Records. In the interval at 11.0, See Berlin (Witzleben). 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—4.30 p.m., Light Music. 8.0, Duets from Opera. 8.45, Gramophone Music. 9.30, Weather and News. 9.45, Orchestral Concert. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—8-Igjan Programme. 7.30, Symphony in D Minor (Franck) on Gramophone Records. 8.10, Weather Report. 8.15, Song Recital. 8.50, News in French. 9.0, Concert of Light Music on Gramophone Records. In the interval at 9.45, News in German. 10.25, Dance Music on Gramophone Records.

LWOW

788 kc/s, 381 metres; 16 kW.—6.0 p.m., Violin Recital by Henryk Czaplinski; Legend (Wicniawski); Mazurka (Zarzyński); Roxana's Song (Szymanowski); Selection from The Golden Cockerel (Rimsky-Korsakov); Caprice cimbouisi (Kreisler); Hungarian Potpourri (Hubay); Lotus Land (Cyril Scott). 6.40, Miscellaneous Items. 7.0, See Wilno. 7.40, See Warsaw. In an interval at 9.0, News 10.25, Sports Notes. 10.26, Relay of Polish Stations. 10.45, Gramophone Music. 11.0 (approx.), Close Down.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal and Request Gramophone Records. 8.30, Talk by Joaquin España Cantos and Request Gramophone Records (cont'd.). 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time, and Political Review. 11.20 (approx.), La Gioconda—Opera (Ponchielli) on Gramophone Records. 1.15 a.m. (Wednesday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—9.0 p.m. till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—5.30 p.m., Gramophone Music. 6.0, See Prague. 8.15, Schrammel Quartet Concert. 9.0, See Prague. 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—3.0 p.m., Concert. 4.0, Agricultural

Talk. 4.30, Snow—Play (Pogodin). 5.30, Programme Announcements. 5.45, Talk: Civil Aviation in Russia. 6.30, Dance Music. 9.4, News. 9.30, Programme Announcements. 9.55, Chimes. 10.5, English Press Review. 10.39, 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.—3.0 p.m., The Feast of the Assumption. Songs, Poems and Legends of the Virgin Mary. 4.0, Talk: The Miracles at Lourdes and the Life-Story of Bernadette Soubirous. 4.25 (from Nürnberg), Military Band Concert, conducted by Lutz Brandt; Festival Music (Frankenstein); Overture, Wallensteins Lager (Rosenkranz); Military Music (Reckling); Potpourri of Historic Marches (Kaiser-Hackenberg); March, Heil, Franken (Feist). 5.45, Talk: The Emancipation of the Bavarian Peasant. 6.5 (from Nürnberg), Violin Sonata in C Minor (Rinkens) by Ludwig Schuster. 6.25, Talk: The Cosmos and Human Destiny. 6.45, Weather and Sports Notes. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Concert by the Station Orchestra conducted by Karl List: Overture, Der Freischütz (Weber); The Emperor Waltz (Joh. Strauss); Intermezzo from Tiedland (d'Albert); Selection from Le postillon de Longjumeau (Adam); Song from The Bird Fancier (Zeller-Bauckner); Waltz, Die Pesther (Launer); Selection from Grigri (Lincke); Swabian Rhapsody (Kämpfer). 9.10, Der Siedler am Rhein—Radio Play (Quirin Egasser). 10.20, Time and News. 11.0, Concert by the Theo Freitag 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.—5.5 p.m., Orchestral Concert, relayed from the Lydie Restaurant. 6.0, Talk for Housewives. 6.20, Talk. 6.45, Accordion Solos. 7.0, Announcements and News. 7.20 Recital of Opera Arias. 8.0, Time Signal. 8.1, Talk by Marie Moestue; Giuseppe Verdi. 8.30, Concert by the Station Orchestra, conducted by Hugo Kraman; Suite (Birkesu); The Wedding at Ulusa (Söderman); Popular Norwegian Melodies; Norwegian Lyric (Palmberg); Rhapsody, The Foolish Maiden (Atterberg). 9.30, Gardening Notes. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Recitations. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Notes, Agricultural Report and Announcements. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Sly Opera in Three Acts (Wolf Ferrari). In the interval, Talk. 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., Le Journal Parlé. 8.20, Symphony Concert, conducted by Flament. Ballet d'enfants (Cools); Symphonic Poem, Isleade (Sporek); L'enterrement d'Opichie (Bourgault-Ducoudray); Incidental Music to Izéyl (Pierne); Serenade (Widor); Selection from Samson and Delilah (Saint-Saëns-Luigini). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.30 p.m., Gramophone Music. 7.15, Le Journal Parlé. 7.30, Gramophone Music. 8.0, Song Recital by Aumonier. Ma vigne (Dupont); Le chanson de Maricette (Tagliafico); Les heures (Privas); Vous êtes Jolie (Delmet). 8.30, Concert by the Station Orchestra. Overture, Jeanne, Jeannette et Jeanne (Lacôme); Suite of Viennese Waltzes (Gillon); Russian Rhapsody, Syt-lana (Weksler); Pieces (Bruch), for Clarinet, Viola and Pianoforte. Selection from La masette (Audran); Suite, Clair de lune (Lacôme); Un soir dans l'Odenwald (Foulds); Blottie dans mes bras (Béry); Spanish Dance and Italian Dance from Le tribut de Zamora (Gounod); Poèmes galants (Laty); Ségiovane (Lacôme). 10.15, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—7.30 a.m., Weather and Physical Culture. 7.45, Petite Suite de Concert (Coleridge-Taylor), on Gramophone Records. 8.0, Press Review and Weather. 12 Noon, Gramophone Concert: Toccata and

AUGUST 15th TUESDAY continued

Fugue (Bach); Choirs of the Sistine Chapel: (a) Sicut cervus, (b) Confiteor Tibi (Bach); Suite in F (Roussel); Piece for Children's Choir (Costeley); The Monastery Bells (Lefebvre-Weley); Song from Samson and Delilah (Saint-Saëns); Elegy (Fauré); Gregorian Chant, Song from Herodiade (Massenet); Symphony (Saint-Saëns). In the interval at 1.0, Exchange and News, and at 1.30, Exchange, 2.0, Exchange, 3.45, Market Prices, 7.0, Agricultural Notes, 7.10, Gramophone Concert: Melody (Oberfeld); (Chinita Linda (Monfred); Quand on est Parigot (Calabrese); La chanson d'autrefois (Jekyll); Tes yeux (Bonincontro); La fête du hameau (Gillet); Selection from Lysistrata (Luncke); Maria, Mari (Di Capua); So tanzt man nur in Wien (Weezel); The Bells of St. Malo (Rimmer); La Voix des églises (Goublier); Waggittines (Bleumart); 7.50, Commercial Prices and News, 8.0, Light Music on Gramophone Records: Selection from The Gipsy Princess (Kálmán); Evangeline (Johnson); Selection from The Show of Shows; Die Heizenmännchen (Eilenberg); Evening Bells (Billi); Le chirurgien du roi (amusé (Mortier); Scherzettino (Taffanel). 8.30, News and Weather, 8.45, Gramophone Concert (cont'd.); Two Songs (Zimmermann); Sandri (Aurelli); L'Angelus de la Mer (Goublier); Gipsy Songs (Dvorak); Vienna, City of my Dreams (Sieczenski); Song (Nicholls); Santiago (Corbin). 9.15, Press Review and News, 9.30, Gramophone Concert (cont'd.): Song (Erwin); Two Songs from Mozart (Guitry-Bahn); Souvenir (Drlik); Selection from Die geschiedene Frau (Fall); Melody (Klemmer); Prelude and Blues (Honegger); My blue Heaven (Donaldson); Je suis a la mode (Avignon); Tu l'as juré (Lenoir); Eternel printemps (Poppy); Place blanche (Melé). 10.30, Close Down.

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, Smiths Play Bridge, 8.30, Words and Music, from New York, 8.45, Congress of Clubs, 9.0, Meredith Wilson Orchestra, from New York, 9.15, Jack Walton's Orchestra, 9.30, News, Markets, 9.45, Programme to be announced, 10.0, Programme to be announced, 10.15, Tarzan of the Apes, 10.30, Larry Larson, from New York, 10.45, Orphan Annie, from New York, 11.0, News, Piano Classics, 11.15, Sports, A Song, 11.30, Pittsburgh Spotlights, 11.45 to 4.0 a.m. (Wednesday) New York Relay, 11.45, Lowell Thomas, 12 Midnight, Amos 'n' Andy, 12.15, Radio Education, 12.45, Ray Heatherstone, 1.0, Crime Clues, 1.30, Adventures in Health, 1.45, Floyd Gibbons, 2.0, Philharmonic Orchestra, 3.0, Musical Memories.

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 Wilno, 7.40, See Warsaw, 10.25, Sports Notes, 10.40, Time Signal, Sports and Police Notes, 10.55 (approx.), Close Down.

PRAGUE

614 kc/s, 458.6 metres; 120 kW.—4.0 p.m., Promenade Concert by the Municipal Orchestra, relayed from Teplice Sanov. Wedding March from A Midsummer Night's Dream (Mendelssohn); Overture, The Flying Dutchman (Wagner); Largo (Handel); Selection from The Bartered Bride (Smetana); Extracts from the Hungarian Suite, Op. 16 (Hofmann); Slav Dances, No. 4 in F and No. 5 in A, Op. 46 (Dvorak); Selection from Faust (Gounod); Waltz (Joh. Strauss), 5.30, Gramophone Music, 6.0, German Transmission: Talk; Czechoslovakia in Summer, and News, 7.0, News, 7.5, Concert relayed from Vinohrady, 8.0, Talk: An Expedition to Central America, 8.15, Song Recital by Petar Markovic; Spring (Hil-dach); Du bist wie eine Blume (Liszt); Caro mio ben (Giordano); Song (Chopin); Aria from Tosca (Puccini); Monologue from Rigoletto (Verdi); Aria from Carmen (Bizet); Prologue to I Pagliacci (Leoncavallo), 8.40, Saxophone Solo, 9.0, At the Old Post Office One-Act Comedy (Gisler), 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.—6.15 to 6.30 a.m. (from Lausanne), Gymnastics, 12.28 p.m., Time Signal from Neuchâtel Observatory, 12.40 (from Lausanne), Gramophone Music, 1.0 (from Lausanne), Financial Notes, 1.10 (from Lausanne), Gramophone Music, 2.0 Interval, 3.28, Time Signal from Neuchâtel Observatory, 3.30 (from Lausanne) Concert by the Radio-Lausanne Orchestra, conducted by Moser, 5.0 (from Lausanne), Programme for Women, 5.30, Interval, 7.0 (from

Geneva), Gramophone Records with Commentary, 7.45 (from Geneva), Answers to Correspondence, 8.0 (from Lausanne), Fifty Years of French Comedy—from Ubu-Roi to Clo-Clo, 9.0, Salzburg Festival Programme (See Vienna), 10.15, News, 10.30 (approx.) Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme, 9.30, Weather Report, 9.40, Musical Programme and Announcements, 10.0, Chimes and News, 10.30, Reading, 11.0, Pianoforte Recital by Emil Thoroddsen, followed by Arias on Gramophone Records.

RIGA

572 kc/s, 525 metres; 15 kW.—6.30 p.m., Talk: Pensions for Artists and Public Servants, 7.0, Weather Report, 7.5, Concert of Opera and Operetta Music, conducted by Arvids Parups, 9.0, Weather and News, 9.15, Gramophone Music.

RUUKAN.—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 from 5.15 p.m.—1.0 to 2.15 p.m., Orchestral Concert. In the interval at 2.0, Time and Announcements, 4.30, News, 4.45, See Turin, 5.15, Weather, 5.20 to 6.0, Orchestral Concert, 7.10, Dopplavoro Notes and News, 7.20, News in Foreign Languages, 7.40, Sports Notes, 8.0, Time and Announcements, 8.15, Sponsored Musical Programme, 8.30, Sports Notes, 9.0, Il Trovatore—Opera in Four Acts (Verdi), relayed from the Arena, Verona.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 1,379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 1,956 metres.—12.45 a.m. (Wednesday), Stock Reports and Baseball Scores, 1.0-3.30, New York Relay, 1.0, Blackstone Plantation, 1.30, Wayne King's Orchestra, 2.0, Ben Bernie's Orchestra, 2.30, Uncle Tex, 3.0, Lives at Stake, 3.30, National Radio Forum, 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.—6.15 a.m. (from Basle), Gymnastics, 6.35, Interval, 11.59, Xenon Time Signal from Neuchâtel Observatory, 12.0 Noon (from Zürich), Concert by the Small Swiss Radio Orchestra, conducted by Max Scherbaum. In the interval at 12.30 p.m., Time, Weather and News, 1.25 (from Zürich), Time, Weather and Exchange, 1.45 (approx.), Interval, 5.0 (from Zürich), Light Music, 5.30 (from Basle), Gramophone Concert of Popular Music, 6.30 (from Basle), Reading, 7.0, Time and Weather, followed by Songs of Love and Happiness—Gramophone Concert, 8.0 (from Basle), Song Recital, 8.56, Weather and News, 9.0, Salzburg Festival Programme (See Vienna), 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 Boden), Programme of Folk Songs, Accordion Solos and Readings, 5.45 (from Boden), Talk, 6.15, Gramophone Music, 6.45, Talk: Water-Polo, 7.15, Weather and News, 7.30 (from Östersund), Talk, 8.0 (from Sundsvall), Organ, Violin and Song Recital: Organ Solo, Tocatta (Walthier); Violin Sonata in G Minor (Tartini); Songs: (a) Canto di Primavera (Buzzi-Peccia), (b) Resemblance (Merikanto); Prelude and Adagio from the Organ Sonata in C Minor (Gülmeist); Suite for Violin and Organ (Czernigge-Taylor); Songs: (a) Aria from The Creation (Haydn), (b) Maria Wiegenlied (Reger), (c) Ave Maria (Gounod); Organ Solo, Choral Fantasia (Matthiessen-Hansen), 9.0, Literary Review, 9.30, Gramophone Music, 9.45, Weather and News, 10.0 (from Göteborg), Soloist Concert. In the interval, Reading, 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—10.30 a.m., Unveiling of a War Memorial and Addresses,

relayed from St. Blaise, 11.30, Catholic Service, 12 Noon, Gramophone Concert, 12.45 p.m., News, 1.0, Time Signal, 1.1, Mendelssohn and Brahms Pianoforte Recital by Walter Frey, 2.0, Military Band Concert in connection with the War Memorial Unveiling Ceremony, relayed from St. Blaise, 3.0 to 4.0, Interval, 4.0, Gramophone Concert: Il bacio (Arditi); Waltz, The Blue Danube (Joh. Strauss); Canzonetta (Tchaikovsky); Melody (Paganini); Arias from (a) Tosca (Puccini), (b) Madame Butterfly (Puccini); Canto pe me (Bovivo); Coro grato (Cordiferro); Aria from Otello (Verdi); Andante and Rondo from the Spanish Symphony (Lalo); Capriccio in F Minor (Dohnányi); Prelude in C Sharp (Rachmaninov); Slav March (Tchaikovsky), 5.0, Talk with Readings on French Authors killed in the War, 5.15, Violin Recital by Stefan Frenkel; Violin Concerto in G Minor (Vivadi); Selection from Die dreigroschen Oper (Weill-Frenkel); Canzonetta (d'Ambrosio); My Country (Smetana), 6.0, Talk in German: General Kleber, the Victor of Heliopolis, 6.15, Talk with Gramophone Illustrations: Berlioz and his Music, 7.30, Time and News, 7.45, Gramophone Music, 8.15, Lottery Results and Announcements, 8.30, Festival Concert of Contemporary Opera Music, relayed from the Municipal Theatre, The Municipal Orchestra, conducted by Hermann Scherchen, and Soloists. Selection from (a) Le pauvre matelot (Millaud), (b) Kasperle (Eck), (c) Panthea (Malipiero), 10.0 (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., Concert of Sacred Music, relayed from the Ufa Palast, 2.0, Concert arranged by the Post Office, 2.30, Advanced English Lesson, 3.0, Interval, 3.30, Talk on Flowers, 4.0, Talk for Women, 4.30, Orchestral Concert, conducted by Albert Hitzig, relayed from Badenweiler, Overture, Der Freischütz (Weber); Tone Poem, A Day in Sans Souci (Kockert); Selection from Aida (Verdi); Hungarian Rhapsody in F Minor (Liszt); Oriental Scene, In the Harbour of Port Said (Armandola); Rheinisch Song Potpourri, Rheinischer Sang (Bammermann); March, Unter dem Siegesbanner (Blond), 5.45, Gardening Talk, 6.10, (from Freiburg), Talk: Liberals, Jews and the Press, 6.35, Time and News, 7.0, Transmission for all German Stations, relayed from Hamburg, 8.0, Concert by the Station Orchestra, conducted by Gustav Görlsch, March for Two Clarinets, Two Horns and Two Bassoons (Beethoven); Six Rustic Dances (Beethoven); Rondio for Celesta, Flute, Oboe, Viola and Cello (Mozart); Divertimento, Der Kampf der menschlichen Leidenschaften (Dittersdorf); Tattuo for Wind Instruments (Beethoven), 8.45, See Frankfurt, 10.15, Time and News, 10.45, Concert from Hamburg, 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 779 kc/s, 385 metres; 8 kW.—6.0 p.m., Local News, 6.5, Concert, 6.15, Popular Concert, 6.30, Hawaiian Guitar Solos, 6.45, Extracts from Opera, Aria from The Tales of Hoffmann (Offenbach); Extracts from the Suite, Scherzade (Bavely); Aria from The Twilight of the Gods (Wagner); Song from Figaro (Mozart), 7.0, Accordion Music, 7.15, News, Racing Results and Market Prices, 7.30, Sound Film Music, 7.45, Military Band Music, 8.0, Choral Concert, Harvesters' Song (Mendelssohn); Sartarello (Verdi); Song (Brakekunt); In the Mountain (Cras), 8.15, Concert by a Symphony Orchestra, 8.45, Chansonnettes, 9.0, Mozart Concert, Minuet; Overture, Idomeneo; Aria from Figaro; Overture, Il seraglio; Aria from Cost Jan tutte; Turkish March, 9.30, Orchestral Music, 9.45, Chansonnettes, 10.0, Music by a Viennese Orchestra, 10.15, North African News, 10.30, Concert for Listeners in Morocco, 11.15, Concert by an Argentine Orchestra, 11.30, Popular Concert, 12 Midnight, News, Weather and Announcements, 12.5 a.m. (Wednesday), Operetta Music, Selection from The Gipsy Princess (Kálmán); Selection from The Gipsy (Sidney), 12.15, Accordion Music, 12.30, Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—4.45 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.—4.45 p.m., I Balilla—Italian Youth Movement Programme, 5.15, Orchestral Concert, 6.0 to 6.5, Weather, 6.40, Giornale Radio, Dopplavoro Notes and Gramophone Music, 7.10, Market Prices, 7.20, News in Foreign Languages, 7.40, Gramophone Music, 8.0, News and Gramophone Music, 8.50, Talk on the following Transmission, 9.0, Il Trovatore—Opera in Four Acts (Verdi), relayed from the Arena, Verona. In the intervals, Talk, Literary Notes and Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.26 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, 218.5 metres.—12.20 p.m., Concert by the Wiener Symphoniker, conducted by Josef Holzer, 2.0 to 2.50, Interval, 2.50, Time and News, 3.0, Reading (Sosnowsky), 3.35, Contralto Recital by Jella Hochreiter, 4.0, Sonata (Rachmaninov), for Cello and Pianoforte, by Richard Kroschack and Otto Schulhof, 4.35, Talk: Remains of the Stone Age in Malta, 5.0, Concert by the Wiener Symphoniker, conducted by Josef Holzer, Overture, Die schöne Galathee (Suppe); Waltz, Freut euch des Lebens (Joh. Strauss); Ländler, Grossmütterchen (Lunge); Salamander, Reptile Dance (Wichl), Habanera (Wichl); Song 's Glückel (Stolz); Selection from Das Finkenkindl (Lelzer); Serenade d'amour (Hies); Polka, Hans Jürgel (Lauerer); Waltz, Dorfkindler (Kálmán); March Potpourri (Konczak), 6.10, Talk: What do we know about Lightning? 6.35, Talk: Travel Impressions of Japan, 7.0, Recital on Two Pianofortes by Heinz and Robert Scholz, Prelude and Fugue in D (Bach); Sonata in D (Mozart); Minuet (Debussy); Etude (Cramer-Scholz), 7.35, Time and News, 7.45, Military Band Concert, conducted by Gustav Gaigg, 9.0, Salzburg Festival Programme, Mozart Concert by the Wiener Philharmoniker, conducted by Bernhard Paumgartner, relayed from the Residenz Theatre, Divertimento in D; March in D; Serenade in D, 10.15, News, 10.30, Talk in Hungarian, 10.45, Gramophone Concert of Light Music.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from Torun, 12.5 p.m., Programme Announcements, 12.10, Weather, 12.15, Concert by the Station Symphony Orchestra, conducted by Oziminski, Soloist; Wyńska (Pianoforte), Overture, Polonia (Wagner); Variations in D Minor for Violin (Schubert); Pianoforte Concerto in G Minor (Mendelssohn), 2.0, Agricultural Talk from Cracow, 959 kc/s, 312.8 metres, 2.20, Famous Singers on Gramophone Records, 2.45, Talk on Forestry, 3.5, Concert by the Gregorium Women's Choir, Address: The Feast of the Assumption; Kyrie; Gloria; Credo; Sanctus; Benedictus; Agnus Dei; Gaudeamus omnes; Allhujia; Sabat Mater; Salve Mater misericordie. In the interval, News, 4.0, Programme for Children, 4.30, Light Music on Gramophone Records, 5.0, Talk, 5.15, Concert of Polish Music, relayed from Wilno, 533 kc/s, 563 metres, 5.0, Violin Recital, relayed from Lwow: Legend (Wieniawski); Mazurka (Zarzycki); Roxana's Song (Szymanowski); Air from The Golden Cockerel (Rimsky-Korsakov); Caprice viennois (Kreisler); Hungarian Airs (Hubay); Lotus Land (Sofu), 6.35, Programme Announcements, 6.40, Miscellaneous Items, 7.0, Dramatic Programme from Wilno, 7.40, Answers to Technical Correspondence, 8.0, Symphony Concert by the Station Orchestra, conducted by Wolfstal, Soloist: Bukiewicz (Violin), Overture, Fingal's Cave (Mendelssohn); Violin Concerto (Haydn); Symphonic Poem, The Steppes (Noskowski); Suite from L'Arlesienne (Bizet); Violin Solos: (a) Nocturne (Tchaikovsky), (b) Harlequin (Popper); Scherzo (Van-Goens); Italian Caprice (Tchaikovsky). 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,

WILNO

533 kc/s, 563 metres; 16 kW.—6.35 p.m., Programme Announcements and Miscellaneous Items, 7.0, Talk: The War of 1863, 7.40, See Warsaw, 8.0, Concert of Request Gramophone Music, 8.50, Programme from Warsaw, 11.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

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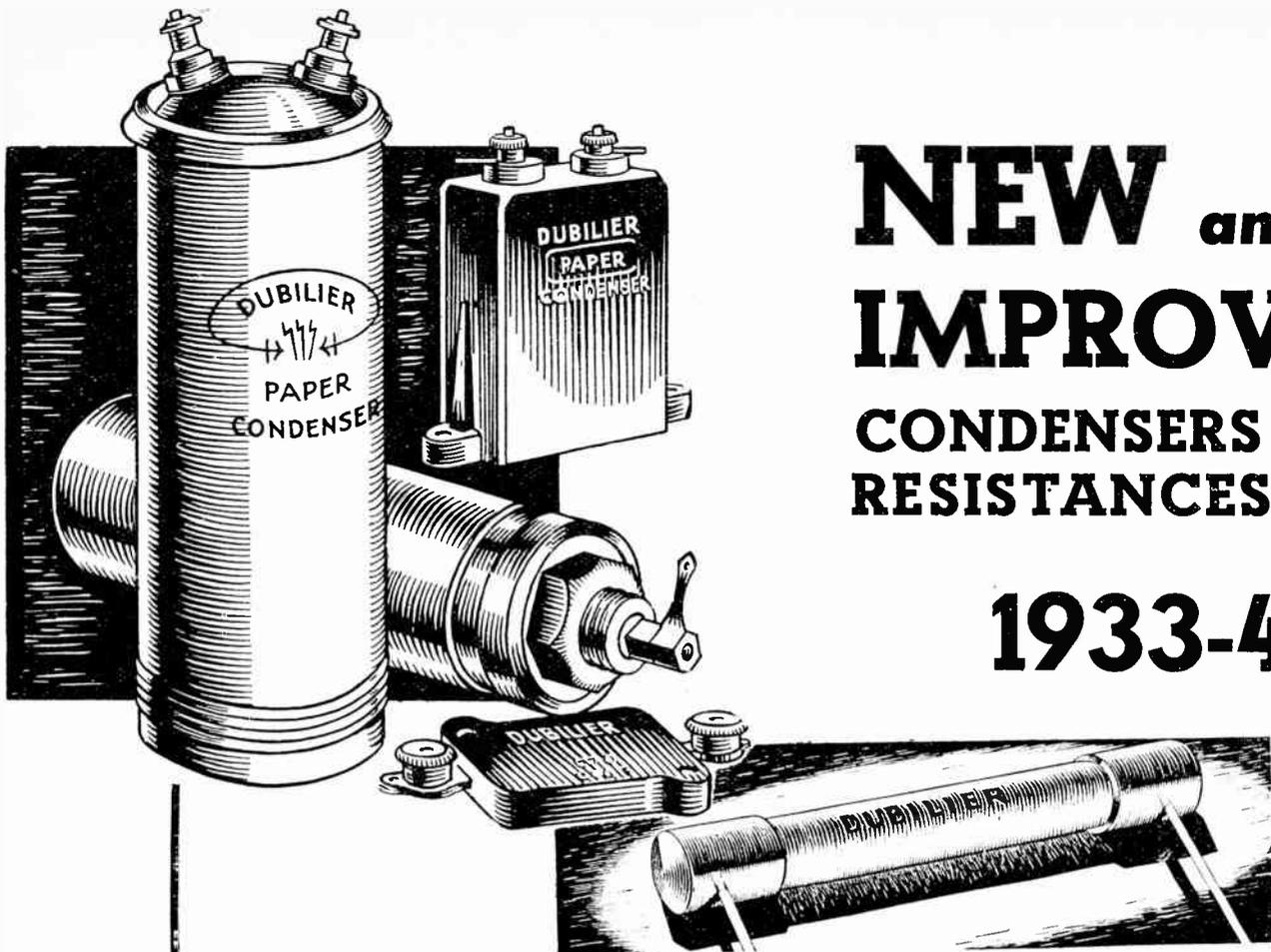
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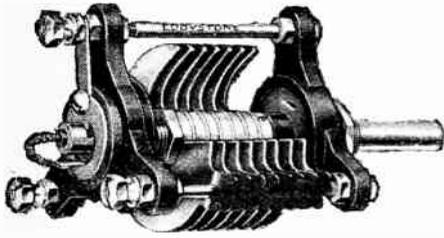
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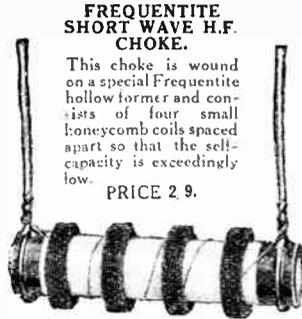


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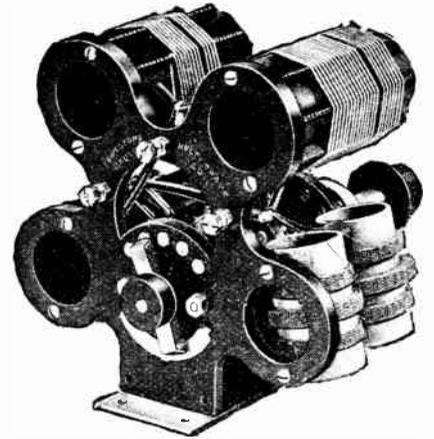
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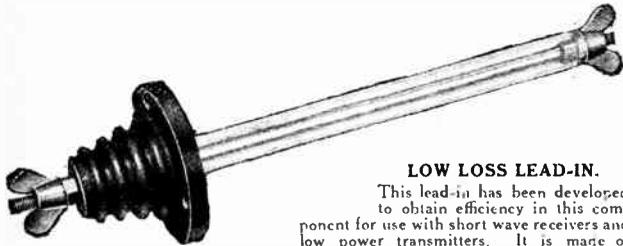


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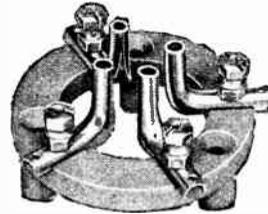
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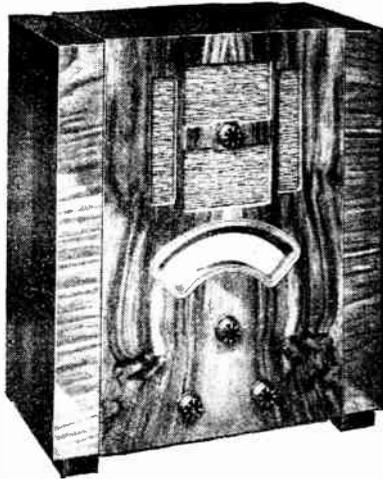
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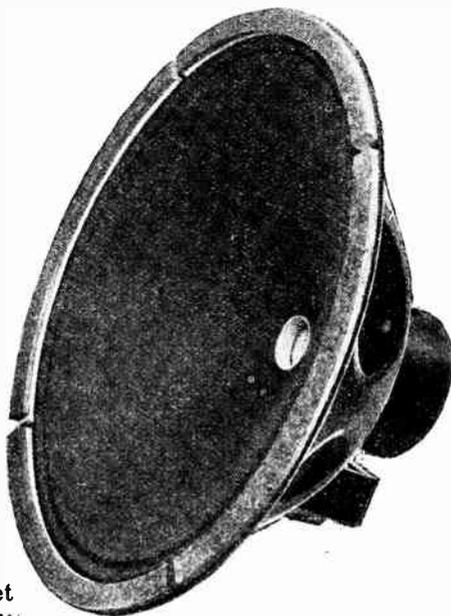
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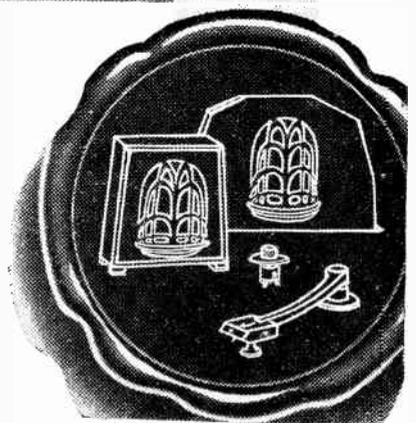


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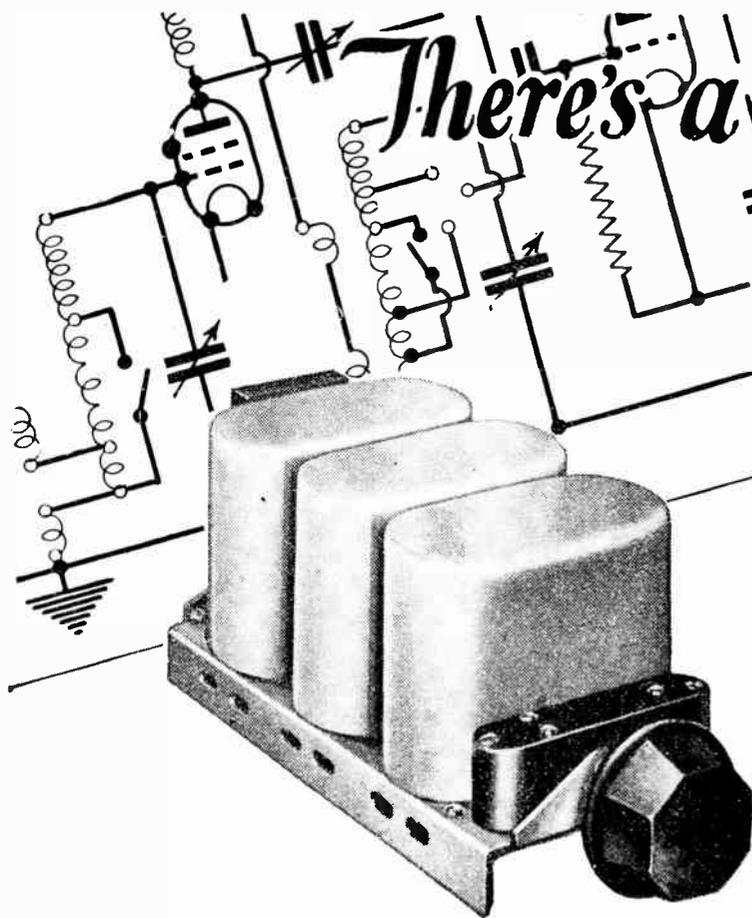
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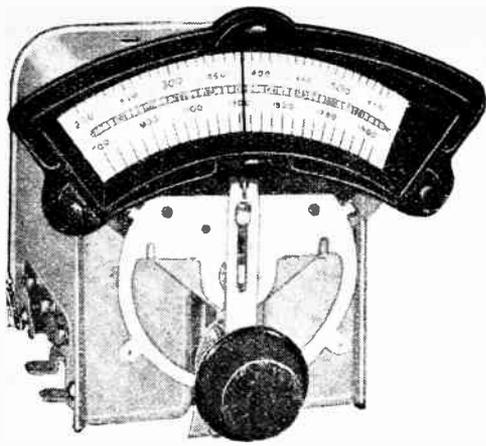
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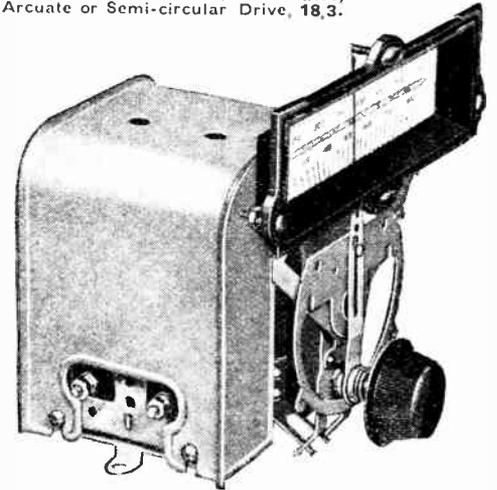


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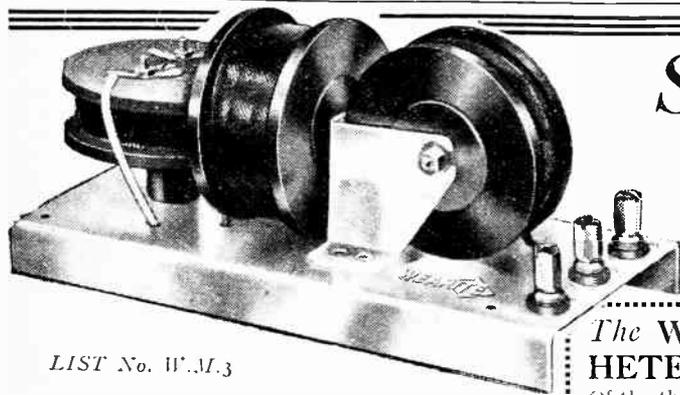
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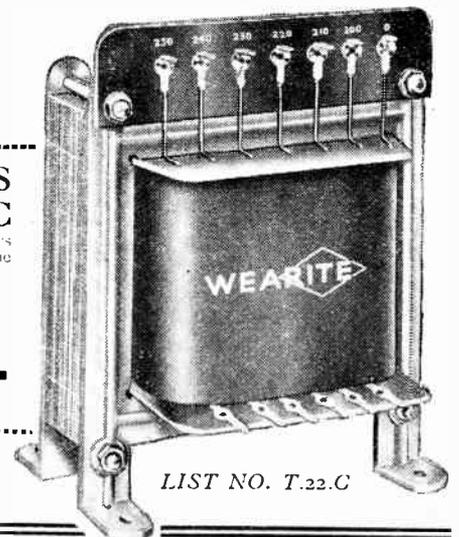
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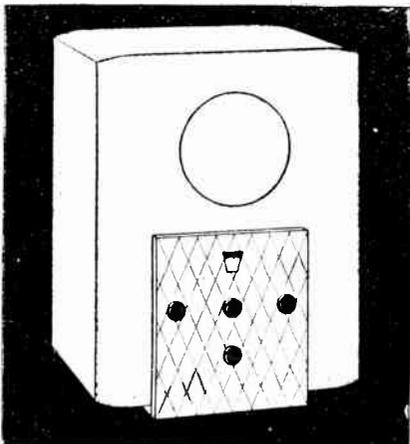
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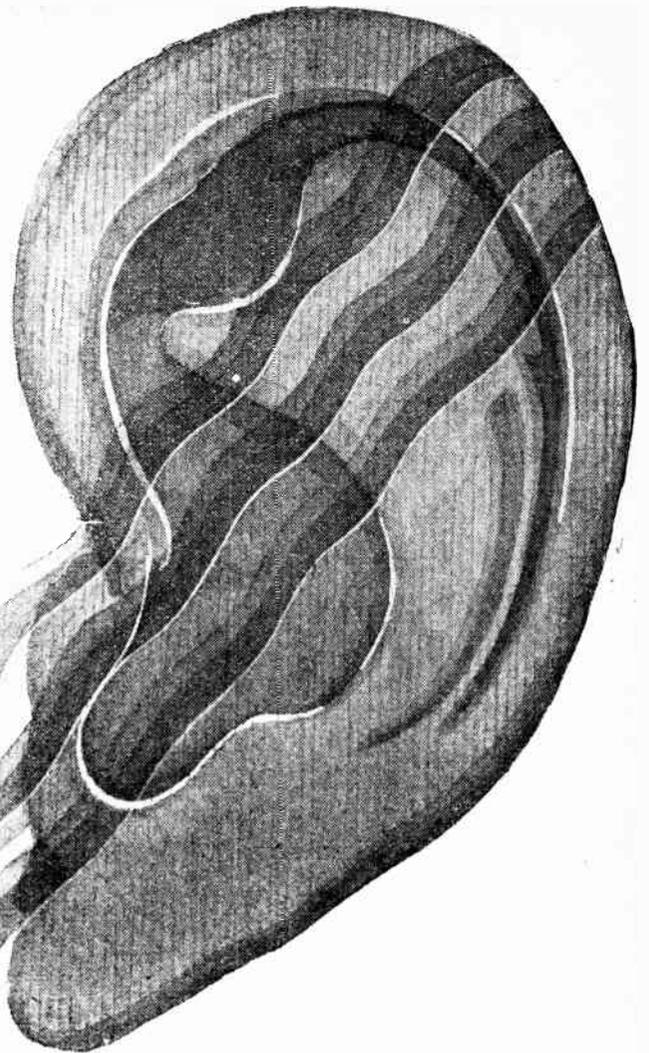
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Multitone have now produced a wireless set for the **deaf!** A Set that can be enjoyed not only by you and me, but by any deaf person no matter of what age. Even deaf mutes who have never heard a sound before, will in most cases be able to hear for the first time in their lives



MULTITONE SET FOR THE DEAF.
5-Valve Twin screened grid. Class B amplification. Moving coil speaker. No aerial or earth required. No reaction. Walnut Cabinet. Two-way tone control. Complete with special earpiece for the deaf **20 gns.**



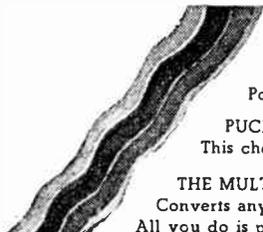
This is what the set will do:—

1. It enables **any** deaf person to listen at the same time as the rest of the family.
2. With the wireless turned off any one can converse with the deaf through the set. The loudspeaker is converted into a microphone by means of a switch.
3. There are two independent volume controls. One enables the deaf person to alter the volume of the wireless or ordinary sounds to suit his needs. The other is for use by the rest of the family as a normal wireless control.

During the course of their researches into this astounding invention, Multitone have produced, as you know, the **only** True Tone-Control Transformers, and their well-known Class "B" Transformer and Converter.

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Power efficiency over 85 per cent. and very low secondary resistance of 100 ohms.	
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This choke matches Class "B" or Q.P.P. output to any M/C speaker.	

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TERMINUS 5063

M.C.67

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The widespread popularity of this model is a tribute to its remarkable tonal fidelity and life-like reproduction. It is fitted with a 3-ratio Transformer suitable for use with the majority of power, super-power and pentode valves.

TYPE "B 8"

For Class "B" Amplification. This unit is identical in appearance and performance to the "Standard" model, but is fitted with a special Transformer having a centre tapped primary. The transformer is designed to operate correctly with the Cossor 240 Class "B" valve, or other valves having similar characteristics.

TYPE "B 15"

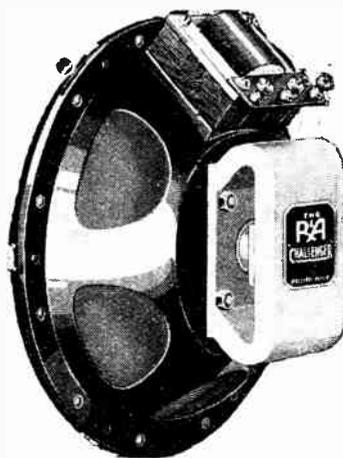
For Class "B" operation. The Transformer is designed to operate correctly with the Cossor 220B, Mazda PD220 and Mullard PM2B valves, or other valves having similar characteristics.

TYPE "P"

Many commercially built receivers now on the market in which a moving coil reproducer of either the permanent magnet or mains energised class is already incorporated necessitate a special high-priced reproducer to match the load of the output from the extension terminals. To meet the public demand we have produced this model, which is identical in appearance and performance to the "Standard" model, but which has available 3 impedance ratios for matching purposes, i.e., 1.2 ohms, 2.3 ohms and 5.25 ohms. It is possible, therefore, to match the output with this Unit of all commercial receivers requiring an extension reproducer having an impedance of between 1 and 5.5 ohms.

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As "Standard" model, but fitted with a Transformer having a centre-tapped primary intended for a Quiescent Push Pull output. The plate to plate load of the primary is 15,000 ohms, and it is, therefore, suitable for use with all valves most commonly used for Q.P.P. operation.



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STAND
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OLYMPIA

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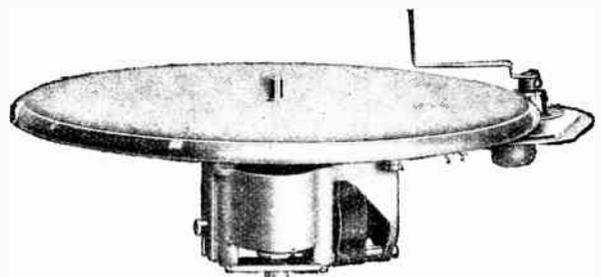


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"HIS MASTER'S VOICE"

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

Programmes

Why Kill the Goose . . . ?

WHEREVER wireless is discussed we may expect to hear criticism of the programmes put out by the B.B.C.—criticism occasionally intelligent, but most often sheeplike in its repetition of opinions expressed by some unfortunate newspaper contributor who, having exhausted other topics, falls back at regular intervals upon a criticism of the programmes as a "stop-gap." Probably the severest critics of all are to be found in the radio trade, manufacturers being ever ready to criticise the programmes and blame them, in times of prosperity as well as times of depression, as being responsible for restricting public interest.

Those who depend for their livelihood on the sale of broadcast receivers and apparatus should surely be the last to encourage dissatisfaction amongst the public with the quality of broadcasting. What should we think if some seaside resort advertised to attract visitors on the lines that the place was not worth coming to anyway? Yet this, in fact, is what the wireless manufacturer is doing when he hopes to sell his products but at the same time decries the B.B.C. programmes.

Why Decry the Programmes?

Is there any real justification for this persistent attitude of protest against the efforts of the B.B.C.? Is it not a fact that in no country in the world can one expect better entertainment or better quality transmission than we get here? There may, perhaps, be insufficient variety in the matter of alternative programmes, and a host of little things to grumble about but mostly insignificant in comparison

with the excellence of the transmissions as a whole. Sometimes we are inclined to think it might be good for the critics if the B.B.C. transmissions were to cease temporarily, when their real worth and importance would then be appreciated for the first time.

Let us be proud of the programmes we have got and impress others with their value. In doing so we do not deprive ourselves of the right to try to improve still further on their excellence. Above all, let the representatives of the Radio industry itself cease from public depreciation of that which alone can sell their wares.

The Show

Forecast and Guide

TUESDAY of next week is the date of the opening of the annual Radio Show at Olympia, and in this issue we include a plan of the Exhibition with a key to the location of stands. A general guide is provided in the form of a forecast of items of outstanding interest in the various classes of exhibit. With a week-end available in which to study this issue, we hope it will be found helpful to those of our readers who will be visiting the Show next week, whilst this number, taken in conjunction with the two further special numbers of *The Wireless World* dealing with the Show, should prove a useful record of the Exhibition equally valuable to those who may not have the opportunity of making a personal visit.

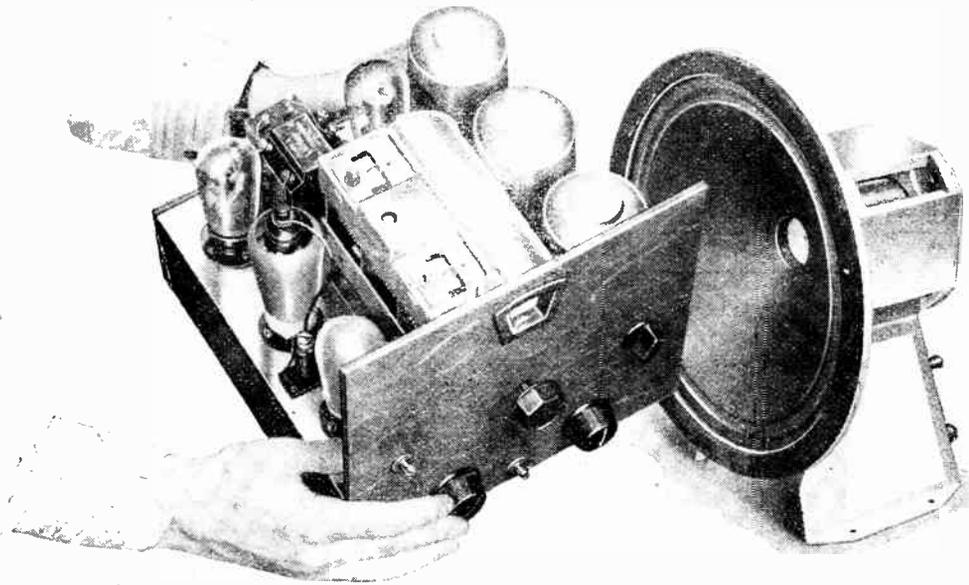
Visitors to Olympia will be interested to know that on our stand, Number 7, we shall be exhibiting the New Monodial Super, the "Two Unit Portable," a battery set recently described, and the Modern Battery Four, a description of which is included in this issue.

The Wireless World

MODERN BATTERY FOUR

An Economical Straight
Set with "Mains"
Performance

By W. T. COCKING



THE advent of the Class "B" output stage has put all other systems out of court in any economical battery receiver, for in the matter of volume it puts the battery user on a par with those fortunate enough to possess a mains supply. Although Class "B" amplification has been thoroughly dealt with in *The Wireless World*, there is still some misapprehension as to its capabilities, and before proceeding with the details of the new receiver it may be well to explain the characteristics of this type of output stage.

The ordinary, or Class "A," output stage consumes a fixed amount of power

whatever input is applied to it. Thus a stage rated for an output of 1 watt will require over 3 watts of battery power for its operation even when a high-efficiency pentode-type valve is employed. This amount of power, moreover, is consumed whether the valve is actually delivering 1 watt to the speaker, or giving no output at all during a pause in the programme.

With Class "B" operation, however, the power consumed varies according to the signal applied to the valve, and during the absence of a signal, a stage rated for an output of 1 watt will require little more than 0.25 watt battery power. When it

is actually delivering 1 watt to the speaker, of course, the battery power is much greater than 1 watt, for the efficiency is by no means 100 per cent. The full output, however, is normally required only on loud passages of music, and during the greater portion of the time the output stage is underloaded, so that the *average* power required may be only about 1 watt for a maximum output of 1 watt.

There can thus be no doubt as to the economy of Class "B" output systems; the question of quality, however, is by no means unimportant, and deserves careful attention. When each type of output stage is delivering its maximum rated

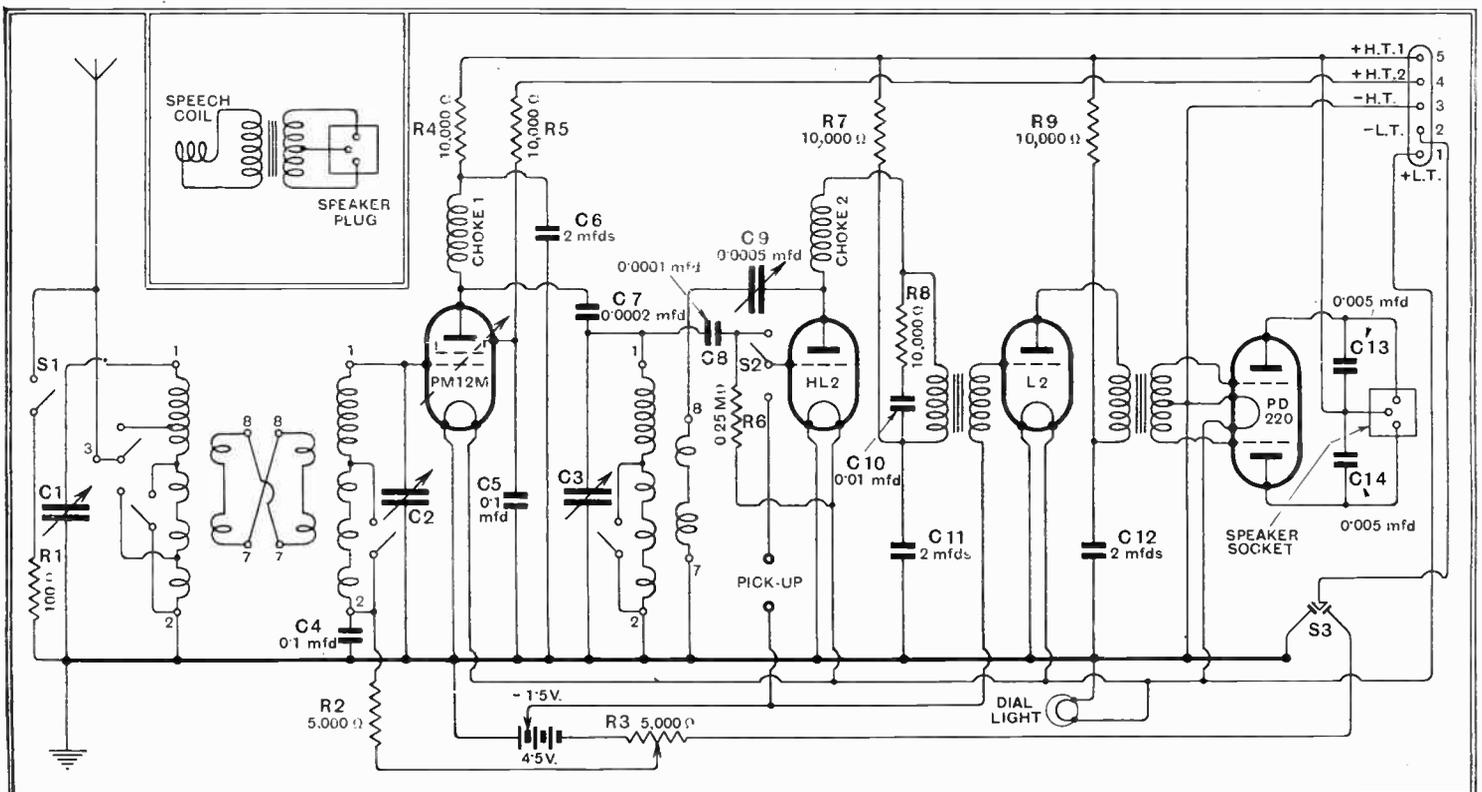


Fig. 1.—The complete circuit diagram of the new battery set. An adequate range of volume control on all signals is secured through the combination of the bias control R3 and the local distance switch S1.

Modern Battery Four—

output, there is no difference in the quality, since the rating in each case is based upon 5 per cent. distortion. As the signal input to the output stage is decreased, the distortion naturally falls, but here we find a difference between Class "A" and Class "B" stages. With the former the distortion falls rapidly as the input is reduced, and it is soon negligible; the result is that, when the stage is correctly operated, distortion can only be detected on the very loudest passages of music. With a Class "B" stage the distortion also falls as the input is reduced, but not so rapidly as with Class "A," and it is quite possible for it not to fall below some 2 per cent. until the input is minute. A Class "B" output stage, therefore, is not as good from the quality viewpoint as a valve operated in Class "A," when both give the same maximum output; the Class "B" stage, however, will require less power to operate it.

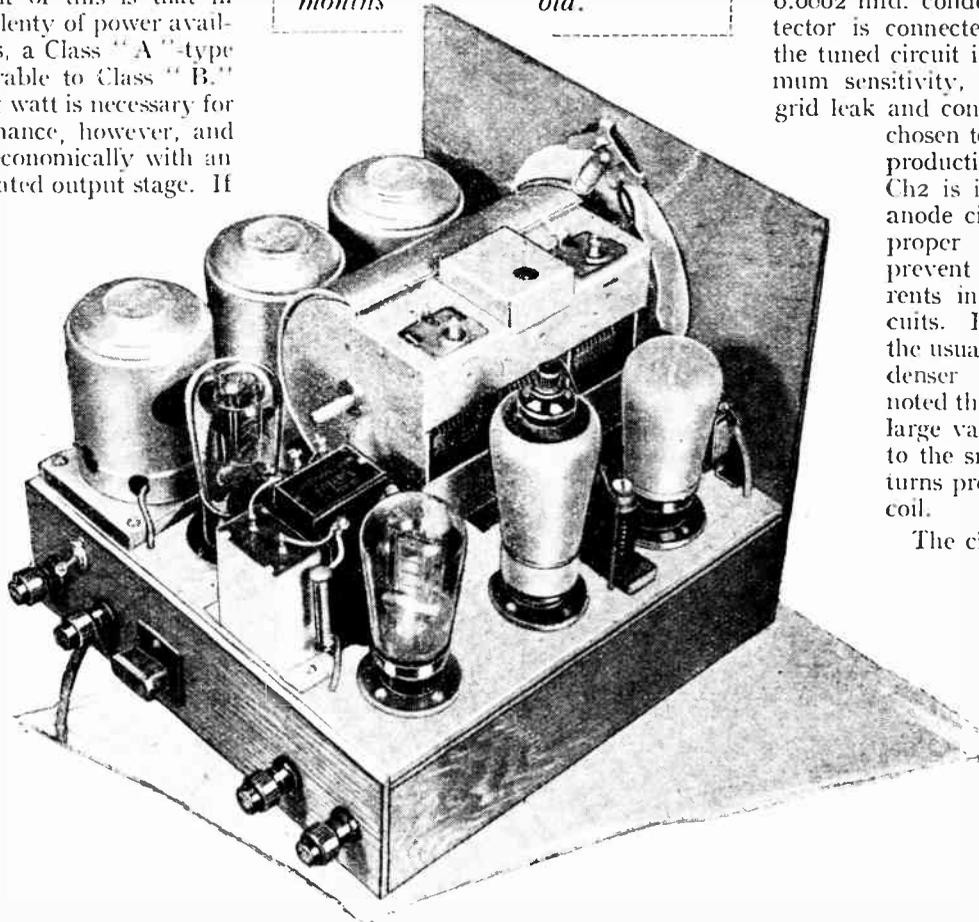
The practical result of this is that in cases where there is plenty of power available, as in mains sets, a Class "A"-type output stage is preferable to Class "B." An output of at least 1 watt is necessary for a satisfactory performance, however, and this is unobtainable economically with an ordinary battery-operated output stage. If we assume that an average battery power of 1 watt is as much as can be normally used, we can only obtain from 100 to 200 milliwatts with a Class "A" arrangement for a maximum distortion limit of 5 per cent., whereas with Class "B" we can have about 1 watt. An output of 100/200 milliwatts is so small that where such a stage is used it is habitually operated in an overloaded condition in order to obtain adequate volume. As a result, the distortion is far above 5 per cent. The use of Class "B," therefore, will lead to a great improvement in the quality of reproduction.

Although Class "B" is not quite as good as Class "A" when each system is rated for the same maximum output, it is very definitely superior to Class "A" when the comparison is based upon equality of the power drawn from the H.T. supply. It will thus be clear that the Class "B" system enables the battery user to obtain volume equivalent to that of a mains-operated set with better quality than he has previously experienced, even although that quality may not be quite as good as that given by the best mains receivers.

The amplification obtainable from a Class "B"-type valve is less than that

given by a pentode, and this is accentuated by the necessity for feeding it through a step-down, rather than the usual step-up, transformer. A set with two L.F. stages, therefore, is now more likely to include two L.F. transformers than one transformer and one resistance coupling.

IRON-CORE tuning coils and class B amplification represent the chief developments of recent months and their correct use gives vastly improved results. In the receiver described in this article, they are utilised to the full, and as regards selectivity, volume, and quality, the performance is greatly superior to that of any simple battery receiver more than six months



The layout is straightforward, involving short leads in the H.F. circuits and so leading to a high measure of stability.

A modern battery receiver thus follows the lines of Fig. 1. In order to obtain both simply and cheaply, a high degree of sensitivity and selectivity, iron-core tuning coils are employed, and the H.F. valve is preceded by a band-pass filter of the link-coupled type. The aerial is tapped well down its tuned circuit, and a change-over switch alters its connection for the long waveband, in order that the loading on the tuned circuit may remain constant on both wavebands.

The H.F. valve is of the short-base, variable- μ type, and consequently cannot handle a very large input without

introducing distortion. For local reception, therefore, it is necessary to reduce the aerial input, and this is done by the Local-Distance switch S_1 , which permits the 100 ohms resistance R_1 to be connected at will across the aerial and earth terminals.

The Receiver Circuits

The volume control proper, of course, takes the form of the potentiometer R_3 of 5,000 ohms connected across a $4\frac{1}{2}$ volts bias battery, and the bias is applied to the H.F. valve through the filter comprising the 0.1 mfd. condenser C_4 and the 5,000 ohms resistance R_2 . In order to avoid a continuous discharge of the bias battery, its connection is completed through the On-Off switch S_3 , the other pole of which breaks negative L.T.

The intervalve coupling is of the tuned grid type, and is fed from the H.F. valve with the aid of the choke Ch_1 and the 0.0002 mfd. condenser C_7 . The grid detector is connected across the whole of the tuned circuit in order to secure maximum sensitivity, and the values of the grid leak and condenser, R_6 and C_8 , are chosen to secure high-quality reproduction. An H.F. choke Ch_2 is included in the detector anode circuit in order to secure proper reaction effects and to prevent the leakage of H.F. currents into the purely L.F. circuits. Reaction is controlled in the usual way by a variable condenser C_9 , but it should be noted that this has the unusually large value of 0.0005 mfd., due to the small number of reaction turns provided on the intervalve coil.

The change-over switch S_2 in the detector grid circuit permits a gramophone pick-up to be connected, and on gramophone the negative grid bias is arranged to be 1.5 volts. The detector is an HL2-type valve, and it is coupled to the driver by means of a transformer having a ratio of 1-3.5, across the primary of which is joined the tone correction

filter R_8 and C_{10} . The driver is an L.2 valve coupled to the PD.220 output valve by a step-down transformer with a ratio of 2-1. No bias is applied to this valve, and in order to suppress parasitic oscillation two 0.005 mfd. condensers C_{13} and C_{14} are connected across the output transformer primary.

Since the slightest trace of battery coupling can lead to considerable distortion with Class "B" working, thorough de-coupling is included, the detector and driver stages being de-coupled by the 10,000 ohms resistances R_7 and R_9 with the 2 mfd. condensers C_{11} and C_{12} . The

Modern Battery Four—

anode circuit of the H.F. valve is also de-coupled by a 10,000 ohms resistance R4 and a 2 mfd. condenser C6, while the screen circuit is fed through the 10,000 ohms resistance R5 with a 0.1 mfd. condenser C5 shunted to earth. There is thus little possibility of the internal resistance of the H.T. battery causing trouble, and experiments indicated that the insertion of a 2,000 ohms resistance in series with the H.T. battery led only to a reduction in volume through the reduced voltage applied to the valves. Since a resistance of this order represents the maximum that is likely to occur in practice, no trouble from this source should be evident.

It will thus be seen that the receiver is quite straightforward without unnecessary frills, and yet includes everything necessary for good quality reproduction with a degree of sensitivity and selectivity sufficient for all but the most stringent requirements. It is economical in upkeep, for the total anode current with the volume control at maximum and no ap-

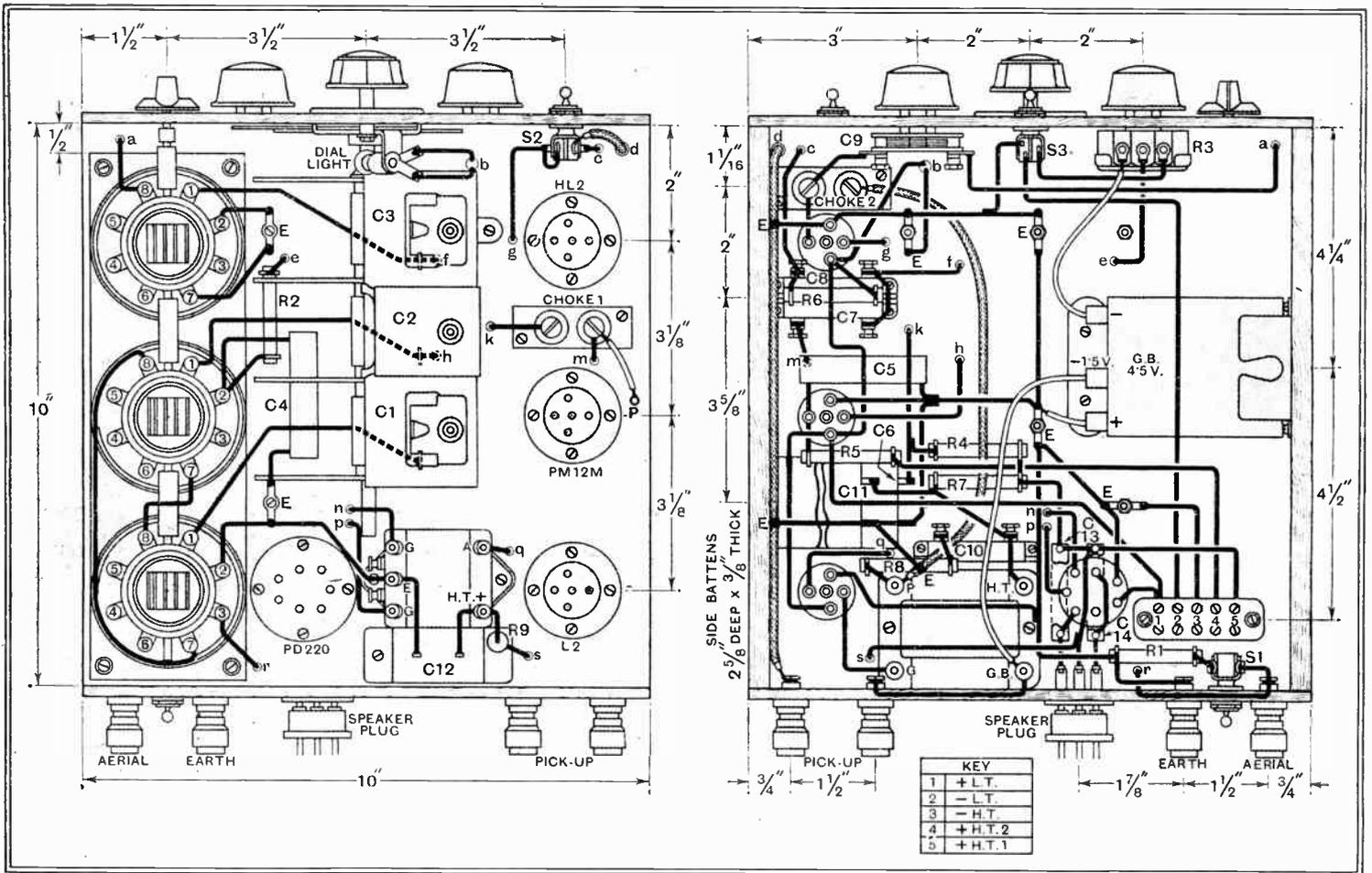
Full-size blue print of this receiver is available from the Publishers at 1s. 6d. each, post free.

plied signal is but 9.6 mA. at 120 volts. When a signal is applied, of course, the current rises to a degree dependent upon

the volume level adopted, but under normal conditions it is unlikely to exceed an average of some 15 mA.

The receiver is in no way critical, and if the specified layout be followed no difficulty whatever should be experienced either in construction or adjustment. The assembly is on a metal-covered chassis, which may be obtained with the large holes already drilled. Before mounting the gang condenser, the leads to the fixed plates should be attached, since the soldering tags are not readily accessible when this component is in position. It is very important to see that the gang condenser frame makes sound contact at each end with the metal base, and it is a wise plan to tighten its fixing bolts when the set has

PRACTICAL WIRING DIAGRAM



Wiring is carried out with tinned copper wire run in insulating sleeving, but it should be noted that the gramophone pick-up lead and the detector anode lead to the L.F. transformer are both screened.

LIST OF PARTS

- | | | |
|--|--|---|
| <p>1 Three-gang condenser, 0.0005 mfd. and dial
C1, C2, C3 Utility W.314, 3
(British Radiophone, Polar.)</p> <p>1 Assembly of three coils Varley "Nicore" BP36</p> <p>3 Fixed condensers, 2 mfd. 750 v. D.C. test
C6, C11, C12 Peak Type A3</p> <p>2 Fixed condensers, 0.1 mfd. tubular
C4, C5 Peak Type "M"</p> <p>2 Fixed condensers, 0.005 mfd. tubular
C13, C14 Peak Type "M"</p> <p>1 Fixed condenser, 0.01 mfd. C10 Graham-Farish</p> <p>1 Fixed condenser, 0.0001 mfd. C8 Graham-Farish</p> <p>1 Fixed condenser, 0.0002 mfd. C7 Graham-Farish
(Dubilier, Ferranti, Formo, Goltone, Hellesen,
Igramic, Loewe, T.C.C., Telsen, Wego.)</p> <p>1 Reaction condenser, 0.0005 mfd. with knob C9
Ormond No. 8 Semi-Circular type
(Magnum)</p> <p>1 Resistance, 100 ohms 1 watt R1 Claude Lyons</p> <p>1 Resistance, 5,000 ohms 1 watt R2 Claude Lyons</p> <p>5 Resistances, 10,000 ohms 1 watt
R4, R5, R7, R8, R9 Claude Lyons
Claude Lyons</p> <p>1 Resistance, 250,000 ohms 1 watt R6
(Dubilier, Eric, Seradex.) Claude Lyons</p> <p>3 5-pin Valve Holders Clix Chassis mounting type</p> <p>1 17-pin Valve Holder Clix Chassis mounting type
(Goltone, Preh, W.B.)</p> | <p>2 H.F. Chokes Ch1, Ch2 McMichael Binocular Junior
(Goltone, Kiuya, Wearite.)</p> <p>1 L.F. Transformer, 3:1 Ferranti AFS
(Igramic, R.I., Varley.)</p> <p>1 Driver Transformer Varley D.P.41
(Benjamin, Bulgin, Ferranti, Igramic, Multitone,
R.I., Telsen, Wearite, W.B.)</p> <p>1 5-way Connector Wilburn</p> <p>1 3-pin Plug complete with socket panel
Belling-Lee No. 1119</p> <p>4 Ebonite shrouded Terminals, aerial, earth, pick-up (2)
Belling-Lee Type "B"</p> <p>(Barton, Clix, Edex, Igramic.)</p> <p>1 Wire-wound Volume Control, 5,000 ohms R3
Claude Lyons Type P.58
(Colvern, Haynes Radio, Watmel.)</p> <p>1 5-way Cable, 30in. with plugs and spade ends
Belling-Lee
(Goltone, Harbros, Lewcos.)</p> | <p>1 G.B. Battery, 4½ volts Siemens G.1
(Grosvenor.)</p> <p>3 G.B. Plugs Clix Type "B"</p> <p>1 G.B. Battery Clip Bulgin No. 2
(Gripsco.)</p> <p>1 Toggle Switch, make and break S1 Bulgin S.60</p> <p>1 Toggle Switch, three-point S3 Bulgin S.67</p> <p>1 Toggle Switch, single pole change-over
S2 Bulgin S.61
(British Radiophone, Claude Lyons.)</p> <p>1 Dial Lamp, 2 volts Bulgin Type H</p> <p>1 length Screened Sleeving Harbros
(Goltone, Lewcos.)</p> <p>Wood Panel, 9in. x 10in. 3-ply</p> <p>Plymax Baseboard, 10in. x 10in. x 3in.
(Or metal chassis, Magnum) Peto-Scott</p> <p>1oz. No. 22 Tinned Copper Wire, 6 lengths Systoflex,
Wood, Wire, etc.</p> <p>Screws:—8 3in. No. 6 R/hd.; 30 3in. No. 4 R/hd.;
2 3in. No. 4 C-sk.; 4 3in. No. 4 C-sk.; 6 3in.
No. 4BA R/hd.</p> <p>Loud Speaker W.B. "Microtone" PM4A</p> <p>Valves:—1 Mullard PM12M or Marconi or Osram VS24;
1 Mazda HL2 or Marconi or Osram HL2; 1
Mazda L2 or Marconi or Osram LP2; 1 Mazda
PD220 or Marconi or Osram B21.</p> |
|--|--|---|



A specimen receiver built to this design will be on view on the "Wireless World" Stand at Olympia.

ment, it should be reduced by slackening off the volume control rather than by employing less reaction. The switch S_1 , of course, must be set for distance while carrying out the ganging operations.

When tested on a good aerial in the heart of London, no difficulty was found in obtaining full loud-speaker volume in daylight from stations such as Brussels, North Regional, Langenberg, Fécamp, Huizen, Radio-Paris, and Berlin, while others were available at good strength. The selectivity was found sufficient to permit the reception of many distant stations situated in wavelength between the two locals, and, as might be expected with iron-core tuning coils, the blanketing effect of the latter was reduced to a minimum.

The Output Valve

The quality of reproduction with the specified speaker is of a very satisfying order, and the volume obtainable before overloading occurs is adequate for most requirements, the best results being secured by setting the switches mounted on the speaker to "B" and "H," giving a transformer ratio of 80-1. Where a different speaker is used, of course, care must be taken to see that it is correctly matched to the Class "B" valve. This requires a load impedance of some 17,000 ohms, and the output transformer must be of the Class "B" type with a low-resistance primary. With a different speaker, some modification to the values of R8 and C10 might prove advisable in order to secure the correct tone. It is hoped to deal with matters of this nature in a further article, however.

The local-distance switch is fitted at the rear above the aerial and earth terminals.

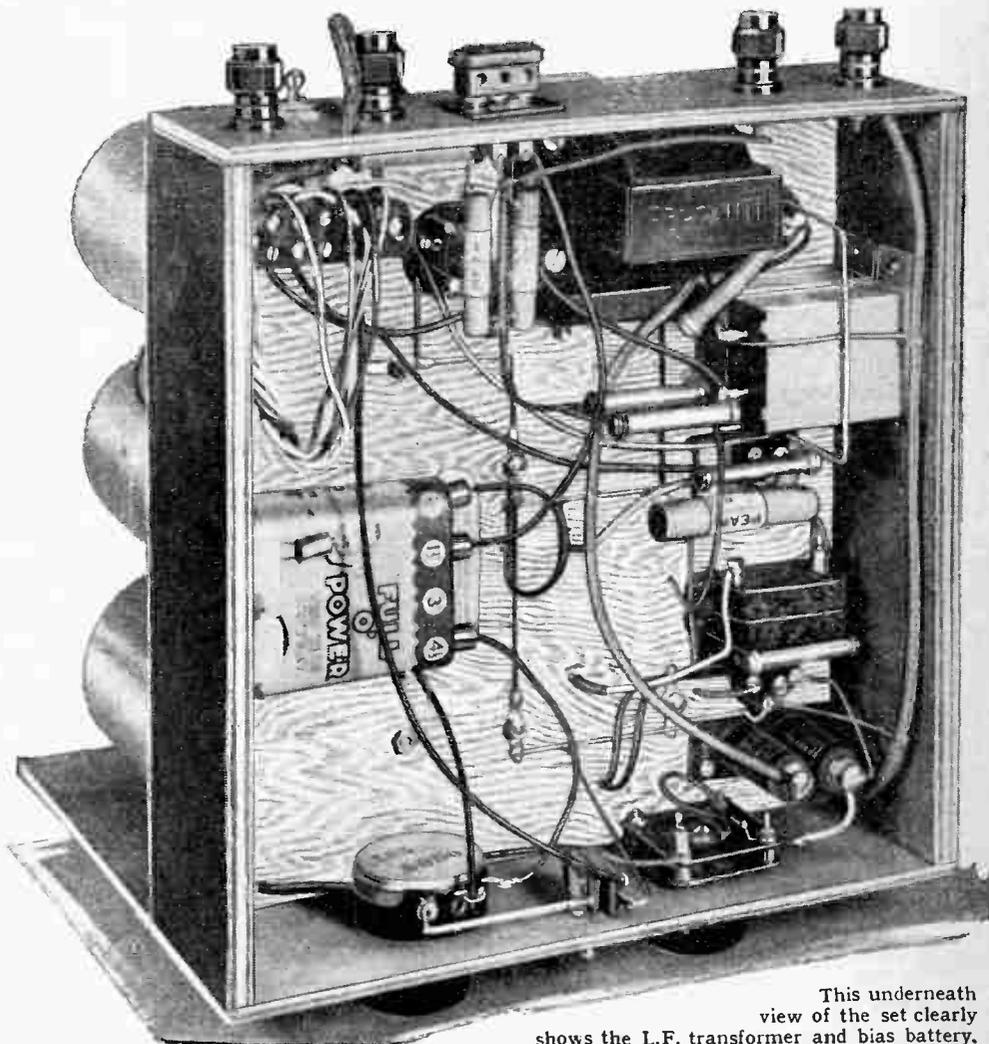
been built for a few weeks, since the wooden base sometimes shrinks slightly.

A screened anode lead to the H.F. valve is unnecessary, and would, in fact, give an undesirable increase in the stray capacity of the intervalve tuned circuit. As a matter of precaution against unwanted couplings, however, both the detector anode lead and the pick-up connection are screened.

Some 120 volts should be applied to H.T.1 with about 80 volts to H.T.2 and 1.5 volts bias on the driver valve. Greater volume and sensitivity will be obtained with 150 volts on H.T.1 and some 80 to 100 volts on H.T.2, but the current consumption will increase considerably. The higher voltages, therefore, are only recommended where economy is not of the first importance.

Ganging

Good quality reception of the local station should at once be obtained, provided that the matching to the speaker is correct and the only initial adjustment required is to the ganging. In general, it will be found that the trimmer on C3 should be nearly fully unscrewed, while that on C1 will need screwing nearly fully home. A station should be tuned in on as low a wavelength as possible, and each trimmer adjusted for maximum response, using as much reaction as possible without the set actually oscillating. If the volume be too great for accurate adjust-



This underneath view of the set clearly shows the L.F. transformer and bias battery.

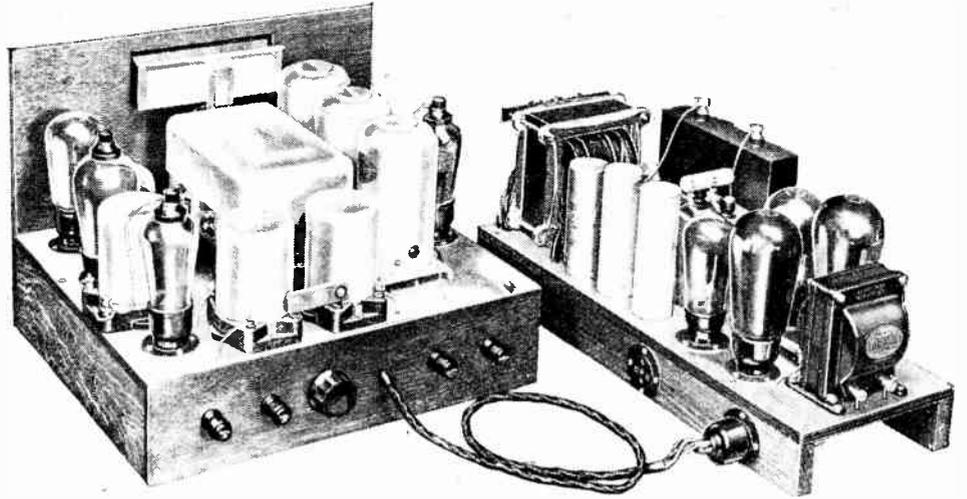
Modern Battery Four—

Considerable latitude in the choice of valves is permissible without alteration to the receiver. From many points of view the Class "B" valve is the most critical, and if a different type be employed the output transformer ratio will have to be altered. When using the Marconi-Osram B.21 Class "B" valve, for instance, the load required is 12,000 ohms, so that a 65:1 ratio would be suitable with the specified speaker. This valve also requires 4½ volts negative grid bias; if it be used, therefore, the centre tap of the driver transformer must be disconnected from the chassis, and joined instead to the negative terminal of the bias battery. The driver appropriate to this valve is the L.P.2 of the same make.

For the detector any triode with an A.C. resistance between 10,000 ohms and 20,000 ohms may be used, and the valve should have as high an amplification factor as possible. Unless the H.F. valve is of the short-base type, however, the use of a different make will necessitate fitting a higher voltage bias battery in order to secure an adequate control of volume. The Marconi-Osram V6.24 is of the short-base type, and when using it no changes to the set or bias are needed.

Although the demands upon the H.T. battery are quite moderate it is advisable to choose one of medium capacity if a long working life is to be obtained. The question of the L.T. supply should also not be overlooked, and a 2-volt accumulator of fairly high capacity is advisable. The total filament current is about 0.7

THE NEW MONODIAL SUPER



An A.C. Receiver Embodying Every Practical New Development in Superheterodyne Technique

Among the features of the new receiver are a Pentagrid single-valve frequency-changer, which reduces the possibility of whistle production, a duo-diode-pentode second detector giving delayed A.V.C. for eliminating fading, and a 6-watt push-pull output stage.

Full constructional details, together with complete wiring diagrams, were included in the July 21st and 28th issues of *The Wireless World*, copies of which are available from the publishers. Full size Blue Print is also available, price 1/6 post free.

ampere, the exact figure depending upon the particular type of dial light selected, so that an accumulator with a capacity of 20 a.h. (actual) can be considered as entirely satisfactory.

additional speakers—that is, if the extra speakers are in parallel, as is usual. [With a normal choke output feed, one of the two condensers forming the filter is in parallel, while both of them are in series, across the speakers.] The value should be about 0.0005-0.001 mfd. Unless very special care has been taken in the balancing of the speakers (when working together) it is unlikely that this additional capacity to that already provided by the leads will make much difference. The H.F. chokes should naturally be of an efficient type.

A large condenser—say of 2 mfd.—should be included in each lead, so that an accidental short to earth in one of the speaker leads will not cause damage to the output valve by short-circuiting its bias resistance (the circuit diagram makes this point clear).

The lead-in proper can be connected to any convenient point of the extension wiring, while the lead to the set should be taken from the "live" side of one of the H.F. chokes—which one is best found by experiment, as there may be a difference between them. The inclusion of a small fixed condenser in the aerial lead is also worth trying. Admittedly, there must be very considerable losses of H.F. energy, but this is inevitable with any scheme when it comes to carrying the lead-in through the house unless elaborate measures are taken regarding spacing of the lead from earthed objects, and this laudable ideal is seldom favoured with the approval of the household! In point of fact, it was found that the extension leads alone provided ample "pick-up."

Individual cases will no doubt require some modification of the above details, but the data given will be sufficient basis for experiment.

DUAL-PURPOSE EXTENSION LEADS

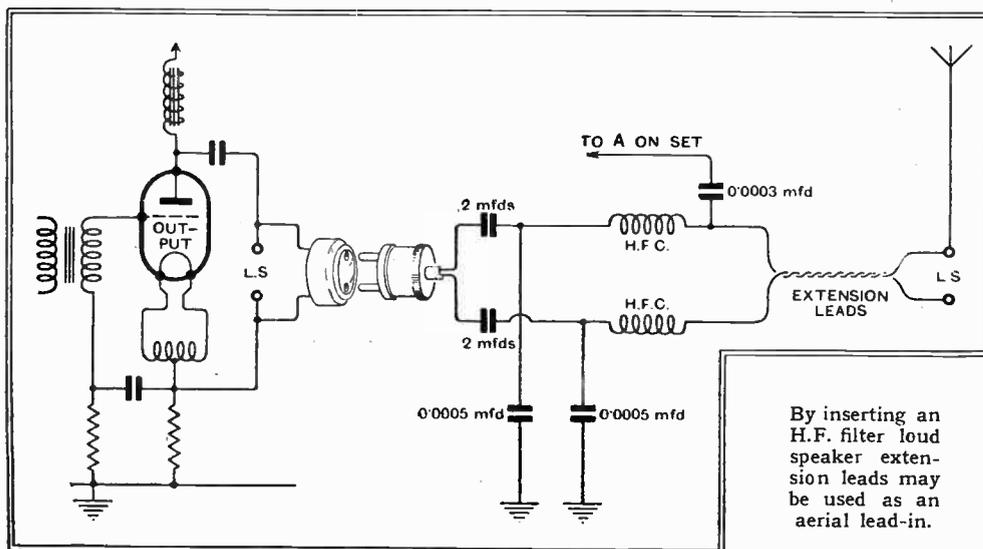
Solving the Problem of Aerial Connections

WHILE the following notes may not hold good with all types of receivers, especially 2-H.F. sets, the method has worked very satisfactorily with an all-mains superheterodyne and also with a simple Det.-2LF. circuit.

The problem was not new; the receiver was wanted for use in an upstairs front room, the aerial lead-in being in a downstairs back room. The house being already wired in several rooms for extra L.S.'s, it

was decided to use this wiring for conveying the H.F. signals to the receiver.

It was important, of course, to prevent H.F. impulses getting into the L.F. part of the receiver; an H.F. choke in each lead followed by a small condenser to earth looked after this point, the value of the condenser being, within limits, immaterial. The larger it is the more efficient the filter becomes, but it must be remembered that it is in parallel with both the main and



N I C O R E

T U N I N G C O I L S

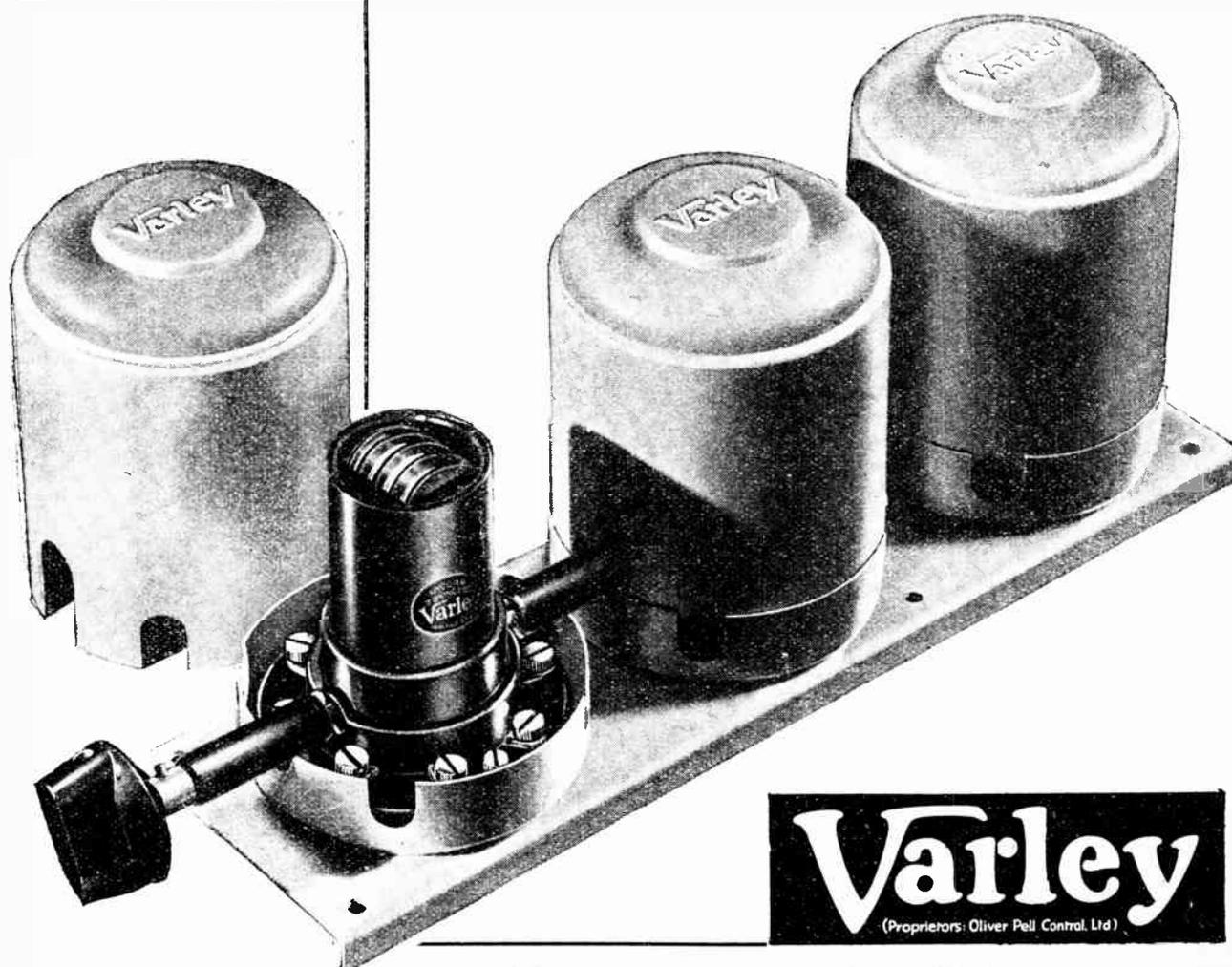


STAND
85

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- 1 Set of Varley Nicore Coils ... **1.13.0**
- 1 Varley DP 41 Driver Transformer ... **13.0**
- 1 Ferranti AF 8 L.F. Transformer, 3.5 1 ... **11.6**
- 1 Specified Peto-Scott Plymax Chassis 10" x 10" ... **7.6**

NEW MONODIAL

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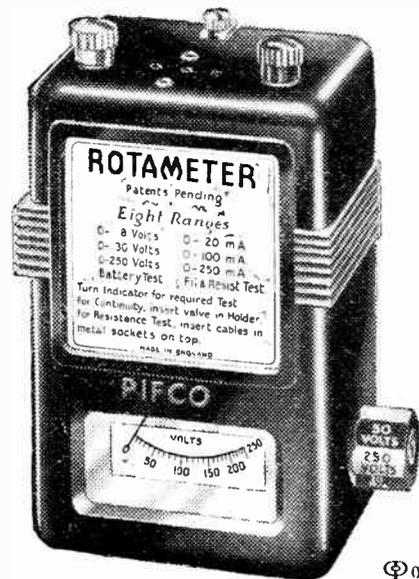
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UNBIASED



Worthy inhabitants of Woolloomoolloo.

Marooned in the Channel

IT is, I think, a great scandal that, in spite of the blowing of trumpets by the P.M.G. and his staff concerning their mighty achievements in the realm of telephony, the traveller is still unable to ring up anybody in England from a cross-Channel boat. This, mark you, when it is possible, as the P.M.G. tells us, to converse over thousands of miles with the worthy inhabitants of Woolloomoolloo (though it is not stated why anybody in their right senses would want to get in touch with that benighted spot).

In the case of cross-Channel boats, however, the P.M.G. still leaves us marooned and expects us to conduct our business by utilising the old-fashioned wireless telegraph service. Only last week I suddenly recollected, when in mid-Channel, a most urgent telephone call which I should have made before I left London. Quite naturally, I sought out the telephone box, which ought to have been on board but wasn't, and, as the matter was quite beyond the scope of a telegram, I had to wait until I got to the other side of the Channel before I could make my call.

Surely it would not be a costly matter to build a low-powered telephony station at Dover which would connect up with the ordinary Post Office telephone system. I noticed the other day that the ever-enterprising Dutch have equipped the ferry boats across the Scheldt estuary with low-powered wireless telephony so that members of the business community can keep in constant touch with their offices.

"Scophony"

WHATEVER criticism can be legitimately levelled against the use of the word "scophony" to describe the latest system of television, I can heartily congratulate the people responsible for it, inasmuch that they have had the good sense to follow the advice I gave some time ago and have avoided a Latin and Greek hybrid.

This is the utmost I can say in favour of the word, however, for I notice that it is being used to describe "vision" apparatus pure and simple and not a combined vision and sound arrangement such as I had in mind when I first suggested the use of such a term.

Crystal Gazing

I WONDER if any kind-hearted reader can tell me where I can get hold of a crystal set, or, failing that, a crystal cup and catswhisker fitting, or even just a plain crystal? I spent two weary days tramping the streets of London in the heat wave trying to get hold of such an article on behalf of a Scottish aunt of mine who has recently followed the example of many of her fellow countrymen and moved south to a dwelling in the shadow of the acrials at Brookmans Park.

I started off by visiting the lordly emporiums of the West End, and, after a vain and perspiring search, I gradually descended in the social scale until I found myself in the Caledonian market.

Strange to relate, although I was offered two coherers and an old Marconi magnetic detector, I unearthed only one crystal receiver, and this of very ancient vintage. The grasping owner, taking advantage of their scarcity, had the nerve to ask me five guineas for his wretched contraption. Needless to say, I speedily told him where he got off, and departed in high dudgeon.

In view of the fact that there will be a large demand for this type of receiver even in the London area when Droitwich opens next year, I cannot but view the dearth of them with some misgivings. When the



In the Caledonian Market.

demand does come we shall, I suppose, be held up to ransom to the tune of five guineas apiece, as we were in 1922.

"Wired Wireless" on Buses

I HAVE seen it stated again and again by responsible people who ought to know better that it is quite impossible to quell the interference due to trams and

By FREE GRID

trolley buses. In fact, I have heard this so often that I have almost begun to believe it. I was all the more astonished, therefore, when I happened to be taking a ride in one of these juggernauts the other day in the Fatherland to find that the problem had so far been overcome that a receiver had been installed on the vehicle itself.

The programme was quite free from electrical interference, though I must admit that it was not wireless, but wired wireless, which was being used. This, however, only makes the achievement more astonishing still, as with this latter arrangement the elimination of interference is a still more difficult problem,



"Impossible."

the music being guided on its path by the same conductors whence comes the interference.

It is not the same as ordinary wireless, where some measure of screening could have been adopted. Nevertheless, elaborate filter circuits made up of a bewildering array of chokes and condensers had done the trick all right. I trust, therefore, that the "impossible" brigade which exist in this country will put this in their pipe and smoke it. If I remember rightly they shouted "impossible" when broadcasting was first mooted over a decade ago.

A Job for a Censor

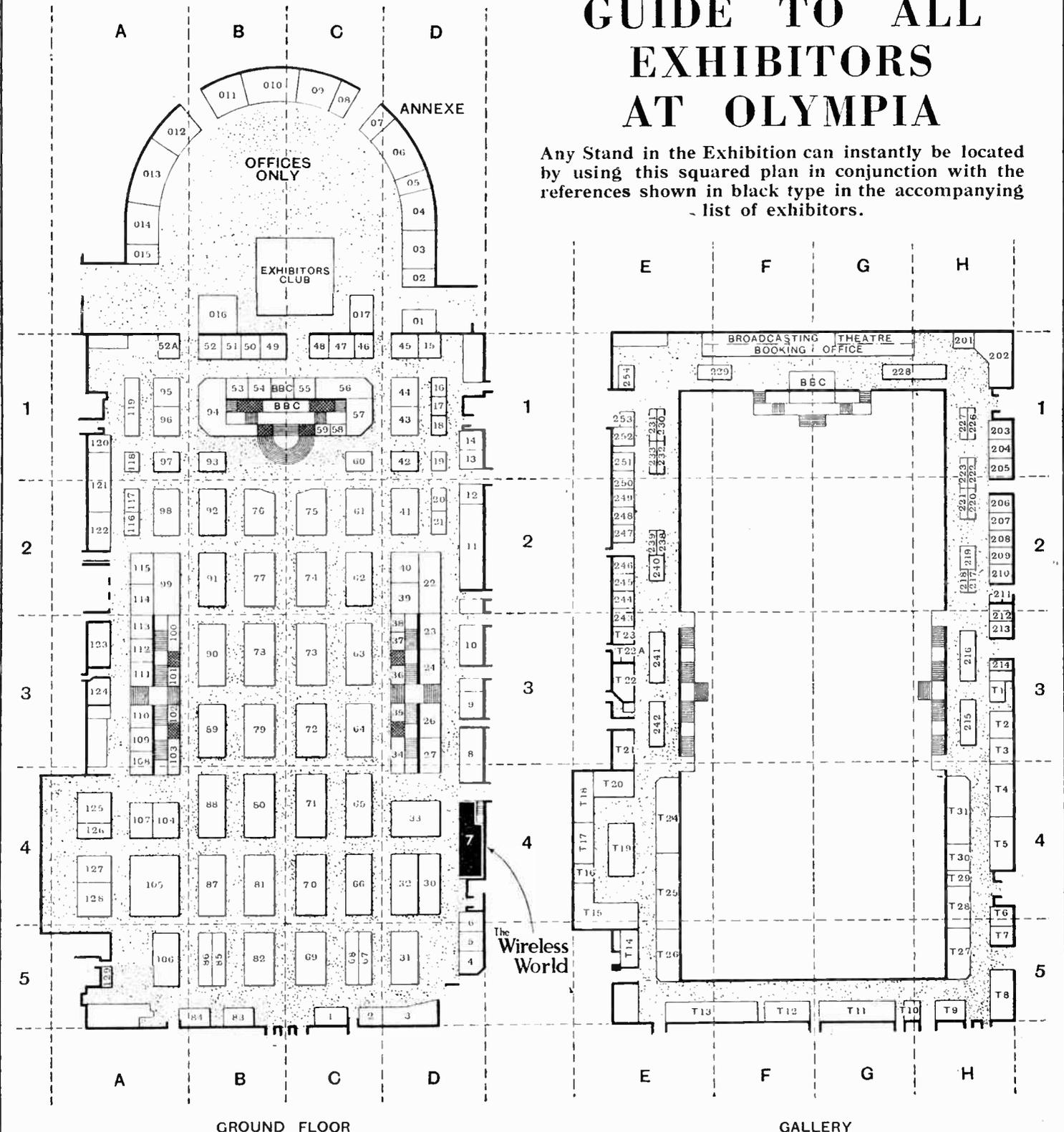
IT was nearly a year ago that I felt constrained to chastise certain representatives of the lay press who tried to tell us that they had witnessed the demonstration of a model train which derived all its power from the human body; the aforementioned power, so they said, increased with mental concentration and decreased with poor health. I defined this statement as "tripe," and issued a challenge which was not accepted; on the contrary, I was subjected to much vulgar abuse.

And now, after all these weary months, the mystery has been solved by the publication of the magic circuit by the inventor himself, and my honour has been vindicated. I do not suppose for one moment, however, that the newspapers concerned will see fit to render me the apology that is due; on the contrary, I expect that they will merely bend their energies to the evolution of some more scientific sob stuff.

The Wireless World STAND FINDER

GUIDE TO ALL EXHIBITORS AT OLYMPIA

Any Stand in the Exhibition can instantly be located by using this squared plan in conjunction with the references shown in black type in the accompanying list of exhibitors.



A selection of Constructional Receivers recently described in the pages of this journal will be on view at *The Wireless World* Stand (No. 7).

Exhibitors at Olympia—

Name and Address.	Stand.	Ref. Sqs.	Name and Address.	Stand.	Ref. Sqs.
Hillman Brothers 123, Albion St., Leeds.	T28	H 4	Shalles & Evans Tranquil House, Tranquil Vale, Blackheath, S.E.3.	254	E 1
Hobday Bros., Ltd. 21-27, Great Eastern St., E.C.2.	T11	G 5	Shawndel Tool Co. 99, Regent St., W.1.	203	H 1
Hustler, Simpson & Webb, Ltd. 317, Hoe St., Walthamstow, E.17.	62	C 2	Siemens Electric Lamps & Supplies, Ltd. 39, Upper Thames St., E.C.4.	31	D 5
IGRANIC Electric Co., Ltd. 147, Queen Victoria St., E.C.4.	86	B 5	Simpson's Electricals, Ltd. Grange Rd., Leyton, E.10.	17	D 1
Iliffe & Sons, Ltd. Dorset House, Stamford St., S.E.1.	7	D 4	Sinclair Speakers 49-50, Twyford St., N.1.	222	E 1
Itonia, Ltd. 58, City Rd., E.C.1.	T27	H 5	Six-Sixty Radio Co., Ltd. 17-18, Rathbone Place, W.1.	95	A 1
JACKSON Bros. (London), Ltd. 72, St. Thomas St., S.E.1.	116	A 2	Slektun Products Winder House, Douglas St., S.W.1.	46	C 1
Johnson Talking Machine Co., Ltd. 96, Clerkenwell Rd., E.C.1.	T9	H 5	Smith & Sons (Motor Accessories), Ltd., S. Cricklewood Works, N.W.2.	51	B 1
KENSINGTON , Ltd. 196, Upton Lane, Forest Gate, E.7.	245	E 2	Sonochorde Reproducers, Ltd. 1, Willesden Lane, N.W.6.	113	A 3
Kolster-Brandes, Ltd. Cray Works, Sidcup, Kent.	63	C 3	Sound Sales, Ltd. Tremlett Grove, Junction Rd., N.19.	213	H 3
L.E.S. Distributors, Ltd. 15-16, Alfred Place, W.C.1.	T14	E 5	Sovereign Products, Ltd. 52, Rosebery Ave., E.C.1.	101	A 3
Lampex Radio & Electric Co. 62, Brewery Rd., Islington, N.7.	18	D 1	Standard Telephones & Cables, Ltd. Connaught House, Aldwych, W.C.2.	96	A 1
Lamplugh Radio, Ltd. 177, Foleshill Rd., Coventry.	219	H 2	Stratton & Co., Ltd. Balmoral Works, Bromsgrove St., Birmingham.	21	D 2
Lancashire Dynamo & Crypto, Ltd. 94, Petty France, Westminster, S.W.1.	50	B 1	Sunbeam Electric, Ltd. Sunbeam Rd., North Acton, N.W.10.	65	C 4
Lectro Linx, Ltd. 79a, Rochester Row, S.W.1.	37	D 3	Sun Electrical Co., Ltd. 118-120, Charing Cross Rd., W.C.2.	T8	H 5
Lissen, Ltd. Worpel Rd., Isleworth, Middx.	72	C 3	Swift Levick & Sons, Ltd. Clarence Steel Works, Sheffield.	36	D 3
London & Provincial Factors, Ltd. 146, Theobald's Rd., W.C.1.	T4	H 4	TANNOY Products 1-7, Dalton St., W. Norwood, S.E.27.	103	A 3
Lugton & Co., Ltd. 203, Old St., E.C.1.	T26	E 5	Telegraph Condenser Co., Ltd. Wales Farm Rd., N. Acton, W.3.	98	A 2
McMICHAEL Radio, Ltd. Wexham Rd., Slough, Bucks.	69	C 5	Telegraph Construction & Maintenance Co., Ltd. Enderley's Wharf, Greenwich, S.E.10.	248	E 2
Magnacore, Ltd. 85, Alsen Rd., Holloway, N.7.	223	H 1	Telephone Mfg. Co., Ltd. Hollingsworth Works, W. Dudwich, S.E.21.	217	H 2
Mains Power Radio, Ltd. Broadway Works, Eastern Rd., Romford, Essex.	211	H 2	Telsen Electric Co., Ltd. Aston, Birmingham.	88	B 4
Manufacturers Accessories Co. (1928), Ltd. 85, Great Eastern St., E.C.2.	T10	G 5	The 362 Radio Valve Co., Ltd. 415, Mare St., Hackney, E.8.	226	H 1
Marconiphone Co., Ltd. 210, Tottenham Court Rd., W.1.	77	B 2	Thompson, Diamond & Butcher 34, Farringdon Rd., E.C.1.	T21	E 3
Metal Agencies Co., Ltd. Queen Sq., Bristol.	T30	H 4	ULTRA Electric, Ltd. Erskine Rd., N.W.3.	78	B 3
Milnes Radio Co. Victoria Works, Church St., Bing- ley, Yorks.	242	E 3	Univolt Electric, Ltd. 119, Finsbury Pavement, E.C.2.	5	D 5
Montague Radio Inventions & Develop- ment Co., Ltd. Beethoven Works, Great College St., Camden Town, N.W.1.	87	B 4	VANDERVELL , Ltd., C. A. 319, Regent St., W.1.	228	G 1
Mullard Wireless Service Co., Ltd. Mullard House, Charing Cross Rd., W.C.2.	71	C 4	Varley (Oliver Pell Control, Ltd.) 103, Kingsway, W.C.2.	85	B 5
Multitone Electric Co., Ltd. 95, White Lion St., Islington, N.1.	55	C 1	Vince's Dry Batteries, Ltd. Lion Works, Garford St., E.14.	105	A 4
NATIONAL Radio Service Co. 15-16, Alfred Place, W.C.1.	T22A	E 3	Vulco Dry Batteries Co., Ltd. Vulco Works, N. 19.	110	A 3
New London Electron Works, Ltd. East Ham, E.6.	107	A 4	WESTINGHOUSE Brake & Saxby Sig- nal Co., Ltd. 82, York Rd., King's Cross, N.1.	32	D 4
Newnes, Ltd., George 8-11, Southampton St., W.C.2.	8	D 3	Whiteley Electrical Radio Co., 128 & 129 A4, A5 Ltd., Victoria St., Mansfield, Notts.		
Nuvolon Electric, Ltd. Meredith Yard, Park Crescent, Clapham Park Rd., S.W.4.	238	E 2	Wilkins & Wright, Ltd. Holyhead Rd., Birmingham.	20	D 2
OLDHAM & Son, Ltd. Denton, Manchester.	123	A 3	Wingrove & Rogers, Ltd. Mill Lane, Old Swan, Liverpool.	93	B 1
Ormond Engineering Co., Ltd. Ormond House, Rosebery Ave., E.C.1.	99	A 2	Wireless & Gramophone Trader Dorset House, Stamford St., S.E.1.	T31	H 4
Orr Radio, Ltd. 63, Lincoln's Inn Fields, W.C.2.	40	D 2	Wireless League 12, Grosvenor Crescent, S.W.1.	232	E 1
Osborn, Chas., A. Regent Works, Arlington St., N.1.	202	H 1	Wireless Retailers Association of Gt. Britain 1, Mitre Court, Fleet St., E.C.4.	250	E 2
			Wright & Weaire, Ltd. 740, High Rd., Tottenham, N.17.	1	C 5
			ZEITLIN & Sons, Ltd., V. 54, Lamb's Conduit St., W.C.1.	T29	H 4

BLUE PRINTS

For the convenience of constructors full-size blue prints are available of the following popular *Wireless World* sets that have been recently described, price 1s. 6d., 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. Three.** (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.)
- Ferrocarril III.** (February 24th and March 3rd, 1933.)
- The Class "B" Ferrocarril Receiver.** (April 17th, 1933.)
- Universal A.C. Short-wave Converter.** (April 25th, 1933.)
- New Monodial Super.** (July 21st and 28th, 1933.)
- Modern Battery Four.** (August 11th, 1933.)

These can be obtained from the Publishers, Iliffe & Sons Ltd., Dorset House, Stamford Street, London, S.E.1.



WHAT TO SEE AT THE SHOW

AS this issue of *The Wireless World* will be in the hands of our readers two or three days before the Exhibition at Olympia opens, it allows time for a study of the following pages before the actual visit to the Show is made, and we believe that readers will welcome this general guide to what is likely to be of outstanding interest on the stands.

We do not claim that the features picked out in the following pages as of special interest include all that is outstanding at the Show, for the reason that, having prepared this issue before Olympia opens, it has been necessary to depend very largely on material supplied by manufacturers or obtained from brief inspections of the apparatus.

New valves and components and new ideas in circuit design have presented the manufacturers with much wider scope for the exercise of individual ingenuity than for many years past. The superheterodyne receiver appears to have come in for the greatest amount of attention from the majority of set manu-

facturers; this is not surprising because the superheterodyne undoubtedly offers more scope than a straight set for making full use of the more interesting types of new valves and such circuit improvements as automatic volume control. Not that straight sets can be regarded as in any way obsolete, however, and there are some fine examples at the Show.

Amongst components it will be noticed that there have been a good many new products developed; in particular should be noted new coils of the iron core type, whilst complete tuning units are gaining in popularity. Various components and aerial equipment for reducing electrical interference are to be featured.

If our readers will study the pages which follow we think that they will gain a fairly comprehensive idea of what Olympia holds in store, and even for those who are unable to visit the Show, this issue, combined with our two further special Show numbers, will, we think, cover the ground and also provide a permanent record for reference.

Classified Forecast of Outstanding Items

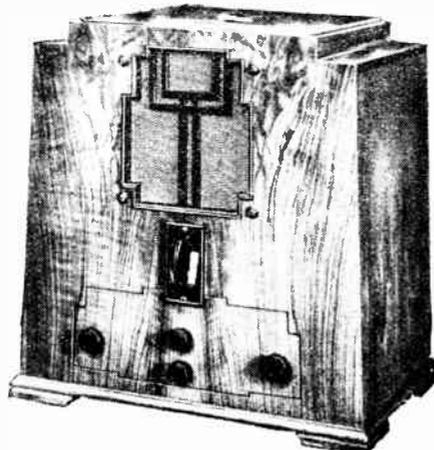
TWO years ago the superheterodynes exhibited at Olympia could almost be counted upon the fingers of one hand; last year they were about equal in number to the multi-valve straight sets; this year they have not only completely routed the larger class of straight set but they have also made deep inroads on the territory of the four-valve receiver. This rapid and decisive advance of the superheterodyne has largely been occasioned by the imperative need for high selectivity under modern broadcasting conditions, for in no other way is it so easy to obtain the requisite degree of freedom from interference.

Although the superheterodyne will represent such a large proportion of the sets on show, this does not mean that there will be any lack of variety. On the contrary, no receiver offers so much scope for originality in design as the superheterodyne, with the result that there will be a greater selection of receivers than ever before.

As an illustration of the different receiver types which are now covered by the term superheterodyne, it is instructive to compare the extremes. One of the largest sets on view will be the R.G.D. model 1201A, in which no fewer than twelve valves are employed; variable- μ valves are used in the H.F. and I.F. circuits with a duo-diode-

SUPERHETERODYNES

triode acting in conjunction with a separate triode to give quiet delayed automatic volume control. The apparatus is specially designed for quality reproduction, and the L.F. circuits employ resistance-capacity coupled push-pull connected valves on the lines of the paraphase system. The output



Marconiphone Model 276.

to the dual speakers is 6 watts, and a visual tuning indicator is fitted.

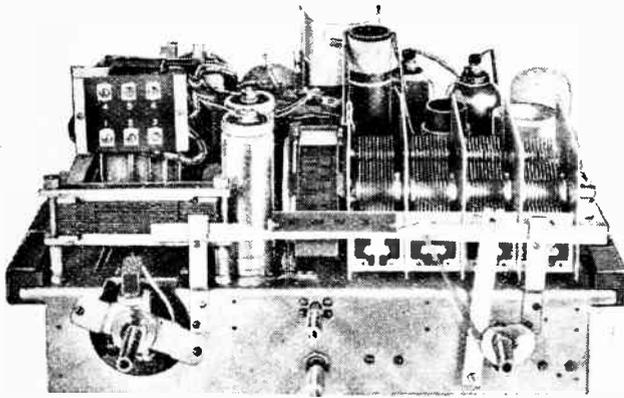
As a contrast to this extreme type, one might take the Varley model AP46, in which there are only four valves. The most interesting feature of this receiver is the omission of any I.F. amplifying stage, for the output of the H.F. pentode detector-oscillator frequency changer is coupled through a band-pass filter directly to the regenerative second detector. The frequency changer is preceded by a variable- μ H.F. stage with two tuned circuits, and the second detector is coupled to the pentode output valve by a tone correction circuit.

Between these two extremes lies every conceivable variety of superheterodyne, and most makers will be showing a number of different types. Thus, R.G.D. will have smaller receivers and Varley larger than the particular models just mentioned. R.G.D. will also be showing their model 701A, which has seven valves, and is rated for an output of 2 watts; there is a preliminary H.F. stage, a separate oscillator for frequency-changing purposes, and an anode bend second detector, while models are available for both A.C. and D.C. mains supplies. Their model 702A is a similar type of receiver, but is rated for a 2½ watts output, and it is fitted with a duo-diode-

What to See at the Show.—

triode second detector to give delayed A.V.C., and there is a visual tuning indicator. The larger Varley superheterodynes are fitted with an intermediate frequency amplifying stage, and also incorporate an automatic volume control system.

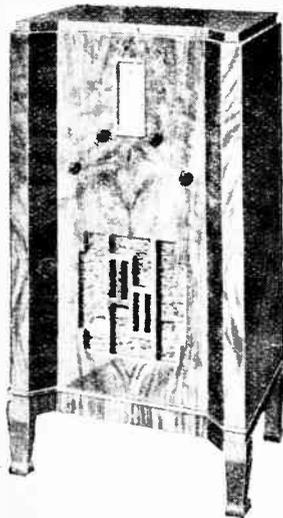
The Ferranti receivers are notable not only for their electrical design but also for the break from tradition in the matter of their cabinet work, and for this alone they will be well worth inspection. The Gloria



H.M.V. Superhet Concert 7 chassis.

model is obtainable in a variety of cabinet forms at prices from 24 guineas to 35 guineas; it is rated for an output of 2½ watts, and is fitted with delayed A.V.C. obtained through a duo-diode-triode valve operating to control the H.F. pentodes in the H.F., first detector, and I.F. stages. A separate oscillator valve is used with a variable-mu H.F. pentode first detector to form the frequency changer, and the L.F. coupling is by means of the resistance-capacity circuit. A tone control and a visual tuning indicator are incorporated.

The Gramophone Co. will be showing their Superhet Concert Seven, model 467, which is fitted with a tone control of unusual character. Instead of operating merely to reduce the high frequency response, it simultaneously increases the bass and reduces the treble or reduces the low frequencies while increasing the upper register,



G.E.C. Console superheterodyne.

and so permits an unusually wide range of control to be obtained. A threshold sensitivity control, with a static suppressor switch, is fitted, and the output to the moving-coil speaker is 2½ watts. This firm will also be showing a five-valve radio-gramo-

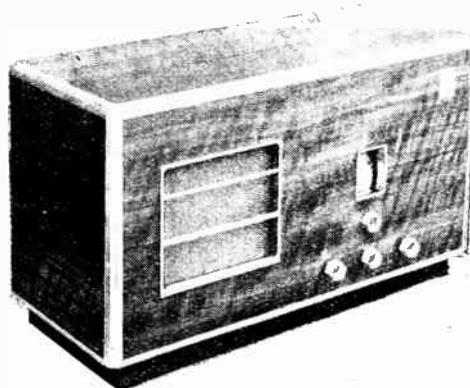
phone at 29 guineas, and there will be a ten-valve superheterodyne in radio-gramophone form with an automatic record changer at 80 guineas, so that models to suit all tastes can be found.

In most cases the intermediate frequency is fixed at some 110 kc/s to 125 kc/s, but in one receiver the high value of 473 kc/s is employed. This is in the Alba superheterodyne, and because of it a single signal frequency tuned circuit can be used without any increase in second channel interference.

The circuit is arranged as a detector-oscillator, a variable-mu I.F. stage, with an anode bend second detector resistance coupled to the output pentode. It is priced at 13 guineas, and a D.C. mains model will be available.

Bush Radio also have a four-valve receiver, but here a more normal intermediate frequency is employed, and a band-pass input circuit is provided to the detector-oscillator. There is a single I.F. stage with an anode bend second detector feeding a pentode output valve rated to deliver 3 watts to the loud speaker. The mains equipment includes a metal rectifier.

Receivers for A.C. and battery working will be shown by Higgs; the model Super A is for A.C. mains and gives a 3 watts output and automatic volume control is fitted. The Super B is for battery operation, and is also fitted with A.V.C.; the output is



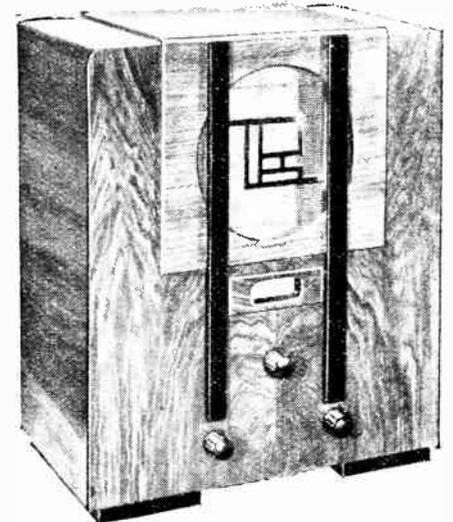
Kolster-Brandes 6-valve receiver.

1½ watts, and the price of 18 guineas includes the moving-coil speaker and batteries. This model is also available in radio-gramophone form.

Ultra Electric will show a wide range of receivers. The Tiger chassis is available in a variety of cabinet styles, and in slightly different models for A.C., D.C., or battery working. The mains models have four valves, apart from the rectifier in the case of the A.C. set, arranged as a detector-oscillator, a variable-mu I.F. stage, a screen-grid second detector, and a pentode output valve. The battery set is similar, but a driver valve is inserted between the second detector and the Class "B" output valve. The larger receiver marketed by this firm, the Panther, includes seven valves, and is for A.C. operation; there are two I.F. stages with a duo-diode-triode second detector, and a two-valve frequency changer.

Kolster-Brandes will have a four-valve superheterodyne and a six-valve model fitted with A.V.C. and automatic tone correction. Their eight-valve receiver has a system of

quiet automatic volume control, known as an inter-station noise suppressor, which is arranged through the combination of a duo-diode-triode with a single-diode-tetrode valve. The output stage consists of two pentodes in push-pull, giving an output of 5½ watts. All receivers of this make are designed for operation from an aerial with a screened lead-in for reducing "man-made static," and the additional equipment for this will also be on view.

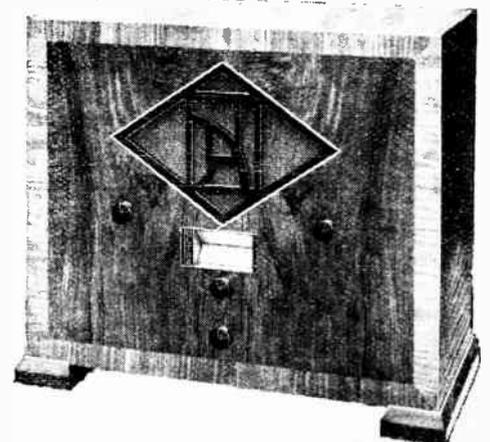


Bush Radio table model.

Although most A.V.C. systems will be arranged with the aid of the duo-diode-triode valve, this does not mean that they will all be identical. Perhaps the majority of sets are using it to give delayed diode A.V.C., but in the six-valve Radio Instruments receiver it is employed for amplified automatic volume control. In the Pyc portable superheterodyne, however, metal rectifiers are used to provide automatic volume control; as might be expected, this set is fitted with a frame aerial and the output stage is of the Class "B" type. Variety is also to be found in the Q.A.V.C. systems; although it is the common practice to use a combination of a duo-diode-triode and a triode, some firms are using metal rectifiers.

D.C. Mains Sets

Examples of nearly every superheterodyne type will be found on the General Electric Co. stand. The smallest is represented by a five-valve model with an input band-pass filter to the detector-oscillator frequency changer, an I.F. stage, a screen-



Ultra Electric "Panther" table model

What to See at the Show.—

grid second detector, and a pentode output valve. A similar set is available for D.C.

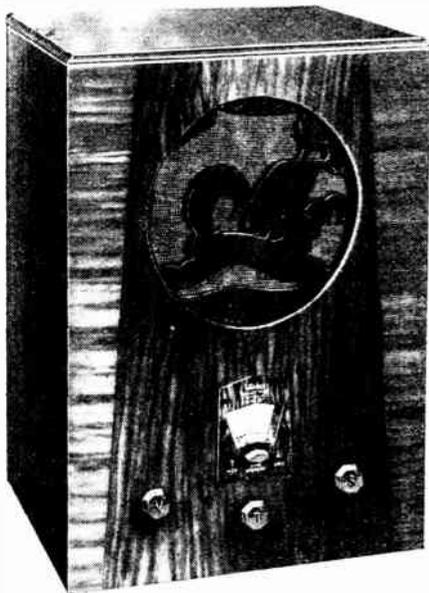


Ferranti "Gloria" companion model.

mains, and this is provided with a barretter for regulating the heater current to the D.C. mains valves. Another model, but with six valves, is arranged for battery operation, and here Class "B" output is naturally used with the new B.21 valve; the output is rated at 1,200 milliwatts. The intermediate frequency is 125 kc/s, and a special arrangement is employed in the input band-pass filter for the suppression of second channel interference and similar whistles.

Q.A.V.C.

The larger model of this firm is provided with eight valves, and there is a variable-mu H.F. stage with two signal frequency



Varley 5-valve superheterodyne.

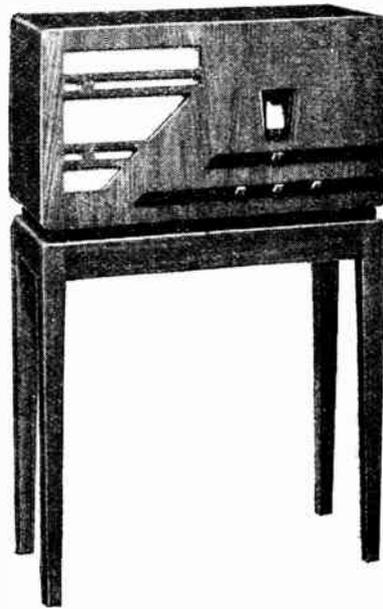
tuned circuits; the chief feature, however, is undoubtedly the system of quiet automatic volume control in which a duo-diode-triode valve is used in conjunction with a separate triode for noise suppression. With the Q.A.V.C. circuit, of course, the set is quite dead until it is tuned accurately to a station. The receivers are all available in different cabinet styles, including radio-gramophones.

An unusual feature to be found in the

Marconiphone model 290 is the employment of a metal rectifier for the A.V.C. system; this receiver is of the seven-valve type with variable-mu H.F. and first detector stages. There is a separate oscillator valve and a static suppressor is included; the output is rated at 2½ watts, and an automatic record changer can be fitted.

Battery Sets

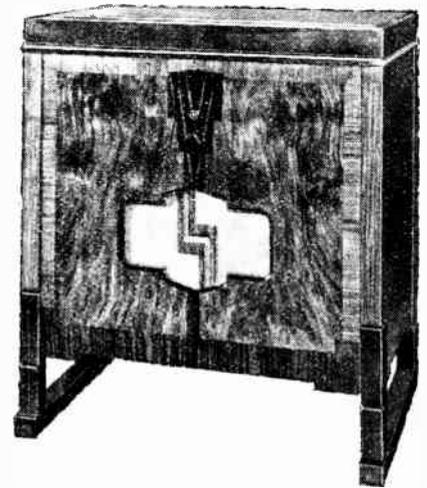
The model 272 is a five-valve set with a constant-peak input band-pass filter to the screen-grid detector-oscillator, which acts as the frequency changer. A single I.F. stage is used, with a power grid detector auto-transformer coupled to the output pentode. This model is priced at 15 guineas. A battery portable superheterodyne will also be shown, and it includes a moving-coil loud speaker, while the total anode current is stated to be only 10 mA.



Standard 60 superheterodyne.

Sunbeam Electric will be showing what is essentially a four-valve superheterodyne in A.C., D.C., and battery forms. In all cases there is a detector-oscillator for the fre-

quency changer, a single intermediate frequency stage, and the second detector. The A.C. model has a pentode output valve, and there is in addition the H.T. rectifier, but



H.M.V. Console Autoradiogram.

in the D.C. set there is, of course, only the pentode output valve. The battery receiver, however, has two L.F. stages, since with Class "B" output it is necessary to employ a driver valve. All models bear the same price of 13 guineas.

A very wide variety of receivers will be found on the Columbia stand, although the differences lie more in the cabinet work and gramophone equipment than in the actual radio chassis. The Autoradiograph De Luxe Ten, model 640, is a ten-valve A.C. set with delayed automatic volume control, moving-coil loud speaker, automatic record changer, and a tuning scale calibrated in both wavelengths and stations. It is priced at 90 guineas, but a smaller model of the seven-valve type, also fitted with D.A.V.C., is available at 43 guineas.

Standard Telephones will have two superheterodynes on view. The Standard 40 is a four-valve model with a moving-coil speaker, while the Standard 60 is fitted with six valves. These sets naturally use Micromesh valves, and the latter includes automatic volume control obtained with the aid of a duo-diode-triode detector valve.

STRAIGHT SETS

THE "Superinductance" receivers with two tuned H.F. stages made by Philips have always been a thorn in the side of partisans of the superheterodyne principle of reception, and improvements which have been made in this year's models will undoubtedly keep this perennial controversy open for some considerable time to come.

The star receiver in the Philips programme this season will be the model 636A. Designed for A.C. mains only, this receiver has seven stages, excluding the rectifier. There are two variable-mu screen grid H.F. stages with a band-pass input circuit and tuned coupling transformers of the high-efficiency "Superinductance" type, a screen grid detector, a combined single diode and screen grid amplifier valve for automatic volume control, a high magnification triode for silent tuning between stations, a triode L.F. stage, and a 7-watt pentode output valve. A three-position control is included so that the set can be adjusted to operate silently under any conditions of local interference. In the third position maximum

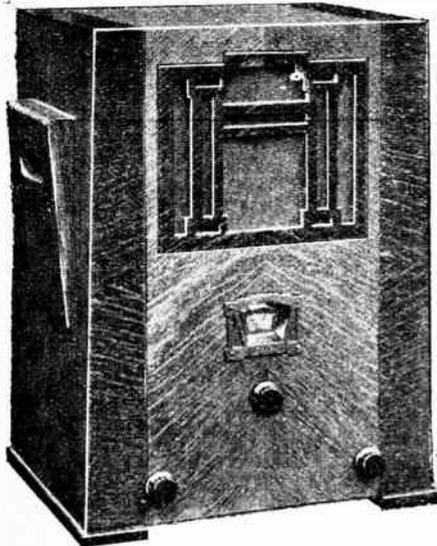
sensitivity without silent tuning is provided for long-distance reception enthusiasts.



Philips Model 634 "Superinductance" receiver.

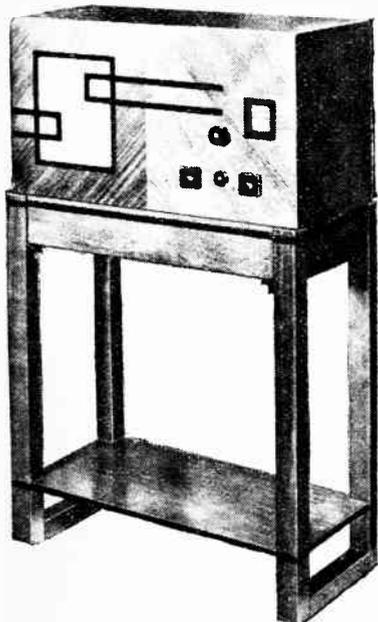
What to See at the Show.—

The Philips 634 receiver is another set employing two H.F. stages with four tuned circuits. It does not incorporate the luxury of silent tuning, but automatic fading compensation is provided by a diode S.G. detector-amplifier valve. This set is available for A.C. or D.C. mains, and in the D.C.



"Alba" Model 222 Class "B" receiver.

set two pentodes in parallel are used in the output stage, from which an excellent power output is obtained on D.C. mains voltages as low as 110. The Philips exhibit will also include an inexpensive battery receiver, the 832B, with one tuned and one semi-aperiodic stage. This receiver is based on last year's 830B model, in which, it will be remembered, the H.T. consumption is controlled to minimise waste during periods when the transmitter is not modulated. The set is now supplied with a moving-coil loud speaker in a cabinet of new design. The range is completed by the 834, also with one tuned and one aperiodic H.F. stage.



Climax T.C. III mains transportable and pedestal.

This set, which is based on the 830 receiver of last year, is available for A.C. or D.C. mains. As in the case of the 634 receiver, parallel pentodes are used in the output stage of the D.C. model.

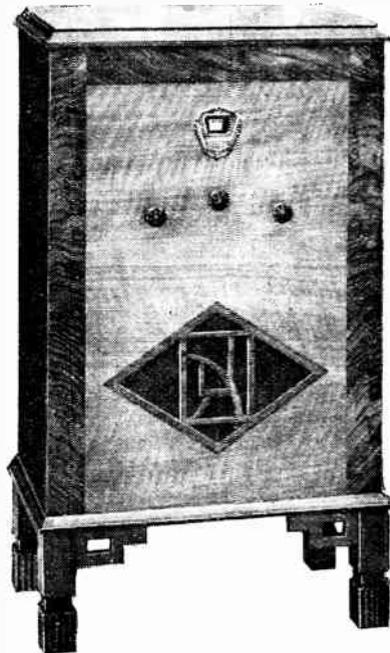
Another good example of a straight receiver employing two variable-mu screen grid H.F. stages is the Cossor Model 735. This receiver is designed for battery operation, and the H.F. valves are followed by a detector, a driver valve, and Class "B" output stage.

Single-stage H.F. Sets

Once again the general-purpose type of receiver, employing a single screen grid stage, followed by a detector and L.F. amplifier, will be well represented at Olympia. Dealing first with mains-operated sets, the following examples will serve to indicate the new standard of value which will be offered in this class.

Messrs. A. J. Balcome, Ltd., will be showing their Model 50 all-mains receiver, including a variable-mu H.F. stage, screen grid detector, and pentode output valve with energised moving-coil loud speaker at £11 19s. 6d.

The Bush Radio A.C. Three will again be shown at the reduced price of £11. The new Clarkes "Atlas" A4 table model is another receiver employing this arrangement of valves and has a rated output of 3 watts. The price is 12 guineas.



Ultra "Lynx" Console model.

The Cossor Models 3468 and 3469 for A.C. and D.C. mains respectively are pedestal models at £9 19s.

Climax sets are represented in this category by the T.C. Three Transportable, which, with band-pass tuning and moving-coil loud speaker, sells at 14 guineas.

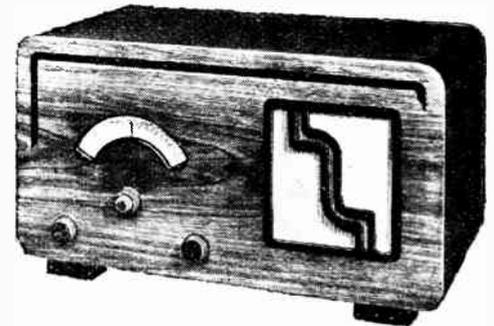
The Columbia 355 All-electric Four and the H.M.V. 436 de Luxe Radio-Four are also outstanding examples of general-purpose sets employing four valves, taking into account the rectifier, the price in each case being 12 guineas.

The well-known Kolster-Brandes K.B.321 receiver will again be shown practically unchanged, but the R.I. "Madrival" all-mains set has been redesigned and now makes use of dust-core tuning inductances. Another three-stage receiver employing iron core coils is the Telsen 464. This receiver includes tone control, and sells at the very reasonable price of 9 guineas.

The Model AP34 receiver to be shown by Varley is a band-pass tuner incorporating

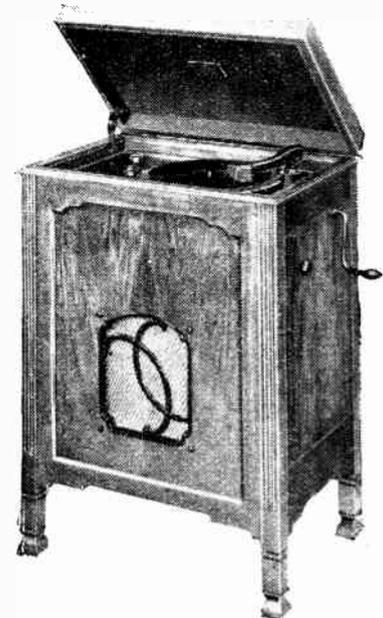
the well-known square peak coils, and with a variable-mu screen grid H.F. valve and a pentode and output stage is priced at 12 guineas.

In the Ultra range of receivers the general-purpose sets are known as the "Lynx" series and are housed in cabinets of striking design. The same base and chassis will be shown in table, model, console, and radio-gramophone form.



New Atlas A4 receiver.

This year, thanks to the introduction of Class "B" and Q.P.P. amplification, the number of battery receivers will show a marked increase over previous years. All the following sets will include a screen-grid H.F. stage, and while in many cases existing sets with plain triode or pentode output valves are being continued, their prices have been reduced, so that they represent extraordinarily good value for money. In the latter class, for instance, there is the Alba Model 22 which, with balanced armature loud speaker, sells for £9 19s. 6d. The equivalent Model 222, with the addition of a driver valve and Class "B" output valve, is a new model with a permanent-magnet moving-coil loud speaker, and will sell for 12 guineas. This set is also available in radio-gramophone form with a spring motor at 18 guineas.



Columbia "CQA" Radiogramophone.

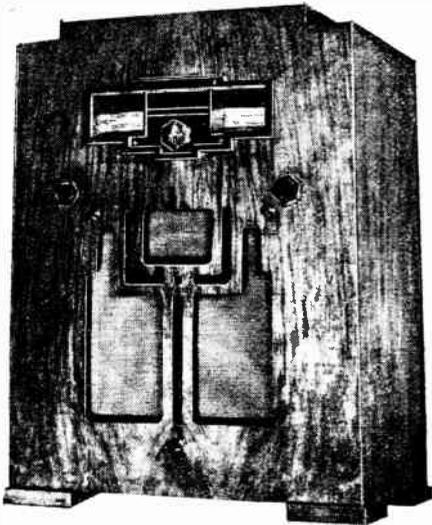
The Clarkes "Atlas" "Lambda" receiver is being continued at £9 15s., and includes many detail refinements in the circuit. A new model, the B4, with a Class "B" output stage giving 1½ watts, will also be shown. In the Cossor range, the equivalent battery model of the general-purpose mains set already described, is the

What to See at the Show.—

Model 3456, a review of which appears in this issue.

The C.A.C. exhibit will include the "Oxford" Class "B" Ferrocart 4, which is based on *The Wireless World* Class "B" Ferrocart receiver.

The principal battery receiver in the Columbia range is the "C.O.A. Battery Four," which incorporates a modified form of quiescent push-pull pentodes in the output stage. The set is fitted with a permanent-magnet moving-coil loud speaker, and the undistorted power output is of the order of 1½ watts. The price of the table model, 1001, has been fixed at 11 guineas, and there is a radio-gramophone version in a full-size cabinet incorporating the new



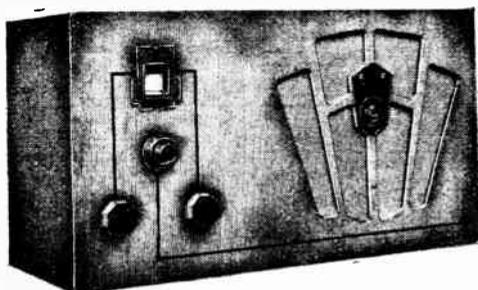
Marconiphone Model 260 with push-pull pentode output stage.

Columbia pick-up and double-spring motor, which is extraordinarily good value at 20 guineas. A new and inexpensive battery set, known as the "M.C. Battery Three," has also been added to the Columbia list, and with a straightforward H.F. detector-pentode circuit and permanent-magnet loud speaker is priced at £8 15s.

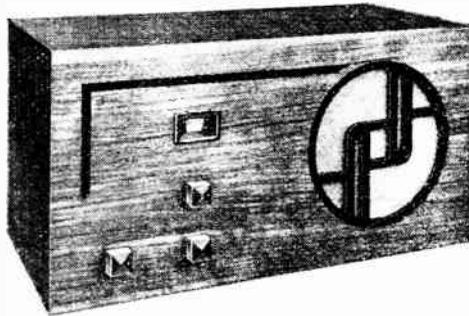
With the introduction of Class "B" amplification, a battery version of the Madrigal receiver has been produced by R.I. This set, like the mains equivalent, makes use of dust-core tuning coils.

In the Marconiphone Model 260, we find another example of push-pull pentodes in the output stage. The arrangement is described as "P.C.P." (the "parallel conductance principle"), and is a modified form of Q.P.P. The set, with a permanent magnet loud speaker, is housed in a cabinet which maintains the Marconiphone reputation for high-grade finish and will sell for £11 15s. 6d.

A really low-priced set with the backing of a firm of high reputation is the Standard



Standard Telephones "30B" receiver.



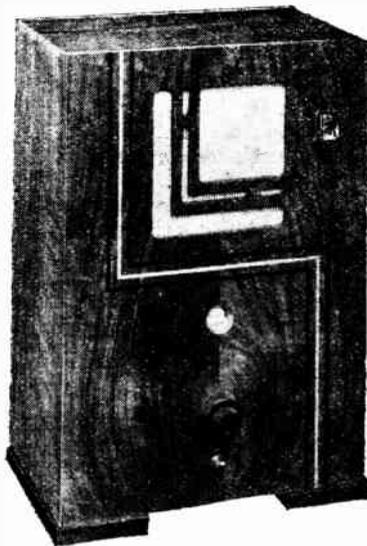
Burgoyne "Class B Three" receiver.

Model 30B, which will be shown by Standard Telephones and Cables, Ltd. This set has a straightforward H.F. detector-pentode circuit, and with an adjustable moving-iron type loud speaker sells for £5 12s. 6d.

Detector L.F. Sets

For the man who is interested primarily in reception of the local station, there will be a wide choice of simple and inexpensive sets consisting of a reacting detector followed by one or more stages of L.F. amplification.

Burgoyne Wireless, Ltd., are specialising in sets of this type for battery operation, and have produced a most attractive series in modern style cabinets. The "Popular" model with a detector-2 L.F. circuit and moving-iron type loud speaker is a self-



Slektun "R & R" All Electric Twin.

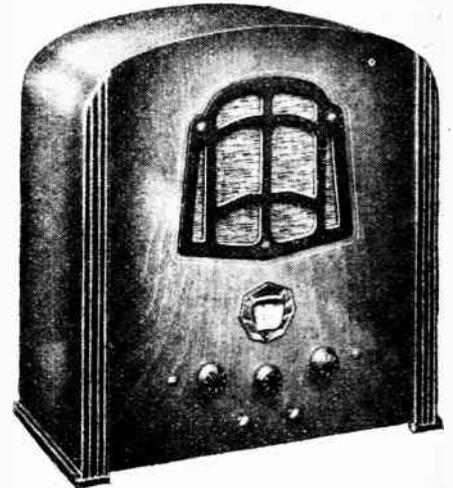
contained receiver with frame aerial, costing £3 17s. 6d. complete. The "Olympic 3" employs the same type of circuit, but is designed for use on an outside aerial. A moving-coil loud speaker is used and the price is the same as that of the "Popular" model. The cabinets are rexine-covered, but de luxe chassis-built models with polished cabinets are available, the price in each case being 4 guineas. The receiver on this stand which is likely to attract the most attention, however, is the new "Class B Three." The circuit consists of a detector, driver valve and Class "B" output valve, and the price, complete with moving-coil loud speaker, is £6 10s.

Slektun Products, Ltd., will also be showing a receiver in which a reacting detector is followed by a driver valve and Class "B" output. The set is known as

the "R. & R." Class "B" Three, and is fitted with a permanent-magnet moving-coil loud speaker.

With the backing of a firm of the standing of the G.E.C., their new battery M.C.3 receiver, which sells for £5 17s. 6d. complete with batteries and moving coil loud speaker, is assured of a favourable reception among those in search of a sound but inexpensive set. The circuit consists of a detector, a low-frequency amplifier, and a pentode output valve.

Standard Telephones and Cables, Ltd., will be showing a two-valve battery set with moving-iron loud speaker, in which



G.E.C. Battery M.C.3.

automatic bias is provided, and showing that the best possible performance is obtained at all times during the discharge of the H.T. battery. Simple two-valve sets for A.C. and D.C. mains, such as the models S322 and S320, will also be found on this stand.

The "Cambridge A.C.2" to be shown by C.A.C. is a receiver of unusual technical merit. The single tuned input circuit contains a coil of the Ferrocart type, and the detector is one of the new high efficiency screen-grid pentode valves. The output valve is a Catkin pentode.

SPECIAL SETS

THE needs of the average listener are met by the ordinary type of broadcast receiver, which has been discussed in the preceding pages. Although there is nothing approaching standardisation in this matter, an "ordinary broadcast receiver" may, without being dogmatic, be described as one which covers the medium and long broadcasting wavebands, and which is primarily intended to operate with an external aerial.

There is, in addition, a minority—but by no means a negligible one—which requires something rather less conventional. For instance, a completely self-contained set with a built-in frame aerial may be considered essential in certain circumstances, either because portability is desired, or because it is impossible to erect a reasonably efficient type of aerial. Again, an increasing number of listeners are discovering the attractions of the short and ultra-short bands, and the newer applications of wireless, such as motor car radio, are making progress. All these interests, and those of the "kit" constructor as well, will be amply catered for at the Show.

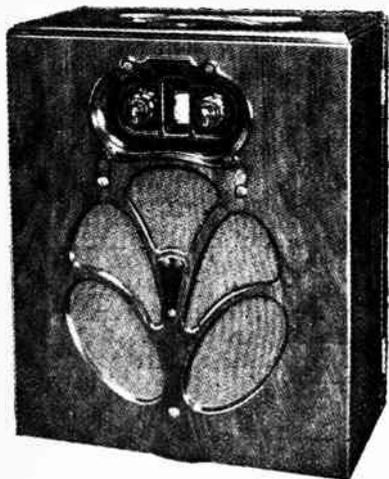
What to See at the Show.—

Among the most interesting of the new portables is the Pye P/B, a six-valve battery-operated superheterodyne, completely self-contained with a frame aerial. The valves operate as signal-frequency H.F. amplifier, combined oscillator-first detector, I.F. amplifier, driver, and class "B" output; the second detector is a Westinghouse metal rectifier, and is arranged to give delayed automatic volume control, which comes into operation as soon as the class "B" valve is fully loaded. This set is fitted with a moving-coil loud speaker; the price is only 14 guineas. Other interesting superheterodyne transportables, also fitted with moving-coil loud speakers, are to be shown by H.M.V. and Marconiphone.

Suitcase Portables

Turning to "straight" sets of the truly portable type, it will be found that the McMichael suitcase model (the Duplex Four) has been brought up to date, and is now fitted with a moving-coil loud speaker. Other battery and mains sets, similarly self-contained, are to be shown.

Iron-cored tuning coils are employed in the tuning circuits of the new Beethoven suitcase model, which employs a high efficiency pentode valve, and, again, a moving-coil loud speaker.



A portable battery-fed superheterodyne by H.M.V.; a moving-coil loud speaker is fitted.

As is to be expected, Class "B" amplification will figure in a number of the new battery portables and transportables. Among the new sets of this type is the Portadyne Model P.B.5, for which an output of 1,300 milliwatts is claimed for a standing anode current of between 7 and 8 milliamperes.

Frame aerials are not confined entirely to portable sets, or even to those with comparatively ambitious H.F. circuits. Burgoyne and Shalless & Evans are both to show a range of self-contained detector-L.F. frame aerial sets at extremely low prices. Naturally, receivers of this type have a limited, but nevertheless very useful, range of reception.

"Paraphase" Amplification

Amplifying equipment, in many cases combined with turntables, record-changing mechanism, and a microphone for public-address work, will be shown by several firms. The R.G.D. 12-watt A.C. outfit, Type W12A, is especially interesting in view of

the fact that, although resistance-capacity coupling is used throughout, a push-pull output stage is employed. This, of course, implies the use of a phase-changing valve. An

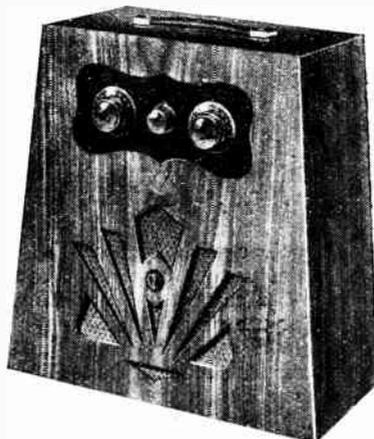


A real portable: the new McMichael set.

automatic record changer is supplied with the equipment in its standard form.

Two amplifiers rated in terms of their D.C. anode dissipation at respectively 25 and 50 watts have been produced by Birmingham Sound Reproducers, Ltd. These give an undistorted output of about 6 to 12 watts, and employ screen grid valves as amplifiers with resistance-capacity intervalve couplings. It is interesting to note that a two-stage H.F. radio chassis designed to work with these amplifiers is to be shown.

Film Industries, Ltd., are to show simple, compact, and relatively inexpensive public address outfits, complete with microphone, and entirely self-contained. The C.A.C. six-watt amplifier includes a scratch filter, and is primarily intended for gramophone work; it gives an output of 6 watts.



The Shalless and Evans detector-L.F. set includes a built-in frame aerial.

Although full details of all the short-wave apparatus to be exhibited have not yet reached us, enough information is available to justify the statement that this specialist branch of wireless activity is not to be neglected. Halford Radio, Ltd., announce the introduction of no fewer than five special short-wave sets designed mainly for overseas

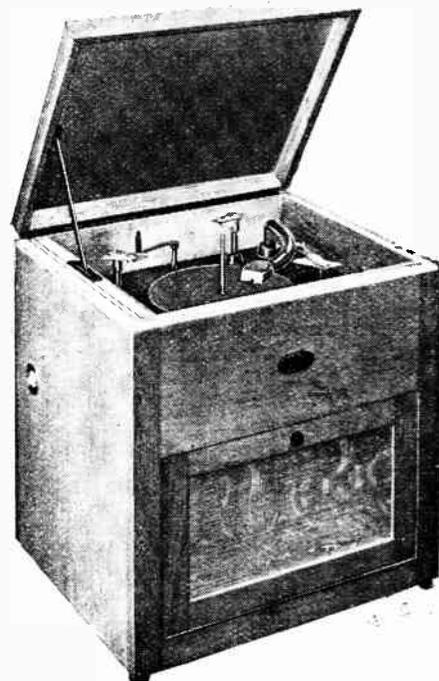
use. The same firm are also producing a series of all-wave receivers (long, medium, and short) which will be of equal interest to listeners in this country. The R.I. Antinodal Short-wave Converter is available in a form suitable for operation on A.C. mains, in addition to the battery-set adaptor.

The Eclex short-wave converters for this season are supplied both for A.C. and battery operation, and with or without an H.F. stage preceding the autodyne frequency changer.

As most of our readers are aware, the firm of Stratton & Co. have for some time specialised in short-wave work, and although details of their programmes for this season have not yet been made public, it is known that several interesting Eddystone short-wave productions will be exhibited.

Kit Set Developments

Among the new kits introduced this season is the new Cossor Melody Maker, a particularly cleverly designed receiver, which will be available in several different forms. The simplest version, a standard three-valve battery model with a high-efficiency pentode output valve, is to be available with either moving-iron or moving-coil loud speakers. The chassis is of gun-finished



R.G.D. amplifying equipment, with resistance-coupled push-pull output.

blued steel, and, by the inclusion of a fully screened coil unit, wiring is greatly simplified. The set includes a variable- μ H.F. stage, and is particularly attractive externally, the cabinet being arranged in the modern style with the loud speaker at the side; there are few better-looking sets, ready-made or in kit form.

As Cossors were pioneers of Class "B" valves, it is only natural that there should be a Melody Maker with this form of amplification on the same chassis.

Another interesting kit set is announced by Lissens; their well-known "Skyscraper" model has been entirely redesigned in order to include reception of short waves in addition to the medium and long broadcasting bands. Recent "Wireless World" sets, including the New Monodial, are to be featured in "kit" form by C.A.C.

What to See at the Show.—

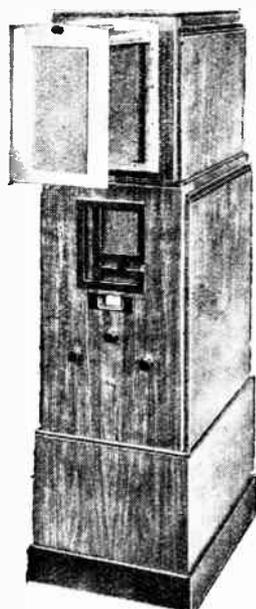
Although it is not, properly speaking, a kit set, the demonstration superheterodyne exhibited by Westinghouse should be mentioned: this set is intended to show the use



B.S.R. amplifier and dual gramophone turntables.

of the new Westector as a combined second detector and A.V.C. device.

Haynes Radio sets are available as complete receivers, bare chassis, or as kits of parts. All are mounted on aluminium base-plates finished to match the general colour scheme, and have full-vision tuning scales, uniform control knobs, and Ferrocart coils throughout, even in the I.F. circuits of the superheterodynes. The Haynes Quality Receiver, embodying an almost ideal specification for medium-range reception with high quality and generous output, appears this year in slightly modified form with the new compact Ferrocart coils. Among the most ambitious of the new sets is a superheterodyne available either for A.C. or D.C. mains. For this set a two-valve or a single-valve "Pentagrid" frequency changer is available, and the second detector is a double-diode triode, arranged to give amplified and delayed automatic volume control. Another new Haynes receiver is a short-wave superheterodyne embodying a signal-frequency H.F. stage before the autodyne detector-oscillator.



The screen of the Bush Radio television receiver fitted immediately above the loud speaker.

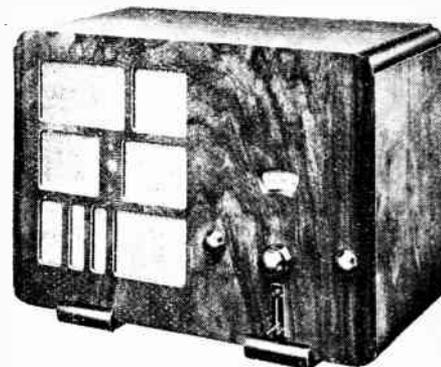
Those who are still using out-of-date sets through uncertainty as to changes in the form of their domestic electrical supply will be interested in the "universal" sets which work equally well on either D.C. or A.C. The Sunbeam series are illustrative of what may be done in this direction; several distinctive models are available, including a

"midget" set measuring no more than 11in. wide and 8in. high. An H.F.-det.-L.F. circuit is included, the output valve being a pentode, and the set works on any mains supply between 200 and 250 volts. A 25ft. aerial is included with the set, and an output of over 1 watt is obtained. The cost of this little set amounts only to seven guineas. Other Sunbeam sets of conventional size, but embodying the same "universal" feature with regard to mains supply, are offered at eight and nine guineas. Grafton Radio are also expected to show "universal" sets, including superheterodynes.

Special Car Sets

It seems certain that several special sets, designed specifically for fitting in a car and for operation while the vehicle is in motion will be exhibited. Page Car Radio are expected to show a superheterodyne including such desirable features as automatic volume control, a signal-frequency H.F. stage, and a remote control device whereby the set may be operated from any convenient point in the car, though it may be mounted in an inaccessible position. Unlike American car sets, provision for long-wave reception is made. Another set, of

simpler type, employs a "straight" three-valve circuit, and there is also an inexpensive "baby" car receiver, for headphone reception, which operates on 12 volts H.T., derived from the car battery.



The latest Cossor Melody Maker; a new departure in kit sets.

A television receiver, completely self-contained with projector and amplifier, is to be exhibited by Bush Radio. In this instrument the screen is mounted above the loud speaker at a convenient height.

LOUD SPEAKERS

It may be safely predicted that, from the point of view of numbers and also in general technical merit, the display of loud speakers at Olympia this year will be better than anything that has been seen before. The small moving-coil unit will still be the best represented, but there is every indication that a wider choice will be offered to those in search of the larger and more expensive types. Loud speakers incorporating Class "B" output stages are being shown by a number of firms, and in the majority of cases universal output transformers have been modified to extend their scope to Class "B" amplification.

Small Moving Coils

One of the most interesting exhibits will be the new range of Ediswan-B.T.H. R.K. reproducers. In addition to the well-known coin. Senior R.K., there will be two entirely new models, the "Major" (8in. cone) and the "Minor" (6in. cone). The new units

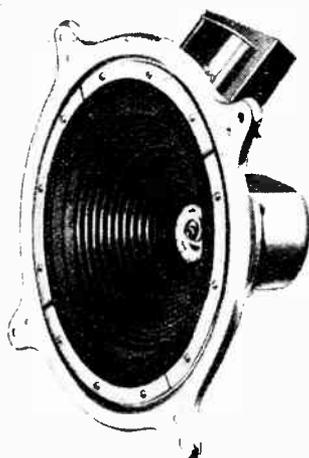
cept in dual units, and a new energised model, the E.8, takes the place of the D.C.8. Centring spiders have been strengthened and air-gap clearances have been increased with larger field magnets. A new range of cabinets of modern design has been introduced.



Rola Type F.R.5-P.M. unit.

The standard Rola F5 (6in.), F6 (7 3/4in.), and F7 (9in.) groups of units and dual-balanced pairs afford a very wide choice for individual requirements, and can now be supplied with output transformers for Class "B" valves.

Magnavox loud speakers will this year be exhibited on the Benjamin Electric stand. There will be several new models, including two permanent magnet units the Standard Type 254 with 7in. cone and the Senior Type 252 with 9in. diaphragm. In the re-designed Type 152 energised models a new design of magnet with a U-shaped yolk has been adopted. In these models, as well as in the case of the permanent magnet units, the familiar Magnavox grille is omitted, and the centring spider is fitted behind the diaphragm. The permanent magnet units will be supplied in a sealed dustproof bag, and will be guaranteed for one year if the seal is unbroken.



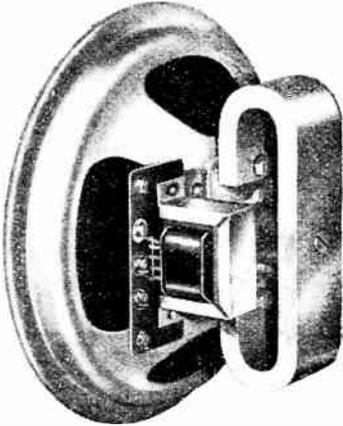
Ediswan "Major" R.K. loud speaker.

are very robustly designed, and all metal parts are cadmium plated.

The Celestion range has been entirely revised. The Soundex is discontinued ex-

What to See at the Show.—

In addition to the well-known Junior, Standard and Senior units and dual-matched pairs, Sonochorde will be showing a new Baby PM at a very attractive price,



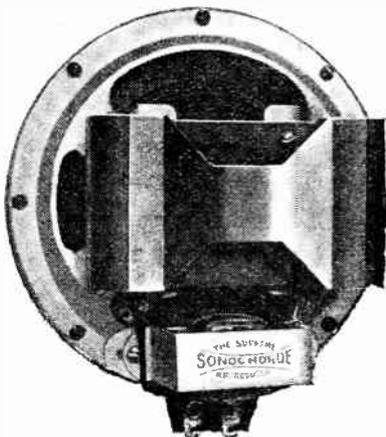
The new Magnavox Type 252 permanent magnet unit.

and a new series of de luxe models with a two-tone green crystalline finish.

A new "Super Dwarf" unit, suitable for portable sets and car radio, will be an important exhibit on the Epoch stand. This firm is also showing a new version of the well-known A2 unit.

Reproducers and Amplifiers will again be showing their "Bantam," "Challenger," and "Victor" units, and, in addition, an entirely new model to be known as the "Alpha." At the time of writing, technical details of this unit are not available.

Under the new management the "Silver Ghost" series of the Lamplugh concern has undergone complete revision. A new diaphragm material known as "Tone Tex" is being used, and a choice of diaphragms of different tone quality is available for each of the four different models now being manufactured. An ingenious quasi-resonant baffle will also be seen on this stand.



Sonochorde "Midget" loud speaker.

Ferranti will be showing a new and inexpensive permanent-magnet unit known as the M5, and two new energised models, the D4 and D5. A universal cabinet of very beautiful design has also been introduced to house these units.

The W.B. range of speakers made by Whiteley Electrical Radio will be fitted with a new type of output transformer incorporating a switching arrangement giving more than usually accurate matching to the power valve. The new device will be known as the "W.B. Microlode."

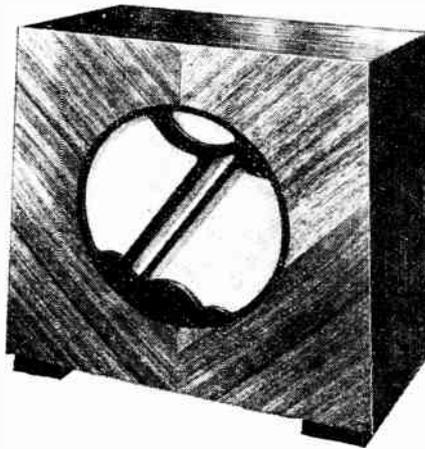
A new energised model will be found on

the Blue Spot stand, where the well-known 29 PM, 45 PM, and 99 PM units and cabinet models will also be available for inspection.

Amplion are showing two models this year, the "Audiola" and a new model for the constructor known as the "Sonette."

A very interesting permanent-magnet unit, specially designed for car sets and small portables, will be shown by Goodmans. The depth is only 2½ in., and the entire chassis is included in the magnet system.

Two other exhibits which will well repay a visit are the new Igranic D9 unit and the



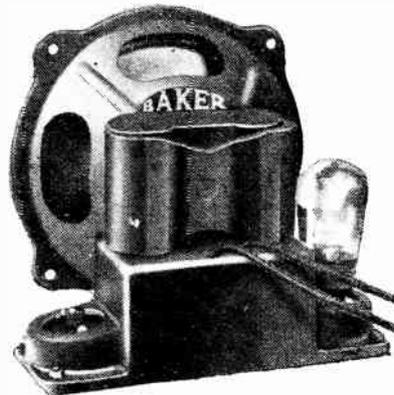
Whiteley Electrical P.M.4A cabinet loud speaker.

Ormond R/494 P.M., which is fitted with what is now an unconventional cylindrical-type permanent magnet.

The Grampian range of small moving coils is unusually comprehensive this year, and not the least interesting item of this exhibit will be the new baffle cabinet for home construction.

Class "B" Speaker-Amplifier Units

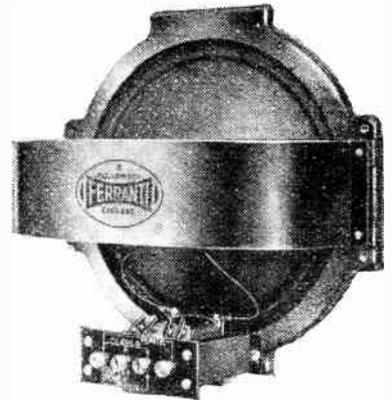
The extra power obtainable from Class "B" output valves compared with that obtainable for the same current consumption from ordinary triodes or pentodes often produces a marked improvement in the performance of a small moving-coil loud speaker from the point of view of quality as well as volume. Many makers are ensuring that their loud speakers shall be properly appreciated by incorporating a Class "B" output stage in the loud speaker unit. The unit is connected in the anode circuit of



Baker Selhurst "Permag" Class "B" unit.

the last valve in the set, which then becomes the driver. Examples of this form

of construction will be shown by Baker Selhurst, Celestion, Epoch, Ferranti, Rola, Sonochorde and Triotron (Chlormet).

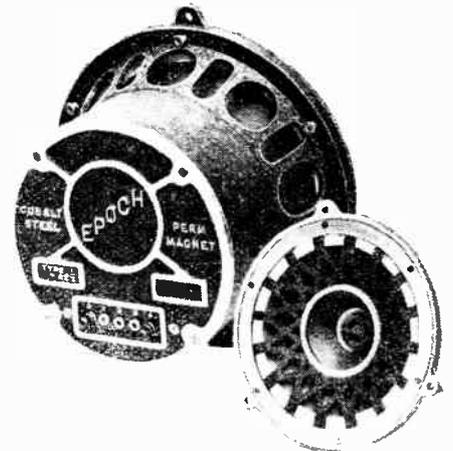


Ferranti M5T permanent magnet unit.

Large Moving Coils

Excellent as is the performance of the small moving coil, there will always be a demand for the more expensive types which can give something better in the matter of quality—more particularly in the base. In this category the range of choice is wider than in previous years.

A new permanent-magnet version of the Ediswan-B.T.H. Senior R.K. will be shown for the first time, and Epoch will be exhibiting a large "Super P.M." model at a popular price. The new Lamplugh de luxe 12 in. "Silver Ghost" is another loud speaker which definitely falls in the high-grade class. Loud speakers of the



The new Epoch Type A.2. unit.

"auditorium" type will also be shown by Celestion and Sonochorde, while other well-known models which should not be missed are the Ferranti M1, G.E.C. "Senior PM," H.M.V. Model 174, Marconiphone 140 and the new 141, the Baker Selhurst "Super Power" range, and the Grampian "Senior" type D.P.4.

GRAMOPHONE EQUIPMENT

ALTHOUGH the owner of a radio receiving set may not at first be particularly interested in gramophone reproduction, it frequently happens that the broadcasting of a record of outstanding merit suggests the possibility of extending the scope of his set from the entertainment point of view. It is safe to say that the receiver

What to See at the Show.—

itself will be already equipped to deal with the output from an electrical pick-up, and his requirements in the matter of subsidiary equipment will be well catered for by many of the firms exhibiting at Olympia this year.

Pick-ups

The performance of many of last year's leading makes has proved so satisfactory that they are being continued practically unchanged, though prices in general show a gratifying reduction.

A newcomer to the field is the Cosmocord "Universe" pick-up, which incorporates a volume control and is provided with an adjustment by which the needle pressure may be adjusted. The characteristic is of good general form, and there is rather more than the usual rise of output towards the bass.



Bower-Lowe Tone and Volume Control unit.

Messrs. Belling-Lee will be showing three models, one of which should be of special interest to owners of portable acoustic gramophones. It is designed to clip on to the side of the case, and can be readily detached when it is desired to use the gramophone in the normal way. The other two models incorporate the same movement, and are designed for permanent baseboard mounting—one with, and the other without, built-in volume control.

A new Bower-Lowe pick-up—the Mark IV—is shown for the first time. It is a really high-grade job, and the movement is housed in a felt-lined, moulded case of modern design, the underside of which is metal-lined to screen off motor interference. The frequency range is from 25 to 6,000 cycles, and a choice of characteris-

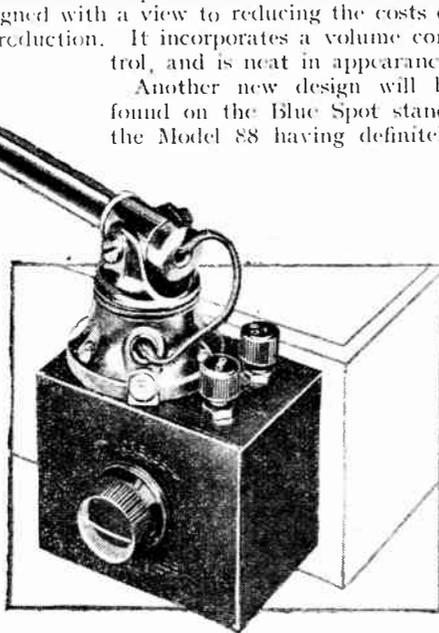


Blue Spot Model 33 Pick-up.

tics is available depending on the type of amplifier equipment with which it is to be used. The Mark III pick-up is now fitted with a volume control incorporated in the base, and the cheaper "Beta" model is being continued as before. A new accessory on this stand which is certain to receive a good deal of attention will be the combined volume and tone control unit, which gives a variable top cut-off down to as low as 1,000 cycles if desired.

Last year's Celestion W8 pick-up has been replaced by an entirely new design—the P2—which incorporates many of the technical features of its predecessor, but has been designed with a view to reducing the costs of production. It incorporates a volume control, and is neat in appearance.

Another new design will be found on the Blue Spot stand, the Model 88 having definitely



Belling-Lee Pick-up for portable gramophones.

been dropped in favour of the new Model 33 pick-up. It has a frequency response from 30 to 4,000 cycles, and is an excellent example of up-to-date practice.



The new Marconiphone Model K.19 pick-up.

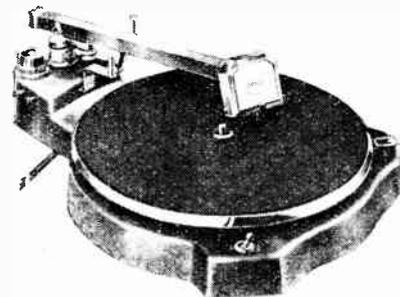
Among well-established makes which are being continued with but minor changes may be noted the Ediswan-B.T.H. "Senior" and "Minor," the Harlie range,

the British Radiophone pick-up, the Garrard and the H.M.V. No. 11 pick-up attachment for existing gramophone tone arms.

Last, but by no means least, entirely new pick-up units will be exhibited by the Marconiphone and Columbia concerns.

Motors and Record Changers

The Garrard Engineering Company will be showing, in addition to their already well-known record changer and range of clockwork and spring motors, a new type of radio-gram unit. This consists of a complete motor plate assembly ready for fixing in the cabinet, and includes a motor and turntable with automatic stop, pick-up and tone arm, volume control, and two needle cups. The rectangular metal base plate is rigid, and measures 16in. by 14in. Everything is lined up and adjusted, and the unit is ready for use after fitting the corner screws. A wide choice of motor types is available, and the units fitted with spring motors should be of special interest to those



Univolt electric turntable and pick-up.

contemplating the construction of a battery radio-gramophone with Class "B" output.

The Univolt series of electric turntable units, including pick-ups, will again be shown at considerably reduced prices. The compact little Harlie motors will also be continued practically unchanged.

An induction motor of sound design and construction will be found on the stand of the G.E.C., who will also be showing an automatic record changer.

B.T.H. will be showing a new governor-controlled D.C. motor, which will be complementary to the A.C. "Trusped."

Playing desks and bureaux designed as stands for receivers of the self-contained transportable type will again be shown by the Apollo and Itonia companies.

COMPONENTS AND ACCESSORIES

OLYMPIA will have much to offer the home constructor this year, for, in addition to the usual seasonal improvements to existing components, a host of new items will make their first appearance. The battery set user, in particular, is well favoured, a fact which is accounted for largely by the latest development in Class "B" amplification. Indeed, practically every component manufacturer will have something to show in connection with this arrangement of the output stage.

Class "B" Components

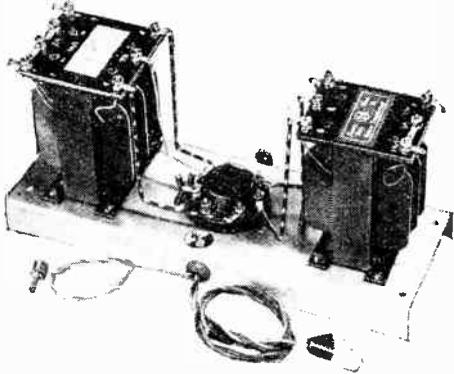
The principal items coming within this category comprise driver transformers, tapped output chokes, output matching transformers, sundry small parts, and complete units for converting an existing receiver to Class "B" working.



Ferranti Class "B" Transformers.

What to See at the Show.—

The Varley series comprise the D.P.40 and D.P.41 driver transformers, each model giving the choice of two alternative step-down ratios. The D.P.42 output choke is tapped, and affords three ratios

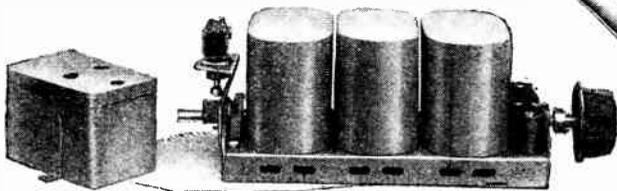


W.B. heavy duty Class "B" converter.

for matching purposes. In addition, Varley will have a range of Q.P.P. components. Driver transformers, with the alternative step-down ratios of two-to-one and three-to-one each half, will be shown by Amplion, Benjamin Electric, Bulgin, Multitone and Telsen, to mention but a few names only.

Class "B" Converters

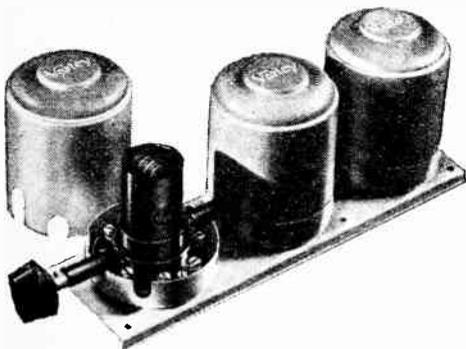
Ferranti have several single-ratio models in their range, also a large selection of tapped chokes and matching transformers, while further examples of single- and multi-ratio driver transformers and output chokes are to be shown by Baker's Selhurst Radio,



Colvern miniature Ferrocart coils.

British Radiophone, Chorlmet Radio, Igranic, R.I., Sound Sales, Sovereign, and Whiteley Electrical.

The conversion of a battery set to Class "B" working is a relatively simple matter, for in most cases all the additional parts can be accommodated in a unit external to the set, with the result that a number of firms have introduced units for this purpose. Ferranti will show a Class "B" super power converter; Whiteley Electrical (W.B.) have two models, one a small-power and the other a super-power type; while



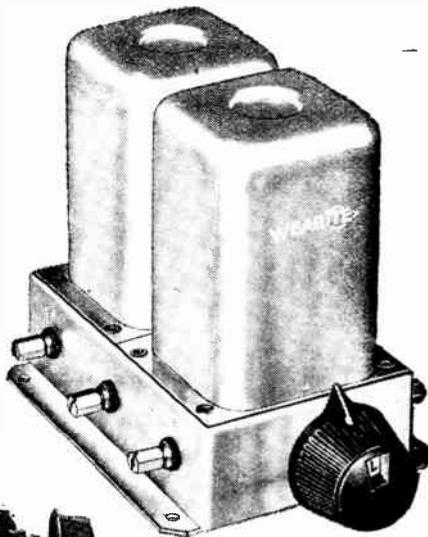
Varley Nicore three-coil unit.

several other examples will be included in the exhibits of Baker's Selhurst Radio, Multitone Electric, Sound Sales, and Sonochorde Reproducers.

Examples of baseboard and chassis-type, seven-pin valve holders for Class "B" valves will be among the products of Benjamin Electric, Bulgin, Clix, Ferranti, Telsen, W.B., and Wearite. The Clix model is of the semi-floating type, and Telsen have adopted an anti-microphonic assembly in one of their models. Belling-Lee will have a neat three-point plug and socket with the centre pin staggered, this having been designed for connecting the loud speaker to the output valve when the former is external to the set.

Coils

Apart from minor improvements and some new additions, the familiar type of small-diameter, air-cored, dual-range screened coils takes much the same form



Wearite Nucleon band-pass coil unit.

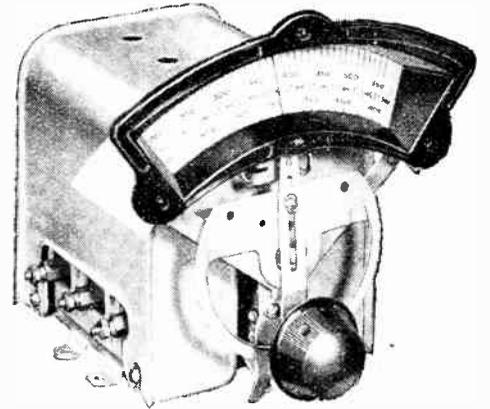


Utility new curved dial.

as hitherto. British Radiophone have now introduced a range of coil units for straight and superheterodyne circuits, and some new band-pass coils are to be shown by Slektun Products.

The main interest in connection with tuning coils will, however, be the new iron-cored specimens, as exemplified by the Colvern Ferrocart series. There are now no fewer than ten different types in this range,

not to mention the new miniature series just introduced. They have similar characteristics to the earlier designs, but are far more compact, a three-coil assembly, including switching, is accommodated on a base-



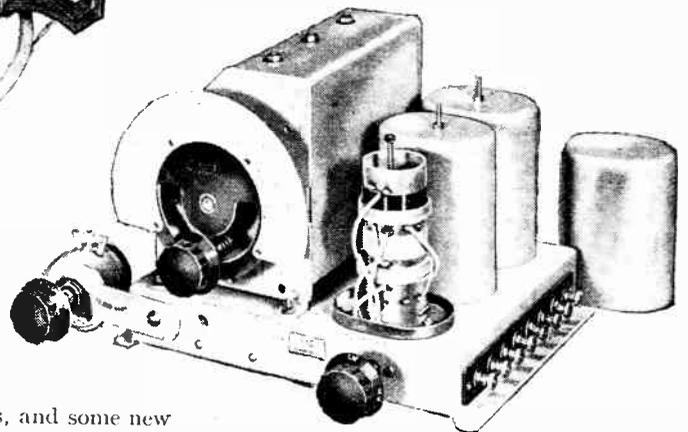
Polar Star Minor three-gang condenser and new drive.

plate measuring 6 1/2 in. long. Some Ferrocart I.F. transformers will probably be on view.

Varley's Nicore series come within the same category, and consist of aerial, H.F., and oscillator coils. These will be shown in ganged units containing up to four coils with switch mechanism. Igranic coils are yet another example of the new practice, but Igranic have extended their range to include the short waves, and one covering 14.8 to 78 metres in two steps is to be shown. Telsen will have some new specimens in miniature form, and the average height is only 2 in.

Nucleon Iron-cored Coils is the designation chosen by Wearite for their new models. These are made in two styles, a Junior and a Senior model; the former has an open iron circuit, but in the Senior models a more complete magnetic circuit is employed for the medium-wave section. The Nucleon range includes several different types of superhet. coils, I.F. transformers, and a screened H.F. choke.

The R.I. Nicrion coils are distinguished by the provision of a control for varying the permeability of the magnetic circuit. It is effected by a change in the position of the core. This offers a simple adjustment for coil inductance, and enables iron-cored and air-cored coils to be accurately



British Radiophone Superhet Radiopak.

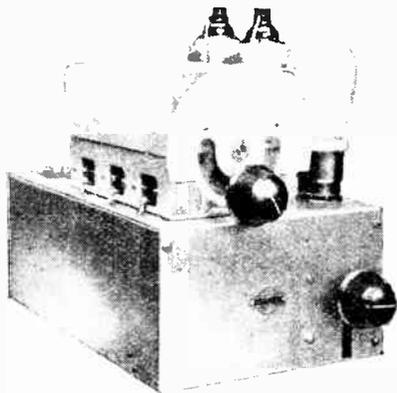
matched when a combination of the two styles are embodied in the set. Furthermore, the tuning can be made to agree with a wavelength calibrated scale.

What to See at the Show.—

Variable Condensers and Dials

No radical changes have occurred in the general form of tuning condensers, and the fully screened gang type, but with sundry modifications, will predominate. Jackson Bros. are to show their superhet. gang condensers in two styles, one with the oscillator section in the front, and the other with the tracking vanes mounted in the back section. They are, of course, designed for 110 kc/s I.F. amplifiers. There will be several new full-vision scales, a point of interest being the mounting of the lamp-holder, so that it travels with the cursor, thus giving maximum illumination where it is most useful.

The latest condenser drives developed by Wilkins and Wright (Utility) embody this feature also, and some new and interesting designs of condensers have been introduced for the coming season. The Polar programme includes an extension of their Star series, and a new range described as the Star Minor gang condensers will be avail-

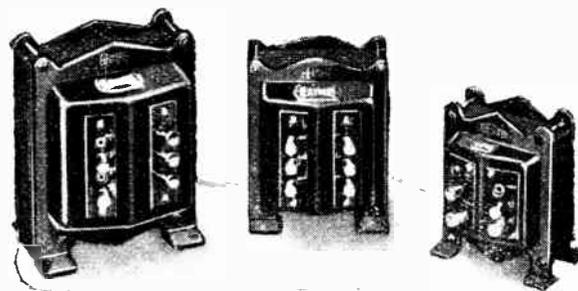


Igranipak, a complete two-H.F. tuning unit.

able for examination. They are more compact than the earlier models, but the same high order of accuracy in matching is maintained. Some new wavelength calibrated full-vision dials have been introduced, and, in addition, there will be a large selection of single, solid dielectric and short-wave condensers. A range of miniature gang condensers, short-wave condensers, full-vision scales, and a single condenser embodying two small fixed condensers constitute the latest additions to the British Radiophone range; Ormond and Ferranti have some examples of the latest practice in condenser design, and Graham Farish have a single model with a loose spindle.

Composite Tuning Units.

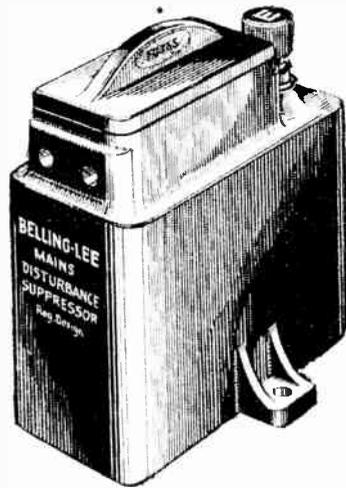
British Radiophone have further developed the idea of the composite tuning unit which appeared last year in the form of the Radiopak, and two new models are now available. Both are for use in super-het. circuits; one when an H.F. stage is employed, and the other where an aerial band-pass circuit immediately precedes the frequency changer. The Igranic Electric Company have developed a unit on somewhat similar lines. Described as the Igranipak it embodies all the essential parts for the H.F. and detector portion of a two-H.F. receiver. Condensers, coils, switching, valve holder, and detector components are mounted on a metal chassis



Selection of Heayberd shrouded mains transformers.

wired and ready for fixing to the baseboard.

Of somewhat different form is the new Straight to Superhet. Converter, to be shown by Sound Sales. This consists of a

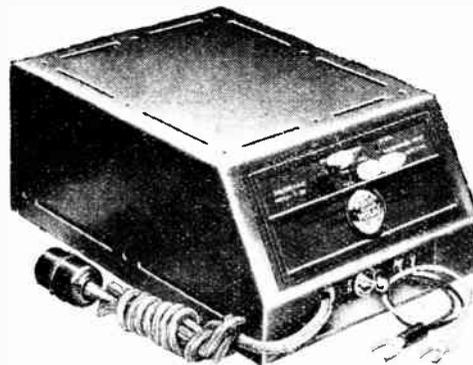


Belling-Lee Mains Disturbance Suppressor.

combined detector-oscillator unit for converting a straight set into a super-heterodyne for normal broadcast use.

Interference Suppressors.

Modern receivers, by virtue of their high sensitivity, have become very much more susceptible to a type of interference often described as "Man-made Static." When this is produced by domestic appliances on



Clarke's Atlas Model T.25 battery eliminator.

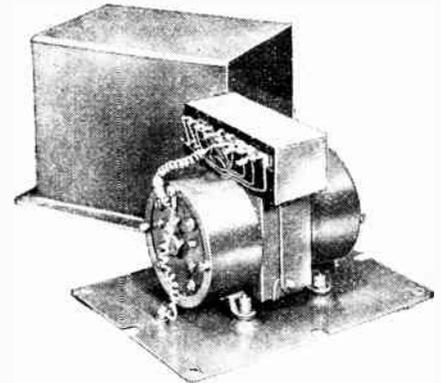
the premises it can be cured without difficulty by suppressor devices. Often, however, the interference is generated elsewhere, in which case either a mains filter or a screened aerial down-lead will have to be employed. Thus the several devices to be shown by Belling-Lee, British Blue Spot, Bulgin, and T.C.C. will be of more than usual interest. British Radiophone will, in addition, be showing their Receptru anti-static down-lead, Lamplugh Radio the Silver

Ghost Antistat aerial unit, and Osdue Manufacturing Company the Biffo static cut-out.

Mains Equipment.

H. Clarke & Co. (M/c), Ltd., makers of the well-known Atlas range of battery eliminators, this year have four new units for use with sets embodying Class "B" and Q.P.P. output stages. Better regulation has been obtained and a wider choice of output voltages, particularly at the intermediate tapplings, is now available. Further examples of H.T. units will be the Godwinex series made by Dyson, the Ferranti models, and a new range made by Telsen.

Heayberd mains transformers have been improved, many models now being fitted with plugs and sockets in place of terminals,



Electro-Dynamic car radio H.T. converter.

and a new series has appeared for use in L.T. battery chargers using Philips rectifiers. Two home chargers for A.C. mains and suitable for radio as well as for car starter batteries have been introduced. Birmingham Sound Reproducers, Bulgin, Ferranti, Igranic, R.L., Sound Sales, Slektun Products, Wearite and Varley will have further examples of main transformers.

Partridge & Wilson have augmented their range of Davenset station charging equipment, so also has the Lancashire Dynamo and Crypto Company, the last named having a series using valve rectifiers. Station charging equipment will be shown, also, by Newton.



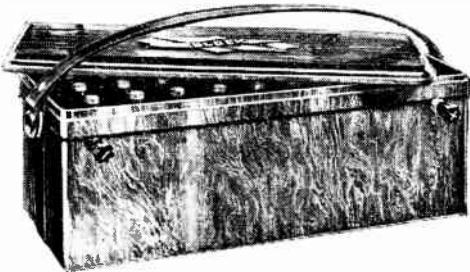
Some Clix insulated sockets and spade terminals.

Rotary transformers will be the feature of the Electro-Dynamic Construction Company's exhibit as usual, and the most recent addition is a small H.T. generator for use with motor car radio sets. Sound Sales have applied the converter unit idea to mains equipment, for this year they will have a small unit described as the Westkit Eliminator kit, which embodies a mains transformer, Westinghouse H.T. rectifier, and fuses ready wired for fitting in a receiver or eliminator. Home chargers will be featured also. Rotax, Ltd., who have for long specialised in the construction of small machines for obtaining H.T. from L.T. bat-

What to See at the Show.—

teries, house lighting plants, and D.C. supply mains have introduced a new M-L anode converter for car radio use.

Several changes have been made in the Westinghouse range of metal rectifiers. Models H.T.6 and H.T.7 are now replaced by one new model, the H.T.12, giving 200 volts at 30 mA. Another new rectifier is the



Block Batteries 60-volt H.T. accumulator.

style H.T.13, designed specially for use with Q.P.P. and Class "B" amplifiers, as it possesses particularly good regulation.

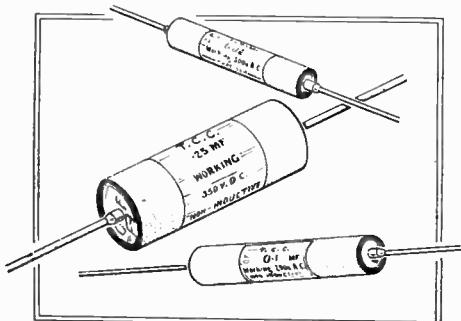
For sundry small components, such as insulated plugs and sockets, fuses and switches, a visit should be made to the stands of Belling-Lee, Bulgin, and Lectro-Linx.



New style container housing Dubilier paper condensers.

Fuller (Sparta), G.E.C., Grosvenor, Hellen, Oldham, Siemens, Smith's (Anodex) among others.

High- and low-tension accumulators are to be featured by Block Batteries, who have developed a type of cell in which the usual lead grid is omitted, by C.A.V., Dagenite, Exide, Oldham, and Milnes Radio. The last named make incorporates nickel-cadmium plates immersed in an alkaline solution, and its special feature is that it can be charged from the L.T. battery. It is robust, and not damaged by heavy discharge.



Selection of T.C.C. tubular condensers.

Fixed Condensers.

The Telegraph Condenser Company have extended their range of small tubular condensers to include values up to 0.25 mfd.



Telsen high voltage dry electrolytic condenser.

These are fitted with wire ends, and, being light and compact, can be suspended in the wiring most conveniently, thereby leaving the baseboard free for the more bulky components. A special display is to be made of the type 87 paper smoothing condenser, a model which is rated for 450 volts working, but will safely withstand surge voltages up to 650 D.C. Small tubular condensers are to be shown by British Radiophone and Telsen, the last mentioned having also a new range of high- and low-voltage dry electrolytic condensers.

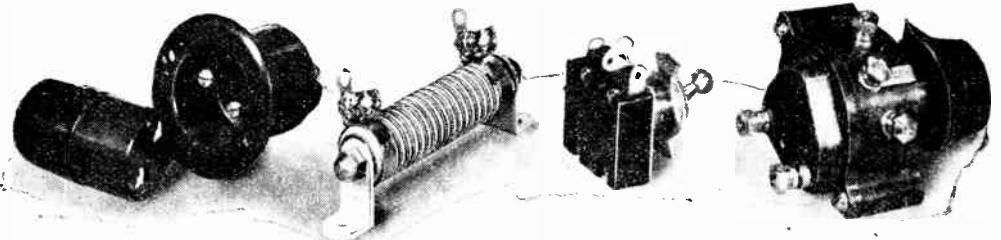
The Dubilier type 9200 metal-cased condenser is replaced by an improved design assembled in a tubular container fitted with terminals and embodying a unique fixing device. Several modifications, also many additions to existing types to comply with present-day requirements, constitute the main features of the Dubilier programme. Ferranti, Sound Sales, and Igranic will also have many interesting specimens for inspection.

special carrying strap, forms a most useful and portable test set. The Radiolab Engineering Company have introduced a portable test set, and, of course, there will be the range of Avometers made by the Automatic Coil Winder and Electrical Equipment Company, who now have a further model described as the Avominor. This is an inexpensive version of the larger instruments, and has three milliamp ranges, three voltage scales, and provision for measuring resistances. Measuring instruments will be a feature also of the Ferranti exhibit.



New multi-range Avominor.

Self-locking washers, tags, and sockets will be a feature of the Gripso exhibit, and an inexpensive microphone is to be shown, among other items, by R. C. & Wilson. R.I. have a new Parafed transformer for auto-coupled circuits only, and Bulgin have developed a power version of their Trans-



Selection of Bulgin components.

Miscellaneous Components and Accessories.

Among the many additions made to the range of electric clocks made by Ferranti will be one embodying an alarm mechanism which comes into action but once in each twenty-four hours. Many very attractive cabinet designs have been prepared by the Carrington Manufacturing Company, while further examples of wireless furniture for the new season's receivers will be found on the Osborn and C.A.C. stands.

The requirements of the radio service engineer are catered for this year by Standard Telephones and Cables, Ltd., who have developed a series of inexpensive units comprising a modulated oscillator, output meter and attenuators; the two first mentioned would suffice for completely overhauling a wireless receiver, and, combined by their

coupler; known as the type B, it gives a one-to-four voltage step-up and embodies three-watt anode resistances.

VALVES

IN past years, the multiplicity of valve types available in this country has often excited astonishment. In spite of the fact that valve manufacturers have recently dropped many of their older models, and now carry stocks of 4-volt and 6-volt types only for replacement purposes, there are no signs of a reduction in the number of types on the market, rather of an increase. The current year has seen a steady outpouring of new valves, and as yet the flow is undiminished.

The introduction of the Class "B" output valve is probably the greatest step forward

What to See at the Show.—

from the point of view of the battery user, for it enables him for the first time to obtain both high quality and large volume economically. Practically every valve firm will be showing at least one type, and in spite of the fact that they fall into two general classes—those capable of giving about 1 watt output and those rated for some 2 watts—they show a surprising uniformity in their quiescent anode currents, which are usually between 2 mA. and 3mA. The output load required, however, varies considerably between different valves, and this point should be watched carefully when selecting a valve to work with existing apparatus. In most cases little or no grid bias is needed, but the Marconi-Osram B.21 type is unusual in that it requires a negative grid bias of 3 volts to 6 volts.

Class "B" working leads naturally to the driver valve, but here we are fortunate in finding that no new type of valve is indicated. The driver is merely a new name for a particular class of triode valves, and many well-known L.F. amplifiers have acquired a fresh dignity from their new title.

As might be expected, most of the new valves are in the A.C. mains range, although notable additions have been made to the D.C. types. Variable- μ valves are now practically universal for H.F. and L.F. amplification, whether the receiver be fitted with A.V.C. or not. One of the chief difficulties in obtaining good A.V.C., however, has lain in avoiding overloading of the H.F. or L.F. valves, for some A.V.C. systems call for a large signal input to the detector. The overload point of the tetrode valve is set largely by the negative resistance kink in its characteristic, and as this can be avoided by a pentode type construction, we shall find many examples of pentodes specially designed for H.F. amplification purposes, and provided with variable- μ characteristics.

Variable- μ H.F. pentodes will be shown on the Cossor, Micromesh, Mullard, and Six-Sixty stands, while Ferranti will have a model fitted with a 5-pin base and rated for 100 volts screen potential. The Marconi-Osram type, however, is obtainable in two patterns

—one with a 5-pin base and an internally connected suppressor grid, and the other with a 7-pin base with the additional grid brought out for external connection, thus extending the application of the valve.

These firms will also be showing the first battery variable- μ H.F. pentode.

H.F. pentodes with non-variable- μ characteristics will be shown by Cossor,

but practically perfect, automatic volume control. Metal rectifiers, in both single and double types, will be shown by Westinghouse, and these enable ordinary or push-pull detection and A.V.C. to be obtained.

In the output stage there will be fewer new types, but Ferranti have introduced a triode with an output of 2½ watts at 250 volts, and the Mullard ACo44 has been redesigned to have similar characteristics. In pentodes, the well-known Marconi-Osram MPT4 is now available in the Catkin type with its output increased to 3 watts, and there is also a new directly heated pentode with a 16 watts anode dissipation rating. Most indirectly heated pentodes will be available in two types—one with the usual 5-pin base and a side terminal and the other with the new 7-pin base. Although it is but a short time since this base was introduced, originally for the Class "B" valve, many valves will now be supplied with it, including the output pentodes, Class "B" valves, duo-diode-triodes, duo-diode-pentodes, H.F. pentodes, and the Pentagrid or Heptode.

H.T. rectifiers have not been forgotten by the valve designers and the indirectly heated rectifier,

introduced some time ago by Mazda, is now to be found in other ranges. Thus, Marconi-Osram will have the MU.12 and MU.14 types, equivalent to their older U.12 and U.14 models. The advantage of indirect heating in a rectifier, of course, is the avoidance of sudden high voltage surges which are detrimental to the life of the smoothing condensers.

In the range of D.C. mains valves, few new types will be found. Mullard will have a range with heaters rated for 20 volts at 0.18 ampere, with the exception of the duo-diode-triode, which requires 25 volts. The Marconi-Osram range is extended by the addition of a duo-diode-triode, and this firm has also introduced a barretter type of voltage regulator for maintaining constant heater current in D.C. mains sets. Cossor will have D.C. valves of the 16 volts 0.25 ampere type, including a variable- μ tetrode, a triode, and an output pentode.

As is usual with D.C. mains valves, these specimens are all rated for a maximum anode potential of 200 volts.



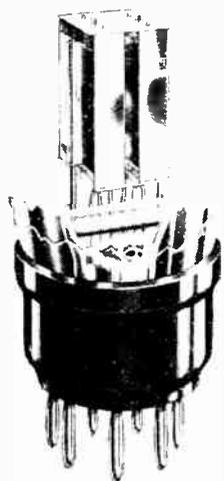
Marconi-Osram B 21 Class "B" valve.



Ferranti VHT4 Heptode frequency changer.



Six-Sixty 220B Class "B" valve.



Cossor 240B Class "B" valve.



Ferranti VPT4 screened H.F. pentode.

Detectors.

The range of detectors will be greatly increased, for in addition to the usual triodes, tetrodes, and pentodes there will be found a bewildering variety of combination diode types. The most usual is the duo-diode-triode, which is made by Ferranti, Marconi-Osram, Micromesh, Mullard, and Six-Sixty. Both Marconi-Osram and Mullard will have this valve also in D.C. mains form. The valve enables many new circuit arrangements to be employed, but its chief purpose is undoubtedly for providing rectification, amplification, and delayed A.V.C. A single-diode-tetrode will be shown by Mullard, and it is intended to replace the ordinary screen grid detector, for it has a greater input handling capacity. Cossor will have a duo-diode-pentode, consisting of a pair of diodes for providing rectification and delayed A.V.C., and a variable- μ pentode for the first L.F. stage and to which A.V.C. bias can be applied to give simple,

Extension Loud Speakers

Points to Consider When Adding a Second Speaker

By M. G. SCROGGIE, B.Sc., A.M.I.E.E.



WHEN it is desired to connect a second loud speaker, possibly on extension leads, several points have to be given consideration. These are discussed in the following article and practical illustrations of various methods of connection are given.

speaker with a rated impedance half the optimum for the valve, then the actual impedance falls to a quarter at the low frequencies, and that can scarcely fail to be objectionable.

The point to be noted is that the amount of latitude that can be tolerated in matching a speaker to a valve depends on how much the actual impedance departs from the rating, and in any case the tolerance is less for a pentode than for a triode.

SOME weeks ago it was suggested in *The Wireless World* that the custom of building the loud speaker into the set is far too prevalent. If the loud speaker is a separate unit, the receiver itself can be established in the most convenient and effective place, and taking the loud speaker to the listener is merely a matter of providing leads of sufficient length.

But things are not quite so simple when the set already has an internal speaker. Two matters must be considered—making the connection and keeping the impedances right. If it is a case of using some loud speaker that happens to be available, the problem is one of connecting it in the most efficient way. But if the speaker can be chosen specially for the job, it is generally possible to use the terminals or sockets that most manufacturers and some designers for constructors provide for the purpose.

Question of Impedance

Let us consider the impedance question first. For each output valve there is a certain loud speaker impedance that enables the greatest undistorted output to be obtained. Now, there is certain to be confusion if it is not realised that the impedance of a loud speaker may mean either of two things. When the speed of a ship is said to be 20 knots, it may mean the rated speed of the ship, which is a fixed part of the specification, or it may mean the actual speed, which varies from time to time according to the instructions given to the engine room. In much the same way the actual impedance of a loud speaker cannot strictly be stated by a single figure, because usually it depends quite a lot on the frequency at which it is measured. That is not very much help to us, because a valve cannot match a whole range of impedances simultaneously, so a sort of representative figure is chosen to be the rated impedance;

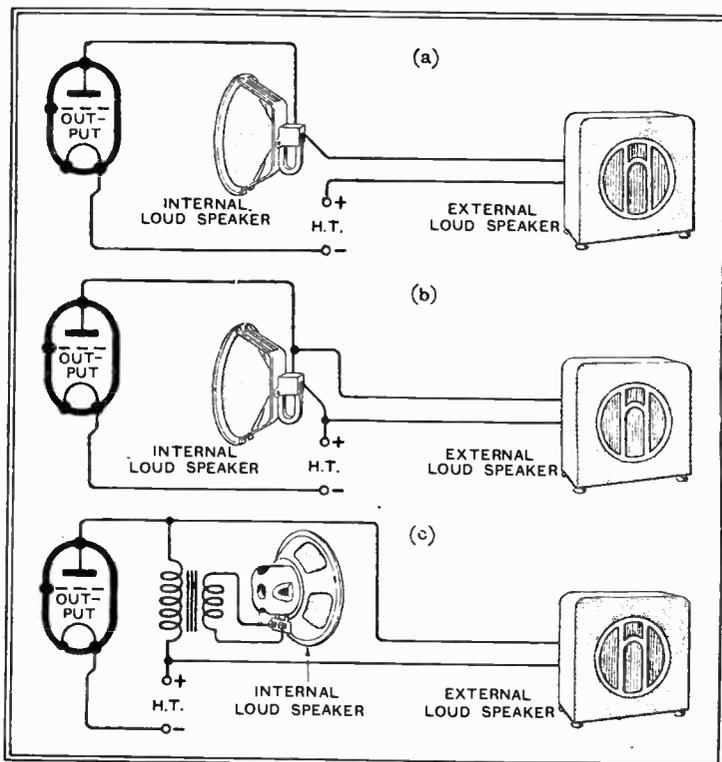
and, although the actual impedance, being different at most frequencies, causes them to be insufficiently reproduced, the rated figure is that which gives the best balance of tone.

Fortunately for the balance of tone it is possible for the actual impedance to depart considerably from the ideal before the efficiency falls off seriously. But while there is a good deal of latitude—more with triodes than with pentodes—the *rated* impedance should be kept reasonably close to the optimum for the valve.

Practical Examples

Assume now that the impedance of the internal loud speaker (A) is correctly matched to the output valve. Obviously, if another (of impedance B) is connected either in series or parallel, the impedance

Fig. 1.—(a) If the impedance of the external loud speaker is lower than that of the other, series connection is allowable, but the volume at the extension end will be lower. It is generally satisfactory if the two impedances are equal and the volume from each is then equal (but try parallel connection as an alternative). (b) If the impedance of the extension speaker is higher, it may be connected in parallel, but the volume will be lower. This is also an alternative connection in the case of similar loud speakers. (c) A low impedance speaker with a step-down transformer is equivalent to a high impedance, and the connection shown is one particular example of (b).



Suppose, for example, that at the lower frequencies the impedance of a certain speaker falls to half the rated amount. The resulting weakness of low notes may pass unnoticed. But if advantage is taken of this apparent tolerance by using a loud

of the combination (C) is no longer perfectly correct. If B is considerably less than A, then it has relatively little effect when connected in series, and C is not far enough away from the ideal to matter. But, unfortunately, the total power

Extension Loud Speakers—

obtained from the valve is divided unequally, and B gets only a small share. If it is quite in order for the external speaker to give reduced volume, well and good; the method is sound. But a parallel connection wouldn't do at all, for C would be far too low, and not only would there be unequal distribution of output, but the output would be much reduced.

Next, suppose that B is considerably greater than A. Now the results are reversed; for series connection is hopeless, giving a poor output, unequally divided. Parallel connection upsets the matching to a negligible extent, and is therefore a possible scheme so long as the extension is not required to give so much volume as

used in most modern receivers, so this is the point at which to explain that up to the present the transformer has been considered as part of the loud speaker. The

If the extension is in place of the internal loud speaker, and not in addition to it, obviously the matching difficulty does not arise, for a speaker of the same impedance is correct. On the other hand, it may be necessary to feed more than one extra speaker; the same principles cover the case.

Examples of Practice

So much for theory. Now we shall look at the most usual output connection systems to see where an extension can be tapped on. A very common arrangement in manufactured sets is that of Fig. 2, used, among others, by Marconiphone, H.M.V., Columbia, Philips, Pye, Bush and R.G.D. The external loud speaker terminals or sockets are paralleled across the coil of the internal loud speaker itself. The impedance at this point is usually low, from 10 ohms downwards; so it is no good using a high impedance speaker. One of the same type, without a transformer, or one of slightly greater impedance, must be used. Of course, it is possible to step up again to a high impedance speaker and get the same effect, but each transformer introduces additional loss, and this can only be regarded as a make-shift. A few receivers are provided with a switch at the point S, and it is generally a simple matter to fit one if it is absent. The contacts should be good, as the total resistance of the circuit is sometimes very low.

Most other sets that include an outlet for extra loud speakers do so after type (a) or (b) in Fig. 3, which amount to the same thing, so far as impedance is concerned; but while (a) makes the connections live, and is contrary to I.E.E. regulations, (b) brings them to earth, and is

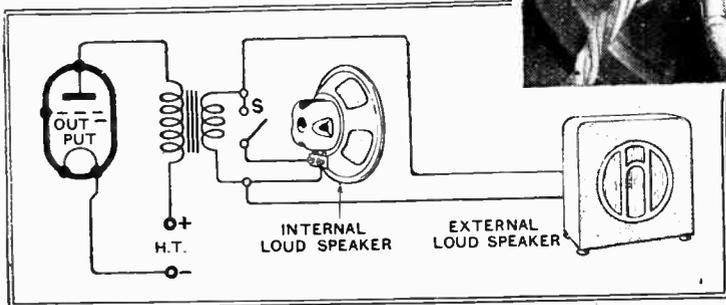


Fig. 2.—A method of connection commonly employed in sets of commercial design.

effect of the transformer is to multiply the impedance of the loud speaker alone by the square of the step-down ratio. For example, a speaker with a 10-ohm coil, connected by a 20:1 step-down transformer, behaves as a 10×20^2 , or 4,000-ohm loud speaker. A step-up may be regarded as a fractional step-down, so an 8,000-ohm speaker coupled by a 1:2 transformer is equivalent to a $8,000 \times (\frac{1}{2})^2$, or 2,000-ohm speaker.

Thinking along these lines, it is clear that if a 4,000-ohm speaker is connected in parallel with a 20:1 transformer feeding a 10-ohm speaker, the result is equivalent to two 4,000-ohm speakers in parallel, or 2,000 ohms altogether. An untapped output choke is, of course, equivalent to a 1:1 transformer, and a tapped choke to a

the built-in speaker. The less the extra speaker disturbs the matching the less volume it gives.

But perhaps the most likely situation is that in which A and B are equal, or nearly so. Then series connection doubles the impedance, and parallel connection halves it, and in both cases the power is equally divided. In the most favourable circumstances even this rather wide departure from ideal matching is not really noticeable. However, it is probable that the matching was not quite the best in the first place, and by choosing the appropriate method of connection the combination may be just on the other side of the optimum, and therefore about as good as before. So far as tone is concerned, the least disturbance is caused by a series connection in the case of the triode; but the pentode is complicated by tone correctors, and actual trial is the soundest plan.

Compromise

Really conscientious readers will no doubt feel uncomfortable about a 100 per cent. departure from the theoretically correct, even if the resulting imperfection cannot be detected by the non-technical members of the family. They have the option of changing the output valve to match the combination of loud speakers (which may be a fairly simple business in a battery-driven set, but introduces awkward problems of bias, grid swing, and H.T. supply in a mains set), or using two loud speakers, each half or double the impedance of the original one, or introducing a 1:1.4 transformer for connecting two equal loud speakers in series, or a 1.4:1 transformer for parallel connection, or, lastly, if there was originally a transformer, altering the ratio to give the same effect.

An output transformer of some sort is

transformer with the same turns ratio. And in matching push-pull stages it must be remembered that the two valves are in series, so the optimum load is double that for one valve connected across the whole primary.

Class B stages are usually rated as one valve, anode to anode.

safe. It is, of course, simple enough to convert (a) to (b) by the addition of a condenser (commonly 2 mfd.), but the choice of value is discussed fully by Dr. L. G. A. Sims (see p. 677, June 29th, 1932 issue).

In either case it is a high-impedance connection, requiring either a high-imped-

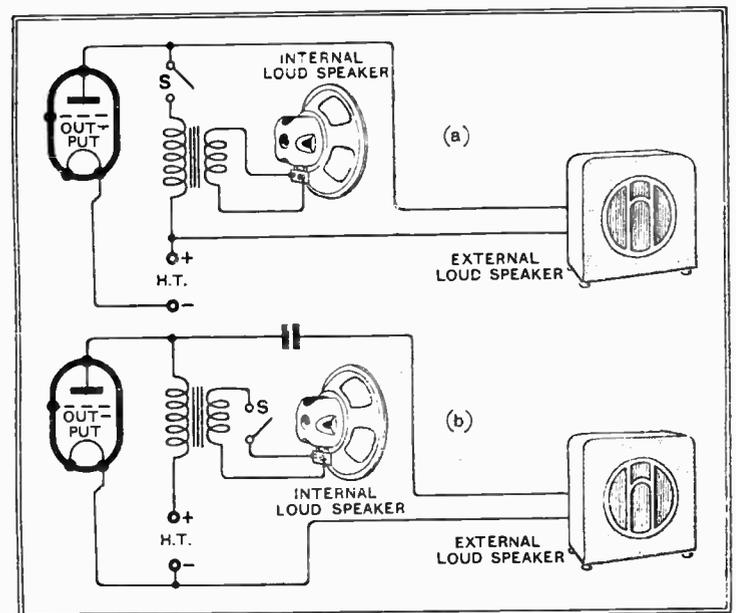
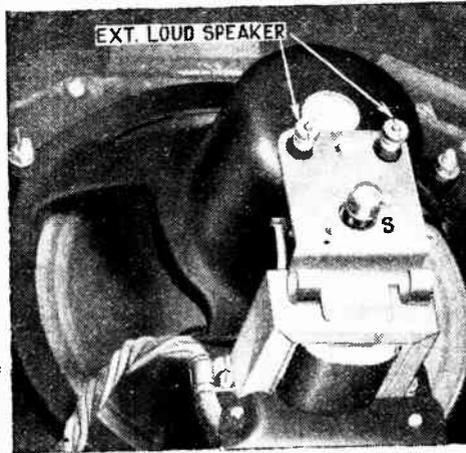


Fig. 3.—Two other methods employed commercially. (a) has the objection that the extension lead is live. In (b) this is avoided.

Extension Loud Speakers—

ance speaker or a step-down transformer. As regards switching out the internal speaker, (a) and (b) are not equivalent. In (a) it is an advantage to break the primary circuit at S, assuming that the extra loud speaker or its transformer can carry the full valve current. In (a) it is possible, and in (b) it is essential, to break the secondary, leaving the primary

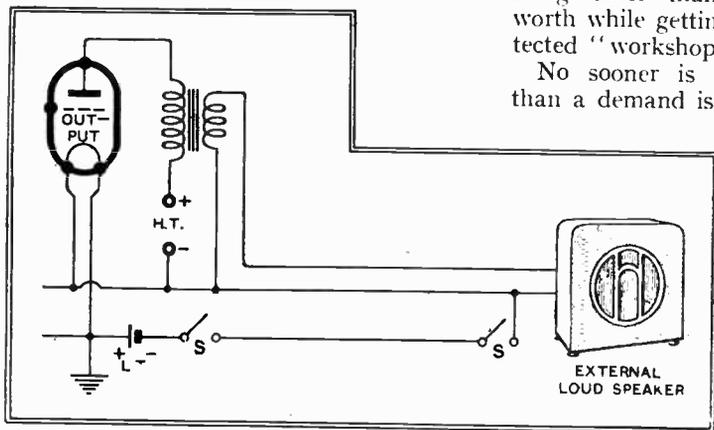


Fig. 4.—An arrangement suitable for battery sets.

to function in the capacity of an output choke.

The most suitable wire to use for the leads themselves depends on whether Fig. 2 or Fig. 3 system is to be used. It must be remembered that the impedance of the extension circuit of Fig. 2 may be very low—an ohm, or even less—and the resistance of the extension leads should be much lower still, which may mean quite a heavy gauge for a long run. But as the circuit can, and should, from every point of view, be earthed, and the voltage is very low, insulation need not be on an expensive scale.

Just the opposite requirements apply to Fig. 3; any wire sufficiently strong mechanically is more than adequate for the current, but the full signal voltage—and in 3 (a) the H.T. voltage also—is imposed, and well-insulated wire of the

type used for 250-volt house lighting is the right stuff. And don't forget that there is an infrequent but, nevertheless, distressing incidence of accident as the result of 250-volt shocks, so the insulation should include any terminals at the far end of the line. For the same reason it is preferable to make a permanent job of it, with plug connections, rather than trailing flex. If it must be flex, for anything other than occasional use, it is worth while getting some of the well-protected "workshop" variety.

No sooner is the extension installed than a demand is certain to arise for

remote control to avoid the fatigue of walking into the other room. There are all sorts of remote control systems, from simple ones in which a switch on and off is the extent of the control, to elaborate and costly schemes that include tuning and

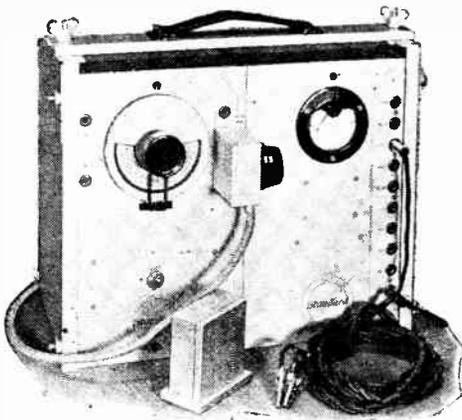
volume control. A.V.C. has largely cut out the tedious task of trying to make a receiver in another room give constant volume on a fading station. Those who are interested in the endless possibilities of remote control can refer to back numbers of *The Wireless World* or the various proprietary systems marketed. One can, in a more or less complicated manner, work an on-off control over the twin loud speaker extension leads, but it is very much easier to do it with a triple lead (if the still more satisfactory pair of twin leads is deemed extravagant). Fig. 4 shows a simple triple lead system for a battery set. The same can be adapted to mains drive, but, unless carefully carried out, is definitely undesirable, because one line is common to mains and loud speaker. Two separate pairs are recommended.

RADIO SERVICE TEST SETS

Self-contained Portable Equipment for the Service Engineer

MUCH can be done in locating faults with a few well-chosen instruments, but the service engineer of to-day is required to check the ganging of the tuned circuits throughout the broadcast wave-range, test for, and if necessary correct, misalignment of pre-selector and oscillator circuits in superheterodynes, check the function of I.F. amplifiers, and also make such adjustments as are necessary to ensure adequate selectivity and sensitivity having regard to the requirements of the user.

In order that work of this nature may be carried out expeditiously Standard Telephones & Cables, Ltd., Connaught House, Aldwych, London, W.C.2, have introduced an inexpensive radio set testing equipment. It is constructed in unit form, each unit being self-contained so that additions can be made from time to time and eventually a complete equipment for making all tests and measurements on a wireless receiver,



Standard Telephones portable Radio Service Test set, comprising type 401A Modulated Oscillator and type 402A Output Meter.

FOREIGN BROADCAST GUIDE

MONTE CENERI

(Switzerland).

Geographical position: 46° 9' N.; 8° 55' E.
Approximate air line from London: 550 miles.
Wavelength: 1,154 m. Frequency, 260 kc/s.
Power: 20 kW.

Standard time: Central European (coincides with B.S.T.).

Standard Daily Transmissions.

16.00-18.00 B.S.T., Concert (Sundays only); 20.29, weather, musical concert or gramophone records; 21.00, talk, main evening entertainment; 22.10, news; 22.30, dance music or records

Announcer: Woman.

Language used: Italian.

Call: *Radio Svizzera Italiana*.

Opening signal: One stroke on a gong.

Interval signal: Church chimes (gramophone record).

including overall response curves, sensitivity and fidelity measurements, can be compiled.

The nucleus of the apparatus is the type 401A Modulated Oscillator which is an H.F. generator modulated by a 400 c/s note, both sets of oscillations being generated by a single screen grid valve. The batteries are self-contained and of the dry type, and about 50 working hours is the estimated life of the L.T. cells

Three sets of coils would be required normally to cover the broadcast wave bands and the superheterodyne I.F. frequencies, but by utilising harmonics of the lower frequencies (long waves) one coil is made to cover ranges of approximately 1,450 kc/s. (207 metres) to 500 kc/s (600 metres) and 290 kc/s (1,070 metres) to 100 kc/s (3,000 metres).

On the medium waveband the fifth harmonics of the long waves are used for the purpose of calibration.

This unit suffices for a large number of tests, the performance of the set being judged aurally. Over the major part of the medium-wave band strong third harmonics are encountered, but as most modern receivers are calibrated either in wavelengths or in stations no difficulty will arise in picking out the correct one. A fourth harmonic is present, but far too weak to be audible on any but the most sensitive sets, and is of little consequence. Incidentally, a plug-in coil, covering the 1,500 to 600 kc/s band is available if required, to replace the standard coil, but then the calibration will be approximate only.

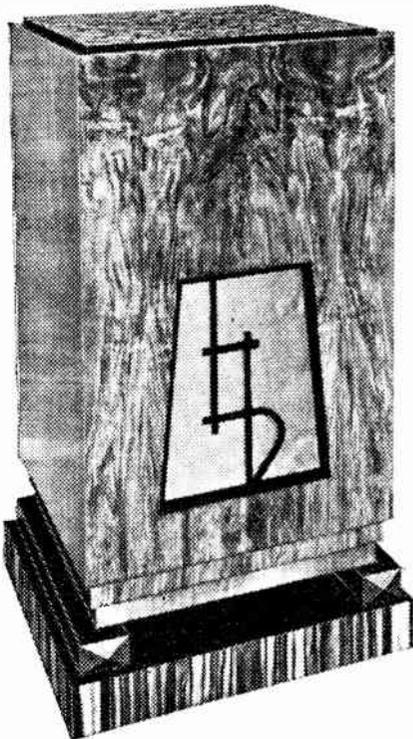
This unit includes an H.F. attenuator, but it is not calibrated.

Since greater precision than that afforded by aural tests can be obtained by using an output meter, a complimentary unit described as the No. 402A Audio Frequency Output Meter is available. It replaces the loud speaker and combines an artificial load and a metal rectifier-type voltmeter calibrated in decibels with a range of -9 dB. to +9 dB. referred to an output of 50 milliwatts. Tappings for matching receiver output circuits of from 20 to 20,000 ohms impedance are provided.

These two units, together, form a complete testing set eminently suitable for servicing purposes, and when combined by means of the special carrying handle made for this purpose becomes readily portable.

The 401A Modulated Oscillator costs £5 18s. and the 402A Output Meter £2 16s. Additional units are in course of preparation and a calibrated H.F. attenuator will be available shortly.

Build Your new Monodial Super from a "C.A.C." kit of parts



KIT "A" RECEIVER UNIT: Comprising the Designer's first specified components (less Chassis, Panel, Valves and Cabinet). **£10-19-6**
KIT "B" POWER UNIT: Comprising the Designer's first specified components, (less Chassis and Valves) **£8-13-6**

Detailed Price List Free on Application.

EXTRAS: "C.A.C." Aluminium Chassis, correctly drilled, with side members, and beautifully finished in French-grey cellulose. Receiver Chassis, 19/-; Power Unit Chassis, 7/6.
 "C.A.C." Panel, 14" x 10" in Polished Oak, Walnut or Mahogany, 2/-.
 Valves: Receiver (5), £4-4-6. Power Unit (4), £3-0-6.
 Cabinet, as illustrated, in beautifully finished selected Burr Walnut and Macassar Ebony £5-10-0.

TRADE ENQUIRIES INVITED

CONSTRUCTION.

We shall be pleased to undertake the construction of the Monodial Receiver to customers' own requirements. Only highly skilled technicians, under the personal supervision of Mr. W. I. G. Page, B.Sc., are entrusted with this work. This ensures that the results obtained by the designer will be duplicated.

DEMONSTRATION.

A cordial invitation is extended to all "W. W." readers to pay a visit to our new factory and showrooms, where continuous demonstrations of this excellent Receiver are being given daily. Business hours: 9.30 a.m. to 6 p.m. (or later by appointment).

SEE OUR FIVE OUTSTANDING RECEIVER DESIGNS on STAND 94 RADIOLYMPIA

All designed by W. I. G. Page B.Sc.

THE "C.A.C." "NORMAN" CLASS "B" FERROCART III.

A remarkable three-valve battery set, incorporating a Detector Valve, a Driver and a Class "B" output valve embodying the latest technique and constituting a distinct advance over all other Detector sets.

THE "C.A.C." "OXFORD" CLASS "B" FERROCART IV.

A Battery Receiver of ultra-modern technique in which has been embodied many refinements which months of research have proved worth while. The undistorted output is about 2 watts, whilst the H.T. consumption averages only about 10 ma.

THE "C.A.C." "CAMBRIDGE" A.C. II.

An inexpensive two-valve A.C. Receiver, giving volume from both radio and gramophone adequate for the largest of rooms, viz., about 2½ watts, the reproduction from the Energised Moving Coil Loud Speaker fed from a Catkin Pentode being of the highest order. A special Ferrocart Coil is used to tune the aerial, followed by an H.F. Pentode as a power grid Detector with negligible input damping. The Detector sensitivity of this Valve is probably the highest attainable.

THE "C.A.C." PENTAGRID SUPERHET.

A four-valve A.C. superhet of highly specialised technique using a Pentagrid Converter as a single-valve frequency changer, which performs the dual functions of oscillator and first Detector in the most efficient manner known. In addition, a variable- μ Pentode is used, which adds its contribution to A.V.C. The third valve is one of the I.F. stage variable- μ Pentodes, which gives almost perfect automatic volume control and the fourth valve is a Catkin new double Diode Pentodes, whilst the sensitivity and selectivity of this Receiver are a revelation. The output is in the order of 2½ watts, whilst the sensitivity and selectivity of this Receiver are a revelation. The four special valves give an overall performance equal to that of any six-valve superhet on the market.

THE "C.A.C." SIX WATTS GRAMOPHONE AMPLIFIER.

This equipment is capable of giving sufficient volume to entertain 200 couples dancing or to more than 300 people in a concert hall. Alternatively, the volume can be reduced for use in the home, where, perhaps, only 2 or 3 watts are required. In the interests of quality of reproduction no pains have been spared, and only the best component are employed in the respective stages.

THIS MAGNIFICENT BURR-WALNUT CABINET

One of the prize-winning designs in our recent competition, has been SPECIALLY CONSTRUCTED FOR THE NEW MONODIAL SUPER

It represents the finest example of Cabinet-making Craftsmanship, and is manufactured throughout in our own Factory. As regards appearance, quality of construction and finish it is in a class entirely of its own. It is manufactured in specially selected Burr-Walnut, with an ebonyised platform and Macassar Ebony base. The Cabinet can also be supplied as a Radio-gram, with raised hinged lid, at an additional cost of 20/-.

EXTERNAL DIMENSIONS:
Height 3' 4", Width 20", Depth 17".

INTERNAL DIMENSIONS:
Height 2' 5½", Width 19", Depth 16".

PRICE - £5-10-0

"THE WIRELESS WORLD"

CLASS "B" FERROCART RECEIVER

The most outstanding battery set of the year designed by Mr. W. I. G. Page, B.Sc., late of "The Wireless World" and now our Chief Technical Consultant. We are still experiencing an enormous demand for Kits of parts for this excellent Receiver. All orders are despatched to nearest Railway Station within two hours of receipt.

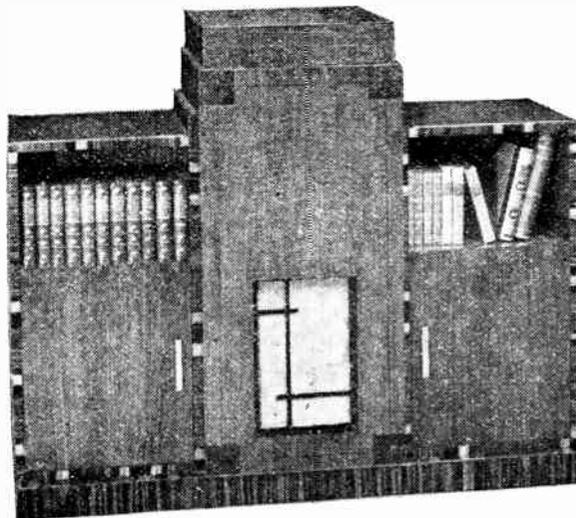
KIT "A." Complete (less Valves, Batteries, Cabinet and Loud Speaker) - **£7-11-0**
KIT "B." Complete with Valves (less Batteries, Cabinet and Loud Speaker) - **£9-17-3**
KIT "C." Complete with Valves, Cabinet and Loud Speaker (less Batteries) - **£13-9-3**

CABINET, beautifully finished in Figured Walnut, exclusively specified by the designer and manufactured in our own factory **£1-12-6**
(Front drilled if desired, without extra charge.)

OUR GUARANTEE OF DELIVERY

When we publish a statement in our advertisement that we can deliver from stock, delivery by return can be implicitly relied upon.

For the past two weeks we have not made this promise because, owing to non-delivery of raw material, certain manufacturers could not supply their components, but WE CAN NOW DELIVER THE COMPLETE NEW MONODIAL SUPER KIT FROM STOCK.



ONE OF OUR PRIZE-WINNING DESIGNS.

Here is another of the prize-winning designs which will appeal to the connoisseur. It is beautifully constructed in Figured and Burr Walnut and Macassar Ebony.

PRICE: 17 GUINEAS.

The result of our Cabinet designs competition, with the names and addresses of the successful competitors will be announced next week. All winning designs are on view on our stand at Radiolympia

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The Sensational W.B. MICROLODE

(Regd. Trade Mark)

A development in permanent magnet moving-coil technique that is making history. Seventeen ratios for power and pentode. Four ratios each for Class B or Q.P.P. without alteration. Accurate adjustment instantly to the correct optimum load for any output under any working conditions.

"W.B." P.M.4.A (as above) complete 42/-

"W.B." P.M.6 (with same features) ,, 32/6

In addition to the "Microlode," these speakers embody the famous "Mansfield" magnetic system.

Learn all about it in our new list post free.



Perfect matching for ANY receiver

Whiteley Electrical Radio Co., Ltd., Dept. W, Mansfield, Notts.

Irish Free State Distributors: Kelly & Shiel, Ltd., 47, Fleet Street, Dublin.

RADIO DATA CHARTS

A
SERIES OF ABACS

providing most of the essential
Data required in Receiver Design

By

R. T. BEATTY, M.A., B.E., D.Sc.

*Reprinted from
"The Wireless World"*

(1930)

"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.

(29 CHARTS and more than
50 Diagrams)

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W.W. 93

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

News of the Week

Current Events in Brief Review

If Winter Comes . . . at Olympia

ALL types of weather are being provided for by the organisers of the Olympia Radio Show. A cooling plant has been installed to operate in case of a heat wave, while, to cope with dull and chilly weather, large ultra-violet lamps have been fitted to give visitors the sensation of summer on the Riviera. If normal weather prevails it is possible that both appliances may be used.

Last year, when the usual temperature in London was in the region of 99°, Olympia was recognised as the coolest spot in London.

New British Broadcasting Station?

A GARDEN party was held at the Independent College, Whalley Range, on Saturday, July 29th, on behalf of a fund to set up a special Scripture wireless station which every day would broadcast sections of the Bible.

Wireless Again

SIX deep-sea travelers fitted with Marconi wireless apparatus assisted General Balbo and the Italian flying squadron on the flight from Italy to Chicago. The General, in his first report to Signor Mussolini, has emphasised the value of the help which wireless gave during the most difficult section of the flight over the Atlantic.

Classes in the Clouds

A FLYING radio classroom is a recent innovation at the R.A.F. wireless centre, Cranwell. We learn that a "Victoria" troop carrier has been equipped with a number of transmitters and receivers so that each pupil on board has a self-contained installation, with its own aerial, for the purpose of receiving instruction under the actual service conditions.

The new system speeds up training and avoids waste of time arising from the minor troubles and misunderstandings which occur when no instructor is present.

Mr. Caldwell's Flutter

ONE of the most prolific factories for radio ideas in America is the brain of Mr. O. H. Caldwell, formerly Federal Radio Commissioner. A volume could be filled with the various gadgets and novelties which Mr. Caldwell has invented. His latest is an attachment to radio receiving sets whereby "an electric light or bell or chimes would automatically call the attention of listeners to an extraordinary programme that has not been previously scheduled."

Mr. Caldwell points out that this could be operated quite easily by means of a "flutter" or special signal transmitted from the broadcasting station. The listener would then know when the latest transatlantic fliers were about to arrive and "say their mouthful" at the microphone.

"The Wireless World" Index and Binding Cases

THE index for Volume XXXII, January to June, 1933, is now ready, and may be obtained from the publishers at Dorset House, Stamford Street, London, S.E.1, price 4d. post free, or with binding case, 3s. 1d. post free.

Britain's Youngest

THE claim of Mr. R. D. L. Dutton (G6QQ), of Oxford, to be the youngest amateur transmitter is challenged by King Edward's School, Stourbridge. We are informed by Major J. Timbrell that G6OI and G6OJ, the school's transmitting stations, are handled by a fully licensed operator, Mr. F. C. Hambrey, who is only fourteen years of age.

During the past six years over fifty operators of these stations have been fully licensed, their average age being sixteen.

The Bisamberg Mystery

IT has already been remarked that the strength of the new Austrian 150 kW. station at Bisamberg has not come up to ex-

"Radio Progress Week"

A GREAT "wireless week" is to be held in the U.S. during October next. It will be sponsored by the manufacturers, who evidently feel it to be a reproach that only sixty million American homes are equipped with radio.

Irish Radio Show

THE Wireless and Gramophone Exhibition of the Irish Free State is to be held as usual in the Mansion House, Dublin, under the auspices of the Irish Radio Traders' Association, Ltd., from Monday, September 18th, to Saturday, September 23rd, inclusive.

The Show is expected to attract more attention than previously on account of the recent opening of the high power station at Athlone.

5-metre Tests from Snowdon

FROM 12.20 p.m. to-morrow until 6 p.m. (B.S.T.) ultra-short wave test signals will be transmitted from the summit of Mount Snowdon by G5BY and G6UH. The test, which was more fully described in last week's issue, will constitute an effort to



MAINS SET FOR £3 16s. od. Professor Leithauser, designer of the German "People's Receiver," with the A.C. model of his creation. The set has been produced by the combined efforts of twenty-eight firms to comply with the demand of Herr Hitler for a cheap receiver which would place the masses in touch with the official propaganda broadcasts.

ceptions. We now learn that open complaints are being made by listeners in the surrounding district, who contend that the new transmitter fails to give better signal strength than the original station at Rosenhügel. As an indication that this is no trick of the imagination, it is worth mentioning that the Rosenhügel station still operates in the mornings, so that listeners can make almost direct comparison between the two transmitters.

A Vienna correspondent states that the trouble is probably due to the intervention of the Carpathian mountains, but we doubt whether this explanation would satisfy aggrieved listeners!

secure a world's record for ground-to-ground communication on 5 metres.

Owners of ultra-short wave receivers should have an excellent opportunity to pick up signals over a very wide range, and the experimenters, who are offering special souvenir awards for the best reports, hope to establish communication with such distant points as the Galloway Hills, Scotland (130 miles distant); the Wicklow Hills, Irish Free State (100 miles); the Isle of Man, the Cumberland Fells, the Wrekin, and the hills of Lancashire and Yorkshire.

Transmitting and receiving periods (except when two-way

contacts are taking place) will be as follows: Transmission, 0-10, 20-30, and 40-50 during each hour. Reception, during the times between these periods.

Reports should be sent to Mr. H. L. O'Heffernan, 3, Chopstow Road, Croydon.

Italy's "Wireless Week"

THE recent "wireless week" in Italy proved a great success, partly because every purchaser of a new radio receiver during the "week" was furnished with a free licence for one year. It is estimated that 80,000 new listeners have been enrolled.

"Radio City" without Radios

AN eagle-eyed reporter has discovered that the Radio Corporation of America, the first to advocate "a radio in every office," has neglected to provide for radio equipment in its own offices or in any of the offices of the R.C.A. building in "Radio City." A recent inspection showed that the new building has neither special electrical plugs for receiving sets nor centralised antennae for multiple use.

Dismissed

WHOLESALE dismissals among the staff of the Reichs Rundfunk Gesellschaft have occurred in the last ten days. According to a communiqué issued by the German Ministry of Propaganda, a number of leading broadcasting officials were "instantly dismissed" on July 31st with three months' salary. The reasons given are "proven inability and political unreliability." Among the prominent figures which depart under the new regime are Dr. Maguus, former Director of the Reichs Rundfunk Gesellschaft; Dr. Flesch, former Director of the Berlin Funkstaude, and Herr Alfred Braun. The Savings Commissioner informs the public that these dismissals will save listeners one million marks.

Actually 100 of the old staff of the Berlin "Broadcasting House" were dismissed on the same day.

Catching the Transmitter

OVER 80 per cent. of the competitors discovered the hidden station in the course of the 7th Annual Direction Finding Competition of the Golders Green and Hendon Radio Society, organised by Lt.-Col. H. Ashley Scarlett, D.S.O.

The campaign ranged over the district bounded by Berkhamsted, St. Albans, Watford, and Amersham—a "difficult" country which taxed the resourcefulness of the competitors. The transmitting station, which employed a wavelength of 164 metres, was under the control of Mr. D. N. Corfield (G6CT).

The results showed a great improvement over previous years, and the average error of the first two groups was only 0.3 per cent.

Practical HINTS and TIPS

AIDS TO BETTER RECEPTION

NO form of A.V.C. works really satisfactorily in conjunction with a manually operated pre-detection control. A little thought will show that this is bound to be so; if the sensitivity of the receiver is adjusted to a low level it is clearly impossible for the automatic control to counter the effect of severe fading.

Manual and Automatic Controls

Although manual control is essential for a set without A.V.C., it is not entirely necessary when this refinement is fitted. Provided that the A.V.C. system works really well, and is properly adjusted, the output valve will never have to handle signals sufficiently strong to overload it, and so a manual control will only be needed when reproduction at an abnormally low level is desired.

Although this can admittedly be done by means of an "H.F." sensitivity control, experience shows that with A.V.C. there is a tendency to forget this control and to leave it in a position corresponding to low sensitivity; further, the inclusion of such a control may upset the operation of the automatic system.

always easy to add this to an existing set in a manner that is entirely free from technical objections, the connection of a variable resistance of between 50,000 and 100,000 ohms maximum across the primary of the L.F. transformer will often prove entirely satisfactory. This arrangement has been criticised, but it often offers the advantage, at low volume settings, of introducing relatively greater attenuation of the middle register than of the upper and lower frequencies.

Where resistance coupling is employed a post-detection volume control, free of all possible objections, is more easily arranged, merely by replacing the existing fixed grid leak by a potentiometer of the same value, and connecting the grid of the succeeding L.F. valve to the slider terminal. These two methods of control are shown diagrammatically in Fig. 1 (a) and (b).

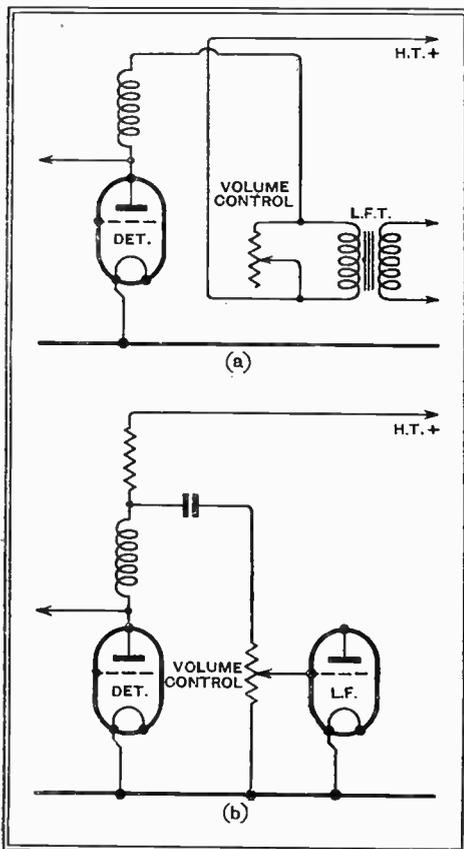
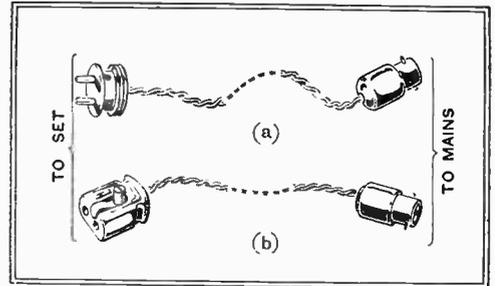


Fig. 1.—The simplest post-detection volume controls for transformer and resistance couplings.

It will therefore be obvious that a post-detection control, which will be quite independent of the automatic system, is distinctly preferable. Although it is not

panying sketch; arrangement (a) is contrary to regulations, for the obvious reason that, on withdrawing the two-pin plug from the receiver, a short-circuit might readily be introduced across the pins if the adaptor were inserted in a "live" lamp socket.

This disability is overcome by employing a special type of connector with recessed sockets, as shown in sketch (b).



Right and wrong; projecting plugs connected as in sketch (a) increase the risk of short-circuits and are contrary to regulations.

The complementary part of this connecting device consists, of course, of a pair of projecting pins, which are mounted on the receiver itself.

IT is common practice to use the aluminium covering of a metal-covered plywood baseboard as an earth "return," and, in consequence, a number of electrical connections are made to it, either with wood screws or with bolts passing through both metal and wood.

Metal-covered Plywood

For some reason that is not quite clear the electrical quality of such connections seems to deteriorate in the course of time. Possibly the wood shrinks, or else it expands and contracts in turn; in any case the connections tend to become loose, and it is worth while to cultivate the habit of tightening them occasionally.

WHEN a receiver is deficient in bass response it is always worth while to explore the possibilities of artificially over-accentuating the lower notes—or under-accentuating the treble, which comes to very much the same thing—by deliberately applying more reaction than is necessary from the point of view of signal strength. In order that this may be done successfully it is, of course, necessary that the set should be fitted with a good input volume control, with a wide range of action.

Reaction as Tone Control

The idea does not always work, but the reproduction of music occasionally becomes definitely more pleasing as a result of adopting it.

ALTHOUGH the practice is not entirely defensible we often succumb to the temptation to pass through a fixed resistance a rather higher current than is intended by the makers. Modern resistances, both of the composition and wirewound type, may often be treated in this way with impunity, although certain precautions should be taken to minimise the risk of trouble.

Over-run Resistances

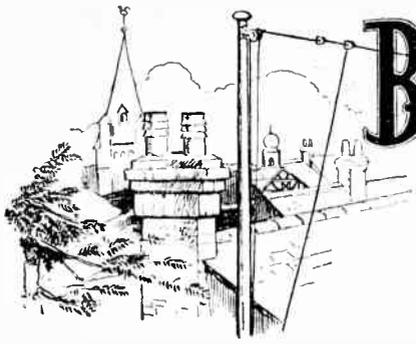
In the first place, it should be realised that as a result of over-running the resistance a good deal of heat will be generated, and the component should therefore be mounted in such a way that no damage to other parts of the set can result. It is also advisable to provide for free radiation of heat; the amount of electrical energy that can be dissipated in a given resistance is greatly increased when the heat generated is quickly conducted away from it.

WHEN connecting a receiver to the mains certain precautions should be observed in order that the risk of accidental short-circuits may be minimised. Regarding this subject, a recently published sketch in the "Hints and Tips" section

Complying with Regulations

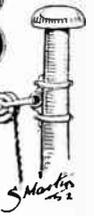
may have given a false impression, although it was intended to illustrate an entirely different matter. So far as mains connections are concerned, there is little risk of trouble if matters are so arranged that the projecting plugs of all plug-and-socket devices automatically become "dead" when they are removed from their sockets.

This point is illustrated in the accom-



Broadcast Brevities

By Our Special
Correspondent



Don't Clap Too Loudly

ONE cannot but admire the transparent honesty of the B.B.C. engineers. Although there has been no great popular applause over their success in synchronising the London and West Nationals (the achievement is too technical to win cheers from the gallery), there has been a steady flow of intelligent congratulation. But this well-merited praise does not deter the engineers from raising a hand in gentle protest and suggesting that the applause is premature.

Wait Till the Winter

Mr. Ashbridge says, in effect: "This is summertime and we expected success. Wait until the winter comes, when the maximum reflection of indirect rays occurs. Then see whether the two stations are happily matched."

This is a courageous attitude, and is one more proof that the B.B.C. engineering department is not out for the cheap applause of the moment.



Activity at Droitwich

RAPID progress is being made in the construction of the high-power station at Droitwich, and the B.B.C. is now promising that we shall hear the first transmissions by the summer of 1934 on 1,500 metres. These first high-power transmissions will sound a death knell to the National transmitters in England, but what is England's loss is Scotland's gain.

Good for the North Country

When Droitwich "takes over," little time will be lost constructing the new B.B.C. station in the Inverness district, which will most probably take the wavelength of 267.4 metres. Then will follow the new high-power transmitter for Newcastle.

Engineers are already exploring for a site north-west of Inverness.

Midland Regional to Follow

Midland Regional transmissions will continue from Daventry for some months after the long-wave programmes are transferred to Droitwich, and it will probably be Christmas, 1934, before Daventry is left solely with the Empire short-wave transmissions.



The Silly Season

IN recent years wireless seems to have had the honour of opening the "silly season," which has its run from the beginning of August till well into September. This year has been no exception; indeed, I doubt whether we have ever had a richer crop of baseless rumours than within the last ten days.

All This and More

We have heard that the B.B.C. will relay Sunday cabaret music from the Continent,

that the new woman announcer gets £500 a year, that the B.B.C. has begun stopping bad items half-way through with the excuse of a "technical hitch," that the B.B.C. engineers are roaming the country in search of "blind spots," that a rival B.B.C. starts before Christmas, that Sir John Reith . . . but why go on?

This is True

Let me tell you something that is true. It is that Sir Walford Davies is completely restored in health and will thus be able to return to the microphone in the evenings next autumn with a series of "Keyboard Talks."

The Compelling Touch

No broadcaster has succeeded to a greater degree than Sir Walford in combining the cultural with the entertainment side in microphone work. His "Music and the Ordinary Listener" was a weekly feast for musicians and non-musicians alike. I have often been amused at the spectacle of a hard-headed, single-minded technical man pausing in his experiments to listen to Sir Walford Davies expounding the beauties of the common chord or the delights of the dominant seventh.

No one else, one felt, could have "put it across" in the same persuasive way. We can undoubtedly look forward to many fascinating half-hours during the coming season.



Radio Plays on the Stage

IN Hungary they take radio drama so seriously that the theatres watch the broadcast programmes for suitable material. I now hear that immediately after the production by the Hungarian Broadcasting

Ambrose on Saturdays

LOVERS of "Ambrosial" music will have welcomed the announcement that Ambrose and his Orchestra are to continue their regular broadcasts on Saturday nights.

Beginning on Saturday, September 30th, this ever-popular dance leader will bring his band to a B.B.C. studio for a programme lasting from 10.30 p.m. to midnight.

When Restaurants Nauseate

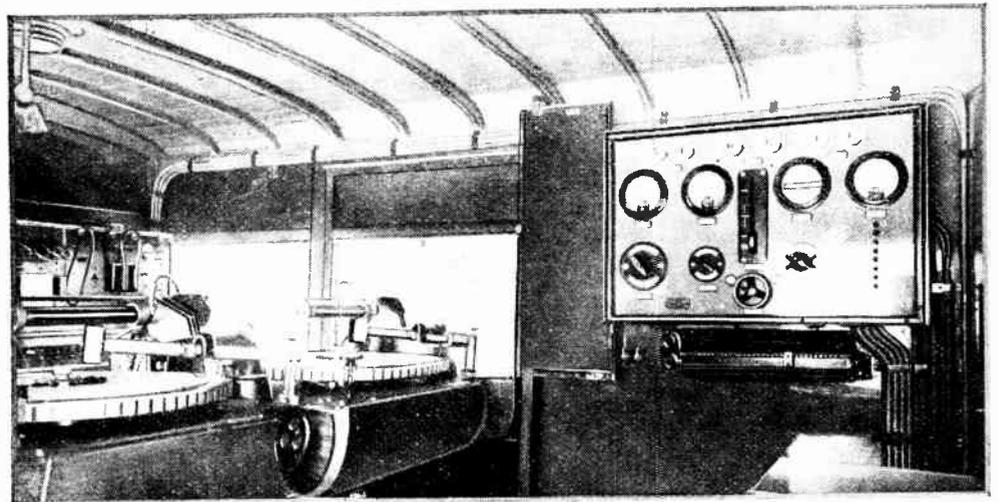
Personally, I consider that dance music definitely gains by being broadcast from the studio, free from the extraneous noises which are inevitable in the best conducted clubs and restaurants. I have never been enchanted by the scuffle of human feet, while I am positively nauseated when the clash of knives and forks mingles with the passionate avowals of the crooner.

Savoy Bands at Portland Place

It looks as if we shall have more and more studio dance music this winter, for I learn that the Savoy bands may also perform at Broadcasting House in the near future.

The B.B.C. Declines

IS it fear of a tragedy that has persuaded the B.B.C. not to relay Mr. John Trantum's wireless talk during his forthcoming five-mile parachute jump on Salisbury Plain?



BROADCAST REPORTING. Inside the new "O.B." van of the German broadcasting service. A running commentary is given just as in the case of an ordinary outside broadcast, but the sounds are stored up on records for use several hours later.

Company of a new musical play, "Waltz and Love," which was transmitted from Budapest, the "Kiraly Szinhaz" theatre asked the two authors, M. Julius Halasz and M. Charles Kristof, to transform it into an operetta for the stage. This they are doing, and the play will be produced shortly.

At all events, the O.B. Department have decided definitely not to attempt it, although the world's champion parachutist will carry a short-wave transmitter from which he will speak for the two minutes during which he is falling before opening his parachute.

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.

Wireless Propaganda

AS a reader of *The Wireless World* for a considerable number of years, I have always been impressed by the fairness of your "Editorial Comments." In the issue of July 28 you refer to "Wireless Propaganda," and I find myself in agreement with all that you say with regard to this, but when you pass on to a consideration of relay services I feel that you have only stated one side of the case.

You criticise the regulations of the Postmaster-General which allow relay services to pick and choose whatever items are desired both from the B.B.C. programmes and programmes from abroad. You will, of course, realise that a relay service depends for its very existence upon the goodwill of its subscribers, and it is therefore essential that a relay service shall choose whatever programme is most popular with its subscribers.

I am sure that *The Wireless World* would be the first in the field to oppose any move on the part of the Postmaster-General to restrict the use of ordinary wireless receivers to reception of British stations only. As a relay subscriber is compelled to take out a licence, which, after all, is a licence for wireless reception, and not for reception of B.B.C. programmes alone, it seems only fair that his choice of programmes should not be more limited than that of the ordinary wireless listener. In general, relay services only give foreign programmes at times when the B.B.C. transmitters are closed down and because of the fact that the receiving

station is usually situated in a country district they are able to give very excellent results.

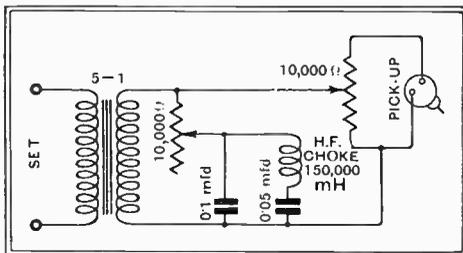
Under the terms of its licence a relay service is not allowed to receive any foreign station which is giving anything in the nature of "propaganda," but I cannot see any reason why it should be prevented from giving a reasonable amount of foreign-sponsored programmes, especially when, as I believe, the B.B.C. is itself allowed to use a sponsored programme so long as it does not take any remuneration from the provider of that programme.

Burnley.

J. MUSCUTT.

Scratch Filters

A FEW months ago you published an article on scratch filters sent up by one of your readers. In this article he invited



Details of the filter suggested by our correspondent.

readers to send up their experience with these filters. I have been fortunate enough to hit upon an almost ideal filter, which

eliminates most of the surface noise, without affecting string tone and other high notes, as my previous attempts have always done. It is really quite simple. Of course, values will have to be altered from those given in the diagram to suit different pick-ups. Mine is the Burndept N.A. pick-up fed into the amplifier through a 5-1 step-up transformer. In conclusion, I would state that I use an R.K. Senior loud speaker which is very sensitive to high notes and scratch.

R. F. S. GOEBEL.

London, N.16.

Relay Services—Should They Pick and Choose?

IN the Editorial of *The Wireless World* of July 28th you suggest that wireless relay services should not be allowed to pick and choose their own programmes.

The arguments you put forward in support of this plan are certainly not very convincing.

A user of a first-class wireless receiver such as *The Wireless World* Monodial can pick up any European station with the same ease as the operator of a relay service. As the percentage of the total listeners throughout the country who get their broadcasting through a relay service must of necessity always be a very small part of the whole, any restrictions on these services cannot be at all effective in preventing the public from hearing undesirable Continental transmissions. In other words, you are trying to mend a leak in the reservoir by mopping up the water that leaks out instead of stopping up the hole.

What good can possibly come of making further petty restrictions on the operators of relay services? We have already far too many such restrictions, and personally I would like to see some of them removed rather than have more added on.

Take our case. We run a dual programme service. We are several hundred miles farther from the Continent than are you in London. Continental reception in daylight is impossible. Since the B.B.C. started their "economy" system of giving no attractive programme until 8.0 p.m. we have had to turn to Athlone for our second service. If you have ever listened to that station between 6.0 and 8.0 p.m. you will know just how poor an alternative service it can be.

Now, sir, I ask you in all reason can you see any sense in a regulation which prevents us relaying gramophone records during this space? Could this possibly affect His Majesty's most worthy Postmaster-General, the B.B.C. or the wireless trader? I submit it could not. Incidentally, it would enable us to avoid relaying a poor programme from a country which is entirely anti-British in outlook and politics, and so in actual fact help to bring about the state of affairs most properly advocated by you.

Perhaps you are not aware that a restriction already exists to restrain relay services from relaying anti-British propaganda in English broadcast from any of the Continental stations.

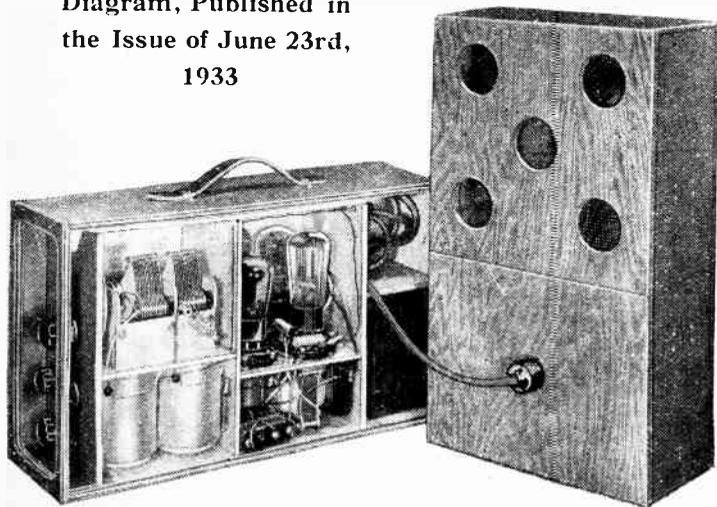
ON WITH THE RELAY.

A Recent "Wireless World" Set :—

The Two-Unit Portable

Exceptional Quality Combined with Compactness

Constructional Details with Complete Wiring Diagram, Published in the Issue of June 23rd, 1933

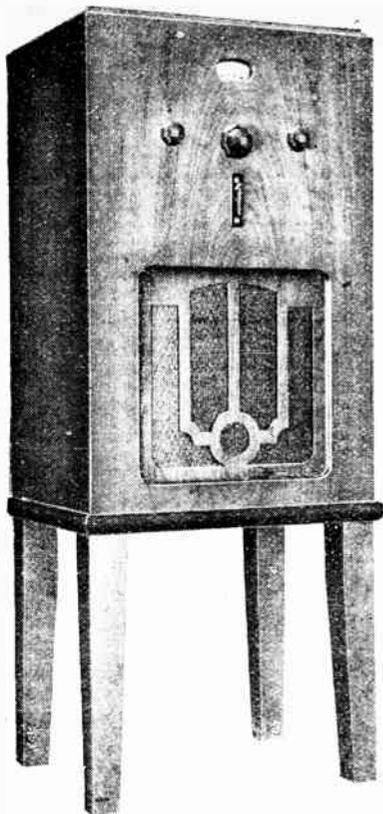


A SELF-CONTAINED set in which extreme portability and easy stowage have been secured, not by sacrificing performance but by dividing the weight and bulk into separate units, which may be interconnected in a moment. One of the containers accommodates the receiver proper and the L.T. battery, while in 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 has proved to be much more convenient than the ordinary portable.

Cossor Receiver

MODEL 3456

A Battery Console with Class "B" Amplification



FOR a set costing less than £10 there can be no doubt that the Cossor Model 3456 presents an imposing appearance. It can be used either as a table model or a console, as the legs, which are held in position by dowel pegs and winged nuts, are readily detachable. The dimensions of the cabinet itself are 14in. x 11in. x 23in. high, and with the legs fitted the overall height is 35in.

In the matter of volume and quality a set must live up to its appearance, and, thanks to Class "B" amplification in the output stage, the Cossor set is able to do this with a surprisingly small drain on the H.T. battery. A permanent magnet moving coil loud speaker is fitted as standard, and the power output is at least one watt.

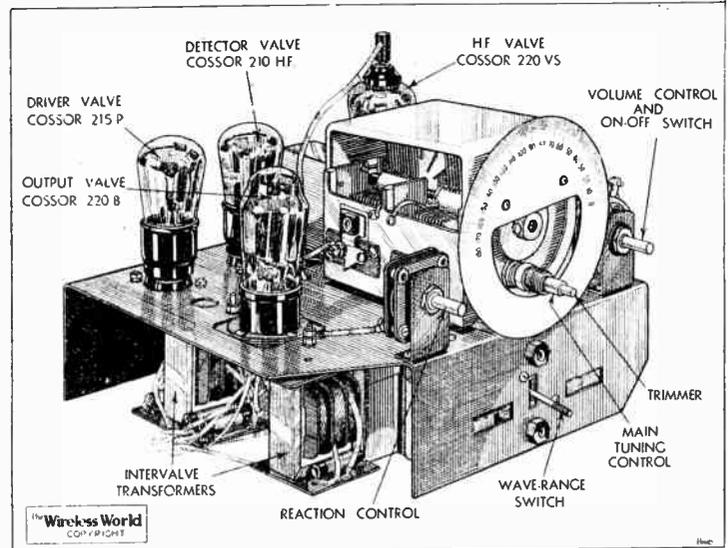
The circuit arrangement is straightforward, and there are four stages. A variable-mu screen grid H.F. valve is followed by a grid detector, with reaction, and a driver valve feeding the push-pull Class "B" output valve. Two tuned circuits are employed, one

in the aerial circuit and the other as a tuned anode coupling between the H.F. and detector stages. To ensure adequate selectivity both circuits are centre-tapped and a short-circuiting switch is arranged to preserve the symmetry of the circuits, both on long and medium waves. On long waves an H.F. choke is included in the aerial lead for the purpose of suppressing interference from nearby transmitters working on the medium wave-band. A two-ganged condenser of substantial construction with slotted end vanes is used to tune the circuits, but to ensure perfect alignment at any point in the wave-range of the set, a trimmer is connected in parallel with the section of the condenser tuning the aerial circuit. Volume is controlled in the H.F. stage by varying the grid bias of the variable-mu valve by means of a potentiometer connected across the 0-volt grid bias battery. It will be seen from the circuit diagram that the on-off switch has three contacts which simultaneously disconnect the L.T., H.T. and grid bias circuits. Reaction is capacity controlled and transformer coupling is used throughout the L.F. stages. All the H.T. supply circuits are thoroughly decoupled.

The steel chassis has been given an oxidised "gun" finish, which is both durable and attractive in appearance. A screw-type holder is fitted in an accessible position at the back of the chassis for a flashlamp fuse, and there is also a pick-up plug and jack.

FEATURES.

Type.—Four-valve battery receiver in convertible console or table model cabinet. Permanent magnet moving coil loud speaker. Class "B" amplification. Provision for gramophone pick-up. **Circuit.**—Variable-mu screen grid H.F.—grid detector with reaction—driver valve—Class "B" output valve. **Controls.**—(1) Main tuning (with trimmer). (2) Volume control and on-off switch. (3) Reaction. (4) Wavering. **Price.**—(excluding batteries), £9 19s. 0d. **Makers.**—A.C. Cossor Ltd., Highbury Grove, London, N.5.



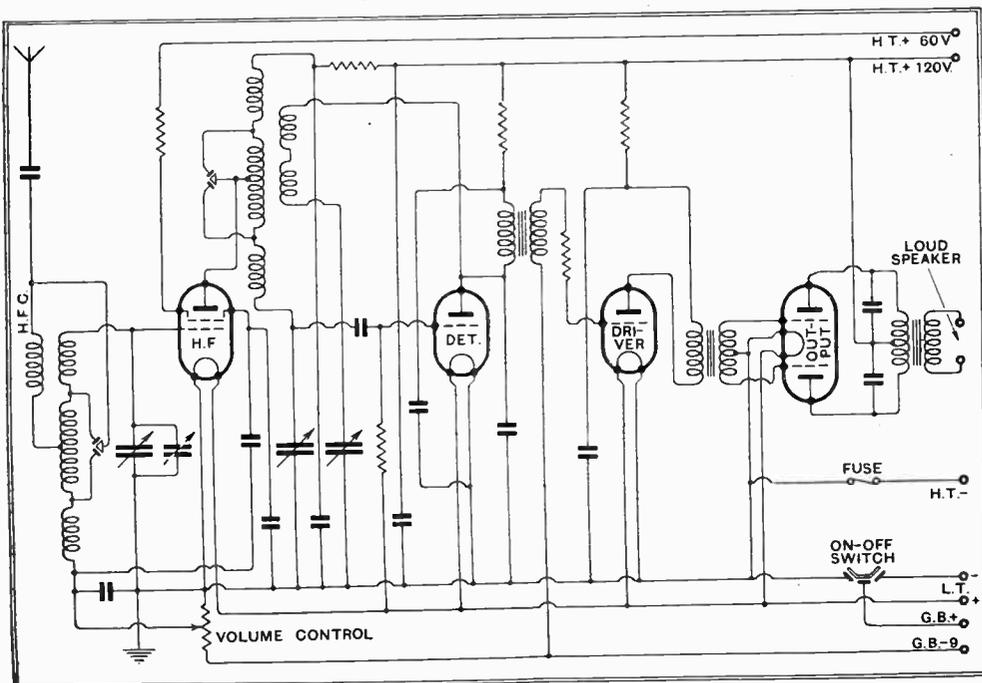
The framework of the Cossor model 3456 chassis is constructed of oxidised steel.

The controls on the front panel consist of a slow-motion main tuning knob, through the hollow spindle of which is passed the trimmer control. On the left is the reaction condenser control and on the right the combined volume control and on-off switch. Change of wave-range is effected by a lever-type switch immediately below the main tuning control.

The range and selectivity of the set are largely governed by the skill with which it is handled. It is important to realise that the main tuning, trimmer, and reaction controls are to some extent interdependent, and it is often possible to improve selectivity when receiving stations near in wavelength to the local station by first reducing the separate volume control and then increasing reaction. Familiarity with the routine of accurately tuning is soon acquired, and the full capabilities of the set will then be realised. We found no difficulty in London in tuning-in Langenberg clear of Northern Regional in daylight, and in separating the two Brookmans Park transmitters sufficiently to receive five or six foreign stations in the wavelength interval between them. The long-wave selectivity was also sufficient to separate Radio Paris, Daventry, and Eiffel Tower; but not quite adequate for uninterrupted reception of Zeesen. Taken all round the selectivity would satisfy all reasonable requirements, and is particularly good, in view of the fact that only two tuned circuits are employed.

The quality of reproduction is well-balanced, and there is no trace of cabinet resonance. The volume can be increased to a level far in excess of that required for the average living room before distortion due to overloading is apparent.

A measurement of the H.T. consumption under working conditions showed the normal standing current to be 4 mA. and the maximum consumption on sustained loud passages 15 to 16 mA.



Simplified circuit diagram in which the connections of the pick-up jack are omitted.

READERS' PROBLEMS

Spoiling Circuit Alignment

ACCORDING to a correspondent, the "ganging" of his battery-operated receiver has been greatly impaired by the substitution of a variable- μ valve for one of the ordinary S.G. type. Circuit diagrams showing the arrangement of the receiver before and after the alteration are submitted, and we are asked to say what is likely to be wrong. Ganging was originally particularly good, but now the H.F. grid circuit does not remain in alignment over the whole tuning scale.

The original arrangement of this circuit is shown in Fig. 1(a); the grid bias cell was shunted by a capacity of 0.005 mfd.; the same condenser was employed in association with a decoupling resistance when the variable- μ valve was fitted.

Consideration of diagram (b) will show that this condenser is now in series with the tuned circuit, while originally it was more or less completely short-circuited by the bias cell; indeed, while this cell had a low internal resistance, it was probably serving little use-

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.

According to Plan

THE user of an A.V.C. Monodial appears to be mildly perturbed because complete removal of the control valve from its socket does not bring about any reduction in signal strength. We are asked to say whether this effect is indicative of a fault, and if so, to suggest where it may lie.

When receiving a rather feeble signal—too weak to reach the threshold value at which the A.V.C. system comes into operation—it is quite natural that removal of the A.V.C. valve should have no audible effect. But, if the signal is strong, removal of the valve should be accompanied by an increase of

Trite, but True

"MY receiver works perfectly on the medium waveband, but fails to give any signals whatever on the long-wave side." The reader who makes this statement in a letter asking for our assistance gives insufficient information for us to suggest the probable location of the fault, and we can do little more than remind him that it must logically be assumed to lie in some circuit or some component that is peculiar to the long waveband, and inoperative on medium waves.

In nine cases out of ten, faults such as those described are due to defective long-wave sections of tuning coils, or to badly working wave-range switches.

Mounting By-pass Condensers

IN the Two-Unit Portable Receiver (*The Wireless World*, July 23rd), space was saved by mounting the tubular by-pass condensers C4 and C5 under the screening covers of the associated tuning coils. A prospective builder of this set tells us that the condensers he has obtained are too large for fitting in this way, and asks whether any harm will be done by mounting them externally.

This alteration is permissible. Although the set is compact it is not so cramped that room will not be available for the condensers elsewhere. To avoid risk of instability, however, they should be mounted in close proximity to the tuning coils.

A.C. Short-wave Sets

IT is common knowledge that mains-operated receivers working on the short waves are particularly likely to suffer from modulation hum, and, further, that this trouble is likely to be provoked when the earth connection is poor.

A user of the A.C. Short-wave Converter (*The Wireless World*, April 28th) notices a certain amount of hum, and has found that it has become rather less troublesome since his earth connection was improved. But further improvements in this direction are unfortunately impossible, and our correspondent goes on to ask whether we can suggest anything else.

We recommend that some simple form of H.F. stopping device should be fitted in the mains feed to the receiver with which the converter is used. Probably a pair of 0.001 mfd. condensers, connected across the primary of the power transformer, as in the converter unit itself, will serve the purpose.

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.

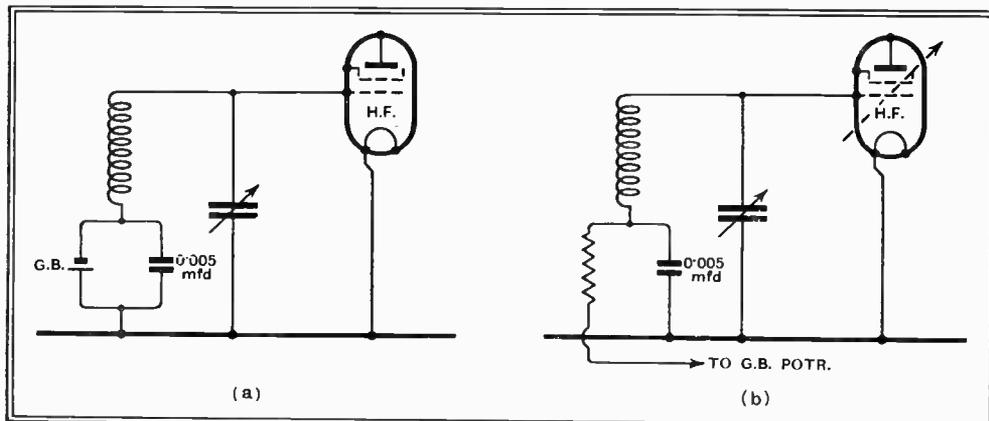


Fig. 1.—The by-pass condenser in diagram (a), though in series with the tuned circuit, is virtually "shorted" by the bias cell, and generally has little effect on tuning.

ful purpose. Now a capacity of 0.005 mfd. is only ten times greater than that of the tuning condenser, and so it is bound to exercise a certain effect on the "law" of that condenser. This, we think, explains entirely why the H.F. grid circuit runs out of tune, and we think that matters will be put right by the fitting of a condenser having the more usual value of about 0.1 mfd.

Old-Type Field Windings

A NUMBER of energised moving-coil loud speakers designed a few years ago were fitted with low-resistance windings designed for working at some 10 or 12 volts, or even less. Where A.C. mains were employed, energising current was obtained through a low-voltage rectifier, generally of the metal oxide type.

Several readers have asked how this type of low-voltage loud speaker can be adapted to work with modern sets in which the field winding is usually employed for smoothing.

We think that the best advice we can offer is that the loud speaker should be used with its existing energising equipment, and without any alteration. When a design calling for a high-resistance field winding is being followed, a special type of choke, having the necessary D.C. resistance, should be substituted for the field.

strength. By trying these experiments our correspondent will find it easy to determine whether the control is working properly.

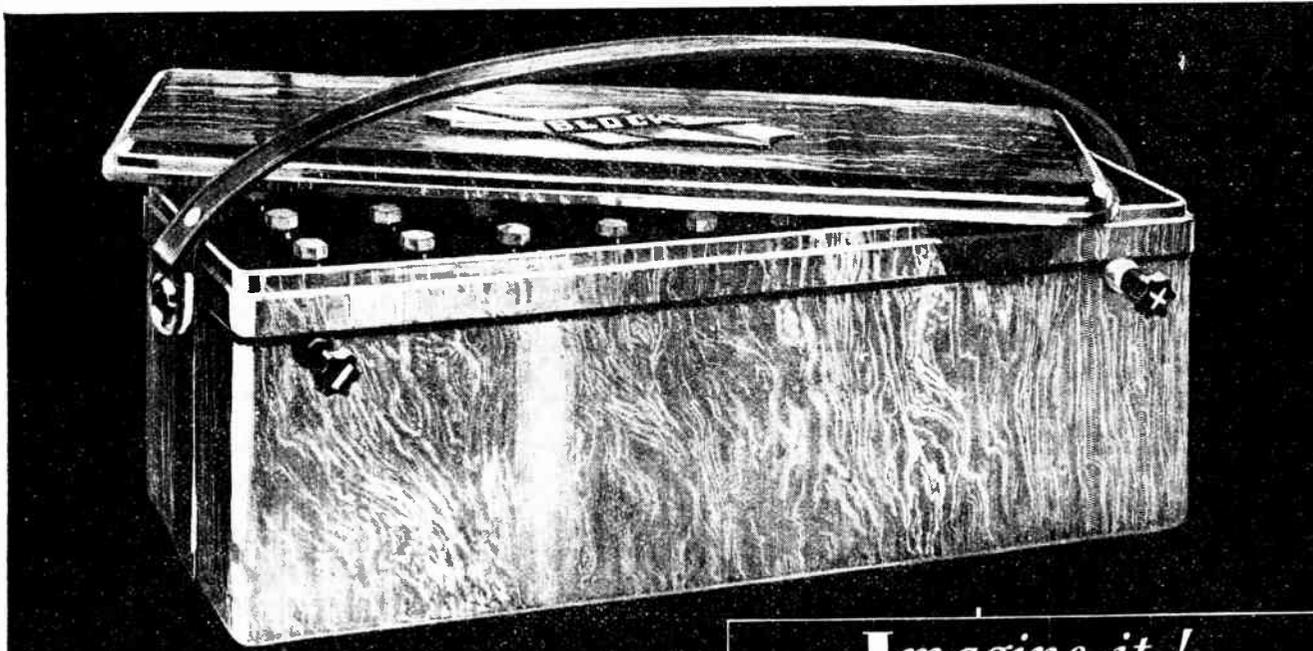
Getting it Both Ways

A QUERIST, who has inserted an anti-H.F. filter in the supply leads from the mains to his receiver, finds that background noises have been reduced to a more than acceptable extent, and that reception is generally more pleasing than before.

But never a rose without a thorn! Our querist occasionally finds it necessary to use a mains aerial, and the trouble is that this device has now become very much less effective than it was before the filter was added. We are asked if anything can be done to restore the lost sensitivity.

The fact that the addition of a mains filter reduces the effectiveness of the mains wiring as a collector of signals is eloquent testimony to the efficiency of the filter that has been fitted. After all, it should be borne in mind that these filters are intended to deflect stray H.F. energy in the mains from the receiver; they cannot be expected to discriminate between wanted and unwanted H.F. currents, and so little or nothing can be done.

All this goes to show that a mains aerial is a device that should only be used when nothing better is possible.



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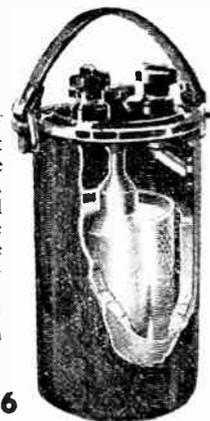
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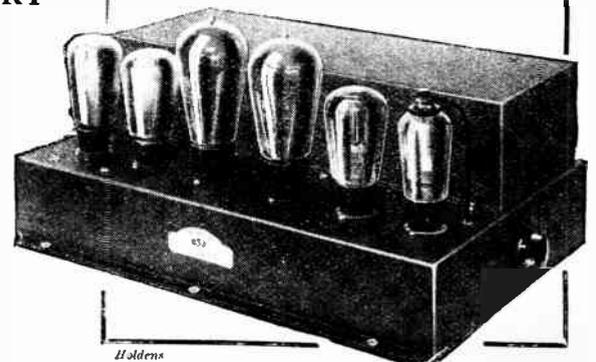
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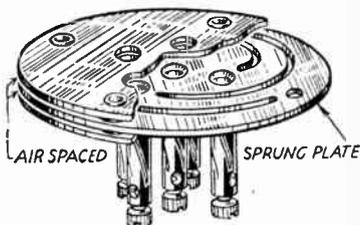
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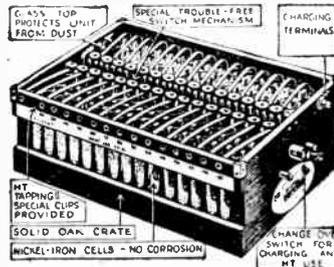
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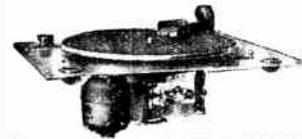
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£1.12.6. Volume
control, 5/- extra

Radio set owners anxious to obtain gramophone reproduction with radio amplification will find Garrard products ideal.

Write for
Illustrated leaflets free.

**GARRARD ENGINEERING AND
MANUFACTURING CO., LTD.,**
Swindon, Wilts OR 17 Grafton St., W.1
Swindon, 534 & 333 (2 lines) Regent 7599

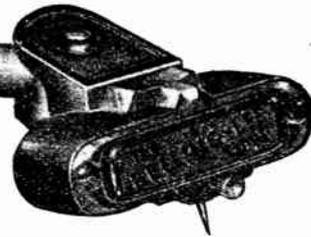
THE BELLING-LEE PICK-UP



MODEL A.

Adjustable arm allows distance between needle point and centre of base to be varied from 7 1/2" to 9 1/2". The arm should be as long as cabinet space permits. Head angle is also adjustable to obtain minimum tracking error for different arm lengths.

LET YOUR EAR BE THE JUDGE!



27/6

Special Features.—Perfectly natural frequency response . . . minimises needle scratch while retaining high notes & brilliancy of reproduction. . . Minimum record wear. . . Copper screened flex.

WRITE FOR BOOKLET "RADIO CONNECTIONS."

BELLING & LEE LTD
CAMBRIDGE ARTERIAL ROAD, ENFIELD, MIDD.



UNBROKEN PUBLIC SERVICE!

There is no need whatever for you to wait indefinitely for your Special Instrument

We Guarantee despatch within 48 hours

SUPPLIERS TO WAR OFFICE, B.B.C. AND COASTAL OFFICE

Will Definitely Eliminate MAINS HUM
The BRYCE-WILBURN Patent Astatic Mains Transformer.

Will Definitely Eliminate MAN-MADE STATIC
The BRYCE-LYNCH Aerial System—which also allows of 4 Receivers being connected to ONE Aerial.

Complete Lists will be forwarded by Return post—series—

W. ANDREW BRYCE & CO. Woodfield Works, BURY, Lancs.
London Area: WILBURN & CO., Wheatheaf House, Carmelite St., LONDON, E.C.4. Phone: BURY 1251.

MAINS TRANSFORMERS

L.F. CHOKES

POWER PACKS

PUBLIC ADDRESS AMPLIFIERS

3-VALVE RECEIVER AND AMPLIFIER 25 Watts output

MOVING COIL, CINEMA TYPE LOUD SPEAKERS

The ELEMENTARY PRINCIPLES of WIRELESS TELEGRAPHY and TELEPHONY

Third Edition
Revised by
O. F. BROWN, B.Sc.

by R. D. BANGAY

THE standard book of instruction for wireless beginners and students. This revised edition brings the whole subject into line with modern developments in wireless. The style is clear and simple and attention is given to the theoretical elements of electricity and magnetism: to the dynamo; and to the properties of waves. A leaflet which gives full particulars of the volume, including a synopsis of the chapters, will be sent on request.

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"KINVA" TYPE I.D.C. SCREENED H.F. CHOKE

WITH THE

"KINVALLOY" IRON-DUST CORE

SPECIFICALLY DESIGNED FOR A LOW AND CONSTANT SELF CAPACITY OVER BOTH WAVE RANGES.

FOR USE IN H.F. ANODES
(PARTICULARLY WITH IRON-CORD COILS).

INDUCTANCE 150,000 MHYS.
D.C. RESIS. 430 ohms.

PRICE **4/6**

WRITE NOW FOR LIST OF

or 4/9 post free.

NEW HETERODYNE FILTERS, I.F. TRANSFORMERS, MAINS TRANSFORMERS, ETC.

POSTLETHWAITE BROS.,
KINVER, STOURBRIDGE.



STAND No. 249 RADIOLYMPIA

Where some interesting improvements in Loud Speakers will be seen.

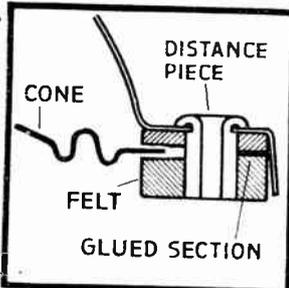
THE ONLY MOVING COIL SPEAKER WITH FULLY FLOATING CONE

Prices from 25/- to 35/-

Enquiries from Set Manfrs. cordially invited.

EARL

MANUFACTURING CO., LTD., AVENUE WORKS, HANOVER PARK, S.E.15



Notice how the cone is free to float between layers of felt cutting out all undesirable resonances.

A NEW

OSBORN RADIO CABINET



Model No. 259. An Ultra-Modern Radiogram. Cabinet in beautifully figured walnut. Mouldings and base lacquered black to give contrast to figured Walnut. 3' 2" high, 1' 9" wide 1' 5" deep. Height between motor-board and baseboard 12". Height for pick-up 4 1/2". Opening at back. Top panel above fret will be cut to your specification—a paper pattern must be forwarded. Baffle included. Hand polished. Takes any type of gramophone motor—electric or spring models. Accommodates baseboard 18" x 14" or smaller. Hole in baffle cut to your specification. **PRICES:** Machined Ready to Assemble, Kit of Parts: Oak £1-15-0. Walnut or Mahogany £2. Assembled Ready to Polish: Oak £2-10-0. Walnut or Mahogany £2-15-0. Assembled and Polished: Oak £3-5-0. Walnut or Mahogany £3-10-0. **ALL MODELS CARRIAGE PAID.**

Osborn Super Acoustic Baffle Board. RADIOLYMPIA STAND 202 GALLERY

Prevents 50% speaker worry. Any size hole cut free. 18" 18" 3" 2 1/2" 2 1/2" 5" 30" 30" 8" 30" 36" 11 3/4". Send for free sample.

WRITE FOR CATALOGUE.

CHAS. A. OSBORN, Dept. W.W., Regent Works, Arlington Street, New North Road, London, N.1. Tel.: Clerkenwell 6035. Showrooms: 21, Essex Road, Islington, N.1. Tel.: Clerkenwell 5634

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

RECEIVERS FOR SALE.

- 6-VALVE 3N.G. Superhet.** £5 10. Swan, 31, Waterloo Sq., Lombard Grove, Camberwell, S.E.5. [3235]
- MICHAEL** Colonial Super-set. Four. 15 guinea model; best offer—Coursy, 30, Saunders St., Southampton. [3229]
- PHILLIPS** 200v. A.C. Gramophone Amplifier, loss valves, perfect; £4.10. Baker, Ashbrook Rd., Sunderland. [3238]
- OLIMAX** All electric 200-250 A.C. Band Pass Three, in walnut cabinet, complete with valves and moving coil speaker; listed £16 16, unopened, £8. 3, e.o.d., carriage paid.
- OSTERGANZ** 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, e.o.d., carriage paid.—Kay, 167, City Rd., Finsbury, E.C.1. [2835]
- WALNUT** Transportable American 1933 Victor (H.M.V. America) 6 valve superhet, incorporating latest H.F. pentodes, output 3 watts undistorted, 200-500, and 1-000-2,000 metres; listed £24, at £12.—Mayfair Radio, 31, George St., Hanover Sq., W.1. [3186]
- "WIRELESS WORLD"** New Monodial, built and supplied as kits; your old Monodial converted, including components and valves, £11; trade supplied. London Radio Development Services, Ltd., 56, Hazel Rd., Kensal Rise, N.W.10. Phone: Willesden 0385. [2087]

MAINS EQUIPMENT

- N. P. Battery Chargers** for A.C. Mains; from 62 6.
- N. P.** have a Motor Dynamo, 2 to 10 amps, A.C. mains, complete with resistance and ammeter, ready for use; bargain, £6 10; trial.
- N. P.** Have a Few Slightly Soiled Instruments from 57 6 to £12; Westinghouse or valve rectification up to 3 circuits; bargains cannot be repeated.
- N. P.** Senior Two, £5 5; will do L.T. batteries up to 36, H.T. up to 120 volts 1 amp; highest value ever offered.
- N. P.** Exchange Charger as Business Grower; new trade lists now ready; Nash Products, Ltd., Stechford, Birmingham, 9. [3112]
- VORTEXION**, Wimbledon, for 99.9% reliable transformers.
- I**f You Haven't Tried Them Yet Ask Someone who has, or call and inspect complimentary letters.
- A**ll Standard Models Delivery by Return; all secondaries centre tapped.
- G**UARANTEED 12 Months, and within 5% normal and 2 1/2% super models, neat shrouding, with detachable feet, as used by Government Departments, etc., etc.
- VORTEXION**.—New monodial transformer, 200-250, 50 cycles, 425-0-425, 120 m.a., 4v. C.T. 3a., 4v. C.T. 1a., 4v. C.T. 1a., 4v. C.T. 6a., screened primary, open type, 20/-; shrouded, 22/-; super shrouded, 25/-; 10 henry choke, 5/6; 20 henry choke, 8/6.
- 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.

(This advertisement continued in third column.)

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.

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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.

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Mains Equipment.—Contd.

(This advertisement continued from first column.)

- 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 1/2 in., 4 super job, 2% regulation; 35/- shrouded, with terminals, less terminals, 30/-; open type 26/-; post 1/-.
- VORTEXION** Auto Transformers to B.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** 200v. 30 m.a. Eliminators, 110 or 220 input with 4v. 4a. winding; 37/6.
- VORTEXION**.—Transformers made to your specification. All standards in stock. Phone all hours.
- VORTEXION** (S. A. Brown), 182, The Broadway, Wimbledon. Tel.: Liberty 2814. [3117]

SERADIX Radio Products, specified for "Wireless World" monodial, used by those who know.

SERADIX Moulded Resistors, reviewed in "Wireless World," June 16th, fitted wire ends, accurate value; now made in four types.

CRID LEAKS.—1, .25, .5, 1.0 and 2.0 megs, 5d. each.

SERADIX M-75 Anode Feed and Bypassing Resistors, 7 1/2 watt rating, 6d. each.

SERADIX M-150 Resistors, as M-75 but 1 1/2 watt rating, 8d. each.

SERADIX M-300 Resistors, as M-75 but 3 watts, 1/3 each most values.

SERADIX Mains Transformers.—New lists available shortly; super type fitted terminals, screened primaries, tapped 200-250-250v.

SERADIX W.H.I. for Westinghouse H.T. 5, 6, 7, 135v. 50 m.a., tapped 80v. and 110v., with 4v. 3-4a., 16 9, carriage paid.

SERADIX W.H.I. for H.T. 11, 300v. 550 m.a., 4v. 3 5a., 4v. 3 5a., 4v. 2 1/2a., 4v. 2 1/2a., 45/-.

SERADIX Special Monodial Transformer, as specified, 57 6

ORDER From Your Dealer, or direct from the makers, mentioning dealers name and address.

SERADIX Products Are Distributed by Trevor Pepper, Wake Green Rd., Birmingham. [3243]



The Silver Ghost Confidence Bond!

I have pleasure in introducing to Wireless World readers the "Silver Ghost" Confidence Bond which introduces a Personal touch between you, your Supplier and the Factory. A Bond! ensuring quality, good faith and satisfaction with every "Silver Ghost" Product. Get to know the Bond and see the new "Silver Ghost" Products at Olympia. W. F. WINKLES.



The "ANTISTAT"

A new screened tuned Aerial Unit consisting of 75 feet of screened Cable and special Control Unit.

PRICE 21/-

"TIMPANI TONE" Baffle

Something entirely new in Baffles. Adds brilliancy, richness of tone and prolongs the overtones. Standard size 10 1/2 x 10 1/2 inch hole.

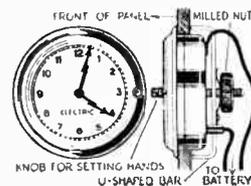
PRICE 15/-



SEND FOR LITERATURE OF

STAND Silver Ghost STAND 219

Lampugh Radio Ltd. Coventry
Silver Ghost Reproducers MASTERS OF SOUND



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 1/2" 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.
D. pl. 20, Crisp Rd., Hammersmith, W.6
Telephone: Riverside 0392.

12/6
COMPLETE WITH BATTERY
POSTAGE 6D

"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 enquire to **Wm. CLARK (Spare Parts) Ltd., 5, Marshalsea Road, London S.E.1.**

WATMEL

POTENTIOMETERS GIVE THE BEST CONTROL

It is obvious that if a firm concentrates on one type of component it is going to turn out a better job than a firm that dabbles in many. This year we are concentrating on potentiometers, and you may rest assured that when you purchase a Watmel potentiometer you are obtaining the very best from a firm that specialises in this type of component.

Here is illustrated the Watmel Type 1 Potentiometer.

Any resistance up to 50,000 ohms (Standard Wiring).

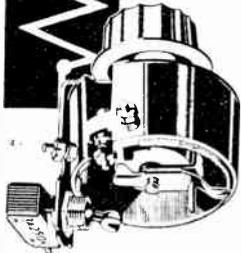
Price **5/6**

With quick Break Switch

Price **7/6**

Please write for free fully illustrated catalogue that will give you interesting information on Volume Control.

Special models made for manufacturers and for the Export Market. Please write for further particulars.



Watmel
POTENTIOMETERS
GIVE THE BEST CONTROL
WATMEL WIRELESS CO. LTD.,
Imperial Works, High Street, Edgware.
Telephone: Edgware 0323. OLC 9D



"We're Fluxite and Solder—the reliable pair; Famous for Soldering—known everywhere!"

"At fixing WIRELESS—we're expert—nothing more—nothing less; THAT is the reason—for this S...O...S!"

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

All Ironmongers sell Fluxite in tins: 4d., 8d., 1s. 4d., and 2s. 8d. Ask to see the FLUXITE POCKET SOLDERING SET—complete with full instructions—7s. 6d. Ask also for our leaflet on HARDENING STEEL with Fluxite.

FLUXITE LTD., (Dept. W.W.), ROTHERHITHE, S.E.16

FOR ALL REPAIRS!



Mains Equipment.—Contd.

EKCO Unit (A.C.110) model No. C2A; what offers?—Saunders, 48, Holland Rd., W.14. [3230]

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

A.C. Charging Plant (valve) unused; List £19/18; offered £6, 18/6.—Jersey, Cunner Hill Estate, Oxford. [3202]

180 Accumulator Chargers, 1/2 amp., 2-6v., in ventilated metal case, with mains flex (Westinghouse rectifiers), 10/8; 1 1/2 amp., 2 1/2; 7 days' trial.—Arden Agency, Wollaston, Wellingborough. [3201]

A.C. or D.C. Chargers for 2 to 200 Cells at Low Prices; all state requirements; dynamos and rotaries in stock, all sizes; Brown's Generator, battery superchargers for H.T. for 2v. or 6v. input, 37/6 and 52/6; television and sewing machine universal motors, 25/-; lists.—Electralix Radios, 218, Upper Thames St., E.C.4. [10398]

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, laminated 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 New Monodial Super Model, 425-0-425v. 120 m.a., 4v. 2a., 4v. 1a., 4v. 1/2a., 4v. 6a., 17/6, post 1/3; super model, 247, post 1/3; chokes for same, 10h., 20h., 16/6 the pair, post 1/3.

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

HOYNE'S.—250-0-250v. 60 m.a., 4v. 1-2a., 4v. 2-4a.; 4v. 1a.; 12/6, 1-post 1/3.

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

HOYNE'S.—350-0-350v. 70-80 m.a., 4v. 2-3a., 4v. 3-4a., 4v. 1-2a.; 15/6, post 1/3.

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/-, post 9d.

HOYNE'S.—200v. 200 m.a., 4v., 2-4a., 4v. 1-2a., suitable for H.T.8; 13/6, post 1/3.

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, Galsstone Rd., Wimbledon, S.W.19. Tel.: Liberty 3303. [3107]

CABINETS.

RADIO-GRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon. [1955]

DYNAMOS, ETC.

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. [3225]

ROTARY Converters.—200-240 D.C. to 200-240 A.C. G.E.C., 200 watts, complete with smoothing, auto switch, etc. in metal silence cabinet, nearly new, cost £28, accept £7; also Wates rotary, 200-240 D.C. to 200-240 A.C., 12v. watts, unused, £4; K.D.A., 12 volts D.C. to 500 D.C., £5.10; others from £1.10; please state requirements.—Johnson Engineering, 86, Great Portland St., W.1. [3239]

GRAMOPHONES, PICK-UPS, ETC.

GARRARD Record Changer, as new and perfect; £6.—Daleside, Dales Lane, Whitefield, Manchester. [3233]

LOUD-SPEAKERS.

B.T.H. RK 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.—O. H. Seckamp, First Avenue House, High Holborn, London, W.C.1. 4th floor; office No. 582a. Phone No.: Holborn 6609. [1425]

TWO Brown 5-Watt P.A. Loud Speaker Units, type P.Q., complete with 5ft. horns; £6/10 the lot.—Hutney Microphone Service, N.8. [3251]

TWO Truvox Exponential Horns, 12ft. 6in., folded, with or without Raycon units, perfect.—Offers to Colebourn and Kermode, Ridgeway St., Douglas, Isle of Man. [3251]

"BAFFAMP"—New amplifying box baffle unit, latest invention for your speaker, greatly improves tone and power, without resonance; 12in., 12/6; 15in., 17/6; 18in., 21/-; 24in., 25/-; direct from factory, carriage paid.—2, Chatham St., Ramsgate. [3216]

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

27/6—6-volt D.C. speakers, as above; £2/7/6 speaker as above for 100-250 volts A.C., complete with field rectifier.

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.

UNUSED "Daven-set" £8/7/6 Battery Charger, £4/10; carriage paid, cash with order or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. Advance 3668. [3253]

IF YOUR RECEPTION IS INDIFFERENT



WILL MAKE IT BETTER



because it definitely increases signal strength and cuts out interference. The most selective aerial, protected by the heavy rubber insulation, which abolishes masts, insulators and separate leads-in. The first and only efficient invisible or indoor aerial. Lightning proof—you can get your £100 Free Insurance Today from any dealer.

100ft 3/6: 75ft 2/6: 50ft 1/9: 25ft 1/4
THE NEW LONDON ELECTRON WORKS LTD EAST HAM LONDON E 6

"DO NOT SPOIL THE SHIP"

Build into your "WIRELESS WORLD" NEW MONODIAL SUPERHET

MODEL "240" RICH & BUNDY MAINS TRANSFORMER

Secondaries: 425-0-425v. V. 120 m.a.
4v.c.t. 3 amps. 4v.c.t. 6 amps.
4v.c.t. 1 amp. 4v.c.t. 1 amp.
Screened Primary: 200, 250v. 40, 100 cycles.

PRICE £3-5-0

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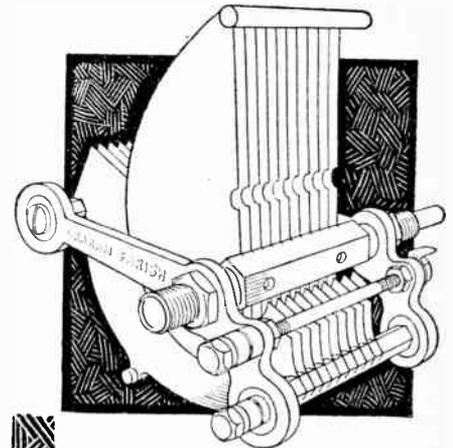
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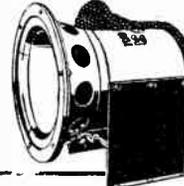
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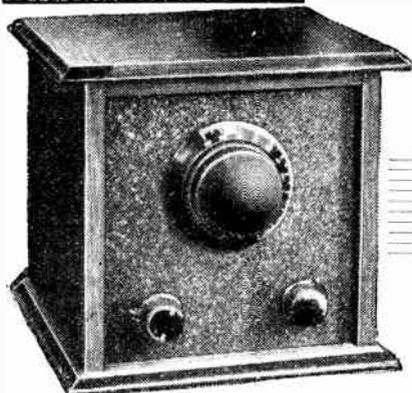
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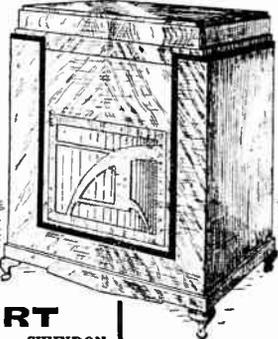
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BRITISH Radiophone (10 only), fitted as above with full vision drive, Type 424a, at 33/-. [3242]

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FERRANTI A.F.4, 8/9; A.F.6, A.F.7, 19/6; B.T.11, nickel plated pick-up, 15/-; Varley Nucleo (1) H.P.30 and (2) H.P.31, 28 - set ganged; 18/6; Colvern T.G.S.C., 2/-; T.G.S.R., 2/-; screening cans, 1/6.—Bostock and Stottill, 1, Westbourne Terrace, S.E.23. [3247]

MONODIAL Builders.—Sylvania 2A7s, 13/6; valve holders, 1/-; Colvern Dynes, 6/-, 3/17/6; suitable ganged condensers, 12/6; rebuilt Columbia D.C. trans-portable S.T.; Det. L.E. Pen., M.C., 45/10; H.M.V. 521 D.C. radiogram, rebuilt, modernised, fitted Mazda low consumption valves, V.M.S.G.s, £20.—Newbury, 8, The Avenue, N.B. Mountview 5686. [3243]

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PATENTS.

THE Proprietor of British Patent No. 239422, dated April 27, 1927, relating to Improvements in Vacuum Tubes, is desirous of entering into arrangements by way of a licence or otherwise on reasonable terms for the purpose of exploiting the above patent and ensuring its practical working in Great Britain. Enquiries to Mr. B. Singer, Chrysler Building, New York City, N.Y., U.S.A. [3223]

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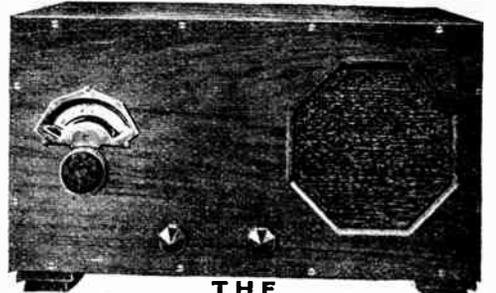
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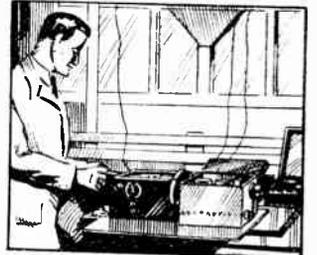
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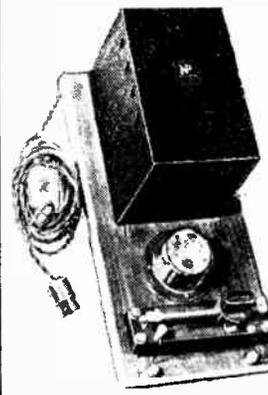
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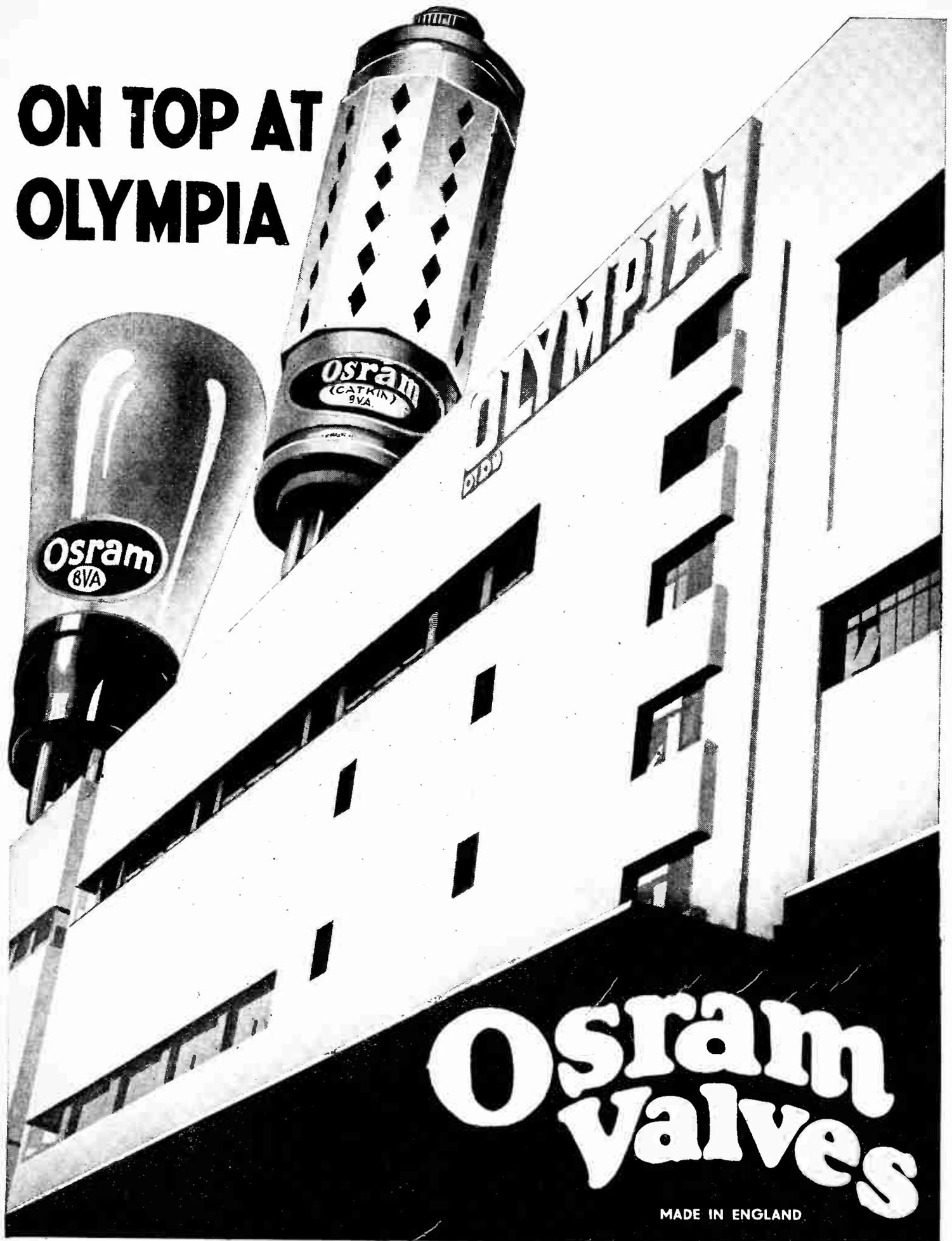
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WEDNESDAY

AUGUST THE SIXTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL LONDON REGIONAL** Promenade concert from Queen's Hall.
"Robert E. Lee," a play by John Drinkwater.
- MIDLAND REGIONAL** "Variety," a gramophonic entertainment.
- NORTH REGIONAL** "Blackpool on Parade," an outside broadcast revue.
- WEST REGIONAL** Welsh concert.
- SCOTTISH REGIONAL** Instrumental concert.
- BELFAST** "The Fly on the Wall," a play by Elizabeth Illingworth.

ABROAD

- BARCELONA** 7.0 p.m. The Radio Trio.
- BARI** 8.35 p.m. Chamber music.
- COPENHAGEN** 8.1 p.m. French ballet music, by the Radio Orchestra.
- EIFFEL TOWER** 8.30 p.m. Concert of modern music, conducted by Flament.
- HEILSBERG** 10.15 p.m. Concert by the Small Station Orchestra.
- LAHTI** 7.0 p.m. Pianoforte recital, by Ole Møller.
- LEIPZIG** 9.10 p.m. Brahms' Serenade for Full Orchestra in D (Op. 11), by the Mozart Society.
- PRAGUE** 9.0 p.m. Tchaikowsky concert, by the Station Orchestra.
- STRASBOURG** 8.30 p.m. Festival concert of contemporary music.
- WARSAW** 5.15 p.m. Chamber music.

BORDEAUX-LAFAYETTE

586 kc/s, 324 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, Tourist Talk. 7.55, Lottery Results. 8.0, Agricultural Talk. 8.15, News. 8.30, Game Concert. After the concert, Amusement Guide and Time Signal.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—5.55 p.m., Hungarian Transmission; Talk on Trade, followed by Concert of Light Music. 6.55, Talk for Housewives. 7.0, See Prague. 7.55, See Moravská-Ostrava. 8.40, 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. 2.5 p.m., Gramophone Concert of Variety Music. 3.0, Agricultural Prices. 3.15, Talk: Silesian Glass. 3.35, Talk: Employment Prospects in Germany. 3.50, Pianoforte Recital by Gertrud Marks: Fantasia in C minor (Mozart); Variations on the Name Abegg (Schumann); Nocturne in C sharp minor (Chopin); Rondo in C minor (Chopin); Die Fleder (Schubert-Heller). 4.20, Reading. 4.40, Schumann Song Recital by Walter Geisler (Baritone); Wdhmung; Lust der Frühlingnacht; in der Fremde; in Waide Frühlingnacht; Ihre Stimme; Der Knabe mit dem Wunderhorn; Frühlingstanz; Sonntags am Rhein. 5.10, Talk: Military Sports in the Schools. 5.30, Agricultural Prices. 5.35 (approx.), Violin Recital of German Music by Günther Hiller: Air on the G String (Methusalem); Largo from the Suite in Old Style (Reger); Sonata in A (Handel); Andante cantabile (Mozart); Waltz in A (Brahms). 6.6, Talk on Museum Treasures. 6.20, Talks by Veterans of the Nazi Movement. 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, The Dog Days Humorous Summer Scenes, with incidental music by Karl Sezuka. 10.0, Time and News. 10.25, Austria. 10.45, Talk: The Breslau Opera Season, 1933-34. 11.0, Talk and Dance Music from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.5 p.m., Gramophone Music. 6.25, German Transmission: Agricultural Report and Talk for Workers. 7.0, See Prague. 7.55, See Moravská-Ostrava. 8.40, A Radio Sketch. 9.0, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

1.1 N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchest-

ra, conducted by Lauwers. Soloist: Dandois (Flute). In a Persian Market (Kotelby); Overture (Fouadram); Madrigal (Simonetta); Valse triste (Sibelius); Piece for Flute (Pressard); Selection from The Little Dutch Girl (Kálmán); Mazurka No. 2 (Godard); Tango (Joscé); Foxtrot (Grinin). 1.0 p.m., Le Journal Parlé. 1.10, Concert by Sykes and his Orchestra, relayed from the Scala, Ostend. 5.0, Dance Music, relayed from the Continental Palace Hotel, Blankenbergh. 6.0, Talk on Vegetables. 5.15, Gramophone Concert. 6.45, La premiere ride sketch (Leon Danannay). 7.0, Gramophone Music. 7.15, Talk: The Belgian Painter, Felicien Rops, for the Centenary of his Birth. 7.30, Medical Review. 8.0, Nocturne from the Quartet (Borodin) on Gramophone Records. 8.10, La nuit d'octobre (de Musset). 8.25, Prelude No. 6, arranged for Quartet (Chopin). 8.30, La nuit d'octobre (de Musset). 8.45, Kamafinskaya (Glinka), on Gramophone Records. 8.50, Reading of Poems. 9.0, Cardion Recital by Nauwelaerts, relayed from Bruges. 10.0, Le Journal Parlé. 10.10, Dance Music by Jacky Ganzo and his Band, relayed from the Continental Palace Hotel, Blankenbergh.

BRUSSELS (No. 2)

1.1 N.R., 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Concert by Sykes and his Orchestra, relayed from the Scala, Ostend. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Emile Lauwers: Two Step (Denon); Overture, Die schöne Galathee (Suppé); Waltz, Dymantien (Jos. Strauss); Phisir d'amour (Martini); Selection from Mignon (Thomas); Roses of Picardy (Wood); Melody (Liesel); Violin Solo: Havanaise (Saint-Saëns); Ballet Italien (de Bozi). 5.0, Dance Music by Mickey's Club Band, relayed from the Casino, Knocke. 6.0, Symphonic Dances (Grieg) on Gramophone Records. 6.15, Recitations. 6.30, Gramophone Records: The Pathetic Symphony (Tchaikovsky); In questa tomba oscura (Beethoven). 7.15, Religious Address. 7.30, Talk: The Scheldt Tunnels. 8.0, Gramophone Music: Two Step (Monte); Potpourri (Mandré); French Songs (arr. Misraik); Wazneria (Douce); Franz Liszt Potpourri (Morena); Arriero (Pallemaerts); Pas des patineurs (Jouvo); Selection from White Horse Inn (Benatzky); The Phantom Brigade (Myddleton). 8.45, Recitations. 9.0, Concert, relayed from the Kursaal, Ostend. After the concert, Le Journal Parlé, followed by Dance Music by Robert de Kers and his Cabaret Kings and a Tango Band, relayed from the Kursaal, Ostend.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: March (Dostal); Waltz, Morgenblätter (Strauss); Overture, Nakis Hechzeit (Lincke); Selection

from A Masked Ball (Verdi); Exotic Dance (Mascagni); Oriental Piece (Wisnar); Selection from Boeccaccio (Suppé); Potpourri (Weninger); Foxtrot on Themes from The Bird Fancier (Zeller-Kochman). In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Romanian Music on Gramophone Records. 7.40, Educational Talk. 8.0, Violin Recital by Elin Flomen: Sonata in F (Brahms); Tambourin chinois (Kreisler); Gavotte (Bach); Melody (Tchaikovsky); Perpetuum mobile (Ries). 8.30, Talk. 8.45, Pianoforte Recital by Titi Fotino: Gavotte (Gluck-Brahms); Rhapsody (Brahms); Berceuse (Chopin); Two Mazurkas (Chopin); Piece (Schubert-Liszt). 9.15, Cello Solos by N. Papazoglu: Sonata in G minor (Benedetto Marcello); Air (Tenaglia); Siellienne (Faure); Arab Melody (Glazunov). 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—Also relayed on 840 metres from 6.45 p.m. till Close Down. 5.0 p.m., Orchestral Concert relayed from the Café Donankors, 6.15, Talk. 6.45, Pianoforte Recital. 7.20, Dialogue. 8.10, Radio Report. 10.10, News. 10.15 (approx.), Cigany Band Concert relayed from the Café Baross. 11.30, Concert. **CASSEL**—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.—Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the A. Bendix String Ensemble, relayed from the Wivex Restaurant. 2.0 to 3.0, Interval. 3.0, Gramophone Concert of Variety Music. 3.30, Concert by the Mogens Hansens Instrumental Ensemble: Marche from Fatinitza (Suppé); Overture, The Black Domino (Auber); Waltz from Ritter Pasman (Joh. Strauss); Novelletta for Strings (Gade); Selection from Sunny (Kern); Five Dances (Lumbye); Waltz, Roses from the South (Joh. Strauss); Selection from The Little Dutch Girl (Kálmán). In an interval at 4.15 (approx.), Talk for Women. 5.35, Exchange and Fish Market Prices. 5.20, Agricultural Talk. 6.20, French Lesson. 6.50, Weather. 7.0, News. 7.15, Time. 7.30, Talk on Psychology. 8.0, Time Signal from the Town Hall. 8.1, Concert of French Ballet Music by the Radio Orchestra, conducted by Emil Reesen; Selection from (a) Céphale et Procris (Grétry), (b) Javotte (Saint-Saëns); Suite from Kassya (Delibes); Mazurka from Coppelia (Delibes). After the concert, Weather. 8.45, Talk. 9.15, Suite for Harp-sichord (Loelllet), played by Folmer Jensen. 9.35, Reading (Scend Borberg). 9.55, News. 10.10, Concert of Danish Music, by the Radio Orchestra, conducted by Emil Reesen: Variations on a Theme of Schubert (Reesen); Selection from Prinsessen og det halve Kongerige (Ager-snap); En Sagadom (Nielsen); String Quartet No. 3 (Jacobson). 11.10, 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. (Thursday), Close Down.

CORK—See Athlone.

CRACOW

950 kc/s, 312.8 metres; 1.5 kW.—7.20 p.m., Miscellaneous Items and News. 7.35, Programme Announcements. 7.40, See Warsaw. 9.0, News. 9.10, Light Music, relayed from Lwow, 788 kc/s, 381 metres. 10.0, 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.—4.50, The Nursery Corner; Music, Stories. 4.15, Birth Day Greetings. 5.0, Concert for Paris month and South Sea Listeners. Gramophone Records; Signature Tune; The Night by the Sea. Maurice Chevalier; Paris, stay the same, from The Love Parade (Scherzinger); Grace Fields; Down at our Charity Bazaar; Tom Burke; Serenata (Toselli); The Verdier Sketch; Sir Harry Lauder; She's the Lass for me; 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). 5.30, Concert for Isle of Wight Listeners; American Songs; The Railroad Boomer; Hallelujah, I'm a Bum; Duet, Poor Man's Heaven (Robinson); One-step, Sailing on the Robert E. Lee; I don't work for a living; Duet, Don't marry a Widow (Robinson); Peg Leg Jack (Luther); Orchestra, Steamboat Bill (Leighton); Signature Tune. 6.0, French Programme. 10.0 (til Close Down, Programme in English by the I.B.C. 10.0, Dance Music. Signature Tune, Bells of Normandy; Ha-wa-tha's lullaby (Donaldson); I shall still keep smiling along (Wallace); Forty-Second Street (Dubin-Warren); I can't remember (Berlin); Shuffle off to Buffalo (Dubin-Warren); Won't you stay to tea (Royal); Someone to care for (Warren); That's my Home (Reed); My heart's to let (Waller); Look what you've done (Kalmar); The Lady I love (Young); I can't write the Words (Marks); This is my love Song (Burke); From Saturday Night until Monday Morning (Dubin); One little Word led to another (Perkins); Castles in the Sand (Sandford); Signature Tune. 11.0, Trio

ATHLONE
725 kc/s, 413 metres; 60 kW.—Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.30 p.m., Time Signal, Weather Report, Stock Exchange Quotations and Gramophone Music. 6.0, Programme for Children. 6.45, News. 7.0, Gaelic Talk. 7.15, German Lesson. 7.30, Time Signal. 7.31, Concert by the Garda Síochána Band. 8.30, Contralto Solos by Florence Howley. 8.45, The Return Play, by Kathleen Plunkett and Company. 9.15, The Station Oulet. 9.30, Traditional Fiddle Solos by C. Mac-Phlinnbroich. 9.45, Sponsored Programme. 10.45, News, Weather Report and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 5 kW.—7.0 p.m., Concert by the Radio Trio: Military March No. 1 (Schubert); Minuet in G Minor (Mozart); Italian Serenade (Holmes); Selection from Der Freischütz (Weber); Barcarolle (Leemans); Selection from Norma (Bellini); Czardas, Targu Jiu (Colin). 8.0, Request Gramophone Records. 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes, Weather and Exchange. 10.5, Concert by the Radio Orchestra. 11.15, Song Recital. 11.45, Dance Music from the Casa Llibre. 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 Talk and Dopplavoto Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), Concert of Chamber Music. Soloists: Pignatelli (Violin), Enza Motti Messina (Soprano), and Renato Marrone (Pianoforte). Overture, Oberon (Weber); Violin Solo: Andante (Malé); Soprano Solos: (a) Die Lotusblume (Schumann), (b) Ich große nicht (Schumann); Pianoforte Solo: Prelude and Fugue in A Minor (Bach-Liszt); Violin Solos: (a) Minuet (Mozart-Burmeister), (b) Püchlein (Kreisler); Soprano Solo: Ein Traum (Grieg); Pianoforte Solo: Ballade, Op. 47 (Chopin); Violin Solo: La bella addormentata (Giacco); Soprano Solo: Martina (Piatella); Pianoforte Solos (Debussy): (a) Reflets dans l'eau, (b) Jardins sous la pluie; Violin Solo: Fugue in A (Tartini-Kreisler); Soprano Solos (Mussorgsky): (a) Lullaby, (b) Gopak; Pianoforte Solo: Mephistowalzer (Liszt). In the interval, Talk: The Ideal Country Residence. 10.30, Dance Music from the Gran Caffè del Levante. 10.50, News in Albanian. 10.55, News.

BASEL—See Schweizerischer Landessender.

BERLIN

DEUTSCHLANDSENDER, REICHSSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Popular Music on Gramophone Records. 3.0, Programme for Children. 3.30, Weather and Exchange. 3.45, Reading (Eduard Mörike). 4.0, See Hamburg. 5.0, Talk: The Menace of Race Suicide. 5.30, Sonata in F Minor, Op. 129, No. 1 (Brahms), for Viola and Pianoforte, by Hans Madlke and Karl Rockstroh. 6.0, A Poem. 6.5, Religious Address and Organ Music. 6.30, Humorous Items. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Today's Motto. 8.5 (approx.), Talk: The German Radio Exhibition. 8.15, See Langenberg. 9.30, Sleepless Nights—Variety Programme. 10.15, Weather and News. 10.45, Weather Report for Shipping. 11.0, Dance Music from Leipzig. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.30 p.m., Military Band Concert, relayed from the Spreegarten, Toplow; March, Dramatic Overture (v. Blon); Spanish Waltz, Carmela (Müller); Nationale Wachtparade (Bernards); March Potpourri (Kozjak); Episode from Der Jägerleben (Reckling); March, Von der Tann (Hager). 5.30, Talk: Art in Leipzig. 5.50, Richard Strauss Song Recital by Georg Frigge (Bass); Du meines Herzens Krönlein; Nichts; Mit deinen blauen Augen; Gelächter; In goldener Fülle. 6.5, See Berlin Deutschlandsender (Reichssender). 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.5, Sienkies Play (Jan Path), arranged for the Radio by Ernst Brungolt. 9.5, Johann Strauss Operetta Concert on Gramophone Records: Overture, Der lustige Krieg; Soprano Solo, Lass' frei nun erschallen, from Indigo; Tenor Solo, Komm in die Gondel, from Eine Nacht in Venedig; Concert Version of the Operetta, Die Florentiner, by Soloists, Choir, and Orchestra of the Berlin Opera House. 10.0, News. 10.15 (approx.), Dance Music, relayed from the Spreegarten, Toplow. In the interval at 11.0 (approx.), Talk: What they are saying in Berlin. 12 Midnight, Close Down.

BERNE—See Schweizerischer Landessender.

BEROMÜNSTER—See Schweizerischer Landessender.

BODEN—See Stockholm.

BODO—See Oslo.

AUGUST 16th

WEDNESDAY

continued

Concert with Songs; A Night of Happiness; Will you forget?; The Wedding in the Ark; Songs: (a) Selection from Rigoletto (Verdi); (b) Shoo the Hoodoo away. Narcissus; Mia bella rosa; Pearl of Mine. 11.20, Concert given by the I.B.C. (Ireland), Ltd. Signature Tune: Come back to Erin; Selection from Chu Chin Chow (Norton); The Snuggler's Song (Mortimer); St. Patrick's Day (arr. Brase); The Clock and the Dresden Figure (Kettelby); Pianoforte and Xylophone Duet: The Match Parade (Wehle); Love in Cloverland (Peter); Song, Boots (McCall); Selection, Shamrock land (Stoddon); Signature Tune. 12.5 a.m. (Thursday), The I.B.C. Late News Bulletins. 12.10 (approx.). Club Concert for Southwold and Walderswick Listeners. Signature Tune: The Chum Song; Praedidium (Jarnefeld); Ca c'est Paris (Padilla); Glow-Worm Idyll (Lincke); Serenade (Piercé); The Fairy on the Clock (Myers). 12.30, Dance Music; Signature Tune; Bells of Normandy; Heavenly Night; One little quarrel; Oh, you sweet thing; My Darling; Stormy Weather; I sigh for you, Rio Rita; Loving them all; Won't you stay to Tea; Signature Tune. 1.0, Light Music; Waltzes from A Waltz Dream (O. Straus); Song, L'amour toujours, L'amour (Frind); Violin Solo; Hymn to the Sun (Rimsky-Korsakov); March from Sylvia (Delibes); Song, I wear your Heart (Haydn Wood); Violin Solo, Scavenger (Drilla); Song, The Blackbird in the Apple Tree (Lubbock); Humoresque (Dvorak). 1.30, Dance Music; Signature Tune; Bells of Normandy; You're getting a Habit with me; They all do the Rumba; You're beautiful to-night, my Dear; Here lies Love, Always in my Heart; My Darling; Stormy Weather; Fiddling Joe; Signature Tune. 1.58 a.m., I.B.C. Goodnight Melody, 2.0 (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.—3.30 p.m., Programme for Young People. 4.25, Economic Notes. 4.30, Orchestral Concert. 5.45, Economic Notes. 6.0, Book Review. 6.25, Topical Talk. 6.45, To-day's News. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Programme to be announced. 9.15, Concert by the Steiner Quartet; Intermezzo for Pianoforte Quartet (Juon); Wiegenlied for String Quartet (Osten-Sacken); Novellotta for Pianoforte Trio (Gade); Trio (Vendler); Cypress Trees, for String Quartet (Dvorak); Silhouettes for Two Violins and Pianoforte (Juon); Three Minuets for Strings (Puccini); Chrysanthemums for String Quartet (Puccini); Polka for String Quartet (Kopylov). 10.15, Time and News. 11.0, See Munich.

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), 606 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, 520 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 Maass. Overture, Alfonso and Estrella (Schubert); Two Pieces for Small Orchestra (Delius): (a) On hearing the first cuckoo in Spring, (b) Summer Night on the River; Masquerade from The Merchant of Venice (Sullivan); Tritsch-Tratsch-Polka (Strauss); Waltz, Transaktionen (Jos. Strauss); March, Columbus (Zichner). 5.0, Talk: In Old Hamburg. 5.15, Talk: When do our Birds Breed? 5.30, Hamburg, Bremen and Lübeck—Report on Events in the Senates and Houses of Burgesses of the Hanseatic Free Cities. 6.0, Talk: The Armies of Foreign States. 6.20, Book Review. 6.45, Frankfurt Exchange and Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Bräsig—Musical Play in Three Acts and a Prelude (Reuter). 9.30, Programme from Stuttgart. 10.0, News, Time, and Weather. 10.20, Topical Talk. 10.30, Light Music and Dance Music from Leipzig.

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 Light 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, Practical Hints for Housewives. 3.30, Programme for Children. 4.0, Programme for Parents.

4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken. In an interval at 5.0, Talk, relayed from Berlin, Deutschlandsender (Reichs-sender). 6.0, Talk: The East German Fair. 6.15, Agricultural Prices. 6.25, Talk: The History of Military Music. 6.50, Weather. 7.0, Transmission for all German Stations: Frederick the Great's Grenadiers, Prussia's Oldest Regiment—Historical Radio Sequence with Music by Modern Composers. 8.0, Weather and News. 8.10, Humorous Items. 8.45, Concert by the Königsberg Opera House, Orchestra, relayed from the Zoological Gardens. 9.45, Reading (Arno Holz). 10.10, Weather and News. 10.15 (approx.), Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Prelude to Act II of Il voto (Giordani); Suite, Schloss Durande (Niemann); Rhapsody, No. 9 (Liszt); Reigen and Humoresque (Reger); Selection from Tiefland (d'Albert); Overture, Rosamunde (Schubert). 12 Midnight (approx.). Close Down.

HILVERSUM

Announced HUIZEN, 1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—10.10 to 11.40 a.m., Programme of the Catholic Radio Society (K.R.O.). 10.10, Pontifical High Mass, relayed from the Cathedral, Utrecht, in commemoration of the Fortieth Anniversary of the Ordination of the Archbishop of Utrecht. 11.40 till Close Down. Programme of the Christian Radio Society (N.C.R.V.). 11.40, Police Notes. 11.55, Gramophone Music. 12.10 p.m., Concert by a Children's Choir. Gramophone Music in the intervals. 1.10, Gramophone Music. 1.40 to 2.10, Interval. 2.10, Talk. 2.40, Quartet Concert. 4.40, Programme for Children. 5.40, Gramophone Music. 6.10, Talk. 6.40, Police Notes. 6.55, Religious News. 7.10, Gramophone Music. 7.40, Concert by the Small N.C.R.V. Orchestra, Soloist: Van den Hurk (Organ). Lied der Trouw (Gersbach); Waaron gejaand naar geld en goed (Hoogenbirk); Troost (Schubert); Vengden (Viotta); Melody (Weber); Prelude, Air and Fugue (Fischer); Overture, Stradella (Flotow); Suite (Juel-Fredriksen); Song Cycle. 8.40, Talk. 9.10, Concert (contd.): Indian Melodies (Lilting); Mijn Neerland (Bunk); Mijn Moedertaal (Brandts Boys); Italian Folk Songs (arr. Leopold); March Potpourri (Blankenburg). In the interval at 9.40 (approx.), News. 10.10, Gramophone Music. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

(Announced HILVERSUM), 160 kc/s, 1,879 metres; 8.5 kW. Programme of the Workers' Radio Society (V.A.R.A.).—11.40 a.m., Popular Concert by De Fliedruiters, conducted by Ray Forest. In the intervals at 12.10 p.m. and at 12.55, Gramophone Music. 1.40, Programme for Children. 3.25 to 3.40, Interval. 3.40, Extracts from La Bohème—Opera (Puccini), on Gramophone Records by Members of the Scala, Milan. 5.25, Recitations. 5.40, Concert by the Eddy Wallis Orchestra. 6.10, RVU Programme; Talk by Mollé Eisma. 6.40, Concert (contd.). 7.25, Topical Talk for Workers. 7.40, S O S Messages. 7.42, Concert by De Fliedruiters, conducted by Ray Forest. Wir tanzen Welt-schlager (Borchert); A Bedtime Story (Nicholls); Stormy Weather (Arken); Sailin' on the Robert E. Lee. 7.55, Song Recital by Charmon. 8.10, Concert by De Fliedruiters (contd.). Please (Rainger); Life (Nicholls); I've got Rhythm (Gersbach); Cuban Love Song (Fichels). 9.10, Concert by Louis David's Ensemble, relayed from the Kurhaus, Schvevningen. 9.40, Concert by De Fliedruiters (contd.). Oriental Fantasia (Lange); Rund um die Wolga (Borchert); Melody (Lecnam); Romanian Potpourri (Michalov). 10.10, Concert, relayed from the Kurhaus, Schvevningen (contd.). 10.40, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 1.15, Radio Concert. 8.0, Amusement Guide and News. 8.10, Tides Report. 8.20, Reading. 8.45, Song Recital by Mme. Créole Lacour.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.10 p.m., Talk for Housewives. 7.25, Announcements and Gramophone Music. 7.40, See Warsaw. 11.0, The Letter Box in French.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

LAHTI

167 kc/s, 1,796 metres; 40 kW. Relayed by Heisinki, 815 kc/s, 358.1 metres.—6.15 p.m., Programme for Children. 6.50, Programme for Girls. 7.0, Pianoforte Recital by Ole

Möller. Poetische Tonbilder (Grieg); Old Vienna (Godowsky); Improptu (Schubert). 7.25, Talk. 7.50, Dance 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.—12 Noon, Concert by the Fröhlichen Fünf. 12.50 p.m., News. 1.0, Orchestral Concert, conducted by Eysoldt; Waltz, Königskinder (Löhrl); Romeo Suite (Ailbott); Overture, Mignon (Thomas); Serenata, inutila (Arnaudei); Ich denk' daran (Drlla); Schubert Potpourri (Ralf); Selection from Faust (Gounod); Erotica (Grieg); Ich liebe dich (Grieg); March, Durch Nacht zum Licht (Laukien). 1.43, Interval. 2.0 (approx.), News. 3.0, Handwork for Children. 3.30, Economic Notes and Time. 3.40, Programme for Young People: Frederick the Great. 4.30, Primitive German History—Radio Report from the Westphalian Provincial Museum. 5.0, See Berlin (Deutschlandsender) Reichs-sender. 5.30, Fashion Talk for Women: Fashion and the National Ideal. 5.50, Political Address. 6.0, Orchestral Concert, conducted by Eysoldt; Coronation March (Kretschner); Overture, Hunyadi Laszlo (Erkel); Romance (Tchaikovsky); Hungarian Caprice (Ferraris); Ballet Music. Über allen Zauber Liebe (Lassen); Selection from Die tote Augen (d'Albert). 6.45, Weather, Sports Notes and Economic Notes. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, News. 8.15, Concert of Contemporary Music, relayed from Bad Pyrmont. 9.15, Through the Village—Radio Sequence (Kürten), by the Augmented Small Station Orchestra. 10.30, News. 11.0, Serenade from Munich. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 383.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon, Concert by a Nazi Band, conducted by Theodor Wunschmann; Overture, Il Turo in Italia (Rossini); Four Norwegian Dances (Grieg); Selection from La Bohème (Puccini); Waltz, Gebirgskinder-Walzer (Zichner); March, Treue im Treue (Teike); Galop, Auf der Reimbahn (Lincke); Romance (Rebikov); Tanzmomente (Herbeck); Auf der Wunderschaft (Mannfeld); Waltz, Wiener Frauen (Joh. Strauss); Galop, Norwegische Rem-tippost (Eilberg). In an interval at 1.0 p.m., News. 2.0, News. 2.30, Talk: Learning to Drive. 3.0, Gramophone Concert of Classical Music. 3.35, Market Prices. 4.0, Programme for Children. 5.0, A Fairy Tale. 5.20, Musical Programme for Young People. 5.50, News, Weather and Time. 6.0, Book Review. 6.20, Talk. 6.50, To-day's News. 7.0, Transmission for all German Stations relayed from Heilsberg. 8.5, Concert by a Male Voice Choir, relayed from Halle; Seele des Weltalls (Mozart); Drinking Song (Knab); Schäferlied, sag, wo willst du weiden? (Jochum); Folk Melody, Mir ist ein feins brauns Maidlein (A. Knab); Es woll ein Jägerlein jagen (Rein); Regiment sein Strassen zieht (Lang); Feuerspruch (Knab). 8.35, Reading (Wilhelm von Scholz). 9.0, Agricultural Notes. 9.10, Serenade in D, Op. 11 (Brahms), by the Orchestra of the Mozart Verein. 10.10, News. 10.25 (approx.), Dance Music and Light Music by the Emdé Orchestra. 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—7.0 p.m., Programme for Children. 7.30, Literary Talk. 8.0, Song Recital. 8.45, Orchestral Concert. 9.30 to 10.0, Programme in English by the I.B.C., arranged by the International Broadcasting Company of London. 9.30, International Broadcasting Club Concert. Ooh! that kiss; My Donna Rita; You loving me; Little Yvonne; He's got a Wife and Family at home; Will you dance through Life with me?; The Windmill; The Village Band. 10.0, Orchestral Concert (contd.). 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—Luxembourg Programme. 7.30 p.m., Concert by the Station Orchestra, conducted by Henri Ponsis; Waltz, Dynamiden (Joh. Strauss); Selection from Il Trovatore (Verdi); Overture, Orpheus in the Underworld (Offenbach). 8.5, Weather Report. 8.10, Talk in French: Mathias Tsch. 8.20, Appassionata (Büsser) by Alle. Braun 8.30, Song Recital. 8.50, News in French. 9.0, Military Band Concert, conducted by Fernand Mertens, relayed from La Place d'Armes. 10.0, News in German. 10.10, Orchestral Music. 10.30, Dance Music.

LWOW

788 kc/s, 381 metres; 16 kW.—6.35 p.m., See Warsaw. 7.20, Miscellaneous Items. 7.40, See Warsaw. 9.0, News. 9.10, Concert of Light Music by the Station Orchestra, conducted by Tadeusz Seredyński. 10.0, See

Warsaw. 10.40, Gramophone Music. 11.0 (approx.), Close Down.

LYONS

LA DOUA (PTT), 644 kc/s, 465.8 metres; 1.5 kW.—6.15 p.m., Radio Journal. 7.30, Radio Gazette for Lyons and the South-East. 8.30, Lottery Results. 8.35, Concert of Music for Old Instruments. 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 with Gramophone Records, and Dance Music. 9.25, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time, and Political Review. 11.20 (approx.), Literary Programme. 1.15 a.m. (Thursday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN

VICENTINO, 662 kc/s, 453 metres; 4 kW.—8.30 p.m. till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., Concert by the Wagner Zither Trio. 7.0, See Prag. 7.55, Concert by a Village Band, conducted by Cizek, relayed from Radvanice. 8.40, See Brno. 9.0, See Prag. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION; 230 kc/s, 1,304 metres; 100 kW.—3.0 p.m., Vocal and Instrumental Concert. 4.0, Agricultural Talk. 4.30, Literary Programme. 5.30, Talk for Young People. 6.30, Concert of Music by Viaskovsky, Schebalin, Prokofiev, and Stravinsky, relayed from the Recreation Park. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes. 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., Concert by the Willy Ehrmann Orchestra; March, Die Regimentkinder (Fucik); Scenes from The Barber of Seville (Rossini); Heimlich (Tellmann); Was Blümen träumen (Translatore); Selection from Der Obersteiger (Zeller); Waltz, Transaktionen (Joh. Strauss). In an interval at 5.0, See Berlin (Deutschlandsender) Reichs-sender. 5.45, The First Bayreuth Festival in 1876—Readings of Contemporary Accounts. 6.5, Soprano Recital by Elisabeth Delle; Songs (Schubert): (a) Die junge Nonne, (b) Der Zwerg; Songs (Erahms): (a) Wie schnell verschwindet so Licht als Glanz, (b) Von ewiger Liebe; Songs (Wolf): (a) Das verhasste Mägdlein, (b) Das Küchlein ist trunken. 6.25, Talk: Constructive and Destructive Revolutions—the Fascist and the Russian Revolutions. 6.45, Time and News. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0 (from Nürnberg), Variety Programme. 9.10, Austria. 9.30, Concert by the Richard Planer Orchestra. 10.20, Time and News. 11.0 (from Nürnberg), Concert by the Franken Orchestra, conducted by Willy Böhm. 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.—6.0 p.m., Pianoforte Recital by Mme. Ilonka Bartok-Kopsland; Polonaise in A Flat, Op. 53 (Chopin); Malenki (Kreim); Improptu in G Flat (Schubert); Allegro and Dance (Bela Bartok); Arabesque (Debussy); Popular Melodies and Hungarian Czardas. 6.30, Programme for Boys. 7.0, Announcements and News. 7.30, Talk on America. 8.0, Time Signal. 8.1, Concert by the Station Orchestra, conducted by Hugo Kramm. Soloist: Alme (Pianoforte); Concerto grosso in F Minor for Pianoforte (Scarlatti); Symphony, from the New World (Dvorak); Fahrnde Musikanten (Schumann); A la marcia, Seherzo and Minuet (Schubert); Overture, Fingal's Cave (Mendelssohn). 9.10, Recitations. 9.30, Agricultural Report. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Concert by a Vocal Octet, relayed from Trondheim, 605 kc/s, 495.8 metres. 10.45, Dance Music. 12 Midnight (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Notes, Tourist Report, Agricultural Notes and Giornale Radio. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Concert: Selection from Semiramide (Rossini); Prelude to La Traviata (Verdi); Selection from Wil-

AUGUST 16th **WEDNESDAY** continued

Nam Tell (Rossini); Aria from William Tell (Mascagni); Sicilia canora (Mule); Selection from Sicilian Vespers (Verdi); Intermezzo from L'amico Fritz (Mascagni); Dance of the Hours from La Gioconda (Ponchielli); Tenor Solos and Popular Songs. Talk in an interval. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207 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 Paris. 8.30, Concert of Modern Music, conducted by Flamant. Selection from Le Roi David (Honegger); Suite in A for Quartet (Flament); Divertissement for Flute, Oboe, Clarinet, Bassoon, Horn and Piano (Roussel); Pavane pour une Infante défunte (Ravel); Escades, No. 2 (Bert); Spanish Dance from La vida breve (Falloy); Russian Rhapsody (Gretchaninoff); Puppazzi (Schmitt); Le train bleu (Milhaud). 10.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328 metres; 60 kW. 7.0 p.m., Gramophone Music. 7.15, Le Journal Paris. 7.30, Sponsored Programme. 8.0, Assurance Societies' Report. 8.5, Talk on Radio Interference. 8.25, Concert. 9.15, Concert by the Roy Fox Orchestra and Soloists, relayed from the Casino, Beauville. 10.45, News.

PARIS

RADIO PARIS, Call GFR, 174 kc/s, 1,725 metres; 75 kW. 7.30 a.m., Weather and Physical Culture. 7.45, Gramophone Records: Voyage en Chine (Marie); Selection from Dédé (Christini). 8.0, Weather and Press Review. 12 Noon, Educational Talk. 12.15 p.m., Gabriel Pierec Festival on Gramophone Records, for the Anniversary of his Birth, August 16th, 1863; Part I, Pierre Music Serenade; Song, Les trois petits oiseaux; Clarinet Solo; Canzonetta; Song, Marionnettes; Extracts from Ramuntcho; Extract from Cydalise et le chevreuil; Part II, Opera Music: Selection from Lakme (Delibes); Duet from Miss Desma (Audran); Selection from Si j'étais roi (Adam); Selection from Blue Bird (Offenbach); Selection from The Pearl Fishers (Bizet); Song from La dame blanche (Boieldieu); Overture, Anacron (Cherubini). In the intervals at 1.00, Exchange and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 7.0, Exchange and Racing Results. 7.10, Gramophone Concert: March (Blemaut); Chanson des peupliers (Doria); En selle (Comtade); Perruche et Perroquet (Corbin); Extract from Le petit duc (Lecocq); Prelude on a Popular Chinese Theme (Forte); Donauwellen (Ivanovic); Duet from Brummel (Hahn); Selection from Hans the Flute Player (Ganne). 7.50, Commercial Prices and News. 8.0, Mamon (Comie Opera (Massenet), on Gramophone Records. In the intervals at 8.30, News; and at 8.40, Fashion Review by Mlle. Jose, 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., KDKA Home Forum. 8.0, to 9.30, New York Relay. 8.0, Betty and Bob. 8.15, Words and Music. 8.30, Happy Days in Dixie. 9.0, Southern Symphonies. 9.30, News and Markets. 9.45, Dance Masters. 10.0, Programme to be announced. 10.15, Tarzan of the Apes. 10.30, Larry Larson, from New York. 10.45, Orphan Annie, from New York. 11.0, News, Piano (Chassique). 11.15, Sports. A Song. 11.30, Pittsburgh Spotlight. 11.45 to 3.30 a.m. (Thursday), New York Relay. 11.45, Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, Eva Le Gallienne. 12.30, Essex House Ensemble. 1.0, Crime (Clues). 1.30, Potash and Perlmutter. 1.45, Phil Cook. 2.0, Philharmonic Orchestra. 3.0, Fritz Lieber.

DORSGRUND.—See Oslo.

POZNAN

596 kc/s, 335 metres; 1.9 kW.—7.20 p.m., Miscellaneous Items and News. 7.35, Theatre Notes and Programme Announcements. 7.40, See Warsaw. 9.10, Light Music, relayed from Lwów. 788 kc/s, 381 metres. 10.0, Time Signal. Sports and Police Notes. 10.15, Dance Music on Gramophone Records. 11.0 (approx.). Close Down.

PRAGUE

314 kc/s, 488.6 metres; 120 kW. 2.50 p.m., Concert by the Station Orchestra, conducted by Otakar Parik. Overture, La Fille de Madame Angot (Lecocq); Selection from The Cricket on the Hearth (Goldmark); Uzech Dances (Smetana); Jimbo's Lullaby from The Children's Corner (Debussy); Suite for Orchestra, Op. 25 (Vendry); March from Princess Hyacinth (Nedbal). 3.55 to 4.0, Exchange. 5.45, Gramophone Music. 5.55, Talk. 6.5, Agricultural Report. 6.10, Gramophone Music. 6.25, News in German. 6.30, German Transmissions: Programme for Children, Reading and Talk for Workers.

7.0, Chimes and News. 7.10, Jan Dusik Song Recital by Maxianova. 7.40, Talk on Economics. 7.55, See Moravská-Ostrava. 8.40, See Brno. 9.0, Tchaikovsky Concert by the Station Orchestra, conducted by Otakar Jeremias. Piano-forte Concerto in B Minor, Op. 23, No. 1; The Nutcracker Suite. 10.0, Time and News. 10.15, News in French. 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. (from Lausanne). Gymnastics. 12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News. 12.40 (from Lausanne). Gramophone Music. 1.0 (from Lausanne). Financial Notes. 1.10 (from Lausanne). Gramophone Music. 2.0, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Lausanne). Concert by the Radio-Lausanne Orchestra, conducted by Moser. 5.0 (from Lausanne). Dance Music on Gramophone Records. 5.30, Interval. 7.0 (from Lausanne). Travel Talk: Hungary and the Danube. 7.30 (from Lausanne). News. 7.35 (from Lausanne). Talk. 8.15 (from Geneva). Concert by the Radio Suisse Romande Orchestra, conducted by Eschard. 9.15 (from Lausanne). Talk: In Praise of Mountains. 9.50, News. 10.0 (from Lausanne). Dance Music Relay. 11.0 (approx.). Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW. 9.5 p.m., Musical Programme. 9.30, Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News. 10.30, Reading. 11.0, Violin Concerto in D (Tchaikovsky) on Gramophone Records.

RJUKAN.—See Oslo.

ROME

Call 1R0, 680 kc/s, 441 metres; 59 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2R0, 1,810 kc/s, 254 metres from 5.15 p.m.—12.30 p.m., Gramophone Music. 1.0 to 2.15, Orchestral Concert of Light Music. In the intervals at 1.30, Giornale Radio, and at 2.0, Time and Announcements. 4.30, Giornale Radio and Report of the Royal Geographical Society. 4.45, Children's Radio Review. 5.10, Weather. 5.15 to 6.0, Orchestral Concert of Light Music. 6.40 (Naples), Shipping and Sports Notes. 6.45, Dopplavov Notes and Tourist Report. 6.57, Report of the International Institute of Agriculture (in Italian and English). 7.10, Agricultural Notes. 7.20, News in Foreign Languages. 7.40, Giornale Radio. 8.0, Time, Announcements and Gramophone Music. 8.15, Medical Talk. 8.20, Giornale Radio and Sports Notes. 8.30, Nozze istriane—Opera in Three Acts (Smaragita). In the intervals, 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.—9.0 p.m., Pop Concert, from New York. 9.30, Hilly Billy Songs by Bradley Kincaid. 9.45 to 10.0 (approx.), Lady Next Door, from New York. 12.45 a.m. (Thursday), Stock Reports and Baseball Scores. 1.0, Variety Programme, from New York. 1.30, Popular Programme. 1.45, Lady Fingers, Pianists. 2.0, Ferd Grofé's Orchestra, from New York. 2.15, Variety Programme. 2.30, Popular Programme. 3.0, Variety Programme. 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.—6.15 a.m. (from Basle), Gymnastics. 6.35, Interval. 11.59, Time Signal from Neuchâtel Observatory. 12 Noon (from Basle), Violin Recital on Gramophone Records. 12.30 p.m., Time, Weather and News. 12.40 (from Basle), Gramophone Concert. 1.25 (from Basle), Time, Weather and Exchange. 1.45 (approx.). Interval. 5.0 (from Basle), Programme for Children. 5.30, Concert by the Swiss Radio Quartet. 6.30 (from Zurich). Talk: Wood in Modern Architecture. 7.0 (from Zurich), Time, Weather, Announcements and Market Prices. 7.10 (from Zurich), Gramophone Concert. 7.30 (from Zurich), English Lesson. 8.0 (from Zurich), Concert of Spanish and Italian Music. 9.0, Weather and News. 9.10 (from Zurich), Taggenburg Programme. 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 Boden). Recital of Folk Music on Two Violins. 5.30 (from Östersund), Talk. 6.0, Gramophone Music. 7.0, Microphone Report. 7.15, Weather and News. 7.30 (from Boden), Talk. 8.0, Serenade in D, Op. 8, for Violin, Viola and Cello (Beethoven). 8.30, Reading. 9.0 (from Sundsvall), Recital of Folk Songs. 9.15, Talk; Vikings. 9.45, Weather and News. 10.0, Modern Dance Music. 11.0 (approx.). Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Tenor and Harpsichord Recital of Old Music by Max Meili and Rachel Thuvoye. 2.0 to 3.30, Interval. 3.30, Orchestral Concert, relayed from the Casino, Vichy. Conductor: Brouillac. Overture, Le cheval de bronze (Auber); Gavotte No. 2 and Minuet (Bourgauff-Ducoudray); Orchestral Suite, Scènes pittoresques (Massenet); Melodies; Ave Maria (Schubert); Selection from La Favorita (Donizetti); Waltz, España (Waldteufel). 5.0, Talk on Electricity. 5.15, Gramophone Concert: Caprice italien (Tchaikovsky); Chinese Serenade (Siede); Japanese Dance (Yoshitomo); Hungarian Rhapsody No. 2 (Liszt); Le million (Bernard); Nons-sommes-seuls (Bernard); Polovotian Dances from Prince Igor (Borodin); Berceuse, Ninnin's Nana (Fallas); Jota (Fallas); Intermezzo from I Pagliacci (Leoncavallo). 6.0, Trio Concert, relayed from Lille, 1,130 kc/s, 265.4 metres. 7.0, Talk on Commerce. 7.15, Talk in German: The Question of Paying Employees during Holidays. 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in German. Lottery Results and Announcements. 8.30, Festive Concert of Contemporary Music, relayed from the Municipal Theatre. The Municipal Orchestra and Soloists, Conductor: Hermann Seherchen. L'Etincelle du soldat (Stravinsky); Lehrstück (Hindemith). In the interval, Press Review in French. 10.30, Orchestral Concert, conducted by Jemine, relayed from the Grand Kießer Tavern; March of the Legion (Opéra); Waltz, Estudiantina (Waldteufel); Overture, Pique Dame (Suppé); Fantasia, Ufatonbomben (Dostal); Fantasia on Popular Viennese Melodies, Vinohona (Léopold); Foxtrot, A Man for Hire (Curt); March (Teddy Moon). 11.30 (approx.). Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60.5 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12 Noon, Concert by a Nazi Band, relayed from Kehl; Conductor, Ernst Viertel. 1.15 p.m., Time and News. 1.30, Song Recital by Willy Dönggraf-Fassbender, on Gramophone Records. 2.30, Concert arranged by the Post Office. 2.30 to 3.30, Interval. 3.30, Programme for Children. 4.30, Concert by the Station Orchestra, conducted by Gustav Görlach; March of the Finnish Cavalry; Obl' French Gavotte; Overture, Der Erlenkühnig (Kullau); Prelude and Lullaby (Järnefeldt); Spanish Waltz, Träume (Ailbott); Selection from Faust (Gounod); Waltz Potpourri (Robrecht); March, Auf Befehl (Lüdecke). 5.45, Reading (Rösch). 6.10, Talk: German Architecture. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, See Breslau. 9.15, Concert of Swabian Folk Music by the Radio Orchestra and Soloists, with a Commentary by Martin Lang. 10.0, Time and News. 11.0 to 12.0, See Munich. 2.0 a.m. (Thursday) (also relayed by Zeesen, 31.5 metres), A Summer Tour through Germany—Radio Sequence for Germans outside the Reich (Lisa Heiss). 2.45 (approx.). Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 779 kc/s, 385 metres; 8 kW.—6.5, 'Cello Solos: Apres un reve (Faure); Sonata (Benedetto); Interlude (Chausson). 6.15, Operetta Music: Selection from Rip van Winkle (Planquette); Song from The Land of Smiles (Lehar); Extract from Mariette (Messager). 6.30, Popular Melodies. 6.50, Talk. 7.15, News, Racing Results and Announcements. 7.30, Opera Music: Waltz from Mirella (Gounod); Extract from Le jongleur de Notre Dame (Massenet); Aria from Le roi d'Ys (Lalo). 7.45, Extracts from Les Deux Pigeons—Ballet (Messager), by a Symphony Orchestra. 8.0, Chansonnettes. 8.15, Military Band Music. 8.30, Music by a Viennese Orchestra. 8.45, Accordion Solos. 9.0, Concert Version of La Mascotte (Audran). 9.45, Opera Music: Entr'acte from Carmen (Bizet); Overture, Si j'étais roi (Adam). 10.0, Popular Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.15, Opera Music: Prelude to Act I of Lohengrin (Wagner); Overture, Philémon et Baucis (Gounod); Dance from L'enfant prodige (Debussy); March from The Valkyrie (Wagner). 11.30, Popular Concert. 12 Midnight, News, Talk and Announcements. 12.5 a.m. (Thursday), Bal musette. 12.15, Military Band Music. 12.30, Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m., Quartet Concert: Minuet (Boccherini); Abendlied (Schumann); Ständchen (Schubert); Pièces for Mandoline and Guitar: (a) Village Festival (Gossec), (b) Gavotte (Lully); Chant sans paroles (Tchaikovsky); Salut d'amour (Elgar); Pièces for Mandoline and Guitar: (a) Ave Maria (Gounod), (b) Barcarolle (Mussio); Canzone andulasa (Amadei); Tarantella napoletana (Bellegini). 6.0 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, 950 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 p.m., Vocal Concert. 6.0 to 6.5, Weather. 6.40, Giornale Radio, Dopplavov Notes and Gramophone Music. 7.0, Time, Tourist Talk and Gramophone Music. 7.10, Market Prices. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.6, News. 8.30, Talk on the following Transmission. 8.35, The Merry Peasant—Operetta in Three Acts (Fall). In the intervals, Talk and Announcements. After the Operetta, 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. 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 Wiener Symphoniker, 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 on Poultry Keeping. 3.30, Marches on Gramophone Records. 4.30, Programme for Young People. 5.0, Travel Talk: In the Langau. 5.25, Soprano and Pianoforte Recital by Paula Jentke and Amy Bock-Walters. 6.5, Talk: Old Austrian Castles and Gardens. 6.30, Technical Talk. 6.55, Talk: Foreign Interest in the Catholic Conference. 7.10, Dances of Other Lands—Concert by the Wiener Symphoniker, conducted by Max Schönerr; Dances from Austria (Fekl); Czardas (Dobnanyi); Rigaudon (Saint-Saëns); Kodo (Gotovac); Fandango (Fallas); Tarantella (Verdi); Romanian Dance, Doina (Dragoi); Polish Dance (Scharwenka); Trepak (Tchaikovsky); Mock Morris (Grainger); German Dances (Reger); Norwegian Peasant Dance (Grieg); Friant (Weinberger); Waltz, Bei uns z'haus (Joh. Strauss). In an interval at 7.35, Time and News. 8.40, Topical Talk. 8.55, Lecture by Karl Kneidinger. 9.30, News. 9.45, Concert by the Wiener Symphoniker, conducted by Josef Holzer.

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., Orchestral Concert, relayed from the Café Bagatela; Overture, Zampa (Herold); Peer Gynt Suite No. 1 (Grieg). 12.25, Polish Press Review. 12.33, Weather. 12.35, Orchestral Concert (cont.): Selection from Paganini (Lehar); Tango, Mimi (Szule); Selection from La Gioconda (Ponchielli). 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.10, Trade Report. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.45, The Post Office Savings Bank Report. 4.0, Concert by the Poznan Symphony Orchestra, relayed from Cichocinek. 5.0, Topical Talk. 5.15, Chamber Music: Quartet in G, Op. 18, No. 2 (Beethoven); Quartet, Op. 96 (Dvorak). 6.15, Talk, relayed from Cracow, 950 kc/s, 312.8 metres. 6.35, Songs and Duets by Ksenia Grey (Soprano) and Donar-Mikuszewsky (Tenor). 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Reading. 8.0, Song Recital by Fabra (Soprano), and Bregy (Tenor). Duets: (a) The Lark (Glinka), (b) Duet (Rubinstein); Tenor Solos: Soprano Solos (Wielhorsky); Duet from Mephistopheles (Boito); Duet from Mamon (Massenet); Soprano Arias from: (a) Mamon (Massenet), (b) The Demon (Rubinstein), (c) The Force of Destiny (Verdi); Baritone Solos: (a) Walter's Song from The Mastersingers (Wagner), (b) Aria from Cavalleria rusticana (Mascagni); Duet from L'amico Fritz (Mascagni). 8.50, Radio Journal. 9.0, Agricultural Correspondence. 9.10, Light Music, relayed from Lwów, 788 kc/s, 381 metres. 10.0, Dance Music, relayed from the Café Europa, Cichocinek. 10.25, Sports Talk. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music (cont.).

WILNO

533 kc/s, 563 metres; 16 kW.—7.20 p.m., Lithuanian Review. 7.35, Programme Announcements. 7.40, See Warsaw. 9.0, Reading. 9.10, Light Music, relayed from Lwów, 788 kc/s, 381 metres. 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 2.30 p.m., Time Signal, Weather Report, Stock Exchange Quotations, and Gramophone Music. 6.0, Programme for Children. 6.40, News. 7.0, French Lesson. 7.15, Poetry Recital by Cathleen Murphy. 7.30, Time Signal. 7.31, Concert by the Station Orchest. In an interval at 7.50, Baritone Solos by T. Dawson. 8.20, Concert by the Caledonian Male Voice Choir. In an interval at 8.35, Uilleann Pipe Solos by Leo Rowsome. 9.5, Traditional Fiddle Solos by Labrad O'Gain. 9.15, Irish Songs by A. Heffernan (Soprano). 9.30, Pianoforte Recital by Fred Stone. 9.45, Sponsored Programme. 10.45, News, Weather Report, and Close Down.

BARCELONA

EAJ1, 850 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 from the Cathedral, Weather, Exchange, and Market Prices. 10.5, Concert by the Station Orchestra: March, Colonel Bogey (Kenneth Alford); Waltz, Live, Love and Laugh (Joh. Strauss); Habanera, A toda vela (Cof); Minuet from Manon (Massenet); Lullaby (d'Ambrosio); Czardas (Gabriel-Marie). 10.45, Marina Opera in Three Acts (Arieta y Corera). In the interval at 12 Midnight, News.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.10 p.m., Agricultural Notes, Tourist Talk, and Dopplavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), Symphony Concert of Russian Music, conducted by Nicolai Malko; Soloist: Massimo Amintrotto (Cello); Symphony No. 5 (Tchaikovsky); Fantasia on Russian Themes for Cello and Orchestra (Rimsky-Korsakov); Scherzo and March from The Loves of the Three Oranges (Prokofiev); Spanish Caprice (Rimsky-Korsakov). In the interval, Talk. 10.50, News in Albanian. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BERLIN

(DEUTSCHLANDSENDER) Reichssender, 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Opera and Operetta Music on Gramophone Records. 2.45, Programme for Children. 3.10, Talk on Gambling for Young People. 3.50, Weather and Exchange. 3.45, Reading (Kortum). 4.0, See Heilsberg. 5.0, Talk for Young Mothers. 5.20, Talk: The National Thrift Movements. 5.35, Chamber Music: Sonata in C for Pianoforte (Mozart); Trio for Two Oboes and English Horn, Op. 87 (Beethoven). 6.5, Poetry Reading (G. O. Stoffregen). 6.30, Agricultural Radio Report. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, To-day's Motto. 8.5 (approx.), Talk: The German Radio Exhibition. 8.15, Smiling Romeo—Radio Sequence in Seven Scenes, with Music by Frederick the Great, J. E. Bach, Handel, Friedemann-Bach, and others. 9.15, Programme relayed from Langenberg. 10.20, Weather and News. 10.45, Weather for Shipping. 11.0, Light Music and Dance Music from Langenberg. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 15 kW.—4.20 p.m., Frederick the Great Memorial Programme, relayed from the Palace of Sans-Souci. A Chamber Orchestra, conducted by Hans von Benda. Soloist: Müller (Flute). Overture, Montezuma (Graun); Recitation: Sans-Souci Speaks; Grave and Allegro from the Flute Concerto in C (Frederick the Great); The King receives Gellert; Adagio and Presto from the Symphony in D (Franz Benda); The King travels to Havelluch; Adagio from the Quartet in G (P. E. Bach); The Death of Frederick; Prelude to Frederick the Great's Funeral Cantata (Reichardt). 5.30, Reading. 5.50, Song Recital by Agnes Schulz-Lichterfeld. 6.10, Talk on Ethics: Youth and the State. 6.30, A Call from Magdeburg. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations: This is Berlin—a Radio Picture of Current Events and Daily Life in the Metropolis. 8.5, Folk Song Recital. 8.40, Topical Talk. 9.0, Modern German Dance Music, by the Ludwig Rühl Band, the Station Orchestra, the Station Choir and Soloists. In an interval, Variety Items, at 10.0 (approx.). Weather and News, and at 11.0 (approx.). Radio Report of the Final Preparations for the Opening of the Radio Exhibition. 1.0 a.m. (Wednesday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

995 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal, relayed from Paris (Ecole Supérieure). 6.71 kc/s, 447.1 metres. 7.40, Talk arranged by the International Labour Bureau. 8.0, News. 8.15, Request Gramophone Music. 8.20, A Comedy, followed by Amusement Guide and Time Signal.

THURSDAY

AUGUST THE SEVENTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL LONDON REGIONAL
MIDLAND REGIONAL
NORTH REGIONAL
WEST REGIONAL
SCOTTISH REGIONAL
BELFAST

Promenade concert from Queen's Hall. Massed bands programme.

From the light operas and musical comedies; orchestral concert. The Arcadian Follies, relayed from Morecambe.

"Summer Holiday, or Beauty and the Beach," by Dorothy Worsley. An excerpt from "Gaiety Whirl of 1933," from the Gaiety Theatre, Ayr. Irish instrumental and vocal programme.

ABROAD

BARI
BRUSSELS (No. 2)
COPENHAGEN
HEILSBURG
HUIZEN
LAHTI
LYONS LA DOUA
STRASBOURG
TURIN
WARSAW

8.35 p.m., Symphony concert of Russian music. 8.0 p.m., The Station Symphony Orchestra, conducted by Kumps. 8.10 p.m., Opera music, by the Radio Orchestra. 8.5 p.m., Wagner and Verdi orchestral concert, from the Kurgarten, Zoppot. 5.20 p.m., Concert by the Amsterdam Orchestral Society, conducted by Nico van de Linden. 7.15 p.m., Beethoven's Sonata No. 2 (Op. 12) for Pianoforte and Violin. 8.30 p.m., Operetta: "Veronique," by Messager, relayed from Marseilles. 6.30 p.m., Song recital, by Matthe Hengel and Annette Brincoeur. 8.30 p.m., Opera: "Don Giovanni," by Mozart. 8.0 p.m., The Symphony Orchestra, conducted by Oziminski.

BRATISLAVA

1,076 kc/s, 270 metres; 14 kW.—6.5 p.m., Gramophone Music. 6.25, Talk. 6.55, Talk for Housewives. 7.0, See Prague. 7.10, See Brno. 7.40, Talk from Kosice, 1,022 kc/s, 293 metres. 7.55, See Moravská-Ostrava. 10.0, 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.—12 Noon, Orchestral Concert, conducted by Franz Jabrzulek: Overture, The Queen's Korchik (Joh. Strauss); Selection from Die Fledermaus (Joh. Strauss); Waltz, Vive la danse (Waldteufel); Selection from Die Landstreichler (Zechner); Overture, Morning, Noon and Night (Suppé); Polka from Gasparone (Müllner); Tango, Gefü nicht so troubles vorher (Künneke); Selection from Der Tenor der Herzogin (Künneke). 1.45, Time and News. 2.5, Gramophone Concert. 3.0, Agricultural Prices. 3.30, Talk: The Old Frontier Town of Namslan. 3.40, Review of Rudolf G. Binding's Books. 4.0, Bach Pianoforte Recital by Elli Pietsch: Sonata in C; Concerto and Fugue. 4.20, Frederick the Great Radio Sequence with Music. 5.30, Agricultural Prices. 5.35 (from Gleiwitz), Talk: The Hitler Youth in Upper Silesia. 6.10, Programme to be announced. 6.25, Talk for Workers. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Undine—Opera in Four Acts (Lortzing)—Concert Version. 9.0, News. 9.10, Concert by the Silesian Philharmonic Orchestra, conducted by Ernst Hoffmann. 10.10, Time and News. 10.30, Dance Music, relayed from Berlin (Witzleben). 1.0 a.m. (Friday), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—2.50 p.m., Orchestral Concert by Unemployed Musicians: Spanish March, The Toreador (Smatek); Waltz (Fueick); Gounod Potpourri (Fueick); March of the Pygmies (Armandola); Yugoslav Potpourri (Leopold). 3.55 to 4.0, See Prague. 5.25, See Moravská-Ostrava. 5.45, Gramophone Music. 5.55, Tourist Talk. 6.5, Gramophone Music. 6.25, German Transmission: A Sketch. 7.0, See Prague. 7.10, Harvest Home—a Play (Valentin Sindler). 7.40, Talk from Kosice, 1,022 kc/s, 293 metres. 7.55, See Moravská-Ostrava. 10.0, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

N.I.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by Leemans: Overture,

Martha (Piotow); Madama (Moszkowski); Etiole de ma Vie (Silesu); Dance of the Hours, from La Gioconda (Ponchielli); Tango (Albeniz); Selection from Mirella (Gounod); Waltz, Du-du-du (Stolz); Foxtrot Bolero (Giesler); Foxtrot (Black). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert. 5.0, The Italian Symphony (Mendelssohn), by the Station Symphony Orchestra, conducted by Kumps. 5.30, Gramophone Records for Children. 6.0, Talk: Children and International Music. 6.15, Gramophone Concert: Part I, Wagner Music: Extracts from The Ring of the Gods; Funeral March from Siegfried; Forest Murmurs; Part II, Messenet Music: Le Dernier Sonnet de la Vierge; Scènes pittoresques; Part III, Verdi Music: Aria from La Traviata; Selection from The Force of Destiny; Melody from Othello; Selection from Il Trovatore. 7.15, Review for Workers. 7.30, Sports Notes. 8.0, Symphonic Poem, Scheherazade (Rimsky-Korsakov). 8.45, Talk. 9.0, Concert, relayed from the Kursaal, Ostende. After the Concert, Le Journal Parlé and Gramophone Concert of Modern Italian Music.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish. 12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Pierre Leemans: Entry of the Gladiators (Fueick); Waltz, Je t'aime (Waldteufel); Sérénade au long (Hinget); Selection from Mignon (Thomas); Tango, Jalousie (Gade); Gramophone Records of Mical Flota: (a) El Caserio (Romero), (b) Principessa (Palomera); Selection from Le Haut (Yvain). 5.0, Concert by the Radio Orchestra, conducted by Walpole: March (Faud); Overture, Phédre (Massenet); Hungarian Rhapsody No. 2 (Liszt); Gramophone Records: (a) Van 't Asterken (Coulmans), (b) Jan broeder vrijt een meisje zoeft (Van Duyso); Xylophone Solo: Czardas (Michiels); Scene and Waltz from Gretia Green (Gruard). 5.45, Programme for Children. 6.30, Concert by the Small Station Orchestra, conducted by Leemans; Soloist: Wigy (Violin); Festival Overture (Leutner); Suite in Old English style, Henry VIII (Foulds); Violin Solo: Meditation (Maes); Romanian Potpourri (Dauber). 7.0, Gramophone Music. 7.15, Talk. 7.20, Talk for Housewives. 8.0, Concert by the Station Symphony Orchestra, conducted by Kumps; Soloists: Mlle. Gilewaert (Songs) and Frans Schell (Songs); Slav March (Tchaikovsky); Overture, The Merry Wives of Windsor (Nielski) Duet from Lilac Time (Schubert-Berthé); Military M a r c h (Schubert); Duet from Lilac Time (Schubert-Berthé); Tarentella (Cui); Overture, Masaniello (Auber); Song from Ball in Savoy (Abraham); Es gibt noch Märchen (Lehar); Pas des fleurs (Delibes); Song from Ball in Savoy (Abraham); Song: In

Heidelberg het ik mijn geluk gevonden (Krauss); Im Walzerrausch (Lincke); Duet from Viktoria and her Hussar (Abraham); Estudiantina (Waldteufel). In the interval, Talk: Reminiscences of Verdun—1914-1918. 10.0, Le Journal Parlé. 10.10, Gramophone Concert.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Syncop Accorders Jazz Band, relayed from the Lido. In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Light Music on Gramophone Records. 7.40, Educational Talk. 8.0 to 9.45, Polish Programme. 8.0, Polish Songs. 8.20, Symphony Concert of Polish Music by the Station Orchestra. 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 7.10 p.m. till Close Down. 5.0 p.m., Orchestral Concert. 6.10, Reading. 6.40, Concert. 7.10, Humorous Dialogue. 8.10, Concert by the Lajos Veres Chiny Band, relayed from the Cafe Ostend; Soloist, Paul Kalnar (Hungarian Folk Songs). 9.30, Concert by the Opera House Orchestra, conducted by Fridl; Overture (Lehar); Selection from Knight John (Keesoh); Kaiserwalzer (Joh. Strauss); Serenade (Schack); Two Songs (Nagypal); Selection from an Operetta (Kalmán). 10.30, News. 10.35 (approx.), Gramophone Music. 11.30, Dance Music, relayed from the Hotel Royal.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the Max Skalak String Ensemble, relayed from the Hotel d'Angleterre. 2.0 to 2.45, Interval. 2.45, Concert by the Radio Orchestra, conducted by Emil Reesen; Soloist: Inger Jacobson (Pianoforte); Overture, Miella (Gounod); Valse Idée (Mazis); Andante cantabile for Strings (Tchaikovsky); Lyric Suite (Trier); The Entry of the Guests into the Wartburg, from Tannhäuser (Wagner); Pianoforte Solos: (a) La cathédrale engloutie (Debussy), (b) Albumblatt in E (Maz), (c) Prelude in C (Prokofiev); Oriental March from Belschazzar's Feast (Sibelius); Selection from Viktoria and her Hussar (Abraham); Waltz, Fantasia (Glinka); Scherzo (Lalo); March, Old Comrades (Teiko). 4.45, Programme for Boys. 5.35, Exchange and Fish Market Prices. 5.50, Talk: Emil Zola from the Modern Standpoint. 6.20, Elementary English Lesson. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.16, Talk: The Importance of Morning Exercises for Children. 7.45, Danish Lesson. 8.10, Concert of Opera Music by the Radio Orchestra, conducted by Lanny Grundahl; Overture: Romeo and Juliet (Bellini); Selection from Der Freischütz (Weber); Overture, The Force of Destiny (Verdi); Selection from Hansel and Gretel (Humperdinck); Waltz from Der Rosenkavalier (R. Strauss); Overture, The Flying Dutchman (Wagner). After the Concert, 9.40, Concert of Old Folk Dance Music for Violin, Viola, Clarinet, and Contra-bass (arr. Lanny Grundahl), by Members of the Radio Orchestra. In an interval, Reading. 10.10, News. 10.25, Song Recital. 10.25, Concert of Old Danish Dance Music by the Radio Orchestra, conducted by Lanny Grundahl. 11.10, Concert by the Teddy Petersen Dance Band, relayed from the Wivex Restaurant. 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., See Warsaw. 7.20, The Letter Box. 7.35, Miscellaneous Items and News. 7.40, See Warsaw. In an interval at 9.0, Programme Announcements and News. 10.0, Violin Recital. 10.30, Sports Notes. 10.35, 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. 4.30, The Nursery Corner: Music, Stories and Birthday Greetings. 5.0, Concert for Working and Littlehampton Listeners: Gramophone Records; Signature Time; The Night by the Sea; The Lion and Albert; Hand me down my Walking Can; An Embankment Impression; I Stopped, I Looked, I Listened; Medley of Songs; Auf Wiedersehen, my Dear; Pianoforte Solo: Everyone says I love you; Rolling down to Rio. 5.30, Concert for Brighton and Hove Listeners: Musical Comedy Memories; Selection from Chu Chin Chow (Nippon); My Hero, from The Chocolate Soldier (O. Stran); Selection from The Desert Song (Romberg); Indian Love Call from Rose-Marie (Ermi); A Bachelor Gay, from The Maid of the Mountains (Tate); Pianoforte Duet from The Cat and the Fiddle (Kern); Selection from The Merry Widow (Lehar); Signature

AUGUST 17th **THURSDAY** continued

Time. 6.0, French Programme. 10.0 till Close Down. Programme in English by the I.B.C. 10.0, Dance Music: Signature Tune: Bells of Normandy; Today I feel so happy; Just an Echo in the Valley; Farewell to Arnis; Same old Moon; Pickaninnies Heaven; Ain't cha coming out to-night. Moon?; London Bridge is falling down; Won't you stay to tea?; I guess I'll have to change my plan; I'm sure of everything but you; Wanderer; Night after Night; A Little Street where Old Friends meet; All over Italy; Castles in the Sand; Hiawatha's Lullaby; Signature Tune. 11.0, Club Concert for Brandon Listeners. Part I—Violin Recital. Signature Tune. The Chum Song; The Fortune Teller (Herbert); Serenade to Nicolette; Salut d'amour (Elgar); River, stay away from my door; In the Gloaming (Chaminade); Ballet Music from Rosamunde (Schubert); March from Sylvia (Delibes); Valse bluette (Drigo); Waltzes from A Waltz Dream (O. Strauss). Part II—Orchestral Music. The Wedding of the Birds; Just once for all time; Guitar Solo; Picking my Way; Some of these days; Southern Rhapsody; Just because I lost my heart; Princess Pat; Signature Tune. 12.5 a.m. (Friday), News Bulletin in English. 12.10 (approx.). Orchestral Concert, Blossoms from Mozart's Garden; Young Tom o' Devon (Russell); Waltz from The Sleeping Beauty (Tchaikovsky); Classical Selection (arr. Ewing); Glorious Devon (German). 12.30, Dance Music: Signature Tune; Bells of Normandy; And so I married the girl; Under my Umbrella; Don't be late in the morning; Good Evening; Memories of You; Here's hoping; Somebody stole my gal; Isn't it romantic?; Won't you stay to tea?; Signature Tune. 1.0, Vocal Concert: Chinatown, my Chinatown; Blaydon Raers; Keep your feet still; Nautical Moments (arr. Winter); There is a Tavern in the Town; Shepherd's Serenade; The Lincolnshire Poacher; More Nautical Moments (arr. Winter). 1.30, Dance Music: Signature Tune; Bells of Normandy; Blue Rhapsody; You've got me in the Palm of your Hand; Sing a New Song; A Little Street where Old Friends meet; Somebody stole my gal; Isn't it Romantic?; Just an Echo in the Valley; Signature Tune. 1.57, The I.B.C. Good-night Melody. 2.0, 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, 245.5 metres; and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., Concert by a Nazi Band. 5.45, Market Prices. 6.0, Reminiscences of the Great War. 6.25, Talk: The Radio War. 6.45, Today's News. 6.50, Time and Announcements. 7.0, Transmission for all German Stations relayed from Berlin (Witzleben). 8.0, Robert Franz Song Recital by Anita Franz. 8.30, Old Frankfurt—Radio Sequence (F. Bothe and Anton Kreiner). 9.20, Cello, Harpsichord and Viola da Gamba Recital by Karl Maria Schwamberger and Dr. Reinhold Merten. 10.5, Time and News.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBERG.—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., Concert of Light Music, conducted by Karl Becker. Nymaria March (Buchwald); Overture, Die Kunst, geliebt zu werden (Gumbert); Waltz, Nachtschwärmer (Ziehrer); Aria from Stabat Mater (Rossini); Bassoon Solo; Selections from Faust (Gounod); Orientalischer Zug (v. Blon); Potpourri from Gasparone (Müllacker); Spanish Dance (Mucskowsky); Patriotic March (Döring). In the interval at 12.10, Time and Weather Announcements, and at 1.10, Weather Report. 1.15, Sponsored Gramophone Concert. 2.0, News. 2.10, Concert on Gramophone Records. Caucasian March (Ippolitov-Ivanov); Oriental Dance (Glazounov); Selection from the Suite Old China (Niemann); (a) The Holy Bark, (b) Garden Party; Selection from Madame Butterfly (Puccini); In a Chinese Temple Garden (Kettelby); Selection from Turandot (Puccini); Selection from Die Geisha (Jones); Persian March (Joh. Strauss). 3.0, Exchange Quotations. 3.40, Shipping Notes and Aviation Report. 4.0, Concert from Heilsberg. 5.0, Programme for Young People. 5.30, Guitar Recital by Heinrich Albert. Sellegietto (P. E. Bach); Andante (Mozart); Overture (Luigi Legnani); Dance of Death (Tárrega); Maurische Charwache (Albert); Tango (Lobes). 6.0 p.m., Und wieder blüht die Heide (The Heather blooms again)—Radio Sequence (Walter Brauns).

6.45, Frankfurt Exchange. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Reading (Cliff Uewson). 8.20 (Hanover), Young Germany in Music—Festival Concert by the Dresden Philharmonic Orchestra, conducted by Walter Stöver; Soloist: Paul Gümmer (Baritone) Concerto for Strings, Flute, and Clarinet (Fleischer); Lively Music for Orchestra (Müller); Symphony Piece, Andurch, Op. 31 (Holmola); Erinnerung, Op. 14, for Baritone and Orchestra (Frickhöffer); Variations and Fugue on a German Folk Song (Müller). In an interval at 9.10, Announcements. 10.10, 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. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Concert by the Königsberg Opera House Orchestra, conducted by Wöllner. In the intervals at 1.20 and at 2.0, News. 2.30 (from Danzig). Danzig Exchange and Market Prices. 3.0, Agricultural Prices and Exchange. 3.30, Programme for Young People. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Helene-marsch (Lübbert); Overture, Vivat akademika (Zimmer); Schubert Potpourri (Raff); Selection from Der Waffenschmidt (Lortzing); Overture, Waldmeister (Joh. Strauss); Ich hab' a mal a Räuscherl g'habt (Kapeller); Tango dramatico (Lander); Swabian Peasant Waltz (Krone); Strauss, Müllacker and Suppe Potpourri (Ziehrer); March, Deutschlands Ruhm (Schroeder). In an interval at 5.0 (approx.), Review of Contemporary Lyric Poetry. 6.0, Talk: The East Prussian Industries at the East German Fair. 6.15, Agricultural Prices. 6.25, Agricultural Programme. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Weather and News. 8.5, Wagner and Verdi Concert by the Kur-Orchestra, relayed from the Kurgarten, Zoppot, Conductor: Karl Tancin. Overture, The Flying Dutchman (Wagner); The Helmsman's Song and Senta's Ballad from The Flying Dutchman (Wagner); Introduction to Act III of Lohengrin (Wagner); Duet and Legend of the Grail from Lohengrin (Wagner); Prelude to Act III and Amelia's Aria from A Masked Ball (Verdi); Duet from A Masked Ball (Verdi). In the interval, News. 9.40, Elementary English Lesson. 10.10, Weather and News.

HILVERSUM

Announced HUIZEN, 1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.)—11.40 a.m. to 1.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 11.40, Police Report. 11.55, Concert by the K.R.O. Orchestra, conducted by M. van 't Woud. Frisch gewagt (Blon); Overture, Nakiris Hochzeit (Linck); Selection from Ten Maids and No Man (Suppe); Waltz, Dorfkind (Kalmán); Indian Canzonetta (Dvorak); Wedgwood Blue (Kettelby); Gramophone Music: Parade in Märchenwald (Noack); In einem türkischen Bazar (Dreyer); Waltz, Dolores (Waldteufel); Noteneigen (Urbach); Bereuse from Jocelyn (Gudard); March, Vooruit K.R.O. (v. 't Woud). 1.40 till Close Down. Programme of the Christian Radio Society (N.C.R.V.). 1.40, Organ Recital by Luise Laueroth. Potpourri, Musical Soap Bubbles (Urbach); Melody from The Maid of the Black Forest (Jessel); Soljanka (Wilke); Selection from Rigoletto (Verdi-Tavan). 2.40, Gramophone Music. 3.10, Interval. 3.40, Bible Reading with Songs and Organ Solos. 4.40, Concert: Franken (Violin), Mine Brandes-Haas (Pianoforte), and Tom Brandes (Harmonium). 6.25, Dress-making Lesson. 6.40, Police Report. 6.55, Gramophone Music. 7.10, Weekly Review of Periodicals. 7.40, Orchestral Concert with Songs by a Male Voice Choir. In the interval at 8.40, Talk. 9.40, News. 10.10, Gramophone Music. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 100 kc/s, 1,875 metres; 8.5 kW. Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.30 a.m., Time. 11.41, Concert of Light Music by the Rentmeester Orchestra. In the intervals: Songs by a Male Voice Choir. 1.55, Gramophone Music. 2.10, Recitations. 2.40, Gramophone Music. 3.25 to 3.40, Interval. 3.40, Programme for Hospitals. 4.10, Accordion Music. 4.40, A Play for Children. 5.20, Concert by the Amsterdam Orchestral Society, conducted by Nico van de Linden; Overture, Martha (Plotow); Ballet Suite from Romeo and Juliet (Gounod); Serenade (Piccini); Minuet from I Pagliacci (Loacavallo); Wine, Woman and Song (Joh. Strauss). 6.10, Sports Talk. 6.40, Concert (contd.); French Military March (Saint-Saëns); Selection from Die Fledermaus (Joh. Strauss); Salut d'amour (Elgar); Overture, Der Schauspielerdirektor (Mozart). 7.10, Travel Talk: From Buitenzorg to Pangerangs. 7.40, Time. 7.41, News. 7.45,

Variety Programme by Kovacs Lajos and his Orchestra and Soloists. 9.55, A Musical Comedy. In the interval at 10.40, News. 11.10, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 1.15, Variety Items. 7.30, Concert by the Billy Arnold Jazz Band, relayed from the Hollywood Restaurant. 8.0, Amusement Guide and News. 8.10, Scientific Review. 8.20, Press Review. 8.30, Radio Concert. In an interval at 9.0, News and Weather Report.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.15, Sports Notes. 7.30, Announcements and Gramophone Music. 7.40 till Close Down, See Warsaw.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

LAHTI

167 kc/s, 1,796 metres; 40 kW. Relayed by Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Concert by the Station Orchestra; Overture, William Tell (Rossini); Melodies from Viktoria and her Hussar (Abraham); Roses from the South (Strauss). 6.50, Talk. 7.15, Sonata No. 2, Op. 12, for Pianoforte and Violin (Beethoven). 7.35, Recitations. 7.55, Song Recital. 8.15, Concert by the Station Orchestra: Romanian Rhapsody (Dimitrescu); Negro's Lullaby (Clutsam); Pizzicato from Sylvia (Delibes); Waltz from Sleeping Beauty (Tchaikovsky); Florentine March (Frenk). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert by the Fröhliche Fünf. 12.50 p.m., News. 1.0, Concert conducted by Eysoldt; Overture, The Caliph of Bagdad (Boieldieu); Rindolfklänge (Strauss); Lyric Suite (Maass); Romance, Maria (Marco); Schubert Potpourri (Urbach); Extract from Bohmische Musikanten (Grün); In the Temple of the Bells (Yoshitomo); March, Mit Standarten (Blon). In an interval at 2.0 (approx.), News. 2.30, Interval. 3.0, Programme for Children. 3.30, Economic Notes and Time. 3.50, Talk: A United Campaign against Unemployment. 4.10, Anecdotes. 4.30, New Developments in Science and Research—Radio Report with Gramophone Interludes. 5.0, Minnets and Gavottes on Gramophone Records. 5.30, Talk: The Death and Burial of Frederick the Great. 6.0, Concert by the Fröhliche Fünf. 6.25, See Munich. 6.45, News. 7.0, Transmission for all German Stations relayed from Berlin (Witzleben). 8.0, News. 8.5, Summer Dance Festival, relayed from the Junkenhäuser Spa. In the interval, Gramophone Records of a Talk by the Spa Manager. 10.20, News. 10.45, Light Music 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.—Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon (from Dresden), Pianoforte and Song Recital by Hephert Trantow and Marion Pöppelmann. 1.0 p.m., News. 1.15, Concert from Langenberg. 2.0, News. 2.10, Art and Film Notes. 3.0, Talk on Aviation for Young People. 3.35, Market Prices. 4.0, See Heilsberg. 5.50, Economic Notes, Weather and Time. 6.0, Talk: The Peace Negotiations in the East. 6.25, See Munich. 6.50, Today's News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Über allen Gipfeln ist Ruh—A Literary Programme (arr. Hans Christoph Kaerzel). 8.25, Agricultural Notes. 8.35, Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer; Overture, Ika (Doppler); Serenade No. 1 (Fuchs); Slav Rhapsody No. 1 (Dvorak); Waltz Scenes from Intermezzo (R. Strauss); Waltz, Marienklänge (Joh. Strauss). 9.15, Konjunktur—Radio Play (Dietrich Loder). 10.35, News.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—7.0 p.m., Gramophone Music. 7.30, Programme for Women. 8.0, Talk. 8.30, Violin Recital. 9.15, Song Recital. 9.45, Weather and News. 10.0, Concert by the Station Orchestra. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—German Programme. 7.30 p.m., Concert by the Station Orchestra, conducted by Henri Pénis. 8.15, Weather Report. 8.20, Song Recital. 8.30, Violin Recital by E. Felgen. 8.50, News in French. 9.0, Song Recital by Elizabeth Corly.

9.30, Orchestral Concert. In an interval at 9.50, News in German. 10.20, Dance Music on Gramophone Records.

LWOW

788 kc/s, 381 metres; 16 kW.—7.20 p.m., Miscellaneous Items. 7.40, See Warsaw. 10.0, Soprano Solos by Marja Popowicz. 10.25, See Warsaw. 10.40, Gramophone Music. 11.0 (approx.), Close Down.

LYONS

LA DOUA, PTT, 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. 8.30, Veronique—Opereita (Messenger), relayed from Marseilles, 950 kc/s, 315 metres. After the Opereita, 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 11.0, Interval. 11.0, Chimes, Time and Political Review. 11.20 (approx.), Song Recital by Maria Valverde (Contralto); Four Songs (J. Maria Guervós); Aria from Samson and Delilah (Saint-Saëns); Aria from The Huguenots (Meyerbeer). 11.30, Municipal Band Concert, relayed from Rosales. 1.15 a.m. (Friday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.15 p.m. till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—5.25 p.m., Programme for Children. 5.45, See Prague. 7.10, See Brno. 7.40, Talk, relayed from Kocice, 1,022 kc/s, 293 metres. 7.55, Talk on the following Transmission. 8.0, An Opereita (Plichta), conducted by the Composer. 10.0, See Prague. 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—3.0 p.m., Grieg Concert. 4.0, Agricultural Talk. 4.30, Russian Literary Programme. 5.30, Programme Announcements. 5.45, Talk. 6.30, Dance Music. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes. 10.5, English Press Review. 10.30, 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 by the Alois Detzer Orchestra. Selection from Die Folklinger (Kretschmar); Overture, Raymond (Thomas); Selection from Carmen (Bizet); Interlude; Recitations by Karl Theodor Wagner; Waltz, Gebirgskinder (Ziehrer); Andante (Kuhlaut); Selection from A Masked Ball (Verdi); Gavotte, Du und ich (Czibulka); Klänge aus dem Bodental (Franke). 5.45, Agricultural Talk. 6.5 (from Nürnberg), Concert of Franconian Soldiers' Songs by a Male Voice Choir. 6.25, A Panegyric at the Grave of Frederick the Great (Reck-Malzerewen). 6.45, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Concert by the Munich Zither Society. March, Durchs Loisaachtal (Albrecht); Concert, Overture (Swabian); Waltz, Allerliebst (Pieringer); March, Leichtes Blut (Zipf); Intermezzo, Sei wieder gut (Schriekler); Polka caprice, Sandmühle (Schwarz); March, Tritt gefasst (Windisch). 9.0, Concert by the Station Orchestra and the Berber Quartet. Conductor: Hans Winter. Vaterländische Ouverture (Reger); String Quartet Concerto (Sphor); Symphony in D (Mozart). 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, relayed from the Café de Théâtre. 6.0, Talk. 6.30, Divine Service Relay. 7.0, Announcements and News. 7.30, Agricultural Talk. 8.30, Concert by the Vienna Guitar Trio. 9.20, Talk. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Song Recital by Einar Rose. 10.45, (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavore Notes, Agricultural Report, and Giopale Radio. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Opereita Music, followed by Per vanità—Comedy in One Act (G. Antonia Traversi). 10.55, News.

AUGUST 17th

THURSDAY

continued

PARIS

EIFFEL TOWER, 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., Dramatic Programme, 7.0, Le Journal Parlé, 8.30, Gramophone Concert: Part I—Extrats from Carmen—Opera (Bizet); Part II—Light Music, 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, 7.50, Talk, 7.55, Gramophone Music (contd.), 8.20, Recitations with Musical Accompaniment: (a) La Fiancée du Tambour (Victor Hugo-Thomé), (b) La Fiancée du Trombone à coulisse (Pessard), 9.0, Concert relayed from the Restaurant de la Forêt, Le Touquet, 11.0, News.

PARIS

RADIO-PARIS, 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 News, 12 Noon, Protestant Address, 12.30 p.m., Variety Programme on Gramophone Records, Part I—Literary Programme for Children: In Mickey's Kingdom (Cattell); Anatole recite une fable (Coquillon); Le dépit amoureux (Molière); Monologue from L'Avare (Molière); La Bouillabaisse (Foucher); Pilier d'estaminet (Wicheler); Le plus beau jour (Wicheler), Part II—Opérta and Sound Film Music: Song from Coiffure pour dames (Pinguault-Vinont); Mèche (Montaux); Songs from Au pays du soleil (Scott); Songs from Coeur de lilas (Yvain); Airs from Ma femme homme d'affaires (Moretti); Air from La clauteur inconnu (Sylviano); Melody (Gramischtraeden); Songs from Nina Rosa (Rombert); Airs from Il est charmant (Boret); Avec un bruit sec, from Oh! Papa (Yvain); Songs from Une petite femme dans le train (Gregon). 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, Market Prices, Weather, Agricultural Notes, Exchange and Racing Results, 7.10, Gramophone Concert: La Toupie (Gillet); Chrysanthèmes (Goullier); Ma Normandie (Berat); Je ne veux que des fleurs (Barbier); After the Ball (Hurin); Selection from The Wedding of the Rose (Jessel); La mère Jeanne (Dupont); Le Sapin (Dupont); La Czarine (Gauze), 7.50, Commercial Notes and News, 8.0, Gramophone Music, 8.30, News, Weather and Sports Notes, 8.45, Chamber Music on Gramophone Records: Trio in G (Haydn); Songs: (a) Butterfly's Song (Campua), (b) Die Stadt (Schubert), (c) Elégie (Duparc), (d) Harmonies intimes (Lesur), (e) The Nightingale and the Rose (Rimsky-Korsakov); Ballad in F Minor (Chopin); Fêtes galantes (Debussy); Mandoline (Debussy); Five Mazurkas (Tausman); Six French Songs (Tailleferre); String Quartet No. 2 (Milhaud). In the interval at 9.15, Press Review and News.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayd by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Pioneers, KDKA to New York, 7.45, KDKA Home Form, 8.0, Betty and Bob, from New York, 8.15, Smiths Play Bridge, 8.30, Words and Music, from New York, 8.45, Federation Pennsylvania Women, 9.0, Thursday Special, from New York, 9.30, News and Markets, 9.45, Thursday Special, from New York, 10.0, Programme to be announced, 10.15, Tarzan of the Apes, 10.30, Larry Larson, from New York, 10.45, Orphan Annie, from New York, 11.0, News Piano-Classic, 11.15, Sports, A Song, 11.30, Pittsburgh Spotlights, 11.45 to 12.45 a.m. (Friday), New York Relay, 11.45, Lowell Thomas, 12 Midnight, Amos 'n' Andy, 12.15, Concert Footlights, 12.45, Pathé News of the Air, 1.0 to 4.0, New York Relay, 1.0, Captain Diamond, 1.30, John Fogarty, 1.45, Floyd Gibbons, 2.0, Death Valley Days, 2.30, Wayne King's Orchestra, 3.0, Goldman Band.

PORSGRUND.—See Oslo.

POZNAŃ

896 kc/s, 335 metres; 1.9 kW.—7.20 p.m., Miscellaneous Items and News, 7.35, Theatre Notes and Programme Announcements, 7.40, See Warsaw, 10.0, Talk, 10.15, Time Signal, Sports and Police Notes, 10.20 (approx.), Close Down.

PRAGUE

614 kc/s, 489.6 metres; 120 kW.—2.50 p.m., See Brno, 3.55 to 4.0, Exchange Quotations, 5.25, See Moravská-Ostrava, 5.45, Gramophone Music, 5.55, Talk: St. Malo, Chateaubriand's Birthplace, 6.5, Talk for Farmers, 6.15, Talk for Workers: The Woman in the Modern Russian Novel, 6.25, News in German, 6.30, German Transmission: Agricultural Programme, 7.0, Time Signal, 7.1, News, 7.10, See Brno, 7.40, Talk relayed from Kosice, 1.022 kc/s, 293 metres, 7.55, See Moravská-Ostrava, 10.0, News, Daily Review, and Sports Notes, 10.15, Orchestral Concert: Polka (Poncar); Selection from La Bohème (Puccini); Tango (Fort); Selection from The Belle of New York (Kerker); Tango (Hybler); March (Kovarik), 11.0 (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. (from Lausanne), Gymnastics, 12.28 p.m., Time Signal from Neuchâtel Observatory, 12.30 News, 12.40 (from Lausanne), Gramophone Music, 1.0 (from Lausanne), Financial Notes, 1.10 (from Lausanne), Gramophone Music, 2.0, Interval, 3.28, Time Signal from Neuchâtel Observatory, 3.30 (from Geneva), Dance Music by the Broadcasting Serenaders, 4.15 (from Geneva), Variety Programme, 4.40 (from Geneva), Dance Music by the Broadcasting Serenaders, 5.30, Interval, 7.0 (from Geneva), Talk for Mountain-Lovers, 7.30 (from Geneva), News, 7.50 (from Geneva), Tourist Report in Esperanto, 8.0 (from Geneva), Violin Recital by Jean Bagarotti, 8.20 (from Geneva), Talk: Lake Geneva, 8.40, Concert by the Radio Suisse Romande Orchestra, conducted by Ehenard, Soloist: Jean Bagarotti (Violin), 9.50, News, 10.0, Concert (contd.), 10.30 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW, 9.5 p.m., Musical Programme, 9.30, Weather Report, 9.40, Musical Programme and Announcements, 10.0, Chimes and News, 10.30, Reading, 11.0 Concert by the Radio Trio, followed by Icelandic Songs on Gramophone Records.

RIGA

572 kc/s, 525 metres; 15 kW.—6.0 p.m., Talk on Wireless, 6.30, Gramophone Music, 7.0, Weather Report, 7.3, Legal Talk, 7.30, Symphony Concert by the Station Orchestra, conducted by Georg Schmevoigt, relayed from Bulduri. In the intervals at 8.20 and 9.0, News and Weather, 9.30, News and Dance Music, 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 190, 680 kc/s, 441 metres; 50 kW. Relayd by Naples, 941 kc/s, 319 metres, and 290, 11,810 kc/s, 25.4 metres, from 5.15 p.m.—1.5 to 2.15 p.m., Orchestral Concert. In the interval at 1.30, Giornale Radio, and at 2.0, Time and Announcements, 4.30, Giornale Radio, 4.45, Children's Radio Review, 5.15, Weather Forecast, 5.17 to 6.0, Concert, Titi Rosati (Cello), Aramis Titta (Baritone), and Carmen Garcia Cornejo (Soprano); Cello Solos: (a) Adagio (Tartini), (b) Czardas (Fischer); Baritone Solos: (a) Visione veneziana (Broggi), (b) Aria from La Traviata (Verdi); Soprano Solos: Mexican, Peruvian and Cuban Songs; Cello Solos: (a) Romance (Napoleoni), (b) Ständchen (Grünfeld); Baritone Solos: (a) La ritrosa (Tirindelli), (b) Lollita (Buzzi-Peccia), 6.40 (Naples), Shipping and Sports Notes, 6.45, Tourist Report and Dopolavoro Announcements, 7.10, Agricultural Notes and Market Prices, 7.20, News in Foreign Languages, 7.40, Giornale Radio, 8.0, Time and Announcements, 8.15, Gramophone Music, 8.30, Giornale Radio and Sports Notes, 8.35 (approx.), Gramophone Concert, 9.15, Quarta pagina galeotta—Play in One Act (Filippo Argiro), 9.45 (approx.), Syncopated Pianoforte Solos by Germano Araldi and Baritone Solos by Guglielmo Castello, 10.5, Dance Music, relayed from the Giardino degli Aranci, 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relayd at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—12.45 a.m. (Friday), Stock Reports and Baseball Scores, 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 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.—6.15 a.m. (from Basle), Gymnastics, 6.35, Interval, 11.59, Time Signal from Neuchâtel Observatory, 12 Noon (from Basle), Swiss Marches on Gramophone Records, 12.30 p.m., Time Weather and News, 12.40 (from Basle), Swiss Folk Music on Gramophone Records, 1.25 (from Basle), Time Weather and Exchange, 1.45 (approx.), Interval, 5.0 (from Zürich), Concert by the Small Station Orchestra, conducted by Scherbaum, 6.0 (from Zürich), Gramophone Concert, 6.30 (from Basle), Talk: The Farnsburg, 7.0 (from Basle), Time, Weather and Announcements, 7.10 (from Basle), Verdi Concert on Gramophone Records, 7.45 (from Basle), Italian Lesson, 8.30 (from Basle), Old Songs to the Lute, 9.0, Weather and News, 9.15, Abel and the Mouth Organ—Radio Play, 10.25 (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.—5.5 p.m., Divine Service relayed from Sälme, 1,220 kc/s, 245.9 metres, 5.30, Talk: A Day in Hollywood, 5.50, Gramophone Music, 6.50, Nine Points of the English Law—Dialogue by C. S. Allwood and K. Laycock, relayed from Jonköping, 6.50 kc/s, 201.3 metres, 7.15, Weather and News, 7.30, Pianoforte Recital by Anita Harrison: Sonata in D (Haydn); Souvenir de Vienne (Cyril Scott); Cherry Ripe (Cyril Scott); Country Gardens (Percy Grainger); Shepherd's Hey (Percy Grainger); Ballad in G minor (Chopin), 8.0, Peterson and Bendel Comedy (Waldemar Hammenhög), 9.45, Weather and News, 10.0 (from Göteborg), Concert of Light Music by the Liseberg Orchestra, conducted by Karl Bornfors, Soloist: Karl Bornfors (Violin), Overture, Fudine (Lortzing); Waltz, Sphärenklänge (Jos. Strauss); Potpourri (Konczak); Violin Solos: (a) Intermezzo from William Rateliff (Mascagni), (b) Intermezzo, Presagi (Cerrri); Waltz Potpourri (Golwyn); Florentine March (Fueck), 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW, 11.50 a.m., Opérta Music on Gramophone Records, 12.45 p.m., News, 1.0, Time and Exchange, 1.5, Light Music on Gramophone Records, 2.0, Programme for Children, 3.0 to 3.30, Interval, 3.30, Orchestral Concert, relayed from the Casino, Vichy; Conductor, Broullac; Overture, Patrie (Bizet); Symphonic Poem, Sur la mer lointaine (Moran); Orchestral Suite, La Feria (Laemont); Melodies; Selection from Coppélia (Delibes); Selection from Tosca (Puccini); Waltz (Strauss), 5.5, French Elocution Lesson, 5.45, Gramophone Concert of Light Music, 6.0, Talk in German: Madame de Staël and Cosmopolitanism of Literature, 6.15, Talk for Women, 6.30, Song Recital by Marthe Hengel and Annette Brinout; Songs (Schubert): (a) Wolin, (b) Des Mädchens Klage, (c) Die junge Nonne; Lieder cycle, Faldrende Goshlin (Maldler); Chanson (Layvi (Bizet)); Vieille chanson (Bizet); La caravane; Duet, Invocation à la mer (Delmas); L'Heureuse (Chabrier); Les cigales (Chabrier); Dimanche de soleil (Casadesu); Le cheval noir; Duet, En allant à la fontaine (Delmas), 7.30, Time and News, 7.45, Gramophone Music, 8.0, Press Review in German, Lottery Results and Announcements, 8.30, Concert by the Echo du Floral Choral Society, relayed from Guelwiler; A la comorde (Massenet); Le vieux moulin (Delmas); L'Enigme (Ritz); Double Quartet: (a) Au dem Brünnele (Brodli), (b) Mutterliebe; Mutterglocke (Kirellhoff); Wanderrlied (Zoellner); Das ist der Tag des Herrn (Kreutzer); Waldlied (Bram); Double Quartet: Mädel, mach' kein bis Gesicht (Nagler); Beim Kronenwirt (Schilling). In the interval, Press Review and Talk, 9.45, Gramophone Concert, 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 40 kW. Relayd by Freiburg, 527 kc/s, 570 metres.—12 Noon, Gramophone Concert, 1.15 p.m., Time and News, 1.50, Concert from Langenberg, 2.0, Concert, arranged by the Post Office, 2.50, Spanish Lesson, 3.0, Elementary English Lesson, 3.30, Programme for Children, 4.30, Concert from Munich, 5.45 (from Freiburg), Talk: The Spiritual Emancipation of German Youth, 6.10, Talk: The Dopolavoro Organisation in Italy, 6.35, Time and News, 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben), 8.5, See Langenberg, 10.20, Time and News, 10.45, I Pagliacci—Opera (Leoncavallo) on Gramophone Records, 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.0 p.m., Local News, 6.5, Chansonnettes, 6.15, Instrumental Solos: Les Cloches (Debussy); Madrigal (Gaubert); Slav Dance (Dvorak); Polish Song (Liszt), 6.30, Popular Concert, 7.0, Sound Film Music, 7.15, News, Racing Results, and Market Prices, 7.30, Accordion Music, 7.45, Impressions d'Italie (Charpentier) by a Symphony Orchestra, 8.0, Popular Melodies, 8.15, Music by a Viennese Orchestra: Le plus joli rêve (Arcoz); Waltz, Tales from the Vienna Woods (Joh. Strauss); Moonlight on the Rhine (Vollstedt); Potpourri of Viennese Melodies (Kronberger); Wiener Zngvögel (Translatour), 8.45, Concert of Russian Music, 9.15, Orchestral Music: Coronation March (Krotschmer); Choral (César Franck); Selection from The Gipsy Princess (Kálmán); Tourjours on jamais (Waldteufel), 9.45, Opera Music: Song from The Cid (Massenet); Chorus from Faust (Gounod); Song from The Fair Maid of Perth (Bizet), 10.0, Military Music, 10.15, North African News and Local News, 10.30, Concert for Listeners in Morocco, 11.15, Chansonnettes, 11.30, Orchestral Concert: Vindobona (Leopold); Song from La Juive (Halévy);

Pilgrims' Chorus from Tannhäuser (Wagner); Melody (Cazes); Sound Film Music, 12 Midnight, News, Weather, and Announcements, 12.5 a.m. (Friday), Orchestral Concert, 12.15, Popular Melodies, 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. Relayd 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 to 6.5, Weather, 6.40, Giornale Radio, Dopolavoro Notes, and Gramophone Music, 7.0, Time, Tourist Talk, and Gramophone Music, 7.10, Market Prices, 7.20, News in Foreign Languages, 7.40, Gramophone Music, 8.0, News, 8.20, Talk on the following transmission, 8.30, Don Giovanni—Opera in Two Acts (Mozart), Talk in the interval. After the Opera, Giornale Radio.

VATICAN CITY

ITALY, 15,120 kc/s, 19.84 metres (Morning) and 5,969, kc/s, 53.26 metres (Evening); 10 kW.—11.0 to 1.15 p.m., Religious Information in French, 8.0, to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 100 kW. Relayd 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 Wiener Symphoniker, conducted by Josef Holzer. In the interval at 1.0 p.m., Time and News, 2.0, Interval, 3.0, Time and Announcements, 3.50, Talk, 3.30, Talk: Praise of Country Life in Ancient Literature, 3.55, Opera Music on Gramophone Records, 4.35, Programme for Children, 5.0, Talk: In the Temmen-Gebirge, 5.25, Soprano and Cello Recital, 5.5, Talk: Indian Village Life, 6.30, Talk: Old People and Old Places, 7.0, Beethoven Concert, The Wiener Symphoniker, conducted by Oswald Kabasta, Soloist: Georg Steiner (Violin), Violin Concerto in D, Op. 61; Symphony in F, No. 4 Op. 48—the Pastoral. In the interval at 7.40, Time and Announcements, 8.30, Reading, 9.0, News, 9.15, Gramophone Concert, 9.40 (approx.), Salzburg Festival Programme, Part Relay of Faust—Drama (Goethe) from the Festspielhaus (Weather permitting) or Concert by the Vienna Chamber Orchestra, conducted by Rudolf Pehn, 10.45, Gramophone Concert.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare, relayed from Turin, 12.5 p.m., Chamber Music and Light Music on Gramophone Records, 12.25, Polish Press Review, 12.33, Weather, 12.35, Gramophone Music (contd.), 1.0, Radio Journal, 1.5 to 2.55, Interval, 2.55, Gramophone Music, 3.5, News, 3.10, Talk on Trade, 3.15, Gramophone Music, 3.25, Economic Notes, 3.35, Gramophone Music, 3.45, Boy Scout's Report, 3.50, Gramophone Music, 4.0, Programme for Children, relayed from Lwow, 788 kc/s, 381 metres, 4.30, Song Recital by Karfowina, 5.0, Talk on Hobbies, 5.15, Light Music, relayed from the Café Gastronomica, 6.15, Talk: The Battle of Warsaw, 6.35, Pianoforte Recital by Jonašowina, Variations in F Minor (Haydn); Bagatelle (Beethoven); Etude in C Sharp Minor (Scriabin); Idyll (Medtner); Elégie (Rachmaninov); Waltz (Rachmaninov); Gavotte (Zarembsky); Polonaise (Zarembsky), 7.20, Miscellaneous Items, 7.35, Programme Announcements, 7.40, Talk: The Mania for Record-making, 8.0, Concert by the Symphony Orchestra, conducted by Oziminski, Soloist: Kaczmar (Bass), Overture, William Tell (Rossini); Two Spanish Dances (Moszkowsky); Waltz, Flirtation (Sterky); Slav Dance in A Flat (Dvorak); Bass Solos (Boito); (a) Prologue to Mephistopheles, (b) Ballad, (c) Ballad Mimet (Bolzon); Ballet Music from Lakmé (Delibes); Selection from Hansel and Gretel (Humperdinck); Mazurka in D (Chopin-Noskowski); Bass Arias from The Damnation of Faust (Berlioz); Mimet and Gavotte (Massenet); Spring Song (Mouziusko-Cielewicz); Mazurka (Narynowsky), 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.—7.20 p.m., The Letter Box, 7.40, See Warsaw. In an interval at 9.0, Topical Talk, 11.0 (approx.), Close Down.

ZAGREB

307 metres; 0.5 kW.—12.20 p.m., Cookery Notes, 12.30, Gramophone Concert of Russian Folk Songs, 1.0, Programme Announcements, 1.2, Gramophone Concert of Opera Overtures, 1.30, News Bulletin, 8.10, Miscellaneous Announcements, 8.30, Concert, relayed from Belgrade (430.4 metres), 10.30, News, Weather and Programme Announcements, 10.40, Orchestral Concert, 11.30, 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 2.30 p.m., Time Signal, Weather Report, Stock Exchange Quotations and Gramophone Music. 6.0, Programme for Children. 6.45, News. 7.0, Gardening Talk by G. O. Sherrard. 7.15, Literary and Dramatic Talk by Auld de Blacam. 7.30, Time Signal. 7.31, The Station Octet. 7.50, Contralto Solos by Joan Burke. 8.5, Pianoforte Recital by Karl Leuzen. 8.25, The Poucher Sketch, by Mary Sheridan and Company. 9.5, The Station Octet (contd.). 9.25, Soprano Solos by Violet Pearson. 9.45, Sponsored Programme. 10.45, News, Weather Report, 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 from the Cathedral, Weather, Messages to Seamen, Exchange and Market Prices. 10.10, Concert by the Station Orchestra: March (Lowenthal); Waltz, Lune de miel (Waldteufel). 10.15, Orchestral Concert. 11.0, Vidin and Pianoforte Recital. 11.30, Dance Music, relayed from the Casa Llibre. In the interval at 12.0 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 Dopelavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), Concert of Opera Music, Soloists: Fiore (Bass) and De Santis Bruno (Soprano). Prelude and Sicilienne from Cavalleria rusticana (Mascagni); Bass Aria from L'Elisi d'amore (Donizetti); Soprano Aria from Doni Flora (Van Westerhout); Selection from Tosca (Puccini); Bass Aria from The Barber of Seville (Rossini); Soprano Aria from Rigoletto (Verdi); Prelude to Act I of Dejanire (Catalani); Bass Aria from Don Pasquale (Donizetti); Soprano Aria from La Traviata (Verdi); Selection from Act II of Fedora (Giordano); Bass Aria from The Secret Marriage (Cimarosa); Soprano Aria from Faust (Gounod); Selection from I Compagnacci (Riccioli). In the interval, Art Notes. 10.30, Dance Music relayed from the Gran Caffè del Levante. 10.50, News in Albanian. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BERLIN

DEUTSCHLANDSENDER (Reichssender). 183.5 kc/s, 1,635 metres; 60 kW. 1.45 p.m., News. 2.0, Concert of Light Music. 2.30, Chamber Music. 3.0, Talk for Girls; Engenies and Heredity. 3.30, Weather and Exchange. 3.45, Reading (K. B. von Medchow). 4.0, Orchestral Concert relayed from the Radio Station Garden. In an interval, Talk: The Deutschlandsender at the Radio Exhibition. 6.0, A Poem. 6.5, Recital of Italian Folk Songs with Mandoline and Guitar Accompaniment. 6.30 Talk: The Nordic Male a born Hunter. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, To-day's Motto. 8.5 (approx.), Orchestral Concert for the Opening of the Radio Exhibition; Conductor: Hans Pfitzner; Soloists: Rosalind von Schirach (Soprano), and R. Beckmann (Baritone); Overture, Don Giovanni (Mozart); Soprano Aria from Fidelio (Beethoven); Fifth Symphony (Beethoven); Symphonic Piece from Herz (Pfitzner); Duet from The Flying Dutchman (Wagner); Wotan's Farewell and Fire Music from The Twilight of the Gods (Wagner). 10.0, Weather and News. 10.45, Weather Report for Shipping. 1.0, Concert from Frankfurt. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW. 4.0 p.m., Concert by the Berlin Kampfbund Orchestra, relayed from the Funkgarten; Conductor, Ewald Huth; Overture, Rienzi (Wagner); Selection from Tieland (d'Albert); Waltz, Die Werber (Lanner); Intermezzo from The Arabian Nights (Joh. Strauss); Ballet Music from La Gioconda (Ponchielli); Selection from The Gipsy Baron (Joh. Strauss); Suite from Coppelia (Delibes); Waltz, Transaktionen (Jos. Strauss). In an interval at 4.50, Talk: The Westphalian Aviation Landing Station. 6.0, Political Review. 6.15, Radio Report on Gramophone Records: The History of a Pomeranian Fortification—the Excavations of Eleven Fortresses at Zantoch. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.5, See Berlin Deutschlandsender (Reichssender). 10.0, Weather and News. 10.5 (approx.), Dance Music by the Georg Gruber Band, relayed from the Zoological Gardens. In an interval at 11.0, Talk: What they are saying in Berlin. 12 Midnight (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER. — See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

FRIDAY

AUGUST THE EIGHTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL LONDON

Variety Programme, relayed from Olympia. Promenade concert from Queen's Hall.

REGIONAL MIDLAND

"What's in the Wind?" by R. Clements.

REGIONAL NORTH

Marches and Waltzes, Orchestral programme.

REGIONAL BELFAST

Instrumental concert.

ABROAD

BARI

8.25 p.m. Concert of opera music.

BERLIN

(Deutschlandsender)

8.5 p.m. Orchestral concert for the opening of the Radio Exhibition.

COPENHAGEN

10.20 p.m. Recital of Old Chamber Music.

HEILSBURG

8.10 p.m. Max von Schilling's memorial concert, by the Königsberg Opera House Orchestra.

LEIPZIG

6.0 p.m. The Leipzig Symphony Orchestra.

MOSCOW

6.30 p.m. Tchaikowsky, Chausson, Debussy and Ravel concert, from the Recreation Park.

POSTE

PARISIEN

8.55 p.m. Dvorak concert by the Station Orchestra, conducted by Anton Bednar.

PRAGUE

7.30 p.m. Beethoven concert by the Station Orchestra, from Bulduri.

RIGA

10.25 p.m. Violin recital, by Edith von Voigtländer.

STUTTGART

7.15 p.m. Salzburg Festival programme. Opera:

VIENNA

"Cosi fan tutte," by Mozart.

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. 6.30, News. 6.45, Film Review. 7.15, Salzburg Festival Programme (See Vienna). 10.0 (approx.), Orchestral Concert and Gramophone Records. After the Programme, Amusement Guide and Time Signal.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.40 p.m., Gramophone Music. 6.55, Talk for Housewives. 7.0, See Prague. 7.55, 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., Weather. 1.2, Gramophone Concert. 1.30, Time and News. 1.45, Orchestral Concert. 2.30, Gramophone Concert. 3.0, Agricultural Prices. 3.20, Talk for Young People; Hermann Löns. 3.45, Talk: Luther's Teachings regarding Authority. 4.0, Quintet in C, Op. 163 (Schubert). 4.45, Reading (Alajunice-Langer). 5.10, Agricultural Prices. 5.15, Song Recital by Erika Hoffmann (Soprano) and Alfred Grüger (Tenor); Songs (Schubert): (a) Feierabend, (b) Die hübsche Fäpie, (c) Der Atlas; Gipsy Songs (Dvorak); Songs (Schubert): (a) Aufenthalt, (b) Gaiymed, (c) Rastlose Liebe; Songs (Brahms): (a) Vergabliches Ständchen, (b) Der Jäger, (c) Mädchenlied, (d) Meine Liebe ist grün. 6.0, Programme to be announced. 6.20, Talk: Let us have German National Drama. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, Concert of German Folk Songs (arr. With), by the Station Choir and Soloists. 9.0, News. 9.10, Silesian Castles Literary Programme (Werner Droth and Alfons Kadka). 10.10, News. 10.30, Talk: The Centenary of Karl Schall's Death. 10.50, Dance Music, relayed from the Hans Metropol, Hindenburg. 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.5 p.m., Gramophone Music. 6.15, Talk for Workers. 6.25, German Transmission: Sports Notes, Topical Talk and Talk on Hunting. 7.0, See Prague. 7.55, Concert by a Russian Church Choir. 8.25, See Prague. 10.15 (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, A

Life for the Czar (Glinka); Ochsennuett (Haydn); Venetian Gondolas (Leumann); Daniscaut et demoiselle (Dancan); Violin Solo: Slav Fantasia (Kreisler); Waltz (Burke); The Student passes by (Baneux); Selection from Rose Marie (Friml). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert. 5.0, Concert by the Radio Orchestra, conducted by Charles Walpot: Marche des diables bleus (Meerhout); Waltz (Kobzelt); Overture, Cigale et Magali (Casadesu); Marche ténébre d'un hamelet (Dubois); selection from A Waltz Dream (O. Straus); Suite saharienne (Ackermans); Overture, William Tell (Rossini). 6.0, Talk: Democracy seeks a Safeguard in Liberalism. 6.15, Military Music on Gramophone Records. 6.50, Concert by the Small Station Orchestra, conducted by P. Leemans: Cortège Louis XIII (Fancher); Two Old Dances (Razigade); Ballet Music from Bacchus (Massenet); Syncope (Kreisler). 7.15, Talk on Arthritis. 7.30, Legal Talk and Literary Review. 8.0, Concert by the Station Symphony Orchestra, conducted by J. Kumps: Soloist: Mme. Froidebise-Holste (Songs); Extracts from Sylvia (Delibes); Songs: (a) Air (Février), (b) Song (Lohar), (c) Aria from Cavalleria rusticana (Mascagni); Old Dance Suite (Kasse); Ballet Music from Carmen (Bizet). 8.45, Talk. 9.0, Concert, relayed from the Kursaal, Ostend. After the Concert, Le Journal Parlé, followed by Dance Music by Robert de Kers and his Cabaret Kings and a Tango Band, relayed from the Kursaal, Ostend. 11.0, La Brabançonne.

BRUSSELS (No. 2)

I.N.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish. 12 Noon, Concert of Gramophone Music. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans: Two Step, El Barro (Sentis); Waltz, Acclamations (Waldteufel); La mia serenata (Stafelli); Selection from Tosca (Puccini); Hind Song from Sudko (Rimsky-Korsakov); Capricieuse (Van Doren); Selection from Monsieur Beaucaire (Messager). 3.0, Concert of Classical Music, relayed from the Kursaal, Ostend. 5.0, Concert by the Station Symphony Orchestra, conducted by Kumps: Overture, Oberon (Weber); Nocturne and Scherzo from A Midsummer Night's Dream (Mendelssohn); Rhapsody on Two Old Flemish Songs (De Boeck); Habanera (Maes); Waltz (Maes); Cortège (Roels); Ballet Suite from Henry VIII (Saint-Saëns). 6.0, Gramophone Music. 6.15, Recitation. 6.30, Selection from Don Pasquale—Opera (Donizetti), on Gramophone Records. 7.15, Recitation. 7.30, Wireless Notes. 8.0, Concert by the Station Orchestra, conducted by Walpot. Soloists: MM. Breders and Gras (Pianoforte) March (Walpot); Waltz from The Dollar Princess (Fall); Overture, Martha (Flotow); In a Persian

Market (Kotelbey); Selection from No. No. Nanette (Yonmans), arranged for Two Pianofortes; Potpourri (Morena). 8.45, Recitations. 9.0, Orchestral Concert, conducted by Caudel, relayed from the Casino, Knoeke; Soloist: Georges Journeay (Baritone); Cortège héroïque (Avals); Ballad (Pelemans); Wotan's Farewell, from The Valkyrie (Wagner); Paraphrase on Boris Godunov (Mussorgsky-Weying); Aria from Prince Igor (Borodin); Caucasian Sketches (Apolito-Vanoy). After the Concert, Le Journal Parlé, followed by Dance Music by Mickey's Club Band, relayed from the Casino, Knoeke.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert of Military Music. In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Educational Talk. 7.40, Manon—Opera in Three Acts (Massenet) on Gramophone Records. In the intervals, Radio Journal. After the Opera, Concert, relayed from the Lido.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.20 p.m. (till Close Down)—6.0 p.m., Talk. 6.30, Concert. 7.5, Review of Foreign Politics. 7.20, Talk with Gramophone Illustrations. 8.40, Military Band Concert: March (Friesay); Selection from Romeo and Juliet (Gounod); Waltz, Wiener Bürger (Ziehrer); Opera Selection (Schneider); Abschied vom Meer (Braun); Hungarian Potpourri (Friesay); March (Opach). 10.10, Weather. 10.15 (approx.), Concert by the Sandor Bura Cigany Band, relayed from the Hotel Ritz. 11.0, Talk: The Feast of St. Stephen.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time Signal, Chimes from the Town Hall and Weather. 12.2 p.m., Music by the Harald Andersen String Ensemble from the Bellevue Strandhotel. 2.0, Interval. 3.0, Concert by the Radio Orchestra, conducted by Lanny Gröndahl: Soloist: Xenius Grige (Songs); Florentine March (Fueik); Suite for Strings in A Minor, No. 1 (Nielsen); Selection from Tieland (d'Albert); March (den Store); Song: (a) Mattinata (Leoncavallo), (b) Song (Sjöberg), (c) Rudolfo's Aria from La Bohème (Puccini), (d) Serenade from Once upon a Time (Lange-Müller), (e) Song (Hartelius), (f) Song; Fantasia on Jutland Folk Melodies (Grainger); Waltz, Münchener Kindl (Kozzak); Classic Minuet for Strings (Ris-Magnussen); First Movement from the Military Symphony (Haydn); Scherzo No. 2 (Schubert); Persian March (Joh. Strauss). 5.0, Reading. 5.35, Exchange and Fish Market Prices. 5.50, Talk on Danish Literature. 6.20, German Lesson. 6.50, Weather. 7.0, News. 7.15, Time. 7.20, Talk: The Radio Exhibition. 7.50, Reading. 8.0, Chimes from the Town Hall. 8.1, Vandeville Comedy in Three Acts (Hosstrup). 10.0, News. 10.20, Recital of Old Chamber Music: Leo Hanson (Violin), Erik Thomsen (Flute), Rudolf Dietzmann (Cello) and Polmer Jensen (Pianoforte and Harpsichord); Glee Music in E Minor for Violin, Flute, Cello and Harpsichord (Telmann); Trio Sonata in A Minor for Violin, Cello and Harpsichord (Buxtehude). 11.0, Dance Music from the Ludberg Restaurant. In the interval at 12 Midnight, 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.—6.20 p.m., Miscellaneous Items and News. 6.35, Programme Announcements. 6.40, See Warsaw. 7.15, Salzburg Festival Programme (See Vienna). In an interval at 8.30, News. 10.5, See Warsaw. 11.0 (approx.), Close Down.

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. 4.30, Programme for Children. 5.0, Concert for Southampton and Winchester Listeners. Organ Solos: (a) Signature Tune, Bells of Normandy. (b) Ca' Cost Madrid (O'Henry). (c) Butterflies in the Rain (Myers); Song: (a) For Good or for Bad (Pearson), (b) Brother, can you spare a Dime? (Harburg); Organ Solos: (a) There's Something about a Soldier (Gay), (b) Paradise (Brown); Song: It's Winter again (Hoffman); Organ Solo, The Wooden Soldier and the China Doll. 5.30, Orchestral Concert for Bournemouth and Weymouth Listeners: Selection from The Flower of Hawaii (Abraham); Stone-cracker John (Coates); Souvenir de Capri (Berce); Whistling Solo, Stars and Stripes (Berce); Selection of Stephen Foster Melodies; Signature Tune. 6.0, Programme in

AUGUST 18th

FRIDAY

continued

French. 10.0 (approx.) till Close Down, Programme in English by the I.P.C. 10.0, Dance Music, Signature Tune, Bells of Normandy; Speak to me of Love; Won't you stay to Tea?; Granny's Photo Album; No more Love; You're getting to be a habit with me; Somebody loves you; Dreaming; Night after Night; When my Little Pomeranian; Memories of You; Maybe I love you too much; Just an Echo in the Valley; Somebody stole my Girl; The Village Band; A Boy and a Girl were dancing; The Wise Old Owl said Hoo; Signature Tune. 11.0, Club Concert for Lowestoft Listeners; Signature Tune; The Chum Song; Pianoforte Solo, Keyboard Kapers (Steele); Songs: (a) Peg Leg Jack (Robinson), (b) I wish I knew a bigger word than Love (Pola); Pianoforte Solo, A Shower of Notes (Steele); Selection from La Source (Delibes); Song: Have you ever been Lonely? (Brown); Pianoforte Solos: (a) Jack o' Clubs (Steele), (b) Where are you?; Trios: (a) Pearl of Mine (Fletcher), (b) Friend o' Mine (Sanderson), (c) La Serenata (Barga-Ritter); Cello Solo, Baroque (Squire); Trios: (a) Even-song (Basthobe-Martin), (b) Cavatina (Raff); Cello Solo, Salut d'Amour (Edgar); Trios: (a) Pizzicato from Sylvia (Delibes), (b) Love's Old Sweet Song (Molloy); Signature Tune. 12.5 a.m. (Saturday), News Bulletin in English. 12.10 (approx.), Tango Band: Espani Cani; Flora Castellana; Adios Muchachos; Media Luz; Luz de Granda. 12.30, Dance Music, Signature Tune, Bells of Normandy; You're beautiful to-night, my Dear; Let's all dance the Polka; Marching along together (Pola); Fit as a Fiddle; My Romance; Just a little Home for the Old Folks; I'm forgetting myself; My Heart's to let; Sing a New Song; Signature Tune. 1.0, Concert of Gramophone Records, 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 my Way (Lang-Kress); Sleepy Time down South; Harlem Holiday (Koehler); In a Clock Store. 1.30, Dance Music, Signature Tune, Bells of Normandy; I sigh for you, Rio Rita (Santuzini); You're beautiful to-night, my dear (Young); Chansonette (Friml); I've told every little Star (Kern); We belong together (Kern); The Song is you (Kern); Waltzing in a Dream (Young); Signature Tune. 1.57, I.B.C. Good-night Melody. 2.0, 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.—6.0 p.m., Medical Talk. 6.25, Topical Programme. 6.45, Today's News. 6.50, Time and Announcements. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, See Breslau. 9.5, See Langenberg. 10.0, Variety Item. 10.15, Time and News. 10.45, Instrumental Concert. Fritz Wörsehing (Guitar). Dr. Paul von Szent-Györgyi (Violin), and Dr. Reinhold Merten (Pianoforte). Guitar Solos: (a) Minnet (de Visce), (b) Der Fuggerin Dank (Neswider), (c) Minnet (Rameau), (d) Gigue (Reusner); Violin and Pianoforte Duets; Guitar Solos (Bach): (a) Musette, (b) Bourrée, (c) Sarabande; Violin and Pianoforte Duets; Guitar Solos: (a) Prelude (Tartega), (b) Etude (Sohr), (c) Capriccio (Mozzani); Violin and Pianoforte Duets.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBERG.—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, 520 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.10 p.m., Ernst Wichert reads from his own works. 6.40, Frankfurt Exchange and Hamburg Egg Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, Concert by the Hamburg Philharmonic Orchestra, conducted by Juse Eibenschütz; Symphonie Suite, Op. 22 (Elphensberg); Summer Idyll (Rouss). 9.15, Announcements. 9.25, Concert of German Folk Dances by the Station Chamber Choir and Orchestra, conducted by Gerhard Maass, with Bernhard Takselat (Director). 10.25, Time and News. 10.45, Concert from Stuttgart.

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.,

Orchestral Concert, conducted by Karl Becker; Vinaria-Marsch (Buchwald); Overture, Die Kunst geliebt zu werden (Gumbert); Waltz, Nachtschwärmer (Ziehrer). Trumpet Solo: Aria from Stabat Mater (Rossini). Gramophone Records: Selection from Faust (Gounod); Orientalischer Zug (Blon); Selection from Gasparone (Müllöcker); Spanish Dances (Moszkowsky); Patriotic Festival March (Doering). 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 and Exchange. 3.30, Programme for Children. 4.0, Talk: Johannes Brahms in the Eyes of Women. 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilken; Overture, King Stephen (Beethoven); Symphony (Haydn); Largo and Campanella (Handel); Andante from the Octet Op. 166 (Schubert); Selection from The Miracle (Humperdinck). Cello Solo: Serenade No. 3 in D minor (Volkmann). Overture, Albin (Flotow). In the interval at 5.0 (approx.), Talk: Suggestions for Excursions. 6.0, Talk: The East German Fair. 6.15, Agricultural Prices. 6.20, Talk: The Art of Pianoforte Playing. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, News. 8.10, Max von Schilling's Memorial Concert by the Königsberg Opera House Orchestra. 9.25, Der trümmende Schäfer—a Pastoral Play (Mohlheim), relayed from the Schlossgarten, Oliva. 10.0, 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.). 11.55 a.m., Gramophone Music. 12.10 p.m., Concert by the van der Horst Ensemble: Overture, Nebeladmezzar (Verdi); Whirlwind (Mattei); Selection from Mignon (Thomas); Albumblatt (Wagner); Gramophone Music; selection from Die Faschingsfee (Kálmán); Waltz, Gold and Silver (Lehár); Für meine Freunde (Komzak); Overture, Die schöne Galathee (Suppé) 1.40 to 2.10, Interval. 2.10, Bible Reading. 2.40, Gramophone Music. 3.10, Song Recital. 4.10, Talk on Photography. 4.40, Gramophone Music. 4.55, Concert by the Columbia Trio: Selection from Tamblhäuser (Wagner); Serenade (Haydn); Minuet (Bocherini); Selection from Orpheus in the Underworld (Offenbach); Si vous l'avez compris (Denza); Ernst August March (Blankenburg); Gramophone Music; March (Rosey); Was Blumen träumen (Translatour); Souvenir (Drlla); French Comedy Overture (Keler-Bela); Baby Laughs (Hunt); Estudiantina (Waldteufel); Husaren Attacke (Oscheit). 6.10, Talk on Horticulture. 6.40, Police News. 6.55, Religious Report. 7.10, Literary Talk. 7.40, Military Band Concert, conducted by Walther Boer; Military March (von Leeuwen); Overture, Zampa (Herold); Tales from the Vienna Woods (Joh. Strauss); Ballet égyptien (Luigini-Laurendeau); Zealandia (Koberg-Boer); Overture, William Tell (Rossini-Dunkler); Hungarian Rhapsody No. 2 (Liszt-Dunkler); Selection from Faust (Gounod-Dunkler). In an interval at 8.40, Talk. 10.0, 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.—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, with Gramophone Interludes. 1.55, Gramophone Music. 2.10, Talk: Modern Architecture in Holland. 2.40, Gramophone Music. 3.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 3.40, Organ Recital by Jan Vogel. 4.10, Programme for Children. 4.40, Concert by the Notenkrakers, conducted by D. Wits; Im Zigeuner Lager (Oscheit); Mein Lebenslauf ist Lieb und Lust (Jos. Strauss); Je veux parler à mon amour (Tosti); Chanson toscane (Popy); Liebesgständnis (Kockert); March, Picador (Oscheit). Gramophone Music: Strauss Potpourri (Weber); Melody (Codini); Czardas (Lebert); Air (Codini); Les gamins de Paris (Berger). 5.40, Concert by the Little V.A.R.A. Orchestra, conducted by Hugo de Groot; Waltz (Lehár); Scene (Codini); Mazurka (Heuberger); Rosy Dreams (Wesly); Moment musical (Schubert); Norwegian Dance (Grieg); Melody (Kalkman); Waltz, Très jolie (Waldteufel). 6.20, Talk. 6.40, Concert by De Pliedruiters, conducted by Ray Forest. 7.40, Religious Address arranged by the Liberal Protestant Radio Society (V.P.R.O.). 8.10, A.V.R.O. Programme. Concert by the Hague Orchestra, conducted by Carl Schuricht, relayed from the Kurhaus, Scheveningen. In the interval at 8.40, Talk arranged by the V.P.R.O. 9.40, Religious News by the V.P.R.O. 9.45, V.A.R.A. Programme, News. 9.55, Gramophone Music arranged by the V.P.R.O. 10.40,

Gramophone Music arranged by the V.A.R.A. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 1.15, Radio Concert. 8.0, Amusement Guide and News. 8.10, Esperanto Lesson. 8.30, Press Review. 8.40, News and Weather Report. 9.0, Concert conducted by Trollies relayed from Grasse.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—6.20 p.m., Announcements and Gramophone Music. 6.30, Sports Notes. 7.15, Salzburg Festival Programme (See Vienna). 10.5, See Warsaw. 11.0, The Letter Box in French.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

LAHTI

167 kc/s, 1,796 metres; 40 kW. Relayed by Helsinki, 815 kc/s, 368.1 metres Programme in Swedish.—6.15 p.m., Programme for Children. 6.40, Talk. 7.0, Song Recital. 7.25, Dramatic Programme. 7.50 (from Helsinki), Hungarian Music by the Otto Krug Orchestra. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12.30 p.m., Dance Music by the Small Station Orchestra, conducted by Eysoldt. In the interval at 12.50, News. 1.10, Concert by the Philharmonic Orchestra, conducted by Richard Keitel, relayed from Gladbach. March, Deutschland allzeit (Sartorio); Overture, Der Wildschütz (Lortzing); Bach and Händel Potpourri (Zimmer); Hungarian Dances Nos. 5 and 6 (Brahms); Festival Overture (Hartung); Concertino for Trombone (Sachse); Zigeunerfest (Heykens); Dance of the Waves (Catalani); Overture (Lincke); Intermezzo (Lindemann); Schatzwalzer (Strauss); Moorish Intermezzo, Zairah (Wohler); Deutscher Rundfunk-Marsch (Kreutzer); March, Tausendkünstler (Blankenburg). In the interval at 2.0, News. 2.30, Interval. 3.0, Talk. 3.30, Market Prices. 3.50, Programme for Young People. 4.20, A German Catechism—Mahoning (Otto Brües) and Bekenntnis (Werner Beumelburg). 4.45, Reading (Karl Nils Nicolaus). 5.0, Variations and Double Fugue on a Theme, Op. 26, for Two Pianofortes (van den Berg). 5.30, Talk: The Blacksmith of Rome. 6.0, Opera Music on Gramophone Records. 6.45, Political Address. 6.50, Announcements. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, News. 8.5, Programme from Breslau. 9.5, Programme of the Works of Young West German Writers and Composers. 10.5, News. 10.45, Concert from Stuttgart. 11.30 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—1.0 p.m., News. 1.15, Concert by the Leipzig String Quartet. 2.15, News. 2.25, Art Review. 2.45, Talk: Excursions in Vogtland. 3.0, Poetry Reading. 3.15, Talk for the Country Woman. 3.35, Market Prices. 4.0, Concert by the Station Orchestra, conducted by Blumer; Overture, Turandot (Lachner); Little Suite (de Michel); Friedmann Bach Potpourri (Graener); Waltz, Wiener Weisen (Strauss); Catalin Rhapsody (Allouart); Two Abbatian Peasant Dances (Merklings). 5.0, Book Review. 5.20, Reading (Wilhelm Schäfer). 5.50, News, Weather, and Time. 6.0, Concert by the Leipzig Symphony Orchestra, conducted by Blumer; Overture, Oberon (Weber); German Dances (Schubert); Orchestral Suite (Blumer); Entr'acte and Waltz Scene from Intermezzo (R. Strauss); Comedy Overture (Fiedler); Hungarian Rhapsody No. 6 (Liszt); Military March (Kaupp). 7.0, Transmission for all German Stations; Der Heimkehrer—Play (Grieso). 8.0, Recital of Songs to the Guitar by Sepp Summer. 8.45, Der Nachtwächter—Radio Play (Schick). 9.5, Agricultural Notes. 9.15, Nazi Songs and Marches on Gramophone Records. 10.15, News. 10.30 (approx.), Dance Music by the Hans Steinbach Band, relayed from Chemnitz. 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—7.0 p.m., Gramophone Music. 7.30, Talk on Zoology. 8.0, Nature Talk. 8.30, Programme from Belgrade, 697 kc/s, 430.4 metres. After the Programme, Weather and News. 10.30,

Gramophone Music. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—Dutch Programme. 7.30 p.m., Second Symphony (Beethoven) on Gramophone Records. 8.0, Weather Report. 8.5, Concert of Songs and Chamber Music. In an interval at 8.20, Prelude in G Minor (Bach) by Anny Hemmer. 8.40, Duet for Viola and Cello (Beethoven) by Anny Hemmer and Léon Van Eckhout. 8.50, News in French. 9.0, Orchestral Concert, relayed from Mondorf-les-Bains. In an interval at 9.45, News in German. 10.25, Dance Music. II

LWOW

788 kc/s, 381 metres; 16 kW.—6.20 p.m., Miscellaneous Items. 6.40, See Warsaw. 7.15, Salzburg Festival Programme (See Vienna). In the intervals, Radio Journal and Hints for the Week-end, relayed from Warsaw, and News. 10.5, See Warsaw. 10.40, Gramophone Music. 11.0 (approx.), Close Down.

LYONS

LA DOUA (PTT), 644 kc/s, 465.8 metres; 1.5 kW.—6.15 p.m., Radio Journal. 7.0, Salzburg Festival Programme. Così fan tutti—Opera in Four Acts (Mozart), relayed from Salzburg. After the Opera, News.

MADRID

EAJ7; 707 kc/s, 424.3 metres; 2 kW.—9.0 p.m., Chimes, Exchange, Radio Journal, and Request Gramophone Records. 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time, and Political Review. 11.20 (approx.), Symphony Music on Gramophone Records; Overture, Amoreon (Cherubini); Le Ronet d'Omphale (Saint-Saëns); Military March (Schubert); Violin Concerto (Brahms); Fantastic Dances (Turina); Overture, Tannhäuser (Wagner). 1.15 a.m. (Saturday), News and Programme Announcements for Listeners Abroad. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453 metres; 4 kW.—8.15 p.m. till Close Down. See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by Pichla. 3.55 to 4.0, See Prague. 5.45, Gramophone Music. 5.55, Talk on Film Production. 6.5, Talk for Tourists. 6.15 till Close Down, See Prague. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 140 kW.—2.15 p.m., Talk in Defence of the Soviet. 3.0, Concert. 4.0, Talk. 4.30, A Dialogue. 5.30, Pushkin Programme for Young People. 6.30, Concert of Music by Tchaikovsky, Chausson, Debussy and Ravel, relayed from the Recreation Park. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes. 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, 569 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m. (from Nürnberg), Concert by the Franconian Chamber Orchestra, conducted by Markus Rümmlin. 5.45, Talk on Discipline for the Younger Generation. 6.25, Talk: Goethe and the German Revolution. 6.45, Time and News. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, Concert by the Massed Nazi Band of Munich, conducted by Loritz. 9.0 (from Nürnberg), Talk: Preparations for the Nazi Party Day. 9.10, Topical Talk. 9.20, Concert by the Station Orchestra and Choir. Conductor: Karl List. Soloists: Hella Welter-Wolf (Soprano), Maria Walter (Soprano), and Hans Skriwanek (Tenor). 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., Pianoforte and Song Recital. 6.0, Report on the Motor Cycle Races at Bjerkobanen. 7.0, Announcements and News. 7.30, Quartet Concert. 8.0, Time Signal. 8.1, Recitations. 8.30, Popular Concert. 9.30, Agricultural Talk. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Violin Concerto (Tchaikovsky) on Gramophone Records. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Doplavoro Notes, Tourist Talk, Agricultural Report, Report of the Royal Geographical Society and Giornale Radio, 8.20, Gramophone Music. In an interval at 8.30, Time Signal and Announcements, 8.45, Mephistopheles—Opera in Three Acts (Boito), on Gramophone Records. In the intervals, Talk and Announcements, 10.55, News.

PARIS

EIFFEL TOWER, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 1.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Dramatic Programme, 7.0, Le Journal Parlé, 8.30, Salzburg Festival Programme (See Vienna), 10.5 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW. 7.0 p.m., Gramophone Music, 7.5, Le Journal Parlé, 7.30, Popular Concert, 8.0, Agricultural Talk, 8.5, Gramophone Music, 8.30, Concert by the Station Symphony Orchestra. Soloist: Resnik (Bass). String Quartet (Borodin); Bass Aria from Prince Igor (Borodin); Cello and Piano-forte; Melody and Spanish Serenade (Glazunov); Viola and Piano-forte; Elégie (Glazunov); Bass Aria from Prince Igor (Borodin); Quintet for Piano-forte, Flute, Clarinet, Horn and Bassoon (Rimsky-Korsakov), 10.15, News.

PARIS

RADIO PARIS (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 News, 12.30 p.m., Gramophone Concert. Selection from Tosca (Puccini); Serenade (Gounod) (Wahlström); Lullaby (Curtis); Ballet Music from Sylvia (Delibes); Jota (Lafarra); Selection from The Queen of Spades (Tchaikovsky); Scene from Lucia di Lammermoor (Donizetti); Siegfried Idyll (Wagner); Menuet antique (Ravel); Old Song, Gris-elidi; March from The Prophet (Meyerbeer); Ballet Music from Faust (Gounod). In the intervals at 1.0, Exchange, News and Weather and at 1.30, Exchange, 2.0, Exchange and Announcements, 3.45, Exchange and Market Prices, 7.0, Market Prices, Weather, Agricultural Notes, Exchange and Racing Results, 7.5, Social Assurance Societies' Report, 7.15, Salzburg Festival Programme (See Vienna). In the intervals, News, Weather, Review by Pierre Seize, 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, KDKA Home Forum, 8.0 to 9.30, New York Relay, 8.0, Betty and Bob, 8.15, Words and Music, 8.45, Pat Kennedy, 9.0, Gene Quaw Orchestra, 9.30, News and Markets, 9.45, Arcadians, from New York, 10.0, Programme to be announced, 10.15, Farzan of the Apes, 10.30, Larry Larson, from New York, 10.45, Orphan Annie, from New York, 11.0, News, 11.15, Sports—A Song, 11.30, Pittsburgh Spotlights, 11.45 to 1.0 a.m. (Saturday), New York Relay, 11.45, Lowell Thomas, 12 Midnight, Amos 'n' Andy, 12.15, Roundgirls, 12.30, Pastoral, 1.0, Jack Pettis' Orchestra, 1.15, Silver Toppers, 1.30 to 3.45, New York Relay, 1.30, Potash and Perlmutter, 1.45, Kane and Kamer, 2.0, Let's Listen to Harris, 2.30, Variety Programme, 3.0, First Nighter.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW. 6.20 p.m., Miscellaneous Items and News, 6.35, Theatre Notes and Programme Announcements, 6.40, See Warsaw, 7.15, Salzburg Festival Programme (See Vienna). In an interval at 8.30, See Warsaw, 10.5, Time Signal, Sports and Police Notes, 10.15, Dance Music on Gramophone Records, 11.0 (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, 5.45, Gramophone Music, 5.55, Talk on Christian Culture, 6.5, Agricultural Report, 6.15, Gramophone Music, 6.25, News in German, 6.30, German Transmission: Talk on Broadcasting, 7.0, Time Signal, 7.1, News, 7.10, Trio Concert, 7.40, Talk, 7.55, Talk, 8.25, Rancho H4H—a Radio Play (J. V. Smejkal), 8.55, Dvorak Concert by the Station Orchestra, conducted by Anton Bednar. Overture, Amid Nature; Slav Dances Nos. 9-16, 10.0, Time, News, Daily Review and Sports Notes, 10.15 (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. (from Lausanne), Gymnastics, 12.28 p.m., Time Signal from Neuchâtel Observatory, 12.30, News, 12.40 (from

AUGUST 18th

FRIDAY

continued

Lausanne), Concert by the Radio-Lausanne Orchestra, conducted by Moser, 1.0 (from Lausanne), Financial Notes, 1.10 (from Lausanne), Concert (contd.), 2.0, Interval, 3.28, Time Signal from Neuchâtel Observatory, 3.30 (from Geneva), Gramophone Concert, 4.30 (from Geneva), Programme for Women, 5.30, Interval, 7.0 (from Lausanne), La Neuveville-Berne Municipal Festival Programme, 7.30 (from Lausanne), News, 7.35 (from Lausanne), Talk on the Exhibition of Paintings at La Chaux-de-Fonds, 8.0 (from Geneva), Cello and Piano-forte Recital, 8.20 (from Geneva), Hawaiian Guitar Solos by Kalola, 8.40 (from Geneva), Topical Talk, 9.0 (from Geneva), Variety Concert by the Broadcasting Serenaders, 10.0, News, 10.10 (from Geneva), Gramophone Concert, 10.30 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme, 9.30, Weather Report, 9.40, Musical Programme and Announcements, 10.0, Chimes and News, 10.30, Reading, 11.0, Symphony No. 2 (Beethoven) on Gramophone Records.

RJUKAN.—See Oslo.

ROME

Call 170, 680 kc/s, 341 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 270, 11,810 kc/s, 25.4 metres from 5.15 p.m.—1.0 to 2.15 p.m., Orchestral Concert. In the interval at 2.0, Time and Announcements, 4.30, Giornale Radio, 4.45, See Turin, 5.15, Weather Forecast, 5.17 to 6.0, Concert, Gina Scheidlin (Piano-forte), Giulio Signore (Tenor), Maria Romano (Soprano) and Carlo Platania (Baritone), Piano-forte Solos: (a) Andante No. 1 (Debussy), (b) A Wedding Day on Troldhaugen (Grieg), (c) La danza d'Isid (Piek-Mangiazalli); Tenor Solo: Serenata from Don Pasquale (Donizetti); Soprano Solos: (a) Notturmo (Cimara), (b) Aria from Don Carlos (Verdi); Tenor and Baritone Duets from (a) La Gioconda (Ponchielli) and (b) The Pearl Fishers (Bizet), 6.40 (Naples), Shipping and Sports Notes, 6.45 Tourist Report and Doplavoro Announcements, 6.57, Report of the International Institute of Agriculture (in Spanish, German and French), 7.10, Agricultural Notes and Market Prices, 7.40, News in Foreign Languages, 7.40, Giornale Radio, 8.0, Time and Announcements, 8.15, Sponsored Concert, 9.15, Relay of an Operetta.

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., Vocal Duets by Haber and Curtis, 9.15, Musical Programme, from New York, 9.30, Talk: The Mind Age, 9.35, Billy Billy Songs by Bradley Kincaid, 9.45 to 10.0 (approx.), South Sea Islanders, 12.45 a.m. (Saturday), Stock Reports and Baseball Scores, 1.0, Cities Service Concert Orchestra, from New York, 1.30, WGY Farm Forum, 2.0, Variety Programme, from New York, 2.30, Popular Programme, from New York, 3.0, WGY Players: At the Country Club, 3.30, Lam and Abner, 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.—6.15 to 6.35 a.m. (from Basle), Gymnastics, 11.59, Time Signal from Neuchâtel Observatory, 12 Noon (from Zürich), Orchestral Concert. In the interval at 12.30 p.m., Time and News, 1.25 (from Zürich), Time, Weather and Exchange, 5.0 (from Zürich), Programme for Children, 5.20 (from Zürich), Concert by the Small Radio Orchestra, conducted by Max Scheerbaum, 6.30 (from Zürich), Technical Wireless Talk, 7.0 (from Zürich), Time and Announcements, 7.10 (from Zürich), Balalaika Concert, 8.0 (from Zürich), Talk on Gothic Architecture, 8.30 (from Zürich), Concert by the Radio Orchestra, 9.0, News, 9.10 (from Zürich), Organ Recital, 9.40 (approx.), Orchestral Concert (contd.), 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; Horby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Osterlund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres. 5.5 p.m., Accordion Recital, 5.55, Talk, 6.0, See Oslo, 7.0, Gramophone Music, 7.15, Weather and News, 7.30, Song Recital by Egil Nordstjå, 8.0, Talk: The Air—the Road of the Future, 8.20,

Concert by the Station Orchestra: Suite, Minnehaha (Coleridge-Taylor); Erinnerung an die Norwegischen Alpen (Berwald); Waltz from Der Rosenkavalier (R. Strauss); Humoresque (Aulic); Cavatina (Raff); Carnival Suite (Dvorak), 9.25, Review of Foreign Affairs, 9.45, Weather and News, 10.0, Gramophone Concert, 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW. 11.30 a.m., Gramophone Concert of Light Music, 12.45 p.m., News, 1.0, Time and Exchange, 1.5, Gramophone Concert of Variety Music, 2.0 to 3.30, Interval, 3.30, Orchestral Concert, conducted by Brouillard, relayed from the Casino, Vichy: Overture, Les dragons de Villars (Maillart); Entr'acte from Loreley (Bruch); Spanish Dances, Jota and Tripon (Lacôme); Concert Suite, Roma (Bizet); Melodies; Louis XIII Air (Pierne); Selection from Lakmé (Delibes); Waltz, Wiener Blut (Joh. Strauss), 5.0, Literary Talk: Erekmann-Chatrian and the Jews, 5.15, Gramophone Concert: Il est charmant; Une viennoise; Serenade (Mouffret); Berceuse (Fauré); Pourvu qu'on rigole; Je t'ai que mon cœur (Dusso); Pourquoi l'adore le midi; Elle était du Nord (Calabrese); Uncle Sammy (Holzmann); Melody (Jesse); Angelina (Ricardo); Pour toi (Santenghini); Pour toi (Pothier), 6.0, Topical Talk in German, 6.15, Lottery Results and Announcements, 6.30, News and Time, 6.45, Announcements and Press Review in German, 7.0, Salzburg Festival Programme: Così fan tutti, Opera in Four Acts (Mozart), relayed from Salzburg, 10.0 (approx.), Press Review in French.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12 Noon, Extracts from Parsifal—Opera (Wagner) on Gramophone Records, 1.15 p.m., Time and News, 1.30, Concert from Langenberg, 2.0, Concert arranged by the Post Office, 2.30, Advanced English Lesson, 3.0, Interval, 3.15, Concert of Operetta Music by the Station Orchestra, conducted by Gustav Görlich: Overture, Die schöne Galathee (Suppé); Waltz, In lauseliger Nacht (Ziehrer); Selection from The Maid of the Black Forest (Jesse); Waltz from Gipsy Love (Lehar); March from Boccaccio (Suppé), 4.0, Talk: Sunday Excursions, 4.30, Orchestral Concert, conducted by Gustav Görlich: Overture, Tauger (Rossini); Potpourri, Immortal Verdi (Rhode); Romance (Leoncavallo); Waltz, Roses from the South (Joh. Strauss); Potpourri, From the Rhine to the Danube (Rhode); Mazurka from Polnabud (Nedba); Wandervogel March (Fetras), 5.45, Wireless Talk: The Short Wave Stations, 6.10, Medical Talk for Young Mothers, 6.35, Time and News, 7.0, Transmission for all German Stations, relayed from Leipzig, 8.5, See Berlin, Deutschlandsender (Reichssender), 10.0, Time and News, 10.25, Violin Recital by Edith von Boigtländer: Five Pieces (Kau); Nocturne in D flat (Chopin-Willhemy); Minuet (Casella); Papillons (Schubert); Die Biene (Schubert), 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.0 p.m., Local News, 6.5, Orchestral Music, 6.15, Music by an Argentine Band, 6.30, Opera Music: Selections from: The Huguenots (Meyerbeer), William Tell (Rossini), Herodiade (Massenet) and Faust (Wagner), 6.45, Music by a Viennese Orchestra, 7.0, Accordion Music, 7.15, News, Racing Results and Market Prices, 7.30, Diversissements sur des Chants Russes (Rabaud) by a Symphony Orchestra, 7.45, Airs from Opéras-comiques: Les dragons de Villars (Maillart), The Daughter of the Regiment (Donizetti), and Rigolotto (Verdi), 8.0, Operetta Music: Selection from The Land of Smiles (Lehar); Selection from Frasquita (Lehar); Ballet Music from Les aventures du Roi Pausole (Bouffé), 8.15, Popular Melodies, 8.30, Instrumental Solos: Myrto (Petit); Moment musical (Schubert); Toccata (Frescobaldi), 8.45, Operetta Music: Songs from Paganiini (Lehar), Suzanne (Paladille) and L'ém à la bouche (Paré-Vau Paré), 9.0, Extracts from Congress Dances (Haydn), followed by Accordion Music, 9.45, Music by a Viennese Orchestra: Selection from Gipsy Love (Lehar); Toujours on aime (Waldteufel); Piece (Piek-Mangiazalli); Selection from The Smiling Lieutenant (O. Strauss); Song from The Viking (Korsakly); Song from Ma tante d'Houffeur (Lenoir), 10.15, North African News and Local News, 10.30, Concert for Listeners in Morocco, 11.15, Opera Music, 11.30, Popular Concert, 12 Midnight, News, Weather and Announcements, 12.5 a.m. (Saturday), Extracts from Opéras-comiques, 12.15, Jazz Music, 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—4.45 p.m., 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.—4.45 p.m., Ballata—Italian Youth Movement Programme, 5.15, Chamber Music Recital by Alfredo Tazzoli (Piano-forte) and Prof. Mariano Dessy (Violin), 6.0 to 6.5, Weather, 6.40, Giornale Radio, Doplavoro Notes and Gramophone Music, 7.0, Time, Report of the Royal Geographical Society and Gramophone Music, 7.10, Market Prices, 7.20, News in Foreign Languages, 7.40, Gramophone Music, 8.0, News, 8.15, Sponsored Music, 8.30, Programme to be announced, 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 Wiener Symphoniker, conducted by Josef Holzer. Overture, Im Karneval (Landl); Viennese Dance (Friedmann-Gärtner); Petite berceuse (Demare); Nocturne (M. Frank); Gipsy Idyll (Ferraris); Kirschenblüte (Marling); Internozzo from Der Gast des Königs (Reinhardt); Du bist das Märchen meines Lebens (Kutschera); Rondino (Sibelius); Waltz, Mein Lebenslauf ist Lieb' und Lust (Joh. Strauss); Phäaken-Marsch (Schieder); Tango, Fine sisse, kleine, schwarze Silhouette (Bazant); Potpourri, Besuch bei Müllöcker (Morena); Erwachen (Werba); Wienerwaldzauber (Preecht-Almueder); Waltz, Hoch Wien (Kratzl); Overture, Meines Frühlings erste Knospe (Ertl); Blasch-Marsch (Schild). In the interval at 1.0 p.m., Time and News, 2.0, Interval, 3.0, Time and Announcements, 3.20, Talk, 3.45, Sound Film Music on Gramophone Records, 4.20, Lola Lorne and Käthe Braun-Prager, introduced by Paul Wertheimer, read from their own Works, 4.50, Talk: The Agricultural Section at the Vienna Fair, 5.0, Talk, 5.20, Concert of Songs and Viola and Piano-forte Solos, 6.0, Tourist Report, 6.15, Talk: Excursions on Land and Water, 6.30, Sports Report, 6.40, Talk: Excavations in Africa, 7.5, Time and Announcements, 7.15, Salzburg Festival Programme, Così fan tutte—Opera in Two Acts (Mozart), relayed from the Festspielhaus, 10.5, News, 10.20, Concert by the Wiener Symphoniker, conducted by Josef Holzer, March, Kinder sinds lustig (Navratil); Overture, A Waltz Dream (O. Strauss); Song from Der liebe Schatz (Reinhardt); Waltz, Herringspazierer (Ziehrer); Stelldichein am Mühlbächlein (Spirk); Zigeunerfest (Lehar); Unser Schubert (Fiebrich); Alt-bayrischer (Fiebrich); So an Wein (Eysler); Melody from Das Schwalbennest; Selection from Wunder Bar (Katscher); March, Weaner Beisser (Ull).

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., Concert relayed from the Café Bagatela: March (Koperski); Overture, Orpheus in the Underworld (Offenbach); Tales from the Vienna Woods (Strauss); Selection from Eugene Onegin (Tchaikovsky); Melodies (Faderewski); Mazurka (Szulc). In the interval at 12.33, Press Review and Weather, 12.55, Radio Journal, 1.0, Interval, 2.5, Gramophone Records, 3.10, News and Commercial Notes, 3.15, Gramophone Records. In the interval at 3.25, Economic Notes, at 3.45, Aviation Notes and Anti-Gas Drill, and at 3.55, Naval and Colonial Report, 4.30, Beethoven Quartets on Gramophone Records, with Introductory Talk, 5.0, Review of Publications, 5.15, Song Recital by Rowicz-Sowilska (Mezzo-Soprano), and Sowilski (Tenor), Tenor Songs: Tu ne partiras pas (Maklakiewicz); Un cheval qui me portait (Lipski); Je n'ai pas le droit de rêver de toi (Rybicki); Si je changais (Niewiadomski); Soprano Songs: Cette même nuit de mai (Friedman); Le regret (Chopin); Les lys (Szopki); Six Tenor Songs; Soprano Songs: Lullaby (Rimsky-Korsakov); Le chapelet (Maklakiewicz); Le monde entier est resté en loin (Szymanski); Comais-tu le pays (Niewiadomski), 6.0, Talk on Contemporary Poland, 6.20, Miscellaneous Items, 6.35, Programme Announcements, 6.40, Topical Talk, 6.55, Talk on Mozart's Opera, Così fan tutte, 7.15, Salzburg Festival Programme (See Vienna). In the interval at 8.30, Radio Journal and Hints for the Week-end, 10.5, Dance Music from the Café Europa, Ciechocinek. In the interval at 10.25, Sports Notes, Aviation Weather and Police Report.

WILNO

533 kc/s, 563 metres; 16 kW.—6.20 p.m., Topical Talk, 6.35, Programme Announcements, 6.40, See Warsaw, 7.15, Salzburg Festival Programme (See Vienna). In an interval, Radio Journal and Hints for the Week-End, 10.5, See Warsaw, 11.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

SATURDAY AUGUST THE NINETEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL Variety programme, relayed from Olympia. LONDON Promenade concert from Queen's Hall. REGIONAL MIDLAND The Roosters Concert Party, relayed from Syston, Leicestershire. REGIONAL NORTH Vocal Duets and Pianoforte Solos. REGIONAL WEST Bridgwater Band Festival. REGIONAL SCOTTISH Recital of Hebridean folk songs. REGIONAL BELFAST Running commentary on the International Ulster Grand Prix Motor Cycle race. ABROAD BRUSSELS (No. 1) 6.15 p.m. Pianoforte recital, by Mlle. Tambluyser. FRANKFURT 7.0 p.m. Report of the Gliding Aviation Competitions, from Wasserkuppe. HAMBURG 4.0 p.m. Grieg and Svendsen concert by the Philharmonic Orchestra. HILVERSUM 3.40 p.m. The K.R.O. Orchestra. POSTE PARISIEN 8.25 p.m. Mendelssohn concert of Chamber Music. STRASBOURG 8.30 p.m. Symphony Concert, conducted by Dorstene, from the Casino, Viehy. STUTTGART 11.0 p.m. Concert by the Station Orchestra. WARSAW 6.35 p.m. Beethoven's Septet (Op. 20), by the Szule Ensemble.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—5.55 p.m., Popular Band Concert. 6.55, Talk for Housewives. 7.0, See Prague. 7.45, See Brno. 8.0, See Prague. 10.15, See Moravska-Ostrava. 11.30 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayd by Gleiwitz, 1,184 kc/s, 253 metres.—1.0 p.m., Weather Report. 1.2, Gramophone Concert. In the interval at 1.45, Time and News. 3.0, Agricultural Prices. 3.15, Book Review. 3.35, Programme to be announced. 3.55, Dialogue; Films of the Week. 4.10, Orchestral Concert, conducted by Walter Mager, relayed from Bad Ziegenhals. 6.0, Programme Announcements. 6.10, Programme to be announced. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Variety Programme with Sketch. 9.0, News. 9.10, Military Band Concert, relayed from Schweidnitz. 10.10, Austria. 10.35, Time and News. 11.0, Dance Music, relayed from Berlin (Witzleben). 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.5 p.m., Gramophone Music. 6.25, German Transmission; News and Folk Song Recital by Ritta Nowak (Soprano) and Linda Schirmer (Soprano). 7.0, See Prague. 7.25, Recital of Italian Arias by Karel Spurny; Arias from Tosca (Puccini), La Bohème (Puccini), and Cavalleria rusticana (Mascagni). 7.45, Talk on Rome and Naples. 8.0, See Prague. 10.15, See Moravska-Ostrava. 11.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12.0 Noon, Concert by the Station Symphony Orchestra, conducted by Kumps; Peer Gynt Suite No. 1 (Grieg); Baritone Solos; Suite (Ducasse); Baritone Solos; Petite suite (Debussy). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Radio Orchestra, conducted by Walpot; Soloist, Armand Crabbe (Baritone); March, Flottez drapeaux (Paradis); Overture, Maritana (Wallace); Waltz, Tout Paris (Waldteufel); Baritone Solos; Selection from Miss Decima (Audran); Ballet Music from Faust (Gounod). 4.45, Talk. 5.0, Relay of a Recital on the Newly installed Organ in Tongerlo Abbey. 6.0, Talk; Belgium's Caves. 6.15, Pianoforte Recital by Mlle. Tambluyser; Prelude (Prokofiev); Dumka (Stathkowsky); Melody (Liadov); Prelude (Gliashenko); Night (Glazunov); Scherzo (Borodin); Preludes (Rachmaninov); (a) in G sharp Minor, (b) in G, (c) in B flat. 6.45, Gramophone Concert; Suite, Four Ways (Coates); Scherzo

from Romeo and Juliet (Berlioz); Allegro vivace from Roma (Bizet). 7.15, Talk on Peter Benoit. 7.30, Le Journal Parlé. 8.0, Concert by the Station Symphony Orchestra, conducted by Jean Kumps; Overture, Figaro (Mozart); Pavane pour une Infante défunte (Ravel); Minuet and Forlana from Le Tombeau de Couperin (Ravel); Divertissement (Kumps). 8.45, Talk on the Belgian Author, Thomas Braun, with Readings by Mme. La Vallée. 9.0, Concert relayed from the Kursaal, Ostend. After the concert, Le Journal Parlé, followed by Dance Music by Robert de Kers and his Cabaret Kings and a Tango Band, relayed from the Kursaal, Ostend.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 336.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Station Orchestra, conducted by C. Walpot. Soloists: Armand Crabbe (Baritone) and M. Lombard (Xylophone). Jubilee March (De Boeck); Invitation to the Waltz (Weber); Overture, Lysistrata (Bizet); Xylophone Solo; Czardas (Monti); Romantic Suite (Armandola). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Station Symphony Orchestra, conducted by Kumps; Overture, Russian and Ludmilla (Glinka); The Flight of the Bumble Bee (Rimsky-Korsakov); Dance of the Tumblers (Rimsky-Korsakov); Divertissement on Brabancon Themes (Delcroix); Three Pieces (Guiraud); Two Dances (Brahms). 4.45, Reading. 5.0, Dance Music by the Jacky Gauzo Band, relayed from the Continental Palace Hotel, Blankenberghe. 6.15, Reading. 6.30, Concert by the Small Station Orchestra, conducted by Leemans; Overture, Sicilian Vespers (Verdi); Suite, Algerian Nights (Grieg); Humoresque (De Taeye); Selection from The Nuremberg Doll (Adam); Jota and Tripoli (Lacôme); Two-Step, Angelina (Ricardo). 7.15, Gramophone Music. 7.30, Film Review. 8.0, Concert by the Small Station Orchestra, conducted by Leemans; Overture, In Guarany (Gomez); Waltz Potpourri (Borchert); In a Monastery Garden (Ketehey); Selection from Romeo and Juliet (Gounod); Symphonic Sketch, Dawn (Leemans); Asturias (Albeniz). 8.45, Recitations by Jack Gorlé. 9.0, Carillon Recital by Robert Dieck, relayed from the Belfry, Ghent; Valse noble (Schubert); Kaerelslied (Van Duysel); William of Nassau; Serenade (Schubert); Melody (Antheunis); Song of the Volga Boatmen; Pensée d'automne (Massenet); The Two Grenadiers (Schumann); Jonge liefde (Meulmans); Mijn Moederpraak (Blaunier); Chanson triste (Tchaikovsky); Vlaanderen (Veremans). 10.0, Le Journal Parlé. 10.10, Dance Music by the Jacky Gauzo Band, relayed from the Continental Palace Hotel, Blankenberghe.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayd by Cork, 1,337 kc/s, 224.4 metres.—1.50 to 2.30 p.m., Time Signal, Weather Report and Gramophone Music. 6.0, Gramophone Concert. 6.45, News. 7.0, Val Voutsden, Entertainer. 7.15, Gaelic Talk. 7.30, Time Signal. 7.31, Pipe and Fiddle Recital by S. O'Laoghaire and P. Clancy. 7.55, Gaelic Song Revital by Denis Cox. 8.15, The Station Octet. 8.30, Traditional Fiddle Solos by T. J. Shiels. 8.40, Pianoforte Recital by R. McNamee. 8.50, The Station Octet. 9.5, Variety Programme by Eva Brennan and Company. 9.45, Sponsored Programme. 10.45, News, Weather Report and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert; Selection from Mephistopheles (Boito); Piece (Chaminade); Ochsennouett (Haydn); Barcarolle (Mans); Erotica (Griez); Seventeenth Century Dance (Offenbach); Selection from Le Roi d'Ys (Lalo). 8.0, Request Gramophone Concert. 8.20, Exchange, followed by Programme for the Centenary of the Renaissance of the Catalan Language. 9.0, Gramophone Music. 9.15, Anti War Talk, followed by Gramophone Music and News. 10.0, Chimes from the Cathedral, Exchange and Market Prices. 10.5, Concert of Popular Music by the Station Orchestra. 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 Popolavoro Announcements. 8.20, Giornale Radio, Sports Notes and News. 8.30, Time and Announcements. 8.35 (approx.), Manou Lescant-Opera (Puccini), on Gramophone Records. In the interval, Reading and Announcements. After the Opera, News in Albanian. 10.55, News.

BASLÉ.—See Schweizerischer Landesender.

BERLIN

(DEUTSCHLANDSENDER), Reichssender, 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, German Dance Music. 3.0, Programme for Children. 3.30, Weather. 3.45, Reading (Hermann Löns). 4.0, Concert of Light Music, relayed from the Radio Exhibition. In an interval, Weekly Sports Review. 6.0, A Poem. 6.5, Dance Music by Rulph Siegel and his Six Soloists. 6.30, Camp Life—Radio Report from an Encampment (on Gramophone Records). 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, To-day Motto. 8.5, See Berlin (Witzleben). 10.0, Weather and News. 10.45, Weather Report for Shipping. 11.0, Talk: The Light Athletic Championships, Germany v. England. 11.15, Dance Music by the Julius Thompson Band. 12.30 a.m. (Sunday), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.0 p.m., Orchestra Concert conducted by Alfred Engel, relayed from the Funkgarten; Waltz, Braune Kameraden (Dragger); Waltz, Morgenblätter (Joh. Strauss); Overture, Maritana (Wallace); Helmsmat's Song and Sailors' Chorus from The Flying Dutchman (Wagner); Ballet Music from Rosamunde (Schubert); March Potpourri, Als wir marschierten (Schmidt-Hagen); Hitler-Mussolini March (Murzill); Overture, Die schöne Galathee (Suppé); Hungarian Dances Nos. 5 and 6 (Brahms); Luna-Walzer (Lindner); Jäger-Marsch (Kroeger); March, Deutschland, Heil! (Baldanino). In the interval at 5.0 (approx.), Part Relay of a Radio Sequence, Heinz erobert den Filmtank for Children and Grown-Ups from the Radio Exhibition. 6.0, A Discussion on the Radio Exhibition by Franz Knospe and Others. 6.15, Talk on Students' Guilds. 6.25, A Review of the Development of the Radio Sports Report, with Gramophone Illustrations. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.5, Gala Concert relayed from the Radio Exhibition. The Station Orchestra and Choir, Nazi Trumpeters and Members of the Berlin Operaballet. 10.0, Weather and News. 10.5, (approx.), Dance Music by the Egon Kaiser Band, relayed from the Zoological Gardens. In an interval at 11.0 (approx.), Report on Gramophone Records of the Germany v. England Light Athletic Championship. 1.0 a.m. (Sunday), Close Down.

BERNE.—See Schweizerischer Landesender.

BEROMUNSTER.—See Schweizerischer Landesender.

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. 7.40, Sports Notes. 7.45, News and Lottery Results. 7.55, News. 8.0, Concert of Gramophone Music. 8.30, Variety Concert. After the Concert, Amusement Guide and Time Signal.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Suceano Orchestra. In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Gramophone Music. 7.40, Educational Talk. 8.0, Concert by the Station Orchestra; March, El Capitan (Souza); Selection from André Chénier (Giordano); Russian Dance Potpourri (Selsky); Selection from The Duchess of Chicago (Kálmán); Clog Dance (Fetras); Intermezzo (Rust); Andalusian Serenade (Armandola). In an interval at 8.30, Talk. 9.15, Popular Romanian Music by the Fanica Luca Orchestra. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 6.50 p.m. (approx.) till Close Down.—6.10 p.m., Answers to Correspondents. 6.50, Gramophone Music. 8.0, Radio Play. 10.0, News. 10.5 (approx.), Concert by the Sandor Farkas Cigány Band, relayed from the Café Boda.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayd by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time and Chimes from the Town Hall. 12.2 p.m., Concert by the A. Bendix String Ensemble, relayed from the Wivex Restaurant. 2.30, Gramophone Concert. 3.0, Programme for Children. 3.30, Concert by the Radio Orchestra, conducted by Lanny Grondahl; Festival Polonaise (Nielsen); Prelude to Mark Stigs Dotre (Södermann); Waltz (Schubert, arr. Nielsen); Melody (Dupuy); Fantasia on Two Russian Folk Songs, Kamarinskaya (Glinka); Danish March; Prelude to Eve (Massenet); Waltz, Tesoro mio (Beucchi); Selection from Garre (Halvorsen); Forget me not, for Strings (Macbeth); Overture, Le brasseur de Preston (Adam). In an interval at 4.15 (approx.), Reading. 5.35, Exchange and Fish Market Prices. 5.50, Talk by a Missionary: The Religious Life of a Primitive Negro Race. 6.20, French Lesson. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.30, Introduction Talk to the following Transmission. 8.0, Concert by the Radio Orchestra, conducted by Lanny Grondahl, with Commentary; Symphony (Wagenseil); Harpsichord Concerto in E Flat (J. C. Bach); Symphony (Stamitz). After the Concert, News. 8.40, Concert by the Louis Preils Instrumental Ensemble. 9.20 (in an interval), Reading (H. G. Wells). 10.20, News. 10.35, Concert by Louis Preils Dance Band. 11.20, Henry Andersen Recital of Modern Danish Songs by Svend Cathala. 11.40, Dance Music (cont'd.). 12.30 a.m. (Sunday), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.20 p.m., Miscellaneous Items and News. 7.35, Programme Announcements. 7.40, See Warsaw. In the intervals at 9.15, News, and at 10.25, Sports Notes. 12 Midnight (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. 4.30, Programme for Children. 5.0, Concert for Tunbridge Wells and Isle of Thanet Listeners. Signature Tune. The Night by the Sea, Vienna, City of My Dreams (arr. Reeve), Ay, Ay, Ay (Ereire); Pianoforte Solo, The First Waltz (Durand); Music from La Source (Delibes); In the Gloaming (Chaminade); The Wedding of the Winds (Hall); Poor Butterfly (Hubbell de Phillipi). 5.30, Concert for Dover and Folkestone Listeners. Organ Solo, Falling in Love again (Hollander); Song, Poor Man's Garden (Russell); Organ Solos: (a) In a Japanese Garden (Higgs); (b) Sylvan Scenes (Fletcher); Songs: (a) My Treasure (Trevalsa); (b) Love's Old Sweet Song (Molloy); Organ Solos: (a) Till I wake (Woodforde-Finden), (b) Kashmiri Love Song (Woodforde-Finden); Signature Tune. 6.0, Programme in French 11.0 till Close Down. Programme in English by the I.B.C. 11.0, Dance Music. Signature Tune, Bells of Normandy. Hyde Park Corner; The Girl in the Little Green Hat; What have I got to Lose?; Rosa Mia; And so I married the Girl; Why waste your Tears; Chansonette; Dreaming; Signature Tune. 11.30, Concert by the I.B.C. (Ireland), Ltd., Signature Tune, Come Back to Erin; Overture Medley (arr. Peters); Irish Jigs and Reels; Song, A Farewell (Liddle); The Golden Musical-Box (Krome); Pianoforte Solo, Still I love Her (Gaskell); Lazy Pete (Kersten); Song, Eileen Aunahm; Woodland Peace (Favilla); Signature Tune. 12.5 a.m. (Sunday), News Bulletin in English. 12.10 (approx.), Club Concert for Huddleigh Listeners. Signature Tune, The Chum Song; The Bumble Bee's Wedding (Denis Clare); The Doll's Song from The Tales of Hoffman (Offenbach); Selection from The Merry Widow (Lehár); Intermezzo, Weigwood Blue (Ketehey); My Darling (Heyman Myers); Signature Tune. 12.30, Dance

AUGUST 19th **SATURDAY** continued

Music. Signature Tune, Bells of Normandy. Under my Umbrella; I wake up Smiling; Stormy Weather; And so I Married the Girl; Forty Second Street; Hiawatha's Lullaby; Castle in the Sand; Shuffle off to Buffalo; Some one to Care For; Signature Tune. 1.0. Concert of Light Music. Old Melody; Songs: (a) No More Love (Friend); (b) My Darling (Heymann); Let's go Native; The Moon is Low; Song, The Porter's Love Song (Johnson); Deep Water (Brian); What's the Use? 1.30, Dance Music; Signature Tune, Bells of Normandy; Tango, Little Lady Please; How do you do, Mr. Brown; What more can I Ask?; The King's Navee; I may Never Pass your Way Again; Won't you stay to Tea?; Signature Tune. 1.58 I.B.C. Good-night Melody. 2.0, 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.—3.20 p.m., Programme for Children. 4.25, Market Prices. 4.30, See Munich. 5.45, Market Prices. 6.0, Talk: Vocational Training for the Unemployed. 6.25, Time and Announcements. 6.30, Weekly Review. 6.50, To-day's News. 7.0, Transmission for all German Stations; Radio Report of the Gliding Aviation Competitions, from the Aerodrome, Wasserkuppe, Rhön. 9.15, Dance Music relayed from Munich. 10.20, Time and News. 10.45, Concert from Stuttgart.

FREDRIKSSTAD. See Oslo.
FREIBURG. See Stuttgart.
GENEVA. See Radio-Suisse Romande.
GENDA. 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.—4.0 p.m., Grieg and Svendsen Concert by the Hamburg Philharmonic Orchestra, conducted by José Eibenschütz; Peer Gynt suite, No. 1, Op. 46 (Grieg); Norwegian Rhapsody No. 3 (Svendsen); Extracts from the Suite, Aus Holbergs Zeit (Grieg); Symphonic Dances Nos. 2 and 3 (Grieg); Polonaise in E (Svendsen). 5.0, Talk: A Bird Sanctuary on the North Coast of Schleswig-Holstein. 5.30, Variety Programme. 6.30, Religious Address. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Political Talk. 8.10, Programme from Langenberg. 10.20, Topical Talk. 10.30, Dance Music, relayed from Berlin (Witzleben).

HANOVER. See Hamburg.

HEILSBURG

1,085 kc s, 276.5 metres; 60 kW.—1.5 p.m., Relayed by Danzig, 662 kc s, 453.2 metres.—1.5 p.m., 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, and Exchange. 3.30, Handwork for Children. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Overture, Nakhris Hoelzer (Lincke); Nordseebilder-Walzer (Joh. Strauss); Tango, Jalousie (Gade); Ein Leckerbissen (Witteborn); Selection from Das Fünftenkind (Lehar); Czardas, Czigas and Bohemienne (Bohm); Leggenda d'Amore (Becc); Waltz, Nmit d'été (Waldteufel); Overture, Die beiden Hensaren (Doppler). In the interval at 4.50 (approx.), Motor Racing. 5.30, Talk: The Berlin Radio Exhibition. 6.5, Programme Announcements. 6.15, Agricultural Prices. 6.25, Talk: Aerial Defence for East Prussia. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, See Frankfurt. 9.10 (from Danzig), Talk by Alfred Rosenberg, Founder of the German Kampfbund. 8.40, Chamber Music. String Quartet in G (Mozart); String Quartet in F (Beethoven). 9.40, Reading (Rudolf Prusber). 10.0, News. 10.15 (approx.), Dance Music, relayed from Berlin (Witzleben). In the interval at 11.0, Radio Report of the Light Athletic Championship, Germany v. England. 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.).— Programme of the Catholic Radio Society (K.R.O.).—11.55 a.m., Concert by the K.R.O. Sextet, conducted by Lustenhouwer; Spanish March (Grieg); Chant sans Paroles (Tchaikovsky); Waltz, Elineas (Waldteufel); Plaisir d'amour (Martini); Offenbachiana (Conradi); Tarantella (Smith); Carmen March (Oscheit); Lortzing Potpourri (Rosenkranz); Ein Liebesmährchen (Naef); Finale. In an interval, Gramophone Music and Announcements. 1.25 to 1.40 p.m. Interval. 1.40, Programme for Children. 3.40, Concert

by the K.R.O. Orchestra, conducted by van 't Woud; Overture, The Barber of Seville (Rossini); Selection from The Tales of Hoffmann (Offenbach); Le rygne (Saint-Saëns); Byzantine Suite, Yllys (Ganne); Waltz (Tchaikovsky); Letzter Frühling (Grieg); March from Sigurd Jorsalfar (Grieg); Generaal Terwisga (Dik); Selection from The Mikado (Sullivan); Melody (Komzak); Potpourri, Mosaik (Zimmer); Einzug der Rosenkönigin (Rhode); King Cotton March (Sousa); Potpourri, Vom Rhein zur Donau (Rhode). In the intervals, Gramophone Music and Press Review. 6.40, Police Notes. 6.55, Talk on Aviation. 7.15, Gramophone Music. 7.25, Variety Concert by the Joska Kiss Cigány Band and the K.R.O. Boys, conducted by Lustenhouwer. In the intervals at 8.10 and 9.10, News. 10.55, Gramophone Music. 11.40 (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 by the Workers' Radio Society (V.A.R.A.).—11.40, Concert by the Little V.A.R.A. Orchestra, conducted by Hugo de Groot. 1.40 p.m., Gramophone Music. 2.10, Song Recital by Cecilia Bremer. 2.25, Talk in Esperanto. 2.40, Song Recital (contd.). 2.50, Concert by the Filharmonits, conducted by Ray Forest. 3.20, Literary Talk. 3.40, Concert (contd.). 4.10, Gramophone Music. 5.10, Concert by the Amsterdam Orchestra, conducted by v. Diepenbeek. March, Hoch Heidecksburg (Heizer); Overture, The Caliph of Bagdad (Boieldieu); Waltz, Lotusblumen (Ohlson); Paraguayan Dance (Valverde); Selection from Les Saltimbanques (Ganne). 5.40, Songs by Friedmann. 5.55, Concert (contd.). March, The Crusaders (Sousa); Overture, Semiramis (Rossini); Waltz, Winterstürme (Fueki); Nigger's Dream (Mydleton). 6.25, Songs by Friedmann. 6.40, Concert (contd.). Torch Dance (Meyerbeer); Zealand Peasant Dances (Mørks); Loreley Paraphrase (Nesvadba); A Summer's Day in Norway (Willmers). 7.40, Talk. 7.40, Variety Concert by the V.A.R.A. Orchestra, conducted by Ray Forest. Soloists: Leonardo Arauisco (Tenor), Ernst Busch (Songs), Cor Steyn (Accordion), Louis Sijnewerman (P'ecolo), Karl van Dyk (Sousaphone), Jan Vogel (Pianoforte), and Jo Sternberg (Recitations). 8.55, News. 9.25, Organ Recital by Johan Jong, Radetzky March (Joh. Strauss); Du sollst der Kaiser meiner Seele sein (Stolz); Overture, The Merry Wives of Windsor (Nicolaï). 9.40, Variety Concert (contd.). 10.40, Gramophone Music. 11.30 (approx.), Close Down.

INNSBRUCK. See Vienna.

JUAN-LES-PINS

1,205 kc s, 249 metres; 6.8 kW.—12.30 p.m., Amusement Guide and Radio Concert. In an interval at 1.0, News. 8.0, Amusement Guide and News. 8.10, Tourist Talk. 8.28, Radio Concert. In an interval at 8.45, News and Weather Report.

KALUNDBORG. See Copenhagen.

KIEL. See Hamburg.

KLAGENFURT. See Vienna.

LAHTI

167 kc s, 1,796 metres; 40 kW. Relayed by Helsinki, 815 kc s, 368.1 metres.—6.15 p.m., Talk. 6.40, Variety Music. 7.0, Talk. 7.25, Concert by the Station Orchestra; March, Heil Europa (von Blom); Overture, Morning, Noon and Night (Suppe); Vive la Danse (Waldteufel); Hungarian Dance No. 1 (Brahms); Melodies from Tieland (d'Albert); Ballet Music from Lakmé (Delibes). Selection from The Queen of Spades (Tchaikovsky). In an interval at 7.50, Recitation. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music 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; Fremdschaftsmarsch (Zeh); Selection from The Bartered Bride (Smetana); Dance of the Waves (Catalani); Overture, Fräulein Lorelei (Lincke); Waltz, Gold and Silver (Lehar); Wiener Moment (Heuser); Bernice (Rark); Spottvogel (Lincke); Potpourri of Children's Songs (Rohler). In the interval at 2.0, News. 2.30, Gramophone Concert. 3.30, Economic Notes and Time. 3.50, Singing Lesson. 4.5, Reading: Night over Flanders (Lrich Hoinkis). 4.25, Talk: Excursions in the Rhineland and Westphalia. 4.50, Topical Talk. 5.0, Song and Pianoforte Recital by Artur Rood (Bartome), and Karl Delseit. 5.30 Ludwig Willner Programme on the Actor's 75th Birthday. Talk: The Career of Willner. Ludwig Willner recites three Ballads (Schiller). 6.0, Concert by the Small Station Orchestra, conducted by Eysoldt. 6.45, Announcements. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, News. 8.5, Variety Programme.

10.5, News. 10.30, Serenade on Gramophone Records. 11.0, See Stuttgart. 12 Midnight, Close Down.

LAUSANNE. See Radio-Suisse Romande.

LEIPZIG

769.9 kc s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc s, 319 metres.—12 Noon, Gramophone Concert. 1.0 p.m., News and Programme Announcements. 1.10, Concert from Langenberg. 1.45, Wireless Notes. 2.0, News. 2.10, Programme for Children. 2.50, Military Band Concert: March (Lincke); Parade March, German War Songs (Stepani); Parade March; Overture, Das Dritte Reich (Theil); Nazi Song, Denn wir sind die braunen Soldaten (Roohnthal); Three Parade Marches; March (Münnecke); Nazi Parade March (Wehneyer). 3.45, Economic Notes and News. 4.0, Talk: Through the Dolomites on a Bicycle. 4.30, Concert from Berlin Deutschlandsender (Reichsender). 5.20, Music Review. 5.40, Talk: Agricultural Policy. 6.0, Talk: Unusual Family Names and their Meaning (Willner). 6.20, A Modern Dictionary. 6.30, Talk: Germany a Thousand Years ago. 6.50, Review of the Day's News. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.5, See Langenberg. 10.5, News. 10.15, Concert by the Dresden Soloist Ensemble: Provençal suite (Jongen); Ballet Music from Der Fremde (Kann); Dance Melodies (Brüll); Impromptu in A Flat for Pianoforte (Schubert); Selection from Belshazzar's Feast (Sibelius); La vestale (Drigo); Dance Suite (Mraczek); Waltz, Künstlerträume (Vollstedt). In the interval at 11.0, Gramophone Report of the Germany v. England Light Athletic Championships. 12 Midnight, Close Down.

LINZ. See Vienna.

LJUBLJANA

522 kc s, 574.7 metres; 7 kW.—7.0 p.m., Concert by the Station Orchestra. 8.0, Review of Foreign Affairs. 8.30, Concert by the Zaria Orchestra. 9.30, Weather and News. 9.45, Song Recital. 10.15, Orchestral Concert. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. French Programme. 7.30 p.m., Quartet in G Minor (Debussy), on Gramophone Records. 8.0, Weather Report. 8.5, Recital of French Songs by Gustave Simon. 8.40, Talk in French. 8.50, News in French. 9.0, Orchestral Concert, conducted by Henri Péniss. In an interval at 9.50, News in German. 10.30, Dance Music on Gramophone Records.

LWOW

788 kc/s, 381 metres; 16 kW.—6.15 p.m., Talk. 6.35, See Warsaw. 7.20, Miscellaneous Items. 7.40, See Warsaw. 9.15, News. 9.30, See Warsaw. 12 Midnight (approx.), Close Down.

LYONS

LA DOUA, PTT, 644 kc s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Programme from Paris (Ecole Supérieure), 671 kc s (447.1 metres), followed by News.

MADRID

EAJ7, 707 kc s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal and Request Gramophone Records. 9.15, News. 9.30 to 11.0, Interval. 11.0, Chimes and Time. 11.5 (approx.), Song Recital with Accompaniment by the Station Sextet, followed by Literary Programme. 1.15 a.m. (Sunday), News. 1.30, Chimes and Close Down.

MALMO. See Stockholm.

MILAN

VICENTINO, 622 kc s, 453.2 metres; 1 kW.—8.45 till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—2.50 to 4.0 p.m., Military Band Concert. 5.45, See Prague. 6.5, Gramophone Music. 6.15, See Prague. 6.25, Concert by a Village Orchestra. 7.0, See Prague. 7.45, See Brno. 8.0, See Prague. 10.15, Concert of Light Music by the Station Orchestra conducted by Plichta. 11.30 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc s, 1,304 metres; 100 kW.—3.0 p.m., Concert. 4.0, Talk. 4.30, Talk: The Soviet Union Workers. 5.30, Programme Announcements. 5.45, Talk. 6.30, Dance Music. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes. 10.5, English Press Review. 10.30, 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 by the Quirin Huber Orchestra. March, Hortstein (Fueki); Overture, Zampa (Hérold); Selection from La Traviata (Verdi); Rocooco Minnet

(Haydn); Waltz, Liebe im Schnee (Benatzky); Lyric Intermezzo, Violetta (Rust); Selection from the Czarevitch (Lehar); Einzug der Heilbearden (Blangenburg). 5.45, Ein Hitlerjunge—Radio Play for Young People (G. Pantel). 6.25, Concert by the Bad Tölz Zither Club. March, Old Munich (Reiter); Waltz, The Blue Danube (Joh. Strauss); Paraphrase on Loreley (Nesvadba); Ländler, Tölzer Prügel (Reiter). 6.45, Wireless Hints. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Knieckerbocker Humorous Play in Three Scenes (Martin Lankes). 8.40, Austria. 9.5, Dance Music by the Radio Dance Band. In the intervals, Humorous Items. 10.20, Time and News. 11.0, See Stuttgart. 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.—5.0 p.m., Gramophone Music. 5.45, Programme for Children. 6.15, Hirdanger Fiddle Recital, with Songs. 6.45, Talk on Economics. 7.0, Announcements and News. 7.30, Discussion between a Customer, a Shop Assistant and a Manager. 8.0, Time Signal. 8.1, Concert by the Station Orchestra, conducted by Hugo Kranum. 8.45, Humorous Recitations. 9.5, Concert (contd.). 9.40, Weather and News. 10.0, Topical Talk. 10.45, Dance Music. 12 Midnight, Close Down.

OSTERSUND. See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW. 8.0 p.m. Dopulavoro Announcements, Tourist Talk, Agricultural Report and Giornale Radio. 8.20, Sports Notes. 8.30, Time and Announcements. 8.35, Gramophone Music. 8.45, Fior di Siviglia—Opera in Three Acts (A. Cuccina). In the intervals, Book Review, Talk and Announcements. 10.55, News.

PARIS

EIFFEL TOWER, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Dramatic Programme. 7.0, Le Journal Parlé. 8.30, Three One-Act Plays; (a) Baptiste (Carré), (b) La troisième convert (de Mackiels), (c) Ordinance par amour (C. Roland and Moreaux). 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. 7.50, The Week's Review. 8.0, Gramophone Music. 8.25, Mendelssohn Concert of Chamber Music. 9.10, Dance Music. 11.0, News.

PARIS

RADIO-PARIS (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 News. 12.0 Noon, Gramophone Concert: Descriptive Piece, L'aurore à la campagne; Xylophonia (Green); Chant du berger (Bergeret); Melody (Zoubalov); The Canary and the Frog; Messenger d'amour (Wittmann); Badner Mädel (Komzak); I'll see you again (Coward); Deliah (Nicholls); Song (Coslow-Harling); The Spanish Mantilla (Guerrero); Conchita (Parés van Parys); Old Limousine Airs (Rouchand); The Vagabond; Ambade printanière (Lacôme); Le sonnet d'arvays à Yeners (Donnay); Waltz, Gold and Silver (Lehar); Roses of Peardy (Haydn Wood); La boîte à bijoux (Debussy); Chanson de facteur (Chautrier); Schottische for Trumpets (Brun); Ronde (Weber). 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, Market Prices. Weather, Agricultural Notes, Exchange and Racing Results. 7.10, Gramophone Music: Paris Belfort (Farrigoux); L'amour de ma vie (Bose); Souvenir (Drdla); Révions (Fragson); Blonde amie (Carcel); Pas des écharpes (Chaminade); Emma Livry (Pirouelle); Je C'aime (Waldteufel); Liebesfreund (Kreiser); Selection from The Mikado (Sullivan). 7.50, Commercial Notes and News. 8.0, Gramophone Concert of Light Music in the intervals, News, Weather, Sports Notes and Press Review.

PITTSBURGH

KDKA, 980 kc s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres. 7.30 to 10.0 p.m., New York Relay. 7.30, Concert Echoes. 8.0, Words and Music. 8.30, Wealth of Harmony. 9.0, Dance Masters. 9.30, Concert Favourites. 10.0, Programme to be announced. 10.15 to 11.0, New York Relay. 10.15, Casino Orchestra. 10.30, Neil Sisters. 10.45, Orphan Annie. 11.0, News, Piano Classique. 11.15, Sports. A Song. 11.30, A Recreo—Bill and Alex. 11.45 to 12.30 a.m. (Sunday), New York Relay. 11.45, Hotel Montclair Orchestra. 12 Midnight, Taxpayers' League. 12.15, Annie, Judy and Zeke. 12.30, Jack Pettis' Orchestra. 1.0, Jack Pettis' Orchestra, from New York. 1.30, Philharmonic Orchestra, from New York. 3.15, Behind the Law.

PORSGRUND. See Oslo.

POZNAN

895 kc/s, 335 metres; 1.9 kW.—7.20 p.m., Miscellaneous Items and News. 7.35, Theatre Notes and Programme Announcements. 7.40, See Warsaw. 9.15, Agricultural Press Review from Wilno, 533 kc/s, 563 metres. 9.30, See Warsaw. 10.0, Time Signal, Sports and Police Notes. 10.15, Dance Music from the Esplanade Café. 11.0 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 to 4.0 p.m., See Moravská-Ostrava. 5.45, Gramophone Music. 5.55, Talk: Clouds and Weather. 6.5, Agricultural Notes. 6.10, Gramophone Music. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission. Talk with Gramophone Illustrations: David Popper for the Twentieth Anniversary of his Death. 7.0, Chimes and News. 7.10, Talk: Chinese Funerals. 7.25, Gramophone Records. 7.45, See Brno. 8.0 to 10, Concert by the Station Orchestra conducted by Otakar Park and Soloists: Overture, Carmen (Bizet); Capriccio in B minor Op. 22 for Piano and Orchestra (Mendelssohn); Aria from L'elisir d'amore (Donizetti); Ballad (Provažnik); Interlude: The Mysterious Chest—a Farce (Babka). Czech Dances Nos. 1, 4 and 5 (Weinberger); Three Songs to the Lute (Port). Gramophone Record: Prelude (Rachmaninov). Pianoforte Solo: Love Song (Suk); Aria from Le postillon de Longjumeau (Adam). Interlude: Recitation, Habanera Op. 83 for Violin and Pianoforte (Saint-Saëns); Two Songs to the Lute (Port); Bolero in D (Moszkowsky). 10.0, Time and News. 10.15, See Moravská-Ostrava. 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 to 6.30 a.m. (from Lausanne). Gymnastics. 12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News. 12.40 (from Lausanne), Gramophone Music. 1.0 (from Lausanne), Financial Notes. 1.10 (from Lausanne), Gramophone Music. 2.0, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Geneva), Gramophone Concert. 5.0 (from Geneva), Gramophone Music. 5.30, Interval. 7.0 (from Geneva), Medical Talk. 7.30 (from Geneva), News. 8.0, Programme to be announced. In an interval at 9.50 (approx.), News. 11.30 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme. 9.30, Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News. 10.30, Reading. 11.0, Concert by the Radio Trio, followed by Dance Music. 2.0 a.m. (Sunday), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—5.0 p.m., Extracts from Lohengrin—Opera (Wagner) on Gramophone Records. 5.50, History Talk. 6.20, Organ Recital. 7.0, Weather Report. 7.3, Talk on Bee-keeping. 7.30, Johann Strauss Concert by the Station Orchestra, conducted by Georg Schuevoviet, relayed from Bulduri. In the intervals at 8.15 and 9.0, News and Weather. After the Concert, News and 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 from 5.15 p.m.—1.0-2.15 p.m., Orchestral Concert: Con me ti porterò (Profeta); The Song is done (Stolz); Romanesca (Guarino); Canto solo per te (Caslar); Selection from Si (Mascagni); L'ultimo amore (Culotta). In the interval at 1.15, Talk: The Art of Photography. at 1.30, Giornale Radio, and at 2.0, Time and Announcements. 4.30, Giornale Radio and Report of the Royal Geographical Society. 4.45, Children's Radio Review. 5.10, Weather Forecast. 5.15-6.0, Orchestral Concert: Juanita (Hamud); Suite goliardica (Amadei); Ein Tag im Wienerwald (Kreuzberger); Selection from Iris (Mascagni); Intermezzo from Miss Dea (Fiaccone); Donna Grazia (Ravasi); Montanina (Pumo); Chiaro di luna hawaiano (Barzizza). 6.40 (Naples), Shipping and Sports Notes. 6.45, Tourist Report and Dopolavoro Announcements. 7.0, Lesson in Morse. 7.10, Agricultural Notes and Mar-

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SATURDAY

continued

ket Prices. 7.20, News 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, Song Recital by Elisa Capolino (Soprano): Songs from (a) The Force of Destiny (Verdi). (b) Madame Butterfly (Puccini), and (c) Iris (Mascagni). 9.0, La vie del Signore—Comedy in One Act (Alberto Donandy). 9.30 (approx.), Concert by the Anguste Orchestra, relayed from the Basilica di Massenzio. After the Concert, 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 and Baseball Scores. 1.0 to 4.0, New York Relay. 1.0, Musical Programme. 1.30, Autobal's Cubans. 2.0, Musical Programme. 2.30, K7, 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 Basle), Gymnastics. 6.35, Interval. 11.59, Time Signal from the Neuchâtel Observatory. 12 Noon (from Berne), Concert of Chamber Music on Gramophone Records. 12.30 p.m., Time, Weather and News. 12.40 (from Berne), Light Music by the Rudi Nyary Orchestra. 1.25 (from Berne), Time, Weather, and Exchange. 1.30 (from Berne), Listeners' Quarter of an Hour. 1.45 (from Berne), Book Review. 2.15 (from Berne), Light Concert on Gramophone Records. 3.0, Sports Talk: The Football Season. 3.30, Interval. 5.0 (from Berne), Accordion Music. 5.30 (from Berne), Diabect Talk by Walter Lapp: My Experiences in Sound Film Studios. 6.0 (from Berne), Sound Film Music on Gramophone Records. 6.30 (from Basle), Programme for Young People. 7.0, Chimes from Zürich Churches. 7.15 (from Basle), Time, Weather, and Exchange. 7.20 (from Basle), Concert of Fall, Kadman and Lehar Music on Gramophone Records. 8.0 (from Basle), Topical Dialogue. 8.30 (from Basle), Concert by the Basle Orchestra. 9.0 (in an interval), Weather and News. 10.15 (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.—4.0 p.m., Variety Concert, relayed from Malmö, 1,301 kc/s 231 metres; Waltz, Idyllen (Joh. Strauss); Prelude (Söderman); Operetta Potpourri (Stolz); Hvilis Du har varme Tanker (Börresen); Czardas (Horvath); Selection from New Moon (Romberg); Waltz (Lundahl); Foxtrot, Just so you'll remember (Meyer). 5.5, Programme for Young People. 5.30 (from Göteborg), The Practical Corner. 5.45, Reading. 6.15, Gramophone Music. 7.15, Weather and News. 7.30 (from Östersund), Old-Time Dance Music. 8.15, Talk. 8.45 (from Boden), Military Band Concert. 9.45, Weather and News. 10.0 (from Göteborg), Dance Music by Worthmuthers Band. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Light Music. 12.45 p.m., News. 1.0, Time Signal. 1.1, Dance Music on Gramophone Records. 2.0, Local Talk in German. 2.15, Light Music on Gramophone Record. 2.45, Talk on Music: The Origin of the Comic Opera. 3.0 to 3.30, Interval. 3.30, Orchestral Concert, conducted by Brionville, relayed from the Casino, Vichy. Overture, Le pré aux clères (Hérold); Suite, Danses anciennes (Masseuret); Symphonie Suito, La Vamma (Bastide); Melodies; Serenade for Violin, Cello, Flute, and Harp (Widor); Selection from

Masanello (Auber); Waltz, Amour et printemps (Waldteufel). 5.0, Gramophone Music. 5.15, Pianoforte Recital by François Cholé; Nocturne (Fauré); Barcarolle (Fauré); La valée des cloches (Ravel); Jeux d'eau (Ravel); Suite (Debussy); Waltz (Piercé); Concert Etude (Piercé). 6.15, Talk on Gastronomy. 6.30, Johann Strauss Gramophone Concert: The Emperor Waltz; Dorfschwaben aus Oesterreich; Waltz, Roses from the South; Du and Du; Wiener Blut. 7.0, Tourist Talk in French. 7.15, Gardening Talk in German. 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in German, Lottery Results, and Announcements. 8.30, Symphony Concert, conducted by Dorstene, relayed from the Casino, Vichy; Meeresstille und glückliche Fahrt (Mendelssohn); Elegie (Spörck); Orchestral suite, Les Perses (Leroux); Elegy, Doloroso (Filippini); Selection from Tannhäuser (Wagner); Scene and Waltz from Gretchen Green (Guiraud). 10.0, 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., Gramophone Music. 1.10 p.m., Sonata in C Minor, Op. 13—the Pathetic (Beethoven) on Gramophone Records. 1.30, Concert from Langenberg. 2.30, Time and News. 2.50, A Discussion by Young People. 3.0, Accordion Recital by Karl Schweikart; March, Im Oberland (Schweikart); Waltz, Fliegerzauber (Kohler); Fantasia, Ein Sonntag im Dorf (Thümler); Rustic Improvisations (Schweikart). 3.20, See Frankfurt. 4.30, Choral Concert, relayed from Pforzheim: Songs (Sleber): (a) Das Lieben bringt gross' Freud, (b) Jetzt gang i ans Brünnele, (c) Nun leb wohl, du kleine Gasse; Coffee Songs (Uhlmann): (a) Abend auf der Heide, (b) Gut Nacht; Am Brünnelein im Walde (Kroner); Komm zum Walde (Baumann); Die Vesper (Beethoven). 5.0, Concert from Munich. 5.45, Talk: Ludwig Willner. 6.10, Talk on the German Christian Movement. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Concert by the Station Orchestra, conducted by Gustav Görlich; Soloists: Heinz Aelgelis (Tenor) and Karl Ebert (Elocutionist). 9.15, Dance Music, relayed from Munich. 10.0, Time and News. 10.20, Talk from Munich. 10.40, Whistling Solos by Gialdini; The Kiss Waltz (Arditi); March of the Grenadiers (Schertzingler); Funicula Funicula (Denza); Chinese Street Serenade (Siede); Fliegermarsch (Dostad). 11.0, Concert by the Station Orchestra, conducted by Ferdinand Drost; Capriccio (Piechler); Verdi Variations Op. 23 (Heger); Waltz, The Blue Danube (Joh. Strauss). 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.0 p.m., Local News. 6.5, Music by an Argentine Orchestra. 6.15, Operetta Music: Selection from La basoche (Messager) and Le Coup de rouls (Messager). 6.30, Cello Solos: Sonata (Handel); Harlequin (Copper); Nauturne (Chopin). 6.45, Sound Film Music. 7.0, Music by a Viennese Orchestra. 7.15, News, Racing Results, and Market Prices. 7.30, A Night on the Bare Mountain (Mussorgsky), by a Symphony Orchestra. 7.45, Opera Music: Selection from Aida (Verdi), Sigurd (Reyer) and Figaro (Mozart). 8.0, Orchestral Music: Selection from La boutique fantasque (Rossini); The Clock and the Dresden Figures (Ketelbey); Hungarian March (Berlioz); Overture, Morning, Noon and Night (Suppe). 8.30, Accordion Music. 8.45, Opera Music: Selection from The Magic Flute (Mozart), Sigurd (Reyer), and L'attaque du moulin (Brucena). 9.0, Music by String Instruments: Wienerblut (Strauss); Si vous Paviez compris (Denza); Salsveig's Song (Greig); Elégie (Masseuret); Nocturne (Chopin); Serenade (Heykens); Santiago (Coripi); Live, Love and Laugh (Strauss). 9.30, Light Orchestral Music. 9.45, Music by an Argentine Orchestra. 10.0, Music by a Viennese Orchestra. 10.15, North African News, and Local News. 10.30, Concert for Listeners in Morocco. 11.15, Popular Concert. 11.30, Concert. 12 Midnight, News, Weather, and Announcements. 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.—5.10 p.m., 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; Genua, 959 kc/s, 312.8 metres; and Florence, 593 kc/s, 500.8 metres.—5.10 p.m., Programme for Women. 5.40, Gramophone Music. 6.0 to 6.5, Weather. 6.35, Giornale Radio, Lottery Results, Dopolavoro Notes, and Gramophone Music. 7.0, Time, Tourist Talk, and Gramophone Music. 7.10, Market Prices. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News and Gramophone Music. 8.30, Talk: Events and Problems. 8.45, Variety Concert. In the interval, Book Review. 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 Announcements in Various 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 Wiener Symphoniker, conducted by Josef Holzer. In the interval at 1.0, Time and News. 2.0, Interval. 3.0, Time, Weather and Exchange. 3.20, Talk: The Flower Gardens of Old Egypt. 3.35, Reading. 4.0, Concert by the Rupp-Krause Zither Quartet. 4.35, Italian Conversation. 5.0, Orchestral Concert, relayed from Baden, near Vienna. 6.0, Talk: Great Viennese Characters in the Turkish Wars. 6.25, Monthly Review of Foreign Affairs. 6.50, Today's Motto. 6.55, Time and Announcements. 7.5, Gramophone Cabaret. 8.5, Topical Programme. 8.20, Die Frau von Vierzig Jahren—Play in Three Acts (Sil Varo). 10.0, News. 10.15, Concert by the Wiener Symphoniker, conducted by Josef Holzer. Overture, Poet and Peasant (Suppe); Violin Solo from The Violin-Maker of Cremona (Hubay); The Skaters' Waltz (Waldteufel); Grünzinger-Lied; (Precht-Almeyer); Da dranssen in der Wachau (Arnold); Elbestands-Gepoluder (Friedental); Spanish Intermezzo, Tintoretto (Kockert); Alt'wern' ma sein aber drahn'wern' ma do (Domanig-Roll); Potpourri, Im siebenen Himmel (Fetras); Waltz, Souvenir de Semmering (Lankesle); March, Frisch auf (Werba).

WARSAW

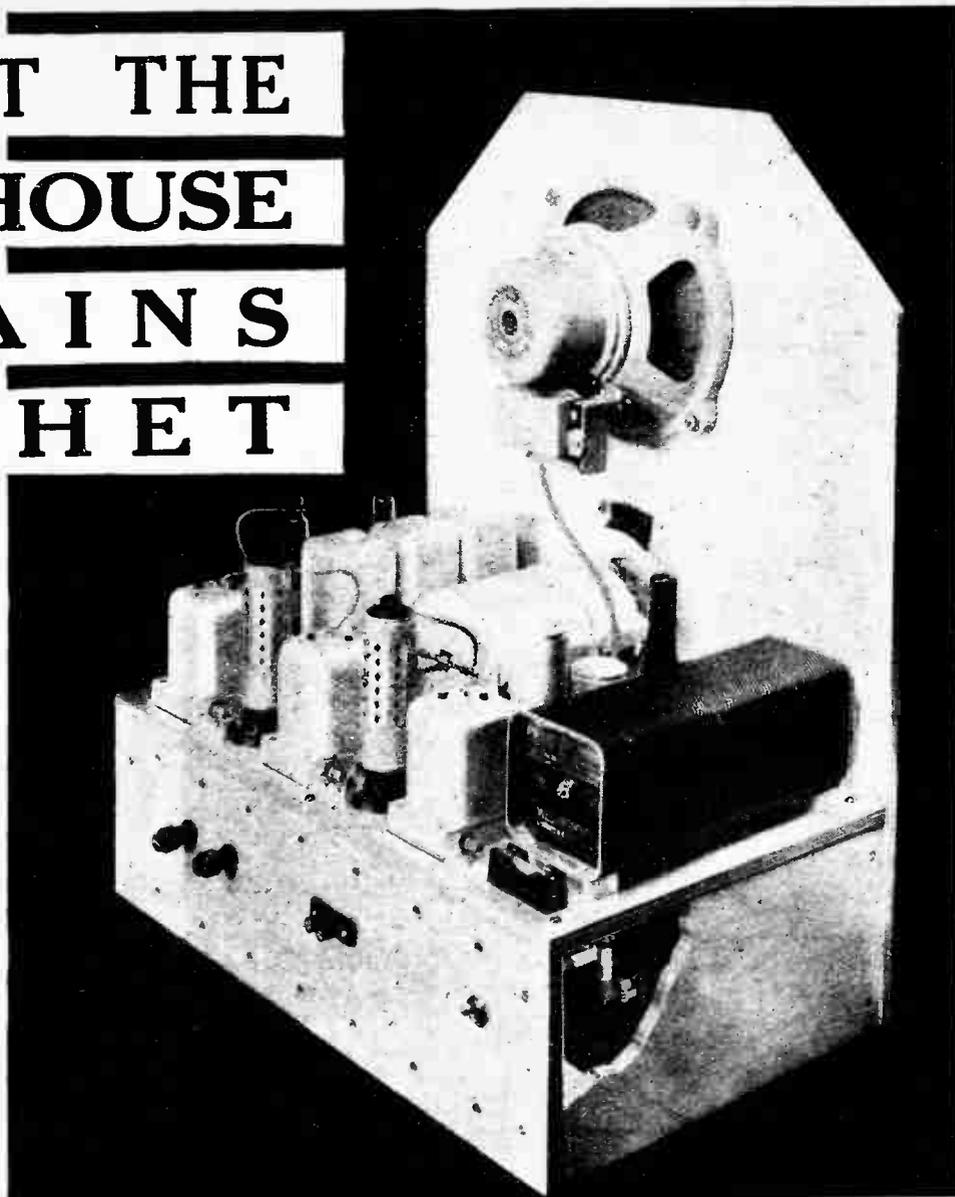
212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Concert of Light Music on Gramophone Records. 12.25, Press Review. 12.33, Weather. 12.35, Gramophone Concert (cont'd). 12.55, Radio Journal. 1.0, Interval. 2.55, Gramophone Concert. 3.5, News. 3.10, Commercial Notes. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.50, Sports Notes. 4.0, Programme for Invalids, relayed from Lwow, 788 kc/s, 381 metres. 4.30, Talk: The Italian Economist, Vilefredo Pareto, Head of the Lausanne School. 4.50, Gramophone Music. 5.0, Topical Talk. 5.15, Violin and Song Recital by Stokowska and Bojar-Przemieniec (Soprano). 6.15, Talk, relayed from Lwow: Conditions of Work among our Neighbours and Allies. 6.35, Septet, Op. 20 (Beethoven), by the Szule Ensemble. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Reading. 8.0, Concert of Light Music by the Station Orchestra. Soloist: Ida Losiowna. 9.5, Radio Journal. 9.15, Agricultural Press Review. 9.30, Pianoforte Recital of Polish Music by Burkath: Two Pieces (Moniuszko): (a) Lullaby, (b) Bagatelle; Idyll (Zarzycki); Conte (Zarembski); Chants du voyageur, Op. 8 (Paderewski); Legend, Op. 15 (Rozycki); Polish Dance, Op. 37, No. 1 (Rozycki); Etude, Op. 4, No. 3 (Szymancki); Three Pieces (Burkath): (a) Romance, Op. 11, (b) Poco andante, (c) Confession of the Young Dancer. 10.0, Dance Music. In the interval at 10.25, Sports Notes, Aviation, Weather and Police Notes, and at 11.30, News for Members of the Polish Polar Expedition.

WILNO

533 kc/s, 563 metres; 16 kW.—7.20 p.m., Weekly Lithuanian Review. 7.35, Programme Announcements. 7.40, See Warsaw. 9.15, Agricultural Press Review. 9.30, See Warsaw. 12 Midnight (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

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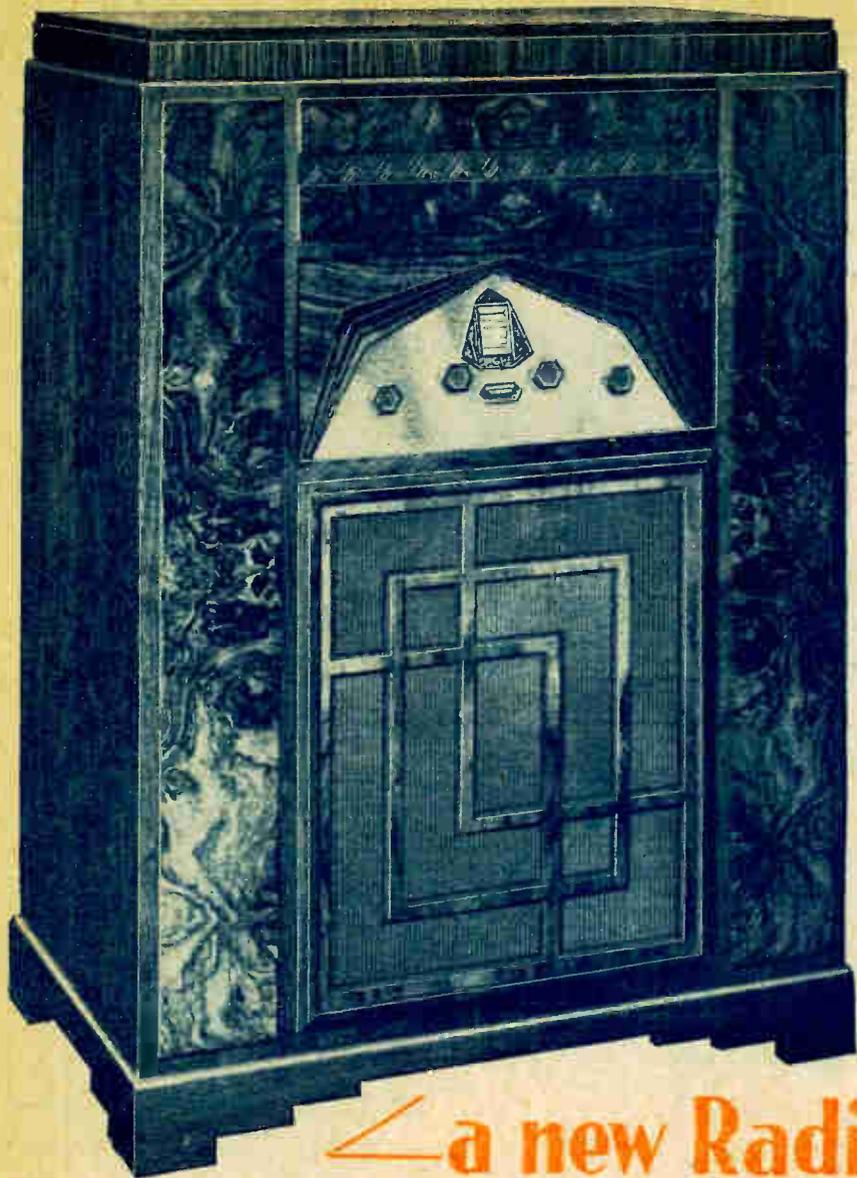
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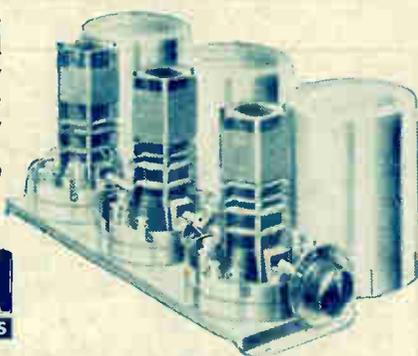
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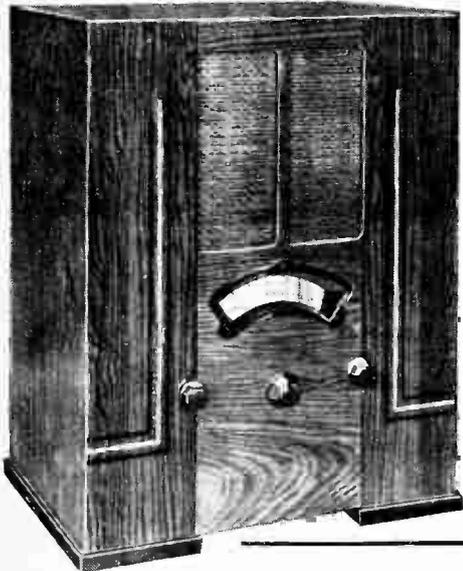
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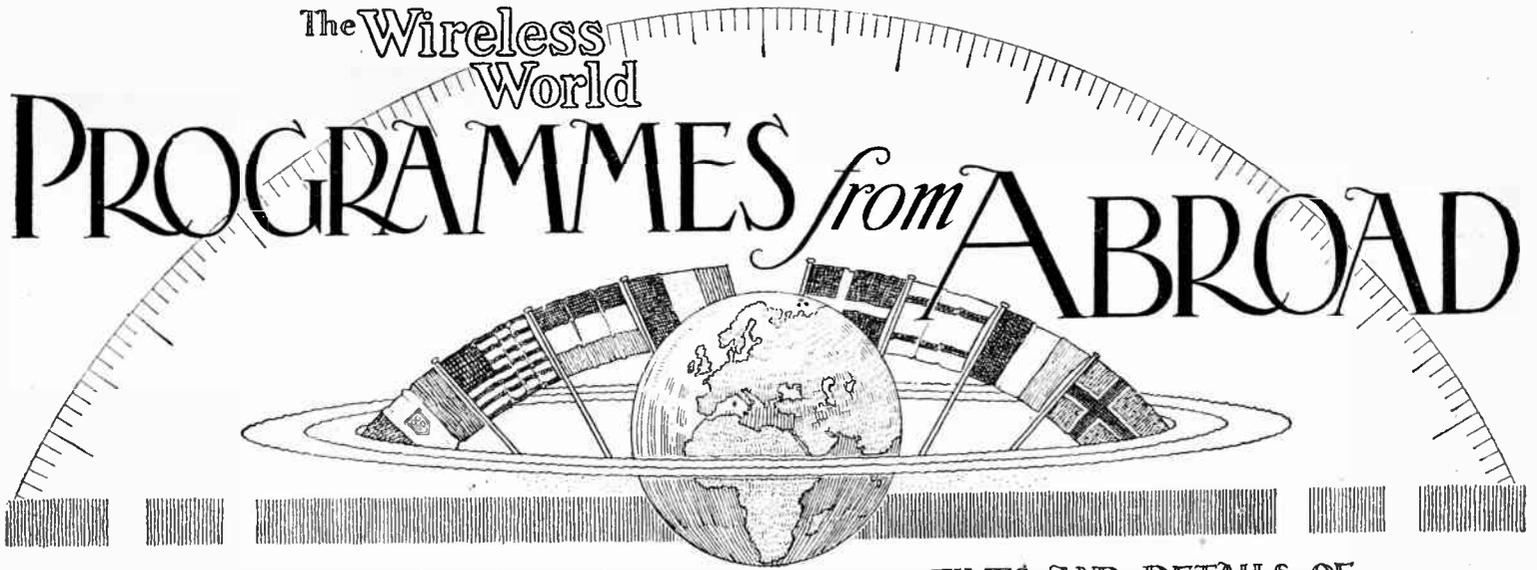
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**TIMES AND DETAILS OF
FULL WEEK'S FOREIGN
TRANSMISSIONS**

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	Hilversum (Holland) (<i>Koolryk. experimental,</i> <i>50 kW., after programme hours.</i>)	.....	453.2	662	4	Milan (Vigentino) (Italy) (<i>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.); Rjukan (0.15 kW.), Notodden (0.08 kW.); Alesund (0.35 kW.) (Norway) (<i>relays Oslo</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 16.86 m.)</i>	.....	441.2	680	50	Rome, IRO. (<i>S.-W. Station, 2 RO on 25.4 m.</i>)	.....
1554.4	193	30	Daventry National .. .. .	.....	435.4	689	55	Stockholm, SASA (Sweden) .. .. .	.....
1538	195	7	Ankara (Angora) (Turkey) .. .. .	.....	430.4	697	2.5	Belgrade (Yugoslavia) .. .. .	.....
1481	202.5	500	Moscow, RVI (Old Komintern) (Russia)	.....	424.3	707	2	Madrid, EAJ7 (Union Radio) .. .. .	.....
1446	207.5	13	Eiffel Tower, F.L, 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, RV76 I (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) .. .. .	.....
1350	222	0.5	Tunis-Kasbah (Tunisia) .. .. .	.....	408.7	734	16	Katowitz (Poland) .. .. .	.....
1304	230	100	Moscow, WZSPS (Trade Union) (Russia)	.....	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	Sтамбул (Turkey) .. .. .	.....	394.2	761	12	Bucharest (Roumania) .. .. .	.....
1200	250	21	Reykjavik (Iceland) .. .. .	.....	389.6	770	120	Leipzig (Germany) .. .. .	.....
1190	252	200	Luxembourg .. .. .	.....	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) .. .. .	.....
1154	260	20	Monte Ceneri (Switzerland) .. .. .	.....	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		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) .. .. .	.....	369.1	815	0.7	Fredriksstad (Norway). (<i>Relays Oslo</i>)	.....
1000	300	100	Moscow RV39 (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) .. .. .	.....	363.6	825	60	Mühlacker (Stuttgart) (Germany) .. .. .	.....
840	357	18.5	Budapest (Hungary) .. .. .	.....	360.6	832	50	London Regional (Brookmans Park) ..	.....
825	363.6	50	Sverdlovsk, RV5 (Russia) .. .. .	.....	355.9	843	7	Graz (Austria). (<i>Relays Vienna</i>)	.....
760	395	1.3	Geneva (Switzerland). (<i>Relays Sottens</i>)	.....	352.1	852	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) .. .. .	.....	348.8	860	10	Strasbourg, PTT (France) .. .. .	.....
680	441.2	0.6	Lausanne (Switzerland). (<i>Relays Sottens</i>)	.....	345.2	869	11.5	Brno (Brunn) (Czechoslovakia) .. .. .	.....
574.7	522	7	Ljubljana (Yugoslavia) .. .. .	.....	341.7	878	35	Brussels II, Velthem (Belgium). (<i>In Flemish</i>)	.....
569	527	0.25	Freiburg-in-Breisgau (Germany). (<i>Relay Stn.</i>)	.....	338.2	887	15	Cadiz (Spain) .. .. .	.....
568.1	528	2	Grenoble (France) .. .. .	.....	335	896	5	Poznan (Poland) .. .. .	.....
566	530	0.25	Hanover (Germany). (<i>Relays Hamburg</i>)	.....	334.4	897	1.9	Milan (Italy). (<i>Relays Turin</i>)	.....
563	533	16	Wilno (Poland). (<i>Relay Station</i>)	.....	331.5	905	50	Poste Parisien (France) .. .. .	.....
560	536	0.25	Augsburg (Germany). (<i>Relays Munich</i>)	.....	328.2	914	60	Breslau (Germany) .. .. .	.....
560	536	1.5	Kaiserslautern (Germany). (<i>Relays Munich</i>)	.....	325	923	60	Göteborg (Sweden). (<i>Relays Stockholm</i>)	.....
550	545	18.5	Budapest No. 1 Lakihegy (Hungary)	.....	321.9	932	10	Dresden (Germany). (<i>Relays Leipzig</i>)	.....
542	554	10	Sundsvall (Sweden). (<i>Relays Stockholm</i>)	.....	318.8	941	0.25	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) .. .. .	.....
517.2	580	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	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	Huizen (Holland). (<i>7 kW. before 4.40 p.m.</i>)	.....
465.8	644	1.5	Lyon 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 Helsinki</i>); Klagenfurt (0.5 kW.) (Austria) (<i>relays Vienna</i>); Porsgrunn (0.7 kW.) (<i>relays Oslo</i>), Tromsø (0.1 kW.) Bodö (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) .. .. .	.....
				.....	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 CT 1AA (Portugal). (Short-wave Station on 31.25 m.)		238.9	1256	2	Nürnberg (Germany). (Relays Munich)	
281.2	1067	0.75	Copenhagen (Denmark)		237.2	1265	1	Nimes (France)	
278.8	1076	13.5	Bratislava (Czechoslovakia)		237.2	1265	3	Bordeaux, Sud-Ouest (France)	
276.5	1085	60	Heilsberg (Germany)		235.5	1274	0.5	Kristiansand (Norway)	
273.7	1096	7	Turin (Italy)		235	1283	1.65	Lodz (Poland). (Relay Station)	
271.5	1105	1.3	Rennes, PTT (France)		232.2	1292	0.25	Kiel (Germany). (Relays Hamburg)	
269.8	1112	20	Bari (Italy)		230.6	1301	—	Swedish Relay Stations. (Malmö, Norrköping, Karlstad and Trollhättan).	
269.8	1112	0.25	Bremen (Germany). (Relays Hamburg)		227.4	1319	0.5	Flensburg (Germany). (Relays Hamburg)	
267.6	1121	0.75	Valencia (Spain)		225.9	1328	10	Fécamp, Radio-Normandie (France)	
267.4	1122	6.25	Nyireghaza (Hungary) (Relays Budapest)		224.4	1337	1	Cork (Irish Free State)	
265.8	1128.5	1.3	Lille, PTT (France)		222.9	1346	0.15	Hudiksvall (Sweden)	
263.8	1137	11.2	Moravska Ostrava (Czechoslovakia)		219.9	1365	1.5	Béziers (France)	
261.5	1147	50	London National (Brookmans Park)		218.5	1373	0.2	Plymouth	
259.3	1157	17	Frankfurt-a.M. (Germany)		218.5	1373	0.5	Salzburg (Austria). (Relays Vienna)	
259.3	1157	2.3	Trier (Germany). (Relays Frankfurt)		217	1382	0.5	Königsberg (East Prussia) (Relays Heilsberg)	
257.1	1167	10	Hörby (Sweden). (Relays Stockholm)		217	1382	0.25	Karlstad (Sweden)	
255.1	1176	0.7	Toulouse, PTT (France)		215.6	1391	0.2	Halmstad (Sweden)	
253.1	1185	5	Gleiwitz (Germany). (Relays Breslau)		214.3	1400	1	Aberdeen	
252	1193	1	Barcelona, EAJ15 (Assoc. Nat.) (Spain)		211.3	1420	1	Newcastle	
249.6	1202	0.8	Juan-les-Pins, Nice (France)		209.8	1430	1.25	Magyarovar, Miskolc and Pecs (Hungary)	
247.7	1211	10	Trieste (Italy) (Relays Turin)		207	1450	0.15	Boras (Sweden)	
245.9	1220		Berne (0.5kW.) (Switzerland) (relays Beromünster): Eskilstuna (0.2 kW.), Säffe (0.4 kW.) (Sweden) (relays Stockholm); Cassel (0.25 kW.) (Germany) (relays Frankfurt); Linz (0.5 kW.) (Austria) (relays Vienna); Pietarsaari (0.5 kW.), Turku (Abo) (0.5 kW.) (Finland) (relays Helsinki).		206	1460	0.2	Ornskoldsvik (Sweden)	
					204.1	1470	0.2	Gävle (Sweden)	
					202.7	1480	0.25	Kristinehamn (Sweden)	
					201.3	1490	0.25	Hälsingborg (Sweden)	
					195	1530	0.2	Karlskrona (Sweden)	

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent B.S.T.)

Metres.	kc/s.	Call Sign.	Station.	Tuning Positions.	Metres.	kc s.	Call Sign.	Station.	Tuning Positions.
80.0	3,750	2RO	Rome (Ecuador). (Daily 13.30)		39.7	7,536	HKF	Bogota (Colombia). (Westinghouse Labs.)	
73.0	4,110	HCJB	Quito (Ecuador). (Daily 13.30)		39.4	7,612	X26A	Nuevo Laredo (Mexico). (Thurs. 17.00)	
70.2	4,273	RW15	Khabarovsk (Russia). (Daily 10.00-13.00)		38.7	7,797	HBL	Radio Nations, Prangins (Switzerland). (Sun. 23.00-23.45)	
62.56	4,795	VE9BY	London, Ont. (Canada). (Sun. 07.00)		37.33	8,036	CNR	Rabat (Morocco). (Sun. 22.00)	
62.5	4,800	W2XV	Long Island, N.Y. (U.S.A.). (Fri. 01.00)		34.68	8,650	W2XV	Long Island, N.Y. (U.S.A.). (Fri. 24.00)	
62.31	5,145	OK1MPT	Prague (Czechoslovakia). (Tues. and Fri. 20.30)		34.68	8,650	VE9BY	London, Ont. (Canada). (Mon. 22.00)	
58.3	5,146	PMY	Bandoeng (Java). (Daily 13.20 and 08.00)		33.50	8,928	TGX	Guatemala City (S. America)	
54.52	5,502	W2XBH	Brooklyn, N.Y. (U.S.A.). (Relays WCGU)		31.8	9,490	SRT	Posen (Poland). (Tues. and Thurs. 18.30)	
52.7	5,690	FIQA	Tananarive, P.T.T. (Madagascar)		31.58	9,500	PRBA	Rio de Janeiro (Brazil). (Daily 22.30)	
51.22	5,714	XDA	Chapultepec (Mexico)		31.55	9,510	VK3ME	Melbourne (Australia). (Wed. and Sat. 11.00)	
50.6	5,930	HJ4ABE	Mediterranean (Colombia)		31.54	9,510	GSB	Empire Broadcasting, Zones 2, 4, 5	
50.26	5,970	HVJ	Vatican State, Rome. (Daily 20.00)		31.51	9,520	OXY	Skamlebaek (Denmark). (Relays Copenhagen)	
50.0	6,000	ZL3ZC	Christchurch (New Zealand). (Wed. 04.00, Sat. 08.30)		31.48	9,530	W2XAF	Schenectady, N.Y. (U.S.A.) (Relays WGY)	
50.0	6,000	—	Bucharest (Roumania)		31.38	9,560	DJA	Zeesen (Germany). (Daily 23.00)	
50.0	6,000	RW59	Moscow (Relays Trade Union Stn.)		31.35	9,570	W1XAZ	East Springfield, Mass. (U.S.A.). (Relays WBBZ)	
49.96	6,005	EAR25	Barcelona, Radio Club (Spain). (Sat. 21.00)		31.3	9,580	HBL	Radio Nations, Prangins (Switzerland). (Sun. 23.00-23.45)	
49.83	6,020	HRB	Teguigalpa (Honduras). (Daily ex. Sun. 01.00-06.00)		31.29	9,585	GSC	Empire Broadcasting, Zone 3	
49.8	6,023	DJC	Zeesen (Germany)		31.28	9,585	W3XAU	Philadelphia, Pa. (U.S.A.). (Relays WCAU)	
49.67	6,042	NEW	Mexico City (Mexico). (Daily 02.00)		31.28	9,590	VK2ME	Sydney (Australia). (Sun. 11.00)	
49.67	6,042	W2XAL	Coytesville, N.J. (U.S.A.). (Relays WRNY)		31.25	9,598	CT1AA	Lisbon (Portugal). (Tues. and Fri. 23.00-01.00)	
49.67	6,042	W4XB	Miami Beach, Florida (U.S.A.)		31.10	9,640	HS2PJ	Bangkok (Siam). (Mon. 03.00-06.00)	
49.6	6,048	W3XAU	Philadelphia, Pa. (U.S.A.). (Relays WCAU)		31.0	9,675	T14NRH	Heredia (Costa Rica). (Daily 23.00 and 03.00)	
49.58	6,050	GSA	Empire Broadcasting, Zones 4-5		30.0	10,000	EAQ	Aranjuez (Spain). (Daily 22.30, Sat. 18.00)	
49.5	6,060	VQ7LO	Nairobi (Kenya Colony). (Daily 17.30)		30.0	10,000	—	Belgrade (Yugoslavia). (Mon. 20.00)	
49.5	6,060	W8XAL	Mason, Ohio (U.S.A.). (Relays WLW)		28.98	10,350	LSX	Buenos Aires (Argentina). (Daily 21.30)	
49.43	6,069	VE9CS	Vancouver, B.C. (Canada)		26.83	11,180	CT3AQ	Funchal (Madeira). (Tues. and Thurs. 11.30-13.30)	
49.4	6,072	UOR2	Vienna. (Tues. 14.00, Thurs. 16.00, Sat. 24.00)		25.63	11,705	FYA	Pontoise (France). (Colonial Stn. E-W, daily 20.30)	
49.34	6,080	W2XCX	Kearny, N.J. (U.S.A.). (Relays WOR)		25.6	11,720	VE9JR	Winnipeg (Canada). (Daily ex. Sat. and Sun. 18.45)	
49.34	6,080	W9XAA	Chicago, Ill. (U.S.A.). (Relays WCFL)		25.53	11,750	GSD	Empire Broadcasting, Zones 1 & 4	
49.22	6,095	VE9GW	Bowmanville, Ont. (Canada). (Daily 21.00)		25.5	11,760	XDA	Chapultepec (Mexico). (Daily 21.00)	
49.2	6,098	ZJT	Johannesburg (S. Africa). (Weekdays 10.00, 15.00 [Sat. 15.30] and 18.00, Sun. 14.00 and 17.30). (Temporarily suspended)		25.5	11,760	DJI	Zeesen (Germany)	
49.18	6,100	W3XAL	Bound Brook, N.Y. (Relays WJZ)		25.45	11,790	W1XAL	Boston, Mass. (U.S.A.)	
49.1	6,110	VUC	Calcutta, India. (Daily 14.00)		25.4	11,810	2RO	Prato Smeraldo, Rome. (17.00 and 20.30)	
49.02	6,120	PK1WK	Bandoeng (Java). (Daily 23.45)		25.36	11,830	W2XE	Wayne, N.J. (U.S.A.). (Relays WABC)	
49.02	6,120	W2XE	Wayne, N.J. (U.S.A.). (Relays WABC)		25.34	11,840	W9XAA	Chicago, Ill. (U.S.A.). (Relays WCFL)	
48.86	6,140	W8XK	East Pittsburg, Pa. (U.S.A.). (Relays KDKA)		25.28	11,865	GSE	Empire Broadcasting, Zone 2	
48.8	6,147	VE9CL	Winnipeg (Canada). (Daily ex. Sun. 01.30)		25.27	11,870	W8XK	East Pittsburg, Pa. (U.S.A.). (Relays KDKA)	
48.65	6,167	XIF	Mexico City (Mexico)		25.14	11,933	FYA	Pontoise (France). (Colonial Stn. N-S)	
48.35	6,205	HKC	Bogota (Colombia). (Daily 16.00)		25.18	12,830	CNR	Rabat (Morocco). (Sun. 12.30)	
48.2	6,220	2RO	Rome (Italy)		20.5	14,630	XDA	Chapultepec (Mexico). (Daily 20.30)	
48.05	6,243	HKD	Barranquilla (Colombia). (Weekdays 24.45)		19.9	15,075	T14NRH	Heredia (Costa Rica). (Sat., Sun., Mon. 17.00 and 22.00)	
48.0	6,250	CN8MC	Casablanca (Morocco). (Relays Rabat)		19.84	15,120	HVJ	Vatican State, Rome. (Daily 11.00)	
47.0	6,382	HCLDR	Quito, Ecuador. (Daily 02.00)		19.81	15,140	GSF	Empire Broadcasting, Zone 5	
46.89	6,425	W3XL	Bound Brook, N.J. (U.S.A.). (Relays WJZ irregular.)		19.73	15,200	DJB	Zeesen (Germany). (Daily 16.00-24.00)	
46.67	6,426	VE9BY	London, Ont. (Canada). (Sat. 02.00 Sun. 03.00)		19.72	15,210	W8XK	East Pittsburg, Pa. (U.S.A.). (Relays KDKA)	
46.38	6,611	RW72	Moscow (Relays Trade Union Stn.)		19.68	15,244	FYA	Pontoise (France). (Colonial Stn. E-W)	
45.0	6,667	FM8KR	Constantine (Algeria). (Mon. and Fri. 23.00)		19.58	15,340	W2XAD	South Schenectady, N.Y. (U.S.A.) (Daily 19.00)	
45.0	6,667	TGW	Guatemala City (Central America). (Daily 04.00)		16.9	17,750	HSP	Bangkok (Siam). (Sun. and Tues. 22.00)	
43.75	6,860	—	Radio Vitus, Paris. (Daily 20.30)		16.88	17,770	GSG	Empire Broadcasting, Zone 2	
43.0	6,970	EAR110	Madrid. (Tues. and Sat. 23.30)		16.87	17,780	W3XAL	Bound Brook, N.J. (Weekdays 14.00)	
41.7	7,195	VS1AB	Singapore (Malay States). (Sun. and Wed. 16.30)		16.86	17,790	DJE	Zeesen (Germany)	
41.8	7,211	EAR58	Teneriffe (Radio Club) (Canary Islands)		16.57	18,105	W9XAA	Chicago, Ill. (U.S.A.). (Relays WCFL)	
41.5	7,230	HB9D	Zurich (Radio Club) (Switzerland). (1st and 3rd Sun.)		14.47	20,730	LSY	Buenos Aires (Argentina). (Sun. 22.00)	
41.0	7,320	HSP2	Bangkok (Siam). (Mon. 15.00)		13.97	21,470	GSH	Empire Broadcasting, Zone 3 (Daylight working.)	
40.3	7,443	HBQ	Radio Nations, Prangins (Switzerland). (Sun. 23.00-23.45)		13.92	21,540	W8XK	East Pittsburg (Relays KDKA)	

FOREIGN SUNDAY PROGRAMMES

AUGUST THE TWENTIETH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Studio service and lecture on "Man and Civilisation," by Christopher Dawson. Chamber music.
- LONDON REGIONAL** Military Band programme.
- MIDLAND REGIONAL** Service from the Central Methodist Church, Blackpool.
- NORTH REGIONAL** Police Band concert.
- WEST REGIONAL** Song and cello recital.
- SCOTTISH REGIONAL** Service from Fisherwick Presbyterian Church, Belfast.
- BELFAST**

ABROAD

- BRUSSELS (No. 1)** 12.0 Noon. The Symphony Orchestra, conducted by Kumps.
- BRUSSELS (No. 2)** 8.0 p.m. Chopin pianoforte recital. 9.0 p.m., Wagner concert from the Casino, Knoeke.
- BUDAPEST** 9.0 p.m. Hungarian music by the Royal Opera House Orchestra.
- HUIZEN** 7.55 p.m. Concert, relayed from Scheveningen.
- PITTSBURGH** 8.0 p.m. National opera concert.
- POSTE PARISIEN** 8.30 p.m. Operetta: "La Rose de Saint-Flour," by Offenbach.
- ROME** 8.30 p.m. Opera: "Andrea Chenier," by Giordano.
- STRASBOURG** 8.30 p.m. Opera: "Lohengrin," by Wagner, from the Casino, Vichy.
- VIENNA** 11.0 p.m. Symphony concert by the Philharmonic Orchestra.
- WARSAW** 8.0 p.m. The Station Orchestra, conducted by Oziminski.

Socialist Movement—a Review on Gramophone Records. 7.45, Sports Notes. 7.55, Lottery Announcements. 8.10 (approx.). See Berlin **Deutschlandsender (Reichssender)**. 10.0, News. 10.15 (approx.). Concert of Light Music and Dance Music. In the interval from 11.0 to 11.10, Topical Talk. 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. 6.15 p.m., Radio Journal. 7.40, Lottery Results. 7.45, Sports Notes. 8.0, Gramophone Music. 8.30, Lohengrin Opera in Three Acts (Wagner), relayed from the Casino, Vichy.

BRATISLAVA

1,076 kc/s, 279 metres; 11 kW.—10 p.m., See **Prague**. 7.50, See **Moravska-Ostrava**. 8.40, See **Prague**. 11.0 (approx.). Close Down.

BREMEN.—See **Hamburg**.

BRESLAU

923 kc/s, 325 metres; 9 kW. Relayed by **Gleiwitz**, 1,194 kc/s, 253 metres.—12 Noon, See **Berlin (Deutschlandsender)**. 1.0 p.m., Concert by the Station Orchestra. 2.0, Talk on Photography. 2.15, Talk: The Defence Forces the Foundation of the state. 2.35, Reading (Franz von Gartner). 3.0, Programme for Children. 3.30, Pianoforte Recital by Erich Winkler. 4.0, See **Berlin (Witzleben)**. In an interval at 4.30, Hans Christoph Kaergel reads from his short story *Nachtgericht*. 4.20, Concert by the Station Orchestra. 6.0, Organ Recital by Gerhard Zeggert, relayed from the Jahrhunderthalle. 6.30, Concert by the Station Orchestra, conducted by Bruno Janz. 7.0, Reading (Paul de Lagarde). 7.30, Weather and Sports Notes. 8.10 (approx.). See **Berlin Deutschlandsender (Reichssender)**. 10.0, Austria. 10.20, Time and News. 10.50, Light Music and Dance Music by a Nazi Band, relayed from Ottmarchau. 12 Midnight (approx.). Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—4.0 p.m., Military Band Concert, conducted by Zita, relayed from the Luzauky Restaurant. 5.30, Gramophone Music. 6.0, German Transmission: Pianoforte Duets by Renata Hawranek-Fischböck and Adele Weingartner; Fantasia in F Minor, Op. 130 (Schubert); Legends Nos. 6-9, Op. 59 (Dvorak). 7.35, See

Prague. 7.35, Humorous Recitation. 7.50, See **Moravska-Ostrava**. 8.40, See **Prague**. 11.0 (approx.). Close Down.

BRUSSELS (No. 1)

1,191 kc/s, 590 metres; 15 kW.—10.0 a.m., Concert from the Scala, Ostend. 11.0, Concert by the Radio Orchestra, conducted by Walpot. 12 Noon, Concert by the Symphony Orchestra, conducted by Kumps. Soloist: Mme. Ervan (Songs). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Radio Orchestra, conducted by M. Leemans. Soloist: M. Gerlaeche (Bass). 1.30, Scenes from *Marquette (Sacha Guitry)*, by Mme. Yvonne Printemps and the Author (on Gramophone Records). 1.40, Concert (contd.). 5.0, Dance Music from the Casino, Knoeke. 5.30, Football Results. 6.30, Programme for Children. 7.0, Partita No. 1 in B flat (Bach). 7.15, Religious Address. 7.30, Radio and Music Review. 8.0, Concert by the Radio Orchestra, conducted by Charles Walpot. Soloist: M. R. Durand (Tenor). March, Stars and Stripes (Sousa); Waltz, Wine, Woman and Song (Joh. Strauss); Violin Solo: Une Fête à Aranjuez (Cedersman); Songs; Ballet Music from *Le Cid (Massenet)*. 8.45, Gramophone Records and Poems. 9.0, Concert, followed by Dance Music relayed from the Kursaal, Ostend. In the interval, Journal Parlé.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—10.0 a.m., Concert by the Radio Orchestra, conducted by Walpot. Soloists: Mme. Eve Govy (Soprano) and Mr. Loufier (Tenor). 11.0, Concert, relayed from the Scala, Ostend. 11.30, Radi Report of the Yser Pilgrimage. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Station Symphony Orchestra, conducted by Kumps. 5.0, Dance Music, relayed from the Kursaal, Ostend. 6.0, Gramophone Music. 6.30, Concert by the Small Station Orchestra, conducted by Leemans; Overture, The Nuremberg Doll (Adam); Suite from *Hiawatha (Coleridge-Taylor)*; Spanish Dance, *Andalusa (Granados)*; selection from *La Mascotte (Audran)*; Rattle of Spring (Sinding); In the Shadow (Finck); Gallop (Richter). 7.15, Religious Address. 7.30, Music Review. 8.0, Chopin Pianoforte Recital by Jean du Chastain; Ballad in G minor; Nocturne; Two Waltzes; Two Mazurkas; Polonaise in A flat. 8.30, Gramophone Music. 8.45, Recitations. 9.0, Concert relayed from the Casino, Knoeke. Soloist: Marjorie Lawrence. The Ride of the Valkyries (Wagner); Prelude to *Lohengrin (Wagner)*; Songs; Prelude and Death of Isolde from *Tristan and Isolde (Wagner)*; Songs; Overture, *Tannhäuser (Wag-*

ner). After the Concert, *Le Journal Parlé*, and Dance Music, relayed from the Casino, Knoeke.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.0 p.m. till Close Down.—11.15 a.m., Protestant Service. 12.20 p.m., Concert by the Budapest Concert Orchestra, conducted by Nandor Zsolt. 2.0, Gramophone Music. 3.0, Agricultural Prices. 3.45, Orchestral Concert, conducted by Bela Melles. 4.50, Talk: St. Stephen. 5.20, Concert by the Budapest Concert Orchestra. 6.30, Talk. 7.0, Recital of Hungarian Folk Songs, with Gypsy Music Accompaniment. 8.15, Poems. 8.40, Sports Notes, Racing Results and News. 9.0, Concert of Hungarian Music by the Royal Opera House Orchestra, conducted by F. Fridl: Overture (Erkel); Symphony Poem, *Les Préludes (Liszt)*; *Ruralia Hungarica (Dohnanyi)*; Hungarian Scenes (Bela Bartok); Violin Solo: Melody from *The Violinmaker of Cremona (Hubay)*; Scherzo, *Beggining (Siklos)*. 10.30, Weather. 10.35, Concert by the Waldbauer Kerpely String Quartet. 11.30, Gypsy Music from the Gate Emke.

CASSEL.—See **Frankfurt**.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by **Kalundborg**, 260 kc/s, 1,153.8 metres.—8.27 a.m., Weather Forecast. 8.30, Morning Gymnastics. 9.0 to 9.30, Talk. 10.0, Divine Service relayed from the Garrison Church. 11.30, Weather and News. 12 Noon, Time and Chimes from the Town Hall and Weather Forecast. 12.5 p.m., Concert by the Radio Orchestra, conducted by Launy Gröndahl. 1.0, English Lesson. 1.20, German Lesson. 1.40, French Lesson. 2.0 (also relayed by **Skamleback** on 31.51 metres), Divine Service relayed from Holmens-Kirke. 4.0, Orchestral Concert, relayed from the Common 5.50, Programme for Children. 5.20, Talk: Fredr. Bosen. 6.50, Weather. 7.1, News and Sports Results. 7.15, Time Signal. 7.30, Talk: The Zionist Congress in Prague. 8.0, Chimes from the Town Hall. 8.5, Concert of Music by J. P. E. Hartmann. The Station Orchestra, conducted by Emil Reesen. Suite from *Thrymskviden*; Suite from *Valkyrien*; Prelude to the Second Act of *Et Folkesang*. After the Concert, Weather. 9.0, Gramophone Music. 9.15, Her Husband—Radio Sketch (Myra Gruenberg). 9.35, Choral Concert of Danish and Norwegian Music. In the interval, Readings. 10.25, News. 10.35, Duet Op. 39 No. for Two Flutes (Kuhlau) by Hye-Knudsen and Erik Thomson. 10.55, Dance Music relayed from the National Scala. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Monday). Close Down.

CORK.—See **Athlone**.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—6.0 p.m., Light Music on Gramophone Records. 6.35, Programme Announcements. 6.40, Miscellaneous Items and News. 7.0, Je C'aime—Play (Sacha Guitry). 7.40, See **Warsaw**. 9.0, Programme from **Lwow**, 788 kc/s, 381 metres. 10.0, See **Warsaw**. In an interval at 10.25, sports Notes. 11.0 (approx.). Close Down.

DANZIG.—See **Heilsberg**.

DRESDEN.—See **Leipzig**.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m. to 7.30 p.m., Programme in English by the I.B.C. 11.0, Philco Concert. Part 1: Orchestral Music: Signature Tune; The Wedding of the Birds; Violin Solo: Indian Love Call (Friml); My Hero, from *The Chocolate Soldier (Strauss)*; Selection from *No. No. Nanette (Youmans)*; Selection from *Princess Pat (Herbert)*; Poème (Fibich); Southern Rhapsody (Hosmer); Some of those Days (Brooks). Part 11: Dance Music by Jack Payne and his Orchestra (Electrical Transcriptions): Farewell to Arms (Wrubel); Let Bygones be Bygones (Gilbert); All over Italy (Butler); Say it isn't so (Berlin); Something came and got me in the Spring (Rich); Hiawatha's Lullaby (Donalson); In the valley of the Moon (Tobias); The Old Spinning Wheel (Hill); I can't remember (Berlin); Signature Tune. 2.0, Concert of Light Music: Selection from *The Gondoliers (Sullivan)*; Waltz, Gold and Silver (Lehar); Violin Solo: Cavatina (Raff); Serenade (Heykens); Pianoforte Solo: Liebestraum (Liszt); Gipsy Moon (Bergonoff-Eyton); March, *The Frog King's Parade (Krouberger)*. 2.30, Concert of Gramophone Records: Bugle Call Rag (Fetras); Selection from *The Kid from Spain*, by Jack Payne and his Band; Song: Down Vauxhall Way (Oliver); Violin Solo: Waltz, Op. 39 (Brahms); Song: Until (Sander-son); Waltz, Morgenblätter (Strauss); Military Band: Tipperary (Judge

ATHLONE 725 kc/s, 413 metres; 60 kW. Relayed by **Cork**, 1,337 kc/s, 224.4 metres.—8.30 p.m., Time Signal. 8.31, Madame Van Aalst's Trio. 8.50, The Mysterious Adventures of Ellis Palmer, by Ian Priestly-Mitchell and Company. 9.35, Contralto Solos by Mairin Feeney. 9.50, Flute and Piccolo Solos by Mollie Flynn. 10.0, Bass Solos by Derek O'Connor. 10.15, Mme. Van Aalst's Trio. 10.30, Pipe and Fiddle Duets by Seaghan O'Loighaire and P. Caney. 11.0, Time, News, Weather, Sports Results, and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—2.0 p.m., Gramophone Music. 2.30 (in the interval), Theatre Notes. 3.0, Concert by the Radio Sextet. 4.0, Programme for Hospitals and Benevolent Institutions with Gramophone Records. 5.0, Interval. 6.30, Agricultural Talk in Catalan. 7.0, Concert by the Radio Orchestra. 7.30, Baritone Song Recital by Estanislao Tarin. 8.0, Concert by the Radio Orchestra and Enriqueta Noguera (Soprano). 9.0, Dance Music from the Hollywood Bar. 10.0, Musical Comedy Music on Gramophone Records. 11.45, Chess Lesson. 12 Midnight, Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—10.45 a.m., Agricultural Report. 11.5, Religious Programme. 11.35, Sacred Music from the Church of San Domenico. 1.0 p.m., Giornale Radio. 1.10 to 2.15, Gramophone Concert. In the interval at 1.55, Weather, and at 2.0, Time and Announcements. 5.30 to 6.30, Gramophone Concert. 8.0, Sports Notes and Giornale Radio. 8.30, Time and Announcements. 8.35 (approx.), Concert of Songs and Operetta Music. In the interval, Talk on Savonarola. 10.30, Gramophone Music. 10.50, News in Albanian. 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, Gramophone Music. 7.30, Talk. 8.0, Concert by the Station Orchestra. 8.50, Song Recital by Pavic Holodkov. 9.30, Radio Play. 10.0, News. 10.20, Variety Programme on Gramophone Records. 11.0, Gypsy Music relayed from the Potrosacka Zadruga Restaurant.

BERLIN

DEUTSCHLANDSENDER (REICHSENDER), 183.5 kc/s, 1,635 metres; 60 kW.—6.0 a.m., Gymnastics from **Berlin (Witzleben)**. 6.15, Press Review, followed by The Day's Motto and Harbour Concert from **Hamburg**. 8.0, Agricultural Programme. 9.0, See **Leipzig**. 10.45, Weather Report for Shipping. 11.0, Inaugural Festival Concert from the New Deutschlandsender Studio. The Augmented Station Orchestra, conducted by Dr. Ludwig Mayer. Soloist: Gerhard Hüsch (Baritone). *Vaterländische Ouvertüre Op. 110 (Reger)*; Song for Baritone and Orchestra: *Seh ich im verfallenden dunklen Haus*, Op. 15 (Pfitzner); Reading (Hans Hermann). The Seventh Symphony (Beethoven). 12 Noon, Concert from the Funkgarten. 12.55, Time Signal. 1.0, Concert by the Berlin Concert Society, conducted by Clement Schmalstich. 3.0, Reading from the Works of Dietrich Eckart. 3.30, Fairy Tales. 4.0, Concert from **Berlin (Witzleben)**. In an interval at 5.0, Report from the Radio Exhibition. 6.0, Talk: Rudolf Hübner, the Poet. 6.30, Die Droste fährt über die Heide—A Radio Sequence on the Life of the Poetess, Auntie von Droste-Hülshoff (Willy Grünwald and Frank Lebercht). 7.40, Report of the German Light Athletic Championships for Women (on Gramophone Records). 8.10, Dinner Abroad relayed from the Radio Exhibition. 10.0, Weather and News. 10.45, Weather for Shipping. 11.0, See **Munich**.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—9.0 a.m., See **Leipzig**. 10.35, Weather. 11.0 to 1.0 p.m., See **Berlin Deutschlandsender (Reichssender)**. 1.0 p.m., Concert from **Heilsberg**. 1.45, See **Leipzig**. 2.30, Talks for Garden City Dwellers. 3.30, Radio Report from **Magdeburg**. 4.0, Orchestral Concert, conducted by Joe Balay, relayed from the Funkgarten. Four Army Marches (Frederick the Great); Two Serenades (Schubert); Waltz, *Neu-Wien* (Joh. Strauss); Selection from *The Flying Dutchman (Wagner)*; Second Hungarian Rhapsody (Liszt); Overture, *Russian and Ludmilla (Glinka)*; Selection from *Tosca (Puccini)*; Gavotte caprice (Bortkiewicz); Overture, *1812 (Tchaikovsky)*. In the interval from 4.50 to 5.20, Extracts from earlier Radio Reports of the Witzleben Stations. 6.0, Careers connected with Radio—Editor, Wireless Apparatus Manufacturer, Critic, Wireless Dealer and Engineer, all before the Microphone. 6.30, Childhood Reminiscences of Contemporary Writers (arr. Herbert Günther). 7.0, The Struggle and Success of the National

AUGUST 20th

SUNDAY

continued

Williams). 3.0, Concert of Light Music: Pizzicato from Sylvia (Delibes); Song: Oh, dem golden Slippers (Frank Lubber); Selection from Frederica (Lehár); Trio: Un peu d'amour (Silesu); Pianoforte Selection from Words and Music (Coward); Song: Beneath thy Window (Di Capua); The Whistler and his Dog (Pryor). 3.30, Orchestral Concert: Waltz, The Blue Danube (Strauss); Morris Dance from Henry VIII (German); Violin Solo, La Capricieuse (Elgar); Sanctuary of the Heart (Kettelbey); The Wedding of the Birds (Adlington); Violin Solo, Au mois d'Avril; Selection from The Flower of Hawaii (Abraham). 4.0, Judge Rutherford's Address, followed by Programme for Children. 4.30, Shredded Wheat Descriptive Adventure Story; The Mill in the Black Forest; Sound-Effect Record, Sea Wash and Breakers; Dance of the Sylphs (Berlioz); Concert Waltz in D (Glazunov). 5.0, Listeners' Request Half-Hour: Selection from The Maid of the Mountains (Fraser-Simson); Tell me to-night (Eyton); War March Songs; Just an echo in the Valley (Woods); The Grasshoppers' Dance (Bucalossi); The Cuckoo Waltz (Jonassen). 5.30, Home Radio (Lowestoft); Concert: Signature Tune, Jolly Good Company; Happy Days are here again (Yellen); The Japanese Sandman; Rhapsody in Blue (Gershwin); Oh Monah; Hits from Forty-Second Street (Dubin-Burke); Selection from The Merry Widow (Lehár); Accordion Nights; Savoy Irish Medley (Somers); Signature Tune. 6.0, Club Concert for Derby Listeners: Signature Tune, The Chum Song; Gungor Snaps (Bourdon); Song, Street of Dreams (Young); Waltz, Jolly Fellows (Vollstedt); Song, Try a little tenderness; Piccolo Solo, Deep Blue Sea (Brewer); Amoureuse (Berger); That tiny Teashop (Raymond); Dance Bagatelle (Bourdonne); Quartets: (a) Dream of the Ocean (Gungl), (b) Minuetto from the Quartet in F; Song, Bohemia (Ross); Quartet: Selection from The Gipsy Princess (Kálmán); Song, Mère my Girl (Aitken); Quartets: (a) I do like to be beside the Seaside (Lover), (b) Stephanie Gavotte (Czibulka); Signature Tune. 7.0, Organ Recital: Ca c'est Madrid (O'Henry); Indian Love Call (Friml); Song, drifting under a Summer Moon (Coningsby); There's something about a Soldier (Gay); Lola (Arndt); Song, You will remember Vienna (Romberg); Il Bacio (Arditi); American Patrol (Michaelis). 7.30, Programme in French. 9.0 till Close Down, Programme in English by the I.B.C. 9.0, Military Band Concert: Colonel Jockey (Alford); Song, Villikins and his Dinah; Valse des Alouettes (Drigo); In a Chinese Temple Garden (Kettelbey); Glow-Worm Idyll (Lincke); Cornet Solo, Carnival of Venice (Briccialdi); Song, D'ye ken John Peel; March Past of the Brigade. 9.30, Orchestral and Vocal Concert: Overture, Die Fledermaus (Strauss); One Fine Day, from Madame Butterfly (Puccini); Song, Red Deyon by the Sea; Pianoforte Selection from Rigoleto (Verdi); Waltz Song from La Bohème (Puccini); Song, O Mistress Mine (Quilter); Polonaise in A (Chopin); Hungarian Dance No. 1 in C Minor (Brahms). 10.0, Concert of Gramophone Records: Just humming along (Ewing), by Raie da Costa; There's something about a Soldier (Gay), by Cicely Courtneidge; Clapham and Dwyer's Fairy Tales; Falling in Love again (Hollander), by Marlene Dietrich; The Nightingale and the Rose (Rimsky-Korsakov), by Beatrice Harrison; Tired Hands (Sanderson), by Essie Ackland; Accordion Nights, by Geraldo and his Accordion Band. 10.30, Henly's Concert of Dance Music: Selection from Lilae Time (Schubert-Berte); In the Park in Parée; Adorable; My first Love to last; Sweep; You don't understand; The Shadow Waltz; I've got to sing a Torch Song. 11.0, Orchestral Concert: My Woman (Crosby); Très jolie (Waldteufel); Violin Solo, Le Balcon (St. Denis); Dreams on the Ocean (Gungl); Song, Juanita (Norton); The Cossacks Wedding Fête (Krier); Violin Solo; Dolores Waltz (Waldteufel); Potpourri of Russian Gipsy Songs and Dances (Schirmann). 11.30, Concert of Light Music by the I.B.C. (Ireland), Ltd.: Signature Tune, Come back to Erin; Castles in the Sand (Sandford); Pianoforte Solo; Jack o' Clubs (Steele); The Kiss Waltz (Burke); Duet; Poor Man's Heaven (Robin); Valse Septembre (Godin); Trio: To-night (Kennedy); Serenade (Toselli); A Hunting Scene (Bucalossi); Signature Tune. 12.5 a.m. (Monday), News Bulletin in English. 12.10 (approx.), Vocal and Instrumental Concert: Banjo Quartet; Snatches of Song (arr. Grimshaw); Xylophone Solo; Fairy Tiptoe; Selection from He Wanted Adventure (Waller and Tunbridge). 1.30, Dance Music: Signature Tune, Bells of

Normandy; What a perfect combination; You're beautiful to-night, my dear; Won't you stay to tea; Chansonnette; You're getting to be a habit with me; I sigh for you, Rio Rita; Rockabye; Signature Tune. 1.57, I.B.C. Goodnight Melody. 2.0, 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.—12 Noon, See Munich. 1.0 p.m., Gramophone Concert of Operetta Music. 2.30, Agricultural Notes. 2.40, Agricultural Programme. 3.45, See Stuttgart. 4.30, Concert by the Municipal Orchestra, relayed from the Kurhaus, Wiesbaden. 6.0, Programme to be announced. 6.25, Humorous Interlude by Ellen Schwannecke. 7.0, Sports Notes. 7.20, Radio Report from the Police Sports (on Gramophone Records). 8.15, Tosca—Opera (Puccini), on Gramophone Records. 10.15, Time and News. 11.0, See Munich.

FREDIKSSTAD.—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), 860 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.—12.15 p.m., Concert by the Station Choir and Orchestra, conducted by José Eibenschütz; Selection from Tiedland (d'Albert); Selection from The Bird Fancier (Zeller); Waltz, Wine, Woman and Song (Joh. Strauss); Waltz, Dorfschwalben aus Oesterreich (Joh. Strauss); Studentenserenade Keldorfer; Chromatische Gallop (Liszt); Waltz from Waldmeister (Joh. Strauss); Hohenfriedberger-Marsch. In the interval at 1.0, Time and Weather. 2.0, Programme for Children. 2.40, Recitations from the Works of Hermann Löns. 3.0 (from Kiel), Wind Instrument Concert by a Nazi Band. 4.0 (from Bremen), Der gestohlene Wahrheitsspiegel-Puppet Play (Otto Rounseville). 5.0, Vocal and Instrumental Concert. 6.20, Concert by the Flensburg Travelling Choir and Recorder Trio. 6.50, Humour in a Soldier's Life—A Radio Sequence (Herbert Wilk). 7.40, Sports Notes. 8.0, Weather. 8.10, See Berlin (Deutschlandsender), 10.0, News. 10.20, Hamburg, Bremen Lubeck—Weekly Review of the Hansatic Free Cities. 10.35, 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.—10.0 a.m. (from Danzig), Talk on German Industry, by Herr Gottfried Feder, Secretary of State, on the occasion of the Meeting of the East German Association for German Culture. 10.45, Programme for the Opening of the Twenty-first East German Fair. The Königsberg Opera House Orchestra, conducted by Bernhard Konz; Overture, Weihe des Hauses (Beethoven); Addresses; Prelude to The Mastersingers (Wagner). 11.40, Poems by Haines Schmalfluss. 11.55, Weather. 12 Noon, Opening of the Handicraft Exhibition. 12.15 p.m., Concert from the Kurhaus, Rauschen. 2.0, Talk on Chess. 2.30, Programme for the Young People. 3.0, Part Relay of a Choral Festival from Korscheln. 3.30, Talk: Church and School in the Baltic Lands. 4.0, Orchestral Concert conducted by Eugen Wilken. In the interval at 5.0, Programme in East Prussian Dialect. 6.0, Sports Notes. 6.10, Reading (Hans von Hilse), 6.30, Bernhard Kaiser in a Recital of Songs from the Cycle—Die neuen Fiedelieder (Edmund Schröder). 7.0, Talk: The Pianoforte Music of the Romantic Era, with Illustrations. 7.45, Sports Notes. 8.0, Concert of Sacred Music, from the Neussgärtler Church. 9.0, News. 9.5, Concert by the Königsberg Opera House Orchestra, conducted by Wolfgang Brückner. 10.15, Weather, News, and Sports Notes, followed by Dance Music 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.).—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. 12.40 p.m., Talk. 1.0, Sextet Concert (contd.). 1.50, Literary Review. 2.10, Concert relayed from the Zoological Gardens, Amsterdam. The Amsterdam St. Cecilia Male Voice Choir conducted by Kroese, the Hague Male Voice Choir conducted by Smit and the Dutch Gentlemen Band conducted by van Zanten (Kooze). 4.10, Programme for Invalids. 4.40 to 7.25, Programme of the Christian Radio Society. 4.40, Sacred Music on Gramophone Records. 5.30, Divine

Service, relayed from Oudshoorn. After the Service, Sacred Music on Gramophone Records. 7.25 till Close Down, K.R.O. Programme. 7.25, Football Results. 7.30, Talk. 7.50, Concert by the K.R.O. Boys, conducted by Lustenhouwer. In an interval, News. 8.40, Concert by the K.R.O. Orchestra, conducted by Van t' Woud. Soloists: Jo Innnik (Contralto). Overture, Si j'étais roi (Adam); Meyerbeer Potpourri (Urbach); Andante cantabile (Tchaikovsky); Selection from Così fan tutte (Mozart); March from The Queen of Sheba (Gounod); Selection from Ariadne auf Naxos (Haydn); Te-ore mio (Becce); Gavotte (Gossec); Marche des petits pierrots (Bosc); Selection from La fille de Madame Angot (Lecocq); March, El capitán (Sotsa). In the interval at 9.20, Gramophone Music, and at 9.55, News. 10.20, Epilogue by the Small Choir, conducted by Pickkers. 10.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 160 kc/s, 1,875 metres; 8.5 kW.—8.10 to 9.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 8.10, Horticultural Talk. 8.40, Orchestral Concert. 10.10 to 11.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.); Divine Service from Amersfoort. 11.40 to 4.40 p.m., Programme of the Algemeene Vereeniging Radio Orceop (A.V.R.O.). 11.40, Concert by the Wireless Orchestra, conducted by Nico Treep. 1.40, Weekly Book Talk. 2.10, Gramophone Music. 2.40, Concert, relayed from the Kurhaus, Scheveningen. The Orchestra of The Hague, conducted by Ignaz Neumark. Soloists: Conde Kerckdijk (Songs) and Elink Schuurman (Pianoforte); Overture, Prometheus (Beethoven); Aria from Figaro (Mozart); Pianoforte Concerto in A (Mozart); Prelude to Loreley (Catalani); Aria from Hans Heiling (Marschner); March from The Prophet (Meyerbeer); Gramophone Music in the intervals. 4.10, Gramophone Music. 4.40 to 7.40, Programme of the V.A.R.A. 4.40, Concert by a Mandoline Orchestra, with Gramophone Music Interludes. 5.40, Concert by Eddy Walis and his Orchestra. 6.30, The Adventures of Me-srs. Wakker and Tropicdult. 6.50, Concert (contd.). 7.25, Organ Recital. 7.40 till Close Down, A.V.R.O. Programme. 7.40, Time and News. 7.55, Concert relayed from the Kurhaus, Scheveningen. Soloists: Alexandre Urinsky (Pianoforte). 8.50, Gramophone Music. 9.0, Concert of Light Music by Paul Golwin and his Orchestra. In the interval from 9.40 to 9.55, Gramophone Music. 10.40, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 1.15, Visite de Colouquinte—Sketch (E. Bigot). 1.30, Radio Concert. 8.0, Amusement Guide and Sports Notes. 8.15, Radio Concert. 8.45, News. 9.0, Radio Concert. 10.0, Popular Programme. 10.30 till Close Down, Programme in English by the I.B.C. 10.30, Military Band Concert: Marche Militaire (Schubert); Song, Ho, Jolly Jenkin (Sullivan); March, Pomp and Circumstance No. 4 (Elgar); Naval Patrol (Williams); Xylophone Solo, The Skaters' Waltz (Waldteufel); Parade of the Tin Soldiers (Jessel); Song, A Jovial Monk Am I (Andran); Gaiety Echoes. 11.0, Concert of Gramophone Records: Czardas from Coppélia (Delibes); Dance of the Marionettes (Wintermüt), by Kreisler; A new love is old (Kern), by George Metaxa; Selection from Wilfred Sanderson's Songs by Edward O'Henry; Too Many Tears (Dubin and Warren), by the Pickers Sisters; I got a Home in dat Rock (arr. Lawrence Brown), by Maria Sandra; Follow a Star (Ellis), by Raie da Costa; Mazurka from Coppélia (Delibes). 11.30, Orchestral Concert: Sashinka (Shirmann); Waltz, Très jolie (Waldteufel); Violin Solo, Dolores Waltz (Waldteufel); Potpourri of Russian Gipsy Songs and Dances (Schirmann). 12 Midnight, A Half-hour in Vienna: Tales from the Vienna Woods (Strauss); Viennese Singing Birds (Translatour); Song, Vienna, City of My Dreams (Sieczynski); Viennese Waltz; Song, Waltzing Time in Old Vienna (Evans); Wiener Bonbons (Strauss); Song, Goodnight Vienna (Posford); Waltz, The Blue Danube (Strauss). 12.30 a.m. (Monday), Dance Music: Signature Tune, Bells of Normandy; What a perfect combination; Letter to my Mother; Look what you've done; Standing on the Corner; Sittin' in the dark; My heart's to let; I'm playing with Fire; When you've fallen in love; Signature Tune. 12.57, I.B.C. Goodnight Melody. 1.0 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—11.10 a.m., The Eighth Symphony (Beet-

hoven). 11.40, Talk. 12 Noon, Concert from Berlin Deutschlandsender. (Reichsender). 1.0 p.m., Reading. 1.30, Concert by the Fröhliche Fünf. 2.30, Interval. 3.0, Talk: Poisonous Fungi of the German Forest. 3.25, Musical Programme. 3.40, The Wine of Dalmatia—Variety Programme with Gramophone Records. 4.10, Talk. 4.30, Concert by the Blind: Käthe Josefak-Dietz (Soprano), Maria Cremer (Soprano), Albert Menn (Pianoforte), and Bernhard Zapater (Guitar). 5.30, Talk on Selma Lagerlöf with Readings. 6.0, Programme to be announced. 7.0, Variety Programme. 7.45, Sports Report. 8.0, Bunter Abend. 9.0, Concert by Nazi Bands in Aid of the German Winter Relief Fund, relayed from Cologne. 10.0, News. 10.30, Talk: The German Idea of Sport. 11.0, Dance Music. LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—9.0 a.m., Luther Commemoration Service from the Andreas-Kirche. 11.30, Jakob Schaffner reads from his own Works. 12 Noon, See Berlin, Deutschlandsender (Reichsender). 1.0 p.m., Programme from Hamburg. 1.45, Concert of German Music in new Settings. Conductor: Max Schwarze; suite in D Minor for Accordion and Strings (Hermann Ambrosius); Pieces for Mandoline Orchestra: (a) Der Vagant (Hermann Erdlen), (b) Folk Song, Muss i denn (arr. Hermann Erdlen), (c) Marching Song, In der Heimat, da gibt's ein Wiedersehn (arr. Hermann Erdlen); German Dances for Accordions and Strings (Haydn); Grotesque March (Schmalstiel). 2.30, Weather and Time. 2.35, Talk: The Programme for the Coming Week. 2.50, Agricultural Notes. 3.0, Talk, with Gramophone Illustrations, Romanian Folk Music. 3.40, Talk. 4.0, See Berlin (Witzleben). 5.40, Der Bürgergeneral—Comedy in One Act (Goethe). 6.30, Pianoforte Recital. 7.0, Pianoforte Recital by Bertha Seifert. 7.30, Typical Programme. 8.0 (from Dresden), Die glückliche Reise—Operetta in Three Acts (Künneke). 10.15, News, followed by Gramophone Music. 11.0, Dance Music from Munich. 12.30 a.m. (Monday), Close Down.

LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—English Programme. 7.30 p.m., Concert of English Music on Gramophone Records. 8.15, Racing Results. 8.20, Concert by the Station Orchestra, conducted by Henri Pensis; Rhapsody in Blue (Gershwin); Les préludes (Liszt). 8.50, News in French. 9.0, English Songs. 9.30, Orchestral Concert, conducted by Henri Pensis; Transactionen (Jos. Strauss); Dances Nos. 5 and 6 (Brahms); In a Persian Market (Kettelbey); Wedding March from Dornröschen's Brautfahrt (Rhode); Overture to an Operetta (Lincke). In an interval at 9.50, News in German. 10.20, Dance Music on Gramophone Records.

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, Amusement Guide and Popular Music. 5.0 to 8.0, Interval. 8.0, Chimes, Talk and Dance Music. 9.30, Interval. 11.0, Chimes. Time and Song Recital, followed by Municipal Band Concert, relayed from Rosales. After the Concert, 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.—12.15 p.m., Variety Concert of Orchestral and Instrumental Music and Songs. 1.30 to 1.45, See Prague. 4.0, See Brno. 5.30, Gramophone Music. 6.0, See Prague. 7.50, Concert of Light Music by the Station Orchestra. 8.40 till Close Down, See Prague. 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW. 2.45 p.m., Weather Forecast. 3.0, Extracts from La Mascotte—Operetta (Andran), followed by Johan Strauss Music on Gramophone Records. 3.55, Time. 4.0, Talk: Life on the Communal Farms. 4.30, Reading from Stanislavski's Memoirs. 5.30, Programme for Young People. 6.30, Concert, relayed from the Central Park; Symphony in B flat (Schubert); Schubert Songs; Symphony (Beethoven). 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.—11.0 a.m., See Berlin (Deutschlandsender). 12 Noon, Police Band Concert, relayed from the Feldherrnhalle. 1.0 p.m., Time and Announcements. 1.10, Agricultural Talk. 1.30, Gramophone Music. 2.25, Political Talk. 2.45, A Radio Play for Children. 3.15, Folk Music for Zither and Guitar. 4.0, Cobble Streets and Sunny Skies—A Radio Sequence (Hermann Ebbinghaus). 4.40, Orchestral Concert, conducted by Otto

AUGUST 20th **SUNDAY** continued

Reiter. 5.45, Recitation in Franconian Dialect. 6.0, Vocal and Instrumental Concert. 6.50, Talk: The German Soul—Freedom and Faith. 7.15, Weather and Sports Report. 7.30, Orchestral Concert, conducted by Fritz Reithmeier: The Golden Spinning Wheel (Dvorak); Minuet (Mozart); Two Arabesques (Debussy); Serenade, Riforma (Carosio); Indian Song (Dvorak); Spring in Old Vienna (Bittner); Provençalische Lied (Schumann); Norwegian Bridal Procession (Grieg); Troika (Tchaikovsky). 8.10, Mr. and Mrs. Salvemoser go on Holiday—Humorous Radio Sequence (Erich Mülller). 9.0, Wind Instrument Concert. 10.0, Austria. 10.20, Time and News. 11.0, Dance Music. In the interval, New Sound Film Songs by Luise Wirtzsohn. 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.—10.15 a.m., Weather Forecast and Road Report. 10.20, Chimes. 10.30, Divine Service, relayed from Bud Romsdalen. 2.0 p.m., Concert, relayed from Bud Romsdalen. 6.15, Recitation. 6.45, Violin Recital of Spanish Music by Willy Johansen: Popular Spanish Suite (Fallas); Spanish Dance (Granados-Kreisler); Pantomime and Fire Dance (Fallas); Jota Aragonesa (Albeniz-Dushkin). 7.15, Weather and News. 7.30, Agricultural Report. 8.0, Time Signal. 8.1, Concert by the Station Orchestra, conducted by Kramm: Overture, A May Day (Haydn Wood); Suite, Foma (Bizet); Elegy (Sverre Jordan); Extase (Thomé); Le Tambourin (Leclair); Norse Suite (Alf Hurrum); Symphonie Poem, Tasso (Liszt); Norwegian Rhapsody No. 1 (Halvorsen); Overture, The Merry Wives of Windsor (Nielsen). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Humorous Recitation. 10.45, Dance Music on Gramophone Records. 11.30 (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 to 2.0, Concert of Light Music. In an interval at 1.30, Time and Weather. 5.30 to 6.30, Gramophone Music. 8.0, Dopplero Notes, Giornale Radio and Sports Notes. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Symphony Concert, conducted by La Rosa Parodi: Sinfonia Siciliana (Turina);

Siciliana (Piccoli); Adagio and Pastorale (Alfrovandini); Bianco e nero (Bossi); Overture, The Thieving Magpie (Rossini). In the interval, Talk. 10.10, Light Music on Gramophone Records. 10.55, News.

PARIS
EIFFEL TOWER. Call FLE, 207.5 kc/s, 1,435.7 metres; 15 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and Fadet Signals)—1.0 p.m., News. 1.15, Weather. 1.30, Concert by the Ilos Orchestra: Moonlight on the Alster (Petras); Czardas (Léoni); selection from Gipsy Love (Lehár); Melody (Bach); selection from Il Trovatore (Verdi); Persian Dance (Giraud); Marching (Tosti); selection from Frasquita (Lehár). 2.30, Radi Report of the Comings: Automobile Races. 3.30, Relay from the Theatre in the Casino Park, Bagnères-de-Bigorre. 4.15 to 6.15, Radio Report of the Comings: Automobile Races. 6.45, Le Journal Parle. 8.30, Gramophone Concert of Variety Music. 10.0 (approx.), Close Down.

PARIS
POSTE PARISIEN. 914 kc/s, 329.2 metres; 60 kW. 10.0 a.m., Gramophone Music. 10.20, Press Review. 10.30, Sponsored Concert. 11.0, Sponsored Programme. 11.30, Organ Recital. 12.15 p.m., Sponsored Concert of Sound Film Songs. 12.45, Sponsored Programme. 12.50, Half-an-Hour of Fantasy by Paul Weil. 1.30, Sponsored Programme. 2.0 to 7.0, Interval. 7.0, Wireless Notes. 7.5, Sports Notes. 7.15, Gramophone Music. 7.30, Catholic Review. 8.0, Recital of Old Songs. 8.30, La Rose de Saint-Flour—One-Act Operetta (Offenbach). 9.10, Concert by the Ray Ventura Orchestra and soloists, relayed from the Casino, Deauville. 10.45, 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: Tu Rex gloria; Improvisation (Verbe). 12.30, Bilbouquet in the Laundry. 12.45, Gramophone Concert. Ballet Music from Hamlet (Thomas); Novelette of Ambrosio; Serenade (Schubert); Le Fontane di Roma (Respighi); Nocturne (Frank); Scherzo in B Flat Minor (Chopin); Habanera (Chabrier); Suite No. 2 for small Orchestra (Stravinsky). 5.30, Gramophone Concert. 6.0, Variety Concert. 7.0, Popular Concert. 8.3,

Radio Paris Music Hall. 8.30, News. 8.45, Recital by René Juyn. In the interval at 9.15, Press Review and News. 10.30 to 11.15, Programme in English by the I.B.C. Orchestral Concert. Victory March (von Blom); Selection from Iolanthe (Sullivan); The Whistler and his Dog (Pryor); Selection from Cavalcade (Coward); Waltz, Domawellen (Ivanovic); By the Swanee River (Myddleton); The Lily of Laguna (Stuart); Selection from Gipsy Love (Lehár).

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. 7.0, Boys of Wyncastle. 7.15 to 10.0 New York Relay. 7.15, Radio Forum. 7.30, Variety Concert. 8.0, National Opera Concert. 9.0, Gould and Sheffer. 9.15, Symphonette. 9.30, Organ Recital. 10.0, Vesper Services. 11.0, News-Recit. 11.15, Weather and Sports. 11.30, L'Heure Exquise, from New York. 12 Midnight, Jack Pettis' Orchestra. 12.30 a.m. (Monday), Wisdom of the Ages, from New York. 1.0, Concert from New York. 1.30, News of the Air. 1.45, Floyd Gibbons, from New York. 2.0, Gulf Headliners, from New York. 2.30, Programme to be announced. 3.30, Green Brothers Orchestra, from New York.

PORSGRUND.—See Oslo.
PRAGUE
 614 kc/s, 488.6 metres; 120 kW. 11.0 a.m., Concert by the Municipal Orchestra, conducted by Wille, relayed from Teplice Sanov: Coronation March from Die Folkinger (Edmund Kretschmer); Overture, The Secret (Smetana); Fantastic Scherzo in G Minor, Op. 25 (Suk); Hungarian Rhapsody No. 2 (Liszt); Selection from The Valkyrie (Wagner); Waltz from Wiener Blut (Joh. Strauss). 12 Noon, Chimes. 12.5 p.m., News. 12.15, See Moravská-Ostrava. 1.30 to 1.45, Agricultural Talk. 4.0, See Brno. 5.30, Gramophone Music. 6.0, German Transmission: Review of the Musical Programme of the Czechoslovak Broadcasting Stations, followed by A Day in Karlsbad—Radio Report, with Interludes by the Karlsbad Municipal orchestra and the Karlsbad Choral Society. After the Programme, News. 7.0, Chimes and News. 7.5, Concert by the Mandoline Club. 7.35, Topical Talk. 7.50, See Moravská-Ostrava. 8.40, One Act Comedy (Turgenev). 9.25, The Garden in Summer—Literary and Musical Programme. 10.0, Time and

News. 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, 750 metres.—9.55 a.m. (from Geneva), Chimes. 10.0 (from Geneva), Protestant Service relayed from St. Peter's Cathedral. 11.0 (from Geneva), Gramophone Music. 12.30 p.m., News. 12.40 (from Geneva), Gramophone Music. 2.0, Interval. 3.0, Concert, relayed from Caux. In the interval at 3.45, Report of the International Motor Rally. 4.15 to 7.0, No Transmission. 7.0 (from Geneva), Religious Address. 7.30, News. 8.0 (from Geneva), Talk on Maria Edge worth, the Irish Authoress. 8.20, Concert by the Radio-Suisse Romande Orchestra, conducted by Robert Echehard. Soloist, Ernest Bauer (Tenor). 9.50, News. 10.0 (from Geneva), Synopsations (Paerl) played by Jean-Marc Pasche. 10.30, 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, from 5.0 p.m.—10.0 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 1.45, Sponsored Gramophone Music. 1.45 to 2.30, Gramophone Music. In the interval at 2.0, Time and Announcements. 5.0 (Naples), Programme for Children. Weather and Sports Notes. 5.15 to 6.30, Vocal and Instrumental Concert. In the intervals, Sports Notes and Weather. 7.30, Sports Notes and News. 8.0, Time, Announcements, Sports Reports, and Gramophone Music. 8.45, Variety Concert. 10.15, Dance 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. (from Basle), Catholic Address. 10.45 (from Basle), Concert by the Basle Municipal Orchestra. 12 Noon (from Basle), Gramophone Music. 12.30 p.m., Time and News. 12.40 (from Zurich), Concert by the Swiss Radio Orchestra. 1.30 (from Basle), Agricultural Programme. 2.0 (from Basle), Accordion Music. 2.30, Interval. 5.0 (from Basle), Gramophone Records. 5.30 (from Basle), Recital by Hans Spindler (Horn), and Dora Bertschinger (Pianoforte). 6.0 (from Basle), Two Talks. 7.0 (from Basle), Time and Sports Notes. 7.5 (from Basle),

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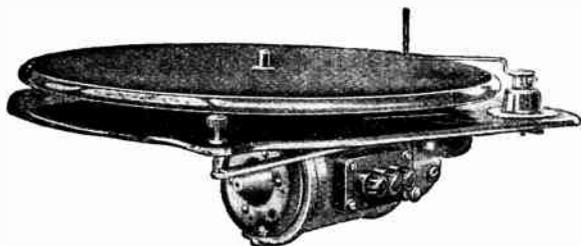
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AUGUST 20th

SUNDAY

continued

Choral Folk Songs on Gramophone Records. 7.30 (from Basle), Zither Music. 8.30 (from Basle), Recital of Old Spanish Pianoforte Music by Hans Bork. 9.0, News. 9.10 (from Basle), Popular Programme. 10.15 (from Basle), Sports Notes. 10.20 (approx.), Close Down.

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 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 to 3.45 a.m. (Monday), New York Relay. 12.45, Russian Symphonic Choir. 1.0, Variety Programme. 2.0, Manhattan Merry-Go-Round. 2.30, American Album of Familiar Music. 3.0, Popular Programme. 3.15, Impressions of Italy. 3.45, Sunday at Seth Parker's, from New York, followed by Programme Résumé.

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**, 389 kc/s, 770 metres; and **Sundsvall**, 554 kc/s, 542 metres.—9.30 a.m., Agricultural Talk. 10.0, Gramophone Music. 11.0, Divine Service. 12.45 p.m., Weather. 1.45 to 2.45, Report on the Automobile Races. 4.0, Talk. 4.30, Concert of Light Music. In the interval at 5.0, Weather. 5.30, Programme for Children. 6.0, Divine Service from Uppsala Cathedral. 7.15, Weather and News. 7.35, Reading. 8.0, Orchestral Concert. Soloist: Oluf Nielsen (Violin); Concerto in F for Violin, Two Oboes, Two Horns, Harpichord and Strings (Vivaldi-Straube); Two Songs (Hugo Wolf): (a) Gesang Weylas, (b) Verborgenheit; The Flight into Egypt from L'Enfance du Christ (Berlioz); Dance from The Damnation of Faust (Berlioz); Two Arias from Samson and Delilah (Saint-Saëns); Hungarian Dances (Brahms); Souvenir de Moscou (Wieniawski); Slav Rhapsody in D No. 1 (Dvorak). 9.20, A Radio Play (Ingeborg Björklund). 9.45, Weather and News. 10.0, Gramophone Music. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—10.45 a.m., Protestant Service. 11.30, Catholic Service in German. 12 Noon, Gramophone Concert of Wagner Music. 12.45 p.m., News. 1.0, Time Signal. 1.1, Light Music on Gramophone Records. 2.0, Dance Music on Gramophone Records. 3.0, Interval. 3.30, Orchestral Concert, conducted by Brouillac, relayed from the Casino, Vichy: Overture, Tannhäuser (Wagner); In the Steppes of Central Asia (Borodin); Suite from Sylvia (Delibes); Melodies; Selection from Hérodiade (Massenet); Waltz, Toujours on jamais (Waldteufel). 5.0, Gramophone Concert of Popular Music. 6.0, Medical Talk. 6.15, Sports Talk. 6.30, Baritone and Soprano Recital by Hastin and Mlle. Ricklin: Pastorale (Haydn); Soprano Arias from (a) Figaro (Mozart), (b) The Magic Flute (Mozart); Baritone Solos: (a) Romance (Debussy), (b) Chanson du pêcheur (Fauré); Soprano Solos (Hazard): (a) La bergère Annette, (b) Au bon vieux temps; Baritone Solos: (a) Hymne à la rivière (Georges), (b) J'ai pleuré en rêve (Hüb); Soprano Solos (Dumas): (a) Soir, (b) L'éphémère, (c) Le baiser volé. 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in German, Lottery Results and Announcements. 8.30, Lohengrin—Opera in Three Acts (Wagner), relayed from the Casino, Vichy. After the Opera, Press Review. 11.10 (approx.), 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.—11.0 a.m., See **Berlin (Deutschlandsender)**. 12 Noon, Wind Instrument Concert from Neustadt: Army March No. 9; Overture, Der Wanderer im Gebirge (Steinbeck); Concertino for Two Trumpets (Matuschka); Die Mühle im Schwarzwald (Eilenberg); Die Post im Walde (Schäffer); Schwarzwälder Schützenmarsch (Ketterer). 1.0 p.m., Schubert Concert on Gramophone Records: Songs; The Trout Quintet. 2.0, Talk on Handicraft. 2.30, Wind-Band Concert. 3.15, Pianoforte Recital. 3.45, Programme for Young People. 4.30, See **Frankfurt**. 6.0, A Wedding Day in the Black Forest—a Radio Picture of Neustadt (on Gramophone Records). 6.30, Gramophone Music. 6.50, Sports Notes. 7.10, Reading (Hans Heyk). 7.30, Three Short Plays (Alfred Lehmann): (a) Der gelbe Domino, (b) Fridericus improvisiert, (c) Generalprobe 1913. 8.10, See **Berlin (Deutschlandsender)**. 10.0, See **Munich**. 10.20, Time and News. 11.0, See **Munich**. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—11.0 a.m., Dance

Music. 11.30, Songs from Operettas. 11.45, Light Music. 12 Noon, Military Music. 12.15 p.m., Operetta Music. 12.30, News. 12.45, Concert. 1.15, Viennese Music. 1.30, Songs from Sound Films. 1.45, Military Music. 2.15, Chansonnettes. 2.40, Instrumental Solos. 2.45, Agricultural Report. 3.0, Extracts from Hérodiade (Massenet). 3.45, Symphony Concert. 4.15, News. 4.30, Airs from Operettas. 4.45, Opera Arias. 5.0, Dance Music. 5.45, Operetta Music. 6.0, News. 6.15, Accordion Solos. 6.30, Viennese Music. 7.0, Songs. 7.15, News. 7.30, Choral Extracts from La Fête des Vignerons (Doret). 7.45, Orchestral Music. 8.0, Maudoline Music. 8.15, Opera Arias. 8.30, Opera Music. 8.45, Spanish Songs. 9.0, Symphony No. 5 (Beethoven). 9.30, Opera Music. 9.45, Orchestral Music. 10.15, News. 10.30, Concert for Listeners in Morocco. 11.0, Songs. 11.30, Songs from Sound Films. 11.45, Orchestral Music. 12 Midnight, News. 12.5 a.m. (Monday), Hawaiian Guitar Music. 12.15, Two-Steps. 11.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—9.40 a.m., See **Turin**. 10.20, Agricultural Report. 10.40, Religion. Address. 11.0 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.—9.40 to 9.55 a.m., Giornale Radio. 10.20, See **Trieste**. 10.40, Agricultural Report. 11.0, Mass from the Church of the Annunciation, Florence. 12 Noon, Bible Reading. 12.30 p.m., Orchestral Concert. In the interval at 1.0, Time and Announcements. 1.30, Sponsored Music. 1.45, Gramophone Music. 2.0, Interval. 4.30, Orchestral Concert. In the interval, Sports Notes. 6.15, Weather and Gramophone Music. 6.30, Interval. 7.0, Time, Announcements and Dopplavoro Notes. 7.10, Gramophone Music. In the interval at 8.0, Giornale Radio and Sports Notes. 8.15, Sponsored Gramophone Concert. 9.15, Variety Concert. 10.15, 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.—11.0 a.m., Symphony Concert by the Vienna Philharmonic Orchestra, conducted by Otto Klemperer, relayed from the Festspielhaus. First Symphony in C Op. 21 (Beethoven); Symphony No. 8 in C Minor (Bruckner). 1.0 p.m., Concert of Light Music. 2.30, Talk: Fruit Growing in Austria in the past and now. 2.50, Time, Programme Announcements and News Review. 3.10, Review of Books. 3.35, Chamber Music Quintet for Flute and String Quartet (Brandt-Buys); Suite in Old Style in D (Brandt-Buys). 4.35, An Entertainment. 5.0, Concert. 6.30, Talk on Showmanship. 7.0, Recital of Songs by Austrian Composers. 7.45, Time, Sports Notes and Programme Announcements. 7.55, Friedrich Neubauer reads from his own works. 8.25, Concert of Light Music by the Orchestra of the Wiener Symphoniker, conducted by Josef Holzer. Soloists: Maria Reining (Soprano) and Hans Skriwanek (Tenor). 10.0, News. 10.15, Concert from the Hotel Krantz Ambassador.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—9.50 a.m., Programme Announcements. 10.0, Divine Service, relayed from **Cracow**, 959 kc/s, 312.8 metres. 11.45, Sacred Music on Gramophone Records. 11.57, Time Signal and Fanfare from Torun Cathedral. 12.5 p.m., Programme Announcements. 12.10, Weather Report. 12.15, Concert by the Station Symphony Orchestra, conducted by Oziminski. Soloist: Jarzelski (Violin). 2.0, Agricultural Report and Weather Forecast. 2.20, Gramophone Records of Famous Singers. 2.45, Agricultural Talk. 3.5, Light Music on Gramophone Records. In the interval, Announcements. 4.0, Topical Talk for Young People. 4.15, Programme for Children, relayed from **Lwow**, 788 kc/s, 381 metres. 4.30, Soprano Song Recital. 5.0, Talk: Emigration and Unemployment. 5.15, Concert of Popular Polish Music. 6.0, Light Music on Gramophone Records. 6.35, Programme Announcements. 6.40, Miscellaneous Items. 7.0, Je C'aime—Play (Saëla Gaffry), relayed from **Cracow**. 7.40, Answers to Technical Correspondence. 8.0, Concert by the Station Orchestra, conducted by Oziminski. Soloist: Wermiska (Soprano). Overture (Noskowski); Serenade (Toselli); Aria from the Third Act of Don Carlos (Verdi); Aria from Madame Butterfly (Puccini); Selection from Orpheus in the Underworld (Offenbach); Three Songs; Mazurka (Noskowski-Kondracki); Mazurka (Namyslowski). 8.50, Radio Journal. 9.0, Programme from **Lwow**. 10.0, Dance Music, relayed from the Europa Café, Cielochinek. 10.25, Sports Notes. 10.40, Aviation Weather Report and Police Notes. 10.45, Dance Music Relay (contd.).

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 2.30 p.m., Time Signal, Stock Exchange Quotations, Weather Forecast, and Gramophone Music. 6.0, Programme for Children. 6.45, News. 7.0, Gaelic Talk. 7.15, Poetry Recital by May Pitchford. 7.30, Time Signal. 7.31, The Station Octet. 7.50, Song Recital by Mr. and Mrs. P. J. Duffy. 8.15, Pianoforte Solos by Sybil Alexander. 8.15, Songs (contd.). 8.30, Sketch, by Mary O'Hea and Company. 9.0, Harp Solos by Annie Fagan. 9.15, The Station Octet. 9.30, Soprano Solos by Josephine Curran. 9.45, Sponsored Programme. 10.45, News, Weather, and Close Down.

BARCELONA

EAJI, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Radio Trio: Selection from Werther (Massenet); Spanish Serenade (Glazunov); Elegie (Vallauray); Menuet from Symphony No. 3 (Mozart); Rondel (Elgar); Melody (Aekermans); Selection from Tosca (Puccini). 8.0, Request Gramophone Records. 8.20, Sports Notes. 8.30, Exchange and Gramophone Records (continued). 9.0, Gramophone Music and News. 10.0, Chimes, Weather and Exchange. 10.5, Humorous Review of the Week's Events in Verse. 10.15, Concert of Sardanas. 11.0, Concert by the Radio Orchestra: Overture, The Magic Flute (Mozart); Gavotte from Armide (Gluck); Aria (Respighi); Appassionato (Filippucci); Polonaise from the Concerto (Jimmé); 11.30, Dance Music from the Casino San Sebastian. 12 Midnight (in the interval), News. 1.0 a.m. (Thursday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Report, Tourist Talk and Dopolaro Amouncements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35, Don Pasquale—Opera in Three Acts (Donizetti). In the intervals, Talk for Women and Art Notes. After the Opera, News in Albanian. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.0 p.m., Gramophone Music. 6.30, Talk. 7.0, Piano-forte Recital by Lidija Brankovic-Suhotina: Impromptu in A flat (Schubert); Mazurka No. 11, Op. 17 (Chopin); Mazurka No. 2, Op. 6 (Chopin); Etude in C, Op. 10 (Chopin); Etude in G flat (Chopin); Reflets dans l'eau (Debussy); Fire Magic (Wagner-Brasen); Der Erlkönig (Schubert-Liszt). 7.40, Song Recital by Klara Ivan. 8.10, Quartet in A, Op. 18 No. 5 (Beethoven). 8.50, Radio Play. 9.20, Concert by the Station Orchestra. 10.20, Time and News. 10.25 (approx.), Dance Music relayed from the Ratnicki Dom Restaurant. 11.0, Dance Music on Gramophone Records.

BERLIN

DEUTSCHLANDSENDER (REICHSENDER), 183.5 kc/s, 1,635 metres; 60 kW.—2.10 p.m., See Breslau. 3.0, Talk for Women. 3.30, Weather and Exchange. 3.45, Review of Books. 4.0, Concert; The German Symphony Orchestra, conducted by Franz von Blon, and the Rüdigerdorfer Bergkapelle, conducted by Hermann Pape: March, Heil Europa (Blon); Overture, Marinarella (Fueki); Marsch, Der alte Fritz (Blon); Selection from The Hermit's Bell (Mailart); Overture, Pique Dame (Suppe); Waltz, In lausiger Nacht (Zielher); Selection from The Gipsy Baron (Joh. Strauss); Badenweiler Marsch (Fürst); Polonaise and Tarantella from the Dance Suite (Blon); Potpourri, Die grosse Kanone (Lincke); Waltz, Wiener Blut (Joh. Strauss); Die kleinen Soldaten (Marks). 6.0, Poems. 6.5, Talk: Training for the German National Football Championship. 6.25, Report from the Radio Exhibition. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Today's Motto. 8.5, Concert from Berlin (Witzleben). 10.0, News. 10.45, Weather. 11.0, Concert from Leipzig. 12.30 a.m. (Tuesday), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.0 p.m., See Berlin (Deutschlandsender). In the interval, Radio Report. 6.0, Herbert Böhm reads from his own works. 6.20, Brahms Song Recital by Eva Liebenberg (Contralto); Feinschnecken; Sonntag; Sehnsucht; Volkslied; Schweserlein; Sandmännchen; Vergebliches Ständchen. 6.40, The Witzleben Station informs its listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Lotteries Announcements. 8.5, Relay from the Radio Exhibition—Programme by the Hitler Youth, Three Nazi Bands and the General Public. 10.0, News, followed by Dance Music from the Delphi Palast. In the interval from 11.0 to 11.5, Talk: What they

MONDAY

AUGUST THE TWENTY-FIRST

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Promenade concert from Queen's Hall.
LONDON REGIONAL	Variety programme from the Radio Exhibition, Olympia.
MIDLAND REGIONAL	Famous choirs. A gramophone recital.
NORTH REGIONAL	"A Poet's Love," song cycle, by Schumann.
WEST REGIONAL	Orchestral concert.
SCOTTISH REGIONAL	Programme of song and story.
BELFAST	The Third Holiday Parade, from Portrush.

ABROAD

BARI	8.35 p.m. Opera: "Don Pasquale," by Donizetti.
BRUSSELS (No. 1)	9.0 p.m. Concert, conducted by Karel Candael, from the Casino, Knocke.
COPENHAGEN	8.5 p.m. Italian opera music, by the Station Orchestra.
HUIZEN	8.0 p.m. Relay of promenade concert from Queen's Hall, London.
RADIO PARIS	8.0 p.m. Opera: "La Traviata," by Verdi. Gramophone records by the cast of the Scala, Milan.
STRASBOURG	6.30 p.m. Song and pianoforte recital, by Jeanne Wild and Mlle. Sternberg.
TOULOUSE	11.15 p.m. Request music and orchestral concert.
TURIN	8.30 p.m. Opera: "Andrea Chénier," by Giordano.
VIENNA	8.30 p.m. The Wiener Symphoniker, conducted by Martin Spörr.

are talking about in Berlin. 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.—6.30 p.m., Radio Journal. 7.0, Programme to be announced. After the Programme, Concert relayed from the Casino, Vichy.

BRATISLAVA

1,076 kc/s, 279 metres; 11 kW.—7.0 p.m., See Prague. 7.35, Talk: Modern Creative Art in Slovakia. 7.50, See Prague. 8.40, See Brno. 9.30, 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. 1.5 (approx.), Concert by Prof. Fahrbaeh-Elmki and his Orchestra. 1.45, Time, Weather, and News. 2.10, Concert of Popular Melodies and Dances. 3.0, Market Prices. 3.20, Talk: Today's Eclipse of the Sun. 3.40, Review of Books. 4.0, Concert, conducted by Bruno Janz; Soloists, Käthe Thiemann (Contralto) and Friedrich Wirth (Lute). In an interval at 5.0, See Berlin (Witzleben). 5.30, Market Prices. 5.35 (approx.), Talk: German Culture. 5.50, Flute Recital. 6.30, Talk: The Organisation of the Nazi Movement—the Schutzstaffel. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Concert, conducted by Ernst Topitz; Soloist, Anton Maria Topitz (Tenor); Overture, Fatinitza (Suppe); Waltz, Wiener Bürger (Zielher); Pizzicato-Polka (Joh. Strauss); Two Pieces (Schitt); (a) Als ich dich kaum gesehen, (b) Abendlied; Two Songs (Schmalstich); (a) Du, (b) Wie ein Rausch; Die kleine Yvette (Schmalstich); Egerländer Marsch (Kopetzky); Intermezzo and Persian March, from The Arabian Nights (Joh. Strauss); Three Songs: (a) Mädel, gib acht! (Mattausch), (b) Mädel, ade (Peppück), (c) Das ist mein Wien (Deesey); Overture, Schön Ann (Lincke); Selection from The Bird-Fancier (Zeller); Austrian Melodies; Tyrolean Song, Andrea Hofar; March, Kärntner Madl (Wagner); Gallop, Im D-Zug (Blon). In the interval at 9.10, Topical Talk. 10.0, Time and News. 10.25, Wireless Technical Talk. 10.35, Talk:

Silesian Nazis in Norway. 10.55 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: News and Talks. 7.0, See Prague. 7.35, See Bratislava. 7.50, See Prague. 8.40, Merry Schlimbert—a Musical Radio Sequence (Dr. H. Hollander). 9.30, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

1.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Station Orchestra, conducted by P. Leemans. Soloist: Mr. Michot (Violin). Overture, The Siege of Corinth (Rossini); Woodland Pictures (Fletcher); Serenade (Malats); Grieg Potpourri (Urbach); Violin Solo (Oliphant); Waltz (Webster-Burke); Ballet égyptien (Luigini). 1.0 p.m., Le Journal parlé. 1.10, Gramophone Concert of Light Music. 5.0, Dance Music from the Casino, Knocke. 6.0, Talk: Nature in Poetry. 6.15, Duet Recital by Mmes. Van Dronne and Tengels. Chi mai di questo core (Aprile); Rimanti in pace mai (Carissimi); Menuetto (Buononcini); An dem Abendstern (Selmann); Wiegendorf (Schumann); Four Duets (Brahms); La nuit (Chausson); Duet (Dvorák). 6.45, Sonata for Cello and Pianoforte (Ireland). 7.15, Medical Talk. 7.30, Cinema Review. 8.0, Song Recital by Rachel Piette. 8.15, Talk, with Gramophone Illustrations: Yugoslav Music. 9.0, Concert, conducted by Karel Candael, relayed from the Casino, Knocke. Soloist: Van Roy (Pianoforte). Preludium (Jamefeldt); Pianoforte Concerto in G (Beethoven); Viennese Waltz (Lange); Pianoforte Solos: (a) Alborado del grazioso (Ravel), (b) Impromptu in A Flat (Faure); Eastern Fantasia, Islamey (Balakirev); Fantastic Symphony (Berlioz). After the Concert, Le Journal Parlé and Dance Music from the Casino, Knocke.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 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 Leemans. 5.0, Concert by the Radio Orchestra, conducted by Walpot. Homage March (Gillon); Waltz, Moonlight on the Alster (Fetras); Overture, The Secret Marriage (Cimarosa); La voix des cloches (Luigini); Selection from The Tales of Hoffmann (Offenbach). 5.45, Programme for Children. 6.30, Concert by the Small Station Orchestra, conducted by Leemans. Overture, Le Postillon de Longjumeau (Adam); Miniature Suite (Coates); Scène enfantine (Bruselmans); Fantastic Dance No. 3 (Turina); Aubade (Van Doren); Potpourri, Das grosse

Fysler (Hruby) 7.15, Talk: A German Woman and a Latin Poet. 7.30, Variety Item. 8.0, Concert by the Radio Orchestra, conducted by Walpot. 8.10, Freddy—Radio Sketch (Monet). 8.45, Talk. 9.0, Concert, relayed from the Kursaal, Ostend. After the Concert, Le Journal Parlé and Dance Music, relayed from the Kursaal, Ostend.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra. Soloist: Teodoru (Violin). March (Blankenburg); Waltz, Künstlerleben (Strauss); Overture, Hamlet (Bach); Selection from Suor Angelica (Puccini); Canzonetta for Violin (Godard); Serenade, Carmencita (Mannfred); Carnival of the Gnomes (Rasch); Entr'acte and Ballet Music from Kosamunde (Schubert); Peer Gynt Suite No. 1 (Grieg); Three Pieces (Niemann). In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Gramophone Music. 7.40, Educational Talk. 8.0, Gramophone Music. 8.30, Talk. 8.45, Recital of Modern Music on Two Pianofortes by Sibiceanu and Koffler. 9.15, Popular Rumanian Music, relayed from the Iordachescu Restaurant. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Programme also relayed on 8.40 metres from 7.0 p.m. till Close Down.—5.30 p.m., Violin Recital of Hungarian Music. 6.30, Talk. 7.0, Pianoforte Recital. 7.45, Talk. 8.15, Gramophone Music. 9.30, News. 9.50, Concert from the Luna Park: Waltz from The Gipsy Princess (Kalman); Selection from Bánk Bán (Erkel); Hungarian Pastorale (Doppler); Song, Ich möchte noch einmal verliebt sein (Sally); English Waltz (Banyai). 10.30, Weather. 10.35, Cigány Music from the Hotel Gellért.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 250 kc/s, 1,153.8 metres.—12 Noon, String Ensemble Concert, relayed from the Hotel d'Angleterre. 2.0 p.m., Interval. 2.50, Talk for the Housewife. 3.0, Concert by Carl Rydahl's Instrumental Ensemble. Soloist: Rena Prüffer (Songs). March, The Soloist: Rena Prüffer (Songs). 5.0, Gramophone Music. 5.35, Exchange and Fish Market Prices. 5.50, Agricultural Talk. 6.20, Elementary English Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.30, Review of Politics for the Past Month. 8.0, Chimes from the Town Hall. 8.5, Concert of Italian opera Music by the Station Orchestra, conducted by Launy Gröndahl. Overture, The Daughter of the Regiment (Donizetti); Selection from Rigoletto (Verdi); Overture, The Barber of Seville (Rossini); Intermezzo from Cavalleria rusticana (Mascagni); Selection from Tosca (Puccini); Finale from Act 2 of Aida (Verdi). After the Concert, Weather. 9.0, A Radio Report. 9.30, Danish Song Recital by Immature Franksen. 9.45, Reading. 10.5, News. 10.20, Symphony Concert by the Station Symphony Orchestra, conducted by Launy Gröndahl. Fugue (Beethoven-Weingartner); Symphony No. 18 in B Flat (Haydn). 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. (Monday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m. to 6.0 p.m., Programme in English by the I.B.C. 11.0, Philco Concert; Part I, Orchestral Concert: Signature Time; Humoresque (Dvorák); Poor Bitterly (de Phillip); Souvenir (Drda); Waltzes from A Waltz Dream (O. Strauss); Serenade (Herbert); Ay, Ay, Ay (Freire); Selection from Sari (Kálmán); March from Sylvia (Delibes); Part II, Dance Music by the Blue Mountaineers (Electrical Transcriptions): Won't you stay to Tea? (Revel); There's a Tiny Little Hair upon your Shoulder (Ewing); You're my Everything (Dixon); When it's Lamplightin' Time in the Valley (Lyons); The Language of Love (Brown); The Younger Generation; You've got me crying again (Newman); Two Buck Tim from Timbuctoo (Hoffmann); Mad about the Boy (Coward); Fit as a Fiddle (Goodheart); Taboo, Taboo (Saterley); All over Italy (Munroe); When my Little Pomeranian (Schuster); Signature Time. 4.30, Programme for Children. 5.0, Request Concert for Chichester and Bognor Listeners: Signature Time; The Night by the Sea; The Voice in the Old Village (Choir); Dance of the Cuckoos (Stunberg); Old Father Thames (Wallace); Hoeh Caroline (Tunbridge); There's another Empty Saddle; The Old Kitchen Kettle (Connely); Just an Echo in the Valley (Woods); A Bedtime Story (Towse). 5.30, Orchestral and Vocal Concert for Hastings and Eastbourne Listeners: Liebestraum (Liszt); Violin Solo, Capriccioso (Elgar); Song, The Old Superb (Standford);

AUGUST 21st

MONDAY

continued

Scarf Dance (Chaminade); Hungarian Dance No. 6 (Brahms); Violin Solo, Valse Bluettes (Drigo); March from Tannhäuser (Wagner); Song, The Mountains of Mourne; Signature Tune. 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: Signature Tune; Bells of Normandy; That's my Home (Rene); Someone to care for (Warren); Mad about the Boy (Coward); Moonlight, the Danube and you (Mannheimer); Let's all dance the Polka (Lawton); The Younger Generation (Coward); Something came and got me in the Spring (Scholl); Hiawatha's Lullaby (Donaldson); Shuffle off to Buffalo (Dubin-Warren); I may never pass your Way again (Dubin); Leave a Little for me (Abraham); Won't you stay to Tea? (Revel); Waltzing in a Dream (Crosby); Chansonnette (Friml); Castles in the Sand (Sandford); You're Getting to be a Habit (Dubin); Look what you've done (Kalmar); Signature Tune. 11.0, Club Concert for Dovedale Listeners; Part I, Military Band: Signature Tune; The Chum Song; Hungarian Dance No. 1 (Brahms, arr. Devis); Song, Liebestraum; Down South (Myddelton); Classical Memories (arr. Ewing); Song, Take a Pair of Sparkling Eyes; Praedidium (Jännefeldt); The Whistler and his Dog (Pryor); Part II, Celebrity Concert on Gramophone Records: Paul Robeson: My old Kentucky Home (Foster); Spring Song (Mendelssohn); The Bostwell Sisters: Hand me down my Walking Cane (Ager); Mabel Constanduros and Michael Hogan: Grandma and the Weather Announcer; Mandoline Solo: Loin du bal (Gillet); Yodelling Song, Mein Leedle Boy (Thurrell); Albert Sandler and his Orchestra: Softly awakes my Heart, from Samson and Delilah (Saint-Saens, arr. Adler); Signature Tune. 12.5 a.m. (Tuesday), The I.B.C. Late News Bulletin. 12.10 (approx.), Viennese Music: Wiener Bonbons (Strauss); Song, Vienna City of my Dreams (Sieczynsky); Waltz, Tales from the Vienna Woods (Joh. Strauss); Wiener Zugvögel (Translatour); Waltz, The Blue Danube (Joh. Strauss). 12.30, Concert of Light Music: That Tiny Teashop (Raymond); I'm called little Buttercup (Sullivan); Waltz, Jolly Fellows (Vollstedt); Leave the Pretty Girls alone (Robinson); Xylophone Solo: Liebesfreud (Kriesler); Roses of Picardy (Haydn Wood); Stephanie Gavotte (Czibulka); The Driver of the 8.15 (Longstaffe). 1.0, Tango Band: I kiss your Hand, Madame (Erwin); La Paloma (Yradier); Song, In old Madrid (arr. Cardew); Violin: Caprice Basque (Sarasate); Trio: Aloma (Steeden); Violin Solo: Song of Songs (Moya); Mama Inez (Gilbert); Will you dance through life with me? (Swabach). 1.30, Dance Music: Signature Tune; Bells of Normandy; Where is this Lady? How deep is the Ocean?; I sigh for you, Rio Rita; Wear a Big Smile; Farewell to Arms; Moon Song; All over Italy; Castles in the Sand; Signature Tune. 1.57, I.B.C. Goodnight Melody. 2.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Relayed by Gassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.0 p.m., The German Almanac. 6.10, Variety Items. 6.25, Talk on Heroism. 6.45, To-day's News. 6.50, Time and Announcements. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Concert by the Station Orchestra, conducted by Dr. Reinhold Merten; Waltz, Die Romaniker (Lanner); Waltzes (Joh. Strauss, Sen.); Dividenden-Walzer (Joh. Strauss); Waltz, Sphärenklänge (Jos. Strauss); Waltz, Frühlingsstimmen (Joh. Strauss); Waltz, Die Jubilanten (E. Strauss); Glücks-Walzer (Suppe); Waltz, Red Roses (Lehar); Waltz, Barbara (Nedbal); Waltz from The Carnival Fairy (Kálmán). 9.20, A Discussion on Education. 9.45, Recital by Albert Fischer (Bass): Three Songs (Schillings): (a) Wie wundersam, (b) Aus den Nibelungen, (c) Freudvoll in deinen Werken sein; Two Songs (Kaun): (a) In der Mühle, (b) Mitternacht; Nachtwandler (Ebel); Der Maikäfer (Loewe); Das Huhn und der Karpfen (Mattiesen). 10.15, Time and News. 10.45, Concert from Leipzig.

FREDIKSSTAD.—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, 556 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m. (from Bremen), Unfamiliar Songs of Schubert and Wolf by Karl Oskau Wittmer, (Bass Baritone), with Interludes by an Instrumental Trio: Songs (Schubert): (a)

Kriegers Ahnung. (b) Lied im Grünen; Scherzo from the Trio in C Minor, Op. 148 (Marschner); Songs (Schubert): (a) Der Zwerg, (b) An eine Quelle, (c) Der zürnerde Barde; Schäfers Klage from the Trio in G Minor (Weber); Songs (Wolf): (a) Der Musikant, (b) Wo find' ich Trost, (c) Fussesreie; Vivo from the Trio, O bellissima Italia (von Raussnern). 6.45, Exchange. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Concert of Zither, Mandoline and Orchestral Music, conducted by Gerhard Maass: Husarenritt (Spindler); Intermezzo, Ein unruhiger Geist (Thauer); Potpourri, Volksliederkranz (Kollmanek); Die Mühle im Schwarzwald (Eilenberg); Zither Solo: Pictures of Carinthia (Schiffel); Potpourri of Russian Folk and Dance Melodies: Wolgalklänge (Ritter); Zither Solo: Die Spitzenklöpplerin (Heinrich); March, Semper vivum (Larcher); Waltz, The Blue Danube (Joh. Strauss). 9.0, First General News. 9.10, Der preussische Achill—A Radio Play about Prince Louis Ferdinand (Josef Buchhorn). 10.20, News. 10.30, Topical Talk. 10.40 (from Kiel), Serenade, conducted by Hans Döring; March, Mein Heimatland (Leuschner); Overture, The Bohemian Girl (Balle); Indian Romance, Sakuntala (Döring); Oriental Suite, The Minaret (Leopold); Coronation Waltz (Joh. Strauss); Es waren zwei Königskinder (Althout); March, Wanderfreunden (Rein); Zug der Gnommen (Blon); Potpourri, Klänge aus Rumänien (Dauber); Intermezzo, Goldiges Lachen (Klose); Bravour Marsch (Prekher).

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 and 2.0, News. 3.0, Market Prices and Exchange. 3.30, Programme for Children. 4.0, Die Sternfahrt—a Radio Play for Children (Juliane Reinecke); Music by Arno Hufeld. 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Der Walfenschmied (Lortzing); Cello Solo, Krottslak-Romanze (Recktenwald); Friedmann - Bach Suite (Leuschner); Selection from La Traviata (Verdi); Catalan Caprice (Albéniz); Serenata napoletana (Sganabati); Schwert und Leier (Jos. Strauss); Selection from Der Tenor der Herzogin (Künneke). 5.55, Review of Books. 6.15, Market Prices. 6.25 (from Danzig), Talk: The Streets of Danzig. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Weather and News. 8.5, Dance Music by the Small Station Orchestra, conducted by Eugen Wilcken. 9.5, Brahms Song Recital by the Station Chorus. 10.5, Weather and News.

HILVERSUM

Announced HILVERSUM, 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.). 11.55 a.m., Gramophone Music. 12.10 p.m., Organ Recital by Jan Zwart: Two Airs (Zwart); Andante con moto (Wesley); Tocatta (Purcell); Andante cantabile (Rea); Sonata pontificale (Lemmans); Andante (Boulay); Festival March (Büsser); Bénédiction nuptiale (Saint-Saens); Sonata No. 3 in A (Mendelssohn); Blijf, Heer, bij ons, als d'avoid nederdaale (Zwart); Halleluja, eenwig dank en eere (Zwart). 1.40, Gramophone Music. 2.35, Talk on Gardening. 2.55, Gramophone Music. 3.25, Interval. 3.40, Bible Reading. 4.40, Gramophone Music. 4.56, Concert: Sonata for Flute, Oboe and Piano-forte (Loelliet); The Countess of Westmoreland's Delight (Shield); Melody (Child); Andante in C (Mozart); Feuilles au vent (Marie); Gramophone Music; Aubade (Waille); Canzone (Bruch); Entr'acte from Rosamund (Schubert); Russian Ballet Scene (Pugni-Bernards). 6.10, Answers to Correspondents. 6.40, Police Notes. 6.55, Religious Information. 7.10, Talk. 7.40, Concert by the Concordia Mixed Choir. 8.40, Talk. 9.10, Organ Recital by Schoep. 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, Concert by the Small Station Orchestra, conducted by de Groot. 1.25 p.m., Gramophone Music. 1.40, Organ Recital by Steyn. 2.10, Song and Piano-forte Recital. 2.40, Gramophone Music. 3.25, Interval. 3.40, Gramophone Music. 4.10, Programme for Children. 4.40, Orchestral Concert, conducted by de Groot: Selection from Rose Marie (Friml); Turkish Patrol (Michaelis); Poupée valsante (Poldini); Negro Lullaby (Clutsmat); Selection from Der Trompeter von Säckingen (Nessler); Souvenirs de Capri (Bece); Overture, Mariana (Wallace). 5.25, Recitation. 5.40, Con-

cert (continued): Suite de ballet (Popy); Selection from Cavalleria rusticana (Mascagni); Selection from I Pagliacci (Leoncavallo); Gramophone Music: Mein Lebenslauf ist Lieb' und Lust (Strauss); Lotus Flowers (Ohlsen); Valse des brunettes (Ganne); Die Sorgenbrecher (Strauss-Gross); Soirée d'été (Waldteufel); Gramophone Music. 7.40, S.O.S. Announcements. 7.45, News and Gramophone Music. 8.0, Symphony Concert, relayed from the Queen's Hall, London. In the interval at 9.30, Recitation. 10.25, Concert by De Flierefluiters. In the interval at 10.55, Recitation.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 1.15, Radio Concert. 8.0, Amusement Guide and News. 8.10, Sports Notes. 8.25, Press Review. 8.30, Radio Concert. 8.45, News and Weather Report. 9.0, Literary Programme.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m. Gramophone Music. 1.20, Concert by the Fröhliche Fünf. In the interval at 2.0 (approx.), News. 2.30, Meat Market Prices. 3.10, Talk: Aquatic Sports. 3.30, Market Prices and Time. 3.50, Talk for Young People: A Journey through East Prussia. 4.30, Talk: The Berlin Radio Exhibition. 4.40, An Old Mexican Legend. 5.0, Concert by the Radio Children's Choir. 5.30, Talk: Songs of the German Flagellants. 6.0, Concert, Margot Grossman (Soprano), Josefa Kastert (Violin), Schreiber (Cello), and Hans Haass (Piano-forte). Violin Sonata (Dittersdorf); Soprano Solos: (a) Le colline d'Anacapri (Fleck), (b) Es war ein Tag (Othegraven); (c) Die Königskinder (Fleck); Cello Solos: (a) Träumerei (Schumann), (b) Spanish Dance (Granados); Soprano Solos: (a) In der Nacht (Trunk), (b) Das verlassene Mägdlein (Wolf), (c) Er ist's (Wolf); Romance for Violin (Wieniawsky). 6.45, Announcements. 7.0, Transmission for all German Stations: Westphalian Strongholds. 8.0, News. 8.5, Choral and Orchestral Concert. 8.45, A Flying Visit. 9.0, Concert by the Cologne Singakademie, the Orchestra, conducted by Eysoldt, and Soloists: Elly Tillmans (Soprano), Josef Schömmel (Tenor), and Rudi Eisenberg (Baritone). Introductory Talk and Commentary by Bredelhoff. 10.0, News. 10.20, Concert, on Gramophone Records. 10.45, Concert, relayed from Leipzig. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon, Weather and Time. 12.5 p.m. (approx.), Gramophone Music. 12.30, Instrumental Concert. 1.20, News. 1.35, Gramophone Concert of Choral and Orchestral Music. 2.20, News. 2.35, Notes on Art. 3.0, Talk on Gardening. 3.15, Talk: Richard Wagner and Chamber Music. 3.35, Exchange Quotations. 4.0, Talk: German Books—Genoewa. 4.15, Concert by the Radio Orchestra, conducted by Willy Steffen. 5.50, Exchange, Weather, and Time. 6.0, Talk: Holidays at Home. 6.15, Talk on Rural Scenery. 6.25, Talk: The Historical Bases of German Particularism. 6.50, Review of the Day's News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, See Frankfurt. 8.50, Announcements. 9.0, Agricultural Notes. 9.10, In the Post-Chaise—a Radio Sequence (Josef Krahe). 10.10, News. 10.20 (approx.), Concert by the Station Orchestra, conducted by Theodor Blumer: Rakoczy Overture (Keler-Bela); Two Pieces (Sinigaglia); (a) Song of the Rain, (b) Etude Caprice; Indian Suite (Lüling); Intermezzo (Kretschmer); Selection from Der Walfenschmied (Lortzing); Waltz, Singen, lachen, tanzen (Zielner); Extase (Ganne); Intermezzo (Maass); Cradle Song (Pittrich); Variations on a Theme of Naumann (Georg Hoebberg); Selection from Der Sternquacker (Lehar); Grossmütterchen (Langer); Chinese Street Serenade (Siedle); Trifolien-Walzer (Strauss); March, Heidenblut (Stelzig). 12.30 a.m. (Tuesday), Close Down.

LINZ.—See Vienna.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—Italian Programme. 7.30 p.m., Gramophone Concert. 8.5, Talk in Italian: Luxembourg. 8.15, Racing Results. 8.20, Italian Songs and Arias. 8.50, News in French. 9.0, Concert

of Italian Music by the Station Orchestra, conducted by Henri Pensis. Overture, Semiramis (Rossini); Selection from Turandot (Puccini); Serenade (Pizzetti); Angelus (Micheletti); Prologue to I Pagliacci (Leoncavallo). 9.50, Ncws in German. 10.0, Orchestral Concert, conducted by Henri Pensis. Gavotte caprice (Bortkiewicz); Graziella (De Tacey); Intermezzo (Caludi); Entry of the Gladiators (Fucik). 10.30, Dance Music on Gramophone Records.

MADRID

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

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.45 p.m. till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by Plichta: Overture, The Kiss (Smctana); Selection from Il Tabarro (Puccini); Polka from Schwanda the Piper (Weinberger); Slav Rhapsody in A Flat, Op. 45, No. 3 (Dvorak); Cradle Song (Krieka); Character Piece (Engelmann). 3.55 to 4.0, See Prague. 5.45, Violin Recital on Gramophone Records. 5.55, Talk for Scouts. 6.5, Songs on Gramophone Records. 6.15, See Prague. 6.30, German Transmission: Recital by Gerti Herrmann (Pianoforte) and O. Reich (Songs). 7.0, See Prague. 7.35, See Bratislava. 7.50, See Prague. 8.40, See Brno. 9.30, See Prague. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 106 kW.—1.45 p.m., Weather Bulletin. 2.45, Weather Report. 3.0, Concert. 3.55, Time. 4.0, Radio Report from Communal Farms. 4.30, Talk: Soviet Literature. 5.30, Programme Announcements. 5.45, Talk: The Climate of the U.S.S.R. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5, Press Review.

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. (from Nürnberg), Concert by the Josef Schwarz Orchestra. Overture, Der Bettelstudent (Müllbacher); Waltz, Fünf Knechtchen (Jos. Strauss); Paraphrase on Blum's Abendlied (Weninger); Potpourri, Eichenblätter (Morena); Waltz Intermezzo, Ein lila Fächer (Siede); Finale from Undine (Lortzing); Sächsischer Defiliermarsch (Lippe). 5.45, Reading (Stöve). 6.5, Piano-forte Recital by Ilse von Tschurtschenthaler. Scherzo in E and Valse Impromptu (Chopin); (Innomenigen (Liszt); L'isle joyeuse (Debussy). 6.25, Review of Books. 6.45, Time and Announcements. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Concert by the Station Orchestra, conducted by Karl List. Purzelbaumgalopp (Lincke); Selection from Der Opernball (Heuberger); Rhapsody on a Bavarian Folk Melody (Pfitzinger); Intermezzo from The Arabian Nights (Joh. Strauss); March from Boccaccio (Suppe). 8.50, Ludwig Thoma Memorial Programme. Magdalena—Play (Thoma). 10.20, Time and News. 11.0, Serenade from Leipzig. 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.—5.30 p.m., Chamber Music by the Radio Ensemble. 6.30, Talk: A Journalist's Impressions of Norway. 7.0, Announcements and News. 7.30, Reading. 8.0, Time Signal. 8.1, Soloist Concert; Lasse Wager (Bass), Daniel Löydal (Pianoforte); Karl Andersen (Cello); Pianoforte Solos: (a) Polonaise in G Sharp Minor (Chopin), (b) Mazurka in G Sharp Minor (Chopin), (c) Waltz in A Minor (Chopin), (d) Soirée de Vienne (Schubert-Liszt), (e) Dance (Debussy); Bass Solos; Cello Solos. 9.10, Review of Foreign Affairs. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Sor-rano Song Recital by Mme. Edith Beckma. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Notes, Tourist Report, Agricul-

AUGUST 21st

MONDAY

continued

tural Notes, Giornale Radio and Report of the Royal Agricultural Society. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Gramophone Music. 9.45, Chamber Music: Manno Rondini (Violin), Cottone (Pianoforte), Corci (Soprano), and Micozzi (Clarinet): Sonata in D for Violin and Pianoforte (Vivaldi-Respighi); Soprano Solos: (a) Bimba bimbetta (Libella), (b) Ancora (Croce): Two Movements from Sonata Op. 120, No. 2, for Clarinet (Brahms); Violin Solos (Wieniawski): (a) Legende, (b) Tarentella; Soprano Solos: (a) Rosamunde (Schubert), (b) M'ama . . . non m'ama (Mas-cagni); Clarinet Solo: Romance from the Concertino, Op. 4 (Wiedemann). 10.15, 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 Review. 7.0 p.m., Le Journal Parlé. 8.45, Concert from the Casino, Vichy; The Symphony Orchestra, conducted by Paul Paray; Soloists, Mme. Ganna Walska (Songs) and Alfred Cortot (Pianoforte): Concerto in F for Violin, Flute, Oboe, Trumpet and Orchestra (Bach); Symphony on a Theme for Pianoforte and Orchestra (Lully); Two Songs (Mozart); Le Tombeau de Couperin (Ravel); Concerto for Pianoforte (Schumann). 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, Recital of Songs and Duets by M. and Mme. Adeline-Daugerville: Les Violettes (Dubois); Duet (Schubert); L'heure exquise (Hahn); Duet from Xavier (Dubois); Les ânes du Caire (Nérini); Colombine (Wekerlin). 8.30, Les oncles de Guignol—One Act Play (Tony Tardy). 9.10, Gramophone Concert: Selection from a Midsummer Night's Dream (Mendelssohn); Melody (Oberfeld); Le veu x l'aimeur (Jouve); Rhapsody in Blue (Gershwin); C'est un rythme d'un tango (Lemoir); Payanea (Berto). 10.10, 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: Romanian Dance (Bartok); Mousnette (Piccolini); Russia under Snow; En Selle (Courtaud). 8.0, Weather and Press Review. 12 Noon, Gramophone Concert of Instrumental Music: The Black Forest Chiming Clock (Doppler); The Village Fiddler (Wieniawski); Villanelle (Dukas); Pastoral Fantasia (Doppler); The Spinner (Dunkler); El Fandango (Duran); Melody (Dvorak); Air (Eilenberg); Ballad (Faure); My Rose (Fillis); Madrigal (Flegier); Belgian Military March (Frenaux); Mazurka brillante (Giretti-Valente); Serenade (Abt); Waltz from Faust (Gounod-Liszt); Sonata for Viola da Gamba and Harpsichord: The Harmonious Blacksmith (Handel); Oboe Sonata in G minor (Handel); Polts (Hasselmann); I know a lovely garden (d'Hardelet); Arabesques (Jeanjeun); Schôn Rosmarin (Kreisler); Le General Fin-Fin (Lavault); Through the Forest (Marinkovitch); Air (Mortley); March; Fantasia in G minor (Bach). 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. 7.0, Agricultural Notes. 7.10, Gramophone Music: In the Shadows (Finck); Les Papillons de Nuit (Gaboroché); Lous les Refrains d'amour (Gaboroché); Le Comique Voyageur (Moy); Conference sur les amineaux (Moy); Little White Lies (Donaldson); My Normandy (Berra); Selection from Orpheus in the Underworld (Offenbach); Waltz from Les Cent Vierges (Lecocq); Air from Le Jour et la Nuit (Lecocq); Two Melodies from Le Coeur et la Main (Lecocq). 7.50, Commercial Prices and News. 8.0, La Traviata—Opera (Verdi), on Gramophone Records by the Cast of the Scala, Milan. In the intervals at 8.30, News, Weather and 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 W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Home Forum. 8.0, Betty and Bob, from New York. 8.15, Words and Music, from New York. 8.45, Human Values. 9.0, Radio Guild, from New York. 10.0, Business News. 10.15, Tarzan of the Apes. 10.30, Larry Larson, from New York. 10.45, Orphan Annie, from New York. 11.0, Press News Reeler. 11.15, Sports Report and a Song. 11.30, Pittsburgh Spotlights. 11.45, Lowell Thomas, from New York. 12 Midnight, Amos 'n' Andy, from New York. 12.15 a.m. (Tuesday), Programme to be announced. 12.30 to 3.0, New York Relay. 12.30, Popular Programme. 1.0, Yesterday and Today. 1.30, Potash and Perlmutter. 1.45, Gould and

Shefter. 2.0, Sinclair Minstrels. 2.30, Melody Moments. 3.0, Silver Toppers.

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, Gramophone Music. 5.55, Talk for Housewives. 6.5, Agricultural Report. 6.10, Gramophone Music. 6.15, Talk: The Jirasek Festival. 6.25, News in German. 6.30, German Transmission: Literary Talk. 7.0, Chimes and News. 7.10, Popular Programme by the Fat Quartet. 7.35, See Bratislava. 7.50, Brass Band Concert. 8.40, See Brno. 9.30, Sonata in F Minor, Op. 49, for Viola and Pianoforte (Rubinstein), by Karel Sile. 10.0, Time and News. 10.15, German Talk: The Prague Sample Fair of 1933. 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. (from Lausanne). Gymnastics. 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, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Lausanne). Concert by the Radio Lausanne Orchestra. 5.0 (from Lausanne). Programme for Children. 5.30, Interval. 7.0 (from Lausanne). Talk on Dogs. 7.25 (from Lausanne), News. 7.30 (from Lausanne). Talk on Antwerp. 8.0 (from Lausanne). Violin Recital by Robert Reitz. 8.30 (from Lausanne). Song Recital by Mme. and M. Rohrus. 9.0, Concert by the Radio Suisse Romande Orchestra, conducted by Echnard. 10.0, News. 10.10 (from Geneva). Gramophone Music. 10.30, 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, from 5.15 p.m.—1.0 p.m., Gramophone Concert. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 2.0, Time and Announcements. 4.30, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Weather. 5.15, Vocal and Instrumental Concert. Nella Ranieri (Violin), Giuseppina Marciano and Clara Fioravanti-Cini (Songs) and Guglielmo Bandini (Bass). Violin Solos (Dvorak): (a) Indian Lament, (b) Humoresque; Duets for Soprano and Mezzo-Soprano: (a) Sol per te (Bononcini), (b) Sacred Song (Mendelssohn); Bass Solos: (a) Arioso (Handel), (b) Aria from Sicilian Vespers (Verdi); Duets: (a) Duet from The Queen of Spades (Tchaikovsky), (b) Popular Tuscan Folk Song for Two Voices (Gordigiani); Violin Solo: Spanish Dance (Sarasate). 6.40 (Naples), Shipping and Sports Notes. 6.45, Dopplavoro and Tourist Report. 7.10, Agricultural Report. 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, Orchestral Concert of Light Music, conducted by Illuminato Culotta. In the interval: Talk. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY; 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 p.m., Book News, by Levere Fuller. 9.15, Soloist, from New York. 9.30, Mountain Ballads, by Bradley Kincaid. 9.45, Talk: What's New in the Berkshires. 12.45 a.m. (Tuesday), Stock Reports and Baseball Scores. 1.0, Sonoyland Sketch, from New York. 1.30, Felix Ferdinand's Burgomasters. 1.45, Ferde Grofé's Orchestra, from New York. 2.0, A. and P. Gypsies, from New York. 2.30, Horse Sense Philosophy. 2.45 to 3.30, New York Relay. 2.45, Musical Programme. 3.0, Contented 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, 459 metres; and Berne, 1,220 kc/s, 245.9 metres.—6.15 a.m. (from Basle). Gymnastics. 6.35, Interval. 11.59, Time Signal from Neuchâtel Observatory, and Weather. 12 Noon (from Basle), Songs on Gramophone Records. 12.30 p.m., Time and News. 12.40 (from Basle). The Blue Danube—Viennese Music on Gramophone Records. 1.25 (from Basle). Time, Weather, and Exchange. 1.35 (approx.). Interval. 5.0 (from Basle). Programme for Women. 5.30 (from Basle). Chamber Music on Gramophone Records. 6.0 (from Basle), Song Recital by Marcel Witt-risch on Gramophone Records. 6.30 (from Zürich), Programme for Children. 7.0, Time

and Weather. 7.5 (from Zürich). Concert by the Radio Orchestra, conducted by Hofmann. 7.30 (from Zürich), English Lesson. 8.0 (from Zürich), Concert (cont'd.). 8.30 (from Zürich), Talk by Franz Andrus: My First Journey to the East. 9.0, News. 9.10 (from Zürich), Radio Play. 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., Reading 5.30, Gramophone Music. 6.30 (from Uppsala), Talk. 7.0, Recital of Negro Spirituals. 7.15, Weather and News. 7.30, Talk. 8.0, Song Recital by Torsten Ralf. Die Allmacht (Schubert); Du bist wie eine Blume (Schumann); Wanderlied (Schumann); Three Songs from Julius Wolff's Tannhäuser (Emil Sjögren). 8.25, Literary Programme, with Music by Erkki Melartin. 8.45, String Quartet in A Minor (Kreisler). 9.15 (from Göteborg), Medical Talk. 9.45, Weather and News. 10.0 (from Malmö), Concert of Light Music. Overture, Britannicus (Scassola); Waltz, Rudolfsklänge (Joh. Strauss); Memories of Naples (Bonincontro); Second Suite de Micheli; Savoyarda (Friell-Lienz); Selection from Nina Rosa (Romberg); March, Unter dem Doppeladler (Wagner). 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. 2.0-3.30, Interval. 3.30, Orchestral Concert, conducted by Broullac, relayed from the Casino, Vichy: Overture, Stradella (Flotow); Nocturne for Violin (Chopin); Evocation de la Vierge from La légende du pinot d'Argentan (Fourdrain); Suite, Calliphœ (Chaminade); Melodies; Entr'acte, Aux étoiles (Duparc); Selection from La Traviata (Verdi); Waltz (Fährbach). 5.0, Gramophone Concert of Variety Music. 6.0, Literary Review. 6.15, Talk in German: A Journey through Alsace. 6.30, Wind and Pianoforte Recital by Jeanne Wild and Mlle. Sternberg: Part 1, Classical Music: Song (Cavalli); Song, Victoire, victoire (Carissini); Aria from Hercules (Händel); Aria from Acté Galatée (Händel); Part II, Slav and Czecho-Slav Music: Prelude (Ladov); Etude in F sharp; The Stream in the Forest (Arensky); Prelude in G minor (Rachmaninov); Tarantella (Moszkovsky); Visions fugitives, Op. 22 (Prokofiev); March (Prokofiev); Three Dances (Willner); Part III, Modern Music: Pieces (Faure): (a) Chanson d'amour, (b) Nell. (c) Barcarolle; Pieces (Hahn): (a) L'heure exquise, (b) En soudaine; Pieces (Kocchlin): (a) Le thé, (b) Si tu le veux. 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in German, Lottery Results and Announcements. 8.30, Talk with Gramophone Illustrations: Old Music. 9.0, Salzburg Festival Programme (see Vienna). After the Programme, Press Review.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—1.30 p.m., Tenor Song Recital on Gramophone Records. 2.0, Concert arranged by the Post Office. 2.15 (from Karlsruhe), Concert arranged by the Post Office. 2.30, Spanish Lesson. 3.0, Elementary English Lesson. 3.30, Interval. 4.30, See Munich. 5.35 (from Mannheim), Talk: Secondary Schools under the New Régime. 6.0, Orchestral Concert, conducted by Karl Assmus, relayed from Baden-Baden: Overture, King Stephen (Beethoven); Serenade (Haydn); Ballet Suite (Gluck-Mottl); Eine kleine Nachtmusik (Mozart); Overture from Rosamunde (Schubert); Overture, Genoveva (Schumann). 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Announcements. 8.15, Concert of Waltzes and Polkas by the Pforzheim Symphony Orchestra, relayed from Pforzheim; Conductor: Hans Leger. 9.0 (from Mannheim), Bei Knorzbachs werd eigebroche—Play in Dialect. 9.45 (from Freiburg), Concert by the Freiburg Zither Quartet, conducted by Louis Melcher. 10.15, Time and News. 10.45, Concert from Leipzig. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.15 p.m., Arias from Opera. 6.30, Instrumental Music: Minuet from the Quartet in E (Schubert); Rigaudon (Rameau); Souvenirs (Nicholl); Moment musical (Schubert). 6.45, Accordion Music. 7.0, Songs. 7.15, News. 7.30, Ballet égyptien (Luigini). 7.45, Music by a Viennese Orchestra. 8.15, Songs from Sound Films. 8.30, Orchestral Music. 9.0, Extracts from Le petit due (Lecocq). 9.30, Military Music.

9.45, Opera Music. 10.0, Opera Music: Overture, Mignon (Thomas); Intermezzo from I Pagliacci (Leoncavallo); Selection from Madame Butterfly (Puccini). 10.15, News. 10.30, Concert for Listeners in Morocco. 11.15, Request Music. 11.30, Orchestral Concert: Marche héroïque (Saint-Saëns); In the Steppes of Central Asia (Borodin); Prelude à l'après-midi d'un faune (Debussy); Selection from Light Cavalry (Suppé). 12 Midnight, News. 12.5 a.m. (Tuesday), Songs from Operettas. 12.15, Bal musette. 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 p.m., Orchestral Concert. 6.0 to 6.5, Weather. 6.40, Giornale Radio, Dopplavoro Notes, and Gramophone Music. 7.0, Time, Tourist Report, and Gramophone Music. 7.10, Agricultural Notes and Market Prices. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, Announcements. Giornale Radio, Sports Notes, and Weather. 8.20, Talk on the following Transmission. 8.30, Andrea Chénier—Opera in Four Acts (Giordano). In the intervals, Talk, Announcements, and Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 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, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 622 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., Gramophone Concert of Peasant Music. 11.55, Weather. 12 Noon, Concert by the Wiener Symphoniker, conducted by Josef Pelzer. 1.0 p.m., Time, Weather and News. 1.10 to 2.0, Concert (cont'd.), Waltz, Alter Wiener Volkston (J. F. Wagner); Song Schön ist mein Wien (Hugo Engel); Italian Serenade (Holmes); Norwegian Melody (Halvorsen); Intermezzo, In the Temple of Beauty (Hummel); Selection from Schön ist die Welt (Lehár); Fächerspolonaise (Ziehrer); March, Wiener Strassenbahner (Kastner). 3.0, Time and Exchange. 3.20, Programme for Children. 3.40, Famous Opera Arias, on Gramophone Records. 4.20, Talk for Young People: Gliding. 4.45, Talk on Mozart. 5.10, Song Recital by Grete Buchek (Soprano) and Fritz Thorsen (Tenor). 5.55, Talk: The Exhibition of Mediaeval Religious Plastic Art. 6.10, Talk: Pötzleinsdorf, an Idyll on the Borders of the City. 6.30, Books of Reference in connection with the Week's Talks. 6.35, Talk: With a Mail Van in the Heart of the Tyrolian Glazier District. 7.0, Concert of Wind Instrument Music. In the interval at 7.35, Time and Weather. 8.15, Topical Talk. 8.30, Concert by the Wiener Symphoniker, conducted by Martin Spörr. Overture, Waltz and Ballet Music from Donna Diana (Reznicek); Music from Peer Gynt (Grieg); Italian Caprice (Tchaikovsky). 9.30, Talk: The Production of Faust at Salzburg. 9.45, News. 10.0, Talks on the Catholic Conference in Vienna: (a) In Esperanto, (b) In French, (c) In Italian. 10.15, Concert of Light Music by the Wiener Symphoniker, conducted by Josef Holzer.

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., Orchestral Concert, conducted by Szule, relayed from the Bagatela; March (Szule); Overture, Figaro (Mozart); Waltz, Wine, Woman and Song (Joh. Strauss); Selection from No. No, Nanette (Youmans); Potpourri of Foreign Legion Songs (Szule); Boston (Lederman); Mazurka from Halka (Moniuszko). In the interval at 12.25, Polish Press Review and Weather Report. 12.55 p.m., Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.45, Traffic Report. 3.50, Gramophone Music. 4.0, Concert by the Poznań Opera House Orchestra, conducted by Tyllja, relayed from Ciechocinek. 5.0, Talk in French. 5.15, Concert of Chamber Music. Fliederbaum (Violin), Ginzburg (Cello), and Rozenbaum (Pianoforte). Trio in G Minor (Schumann); Trio in G, Op. 1, No. 2 (Beethoven). 6.15, Talk on Economics. 6.35, Light Music on Gramophone Records. 6.50, Talk on the Literary Works of Marshal Pilsudski. 6.55, Military Programme. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Literary Talk. 8.0, Manon—Opera (Massenet) on Gramophone Records. In the intervals, Answers to Agricultural Correspondence, Radio Journal, Aviation Weather Report, and Police Notes. 10.45, Dance Music on Gramophone Records.

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 2.30 p.m., Time Signal, Stock Exchange Quotations, Weather Forecast, and Gramophone Music. 6.0, Programme for Children. 6.40, News. 7.0, Gaelic Reading. 7.15, Talk by Nora Patricia Morrow: Bohemianism. 7.30, Time Signal. 7.31, The Station Octet. 7.50, Contralto Solos by Florence Howley. 8.5, Violin Duets by Mabel and Una Kenny. 8.25, Illustrated Lecture Recital by C. M. Ni Dhuilghaill. 9.5, Baritone Solos by May Dunleavy. 9.20, The Station Octet. 9.30, Soprano Solos by Mollie Phillips. 9.45, Sponsored Programme. 10.45, News, Weather, and Close Down.

BARCELONA

EAJ1; 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Radio Trio: Turkish March, from The Ruins of Athens (Beethoven); Selection from Carmen (Bizet); Novelette No. 2 (d'Ambrosio); Serenade (Pierné); Farandola (Pierné); Berceuse de Jocelyn (Godard); Selection from Sunson and Delilah (Saint-Saëns). 8.0, Request Gramophone Records. 8.30, Exchange and Talk. 9.0, Gramophone Music and News. 10.0, Chimes, Weather, Messages for Seamen, and Exchange. 10.5, Sponsored Programme. 10.30, Concert by the Radio Orchestra. 11.0, Recitations. 11.15, Dance Music, relayed from the Café Español. 12 Midnight (in the interval), News. 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, Orchestral Concert, conducted by Ernesto Abbate: March, I gladiatori (Abbate); Tasso (Liszt); La principessa lontana (Abbate); Extracts from Il Guarany (Gomez); Intermezzo from La Wally (Catalani); Danza esotica (Mascagni); Allegro vivace, from Polluto (Donizetti); Fa, Re, Do, Si (Abbate). Reading in the interval. 10.30, Gramophone Music. 10.50, News in Albanian. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.0 p.m., Song Recital by Aleksandar Trifunovic. 6.30, Gramophone Music. 7.0, Concert by the Station Orchestra. 7.50, Talk. 8.30, Programme relayed from Zagreb, 977 kc/s, 307 metres. 10.30, Time and News. 10.35 (approx.), Cigány Music relayed from the Rudnicain Restaurant.

BERLIN

DEUTSCHLANDSENDER REICHSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—12.10 p.m., Gramophone Concert: Wilhelm Backhaus (Pianoforte); Waltz and Hungarian Dances (Brahms); Gigli (Tenor). Aria from Manon (Massenet); Pablo Casals (Cello): (a) The Flight of the Bumble Bee (Rimsky-Korsakov), (b) Minuet (Debussy); Heinrich Schlusnus (Baritone): (a) Drinking Song from Don Giovanni (Mozart), (b) Serenade from Don Giovanni (Mozart). 12.30 p.m., Concert from the Funkgarten. 12.55 p.m., Time Signal. 1.45, News. 2.0, Topical Talk. 2.10, Concert from Stuttgart. 3.0, Report from the Radio Exhibition: Young People at the Exhibition. 3.30, Weather and Exchange. 3.45, Reading from the Works of Rudolf Iltich. 4.0, Concert from Berlin (Witzleben). In the interval, Report from the Radio Exhibition: The Reichsmarine. 6.0, Poems. 6.5, Talk: The German Theatre as an Outpost of German Culture. 6.30, Political Press Review. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Today's Motto. 8.5 (approx.), from the Maas to the Memel—German Costume Festival, relayed from the Radio Exhibition; East Prussian Songs and Poems; Songs of the Moors; Saxon Peasant Dances; Poems and Folk Dances of Holstein; Silesian Poems and Folk Dances; Rhinish Poems and Songs; Folk Dances of the Mark; Bavarian Folk Songs and National Dances; Friesian Fishers' Songs; Alemannic Folk Songs; Saxon Anecdotes in Prose and Song; Humorous Items from the Lost Province. 10.0, News. 10.45, Weather. 11.0, Dance Music. 12.30 a.m. (Wednesday), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.15 p.m., Review of Books—The Listener. 6.40, The Witzleben Station informs its Listeners. . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Lottery Announcements. 8.5, See Berlin, Deutschlandsender (Reichsender). 10.0, News. 10.15 (approx.), Serenade by the Berlin Station Orchestra, conducted by Heinrich Knapstein. Comedy Overture. Op. 11 (Max Fiedler); Sinfonietta for String Orchestra. Op. 22 (Gustav Jensen); Suite, Aus Thüringen (Joachim Raff); Ballet Suite, Op. 32a (Paul Juon); Piedmontese Dances, Op. 31 (Singaglia); Pa-

TUESDAY

AUGUST THE TWENTY-SECOND

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL LONDON A revue, from the Radio Exhibition, Olympia. Promenade concert from the Queen's Hall.
REGIONAL MIDLAND REGIONAL Band programme.
NORTH REGIONAL "Office or Workshop," a frivolous discussion.
SCOTTISH REGIONAL Recital of songs. Scottish place-names.
BELFAST In Lighter Vein. Orchestral concert.

ABROAD

BRUSSELS (No. 1) 8.0 p.m. Fauré concert by the Symphony Orchestra.
BRUSSELS (No. 2) 8.0 p.m. The Radio Orchestra, conducted by Walpot.
HAMBURG 8.10 p.m. The Kiel Orchestra of Unemployed Musicians and the Germania Choir.
HILVERSUM 8.0 p.m. Concert by the K.R.O. Orchestra, conducted by Gerritsen.
OSLO 8.30 p.m. Modern operetta music by the Station Symphony Orchestra.
TOULOUSE 9.30 p.m. Music from various operas.
TURIN 8.35 p.m. Operetta: "Sengnizza," by Mario Costa.
VIENNA 9.0 p.m. The Wiener Symphoniker, conducted by Josef Holzer.
WARSAW 8.0 p.m. The Station Orchestra, conducted by Oziminski.

triotic Festival March (Mrazek). 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.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.30 p.m., Radio Journal. 7.30, News. 7.40, Lottery Results. 7.45, News. 8.0, Gramophone Music. 8.30, See Paris (Eiffel Tower).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.25 p.m., Gramophone Music. 6.45, Educational Talk. 6.55, Talk for Housewives. 7.0, 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.—1.30 p.m. (approx.), Concert of Opera Music by the Small Silesian Philharmonic Orchestra, conducted by Franz Marszalek: Overture, Figaro (Mozart); Selection from Hansel and Gretel (Humperdinck); Waltz from Faust (Gounod); Overture, Der Wildschütz (Lortzing); Selection from Boris Godunov (Mussorgsky); Aria and Coronation March from Die Folkunger (Kretschmer); Selection from Adriana Lecouvreur (Cilea); Hindu Song from Sadko (Rimsky-Korsakov); Overture, Oberon (Weber). In an interval at 2.10, Time and News. 3.0, Agricultural Prices. 3.15, Book Review. 3.35, Programme for Children. 4.0, Programme from Berlin (Witzleben). 6.0, Agricultural Prices. 6.25, Talk: The Breakdown of International Economics. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Open-Air Singing, relayed from the Schlossplatz. 9.0, News. 9.10, Mensch, aus Erde gemacht—Drama (Friedrich Griese), arranged for Radio. 10.20, Austria. 10.40, Time and News. 11.0, Dance Music and Light Music by the Falubach-Elmki Band, relayed from the Café Vaterland. 1.0 a.m. (Wednesday), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.5 p.m., Gramophone Music. 6.15, Tourist Talk. 6.25, German Transmission: News, Medical and Agricultural Talks. 7.0, 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 Little Station Or-

chestra. 12.45 p.m., Song Recital by Gisèle Moiret. 1.0, Le Journal Parlé. 1.10, Extracts from The Barber of Seville (Rossini). 1.30, Symphonic Etudes (Schumann) by Marguerite Van Neste (Pianoforte). 1.45, Gramophone Music. 5.0, Symphony (Mozart) on Gramophone Records. 5.30, Programme for Children. 6.5, Talk: Missionaries and their Struggle against Infectious Diseases. 6.15, Pianoforte Recital by Camille Mellaerts: Piece (Liszt); Scherzo in A Minor (De Boeck). 6.30, Poetic Suite (Dvorak) by the Little Station Orchestra, conducted by P. Leemans. 6.45, Readings (Alain-Fournier), Claudel, Mallarmé and Mérimée. 7.0, Suite, Namouna (Lalo) by the Little Station Orchestra, conducted by Leemans. 7.15, Catholic Report and Cinema Review. 7.30, Talk for Women. 8.0, Fauré Concert by the Symphony Orchestra, conducted by Jean Kumps. Soloist: José Bulcus (Pianoforte). Suite Caligula; Ballad for Pianoforte and Orchestra; Berceuse; Scherzo from the First Quartet in C Minor. 8.45, Talk. 9.0, Concert, conducted by Karel Candacl, relayed from the Casino, Knocke. Soloist: Viola Mitchell (Violin). Academic Festival Overture (Brahms); Violin Concerto No. 7 in D (Mozart); Orchestral Suite, A Midsummer Night's Dream (Mendelssohn); Violin Solos: (a) Improvisation (Bloch), (b) Cortège (Boulangier), (c) Berceuse (Ysaë), (d) Moto perpetuo (Novacek); Carnaval à Paris (Svendsen). After the Concert, Le Journal Parlé, followed by the Unfinished Quartet (Liszt) on Gramophone Records. 10.55, Christmas vimeit.

BRUSSELS (No. 2)

I.N.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Marches and Waltzes on Gramophone Records. 5.0, Concert by the Radio Orchestra, conducted by Walpot: Overture, The Daughter of the Regiment (Donizetti); Walzer trümpe (Robrecht); Round the World in a Zeppelin (Mannecke); Four Pieces (Kreier): (a) Marche miniature viennoise, (b) Liebeslied, (c) Caprice viennois, (d) Liebestruhl; Potpourri, Dividenden (Morena). 5.45, Programme for Children. 6.30, Gramophone Records. 7.0, Pianoforte Solos on Gramophone Records. 7.15, Talk. 7.30, Le Journal Parlé. 8.0, Concert by the Radio Orchestra, conducted by Walpot. Soloist: Henry Marchand (Songs). Solidaritätslied (Brecht-Eisler); Potpourri (Manfred); Songs: The Nutcracker Ballet (Tchaikovsky); An Interview with Henry Marchand; Overture, The Caliph of Bagdad (Boieldieu); Rhapsody No. 12 (Liszt); Songs: Waltz, Jolly Fellows (Vollstedt); Modern Dance Suite, The Great Four. 10.0, Le Journal Parlé. 10.10, Old Dance Music on Gramophone Records.

BUCHAREST

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, Reading. 7.20, Gramophone Music. 7.40, Educational Talk. 8.0, Song Recital by Hélène Gorgos: The Nightingale and the Rose (Rimsky-Korsakov); Song from Si j'étais roi (Alain); Indian Love Call from Rose Marie (Kálmán); Song from a Kiss in Spring (Kálmán). 8.20, Concert by the Station Orchestra: Celtic Overture, Waltz No. 1 (Dvorak); Suite, Much Ado about nothing (Korngold); Exotic Dance (Mascagni); Lehar Potpourri (Hrubý); Clog Dance (Fetras); Intermezzo pizzicato (Fetras). 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 6.15 p.m. till Close Down. 5.0 p.m., Gramophone Music. 5.45, Talk on Sport. 6.15, Pianoforte Recital of Hungarian Melodies. 7.0, Talk. 7.30, Talk. 8.0, Three One-Act Plays. 9.45, News. 10.0 (approx.), Cigány Concert from the Café Patria. 11.0, Dance Music from the Kajnapark Restaurant.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time and Chimes from the Town Hall and Weather. 12.5 p.m., String Ensemble Concert, relayed from the Bellevue Strandhotel. 2.0, Interval. 3.0, Concert by Louis Preils' Instrumental Ensemble. In the interval at 3.45 (approx.), Reading. 5.0, Programme for Children. 5.35, Exchange and Fish Market Prices. 5.50, Talk: The Denmark Expedition. 6.20, Elementary German Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.30, Concert relayed from the Tivoli; Part I: The Orchestra, conducted by Georg Høeberg; Soloist: Birgit Engel (Songs); Solistforeningsmarch (Bendix); King Christian IX March (Lumbye); Waltz (Lumbye); Polka, Britta (Lumbye); Songs; Drømmebilleder (Lumbye); Gallop from Livjægerne paa Amager (Lumbye). 8.30, Reading. 9.0, Concert (contd.); Part II: Tchaikovsky Music; The Orchestra, conducted by Schmedler-Petersen; Soloists: Emil Telnáyi (Violin) and Victor Schiøler (Pianoforte): 1812 Overture; Violin Concerto in D, Op. 35; Pianoforte Concerto No. 1 in B flat, Op. 23. 10.30, Reading. 10.45, News. 11.0, Concert (contd.); Part III: The Orchestra, conducted by Felmb, and Soloists: Viennese Operetta Potpourri, Von Wien durch die Welt; Song: Waltz, Frühlingstimmen (Joh. Strauss); Kornmodglansen (Lange - Müller); Fuglekvidder (Heise). 11.45, Close Down.

GORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m. to 12 Noon, Programme in English by the I.B.C. 11.0, The Philo Happy Hour. Part I. Orchestral Concert. Signature Tune; Nautical Moments (arr. Winter); Under Heaven's Blue (Payan); Cello Solo, Harlingade (Ailburt); By the Sleepy Lagoon (Coates); Waltz, Wiener Ball (Joh. Strauss); Violin Solo, Because (d'Hardelot); Barcarolle (Waldteufel). Part II. Dance Music by Jack Hylton and his Orchestra (Electrical Transcriptions). Little Miss Muffet (Perritt); That's my Home (Ellison); Out in the Open (Edgar); Sittin' in the Dark (Greer); Hyde Park Corner (Evans); This is the Rhythm for me (Monkman); What a Lady Josephine must have been (Pola); It's the Band (Steininger); Signature Tune. 12 Noon, French Programme. 4.30 to 6.0, Programme in English by the I.B.C. 4.30, The Nursery Corner. Music, Story and Birthday Greetings. 5.0, Concert for Torquay and Exeter Listeners. Part I. Listeners Request Half-hour. Signature Tune; The Night by the Sea; Waltz, The Blue Danube (Joh. Strass); Tell me tonight (Spoliassky); 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). 5.30, Concert for Plymouth and Devonport Listeners. Part II. Song Memories. A Bachelor Gay, from The Maid of the Mountains (Fraser-Simson); The Dance of the Tea-Balls (Smith-Hagen); What's the price of Swedes? (Viunecombe); Lily of Laguna (Stuart); Waltz Favourites (arr. Anciliffe); O Dem Golden Slippers (Bland); Good Old Songs; Signature Tune. 6.0, Programme in French. 10.0, Dance Music. Signature Tune. The Bells of Normandy. (Chaussonette (Frind); Won't you stay to Tea? (Revel); Waltzing in a Dream (Crosby); Pickaninnies' Heaven (Johnston); Love Tales (Agar); The Wise Old Owl said "Hoo" (White); That's my Home (Rene); Just an Echo in the Valley (Woods); Get Happy (Arlen); Ich liebe dich, my Dear (Hart-Blight); Something came and got me in the Spring (Scholl); May be I love you too much (Berlin); Can't we meet again? (Connelly); The Girl in the little green Hat (Rich); Sweetheart (Miller); Hold up your

AUGUST 22nd

TUESDAY

continued

Hands (Robinson); Ro-a Mia (Potter); Signature Tune. 11.0, Club Concert for Matlock Listeners. Part I. Organ Recital with Songs. Signature Tune. The Chum Song; Butterflies in the Rain (Gay); Old Comrade (Teike); Song, The Gay Highway (Drummond); Ca'est Madrid (O'Leary); Song, Kashmiri Song; Life on the Ocean (Binding); Song, The Floral Dance (Moss); Chanson (Friml). Part II. Orchestral and Vocal Concert; Spring Blossoms awaken (Lohr); Spanish Serenade (Herbert); Chinese Serenade (Herbert); Song, Forget-me-not (Rottler); Poeme (Fibich); Salut d'amour (Elgar); Song, Lay my Head beneath a Rose (Frankenstein); I kiss your Lips (Rudolph); Signature Tune. 12.5 a.m., News Bulletin in English. 12.10. Novelty Orchestra. The Ghost Walk; Hawaiian Memories (Armandola); Dance of the Raindrops (Reeves); Jolly Fellows Waltz (Voll-tell); Bells across the Meadow (Ketchey). 12.30, Vandeville: The Grasshopper's Dance (Bucados); Mrs. Blumberg's Boarding House Sketch. Balalaika Orchestra: Moment musical (Schubert); Song, Dark Red Roses; Hawaiian Hotel; A little of what you fancy; Yodeling Song, Strawberries and Cream (Terrell). 1.0, Gramophone Concert: Laid you made the Night too long (Lewis); Siboney (Simons); Selection from The Desert Song (Romberg); The Mills Brothers; Bugle Call Rag (Pettis); Tired Hands (Sanderson); Nonchalant Nonsense (Wayne); Selection from The Cat and the Fiddle (Kern). 1.30, Dance Music, Signature Tune, Bells of Normandy; One Little Quarrel (Goodhart); sing a new Song (Weyer); Nightfall (Lewis); Try a little Tenderness (Wood); Forty-second Street; A Bedtime Story; The Clouds will soon roll by; Hiawatha's Lullaby; Signature Tune. 1.57, I.B.C. Good-night Melody. 2.0 (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. Part I: Pianoforte Concerto in E. Op. 12 (d'Albert), by Grete Altstadt and the Station Orchestra, conducted by Dr. Reinhold Merten. Part II: Old Dance Music. 5.45, Market Prices. 6.0, Talk: The Financial Policy of Local Government Bodies. 6.25, Book Review. 6.45, Today's News. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, A Dialogue: The Battle of Bertrix. 8.10 (approx.). See Berlin Deutschlandsender (Reichsender). 8.45, Programme to be Announced. 10.20, Time and News. 10.45, See Stuttgart.

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., Concert. 6.45, Frankfurt Exchange and Hamburg Egg Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Political Talk. 8.10 (from Kiel). Concert by the Kiel Orchestra of Unemployed Musicians and the Germania Choir. Soloist: Otto Proft (Violin). Festival Overture (Lortzing); Male Voice Choir: (a) Deutschland, mein Deutschland (Trunk); (b) Schenkensbachs Reiterlied (Jungst); First Movement from the Third Symphony in D (Frederick the Great); Choir: Choral von Leuthen (Becker); Romance in E for Violin and Orchestra (Beethoven); Male Voice Choir: (a) Drei Lilien (Haussner); (b) Das Lied vom Herrn von Falkenstein (Brahms); Military March in D (Schubert); Male Voice Choir: Der saumige Landsknecht (Ullig); Song from Der Kuhreigen (Kienzl). 9.15, Die Wesermarsch-Radio Sequence (Alma Rogge) 10.0, Time and News. 10.20, Topical Talk. 10.30, Concert 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 Concert: Overture. The Daughter of the Regiment (Donizetti); Two Pieces (Siede): (a) Ein Schäferstündchen, (b) Baby Parade; Two Pieces (Gray); Selection from Der arme Jonathan (Müllacker); Volga Volga (Noack); Die Hydrophoben (Gungl); Kitten on the Keys (Confrey); Teddybear's Picnic (Bratton); Overture, The Bohemian Girl (Balfe); Two Pieces (King); Czardas, from Die Fledermaus (Joh. Strauss); Mein Herr, was dächten Sie von mir (Strauss); Overture, Flotte Bursche (Stuppe); March, Frei und jung dabei (Lehár). In the intervals at 1.20 and 2.0,

News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Market Prices. 3.30, Musical Improvisations for Children. 4.0 (from Danzig), Song Recital by Reina Bäckhaus: Three Songs (Reger): (a) Des Windes Gebet, (b) Maria Wiegenlied, (c) Waldeinsamkeit; Three Songs (Hugo Wolf): (a) Auf ein altes Bild, (b) Weylas Lied, (c) Heimweh; Three Songs (Karl Tutein): (a) Das verlassene Mägdlein, (b) Hagebutten, (c) Bekenntnis. 4.30, Concert from the Kurgarten, Zoppot: Overture, Figaro (Mozart); Larghetto from the Clarinet Quintet (Mozart); Violin Solo, Nocturne (Chopin-Sarasate); Tarantella for Cello and Orchestra (Popper); Selection from Il Trovatore (Verdi); Coppelia Suite (Delibes). In the interval at 5.10, Talk: The Air Armament of Other Nations. 5.45, Talk on Hanns Johst. 6.15, Market Prices. 6.25, Talk: East Prussia and the Adjournment of the Disarmament Conference. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Programme from Berlin (Deutschlandsender). 9.10, See Breslau. 10.20, Weather and News.

HILVERSUM

Announced HILVERSUM, 1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Catholic Radio Society (K.R.O.). 11.55 a.m., Concert by the K.R.O. Sextet. 1.25 to 1.40, Interval. 1.40, Programme for Women. 2.40, Baritone and Pianoforte Recital by van Ogtrop and Thunis: Songs (Schubert): (a) Litanei, (b) An die Musik, (c) Du bist die Ruh, (d) Der Doppelgänger; Pianoforte Solos: (a) Consolations (Liszt), (b) Gondoliera (Liszt); Gramophone Music; Songs (Brahms): (a) Der Schindler, (b) O liebliche Wangen, (c) Mitternacht, (d) Feldeinsamkeit; Song, Zueignung (Richard Strauss); Pianoforte Solo, Sketches, Op. 17 (Thunis); Gramophone Music; Songs: (a) Ridonna mi la calma (Tosti), (b) Es war ein alter König (Diepenbroek), (c) Non credo (Widor), (d) Goodbye (Tosti); Pianoforte Solos (Chopin): (a) Etude No. 7, Op. 25; (b) Etude No. 9, Op. 25, (c) Scherzo, Op. 20. 4.50, Programme for Children. 5.20, Gramophone Music. 5.40, Recitations. 5.55, Concert by the K.R.O. Boys, conducted by Lustenhouwer. Soloist: Mossel (Songs). In an interval at 6.40, Police Notes. 7.25, Talk. 7.40, Gramophone Music. 7.50, Talk on Esperanto. 8.0, Concert by the K.R.O. Orchestra, conducted by Gerritsen: Suite from Der Rosenkavalier (Strauss); Symphony concertante in E flat (Mozart). In an interval at 8.25, News. 8.55, De Hoed van den Reformaris—Radio Play in Four Acts (J. B. de Gou). 9.40, Talk. 10.0, Concert (cont'd): Overture. The Crown Diamonds (Auber); Berenise (Jännefeldt); Suite from Coppelia (Delibes). In an interval at 10.10, 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 Algemeene Vereeniging Radio Omroep (A.V.R.O.). 10.10 a.m., Recital of Songs and Organ Music. 10.40, Talk. 11.10, Concert (cont'd). 11.40, Concert by the Wireless Orchestra. 1.55 p.m., Gramophone Music. 3.40, Pianoforte Recital: Preludes, Op. 7 (Leon Orthel); Three Preludes (Wurriser); Sonata Tragica (MacDowell). 4.10, Concert by a Children's Choir. 4.40, Programme for Children. 5.10, Concert by the Wireless Orchestra, conducted by Nico Treep: Martial Moments (Winter); American Cake Walk (Lincke); Selection from The Desert Song (Romberg); Gramophone Music: Bazarolle (Waldeufel); Selection from The Bartered Bride (Smetana); Czardas (Monti). 6.40, Gramophone Records. 7.10, Quartet for Flute, Guitar, Viola, and Cello (Schubert). 7.40, Time and News. 7.45, Concert of Light Music by Paul Godwin and his Orchestra. In the interval from 8.40 to 9.0, Songs by Alex de Haas. 9.40, Gramophone Music. 10.40, News. 10.50, Concert of Light Music by John Brück and his Boys. 11.40 (approx.), Close Down.

Innsbruck.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 1.15, Radio Concert. 8.0, Amusement Guide and News. 8.10, Agricultural Report. 8.20, Press Review. 8.30, Radio Concert. 8.45, News and Weather Report. 9.0, Concert by the Casino Orchestra, conducted by Marc César, relayed from Monte Carlo.

Kalundborg.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.5 p.m., Talk on Photography. 7.20, Announcements and Gramophone Music. 7.35, Sports Notes. 7.40 till Close Down. See Warsaw.

Kiel.—See Hamburg.

Klagenfurt.—See Vienna.

Kosice.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Gramophone Concert. 12.30, See Berlin Deutschlandsender (Reichsender). 12.50, News. 1.30, Concert conducted by Eysoldt. In the interval at 2.0, News. 2.30, Interval. 3.0, Concert by the Station Chamber Orchestra, conducted by Keiper. Soloist: Mia Vogel-sang (Soprano); Waltz, Traumideale (Fueck); Comedy Overture (Kéler-Béla); Soprano Solos: (a) Viennese Waltz (Strauss), (b) Air from The Bird Fancier (Zeller); Serenata d'Amalfi (Bece); Curlylocks (Powell); Air from The Dubarry (Müllacker-Mackeben); Selection from Gasparone (Müllacker). 4.0, Educational Book Review. 4.20, Reading. 4.30, Talk on Syndicates. 5.0, Music by the Fröhliche Fünf. 5.25, Talk on Sport. 5.45, Italian Lesson. 6.0, Concert. Wilhelm Scholl (Tenor), Karl Delseit (Pianoforte), and Fritz Hoffmann (Violin); Three Etudes for Pianoforte (Chopin): (a) in A flat, (b) in G flat, (c) in F; Tenor Solos (Schumann): (a) Wanderlust, (b) Frühlingsfahrt; Novellette in D for Pianoforte (Schumann); Violin Solo: Hejre Kati (Hubay); Tenor Solos: (a) Für dich allein (Göchl), (b) Sechse, Sieben oder Acht (Brüll); Pianoforte Solos: (a) Nine Variations (Beethoven), (b) Rondo a capriccio, Op. 129 (Beethoven). 6.45, Announcements. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, News. 8.5, Topical Talk. 8.15, Variety Concert. 9.40, Weekly Review. 10.10, News. 10.30, Chess Lesson.

Lausanne.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—1.45 p.m., Max von Schillings' Concert. 2.30, News. 2.40, Talk on Luther. 3.0 to 3.15, Reading: Das Mutterherz (Albert Leitch). 3.35, Exchange Quotations. 4.0, Concert by the Dresden Soloist Ensemble: Entr'acte and Ballet Music from Ali Baba (Cherubini); Norwegian Bridal Procession (Grieg); Hungarian Shepherd Dance (Gungl); Nocturne No. 3 (Liszt); Waltz, In der Zauber-nacht (Komzak); Selection from Das süsse Mädel (Reinhardt); Sérénade d'Arlequin (Eduard Schütt); Rondo all'Onzease (Brahms); Waltz, Die guten alten Zeiten (Jos. Strauss); Le Tambourin (Leclair); Piece for Violin, Cello and Pianoforte: Nina (Pergolesi); Un Tempo di Minuetto (Ario Pirelli); Pizzicato—Serenade, Pierrette (Fritz Brase); Two Pieces (Walter Niemann): (a) Ständchen, (b) Auf der Gondel zu singen; Two Pieces (Haskell): (a) Harlekin and Colombine, (b) Gavotte. 5.50, Exchange, Weather and Time. 6.0, Talk: Animals as Friends. 6.25, Talk. 6.50, Review of the Day's News. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Schaffendes Volk—A Radio Report. 8.45, Operetta Pot-pourri—Concert by the Station Orchestra and Soloists. In the interval from 9.20 to 9.30, Talk on the Autumn Fair. 10.25, News. 10.35 (approx.), Organ Recital from Glauchau Church: Toccata and Duodezima (Georg Müllatt); Elevazione (Zipoli); Larghetto (Bassani); Variations on a Melody (Sweelinck); Concerto in B Minor for Organ (Walther); Doric Toccata (Bach); Nun ruhen alle Wälder. 11.30 (approx.), Close Down.

Linz.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—7.0 p.m., Concert by the Station Orchestra. 8.0, Topical Talk. 8.30, Variety Programme—Songs, Accordion Solos, Gramophone Records and Orchestral Music. 9.30, Weather and News. 10.0, Dance Music. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—Belgian Programme. 7.30 p.m., Symphony Concert on Gramophone Records. 8.15, Racing Results. 8.20, Orchestral Concert: Selection from Die Fledermaus (Joh. Strauss); Selection from The Merry Widow (Lehár); Selection from Rose Marie (Friml). 8.50, News in French. 9.0, Belgian Arias and Songs. 9.25, Concerto in E flat for Two Pianofortes (Mozart). 9.45, News in German. 9.55, Variety Concert on Gramophone Records. 10.25, Dance Music by the Station Jazz Band.

LWOW

788 kc/s, 381 metres; 16 kW.—7.5 p.m., Gramophone Music. 7.20, Miscellaneous Items. 7.40, See Warsaw. In an interval at 9.0, News. 10.40, Gramophone Music. 11.0 (approx.), Close Down.

LYONS

LA DOUA (PTT), 644 kc/s, 465.8 metres; 1.5 kW.—6.15 p.m., Radio Journal. 7.30, Radio Gazette for Lyons and the South-East. 8.30, See Paris (Eiffel Tower). 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 Records. In the interval at 8.30, Announcements. 9.15, News. 9.30 to 11.0, Interval. 11.0, Chimes, Time and Political Review. 11.20 (approx.), Extracts from Fedora—Opera (Giordano), on Gramophone Records. 1.15 a.m. (Wednesday), News. 1.30, Chimes and Close Down.

Malmö.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.45 p.m. till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—2.50 p.m., Military Band Concert. 3.55—4.0, See Prague. 5.45, Dance Music on Gramophone Records. 5.55, Talk. 6.5, See Brno. 7.0, See Prague. 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 109 kW.—1.45 p.m., Weather Forecast. 2.45, Weather Report. 3.0, Extracts from Russalka—Opera (Dargomizsky). 3.55, Time, 4.0, Agrotechnical Programme. 4.30, Literary Programme. 5.30, An Operetta for Young People. 6.30, Concert, relayed from the Central Park. Symphony (Glazunov); Song (Netchaev); Suite from The Fountain of Bachtchisarai (Krilov); Suite (Schegstakovitch); Polka. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5, Press Review in English. 10.30, 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.—4.25 p.m., Concert by the Allo Eckl-Peillstein Orchestra: Overture. La dame blanche (Boieldieu); Suite from Sylvia (Delibes); Moment musical (Schubert); Waltz, Dreams on the Ocean (Gungl); Intermezzo. Tanz der Schmetterlinge (Kockert); Potpourri, Für lustige Leut' (Komzak). 5.40, Talk: On the High Seas at the Outbreak of the Great War. 6.5, Hermann Zilcher Song Recital by Margret Zilcher-Kiesekamp (Soprano), with the Composer at the Pianoforte; Morgenlied; Wiegenlied; Um Mitternacht; St. Nepomuks Vorabend; Ein dem Menschen. 6.25, Talk by Dr. Bastian Schmid. 6.45, Time and Announcements. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Report by the Mayor of Nürnberg on the Preparations for the Nazi Party Day. 8.10, Wiener Bonbons—Variety Programme (arr. Wilfrid Feldhütter and Franz Weichen-mayr). 7.15, Austria. 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, relayed from the Grand Café. 6.0, Talk for Housewives. In an interval at 6.30, Programme to be Announced. 6.45, Balalaika Duets. Romance and Russian Melodies (Moniuszko); Ukrainian Dance (E. Stepaschko). 7.0, Time Signal. 7.15, Weather and News. 7.30, Chamber Music. 8.0, Time Signal. 8.1, Talk: The Parliamentary Elections. 8.30, Modern Operetta Music by the Station Orchestra, conducted by Hugo Kramm. March from Der Teufelsreiter (Kalman); Melodies (Karl Komjati); Selection from The Three Musketeers (Friml); Selection from Oh Kay (Gershwin); Selection from Der Tenor der Herzogin (Künnecke); Selection from Der Orlov (Granichstaedten). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Songs and Duets. 10.45 (approx.), Close Down.

Ostersund.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro and Agricultural Notes and News. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Sly—Opera in Three Acts (Wolf-Ferrari). 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 Review. 7.0, Le Journal Parlé. 8.30, La Fleur d'orange—Play (Bibrabeau). 10.30 (approx.), Close Down.

AUGUST 22nd **TUESDAY** continued

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music. 7.15, Le Journal Parlé. 7.30, Organ Recital. 8.0, Gramophone Music. 8.30, Concert by the Station Orchestra: Overture, Mirella (Gounod); Valse militaire (Waldeufel); Canzonetta (Fillipucci); Idylle rhénane (Latz); Fantasia (Urgel); Suite from Coppélia (Delibes); Sous bois (Staub). Interlude from Pépita Jimenez (Albeniz); Selection from L'amour masqué (Messager); Castilian Dance (Turina). 10.15, 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 Records: En relisant vos Lettres (Masson-Kiek); La Cinquante (Marie); Primo Bacio (Rico); Miami (Lears). 8.0, Weather and Press Review. 12 Noon, Debussy Concert on Gramophone Records, for the Seventy-first Anniversary of his Birth: Scottish March; Jardins sous la pluie; L'isle joyeuse; Mandoline; Prelude à l'après-midi d'un Faune; Minstrels; Petite Suite; Noël des enfants qui n'ont plus de Maison; Le Martyre de St. Sébastien; L'On dine; La Boite à bijoux; Ariettes oubliées; Suite, Iberia; Ballad; Nocturne. 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. 7.0, Agricultural Notes. 7.10, Gramophone Concert: Amours nous dans le Mystère (Persiani-Bonnier-Charpentier); Marionnettes (Glazunov); Waltz, El Relicario (Padilla); Ginette (Paradis); Polka (Marceau); Piccolo (Strauss); Romance (Svendsen); Simple avenu (Thomé); Glow-worm Gavotte (Lincke); Emma Livry (Pironelle); Ay, ay, ay (Freire); Hochzeitzeit in Lilliput (Translatour). 7.50, Commercial Prices and News. 8.0, See Paris (Eiffel Tower). In the intervals, News, Weather and Press Review.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayed by W8KK 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, Smiths Play Bridge. 8.30, Words and Music, from New York. 8.45, Congress of Clubs. 9.0, Meredith Wilson Orchestra, from New York. 9.15, Jack Walton's Orchestra, from New York. 9.30, News and Markets Report. 9.45, Programme to be announced. 10.15, Tarzan of the Apes. 10.30, Larry Larson, from New York. 10.45, Orphan Annie, from New York. 11.0, News and Piano Classique. 11.15, Sports News and a Song. 11.30, Pittsburgh Spotlights. 11.45 to 3.30 a.m. (Wednesday), New York Relay. 11.45, Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15 a.m., Radio in Education. 12.45, Ray Heatherton. 1.0, Beggar's Opera, Part II. 1.30, Adventures in Health. 1.45, Floyd Gibbons. 2.0, Philharmonic Orchestra. 3.0, Musical Memories.

PORSCRUND.—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, Gramophone Music. 5.55, Talk. 6.5, Market Prices. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Songs (Fielitz): (a) Stilles Leid, (b) Song, (c) Rosenzweig, (d) Heimliche (Grüsse), (e) Strande, (f) Kinderstimmen, (g) Mondnacht, (h) Wanderträume, (i) Anathema, (j) Ergebung; Aria from The Creation (Haydn). 7.0, Chimes and News. 7.10, Cembalo Recital by Joseph Langer. 7.30, Talk. 7.45, La belle Hélène—Opera (Offenbach). 10.0, Time and News. 10.15, Song Recital by Laznicka. 11.0 (approx.), Close Down.

RABAT

MOROCCO, 721.1 kc/s, 416 metres; 6 kW.—12.30 p.m., Concert: Waltz (Joh. Strauss); Gavotte (Czibulka); Overture, Le roi d'Yvetot (Adam-Tavan); Song (Petit Kahn); Clarinet Solo: Neapolitan Song (de Boisdefre-Marcon); Vieja Castilla (Capri); Selection from La Traviata (Berdì Tavan); Clarinet Solo (Weber); Song from The Tales of Hoffmann (Offenbach); Suite, Trianon (Lachau); Song: Berceuse de Jocelyn (Godard); Notre amour (Boellmann-Chapelier); The Musical Box and the Pianola (Antiga). 4.0, Gramophone Music. 5.0, Interval. 7.0, Arab Programme, News and Gramophone Music. 7.45, Le Journal Parlé and Weather. 8.0, Concert: Overture, Prometheus (Beethoven-Salabert); Gretchen am Spinrade (Schubert-Salabert); Waltz, Du und Du (Joh. Strauss); Prayer from Tosca (Puccini); Sevilla (Albeniz); Selection from Cavalleria rusticana (Mascagni-Tavan); Songs from La Bohème (Puccini). Violin Solo: Song from The 'id (Massenet); Divertissement (Lalo); Aria from L'enfance du Christ (Berlioz); Chant d'automne (Tchaikovsky-Salabert); Melody (Badenes). In the interval, Literary Talk. 10.0, Gramophone Music.

RADIO-SUISSE ROMANDE

Radio-Suisse Romande, Tuesday, Aug 22 — **SOTTENS**, 743 kc/s, 403 metres; 25 kW.; and **Geneva**, 395 kc/s, 760 metres.—6.15 to 6.30 a.m. (from Lausanne), Gymnastics. 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, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Lausanne), Concert by the Radio Lausanne Orchestra. 5.0 (from Lausanne), Talk for Women. 5.30, Interval. 7.0 (from Geneva), Talk, Geneva Since 1850. 7.30 (from Geneva), News. 8.0 (from Geneva), Variety Programme by the Broadcasting Serenaders. 9.0 (from Geneva), Concert: Overture, Si j'étais Roi (Adani); Cornet Solos from Don Quixote (Massenet); Minuet from the Divertissement in D (Mozart); Tyrolisme (Schubert); Saychull and Bold (Rust). 9.50, News. 10.0 (from Geneva), Gramophone Music. 10.30, Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.30 p.m., Humorous Programme. 7.0, Weather Report. 7.5, Orchestral Concert, conducted by Parups, relayed from Melluzi. Overture, Raymond (Thomas); Suite, Scènes napolitaines (Massenet); Waltz, Schön Rosmarin (Kreisler); Réverie (Scriabin); Hungarian March from The Damnation of Faust (Berlioz); Introduction to Act III and Dance of the Apprentices from The Mastersingers (Wagner); Arias; Ballet Music from Lakmé (Delibes); In a Chinese Temple Garden (Ketilbey); Waltz, Mein Lebenslauf ist Lieb und Lust (Joh. Strauß). In an interval at 8.0, News. 9.0, Weather and News. 9.15, Italian Opera Music 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; from 5.15 p.m. 12.30 p.m., Gramophone Music. 1.0, Orchestral Concert. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 2.0, Time and Announcements. 4.30, Giornale Radio and Exchange. 4.45, See Turin. 5.15, Weather. 5.20 to 6.0, Concert of Light Music. 6.40 (Naples), Shipping and Sports Notes. 6.45, Lesson in Morse, and Popolavoro Notes. 7.0, Tourist Report. 7.10, Agricultural Report. 7.20, News in Foreign Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Sponsored Gramophone Music. 8.30, Sports Notes. 8.45, Military Band Concert, conducted by Andrea Marchesini. In the interval—L'ottavo servizio da tè—One Act Sketch (Enrico Serretta). 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 and Baseball Scores. 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, Live Tex and the Fire Chief Band. 3.0, Lives at Stake. 3.30, National Radio Forum, 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.—6.15 a.m. (from Basle), Gymnastics. 6.35, Interval. 11.59, Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from Zürich), Concert by the Radio Orchestra, conducted by Neppach. 12.30 p.m., Time and News. 12.40 (from Zürich), Report from the Horticultural Exhibition. 1.25, Time, Weather and Exchange. 1.35 (approx.), Interval. 5.0 (from Zürich), Concert by the Little Swiss Radio Orchestra, conducted by Max Scherbaum. 5.30 (from Basle), Newly-released Gramophone Records. 6.30 (from Berne), Reading (Nüesch). 7.0, Time and Weather. 7.5 (from Berne), Violin Recital by Lily Klyewer. 7.40, Concert by the Swiss Radio Orchestra, conducted by Neppach. 8.0 (from Berne), The Microphone at Castle Spiez. 8.30, Concert by the Radio Orchestra. 9.0, News. 9.10 (from Berne), The Romantic Movement—Programme of Literature and Music. 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., Country Melodies. 5.30, Cabaret Programme. 6.15, Gramophone Music. 7.15, Weather and News. 7.30, Talk: The Vikings. 8.0, Orchestral Concert; Soloist, Tobias Wilhelm (Violin); Overture, Euryanthe (Weber); Symphony in A, No. 4 (Mendelssohn); Con-

certo in D Minor for Violin and Orchestra (Tobias Wilhelm). 9.15 (from Malmö, 1,301 kc/s, 231 metres), Talk—Our Young Authors. 9.45, Weather and News. 10.0 (from Örebro, 1,265 kc/s, 237.2 metres), Organ Recital. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Extracts from Maçon—Opera (Massenet), on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Popular Music on Gramophone Records. 2.0-5.0, Interval. 5.0, Talk and Readings: French Authors who died in the War. 5.15, Gramophone Concert: La Messe solennelle de St. Hubert (Blondian); The Bells of St. Malo (Rinner); Tesoro mio (Beucucci); The Rhine (Metra); La Gitana (Busalotti); Cocktail Pathé Sketch (Dorin); Marine Infantry Hymn (Cappé); Défilé de l'aviation (Parés). 6.0, Talk on Gastronomy. 6.15, Topical Talk. 6.30, Viola Recital by Gaston Stoltz; Sonata No. 4 (Corelli); Andante, Minuet and Rondo (Mozart); Barcarolle (Bachelet); Petite histoire (Bachelet); Lied (Stoltz); Suite (Jonen). 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in German and Lottery Results. 8.30, See Paris (Eiffel Tower). After the Programme, Press Review.

STUTTGART

MUHLACKER; 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—1.30 p.m., Dance Music on Gramophone Records. 2.10 (from Pforzheim), Concert by the Pforzheim Symphony Orchestra, conducted by Hans Schröder: Overture, Gri-Gri (Lincke); Waltz from Eva (Lehár); In the Shadows (Finck); Bridal Procession of the Marionettes (Rathke); Selection from Goldene Meistertin (Eysler); Husarenveddette (Fueck). 3.0, Advanced English Lesson. 3.30, Talk on Flowers. 4.0, Programme for Women—Reading. 4.30, See Frankfurt. 5.45, Talk: Max Eyth as the Organizer of German Agriculture. 6.10 (from Freiburg), Dialogue on Germany. 6.35, Time and News. 7.0, Transmission for all German Stations: Swabian-Alemannic Humour—Radio Sequence (Martin Lang) by a Peasant Orchestra and Choir. 8.0, Ex-Soldiers' Anecdotes of the Great War. 8.10, Programme from Berlin **Deutschlandsender (Reichsender)**. 10.0, See Munich. 10.20, Time and News. 10.45 (from Freiburg), Concert by the Freiburg Kampfbund Orchestra, conducted by Willi Döhrmann: Overture, Anne Bolcyn (Donizetti); Caprice italien (Tchaikovsky); Suppé Operetta Potpourri (Rhode); Paraphrase on the Song, Es liegt eine Krone im tiefen Rhein (Pachernegg); Waltz, Dreams on the Ocean (Gungl); Intermezzo, Glockenblumen (Ganglberger); Nüchtlche Serenade (Köhler); March, Deutsche Zuversicht (Kapp). 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.15 p.m., Military Music. 6.30, 'Cello Solos. 6.45, Popular Songs. 7.0, Hawaiian Guitar Music. 7.15, News. 7.30, Scènes alsaciennes (Massenet). 7.45, Arias from Opera. 8.0, Accordion Solos. 8.15, Instrumental Music: Overture, Poet and Peasant (Suppé); La Serenata (Braga); Quartet (Haydn); Humoresque (Dvorák); Wiegendorf (Schubert). 8.45, Songs from Operettas. 9.0, Strauss Waltzes: Emperor Waltz; Dorfgeschwalben aus Oesterreich (Jos. Strauss); Künstlerleben; Du und du; The Blue Danube; Frühlingstimmen; Roses from the South; Waltz, Wiener Blut. 9.30, Opera Music: Lament from I Pagliacci (Leoncavallo); Aria from Tosca (Puccini); Aria from Werther (Massenet). 9.45, Orchestral Music: Overture, Figaro (Mozart); The Ride of the Valkyries (Wagner); Selection from Il Trovatore (Verdi). 10.0, Songs from Sound Films. 10.15, News. 10.30, Concert for Listeners in Morocco. 11.15, Chansonnettes. 11.30, Concert of Light Music. 12 Midnight, News. 12.5 a.m. (Wednesday), Music by an Argentine Orchestra. 12.15, Bal Musette. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—4.45 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.—4.45 p.m., 1 Balilla—Italian Youth Movement Programme. 5.15, Orchestral Concert 6.0 to 6.5, Weather. 6.40, Giornale radio, Popolavoro Notes and Gramophone Music. 7.0, Time, Report of the Royal Geographical Society and Gramophone Music. 7.10, Agricultural Notes and Market Prices. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, Announcements, Giornale Radio, Sports Notes, Weather and Gramophone Music. 8.30, Talk on the following

Transmission. 8.35, Scugnizza—Operetta in Three Acts (Mario Costa). In the intervals, Talk and Literary Notes. After the Operetta, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (morning), and 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, 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 of Light Music by the Wiener Symphoniker. In the interval from 1.0 to 1.10 p.m., Time and News. 2.0 to 3.0, Interval. 3.0, Time and Exchange. 3.20, Talk: Moderation and Excess in Sport. 3.35, Talk: Cooking Fruit. 4.0, Gramophone Concert of Operetta Music. 4.40, Talk: Natural History for City Dwellers. 5.5, Talk: The Vienna Furniture Fair, 1933. 5.15, Baritone and Violin Recital by Hans Karolus and Erika Kalir; Suite on Themes by Pergolesi (Stravinsky); Chant de Roxane (Karol Szyrianowsky); Orientale (Vladigrov); The Flight of the Bumble Bee (Rimsky-Korsakov); Seven Gallows' Songs from Poems by Christian Morgenstern (Greener); Three Pieces (Mauz): (a) Wiedersehen, (b) Bitte, (c) Der Tote. 6.5, Reading. 6.30, Talk: English Guests in Austria. 7.0, Gipsy Tunes—Concert by the Wiener Symphoniker, conducted by Fred Kreinpl; Soloists, Isoldé Riehl (contralto) and Christa Richter (Violin); Second Hungarian Rhapsody (Liszt); Rhapsodie tzigane (Ravel); Puszlastimmung (Hubay); Zigeunerlieder (Brahms); Three Hungarian Dances (Brahms); Zigeunerweisen (Sarasate); Variations on an Hungarian Folk Song (Zador). In the interval at 7.40, Time and News. 8.30, Reading (Paul Wilhelm). 9.0, Concert by the Wiener Symphoniker Radio Orchestra, conducted by Josef Holzer; Soloist, Anton Kamper (Violin); March, Egerländer (Kopetzky); Overture, Josef Lamer (Fahrbach); Selection from The Cinema Star (Gilbert); Violin Solo, Liebesserenade (Ganglberger); Waltz, Volksgartensträußchen (Ziehrer); Evening Idyll (Humphries); Parade of the Tin Soldiers (Jessel); Song, Das Veilchen (Dolph-Heckel); Overture, Im Reiche des Indra (Lincke); Oriental Intermezzo, Medina (Toifl); Marching Song, Einmal schaff't jeder (Heymann); Potpourri, Wiener Volksmusik (Komzak). 10.30, News. 10.45, Dance Music on Gramophone Records.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from Turin. 12.5 p.m., Light Music on Gramophone Records. 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. 3.45, Aviation Report and Anti-Gas Drill. 3.50, Gramophone Music. 3.55, News. 4.0, Concert of Chamber Music on Gramophone Records with Introductory Talk. 4.30, Light Music on Gramophone Records. 5.0, Answers to Correspondence. 5.15, Soprano and Baritone Song Recital. 6.15, Talk. 6.35, Song Recital. 7.5, Instrumental Music on Gramophone Records. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Topical Talk. 8.0, Concert by the Station Orchestra, conducted by Oziminski. Soloist, Wraga (Bass); Polonaise (Mousszko); Torch Dance of the Brides of Kashmir from Feramors (Rubinstein); Berceuse (Maszynski); Suite algérienne (Saint-Saëns). Three Songs: (a) Morska oko (Swierczynski), (b) Les Tulipes (Cytkow), (c) The Song of the Flea (Mussorgsky). Messe à Sainte Cécile (Gounod-Noskowski); Rondo (Haydn); Popular Lithuanian Melody (Golewicz); Waltz from Sleeping Beauty (Tchaikovsky); Aria from The Huguenots (Meyerbeer); Aria from Der Freischütz (Weber); Aria from Mephistopheles (Boito); Peer Gynt Suite No. 1 (Grieg). In the intervals, 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.—4.0 p.m., Hungarian Music on Gramophone Records. 5.0, Talk on Wireless. 5.15, See Warsaw. 7.5, Miscellaneous Items. 7.20, Talk in Lithuanian. 7.35, Programme Announcements. 7.40, See Warsaw. 11.0 (approx.), Close Down.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—8.10 p.m., Announcements. 8.30, Spinnet and Piano-forte Recital. 9.30, Soprano and Baritone Solos. 10.30, Weather and News. 10.40, Concert by the Ruslan Orchestra. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

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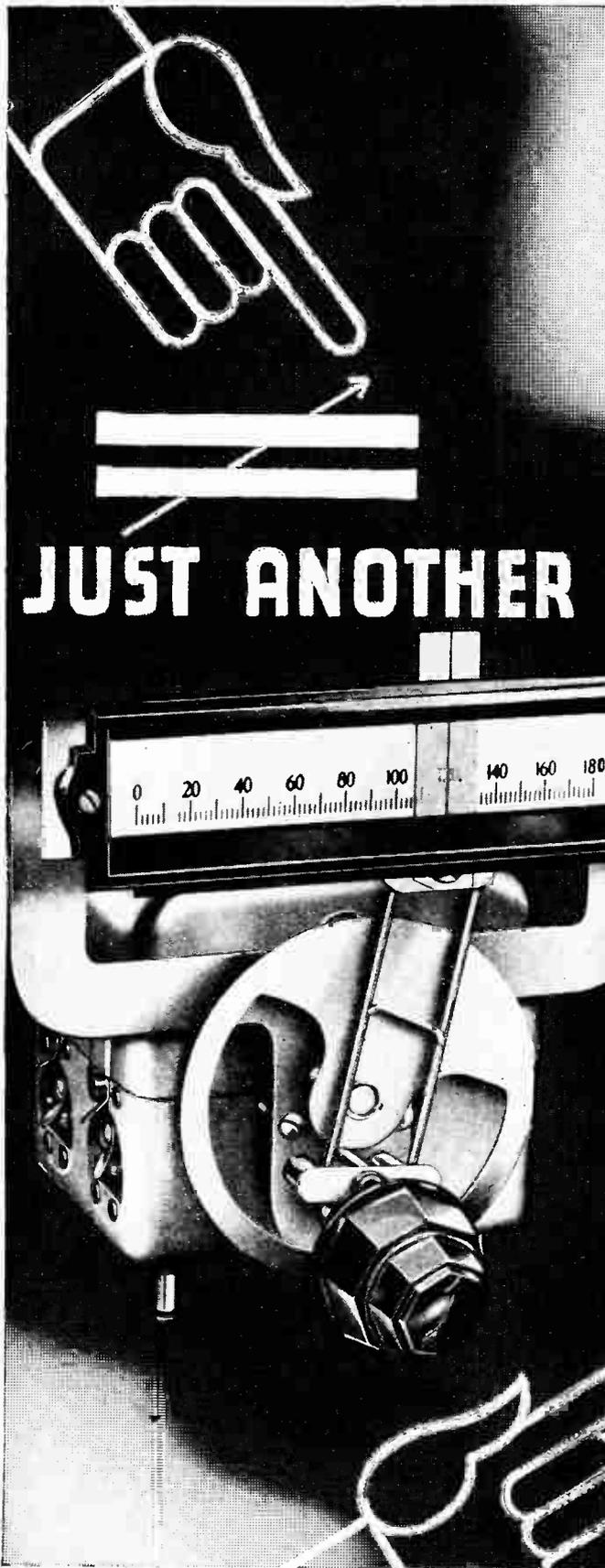
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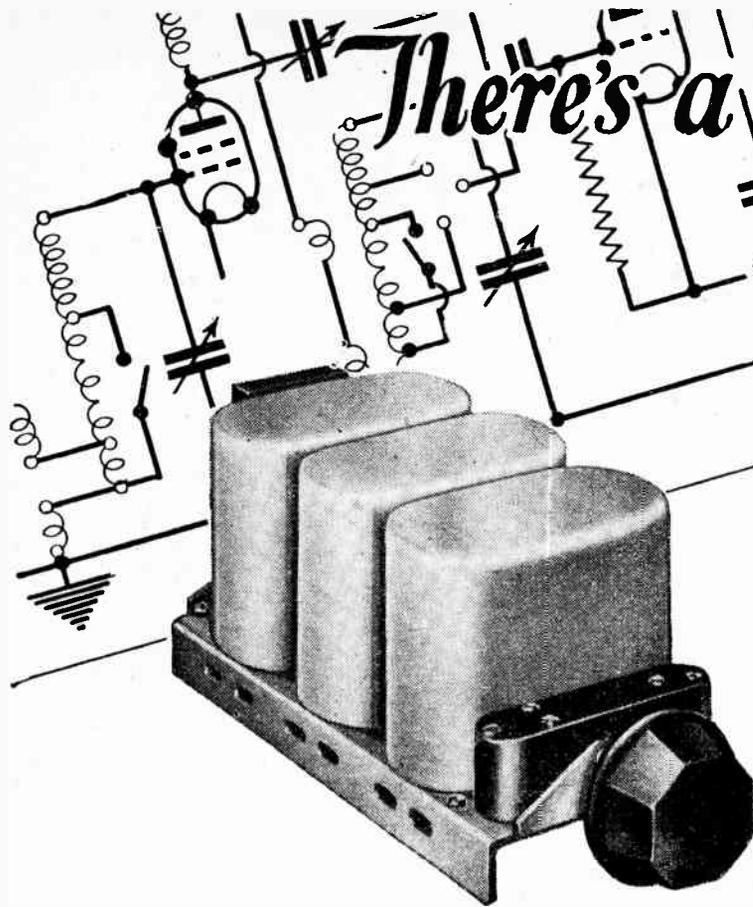


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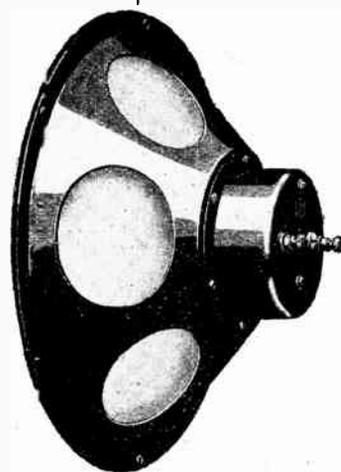


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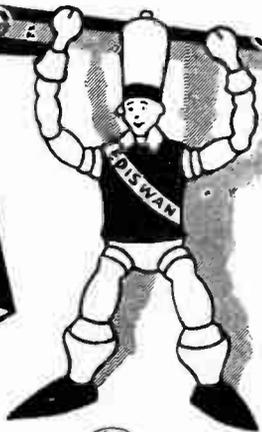


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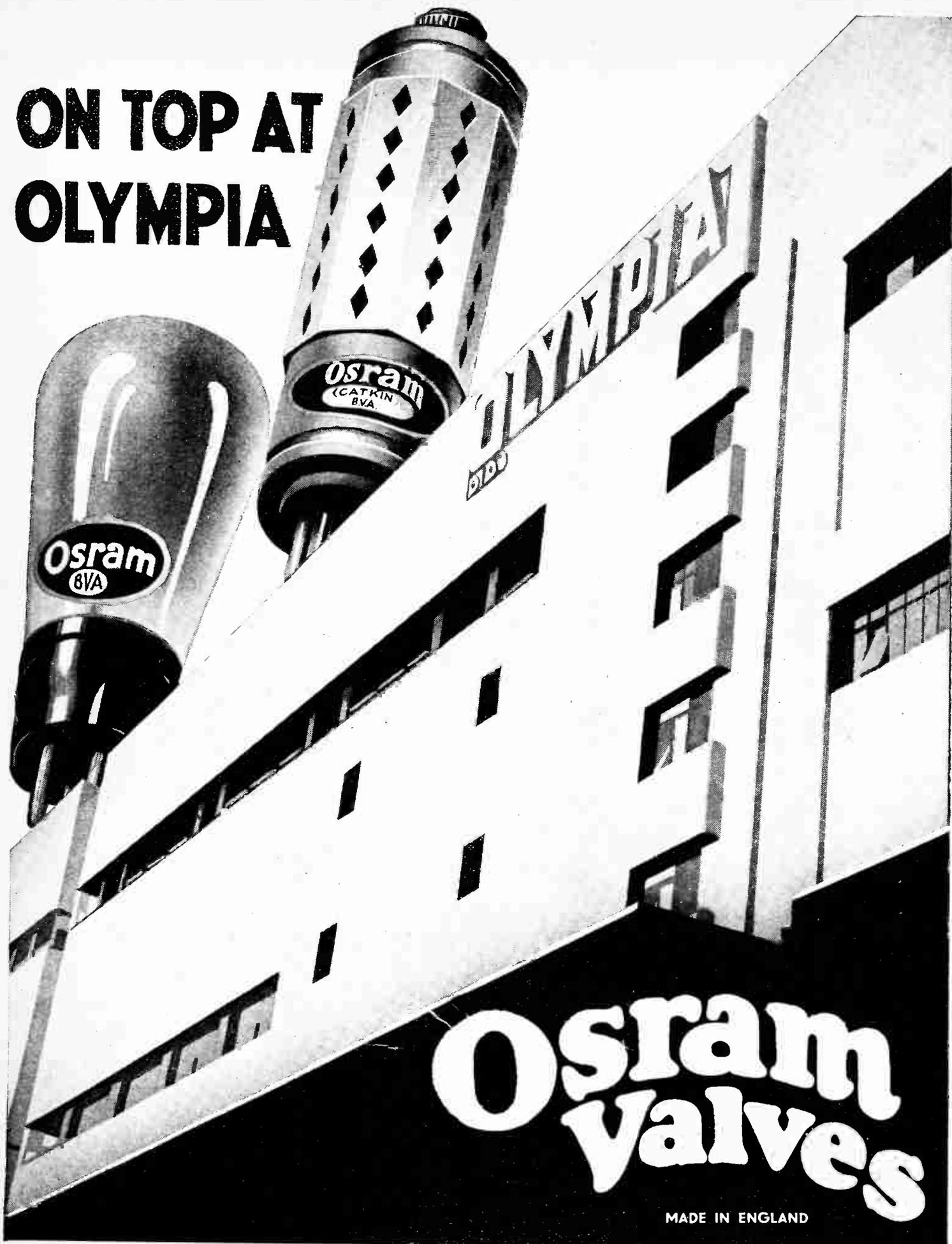
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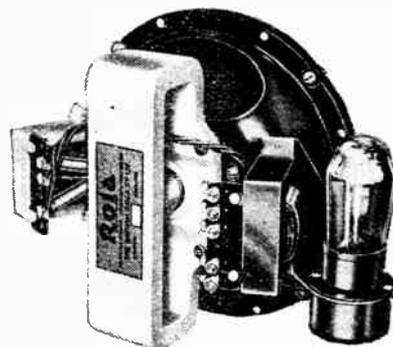
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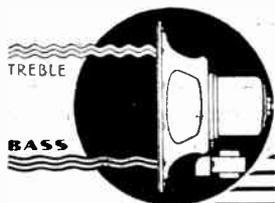
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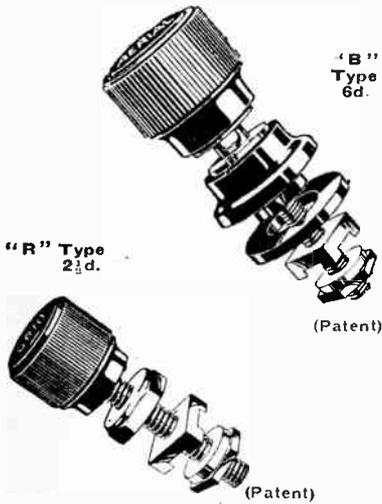


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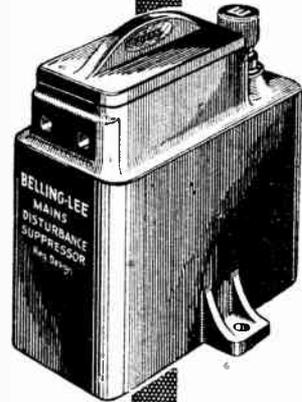
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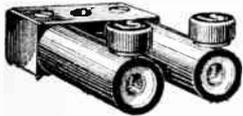
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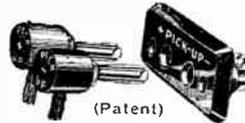


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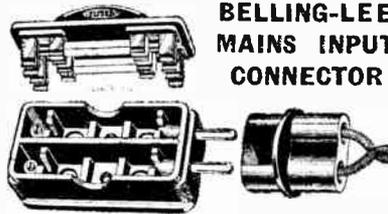
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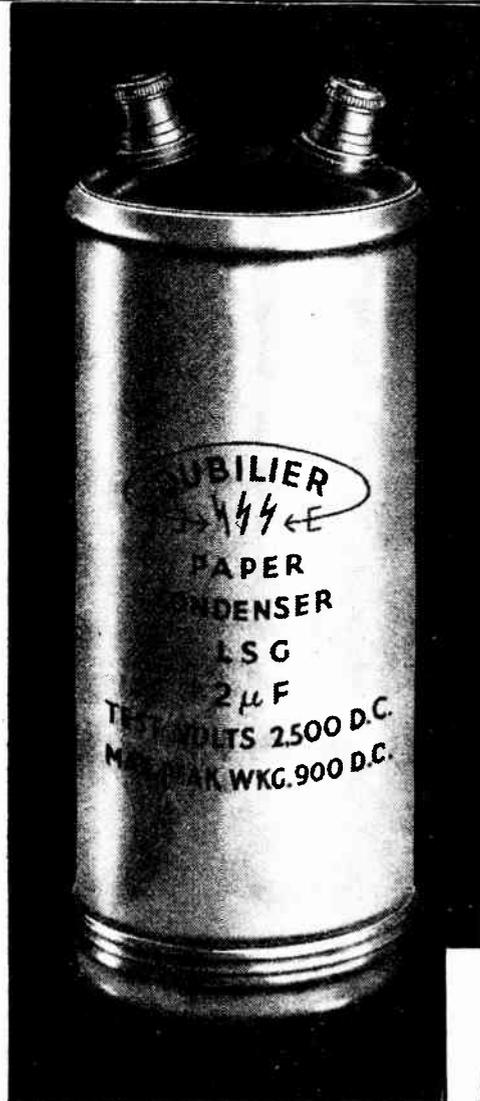
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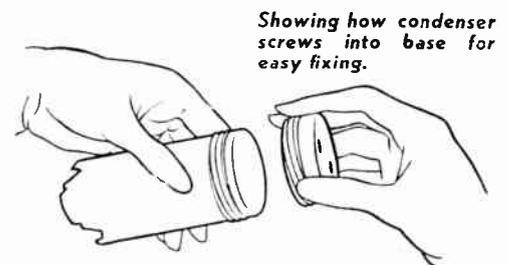
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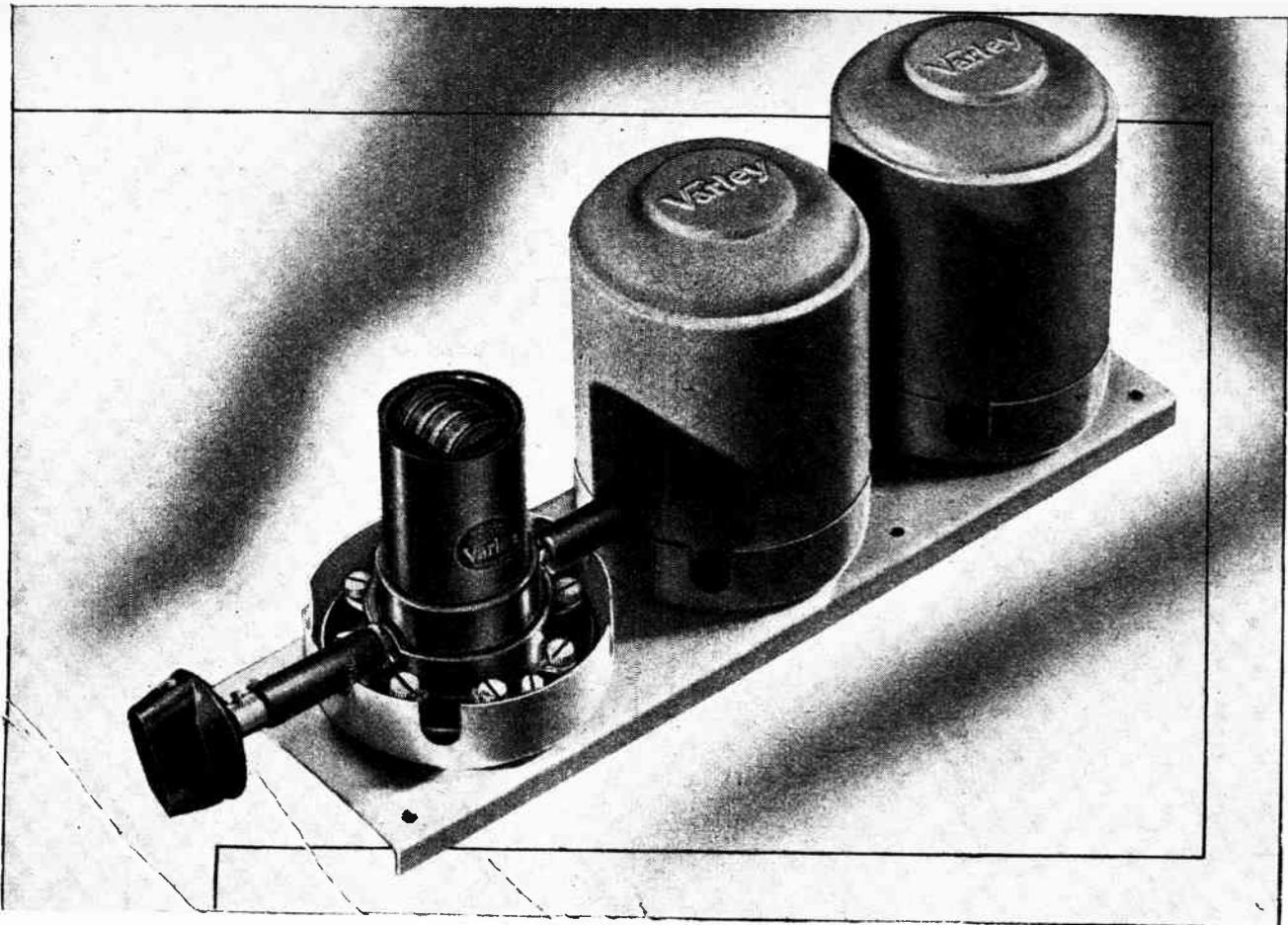
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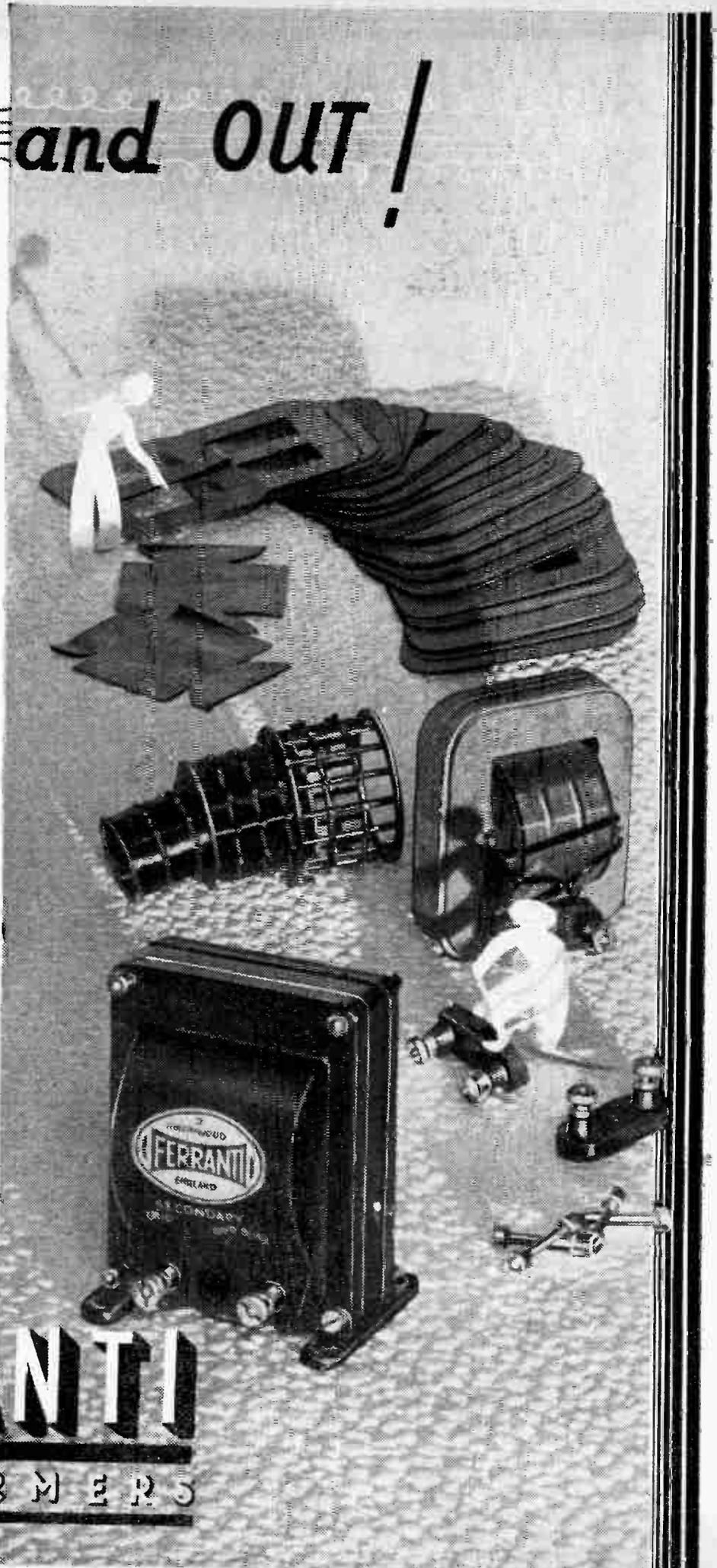
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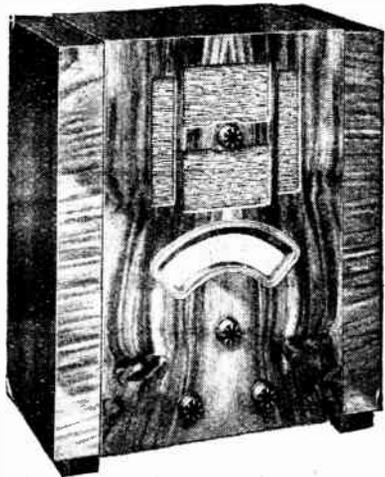
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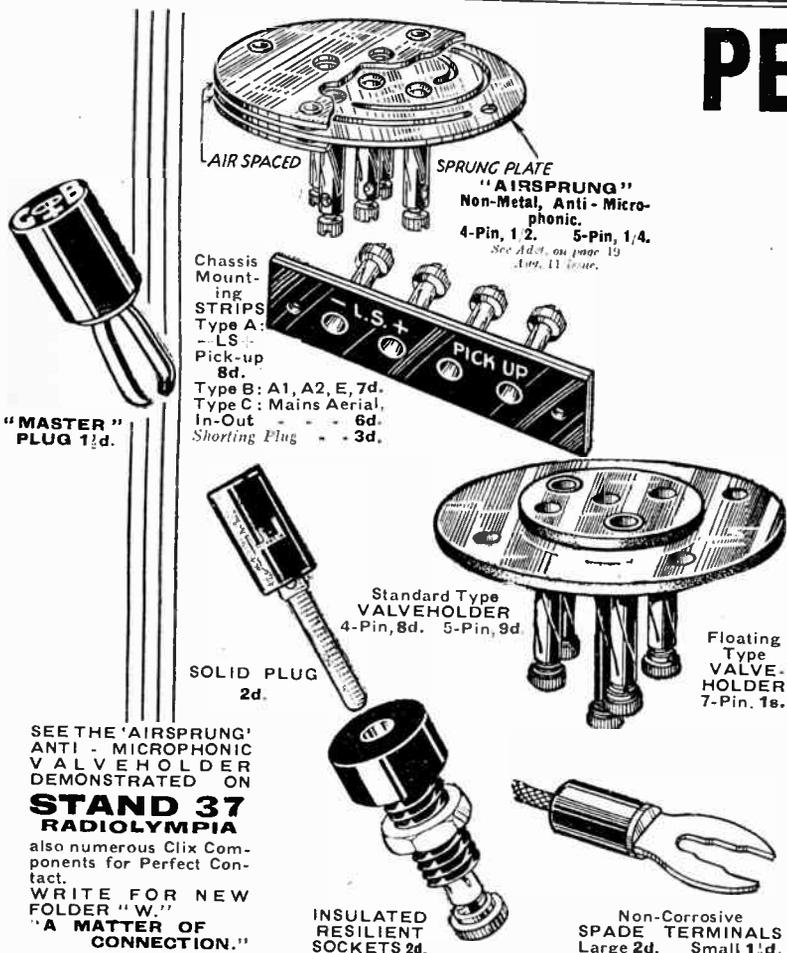
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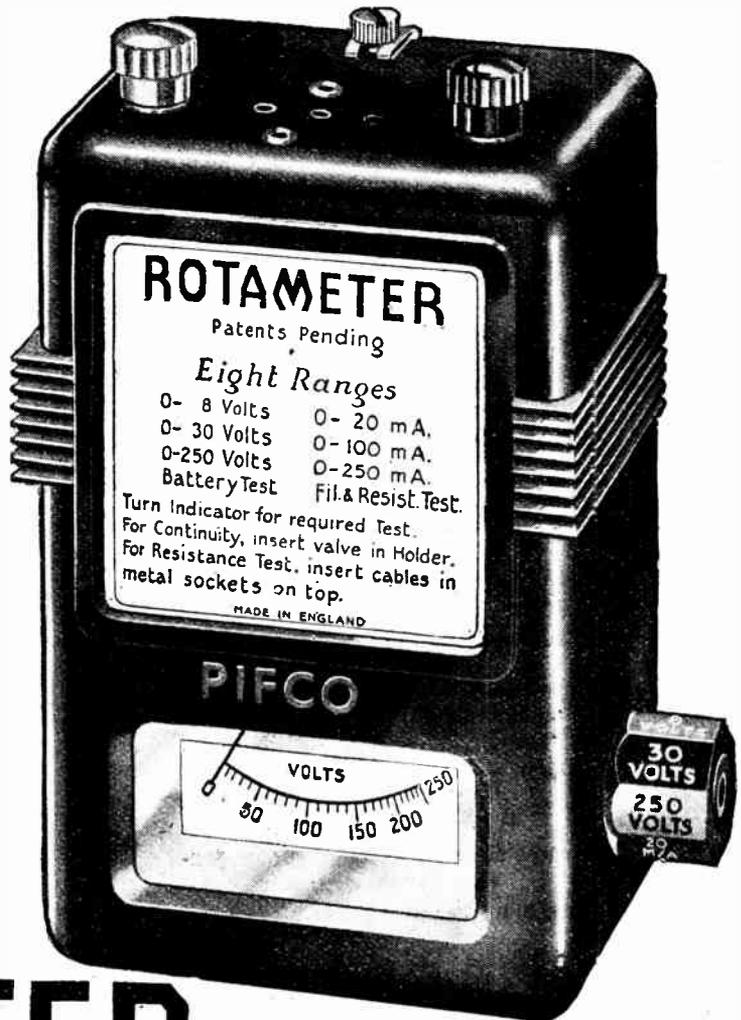
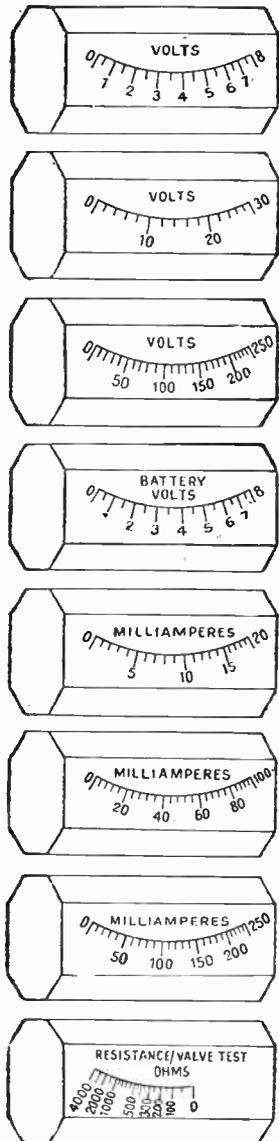
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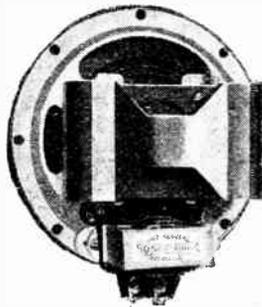


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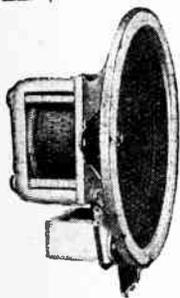
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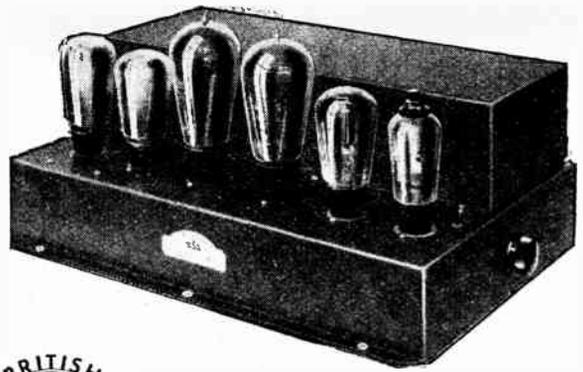
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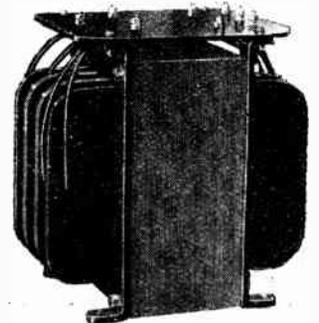
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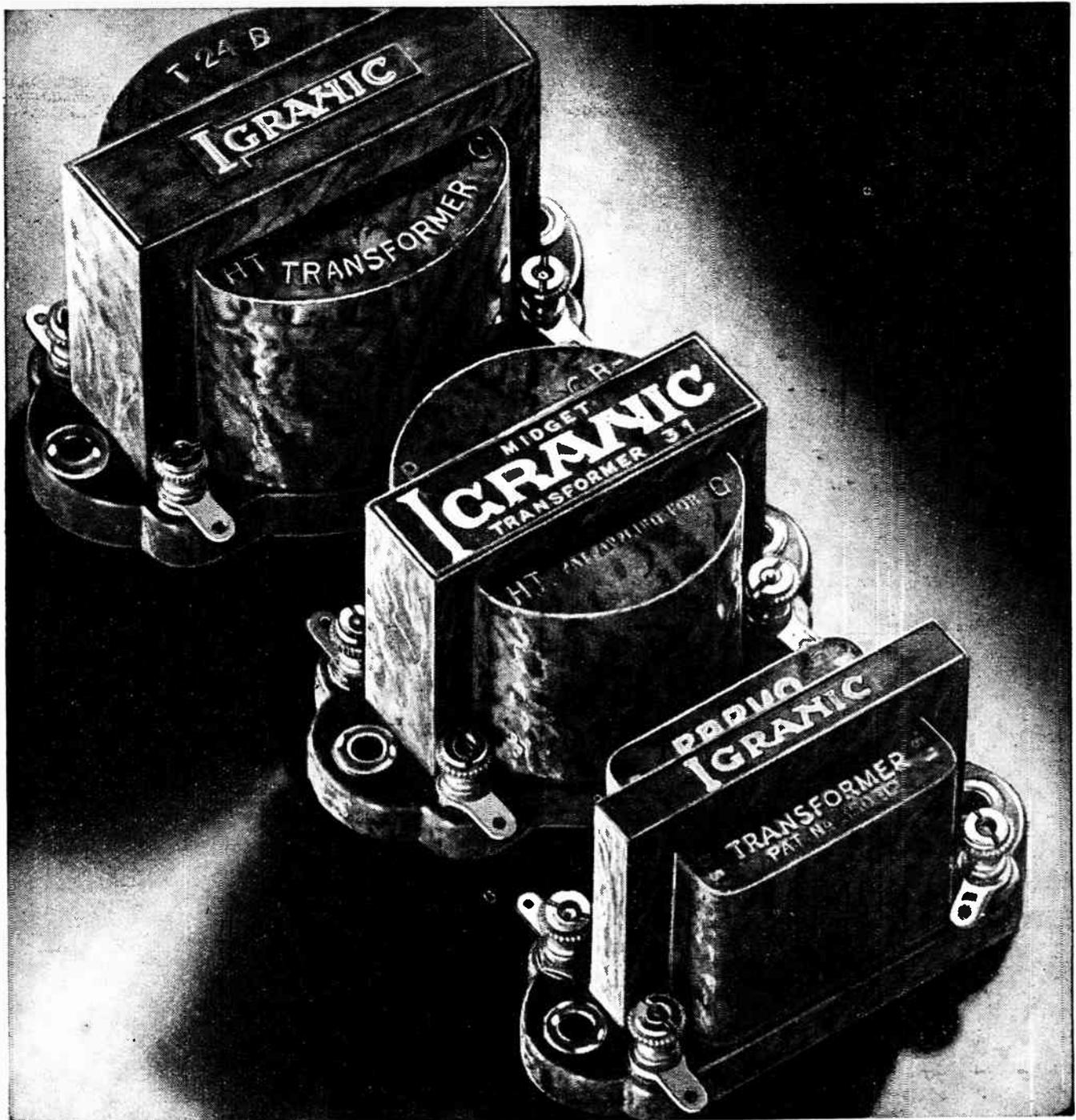
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EDITORIAL COMMENT

Wireless and the Mains

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THE electrical industry collectively attaches much importance to the increase in the popularity of wireless because it is an added inducement to the public to become consumers of electricity since electricity provides such a very convenient means of operating a wireless set, and from this beginning the employment of current for lighting and other domestic purposes follows.

It is because of this recognition of the importance of wireless sets by the electrical industry as a whole, that we feel justified in continuing our criticism of those distributors of electricity who have not yet had their eyes opened to the folly of their attitude in endeavouring to penalise consumers by continuing to insist that wireless sets must be connected to the lighting mains and not supplied at the power rate.

We must admit that we are distressed, too, to find that our esteemed contemporary, *The Electrician*, in a recent issue criticises our attitude in stating that wireless sets should be connected to the power circuit. *The Electrician* states in a Leader: "Even our contemporary, *The Wireless World*, in its issue of July 14th, goes rather far in criticising supply undertakings which insist on current for wireless receivers being taken through the lighting meter," and the article continues with the suggestion that a wireless set should be connected to the lighting circuit for the reason that it does not constitute a "power load." We believe that we are right in taking the view that the question of "power load" does not come into the argument. If we exclude from the lighting circuit any domestic apparatus which does not constitute a "power load,"

then, on the question of "load," domestic irons, kettles, fans and, in fact, almost anything other than heating appliances, would have to be fed through the lighting meter.

We believe that it is only reasonable to insist on the lighting rate being applicable where lamps are used for the purpose of illumination.

Supply authorities are *privileged* to charge a higher rate for illumination and it is an abuse of this privilege to attempt to compel the consumer to pay the lighting rate for any other purpose than illumination. If this view is wrong, our correspondence pages are open to any supply undertaking which cares to argue the point. In the meantime, we should welcome communications from any readers who, in their districts, are troubled over this attitude of suppliers.

We feel that publicity should be given to a matter of this kind, which is not only irksome to the consumer but definitely hampers the extension of the use of electricity for domestic purposes.

The Show

A Survey of Progress

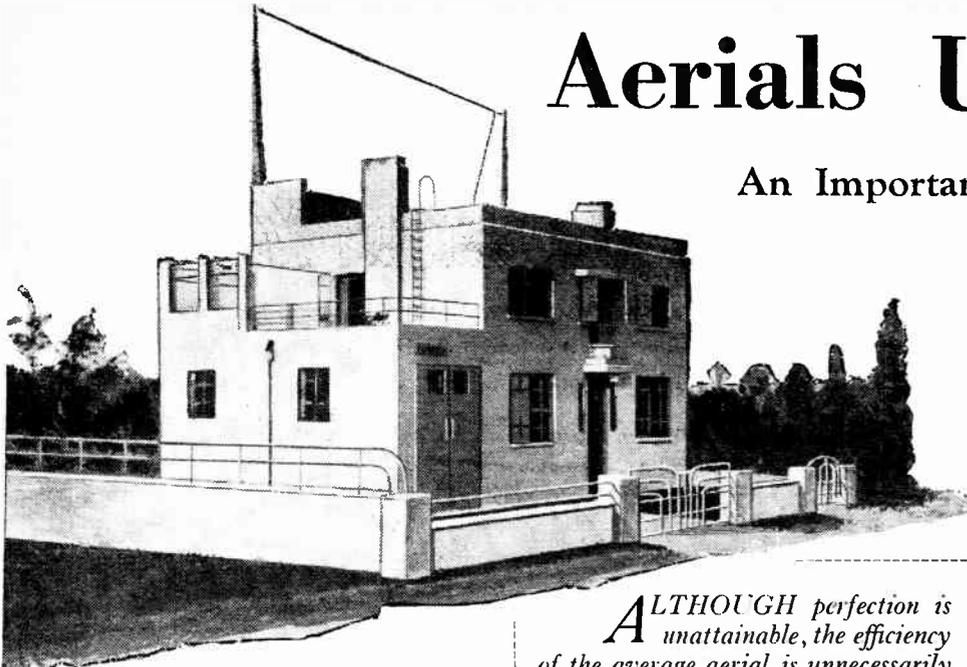
IN this issue, which comprises the second of our three special Olympia Show numbers, we include a series of articles surveying the progress which has been made in various branches of wireless since last season, as portrayed by the exhibits at Olympia.

In almost every direction substantial development has taken place, and our object in this issue has been to try to indicate to our readers the outstanding tendencies rather than to give a detailed report on the exhibition as a whole; a report of this nature will, however, be included next week, when every manufacturer's exhibit will be dealt with individually.

Aerials Up to Date

An Important But Neglected Accessory

By H. F. SMITH



ALTHOUGH perfection is unattainable, the efficiency of the average aerial is unnecessarily low. This article explains the few simple rules which lead to better results, and, from an entirely practical point of view, deals with the use of screened aerial down-leads as a palliative to man-made static.

EVER since the earliest days of radio communication the external aerial has been a bone of contention. Technicians point out, quite rightly, that a good aerial is still, as it always has been, a vital necessity for which there is no real and entirely satisfactory substitute. Those who are mainly concerned with æsthetic considerations do not hesitate to condemn it roundly as a blot on the landscape. Viewing the subject dispassionately, both sides deserve a certain amount of sympathy.

In spite of continued improvements in the sensitivity of our receivers, a great deal of efficiency is sacrificed by using an ineffective form of collector; true, the frame aerial has its own special advantages, but in the best form is hardly practical for domestic use. Probably the greatest advantage of a good aerial is that it tends to reduce background noises.

To do its job properly an aerial must be high, and therefore conspicuous; here a loophole is given for the critics, but many of them will admit that although a lofty aerial is out of keeping with old-world surroundings it fits in quite happily with the modernistic style of building. Architects are displaying a welcome tendency to make proper provision for an aerial, and in several cases are putting up a mast (or masts) as a part of the general scheme. One of several such arrangements observed by a *Wireless World* artist is illustrated at the head of this article; here the building is of ferro-concrete, and the aerial masts are of the same material.

Almost everyone knows that, as already implied, height is a vital factor in aerial design. But the effective height of an

aerial is determined not so much by its elevation above the ground as by its height with relation to adjacent earthed or semi-earthed bodies. An aerial erected 20ft. above the roof of an 80ft. metal-framed building has an effective height, not of 100ft., but of 20ft. only. Too much emphasis cannot be laid upon the need for keeping the aerial well clear of all such obstructions as roofs, metal guttering, and walls; this applies both to the horizontal portion and to the down-leads.

One often sees fearsome multiple-wire aerials which presumably have been erected in the fond hopes that their receptive powers will be greater than that of a single wire, which is much easier to put up and which is certainly less conspicuous and offensive to the eye.

Aerials that are otherwise workmanlike and effective are often marred, particularly as regards their appearance, by a

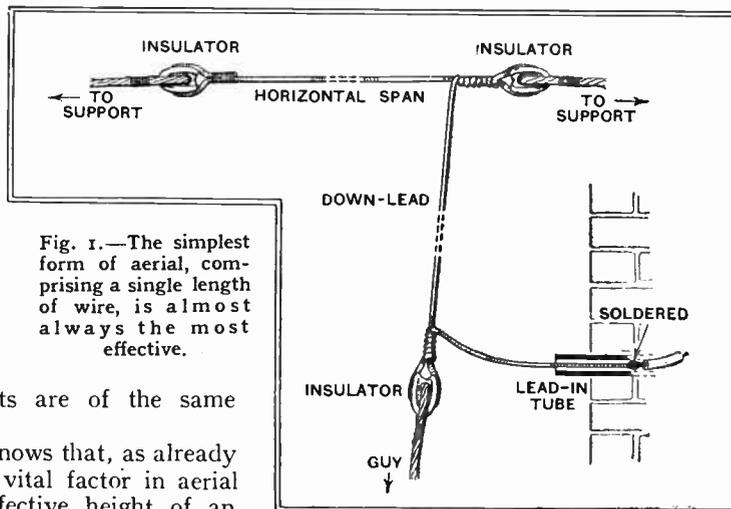


Fig. 1.—The simplest form of aerial, comprising a single length of wire, is almost always the most effective.

straggling, unsupported down-lead. It is seldom that a proper guy rope, with, of course, an extra insulator, cannot be so arranged as to improve matters in such cases.

There is little need to discuss at length the actual constructional details of an aerial. The simplest possible arrangement, as illustrated in Fig. 1, is generally the best; here a single wire, continuous from the inside of the lead-in tube to the extreme end, is shown. All external joints should be avoided: the resistance of such joints, however well made, is likely to become seriously high, and even if they are soldered the mechanical strength of the wire is likely to be impaired.

Opinions differ as to the best type of wire to use, and it is doubtful whether the classical seven-stranded hard-drawn copper can be bettered. It is flexible, and therefore easy to handle, and is usually

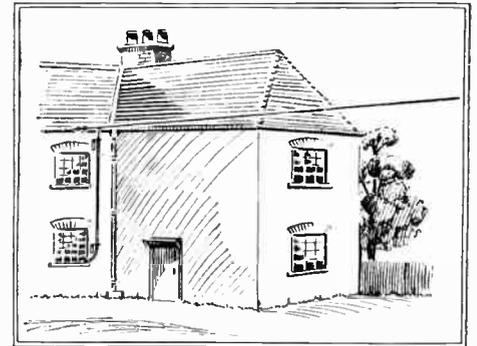


Fig. 2.—An example to be avoided, whether for a screened or unshielded aerial.

strong enough mechanically. Probably the only valid objection that can be urged against it is that if several strands become broken after each individual wire has accumulated a more or less insulating film of corrosion, very puzzling effects can arise when the aerial is used for short-wave reception. This explains why a single strand of No. 16 hard-drawn copper is sometimes preferred; phosphor bronze would be still better, but is unpleasant to work; it should always be thoroughly stretched before making the aerial.

A Weak Link

Good lead-in insulators, through which the aerial connection is taken into the building, are few and far between, and it is for this reason that a plain insulating tube, through which the aerial wire itself may be passed, without the need for an external joint, is suggested in Fig. 1. There are, however, a few commercial insulators of good design; but even so especial care should be taken in making connection to the outer terminal.

Aerials Up to Date.--

Partially shielded aerials, which help to minimise electrical interference, are a recent innovation, to which much attention is now being paid. Before discussing the practical aspects of this subject it

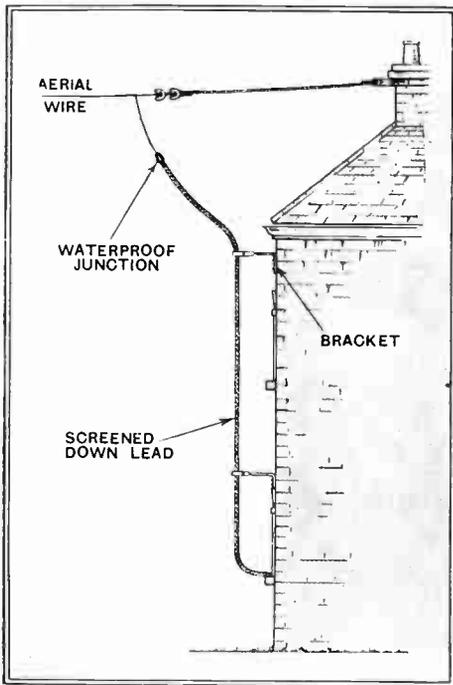


Fig. 3.—A suggested method of installing a screened aerial. The unshielded portion is well clear of sources of interference.

should be made clear that the practice of shielding the aerial down-lead is bound to decrease sensitivity, though in favourable circumstances the loss may be negligible. Further, it is only likely to be effective in preventing interference of the kind which is disseminated and reradiated by the electrical wiring (or even the water or heating pipes) of the house in which the receiver is installed. Perhaps this does not sound very encouraging, but recent investigations show that a surprisingly large proportion of man-made static reaches our sets in this way.

A shielded down-lead is worse than useless unless carefully installed with some appreciation of its proper function. For instance, a case was recently investigated where no improvements whatsoever in noise-to-signal ratio was made by fitting one. It was found that matters were arranged in very much the manner depicted in Fig. 2; the horizontal span of the aerial ran for 20 or 30 feet of its length within a foot or two of the eaves of the house, and so was in just as bad a position to pick up interference from the house wiring, etc., as the down-lead itself.

Regular readers will be aware that for shielding the down-lead, special low-capacity cable, such as that made by Goltone, or British Radiophone, is essential; ordinary rubber-covered wire with an external metal braiding is quite useless unless special precautions to be described later are taken.

The user of this cable should bear in mind the desirability of screening just enough, and no more, of the aerial; only

that part of it which is likely to be influenced by the field of interference should be shielded. A successful installation is sketched in Fig. 3; it will be seen that the down-lead is shielded up to a point well clear of the building to which the "home" end of the aerial is attached. In order to relieve the aerial supports as much as possible of the considerable weight and windage of the screened cable, the latter is supported by a bracket at the highest possible point. As an alternative, the waterproof insulator fitted at the junction between the unshielded and shielded parts of the down-lead might be mounted on the top bracket, but it has been found that in some instances this plan results in insufficient spacing between the unshielded part of the aerial and the building. Similarly, it is desirable that the screened down-lead should be carried right down to the aerial terminal of the set.

Another Method of Screening

Although we speak of "screened down-leads," it does not necessarily follow that maximum immunity from interference is obtained by shielding the vertical wire. Where it is possible to erect the entire aerial well clear of the sources of interference, better results are sometimes obtained by fitting a shielded horizontal lead-in, as in Fig. 4. This sketch depicts an aerial system of which the writer had personal experience. As it was installed some time ago, before low-capacity shielded cable became available, a length of metal tubing, about 1 in. in diameter, with the conductor wire carefully centred in it, and with a minimum of solid dielectric material, was used for the lead-in. By cleating this tube to the wall it was found possible to arrange the lead-in quite neatly and inconspicuously.

Still referring to Fig. 4, it may be pointed out that in many instances matters would be greatly improved by fitting an inverted "L" aerial instead of

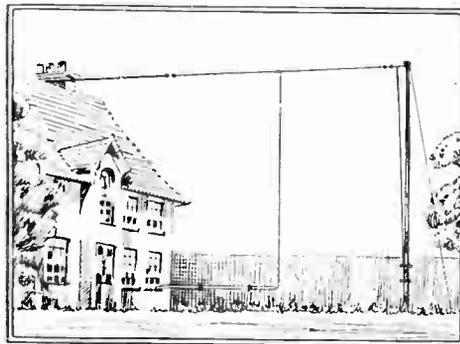


Fig. 4.—A variation of the usual type of shielded aerial; the horizontal lead-in wire is screened.

a "T" as illustrated. Especially is this likely to be the case if radiation of interference were taking place from electrical wiring in the upper part of the building in such a way that it would affect the nearer horizontal limb of the aerial. By considering these matters carefully it is

often possible to obtain highly effective shielding by using no more than 15 feet of metal-braided cable; in such a short length the losses should be almost negligible.

A further advantage of the shielded horizontal lead-in, as opposed to the shielded vertical down-lead, is that the signal pick-up of an aerial embodying the former arrangement is likely to be considerably better. However, no hard-and-fast rule can be laid down; each case must be treated on its merits, and anyone who is proposing to try the effect of a shielded aerial would be well advised to experiment with various arrangements before supporting brackets, etc., are finally mounted in position.

The most highly developed, and in some respects the best, form of anti-inter-

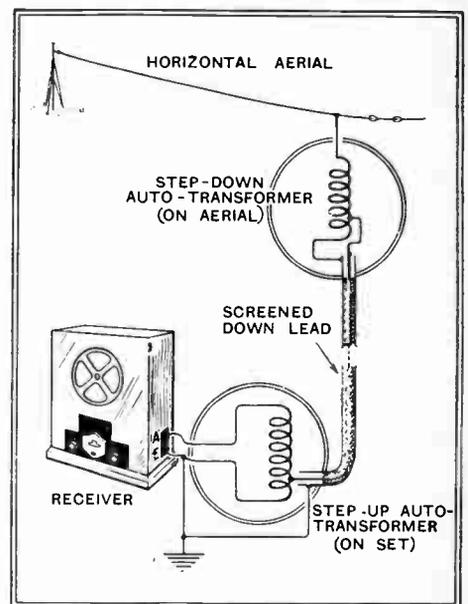


Fig. 5.—Schematic diagram to show the use of impedance-matching transformers whereby losses in screened aerial down-leads may be avoided.

ference aerial is so arranged that the losses in the screened cable are minimised by the principle of impedance-matching; in effect, signal impulses are passed through the shielded line at low voltage, and then again stepped-up before being applied to the receiver.

This involves the fitting of two transformers; as one of these must be mounted on the aerial itself, at the junction point between screened and unshielded sections, switching is obviously impossible. In America, where this scheme has been widely adopted, broadcasting is carried out on the medium waveband only, and so this difficulty does not arise. In this country the task of designing transformers to cover both medium and long waves is being energetically pursued, and by the time this article appears it seems probable that they will be available commercially. One of the great advantages of the impedance-matched transmission line system, as it is called, is that ordinary high-capacity braided cable, which is relatively cheap, may be employed instead of special low-capacity cable.

UNBIASED

BY FREE GRID

My Show Report

UNFORTUNATELY I have been laid low by a bad cold caught while bathing off Southend beach on Bank Holiday, and so was unable to make my customary visit to Robolympia on the opening day of the eighth Olympiad. I have, in fact,



To their intense surprise.

only just finished a hasty preliminary scramble round the stands, and so am quite unable to furnish you with my usual full report.

Short as the time has been, however, it was unhappily more than sufficient to bring home to me again the fact that my old friends the manufacturers, like the Bourbons of old, "have learnt nothing and forgotten nothing." The same old Lingolympia held sway. Enquiries for technical information led to the same charming and would-be-disarming smile from the bathing beauties who adorned the various stands, and to the same "hot air" from the tailors' dummies who hung about in the offing. There were, however, certain notable exceptions, especially among the valve manufacturers, who had completely reformed; in one particular case I found that the fort was held, speaking both literally and metaphorically, even during the height of the luncheon hour.

At one particular stand (no names no pack drill) the salesmen were so vociferous in their efforts to sell me a certain set that they had trouble with their sibilants, and I was compelled to put up my umbrella in self-defence. To their intense surprise no less than my own, their "hot air" proved so powerful that my umbrella was caught up in it, and willy nilly I was raised from the floor and managed to make my escape *via* the gallery.

My Missing Medals

I WAS extremely interested in the *contretemps* which occurred with the Baden-Powell broadcast the other night as it reminded me of a somewhat similar mishap which came my way in the very early days of European broadcasting, and which some of you who used to listen to the Continental stations some ten years ago may recollect.

It so happened that I had arranged to give a talk from a Broadcasting station in the capital of a certain country with whose language I am familiar. I was due at an official reception later on the same evening and, as etiquette demands, donned my full regalia of decorations which the rulers of that particular country had from time to time seen fit to confer on me for services rendered. I left my hotel in good time for the broadcast, but to my dismay found that a lightning taxi strike had developed. As there appeared to be no conveyance of any type available, I entered a telephone box to acquaint the station director with my predicament.

He was nothing if not resourceful, and suggested that I should give my talk there and then, the telephone earpiece being held close to the broadcasting microphone.

While the problem was thus satisfactorily solved at the broadcasting station, I had several little troubles of my own in the telephone box, and was far from happy. I was interrupted every few minutes by the voice of the girl at the telephone exchange demanding the local equivalent of "another tuppence," and as these little "asides" were all broadcast I learnt from the newspapers next morning that my talk, which was of a very serious and intimate nature, had been mistaken for a comic turn, and they gave me unstinting praise, as a result of which my post bag was full to bursting with offers from music halls.

This was by no means the end of my troubles, however, as the telephone box was besieged by a large and menacing crowd who were waiting to phone. My greatest difficulty, however, was the money question. The repeated demands of the telephone girl speedily exhausted all my small change, and my talk was in grave danger of being cut off when suddenly I remembered the

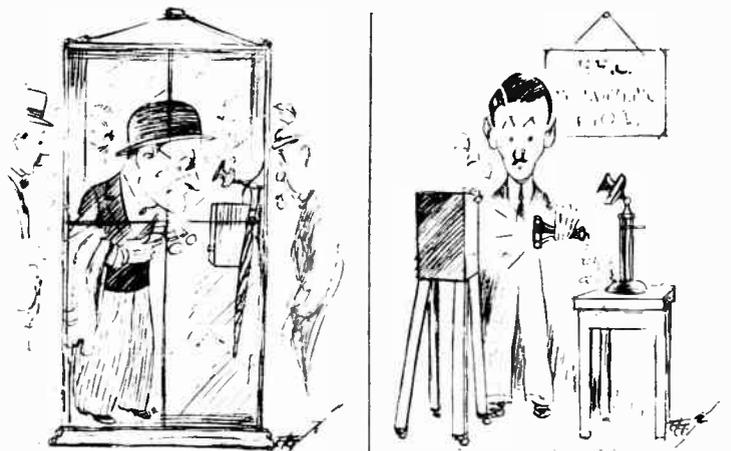
medals to which I have already referred. Fortunately they were just the right size, and as the country in question had estimated my services at a high value they were also numerous and just managed to last out my talk.

Thus a delicate situation was saved, but I fear that at the subsequent banquet that evening I was looked at askance as being the only undecorated individual in the room. I was quite unable to explain, as naturally it would have caused the utmost indignation had I revealed to what base purpose I had put some of the highest distinctions which a country can bestow.

Automatic Stenographer

I SEE that according to a report from Germany a well-known scientist of that country has just developed an automatic stenographer based on radio principles. It appears that it (or should it be she?) consists of a microphone coupled to a powerful valve amplifier which is arranged in some mysterious manner so that when words are spoken into the microphone the typewriter is caused to knock them out on the paper in the usual way. "In this manner," states the report, "the spelling errors of the ordinary female stenographer are avoided and, moreover, owing to its lightness and compactness, the 'automatic stenographer' can be taken on the knee with impunity."

I am quite at a loss to understand the meaning of the last part of this sentence. Whether it is intended as an uncomplimentary reference to the weight of ordinary stenographers, or something far more subtle, I cannot say. Perhaps some



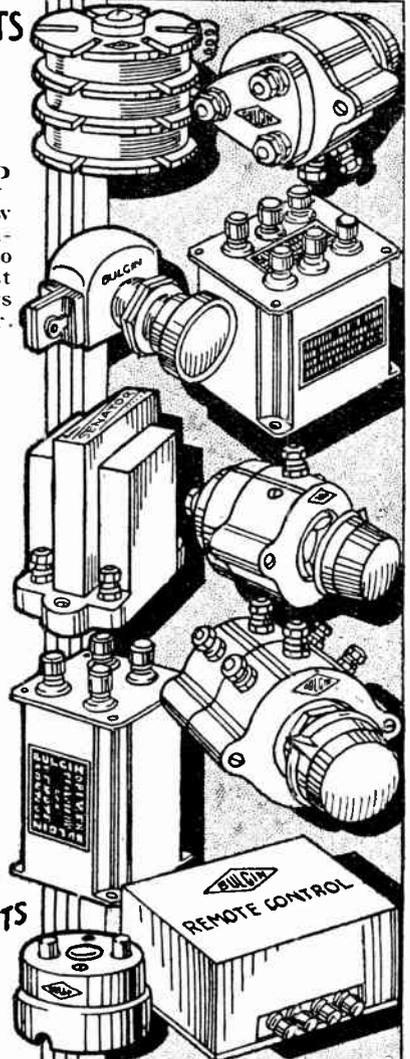
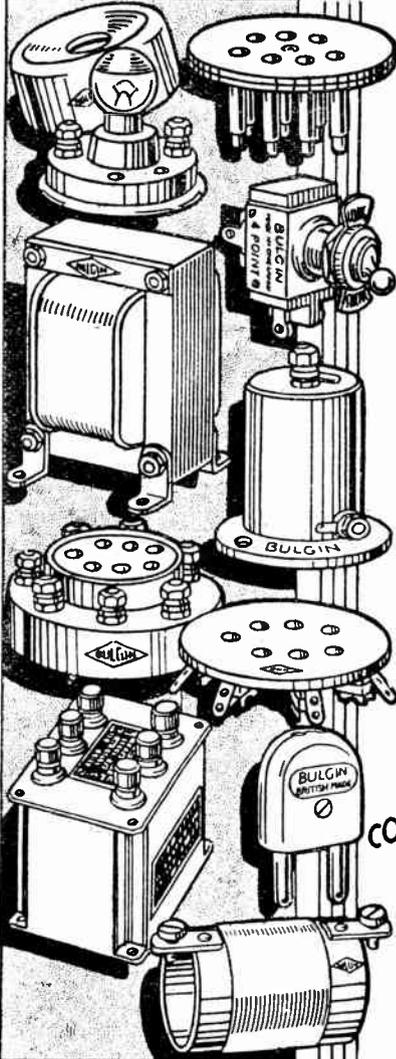
I had troubles of my own, and was far from happy.

reader with a special understanding of Teutonic psychology can help me out of my difficulty, for, speaking personally, I have never found that stenographers are unduly heavy.

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PROGRESS IN RECEIVER DESIGN

Outstanding Features of New Sets on the Stands at Olympia

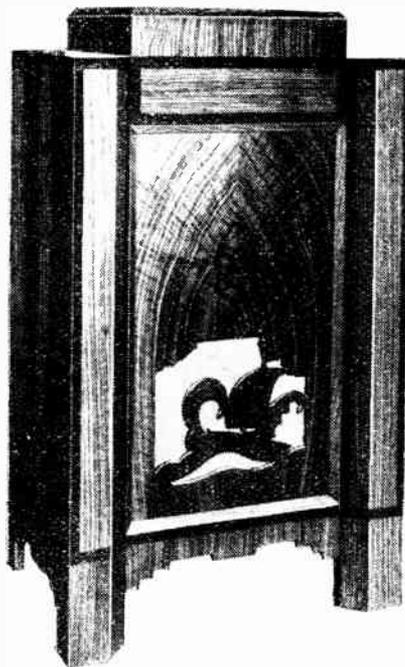
THE most striking trend in superheterodyne development at Olympia is undoubtedly towards the set of only four or five valves. The term superheterodyne has been associated for so many years with large and ambitious types of receiver that it comes as something of a shock to find that it is used to describe receivers which are much smaller than many straight sets of the past.

The superheterodyne can no longer be considered a luxury receiver, for while it is true that the largest and most expensive sets are of this type the smaller specimens cost no more than straight sets of equivalent sensitivity. This important change has been brought about chiefly by the need for increased selectivity, and the reduction in the number of valves necessary has occurred more through improvements in design than through the introduction of multiple-type valves. Surprising as it may seem, the use of these new valves is generally confined to the larger class of receiver.

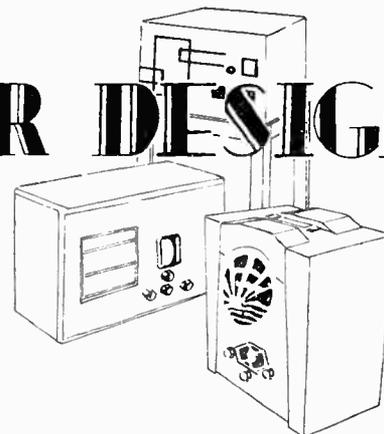
Owing to these present tendencies it is no longer convenient to class all superheterodynes together, for the extremes in type are no longer capable of giving even an approximately equal performance, and it is now necessary to divide them into at least two distinct classes. While there is now much to be said for a classification which is not based upon the number of valves employed, this still remains a convenient basis, inasmuch as it gives the purchaser some idea of the running costs in

six valves or more fall automatically into the larger category.

The smaller type of receiver, as might be expected, shows considerable uniformity among the different specimens. The general trend is to use a band-pass input tuning circuit feeding a single valve detector-oscillator for the frequency changer. A single I.F. stage with band-pass type intervalve couplings is used, with

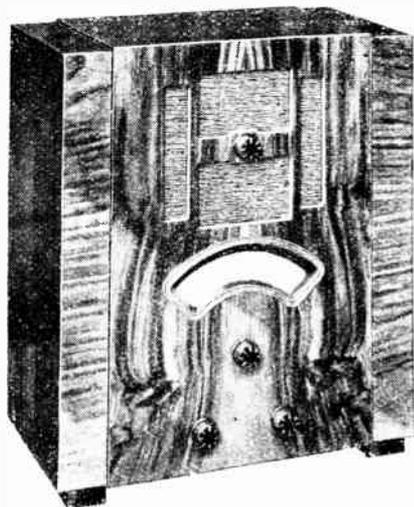


Varley radio-gramophone with A.V.C. obtained through a duo-diode-triode second detector



detector and the output stage. Battery sets thus usually incorporate one more valve than the equivalent mains types, not counting the H.T. rectifier of A.C. models. The numerous six-valve class of battery superheterodynes, therefore, is most conveniently included with mains sets of four or five valves, although a six-valve mains set would be classed among the larger types.

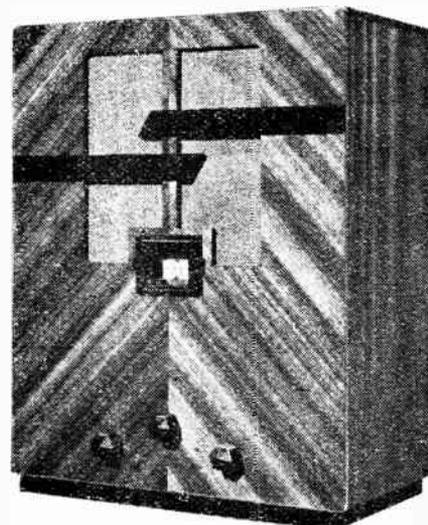
Examples of this general trend are to be found on the stands of Bush Radio, General Electric Co., Halford, Higgs, H.M.V., Marconiphone, Standard, Sunbeam Electric, and Ultra Electric. Quite a number of the small superheterodynes, however, do not conform to this general practice, and some models are of considerable interest. The Alba Model 54, for instance, has an intermediate frequency of 473 kc/s instead of the usual 110-125 kc/s, with the result that an input band-pass filter is considered unnecessary, and a single tuned aerial circuit is employed. The Kolster-Brandes 444 set has only four valves, including the H.T. rectifier, so that it is really a three-valve superheterodyne, and it is probably the smallest example of this type of receiver on view. The City Accumulator Co. have a five-valve model, including the rectifier, which follows the lines of well-tried practice, but is one of



G. E. C. Five-valve superheterodyne with a detector-oscillator frequency changer

a second detector and a pentode output valve. In nearly every case the single valve frequency changer employs a non-variable- μ type H.F. pentode with the tuned oscillator circuit connected in, or coupled tightly to, the anode circuit, the reaction being provided by means of a small coil connected in the cathode lead of the valve. A frequency changer of this type is capable of very high efficiency, approaching that of a good two-valve arrangement, and where the initial ganging adjustments are carried out in the factory it can be entirely satisfactory.

It is the general practice to use a variable- μ type of H.F. pentode for the I.F. stage, and to control the grid bias of this valve for the volume control. More divergency exists in the L.F. circuits and the second detector, and the division between a grid detector with transformer coupling and an anode-bend detector with resistance-capacity coupling is probably about equal. In the case of battery sets, of course, the Class "B" output stage is practically universal, and a driver valve is invariably included between the second



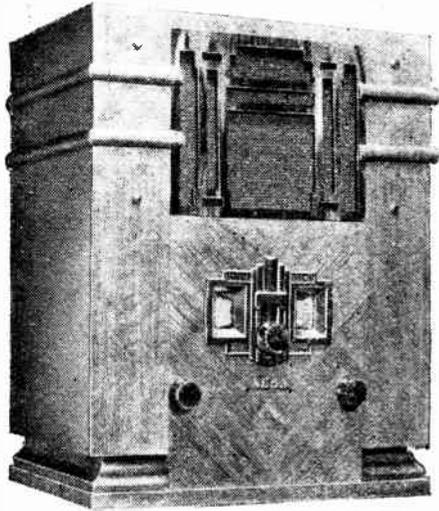
The Standard 40 receiver, which is fitted with H.F. pentode valves

valve replacements, and the old general rule of the greater the number of valves the better the performance still holds good. The small class of superheterodynes, therefore, may well be considered as that of sets with five valves or less, while those with

the first British commercially manufactured receiver to use the Pentagrid valve for the frequency changer. This has rendered possible the bias control of two valves for volume control.

Progress in Receiver Design—

Ekco sets are this year to be classified by stages; their seven-stage model employs four multiple valves, including a duo-diode-triode, which provides delayed A.V.C. Apart from its technical features, this set represents a new tendency in cabinet design, all models being housed in modernistic bakelite cabinets. The most unusual design is in black, relieved with chromium insets.



Alba Superheterodyne, with a frequency of 475 kc. s.

The Varley Model AP46 is unusual in that it includes a variable- μ H.F. stage before the detector-oscillator and has no I.F. amplifier. The I.F. circuits consist simply of a band-pass filter, to which reaction is applied, coupling the frequency changer directly to the second detector. A larger model, the AP48, of the same firm includes a single I.F. valve as well as the H.F. stage, and it is fitted with a duo-diode-triode second detector to provide automatic volume control. The Portadyne 5/AC set is also of the five-valve type, and is fitted with A.V.C. obtained with the aid of a duo-diode-triode, while their battery model 5/B includes a detector-oscillator with a single I.F. stage, second detector, driver, and Class "B" output; A.V.C. is included.

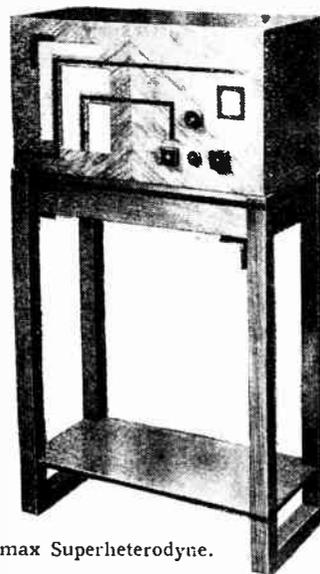
In the larger class of superheterodyne it is hardly possible to find any general trend in design as in the case of the small sets, for the greater number of valves employed



Ferranti Arcadia Companionette with a book-shelf in the lower portion of the cabinet.

gives a great possibility of variation, of which designers have not been slow to take advantage. Automatic volume control, however, although not strictly a superheterodyne development, can at the present time be rightly considered as such by virtue of its rarity among straight sets.

Automatic volume control has been largely called into being by the development of superheterodynes of extreme sensitivity and selectivity, for these have led to a great increase in distant listening. This has often been marred, however, by fading, and some means of counteracting this has been sought, and found in automatic volume control. Although there are many different methods by which A.V.C. can be achieved, it is customary for the circuit to be arranged so that any increase in the second detector input increases the negative grid bias applied to the variable- μ valves, so reducing their amplification. Since the ear is insensitive to small changes in volume, the net result is that the apparent volume from the loud speaker remains constant for a very large change of signal input. As a result, the volume variations of fading are smoothed out, and one of its chief drawbacks is removed. In addition to reducing fading, however, an A.V.C. system prevents overloading when tuning through a strong signal.

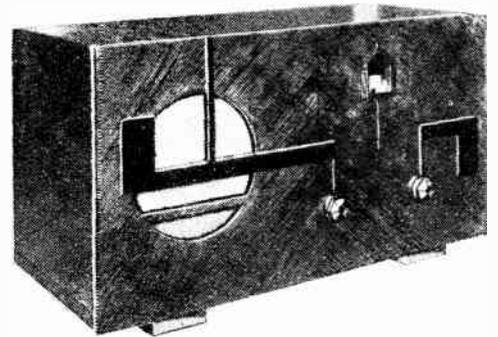


Climax Superheterodyne.

In order to avoid a drop in the initial sensitivity of the receiver, it is usual to fit delayed A.V.C., which is only another way of saying that the control is inoperative for signals weaker than a certain predetermined level. The control is usually arranged with the aid of a duo-diode-triode valve, in which one diode provides signal rectification and the other delayed automatic volume control, sometimes alone and sometimes in conjunction with the triode, while the triode portion acts as the first L.F. stage. Systems of this nature are to be found among the Columbia, H.M.V., Hustler Simpson and Webb, Kolster-Brandes, and Ultra Electric models, while the Ferranti "Gloria," the R.G.D. "702A" and "901A," and the Standard "60" are also fitted with delayed A.V.C.

The fact that A.V.C. tends to maintain

a constant detector input brings one disadvantage in its train. During the process of tuning, the controls must at times be inevitably so set that no station is received. The sensitivity of the set is

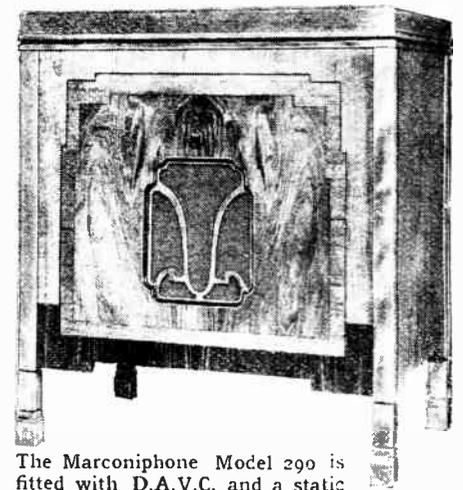


Lissen five-valve receiver, with pentode amplified A.V.C.

then at its maximum and atmospherics and any local electrical interference are reproduced at large volume. When accurately tuned to a station, an A.V.C. set, of course, is no more likely to give background noise than a receiver not so equipped, but during tuning it is noisier unless special circuits are fitted.

There are two general methods of attacking the noise problem. Many of the receivers just mentioned are fitted with a "noise suppressor switch" which permits the maximum sensitivity to be reduced at will to such a degree that the background with no signal is not excessive. The switch is kept closed during the process of tuning so that most signals give quite low volume, and when the desired station has been found it is opened for normal reception.

The alternative method is entirely automatic, but since it necessitates the use of an additional valve, it is usually found only in the largest receivers. With the quiet automatic volume control system nothing whatever is heard unless the set is tuned accurately to a station. In most cases the grid leak of the first L.F. valve is returned to earth through a high resistance included in the anode circuit of a control valve. This valve is arranged to pass current through the resistance in the absence of a signal, so that the L.F. valve is biased beyond the anode current cut-off point and is rendered inoperative. When



The Marconiphone Model 290 is fitted with D.A.V.C. and a static suppressor switch.

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a signal is tuned in the current through the control valve falls to zero, and the bias on the L.F. stage is reduced to its normal amplifying value.

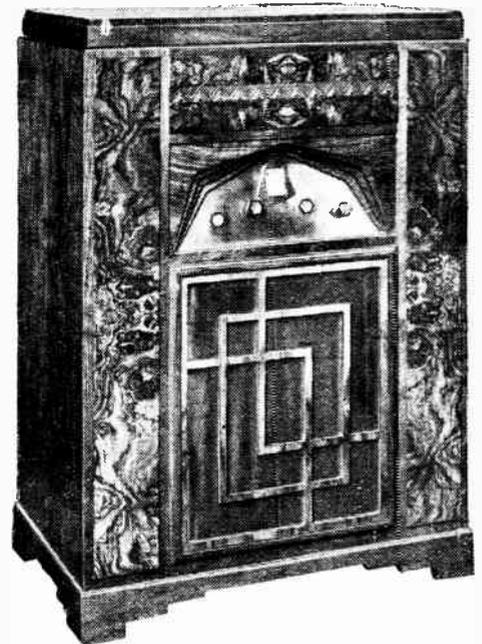
Although the arrangements used to obtain Q.A.V.C. in different sets may differ in detail, they all operate upon this general principle of overbiasing amplifying valve. In some cases the "quiet" control valve is operated from the output of the normal second detector, but in others a separate rectifier is provided and fed by a very sharply tuned circuit. A better Q.A.V.C. action is then obtained, and the apparent, but not the true, selectivity is greatly increased.

Most of the sets with quiet automatic volume control use a duo-diode-triode to give delayed A.V.C. with an additional valve for the "quiet" control. The receivers themselves, however, differ so much from one another that a general description is impossible. The General Electric Co.'s model, for instance, is fitted with a single tuned aerial circuit feeding a variable- μ H.F. stage transformer coupled to the first detector to which a separate oscillator is linked. There is a single I.F. stage, and a separate triode controlling valve is fitted to give the "quiet" control on the triode portion of the duo-diode-triode second detector. In the Kolster-Brandes model KB888, however, the control is arranged by the combination of a duo-diode-triode with a

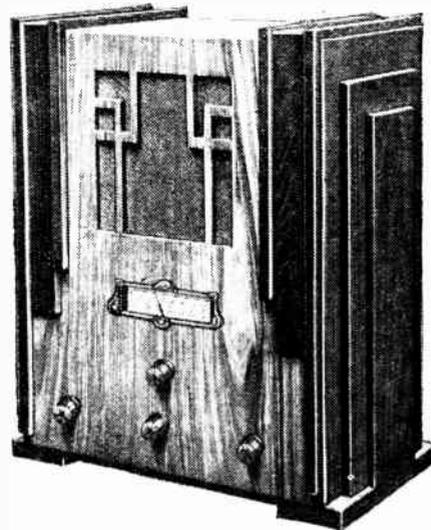
degree of stability. A separate first detector, also of the pentode type, is used.

Since the action of A.V.C. is to maintain constant signal strength, it will be obvious that the usual method of tuning for the strongest signal is inapplicable. In many cases, therefore, a tuning indicator is fitted, and the set is tuned for maximum deflection of an indicator, which often takes the form of a simple milliammeter.

Although delayed diode A.V.C. is common, other systems are to be found, and in the R.I. "Madrigal" model the duo-diode-triode is used to provide amplified A.V.C. The Brunswick 6-valve receiver also includes amplified A.V.C., and



The 12-valve R.G.D. Model 1201A includes a high-quality paraphase type of L.F. amplifier and dual speakers.



Edge Radio Model MS5.

two-valve frequency changer is employed and the I.F. couplings are the new iron-core type band-pass transformers.

The Marconiphone seven-valve model is fitted with variable- μ valves for the H.F., first detector, and I.F. stages, and Q.A.V.C. is obtained through the combination of valves and metal rectifiers. It is claimed that the output is substantially constant for a 400-1 variation of the signal input.

The Cromwell SH8B has no fewer than eight valves, arranged as an H.F. stage, first detector, oscillator, I.F. stage, diode rectifiers, providing A.V.C., driver, and



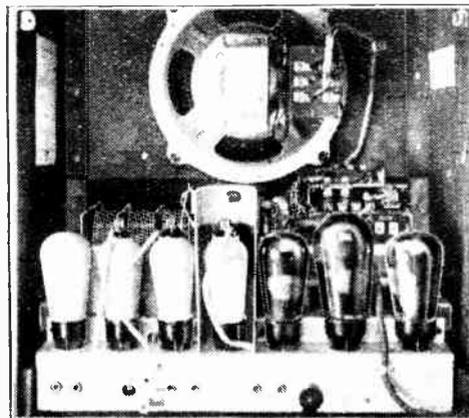
The Cromwell Model SH8A, with Q.A.V.C. and a 3½-watt output stage.

their 8-valve model is fitted with amplified quiet A.V.C., while the Lissen 6-valve set has a form of pentode amplified automatic volume control.

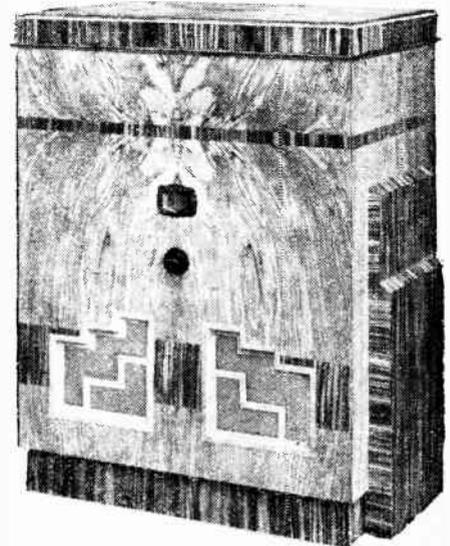
The Westector is not without its adherents, however, and it is employed to give A.V.C. in the Pye model P/B, and it is also used in several of the Grafton models. The model 808 of this firm has a band-pass input circuit to the H.F. valve with a tuned coupling to the first detector, thus giving a total of three signal frequency tuned circuits and keeping second channel interference at a minimum. Metal rectifiers are used for the second detector and to provide delayed automatic volume control, and there are two L.F. stages. A

single-diode-tetrode; in all eight valves are used, and the 5½ watts output stage is of the push-pull pentode type.

In the Radio Gramophone Development model 1201 A a double-diode-triode is used with a separate triode for Q.A.V.C., and the A.V.C. system controls the variable- μ H.F., first detector, and I.F. valves. A separate oscillator is employed with a paraphase L.F. amplifier giving 6 watts output to dual type moving-coil speakers. The Tannoy Super Radiogramophone is of the seven valve type, and is unusual in that a pentode is used for the oscillator in order to obtain a high



Chassis of the H.M.V. Concert Seven. This set is fitted with D.A.V.C., a static suppressor and a threshold sensitivity control.



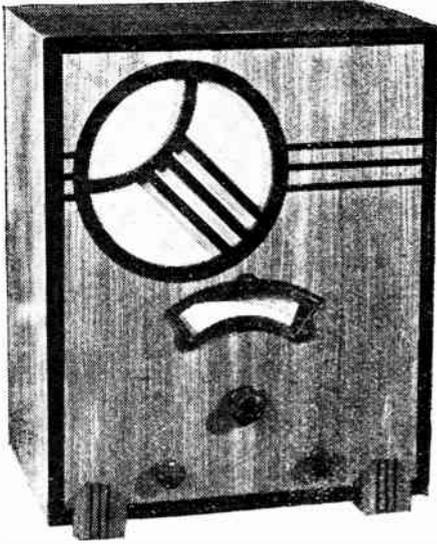
Brunswick eight-valve receiver includes amplified quiet automatic volume control.

Class "B" output. The model SH8A of the same firm is for A.C. mains and is fitted with Q.A.V.C.

It will thus be seen that the general trend of development as exemplified by the exhibits at Olympia may be summed up under the two headings—detector-oscillators and A.V.C. systems. The first of these has brought the superheterodyne and its inherent high selectivity in direct

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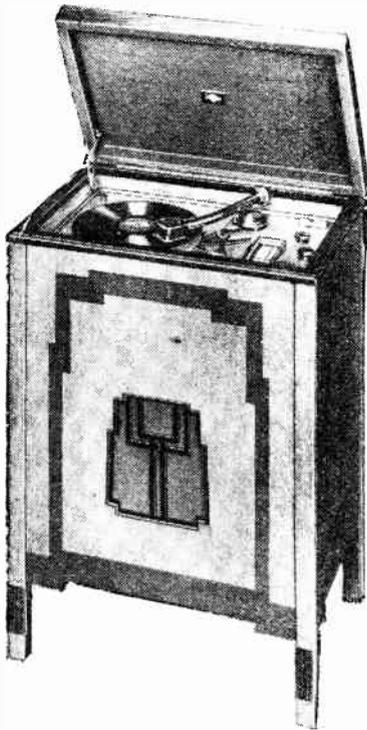
competition with the moderate size straight set, while the second has greatly extended the usefulness and improved the operation of the larger class of superheterodyne.



The Hustler, Simpson and Webb "Falcon" model is a battery set with a detector-oscillator and Class "B" output stage.

Straight Sets

Among receivers which do not employ the superheterodyne principle, the three-stage general-purpose set, comprising a single screen-grid H.F. stage, a detector, and a power output valve, is still the predominant type. When designed for A.C. mains it is often described as a four-valve set, but as the rectifier valve is really only



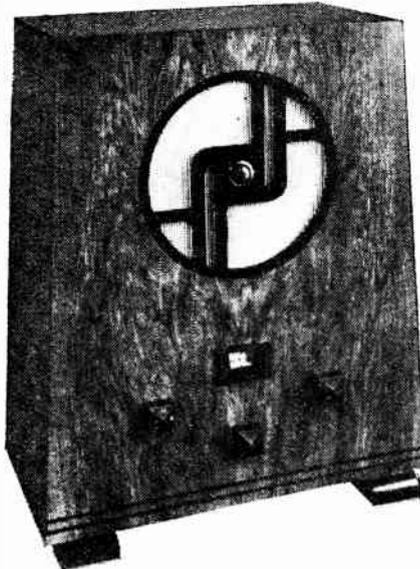
The Marconiphone Model 271 radio-gramophone employs an up-to-date screen grid-H.F.-detector-pentode circuit.

an extension of the mains supply system to provide the anode current in a suitable form, we prefer to describe sets of this type as three-stage receivers.

No epoch-making technical discovery has provided publicity for the three-stage set, but the fact that attention has been diverted to other developments does not necessarily imply that it has become a back number. Improvements in manufacturing methods have resulted in a very acceptable reduction in price, and performance has been improved by detail refinements such as iron-cored coils, as used in the R.I. "Madrigal" receiver. It is safe to prophesy that the H.F.-Det.-L.F. set will continue to satisfy the demands of the average listener who requires good quality reception of the local station with sufficient range and selectivity to enable him to tune in the pick of the foreign broadcast programmes.

We are also able to record a revival of interest in the simple Det.-L.F. type of set, and here again the adoption of the Ferrocart type of coil has enhanced the standard of performance which may be expected from this circuit.

It must not be thought, however, that the scope of the straight receiver has been restricted to the production of general-purpose receivers alone, or that the field of long-range reception with superlative selectivity has been entirely conceded to the superheterodyne receiver. The superheterodyne owes its popularity with



Burgoyne "Olympic 3" detector-L.F. receiver.

manufacturers and the buying public to the fact that it is easier and, generally speaking, less expensive to achieve the requisite degree of amplification and selectivity in an I.F. stage which is required to work at a comparatively low single frequency; but the success which has been achieved has been to a certain extent offset by interference problems due to second channel and I.F. interference generated in the receiver itself.

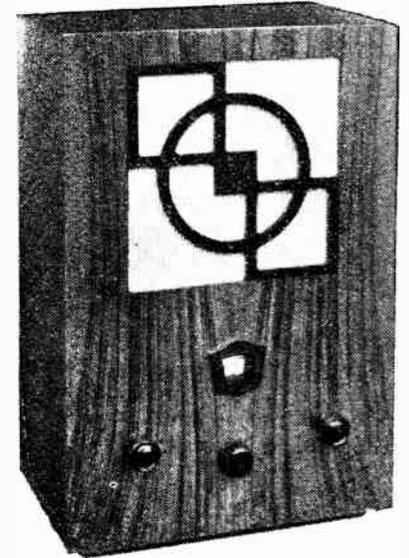
Two H.F. Sets

The case for the straight H.F. receiver, in which the whole of the amplification prior to detection is carried out at signal frequency, rests on the fact that it is free from this particular type of interference.

All who have had experience of handling the straight H.F. type of set are agreed in giving it credit for quiet and gentlemanly behaviour.

The difficulties of approaching superheterodyne performance with direct H.F. amplification are, however, formidable. Selectivity is directly bound up with the number and efficiency of the tuned circuits, and any attempt to increase either of these quantities in a straight set is attended by difficulties of alignment and stability; not to mention the question of ensuring reasonably constant amplification over the wave range.

The new H.F.-pentode type of screen grid valve has considerably eased the difficulties of the designer in the matter of



The Lampex "Phantom Minx"—another example of the inexpensive detector-L.F. set.

stability of the H.F. stages, and has also enabled him to provide for a wider range of volume control by means of variation of the grid bias.

Circuit Stability

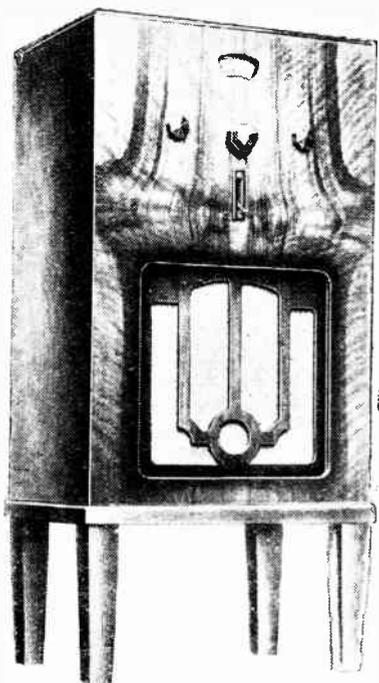
Another solution of the problem of working two successive stages of H.F. amplification with stability has been to tune the first stage and to make the second stage semi-aperiodic. By arranging that the natural resonance of the H.F. choke in the anode circuit of the second stage shall occur just above the longest wavelength of each wave-range, this scheme can be made to even out the amplification over the tuning scale. An example of this practice is to be found in the McMichael "Lodex Five," in which a patented form of double resonant choke is employed. The Philips Type 834 is another receiver employing one tuned and one aperiodic H.F. stage. In general, sets of this type can be relied upon to give a performance intermediate between that of the three-stage general-purpose set and the low-priced superheterodyne, and this without having to resort to the use of reaction.

To achieve superheterodyne range both H.F. stages must be tuned, and at least three or four tuned circuits must be included if comparable selectivity is to be

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obtained. Since these circuits are functioning at signal frequencies, the tuning coils employed must be of exceptionally high efficiency if they are to compete with I.F. amplifiers in which the simplest coils, on account of the comparatively low frequency of operation, give a high degree of selectivity. Assuming that circuits of sufficiently high selectivity could be devised, there is still the difficulty of ganging, which becomes increasingly acute as the sharpness of the resonance curve is increased. These difficulties largely fall to the lot of the works designer, but there are many sets in production to-day which prove that they are by no means insuperable.

In the latest Philips Model 636A we have a good example of straight receiver design with a performance comparable with that of the modern superhet., even to the inclusion of silent automatic volume control. There are no fewer than seven stages of amplification, the first two of which are at radio frequency. In all, there are four tuned circuits associated with the H.F. stages, and all are of the "Super-inductance" type employing Litz-wound coils on glass formers. Two of the tuned circuits are coupled together in the aerial circuit to form a band-pass filter, and the



Employing a single H.F. stage and Class "B" output, the Cossor Model 3456 may be used either as a table model or a console.

Automatic volume control is effected in the first H.F. stage, and here the standing bias is also variable in stages to give three levels of over-all sensitivity in order to extract the best possible performance permitted by local conditions.

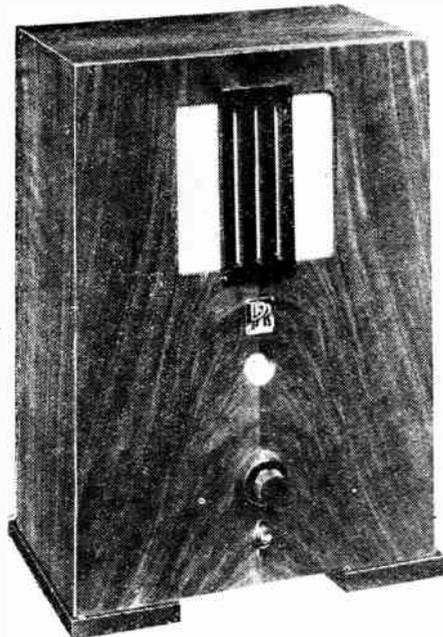
Amongst other notable examples of receivers in which both H.F. stages are tuned and in which three or more ganged circuits are employed, may be mentioned the Cossor Type 735, the Kolster Brandes Model 320, and the Grafton No. 909 five-valve battery set, which incorporates a Class "B" output stage.

Battery Economy

Mention of Class "B" amplification brings us to the subject of the battery set in general, in which there has been a remarkable revival of interest following the adoption of special output circuits designed to economise H.T. battery power. A move in this direction was made last year by the introduction of high-efficiency battery pentodes, examples of which are still to be found in such sets as the Atlas "Lambda." There was also a special type of circuit in which the H.T. supply was controlled by a separate valve during periods when the transmitting station was not modulated. During the year the quiescent type of push-

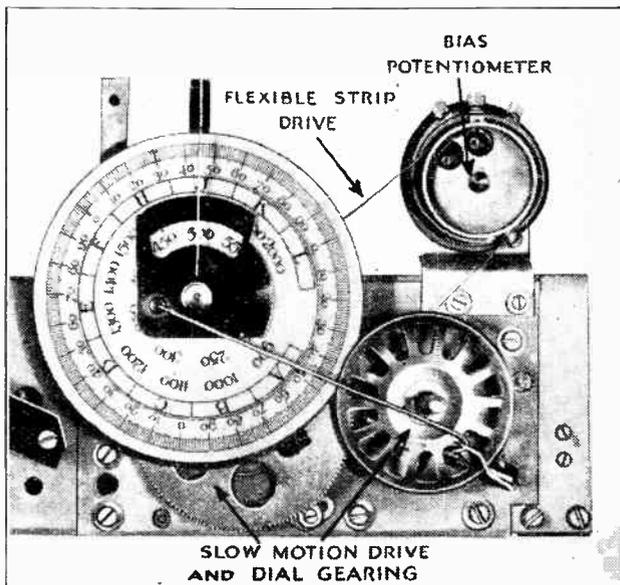
scale. A screen-grid valve is used in the detector stage proper, and in parallel with this there is a special single diode and screen-grid amplifier valve, the function of which is to provide the bias necessary for automatic volume control. The fifth valve is a triode for the suppression of background noise between stations, and the remaining two stages consist of a high magnification triode L.F. amplifier and a seven-watt output pentode.

Uniform amplification over the wave-range is achieved by a potentiometer coupled mechanically to the main tuning control. This potentiometer gives slight variation of the bias on the second H.F. valve, to compensate for the variation in circuit magnification at different points in the wave-band.

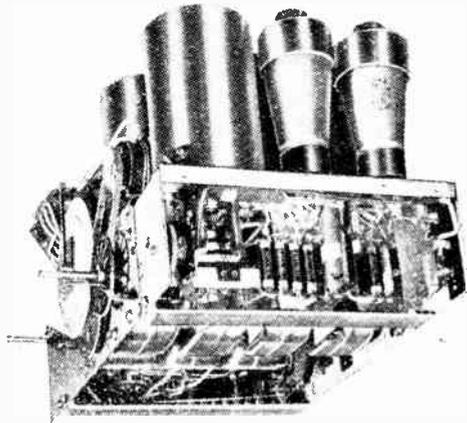


Slektun "R & R Class B Three" in which a reacting detector is followed by a driver and a Class "B" stage.

others take the form of H.F. transformers which are deliberately detuned off resonance by a calculated amount to supplement the function of the input band-pass filter in maintaining high-note response. The high degree of accuracy in ganging which is called for by these circuits has been achieved by a special type of tuning condenser, and, to ensure that the station settings correspond with the calibration chart provided with the set, the slow-motion drive is coupled to the main condenser spindle by a linked drive which can be adjusted to compensate for slight discrepancies in different parts of the tuning



Tuning control and mechanically coupled compensating potentiometer in the Philips 636A giving constant amplification over the wave range.



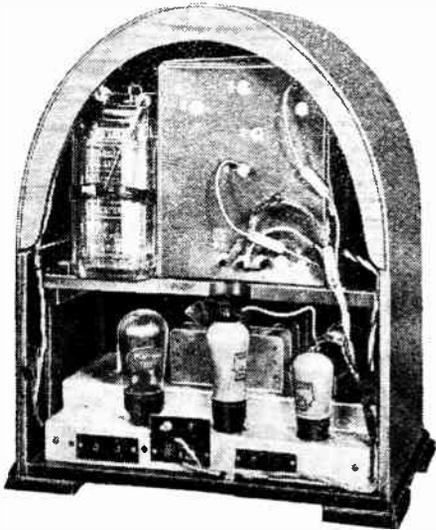
A "straight H.F." receiver of advanced design. The chassis of the Philips Type 636A has seven stages, excluding the rectifier, and is equipped with silent A.V.C.

pull circuit, in which we may include both Q.P.P. and Class "B," has become thoroughly established. The controversy as to which is the more efficient of these two methods is still an open one, and although numerically Class "B" output stages are in the ascendant, the issue from a technical standpoint is by no means settled.

It has been argued that the Q.P.P. system calls for a grid bias battery and extra H.T. current for the auxiliary electrodes of the pentode valves, neither of which are required in Class "B" amplification. It is frequently overlooked, however, that the expenditure of power in the grid cir-

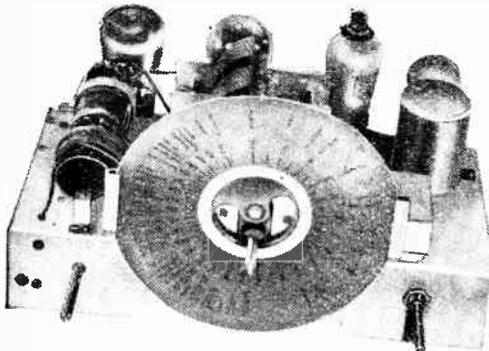
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cuit of a Class "B" amplifier calls for a driver stage, which may easily consume as much current as the pentode grids and which also requires adequate bias.



The Marconiphone Model 283 is typical of the inexpensive S.G. - detector - pentode battery receiver.

In push-pull sets of all types accurate matching of the two sections is important. In Class "B" valves, in which both groups of electrodes are enclosed in a single glass envelope, this point can be safely left to the care of the manufacturer, but in the case of Q.P.P., where two separate pentodes are employed, there is the possibility of trouble arising if the purchaser should replace one of the valves without due care. To overcome this possibility the Marconiphone Company in their Model 260 receiver has introduced what they term



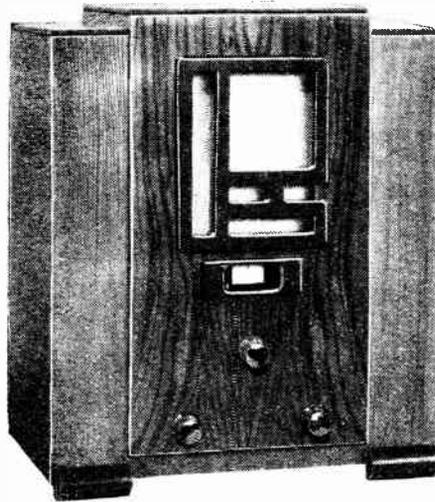
Chassis of the Columbia C.Q.A.4 in which a modified form of Q.P.P. is used in the output stage.

the "Parallel Conductance Principle" (P.C.P.), the essence of which is to ensure that the user shall be in a position to adjust the slope of any replacement valves to the standard value for which the set has been designed. In future all pentodes supplied for this set will be divided into five classes, each marked with a distinguishing letter. Suitable tappings in the H.T. battery will be lettered to correspond with each of the five classes of valve, so that by inserting the auxiliary grid lead in the socket corresponding with the letter marked on the valve the slope of the valve will be automatically adjusted to the standard value. In other words, the slopes of the valves, upon which the mutual conductance depends, will be made parallel.

A similar system has been adopted in the Columbia "C.Q.A. Four" set, and, due to the care which has been taken in adjusting the curvature of the foot of the valve characteristic and the correct application of the working point, i.e., the point where the slope is exactly half the slope of the straight portion of the curve, freedom from distortion has been ensured at all output levels. It is for this reason that the system has been named "Constant Quality Amplification" (C.Q.A.).

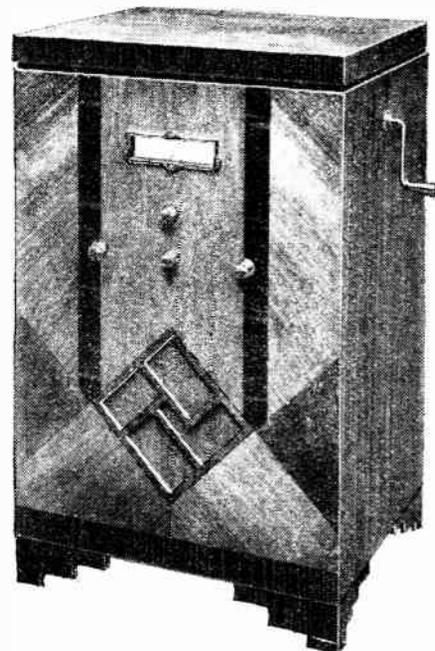
The Battery Radiogram

The introduction of economical output stages has been the means of stimulating the development of the battery radiogramophone. Hitherto it has been difficult to produce an output reasonably in



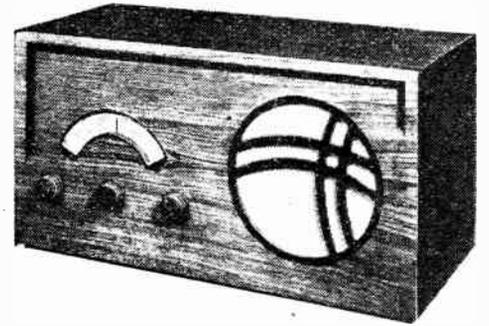
Quiescent push-pull pentodes are used in the output stage of the Bush Radio 5-valve battery receiver.

keeping with the size of the average radio-gramophone cabinet without considerably increasing the maintenance costs of a battery-energised receiver. The quiescent output stage has definitely removed this difficulty, and



A typical example of the new battery radiogramophones—the Edge Radio Model RB4.

we may reasonably expect to see an increasing number of sets of this type during the coming season. A clockwork



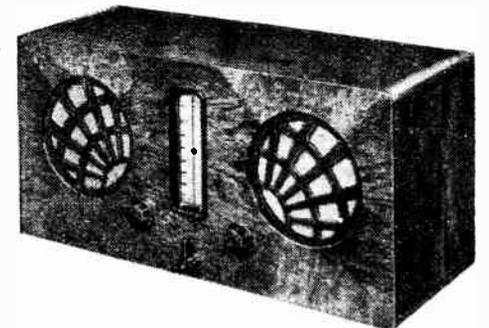
The tendency towards "horizontal" type cabinets is exemplified in the Atlas B4 battery receiver.

motor is, of course, employed, and the Columbia "C.Q.A. Radiograph" may be taken as representative of the Q.P.P. system and the "Alba" Battery Radiogramophone of the Class "B" output valve.

Cabinet Design

With regard to the cabinet design, there is a noticeable tendency towards the horizontal type of cabinet in which the loud speaker is placed on the same level as the tuning controls. In many cases transportable sets of this type are provided with a separate pedestal as in the case of the Climax D.C.3.

The McMichael "Twin Supervox" cabinet is also of the horizontal type, and



Dual loud speaker units are fitted in the McMichael "Twin Supervox" table model.

is probably unique in representing the application of dual loud speakers to table model sets. Although we have not yet reached the stage of true "stereophonic" reception, which would necessitate twin microphones and transmitters, in addition to dual loud speakers at the receiving end, there can be no doubt that two loud speakers carefully placed not only give a better overall frequency response, but also give a subtle difference in quality which is a distinct improvement on the comparatively "flat" tone of a single unit.

The New Portables

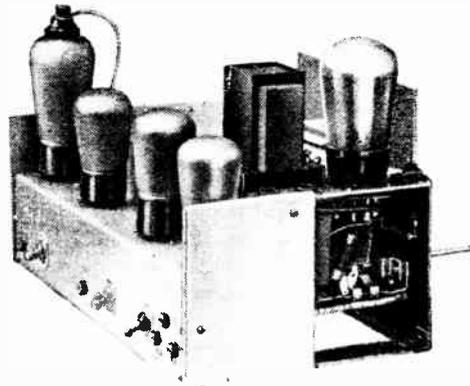
It required no great stretch of imagination to foretell that many of the self-contained battery sets for the coming season would make full use of the battery-economy systems that have been developed during the past year. Here reference is

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made, of course, to those systems, such as Class "B" and Q.P.P., in which drastic economies are effected by the logical principle of limiting output anode current to the value required for dealing with the strength of signals actually being received.

Among the sets to include Class "B" amplification is the Portadyne P.B. Model, which embodies a "straight" circuit with manual tone control and a moving-coil loud speaker. Another somewhat similar set is the Lissen Class "B" Portable, in which a combined reaction-volume control is fitted.

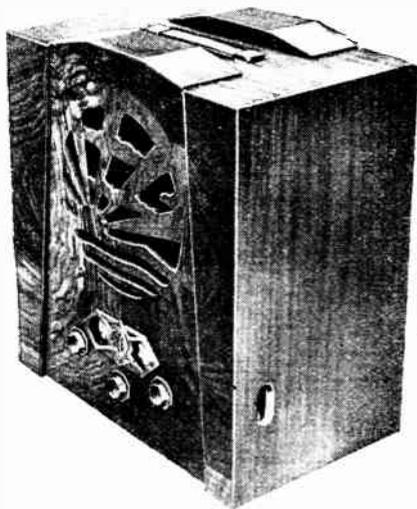
The use of Class "B" amplification is not confined to straight portable sets, and is to be found in the new Pye super-



Portadyne Model P.B. chassis.

heterodyne portable, the output stage of which is rated at 1.4 watts. This set is a transportable rather than a portable, and is fitted with a moving-coil loud speaker. In its class it is certainly one of the most interesting of the new sets, if only for the reason that a Westector second detector provides delayed automatic volume control.

In spite of the claims of Class "B" and Q.P.P., a number of portable sets make use of high-efficiency pentode valves; in this category come the portable superheterodynes shown by Marconiphone,



Pye portable superheterodyne.

Columbia, and H.M.V. Similarly, many straight portable sets embody the same output arrangement; amongst these are the well-known McMichael Duplex Four,

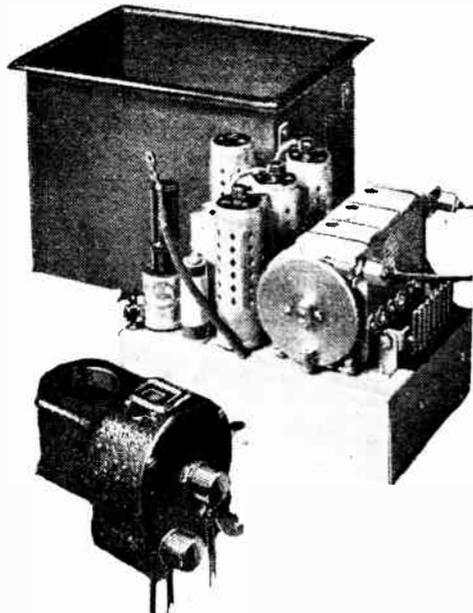
the Beethoven Major Model, and the Aerodyne Eagle. It is interesting to observe that these sets, in addition to several others, use the well-tried combina-



The new Beethoven Major portable.

tion of one tuned H.F. stage, a grid detector, and two L.F. stages.

The practice of fitting permanent-magnet moving-coil loud speakers in portables represents a new trend in design; actually, a great number of the heavier "transportables" are so equipped, but only one or two "suitcase" portables (for



Page Car Radio set, with weatherproof case and remote control unit.

example, the new McMichael and the Beethoven) are fitted with this type of loud speaker.

Iron-cored tuning coils, which offer special advantages in a portable, are not so widely used as might be expected, but are to be found in one or two examples.

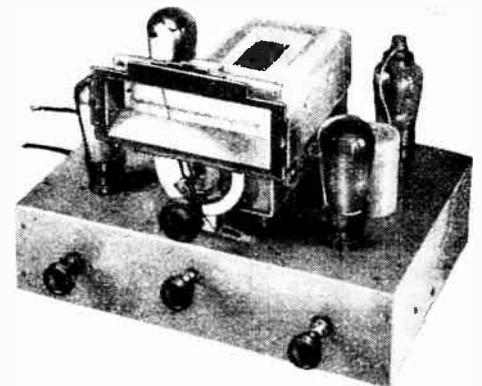
Finally, there are a range of exceptionally small Adey portables, stated not to exceed thirteen pounds in weight. The same firm make use of a "self-coupling valve" in their standard models.

All this season's portables seem to represent extremely good value for money: as an example of one of the cheapest, mention may be made of the Shalles and Evans Embassy Model, with a 1-v-2 circuit and a Celestion loud

speaker, which is sold at seven guineas complete.

The introduction of an entirely new type of set, so far as this country is concerned, is to be recorded. This is the motor car receiver, intended to be installed permanently in a car, and to operate while the vehicle is stationary or in motion. For good results, such a set must obviously be highly sensitive, due to the limited pick-up of even the best aerial that can ever be installed; and further, an effective form of automatic volume control is desirable in order to compensate for the normally severe fluctuations of signal strength.

These requirements are met by the Page Car Radio superheterodyne, which is the only car set of which details are yet available. A five-valve superheterodyne circuit is employed, with a signal-frequency H.F. stage and a combined oscillator-de-



Haynes Radio Class "B" Four.

tor; naturally enough, unbreakable Catkin valves are employed throughout.

Kit Set Tendencies

Although there are fewer receivers available this year as kits of parts, the prospective constructor has still a wide choice, the sets shown ranging from simple "straight" circuits to superheterodynes of the most ambitious type.

Cossor Melody Makers are produced in several models, but all are cleverly designed for mounting on the same steel chassis, and include a straightforward H.F.-det.-L.F. circuit with two tuned circuits. It is interesting to note that centre-tapped tuning coils are employed both for the aerial-grid coupling and the tuned anode H.F. coupling, matters being so arranged that the medium-wave windings are divided electrically into two sections, the long-wave loading coils being inserted at the centre point, *à la* Hartley circuit. An anti-break-through choke is inserted in the aerial circuit to prevent medium-wave interference on the long-wave band. The Cossor battery models include a kit with pentode output, and another with Class "B." A mains-driven version, with an energised moving-coil loud speaker, is also available.

Lissen kits are even more than usually interesting from the technical point of view. The "Universal Skyscraper Q.P.P." four-valve battery-fed set, which costs only £5 12s. 6d. with valves, covers wavelengths between 12-2,000 metres in four ranges, the change-over being effected

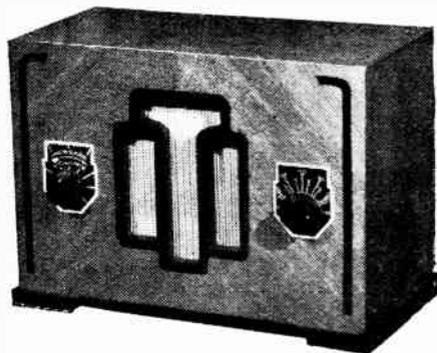
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by switching in the modern manner. An H.F. stage is included, and the detector is a screen-grid valve.

In spite of its "all-wave" feature, this set seems quite easy to build. Special cabinets, both of the table and console types (the latter with a moving-coil speaker) are available for it.

The Lissen superheterodyne kit is equally interesting and even more ambitious. This is a seven-valve set for battery feed, including amplified automatic volume control, Class "B" amplification, and tone control.

Although they are available as finished receivers as well as kits, the exhibits of Haynes Radio will be treated here. Modern tendencies in design are illustrated by the fact that all sets include Ferrocort coils, and all except those of the battery type are arranged in two units. In every case, two- or six-watt amplifier units can be supplied. The sets include the Class "B" Three, a det.-L.F. combination; a similar four-valve battery set with H.F. amplification, and the well-known A.C. Quality Four, which now appears in slightly modified form, with the latest Ferrocort coils and a variable-mu H.F. pentode. Among other Haynes' sets are A.C. and D.C. superheterodynes with Pentagrid or two-valve frequency changers and amplified delayed A.V.C. These are claimed to be the first all-iron-cored superheterodynes.



A British "Midget" set, the Sunbeam Model M30.

We may draw attention to the fact that kits of parts for several *Wireless World* sets are displayed by C.A.C. Lastly, Westinghouse are sponsoring a superheterodyne kit which illustrates the use of the Westector H.F. rectifier.

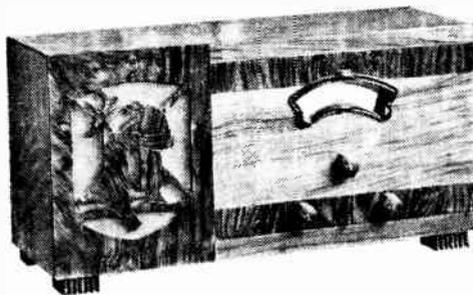
Universal A.C.-D.C. Sets

There is no technical reason nowadays why a set designed to work interchangeably on A.C. or D.C. mains should not give excellent results, and several manufacturers have produced models of this type, which represent yet another new tendency.

Indeed, two distinct novelties are embodied in the Sunbeam M.30 set, the first British version of the American "midget" set which has been so successful in the country of its origin. An A.C.-D.C. circuit is employed, in which the heaters of

both receiving and rectifying valves are connected in series and joined directly to the mains through a voltage-reducing resistance. An H.F.-det.-L.F. three-valve arrangement is employed, and the set measures only 11in. in width and 8in. high. Several other "universal" Sunbeam sets, of more conventional dimensions but with the same basic circuit, are produced.

The Cromwell "A.C.-D.C." employs three 16-volt valves in a straight circuit with pentode output; the cabinet is of the latest horizontal pattern with a permanent-magnet moving-coil loud speaker mounted at the side of the receiver chassis. In the Grafton Universal model, another H.F.-



The Cromwell A.C. D.C. "Universal" set.

det.-L.F. set, the present-day tendency to adjust the filter coupling for optimum transference of energy, rather than to cover a band of frequencies, is exemplified; this is described as "peak band pass," and suitable precautions are taken elsewhere to avoid high-note loss in the tuned circuits.

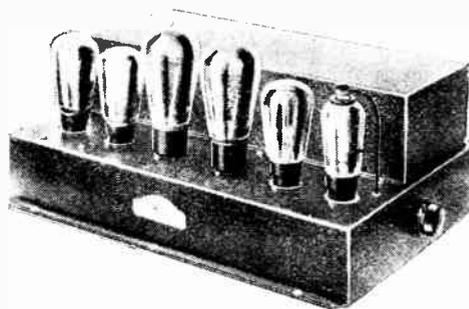
The new "universal mains" idea is not confined to straight sets, but has been applied, apparently with complete success, to several superheterodynes, including another Grafton model. In the Higgs Super-C, a six-valve superheterodyne circuit is employed, with a pentode passing its output of 1,750 milliwatts to a Magna moving-coil loud speaker.

Unclassified Apparatus

Commercialised television is making progress, and two complete vision receivers are exhibited at Olympia. The Bush Radio equipment, made for the Baird Television Company, was illustrated last week; it includes a receiver unit comprising one H.F. stage, a detector, and a four-stage resistance-coupled L.F. amplifier. The mirror drum system is employed, and a loud speaker is fitted; this may be connected to another set for simultaneous sound reproduction, or to the built-in amplifier for operation as a normal receiver. The price is 50 guineas. We have already had an opportunity of handling this equipment, which is quite practical and easy to work.

The second television set, made by Grafton, embodies two separate receivers,

one for sound and the other for vision. The first is a straightforward H.F.-det.-L.F. three-valve combination with band-pass tuning and pentode output, while the

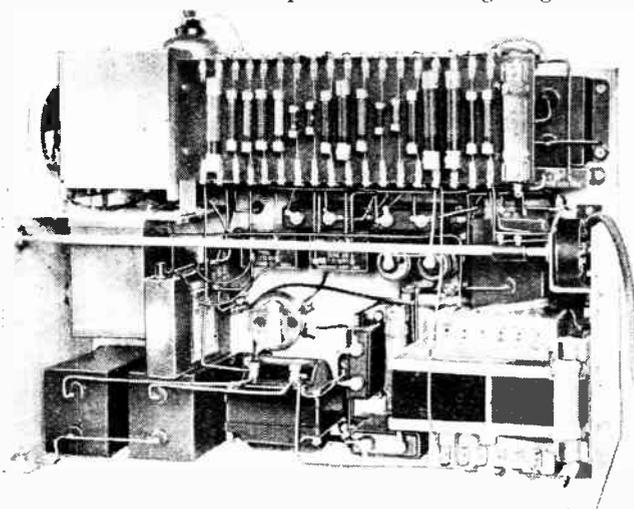


The B.S.R. 15-watt amplifier.

second includes two H.F. stages, diode detection, and a special amplifier. Of course, the "sound" receiver may be used separately.

With regard to L.F. amplifiers, the introduction of resistance-coupled push-pull by R.G.D. may revive an old controversy. Resistance coupling, with its faithful reproduction of transients, has many devotees, and, in its new form (which we believe has not previously been available commercially) offers additional advantages.

General-purpose amplifiers are shown by an increasing number of manufacturers, and it is clear that special attention is being paid to public-address apparatus. For this purpose, the compact equipment, complete with moving-coil microphone and long-range loud



Bush Radio television amplifier.

speaker, shown by Film Industries is interesting. In addition to the amplifiers dealt with in our Show Forecast, mention should be made of two representative types made by Tannoy, in which outputs of about 15 and 30 watts are obtained from respectively one and two DA.60 valves.

A "non-radio" innovation of considerable interest has been introduced by Multitone, who are showing a Class "B" 2-H.F. set which functions (a) as an ordinary broadcast set, (b) as the same, but with a "parallel" output with independent volume control for headphone listening by a deaf person, (c) as a deaf-aid amplifier, for which purpose the special loud speaker is converted into a microphone.

C.Q.A.

CONSTANT
QUALITY
AMPLIFICATION



SPECIFICATION

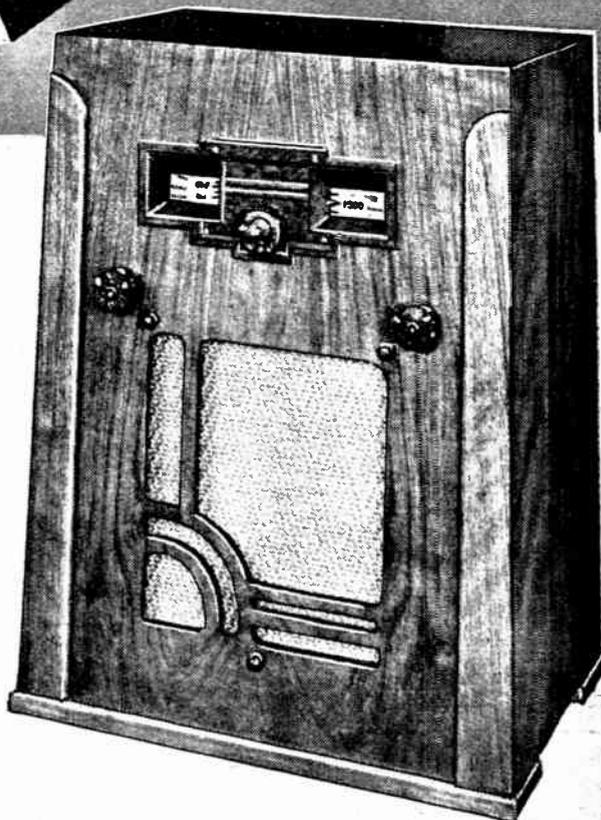
Three-stage band-pass receiver. Quiescent push-pull pentode amplification. Automatic lighting of "Station" from switch MW-LW (and Gram.). Triple action volume control. 60 amp. hour accumulator. 166v. coded H.T. battery with 90 G.B. battery. Marconi valves VS₂, HL₂, 2PT₂. Permanent magnet moving coil speaker. Additional speaker terminals. Alternative Aerial tappings. Pick-up connections enable the set to be used as a powerful gramophone reproducer with unique fidelity. Walnut finished cabinet with dark inlaid horizontal bands. Dimensions: 18 $\frac{3}{4}$ " high, 13 $\frac{1}{4}$ " wide, 9 $\frac{1}{2}$ " deep.

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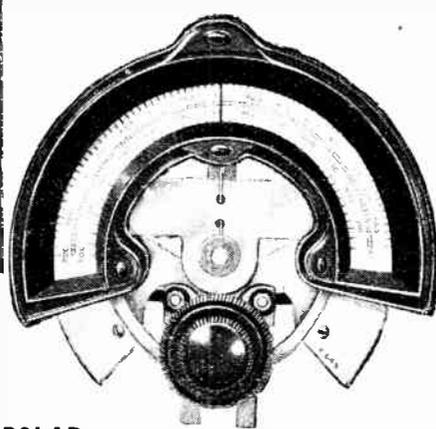
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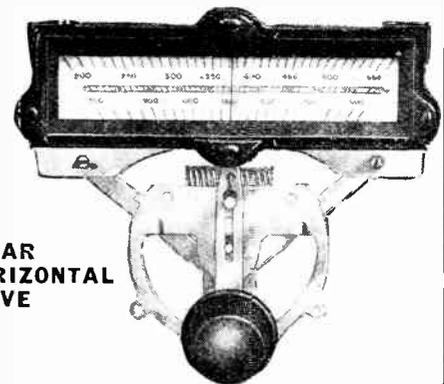
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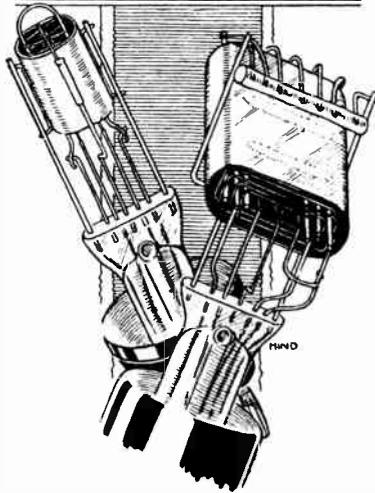
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PENTODE OR TRIODE?



WHY are pentodes ever used? They are more complicated than triodes, and hence are more easily damaged; they are more difficult to harness to the loud speaker; there is a strong tendency for them to give poorer quality of reproduction; extra components are almost invariably required to prevent excessive shrillness; an extra H.T. tapping has often to be found; and—important in these days—they appear to cost a good deal more.

Since pentodes actually are used in vast quantities, it is obvious that they have something substantial to offer that overrides this impressive array of objections. They offer two advantages—greater sensitivity and greater efficiency. As these words, and particularly efficiency, are commonly used in a loose and indefinite sense (e.g., “—’s Boot Polish is the most Efficient in the World”), it is important to understand that here they are to be taken as exact scientific terms, so before going farther it will be as well to explain them.

The object of an output-stage valve is to deliver a certain amount of power to the loud speaker; enough to produce as much sound as we want without distortion. For the valve to function, it is necessary to supply it, among other things, with a continuous flow of current to the anode (“H.T.”), and a varying or “signal” voltage to the grid.

Sensitivity

The sensitivity tells us how little signal voltage is necessary to make the valve furnish its quota of power, and the efficiency indicates how little H.T. is required for the same purpose.

Sensitivity is measured in milliwatts (unit of power) per grid volt squared, written mW/V^2 . The grid voltage, which, let it be emphasised, is the signal voltage and not grid bias, is squared because the power is proportional to the square of

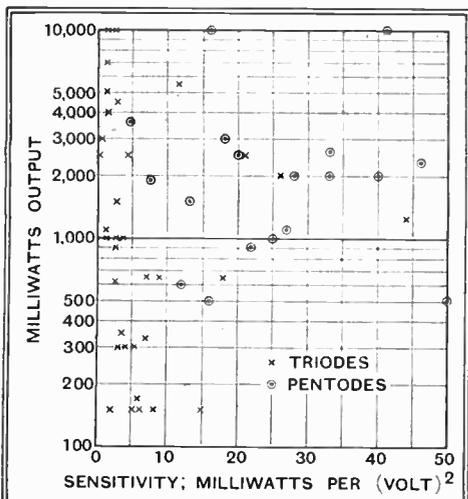


Fig. 1.—Chart to show the relative sensitivity of representative makes of triodes and pentodes.

A Comparison of Their Merits

OPINION is more or less divided upon the question of the choice between a triode or pentode valve in the output stage. In this article the author compares the two from the standpoints of sensitivity and efficiency.

By M. G. SCROGGIE, B.Sc.,
A.M.I.E.E.

the signal voltage. For example, if a valve which is adjusted to the most favourable working conditions delivers 1,000 milliwatts when the intervalve transformer or other coupling connecting it to the previous valve is giving it 10 volts, then the sensitivity is $1,000/10^2 = 10$. It is substantially correct to go on to say that if the signal is 1 volt the power output is 10 milliwatts. But it is not necessarily correct to suppose that if the signal is 20 volts the output will be 4,000 milliwatts, because that may exceed the limit of which the valve is capable. If we are offered the choice of two valves, each of which gives the required power, then the one with the greater sensitivity is the one that requires the less voltage from the previous valve. So it may be possible by selecting it to work with a resistance coupling instead of a more expensive transformer, or even to cut out a whole stage between it and the detector. On the other hand, we may not be at all pressed for signal volts, and then the more sensitive valve has little advantage.

Efficiency is expressed as a simple percentage because the H.T. power is also measured in milliwatts, so this is a very easy calculation. For example, a 500 milliwatt output valve requires 10 milli-

amps at 200 volts. The input is therefore $10 \times 200 = 2,000$ milliwatts, and the efficiency is $500/2,000$, or 25 per cent. The importance we attach to efficiency depends on how much we have to pay for power; as battery power costs roughly one pound sterling for every penny charged for a similar helping from the mains, the battery user is likely to look at this matter through a very different pair of spectacles to that worn by the listener who plugs in. The time when the latter gives most thought to the problem is when he is contracting to pay for a new receiver, because the first cost goes up very steeply according to the demands made by the output valve.

Running Costs

If, therefore, the pentode is more efficient, that is, needs less power put into it to get the required amount out, it will cost less to run in a battery-driven set, and will make a mains-driven set less to buy. It may be urged against the latter claim that the pentode itself costs more. But examination of valve data, as published in *Wireless World Valve Supplements*, or *The Wireless World Diary*, brings to light the fact that a pentode costs little or no more than a triode capable of supplying the same output. In fact, in the larger sizes a pentode costs a good deal less. The 10,000 milliwatt pentode is priced at less than half the same maker's 10,000 milliwatt triode. For the usual 2,000 milliwatts a pentode is a shilling or two more than the corresponding triode. Of course, if the output is fixed at a very low figure like 150 milliwatts, the pentode looks rather expensive, because it is not made in sizes limited to such a small output.

Before we can assess the relative merits of the rival types we must know by how much the pentode excels the triode in its twin virtues of sensitivity and efficiency. The accompanying charts are intended to shed light on this question. The vertical

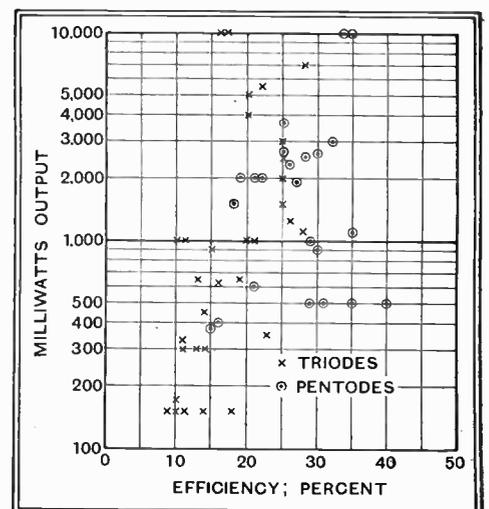


Fig. 2.—Chart showing the relative efficiency of triodes and pentodes.

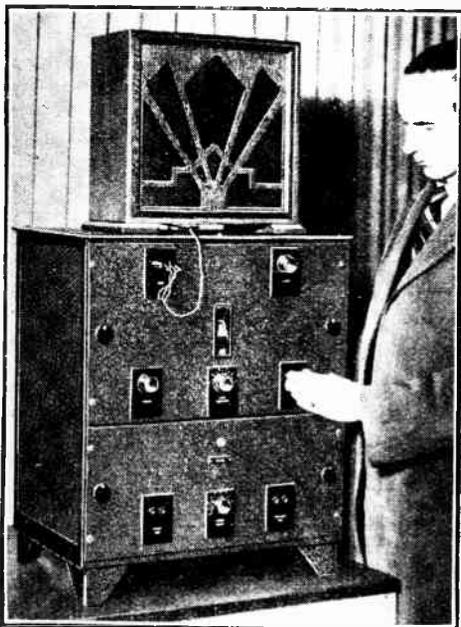
Pentode or Triode?—

scale in each of them is maximum power output, which we are using as a basis of comparison. It has been made a logarithmic scale merely to spread out the points evenly. The horizontal scales serve for percentage efficiency and mW/V_g^2 respectively. The points indicate these two quantities for both triodes and pentodes listed by four makers whose products are comparable. The rather wide range of variation is perhaps due to the fact that some of these valves might well be placed on the retired list to make way for those more recently developed.

The Final Verdict

Looking at Fig. 1, the sensitivity of triodes is seen to vary enormously from 0.3 to one stray hero on the 44 line. But, disregarding the prodigies, an average would be drawn at about 5. The pentodes also cover a wide field, but their average is more like 25. In other words, the average pentode gives about five times as much output as a triode for a given grid swing. But, as we are judging them on the basis of an equal output, in order to find out what the previous stage has to do, the same thing is better expressed by saying that the triode requires rather more than double the signal voltage applied to the grid to drive it at full throttle (actually $\sqrt{25/5} = 2.24$ times as much if those averages are assumed).

So the sensitivity of the pentode, which was acclaimed in the early days as equal to an extra stage of amplification, is actually of little account. There is seldom such a shortage of volts from the detector that an intermediate stage is necessary even with a triode, and, as we have seen, an exceptional triode will compare with any pentode on this score.



Marconiphone apparatus for broadcast reception recently installed at the Stanmore Orthopaedic Hospital. The apparatus consists of a superhet. receiver coupled to a P.23 amplifier.

How about efficiency? The first glance at Fig. 2 finds a tendency for it to increase as the power rating of the valve increases. That is not at all surprising. It applies to most types of machines, and is one reason why lots of little electric power stations are being scrapped in favour of a few "super" stations. So our conclusions depend to some extent on whether our interests lie in the 150 milliwatt class or the 10,000 milliwatt class—or somewhere in between.

Fortunately for comparison, efficiency does not fluctuate so wildly as sensitivity, and there is not much difficulty in assigning an average of about 30 per cent. to the pentode. As the object is to compare the drain on the H.T. supply, the current taken by the auxiliary grid (which is often forgotten) is included in this calculation.

The triode efficiency is more difficult to express in a single figure. In the lowest power classes, where there is no competition, it is round about 12 per cent. Else-

where the average may be put at 20 per cent. Which means that from 800 milliwatts upwards the triodes require something like 50 per cent. more H.T. to handle the same amount of output as a pentode.

That may signify very little or a great deal, according to circumstances. Though there are no pentodes limited to two or three hundred milliwatts, they can, of course, be operated with reduced H.T. for economical working in portable and other battery sets, and the efficiency is well maintained, whereas the competing triode falls off rather badly, as we have seen. The advantage is then more like 100 per cent. in favour of the pentode. At the same time, not only is the efficiency maintained, but so also is the price, which likewise is about double that of the triode.

It is now merely a matter of "Consider your verdict, gentlemen," but, to prevent a deadlock, it will be necessary to have two jury-boxes, one for battery and one for the mains.

DISTANT RECEPTION NOTES

Illicit Stations of Europe

FROM time to time we read in the lay papers startling accounts of the activities of some "mystery" broadcasting station. I wonder how many readers of *The Wireless World* have any idea of the number of unknown stations which are constantly at work within the limits of the medium waveband. If you examine any of the monthly reports of the U.I.R. you will be surprised to find how many transmissions there are marked not with a name but with a query.

In the great majority of cases this does not mean that a transmission came from some authorised but unidentified station. The department of the Brussels Laboratories which is responsible for wavelength-checking knows the stations of Europe so well that it could hardly fail to identify any of them, even if it were considerably off its normal wavelength. In most instances the queries denote stations of unknown origin which, though they have no right to be working on the medium waveband, do so night after night and often with considerable power behind their signals.

The last U.I.R. report shows no fewer than a score of such stations, and there is no question that many of them are responsible for heterodyne interference with authorised transmissions. The position is a rather disquieting one, for the presence of such a number of illicit stations on the medium waveband is already something more than a nuisance, and if they are allowed to continue at work they may suffice to upset the delicate balance of the Lucerne Plan.

Another problem of no small dimensions is that provided by the harmonics of some of the bigger stations. Many of the more powerful long-wave stations have third, fourth, and fifth harmonics, which assert themselves in the wave-band between 200 and 550 metres. But it is not only the long-wave stations that may interfere; any medium-wave station with a wavelength about 400 metres can cause trouble if it develops a strong second harmonic. The harmonic question is one that will probably demand much attention in the future.

Readers may have noticed that there is a tendency among Continental stations to give their call-signs less and less frequently. This is rather trying unless the set is accurately calibrated, and calibration itself becomes, of course, a much slower and more laborious business. Many stations have adopted distinctive interval signals, but it is quite a feat to memorise these. If you are engaged in calibrating, and cannot identify certain stations, one of the most fruitful methods is to make a note of the various settings, and then to return to them at times between 10 and 11 p.m., when the stations are going to bed. Many close down with their national anthems or with some form of "Good-night." Identification is usually easy by means of the music or the language used.

Germany and Lucerne

Germany, I hear, is going forward rapidly with preparations for the coming into force of the Lucerne Plan. It is quite likely that certain wavelength exchanges between German stations will take place early in the autumn, with a view to letting stations settle down to channels near those which they will occupy after January 15th. Under the Lucerne Plan Stuttgart is to work on 522 metres, Munich on 405.4 metres, and Witzleben on 356.7 metres. The present wavelengths are: Munich 532.9 metres; Witzleben 419 metres, and Stuttgart 360.1 metres. The present proposal is for Witzleben to take over Stuttgart's channel (a change which will be welcomed by the B.B.C.—until Berlin goes up to 100 kilowatts!), Stuttgart will go up to 532.9 metres, and Munich will occupy Witzleben's former channel.

The choice of stations is as wide as ever on both the long and medium wavebands. Were I limited to a dozen Continental transmissions, the twelve that I would choose at present would be: Huizen, Radio-Paris, Warsaw, Prague, Langenberg, Toulouse, Rome, Leipzig, Strasbourg, Brussels No. 2, Breslau, and Trieste.

D. EXER.

SIDELIGHTS ON OLYMPIA

Early Impressions : Better Than Ever

WHERE exhibitions are concerned we have no veneration for the past. It seems the natural and usual thing to belittle all previous exhibitions by describing the affair of the moment as "the finest of its kind ever held, etc." This good-natured habit places one at a disadvantage when the Show under review really is the finest of its kind ever held; so that in

Not so to-day. Although at Olympia the modern note in stand designs "hits one in the eye," it becomes instantly noticeable how ultra-modern in appearance the average set has become, harmonising with the new steel furniture (which fills the Show almost to the point of congestion), but remaining in tune with furniture bought the day before yesterday.

One pre-Show rumour must be exploded. Not ninety per cent. of the visitors are women, so no reader should stay away from Olympia on this score. Men are probably in the majority by three to one. Last year the ratio was four to one. Significant!

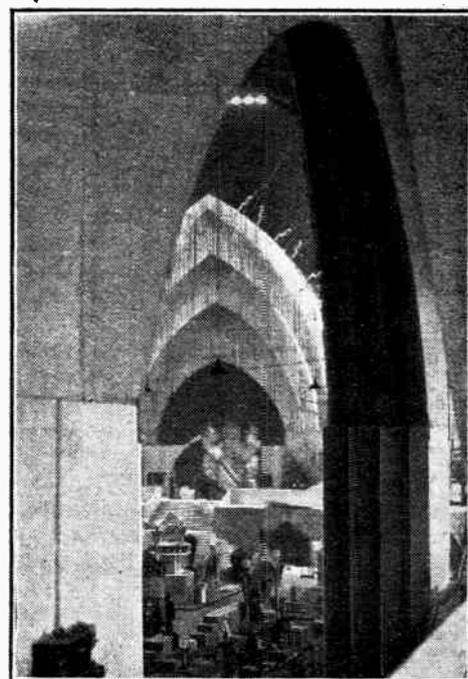
The two principal "side shows" are the Post Office display and the B.B.C. theatre. Never before has the Post Office taken so much space. This year the P.O. effort is an exhibition in itself, and is the size of a

small village. Trunk telephone services, the teleprinter, and man-made static are exploited to the uttermost, especially the last-named, and there is diabolical irony in the display of such life-sweetening devices as vacuum cleaners, electric refrigerators, electric sewing-machines and hair-dryers, all capable of producing human misery within earshot of a loud speaker.

Lovers of quality reproduction will be interested in devices for demonstrating visually and aurally the presence or absence of certain bands of frequencies in reproduced music. By the use of switches, different portions of the musical register can be added or suppressed.

At one time the Post Office considered the advisability of showing a "pirate-trapping" outfit, complete with direction finder and rotating aerial, but other counsels prevailed.

The B.B.C. Theatre astonishes one by its vastness. Seating 2,500 people, all of whom get a perfect view of the stage, this gigantic "studio" is as large and comfortable as any suburban cinema, and the acoustics are superior. The B.B.C.'s own exhibit, though not spectacular, will repay close inspection. The coloured photographs of the studios and transmitters are highly effective, while the



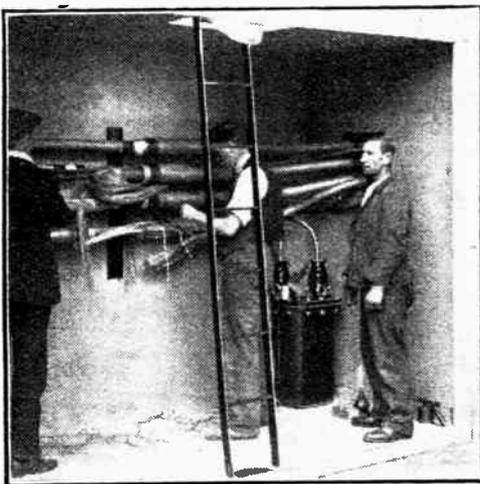
AN ECCLESIASTICAL EFFECT is obtained in this unusual view of the brilliant electrical composition which dominates Olympia.



OLYMPIA CALLING. This view of the B.B.C. Theatre at Olympia gives an impression of its great size and the clever lighting effects.

trying to picture Olympia, 1933, the writer gropes for superlatives, finds none that have never been used before, and decides that plain, unadorned English must suffice.

Olympia has never yet offered us a radio show so glitteringly and yet so solidly attractive. As if to atone for the absence of



UNDERGROUND. In this model of a typical Post Office cable tunnel the lowest cable is a 159-pair composite incorporating wires used for broadcasting.

individual demonstration rooms, the exhibitors seem to have expended the last ounce of energy in making their stands original and compelling, and in this they have been largely helped by the sane decision of the R.M.A. to permit more individual latitude in the design of stands than in the past.

It was whispered some years ago that stand designs were too attractive; they made the wireless sets look cumbrous and old-fashioned.

permanent crowd around a large glass cubicle testifies to the public interest in the 1½-kilowatt amplifier which is flooding all Olympia with a cascade of music.

A Glowing Pageant

The Show abounds in novelties. The most valuable single exhibit is contained in a little iron cage, and consists of a gold and a silver bar to the value of £2,000, representing the amount of these metals used by H.M.V. in a year in producing switch contacts for radio receivers.

Although the Show numbers of *The Wireless World* give a comprehensive view of the exhibition and all that it stands for, the man who stays away from Olympia will have missed a glowing pageant of wireless for which there can be no substitute.



MISCHIEF MAKERS. A section of the G.P.O. exhibit devoted to the cause and cure of man-made static.

Practical HINTS and TIPS



AIDS TO BETTER RECEPTION

IT is somewhat disturbing to find that a push-pull output stage goes on working quite happily when one of the valves is withdrawn from its holder. Those whose receivers behave in this way may be reassured by the statement that it does

Points About Push-pull

not necessarily indicate that anything is wrong; the accompanying diagram, Fig. 1, shows how this

state of affairs can come about.

In diagram (a) the conventional push-pull output stage is shown, while in diagram (b) the connections belonging to one of the valves have been "faded out." What is left is nothing more nor less than an ordinary single-valve output stage.

Of course, the withdrawal of one valve may be expected to result in a serious diminution of volume and deterioration of quality as well. But, especially in mains-operated sets, volume may not fall off to any very obvious extent; this is because an H.T. voltage rise will take place as a result of removing one valve, and the remaining valve, working in an overloaded condition, may give, at any rate for a while, an abnormally great volume.

A well-known advantage of the push-pull system is that an amplifier in which it is included is less prone than usual to

one valve is the production of violent motor-boating. Quite often, however, removal of one valve will produce motor-boating, but on replacing this valve and removing the other, fairly normal working will be obtained.

This effect seems puzzling, but there is a fairly simple explanation for it. In one case the phase of the impulses fed back to the earlier stages by the output valve is such that instability is provoked, while in the other there is an anti-reaction effect which prevents self-oscillation.

It follows from this that if motor-boating occurs in a push-pull amplifier one of the output valves may be suspected as being faulty.

Still another point emerges; it is distinctly dangerous to modify a published design in which push-pull is included by the substitution of a single-valve output stage. The amount of decoupling that may be more than sufficient in a push-pull amplifier may be quite inadequate for the changed conditions.

QUITE apart from the ordinary forms of second-channel interference, superheterodynes are liable to suffer from other forms of whistles if the detector is operated in an overloaded condition. These are often due to the production of

Super-heterodyne Whistles

harmonics of the I.F. amplifier; overloading due to a powerful local station may occur when the set is tuned to a wavelength differing considerably from that of the interfering station, especially if the number of pre-selector tuned circuits be small.

Further, it should be borne in mind that whistles due to the generation of harmonics are particularly likely to give trouble in a receiver with battery valves, which can never handle so large an input as those of the indirectly heated mains-driven type.

It follows, therefore, that in the vicinity of a powerful station it may often be necessary to make provision for reducing the input from the aerial, especially when receiving stations adjacent in wavelength to that of the local transmitter. A variable condenser in series with the aerial will generally prove effective.

WHEN the anode circuit of the detector valve is reached it is often considered that H.F. currents have been finally disposed of, and that this circuit can be treated purely from the "L.F." point of view. In practice this is not so, and it is a fact that the detector grid circuit is sometimes affected profoundly by the arrangement of components in the anode circuit of the valve.

The Detector Anode Circuit

For instance, the tuning of the grid circuit is affected by a change in anode circuit constants. An alteration in capacity of the anode by-pass condenser, which is generally fitted in order to improve rectification efficiency (or rather to reduce anti-reaction feedback), will necessitate re-trimming of the preceding circuit in the case of a gang-tuned receiver. Similarly, the substitution of a different H.F. choke, or the development of a complete or partial short-circuit in an existing choke, will have the same effect.

In addition, any alteration in the anode by-pass capacity will affect reaction control. It is usual to employ the largest capacity possible consistent with retention of high notes and good reaction control.

IT is somewhat disquieting to find that the protective fuses included in a mains-operated receiver "blow" consistently, even though their rated capacity is greater by a considerable margin than the estimated value of current that should be passing through them. In almost every receiver momentary current surges take place when switching on or off, and these surges may be heavy enough to blow fuses which might be expected to have a large margin of safety.

Safety Fuses

Although it may seem to be a rather reprehensible procedure, fuses are often chosen merely by ascertaining by trial which is the lightest value that will stand up to the surges while the set is operating normally.

It follows from this that too much reliance should not be placed on a fuse as a protective device; its presence should not be taken as an excuse for poor insulation or slipshod wiring that may develop a short-circuit at any moment.

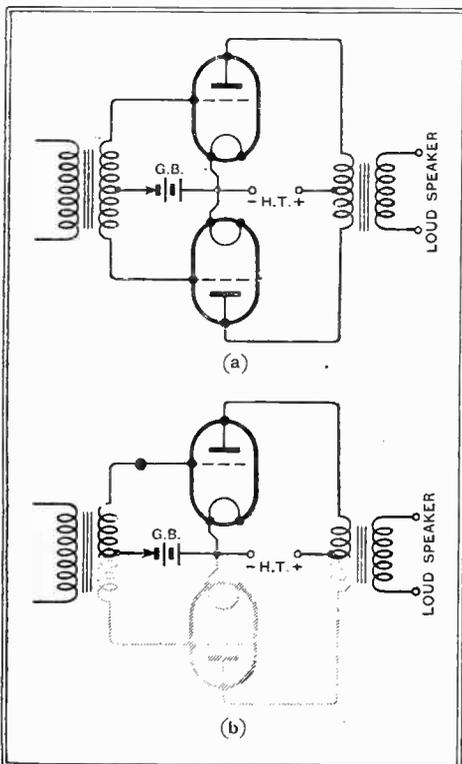


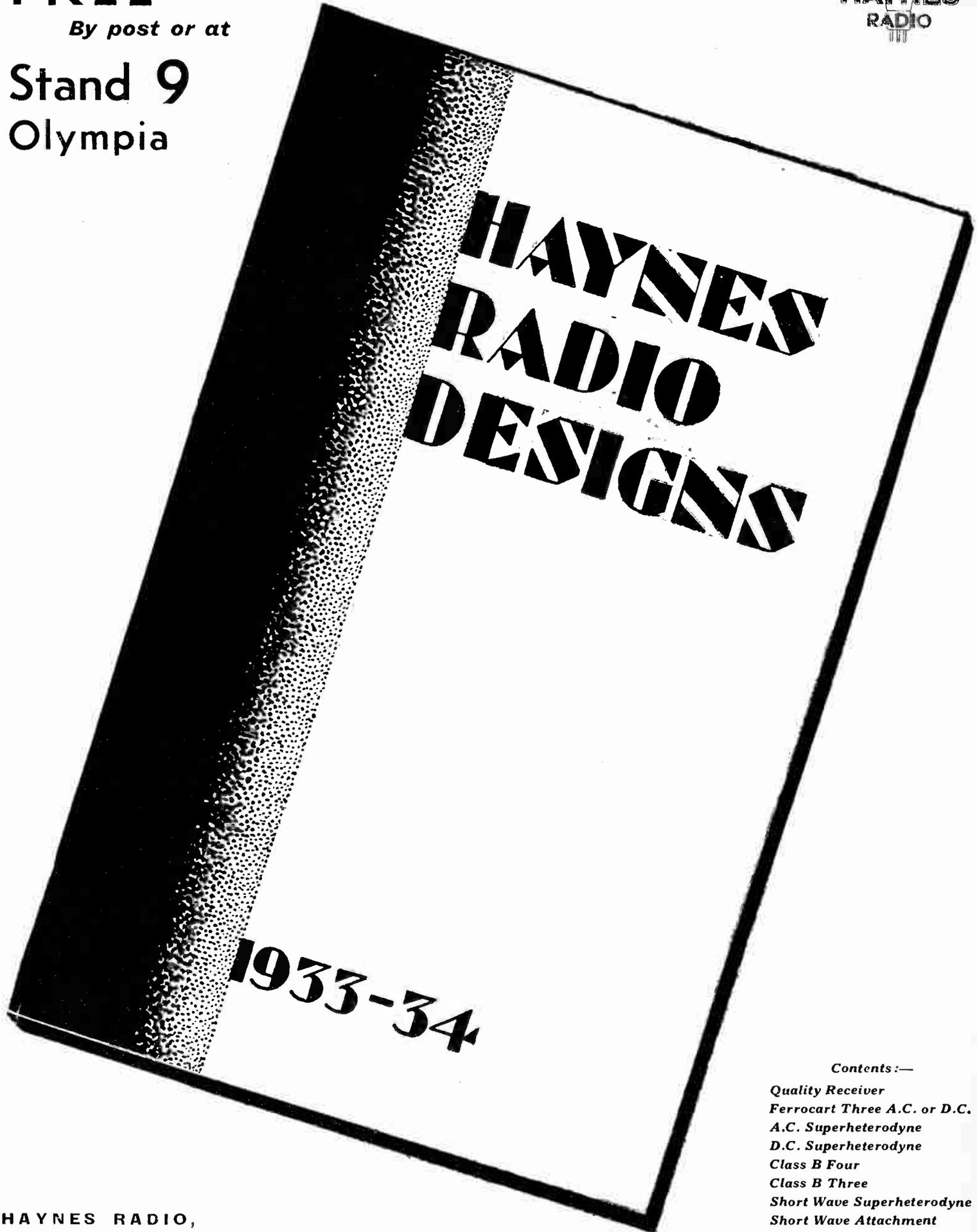
Fig. 1—A conventional push-pull stage, and (b) a diagram to show how it can work with one valve removed.

motor-boating and other forms of instability. It is, therefore, not surprising that in many cases the result of removing

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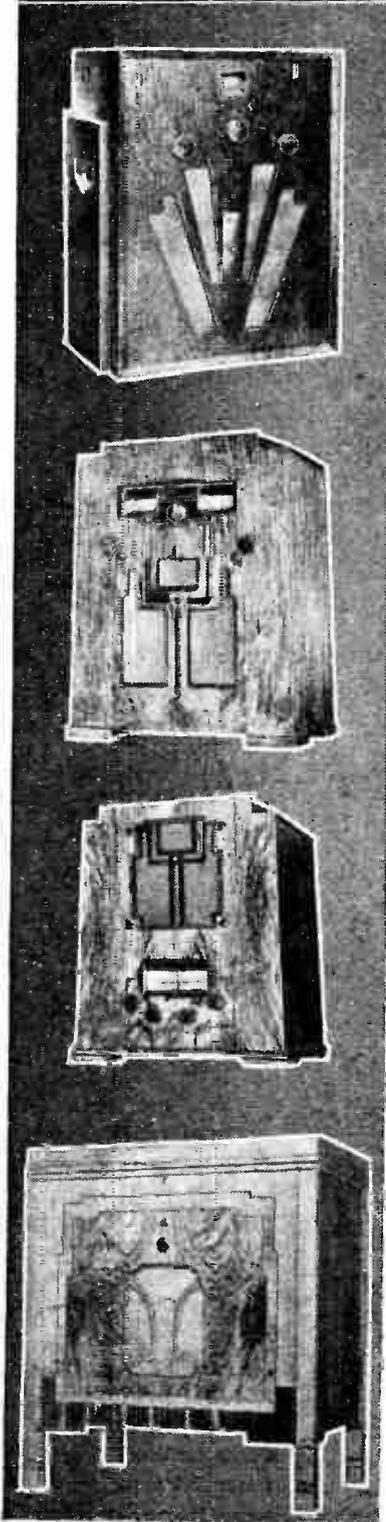
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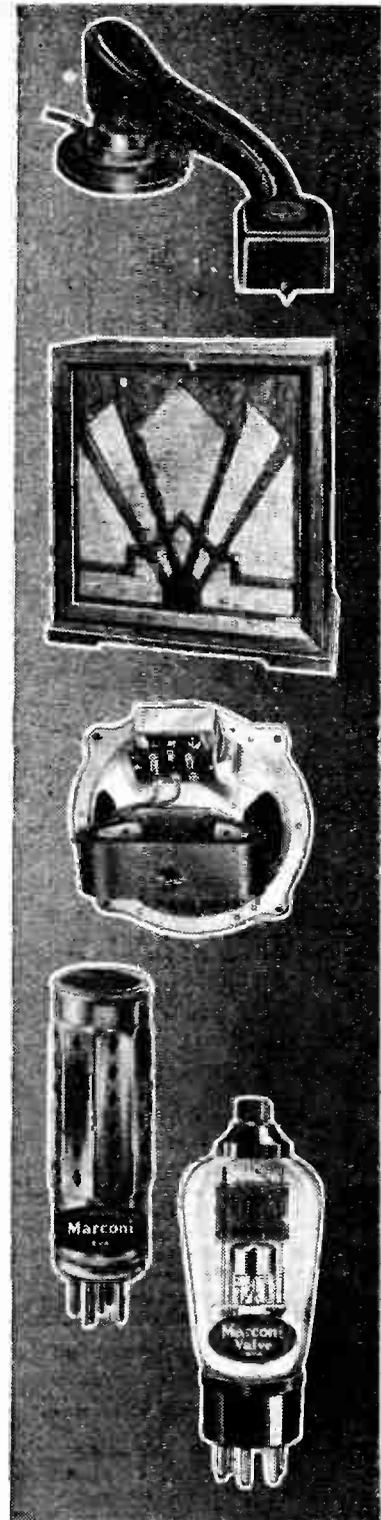
- MSP4** H.F. Pentode 17/6
- VMP4** Variable-Mu H.F. Pentode 17/6
- MHD4** Double-Diode Triode 15/6
- MPT4I** High slope Power Pentode 18/6

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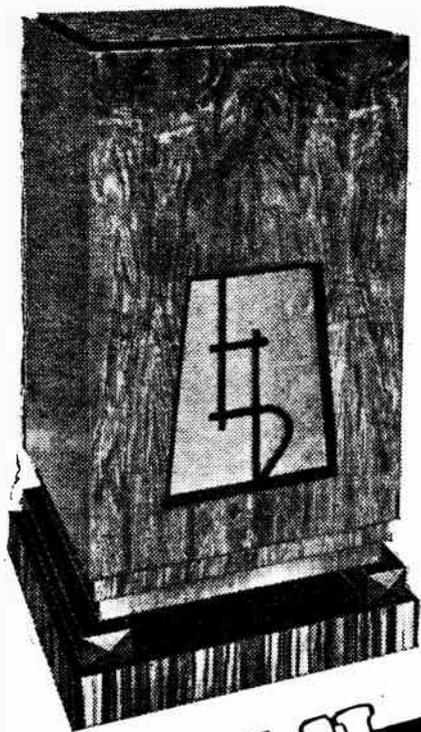


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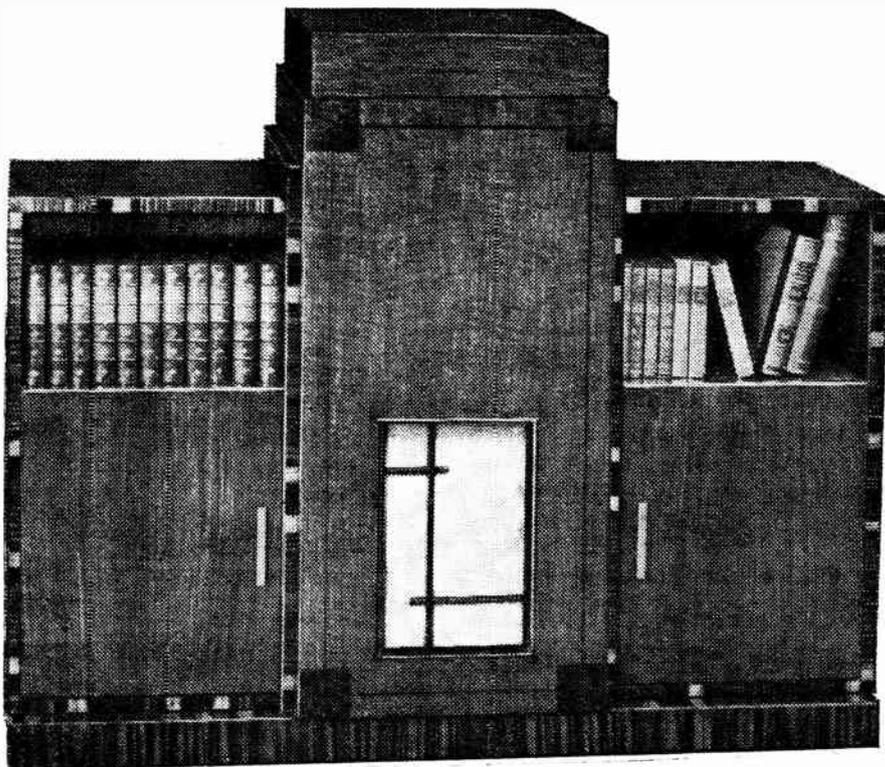
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Foreign Stations

Reasons for Increasing Popularity

By R. W. HALLOWS

was "proved" first of all that foreign stations could never be worth bothering about since the signal-to-noise ratio must always be such that a mushy, noisy background would be unpleasantly in evidence. When the coming of high-powered transmitters showed that there was a flaw in the argument the next step was to demonstrate mathematically

that long-distance listening must entail sideband cutting and therefore poor quality of reproduction owing to the loss of the higher audio frequencies. If you were content with *that* kind of reception you were a poor thing with no musical ear and no understanding of the real possibilities of wireless.

Band-pass tuning gave a means of obtaining a useful degree of selectivity without cutting sidebands, and then came the discovery that in highly selective circuits the outer sidebands are not "strictly speaking" cut; they are merely amplified to a much smaller degree than those corre-

fading. Violent fading is a comparatively rare phenomenon, and there is no question that automatic volume control can deal satisfactorily with the milder and more usual kind.

The modern set provides genuine high-frequency amplification with complete stability. With modern apparatus at his command the listener can obtain excellent reproduction from stations hundreds of miles away. Nor must it be forgotten that the field strength of many Continental stations is greater in this country nowadays than was that of the local station fifty miles or so away in the early days of broadcasting.

Elaborate Sets Not Essential

Not everyone can possess a large super-heterodyne incorporating all the refinements mentioned or a "straight" receiver with two or more selective and efficient high-frequency stages. Excellent reception of a large number of foreign stations is obtainable with much less ambitious apparatus so long as attention is paid to certain points whose importance is not always realised.

Generally speaking, the user of a small set will find that the best quality is provided by those foreign stations that are most easily and most strongly received. To put it slightly differently, first-rate reproduction is seldom to be expected from stations which have to be "worked up" to good loud speaker strength by critical adjustments of the reaction control.

When a programme is being transmitted simultaneously by two or more stations it often pays to see which is coming through best. The Stockholm programmes, for instance, are sent out by Motala on the long waves, Stockholm in the upper part of the medium waveband, Gothenburg near the middle of this band, and Hörby in its lower portion. Atmospherics, heterodynes, sparks, mush or fading, can often be "dodged" by changing from one of these stations to another.

Lastly, I would like to stress the importance to the long-distance listener who values quality of having a first-rate earth connection. A bad earth leads often to instability, and it may have such an adverse effect upon the sensitiveness of the set that to obtain adequate strength from foreign stations the reaction coupling has to be made much tighter than is desirable. With modern sets the earth connection is possibly even more important than the aerial. You may obtain respectable results with a bad aerial and a good earth, but no matter how good the aerial is the performances may be poor if the earth is defective.

THERE are still some who persist in the belief that no transmissions except those of their local station can be received well enough to be genuinely worth listening to from the entertainment point of view. Old ideas proverbially die hard, and this belief is a survival from the time when neither transmitting plants nor receiving sets were what they are nowadays. Not so very long ago the service area of a broadcasting station had a radius of no more than fifty miles or so, and if one lived at more than that distance from it first-rate reception was difficult, if not impossible, to obtain. To-day this country may be regarded as lying for all intents and purposes within the service areas of a large number of Continental stations. It is no exaggeration to say that with suitable apparatus their programmes can be received every bit as well as, and frequently better than, those which emanate from home stations.

A good many years ago a regular campaign was started against foreign listening. Its opponents included people of considerable eminence in the world of wireless in those days, and the attitude of at least one high official of the B.B.C. was that anyone who sought to derive entertainment by listening to transmissions from abroad was suffering from an attack of a mild form of temporary insanity which would pass away as his wireless education became more complete.

Distance and Quality

The long-distance enthusiast was jeered at; he was termed a knob-twiddler, or a condenser fiend, or an ether hog; it was said of him that he did not care *what* he heard so long as it was a transmission coming from several hundred miles away. His hobby was but a passing craze; within a short time all sensible people would realise that the local station was the only one that could ever be worth listening to.

It is interesting to look back now at the successive attacks launched during the campaign against the long-distance man. It

*I*N spite of past efforts to discourage listeners from interest in foreign stations, the popularity of foreign listening has steadily increased and causes which have contributed to bring this about are discussed in the following article.

sponding to the lower frequencies. They are still "there," that is to say, though they may be swamped owing to the much greater amplification that takes place of the lower audio frequencies. Tone-control enabled proper balance to be restored in the post-detector-stages; neither sensitiveness nor selectivity were found to be enemies of high quality, as had previously been taken for granted.

Nothing daunted, those who had sworn to have the scalp of the long-distance enthusiast developed a new line of attack. This time, they assured themselves, they were clearly backing a winner, for fading was the horse that carried their money, and, since fading is a natural phenomenon, it seemed that no improvement in the receiving set could possibly combat its dire effects.

Automatic volume control was long in coming to this country, but once it had arrived it was found capable of taking charge of any but the most violent kind of

News of the Week

Current Events in Brief Review

An Old Spanish Custom

IT is estimated that one listener out of six pays the annual radio tax in Spain.

Is Wireless a Luxury?

THE purchaser of a wireless set in Belgium now pays a "luxury tax" of 9 per cent. of its value.

Try Again

NOT one of the designs submitted for the projected Broadcasting House in Brussels has been considered good enough by the jury of experts.

Maison de la Radio

THE latest Broadcasting House is that recently opened at Lille by the French Postmaster-General. The "Maison de la Radio" is the first of its kind in France, having been specially built for broadcasting purposes.

1,200 Kilowatts from Moscow

THE latest rumour is that Soviet Russia is now contemplating the construction of a 1,200-kW broadcasting station to place all on the Continent within its service area.

This is exactly 1,000 times the power of the B.B.C. transmitter at Swansea, which is the lowest-powered in Europe.

Sir Ambrose Fleming

WE take pleasure in seizing the unexpected opportunity to congratulate Sir Ambrose Fleming, inventor of the thermionic valve, on his marriage to Miss Olive May Franks, a well-known singer, a few days ago. Sir Ambrose, who retired from the Chair of Electrical Engineering at University College some years ago, now lives at Sidmouth, in Devon, and still spends much of his time in the study of wireless phenomena and television.

Radio in U.S. Prosperity Campaign

RADIO will be shrieking as loudly as the "Sign of the Blue Eagle" in President Roosevelt's great campaign to provide employment throughout the United States and bring about a return to national prosperity, writes our Washington correspondent. "The Sign of the Blue Eagle" is the badge granted to those who enter the scheme. It is one of the functions of the radio networks to broadcast without intermission the facts concerning the national effort and its progress. Prominent speakers are recounting how firms can win the right to blazon the "Sign of the Blue Eagle" on their premises and notepaper.

The plans include asking sponsors of commercial programmes to devote part of their time to propaganda for this movement.

America believes that radio is one of its biggest aids towards national salvation.

Those Ultra-short Aerials

ACCORDING to a British United Press message from New York, a Portland, Oregon, man has built a wireless set for his bicycle. The aerial is strung between the handle-bars.

Wireless Again

OF the thousands of German Jews who have fled from Germany, many are stated to be setting up in the wireless business, according to a correspondent who has recently interviewed a number of fugitives. A number have left for South Africa and the Dutch East Indies.

Radio Age Gauge

PROFESSOR FANESES, a French scientist, is stated to have succeeded in fixing the age of the earth as between 500 and 3,000 millions of years by means

Nottingham Radio Show

THE City of Nottingham will hold its radio exhibition at the Greyfriars Hall, from September 6th to the 14th, 1933. Leading manufacturers and many local traders will be represented.

Summer Clubs

WE have always contended that wireless clubs make a mistake in closing down during the summer months. That the outdoor season can be fruitful in results is borne out by the experience of a number of the more active organisations who have courageously refused to "shut up shop" from April to September. Special congratulations are due to Slade Radio (Birmingham), the Golders Green and Hendon Radio Society, the North Middlesex Radio Society, the Sidcup Radio and Television Club, and the

A Shock

A CONTINENTAL broadcasting engineer returning from work the other evening met his eight-year-old son. Noticing that the child's finger was bandaged, the father enquired the cause. "I touched a wasp," said the child, "and the end wasn't insulated."

It Isn't Cricket

CLASSICAL music and cricket are not mutually repellent, according to the consensus of opinion shown in a dispute now raging in Leicester with regard to the appearance of a radio gramophone on the Leicester County cricket ground. What apparently puts the players off their stroke is jazz music and talks.

Pictures on the Spot

THE Paris "Soir" is, we believe, the first newspaper in the world to use a transportable picture transmitter, packed in a valise, for the use of its reporters. The apparatus is the well-known "Belinograph," and we learn that it is to be used for the rapid transmission of photographs to Head Office from any spot to which the reporter may be called.

Jewish Broadcasting Station

A JEWISH broadcasting station operating on power sufficient to include all Germany in its service area may shortly be erected in Prague by the Jewish Wireless Association. Already the rumour is said to be causing uneasiness in official circles in Germany. The construction of the station is being discussed at the Zionist Congress.

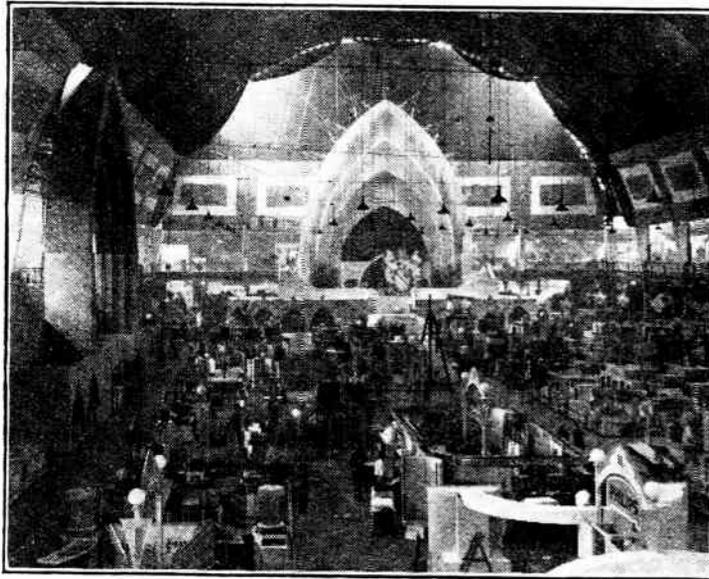
Peace at Last

WE learn that Professor Swardemaker has constructed an absolutely non-resonant studio in Utrecht. Between each of the walls a complete vacuum has been achieved. Each wall has a composition of paper, wood, cork, seaweed, human hair, and a special sort of stone, and the internal wall is hung with a "variety of tissues." It is not stated whether the studio is intended for broadcasting or as a refuge from it.

Interned

GERMANY'S erstwhile broadcasting chiefs have been sent to the Internment Camp at Oranienburg. They include Dr. Magnus, formerly Managing Director of the Reichs Rundfunk Gesellschaft, and Dr. Giesecke, Vice-president of the International Broadcasting Union. When he received this news, Dr. Hans Bredow, the former radio commissioner of the German Post Office, telegraphed to the Prussian Prime Minister, expressing the wish to be treated in the same manner as his former colleagues, who, he declared, were quite honourable.

The charge brought by the R.R.G. against the Directors is that of squandering public moneys.



OLYMPIA, 1933. An exclusive glimpse of the great Show taken shortly before "zero hour." Daring originality in stand design is one of the characteristics of the Exhibition, and the lighting effects have never been equalled. The Show remains open until Thursday, August 24th.

of "radio active analysis of 25 meteorites." Our Paris correspondent tactfully suggests that the Professor's methods might be unobtrusively employed to ascertain the exact juvenility of lady listeners who are averse to supplying the information on the new French licence forms.

A Station Comes Back

OWING to the tremendous public outcry which followed the closing of 1ZR, Auckland, one of New Zealand's most popular privately owned broadcasting stations, the Post Office renewed the licence after about a fortnight's silence. According to our Wellington correspondent, the 1ZR Radio Club, which has a membership of 4,000, organised a mass demonstration of protest at the Town Hall. It was disclosed that the licence had been cancelled because of an ambiguous announcement which might have been construed as an advertisement.

Bradford Experimental Radio Society, all of which have been exceptionally active with field days and ordinary meetings. The Bradford Society has met weekly throughout the summer with an average attendance of over fifty.

Societies capable of such vitality in the summer cannot possibly be unsuccessful during the winter, and we hope that their enthusiasm will be amply rewarded when the indoor session begins. There is no better way of keeping in touch with practical wireless matters than by joining the local club and enjoying the freemasonry which exists among all keen radio men.

Secret Transmitter?

MR. WANG FU-SHIIH, a student of Tungchi Engineering University, Shanghai, claims to have invented a portable radio television transmitter capable of sending messages in absolute secrecy, writes our Washington correspondent.

Notes on the

New Monodial Super

Getting the Best Out of the New Superheterodyne

By W. T. COCKING

FULL details of the construction and the initial adjustments of the New Monodial Super have already appeared,¹ and little more need be said about the receiver itself. Since the performance may be greatly affected by such external factors as the aerial system and the loud speaker, however, it is felt that some attention should be devoted to matters of this nature.

The aerial and earth system, although often overlooked in these days of sensitive receivers, is still an essential feature. With the receiver in question the earth is perhaps of less importance than the aerial, for the set is essentially stable and hum-free; nevertheless, it is wise to use as good an earth as possible. The best type of aerial, however, is a matter upon which it is impossible to be dogmatic, for it depends greatly upon local conditions. In cases where the set is used in a district remote from any broadcasting station, it is usually best to employ an efficient aerial, even although the sensitivity is sufficient to give distant reception with a poor collector, for the best reception of very weak stations and the full benefit

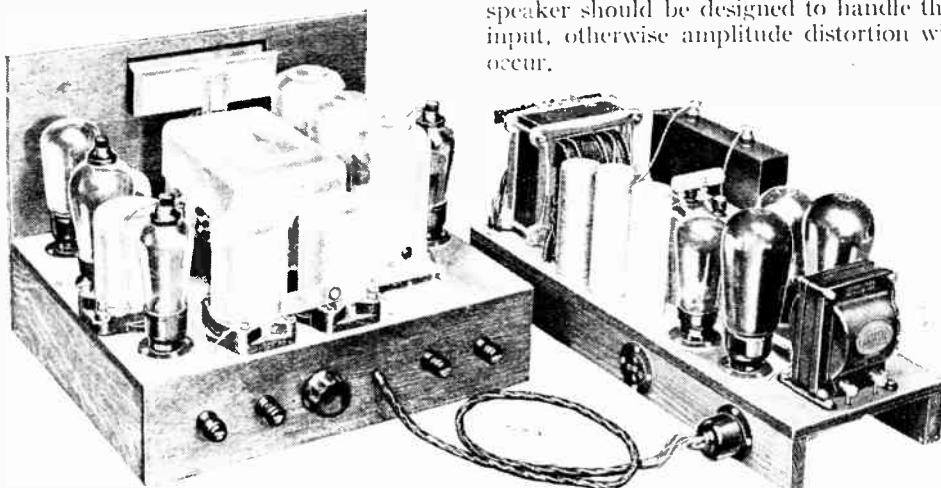
valve or the first detector being overloaded. Any overloading, of course, would result in the production of whistles. The limitation to the size of the aerial may be either physical or electrical; the latter is often the more convenient, and it can take the form of a small condenser connected in series with the aerial lead to the set. The optimum value should be found by trial, since it will depend upon the

NO receiver will give of its best unless the associated apparatus is suitable. In this article, hints are given on choosing a loudspeaker for the New Monodial Super and on installing it to the best advantage.

actual size of the aerial and upon its nearness to the local station, but a capacity of some 0.0002 mfd. will often be suitable. It should be emphasised that such limitation of the aerial size is only rarely necessary, for the receiver will handle an unusually large signal input

before overloading occurs.

The loud speaker is the next matter deserving attention, for upon it largely depends the quality of reproduction which is secured. In itself, the receiver gives an overall response which is substantially level up to 7,000 cycles, and if the full benefit of this is to be obtained it is obvious that the speaker should give a similar response. Moreover, since the maximum output is about 6 watts, the speaker should be designed to handle this input, otherwise amplitude distortion will occur.

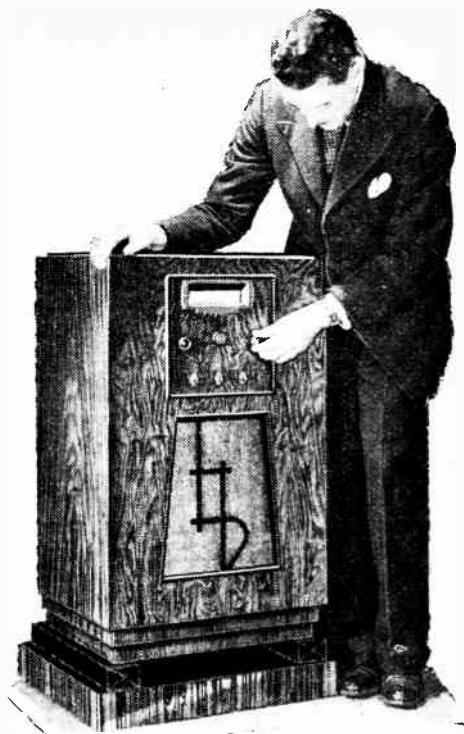


The push-pull output stage, together with the mains and smoothing equipment, are built as a separate unit from the receiver.

of A.V.C. in counteracting fading will then be secured.

If the set be used in the shadow of a local station, however, it is a wise plan to limit the size of the aerial in order to avoid any possibility of either the H.F.

Dual-matched pairs offer themselves as one type capable of giving a satisfactory performance. In this arrangement, two similar, but not identical, speakers are used, and their natural resonances are arranged to occur at slightly differing frequencies. As a result, the power handling capacity is more than double that of



The New Monodial Super housed in a C.A.C. burr-walnut cabinet.

a single similar speaker, and a good dual pair will usually handle 5 to 6 watts comfortably. Furthermore, by the staggering of resonances, the frequency response curve is smoothed out so that the audible effect of resonances is largely eliminated.

Dual speakers are usually obtainable with field resistances of 2,500 ohms per speaker, so that a pair of fields connected in parallel is directly applicable for energisation from the power unit, which has, in fact, been designed with this point in view. Many suitable types are available, and the products of firms such as Celestion, Magnavox, and British Rola are all worthy of examination.

Single Speaker Types

It is sometimes difficult to fit dual speakers into the conventional type of cabinet, however, and it is fortunate, therefore, that their use is by no means an essential factor to the attainment of a high standard of quality. Many of the larger type of single moving-coil speakers are designed to handle an input of 6 watts, and are capable of an entirely satisfactory performance. Speakers of this type usually have a fairly large diameter cone with a very free mounting, so that a large amplitude of vibration is possible, and the field energisation required is often up to 20 watts.

One very well-known speaker which falls into this category is the B.T.H. R.K. Senior, and it is rated to handle 5 watts; its speech coil impedance is 15 ohms, so that the output transformer, about which more later, should have a ratio of 25.8-1, or with sufficient accuracy, 25-1. Unfortunately, the field resistance of the standard model is 5,000 ohms, so that it is not directly applicable to energisation from the power unit. It could be used with a separate source of field current, however,

¹ The Wireless World, July 21st and 28th, 1933.

New Monodial Super.—

or the field could be rewound to a resistance of 1,250 ohms.

Another specimen of this class is the Ferranti M.I model, for this is rated to handle 6.5 watts; it has a speech coil impedance of 20 ohms, so that here the transformer ratio should be 22.5-1. This particular speaker is a permanent magnet type, so that no energisation difficulties arise; when using it, however, it is necessary to fit a 30H., 1,250 ohms, 120 ma. choke to the power unit.

Guarding Against Resonances

In perhaps the majority of cases the speaker will be fitted into a cabinet instead of being mounted on a baffle board, and if boominess is to be avoided it is necessary to guard against box resonance. Although it is possible so to adjust matters that box resonance occurs at a frequency at which the speaker response is deficient, and so actually improves the final result, this requires a high degree of skill. In general, therefore, it is wise to content oneself with choosing a wide and shallow, rather than a narrow and deep, cabinet, and if any trace of box resonance should be found, it may often be removed by providing a lining of acoustically dead material. The use of slag wool packing in the well-known manner is also beneficial.

If the receiver be mounted in the same cabinet as the speaker, a further point to guard against is acoustic reaction. This rarely occurs in connection with the valves in a modern set, but usually to the plates of the variable condenser, and, even if it is not present in sufficient intensity to set up a sustained howl, it may cause a low-frequency resonance similar in its audible effect to box resonance. Fortunately, the cure is simple, and consists merely in mounting the whole receiver chassis on blocks of sponge rubber so that it can float freely.

These questions of box resonance and acoustic reaction are of considerable importance, as is also the low-frequency resonance of the speaker, for they are the

usual cause of boomy reproduction. Although it is not difficult to reduce them to small proportions, in extreme cases a slight modification to the set might become advisable. Where such resonances are found, therefore, it is useful to note that the bass amplification may be reduced slightly by the simple expedient of fitting a 2-mfd. second detector anode circuit decoupling condenser instead of the 1-mfd. condenser specified. In the other case, where the bass is deficient through the use of a speaker with a poor low-frequency response or a small baffle, the bass can be increased by decreasing the capacity of this condenser; 0.5 mfd. to 0.25 mfd. is then recommended. It should be emphasised that the normal value of 1 mfd. is right for normal conditions as to speaker and cabinet, and it is actually intended that the receiver be included in the same cabinet as the speaker, so that it is unlikely that any difficulty would be experienced. The remarks in this article are based chiefly upon abnormal circumstances, in order to point out the path which must then be followed for the attainment of normal results.

In conclusion, a word about output transformers is not out of place. A push-pull transformer with a primary inductance of some 60h., a low D.C. resistance, a power rating of 6 watts, and a ratio depending on the speaker, is necessary. In

some cases suitable types of transformer are supplied with the speaker, but in others a separate component must be obtained. Unfortunately, there are not many types available with the requisite



A 6.5 watts permanent-magnet speaker—the Ferranti M.I.

primary inductance and power rating which have also a good characteristic at high frequencies. It is hoped, therefore, to publish constructional details of a transformer specially designed for use with this receiver in an early issue of *The Wireless World*.

A NEW AUTOMATIC GRAMOPHONE



The Automatic Gramophone Company's latest record changer plays both sides of each record before rejection.

Simplicity and Reliability
Combined in an
Ingenuous Design

above the level of the guiding rails where it is clamped diametrically between rubber pads, turned through 180 degrees and again lowered to the turntable. After playing the second side

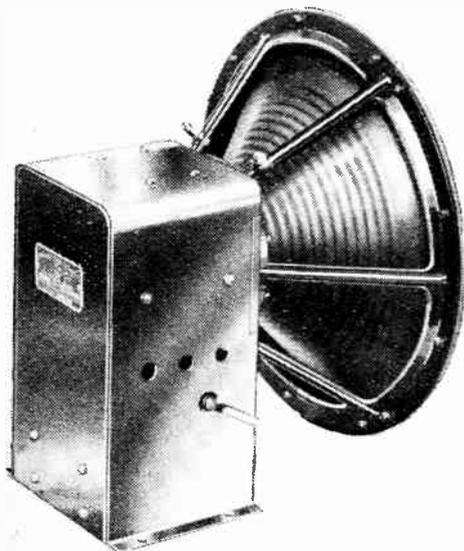
the disc is rejected through a slot into a container underneath the record magazine.

We were particularly impressed with the smooth manner in which the whole operation is carried out; the record is lowered gently into the "used" compartment and not dropped. The time taken in turning over the record was 20 seconds, but we understand that in the production models this will be reduced to about 10 seconds.

A complete radio-gramophone incorporating a seven-valve superheterodyne in conjunction with the record changer is now available at 60 guineas, and the changer mechanism will also be sold separately, the price having been provisionally fixed at 12 guineas. At the moment the instrument is designed to take 10-inch records which statistics show to be the favourite size with the public and which are selling at the present time in large numbers, but designs are now in hand for a model which will handle alternately 10-inch or 12-inch records.

THE established gramophone enthusiast with a large stock of the older type of recordings in which each record of a symphony must be turned over in order to maintain the correct sequence has not been so well catered for by manufacturers of record changing devices, and it is gratifying to learn that a new machine is now in production which performs this function automatically and reliably.

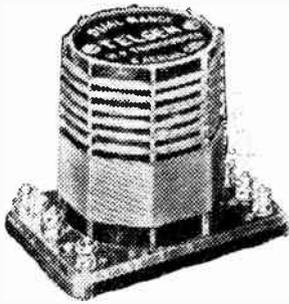
The new design has been evolved and is made by The Automatic Gramophone Co., 8, Imperial Arcade, Western Road, Brighton, and is extraordinarily light and compact having regard to the complicated function it is called upon to perform. The records are stacked in a magazine at the left of the motor board and are fed along parallel guides to a position immediately above the turntable to which they are lowered by a flange rod passing through the hollow spindle. After playing one side the same rod lifts the record to a point just



A well-known large cone speaker—the B.T.H. R.K. Senior.

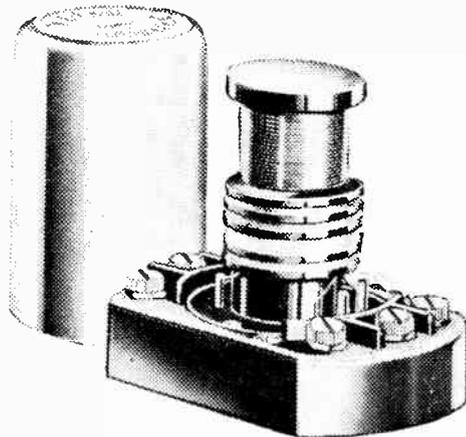
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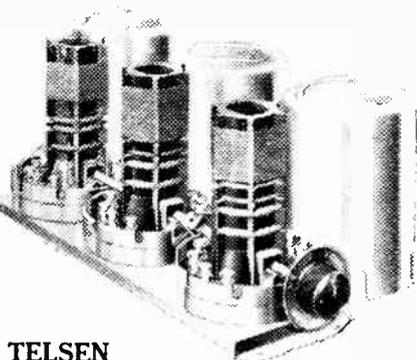
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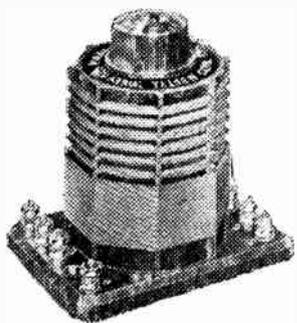


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SUPER-HET.
COILS (TYPE No. S 330)**

For Superhets which do not employ band-pass tuning in their pre-detector H.F. stages. Mechanical construction and wave-change switch assembly almost identical with standard Telsen Screened Coils Price **21/6**



**TELSEN
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AND OSCILLATOR COIL UNIT**
Comprises the Band-Pass Coils and Oscillator Coil combined into a single compact unit. All wave change switches are ganged, with single knob control. Ideal for any Superheterodyne circuit. Price **21/6**



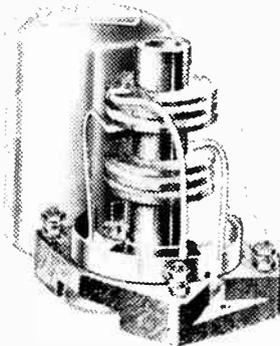
**TELSEN
H.F. TRANSFORMER
COIL.**

May be used for H.F. amplification with Screened Grid Valve, either as an H.F. Transformer, or, alternatively as a tuned grid or tuned anode coil. It also makes a highly efficient Aerial Coil where the adjustable selectivity feature is not required. Price **4/6**

TELSEN IRON-CORED SCREENED COILS

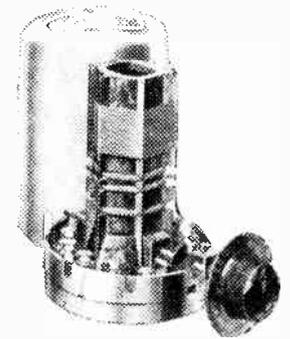
The result of extensive research, these Coils employ an iron-dust core, achieving greatly reduced size, with considerably higher efficiency than that of the majority of air-cored coils. Magnification and selectivity are correspondingly improved, the metal screening also preventing interaction. For use either as aerial tuning coils or H.F. transformers, a reaction winding being included.

No. W.349 Single Coil	Price 8/6
No. W.422 Twin Matched Coils	17/-
No. W.423 Triple Matched Coils	25/6



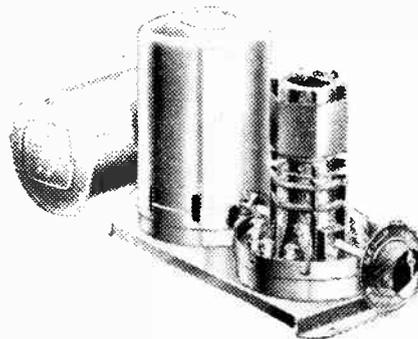
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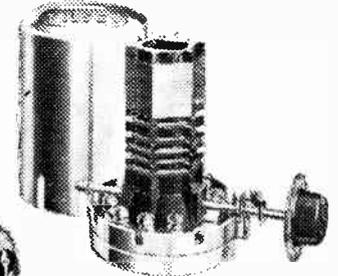
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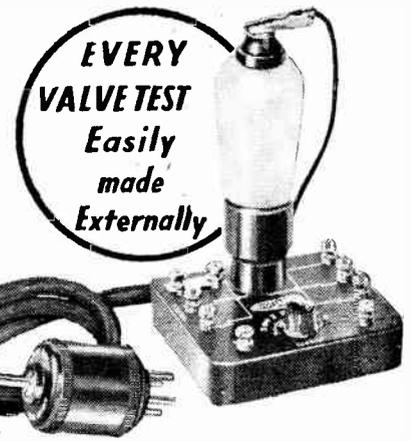
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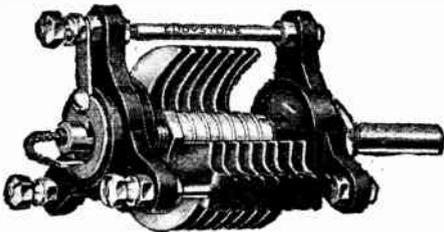
For those wishing to make their own testing equipment, the patent AvoDapter Convertible 4 and 5 pin plug with a six-way lead is supplied separately at 7/6.

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SCIENTIFIC S.W. CONDENSER

A new "EDDYSTONE" production with special Isolex endplates, soldered brass vanes, a screened and insulated non-inductive pigtail and ideal for all short wave use.

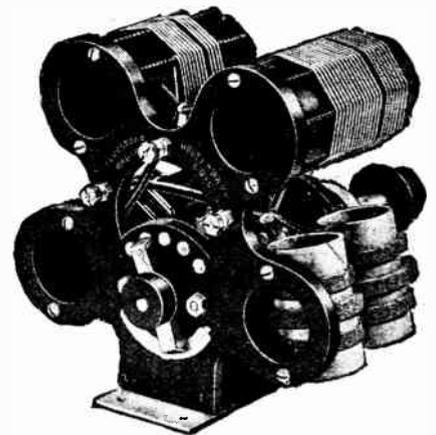
35 mmfd.	6/-
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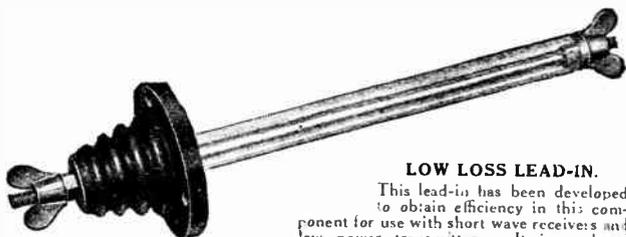
FREQUENTITE SHORT WAVE H.F. CHOKE.

This choke is wound on a special Frequentite hollow former and consists of four small honeycomb coils spaced apart so that the self-capacity is exceedingly low. PRICE 2/9.



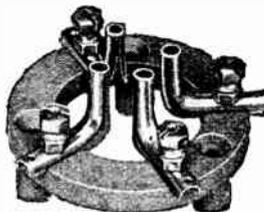
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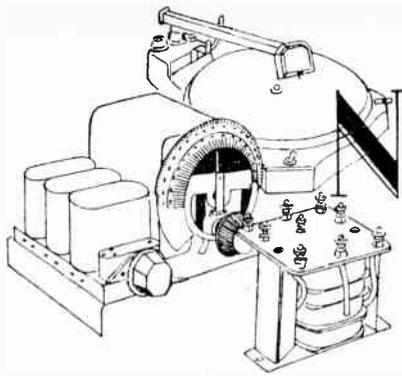
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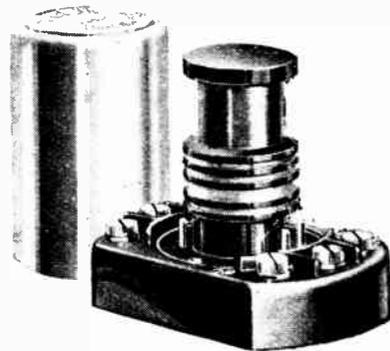
NEW COMPONENTS AND ACCESSORIES

A Wide Choice and Some Interesting Innovations

THE general improvement in the design of components shown at Olympia would in itself constitute a very profitable year's work. Yet when to this is added the latest developments in tuning coils and the establishment of a new output system for battery receivers the total sum of the year's progress might well be regarded with no little satisfaction.

New developments invariably call for special components, and the two cases cited are no exception to the rule. Hitherto coils for use in high frequency circuits have been of the air-cored type, and while this style will doubtlessly continue to be employed for many purposes, the latest models, in which a magnetic core of high permeability material is used, are likely to prove the more popular for the coming season's receivers. For not only are they more compact, but, in general, show a marked improvement in efficiency over the orthodox pattern, and a receiver fitted

a substantially closed core for the medium-wave winding and an open one for the long-wave section. They are, of course,



Telsen iron cored coil.

entirely screened and embody a wave-change switch.

Colvern and Igranic both favour a closed magnetic circuit for their Ferrocart and Igranicor coils respectively. The Ferrocart range is particularly extensive, there being a coil for every circuit arrangement, or for use wherever the well-known "K" type were employed formerly. In addition, a new miniature style has now appeared which, although requiring less space than the earlier pattern, possesses similar characteristics and the same inductance values. Superheterodyne I.F. transformers fitted with the new Ferrocart cores are now available.

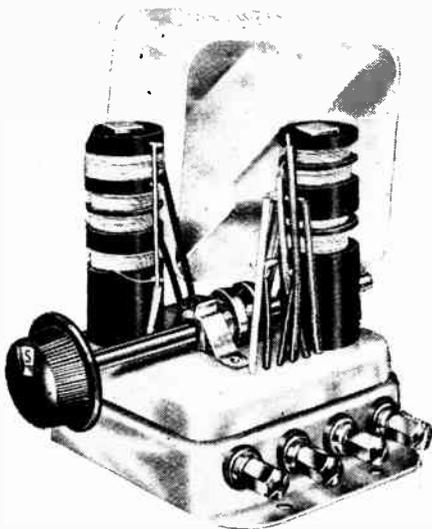
The Igranic coils are wound on a sectionalised bobbin assembled on "E" and "I" laminations consisting of a finely powdered iron mixed with an insulating material and then moulded under heat to the required shape. There are five different coils in this series, including one for the short wavebands.

Examples of coils with open magnetic circuits are the Telsen and the Varley models. Here, again, a wide variety of

Radio Instruments, in their Nicrion coils, make use of a divided core with provision for varying their relative positions, and as this alters the permeability of the magnetic circuit it offers a simple adjustment of inductance, so that coils may be accurately matched under working conditions, or, if a combination of air and iron cored coils is used in the same circuit the inductance of the latter can be easily aligned with that of the former. Lissen and Sovereign Products also have a range of iron cored coils.

Permeability Tuning

Since variation in the position of the core alters the inductance, and, therefore the wavelength, to which the circuit is tuned, it follows that a variable condenser might be dispensed with and tuning effected by this means. Sovereign Products have introduced a "Permeability Tuner" embodying this principle, and single as well as ganged-coil models are available covering the medium as well as the long waveband. Varley have for some time been investigating this line of thought, and on their stand they have an experimental model which is also described as a "Permeability Tuner." Practical



Wearite Nucleon Junior coil.

with the new coils possesses better selectivity and higher sensitivity than one of equivalent style using the familiar small-diameter air-cored coils.

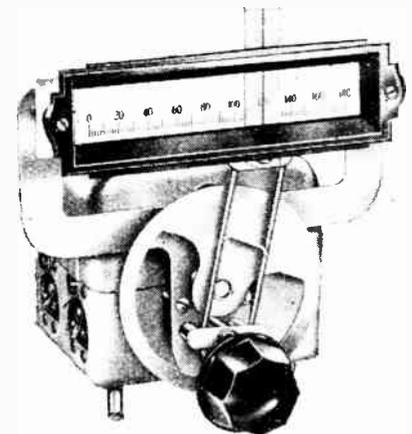
Iron Cored H.F. Coils

Opinions seem to be divided as to which is the most suitable form for the core, since some manufacturers favour a closed magnetic circuit, while others prefer the open type. Wright and Weaire, however, adopt both styles in their range of Nucleon coils, the Junior models have open magnetic circuits, but the Senior coils are fitted with



Igranicor band-pass coil unit.

coils with different windings are available, either as separate units or assembled on sub-panels containing any combination of coils complete with ganged switch.



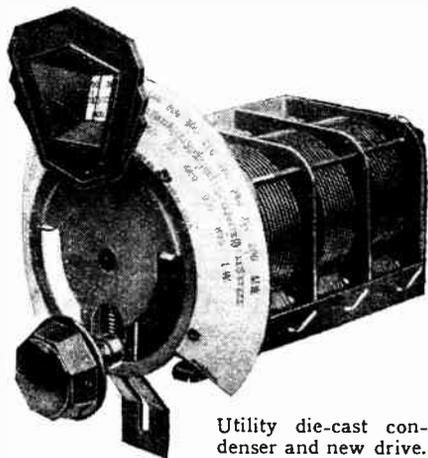
J.B. Nugang condenser and full vision scale.

tuning devices on these lines will undoubtedly be further developed.

The principal changes effected in the design of gang condensers have, in the main, been directed towards a reduction in size. Incidentally, the workmanship is better, matching of the several sections has attained a satisfactorily high standard, and prices are a shade lower, so that on the whole one obtains better value for money this year. A good example of modern practice in condenser design is

New Components and Accessories—

found in the Polar Star Minor series, a new range of gang condensers just introduced. Baseboard space is saved by assembling the condensers with the stator vanes vertical; this has the additional advantage that it brings the small trimmers on top and so readily accessible. Stout



Utility die-cast condenser and new drive.

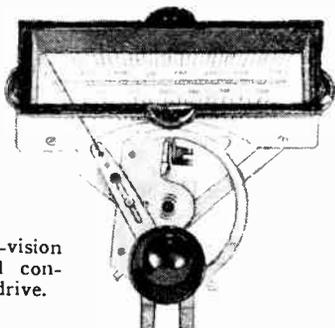
steel frames, rigid construction and a semi-flexible mounting, coupled with close matching of the sections, constitute the main features of this design. The range includes straight and superheterodyne models.

Jackson Bros.' Nugang and Superhet-gang condensers remain substantially unchanged but for a few minor modifications. The principal matter of interest is the provision of alternative superheterodyne types; these are now available with the oscillator section located either at the front or at the rear of the condenser.

Smaller Gang Condensers

British Radiophone have extended their range and introduced a series of miniature gang condensers for straight and superhet circuits. Constructionally these follow similar lines to the type they fit to their Radiopaks, the stator sections being vertical, so conserving baseboard space and bringing the trimmers to the top. The new Utility die-cast condensers are another example of compactness and sound design. Superhet models are also featured.

That an agreement is being reached in the design of superhet condensers is now apparent, for British Radiophone, J.B. and Polar have designed their respective models for use with coils of the same



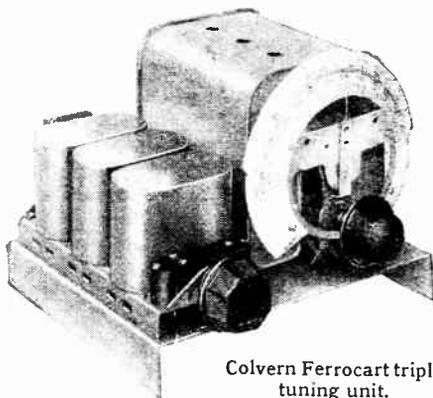
Polar full-vision horizontal condenser drive.

inductance. For the pre-selector circuits coils of 157 mH. and 1,900 mH. for the medium and long wavebands are required,

while for the oscillator the inductance values are given as 126.5 mH. and 920 mH. respectively. I.F. amplifiers of 110 kc/s are specified, and this applies, also, to the Utility models. Further examples of up-to-date gang condensers are the Ferranti and Ormond makes.

Much thought has been given to the design of condenser dials this year, not only with the desire to improve them mechanically, but also from the æsthetic point of view. The fixed scale with moving pointer type is rapidly gaining favour, and all the leading condenser makers now include several models in their respective ranges, and in many cases wavelength calibrated scales are adopted.

The modern practice of tuning simultaneously all H.F. circuits, and in superhets also the oscillator, demands no little skill and considerable patience for the initial adjustment of matching and tracking, and incorrect alignment of any one of the several circuits will lead to disappointing results. In order to relieve the constructor of as much of this tedious work as practical considerations allow, British Radiophone last year introduced their



Colvern Ferrocart triple tuning unit.

Radiopak, a unit embodying aerial and H.F. circuits matched and correctly adjusted, this being carried out with the aid of special test apparatus which ensured an order of accuracy not easily attained by the average set builder.

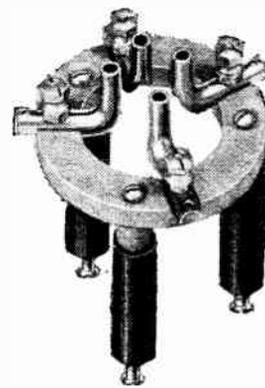
This year sees an extension of the Radiopak principle, and several new models for straight, as well as for superheterodyne receivers, have been introduced. A unit on somewhat similar lines has been developed by Igranic. Known as the Igranipak, it takes the form of a complete two-H.F. and Det. unit, and embodies, also, the valve holders and all the essential components for the input portion of the set.

Short-wave Developments

The Sound Sales Straight to Superhet Converter might be included under the same heading, for it consists of a frequency changing unit utilising an H.F. Pentode in the dual rôle of oscillator and detector, and is intended for the conversion of a straight set to a superheterodyne for use on the normal broadcast wavebands. Colvern, likewise, have several coil and condenser units assembled on small metal sub-panels for embodying in receivers.

The requirements of the short-wave listener are well catered for this year, and

in particular by Stratton and Co., the short-wave specialists and makers of Eddy-

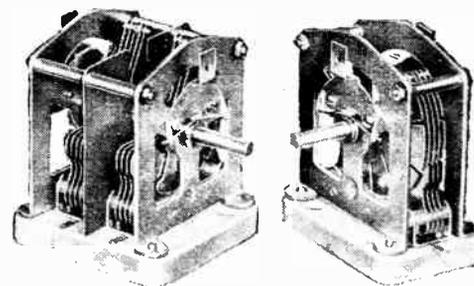


Eddystone ultra-short-wave valve holder.

stone components. A new condenser, styled the Scientific S.W. model, has been developed, due attention being given to low-loss construction and noiseless operation. This style is made in sizes of from 35 m-mfds. to 150 m-mfds., so covering the ultra-short as well as the normal short-wave bands. A special ultra-short wave valve holder raised on pillars is another new Eddystone product, these developments being indicative of the interest now being shown in 5-metre work.

British Radiophone and Polar have each introduced short wave condensers, and Jackson Bros. a new slow motion dial having a finely engraved scale with 200 divisions, a hair line indicator and twin ratios of 8:1 and 150:1. Another example is the Igranic Indigraph Vernier knob and dial which in its modified form gives reduction drives of 8:1 and 500:1, the vernier drive now being brought in or put out of action by a simple cam mechanism. Ormond, also, have a short-wave condenser embodying a 50:1 reduction drive.

The popularity of the Class "B" output stage was a foregone conclusion as soon as details of the arrangement became public. That it has now definitely established itself is exemplified by the exceptionally large number of special components shown this year. Since it is a



British Radiophone short-wave condensers.

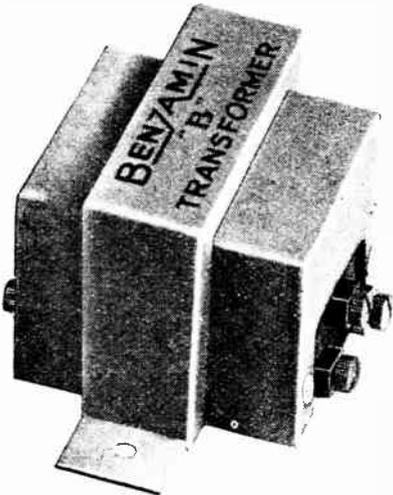
push-pull arrangement an input transformer having a centre-tapped secondary is required, but, unlike the usual intervalve coupling unit of this type, the particular nature of the system calls for a step-down ratio between primary and secondary, but with the secondary winding of low D.C. resistance. Multitone Electric were the pioneers of this class of component, and their present range is very extensive indeed. In order that the one component may serve for several different combinations of valves the majority of driver transformers offer the choice of two or more ratios. Typical examples of dual-

New Components and Accessories—

range models, giving a 2:1 and a 3:1 step-down each half, are the Benjamin, Bulgin, Igranic, Sound Sales, Telsen and Varley makes. Still others, such as the Amplion, Sovereign and Wearite, for example, provide several alternative ratios, while we find in some cases that a range of single ratio models are made. British Radiophone, Multitone and Ferranti being the principal firms interested in this type.

Class "B" Converter Units

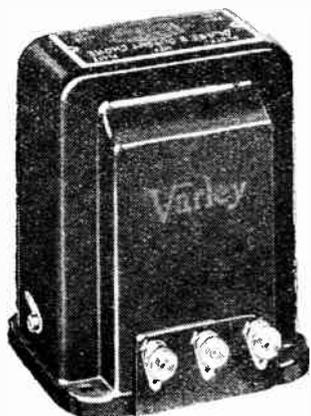
Since correct matching between the output valve and the loud speaker is a very necessary condition if the full benefit



Benjamin Class "B" driver transformer.

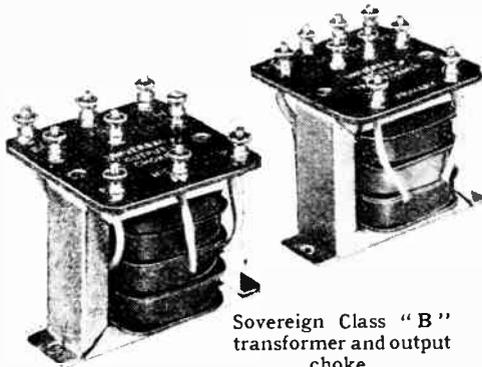
conferred by this arrangement is to be obtained, either a special output transformer or a tapped choke of high inductance must be used. Consequently, every manufacturer of driver transformers includes in his range either the one or the other. The special chokes are provided with several tappings thereby giving a wide choice of ratios and enabling practically every make of Class "B" valve to be satisfactorily matched to a standard model loud speaker.

This new system of power amplification will appeal to all users of battery sets, for an existing receiver can so easily be converted. The original output stage becomes the driver valve and all the additional components can be assembled in a separate unit used external to the set, and this fact has not escaped the notice of the



Varley Class "B" output choke.

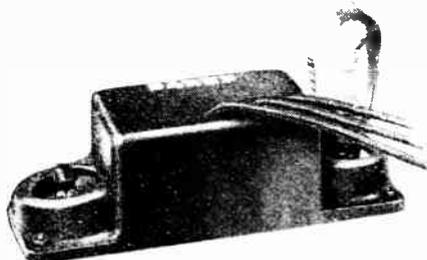
manufacturers, for several quite inexpensive units are now available. Prices range from about 30s. to 70s., according to the power handling capabilities of the unit



Sovereign Class "B" transformer and output choke.

and typical examples are the Baker's, Ferranti, Multitone, Sono-chord, Sound Sales and W.B. models.

The progress made in the design of the dry-cell type H.T. battery is unfortunately not easily detected since it takes the form mainly of improvements in manufacture directed towards lengthening the useful life of the battery by reducing the internal resistance of the cells. What is apparent, however, are the many new models introduced for use with Class "B" receivers. While, in the main, these could be classified as double, or extra, capacity sizes, for they are required to withstand an average discharge of the order of 12 mA, the instantaneous demand often exceeds this figure by an appreciable amount. It says much for the manufacturing processes of our battery makers that during the development stages of Q.P.P. and Class "B" the normal dry battery of the time



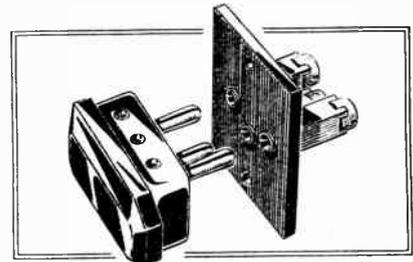
Baker's Class "B" converter.

successfully withstood the demands made on it so that with the latest types, as exemplified by the Anodex, C.A.V., Drydex, Ever-Ready, G.E.C., Grosvenor, Hellesen, Oldham, Pertrix, Siemens, Sparta and Vulco batteries, entire satisfaction can be assured. As an alternative to the dry-cell type of battery there is the H.T. accumulator which, like its contemporary, has been the subject of improvement, but, here again, only detailed modifications have been found necessary to bring them right up to date. They will find favour mainly where heavy discharges are required. Examples of the high standard now attained in the manufacture of this type of H.T. supply are the C.A.V., Dagenite, Exide, Oldham, and Smith's products.

These firms are responsible, also, for providing L.T. accumulators for the filament supply. Considerable advance has been made in the design of the "Mass"

type plate, a style of construction which permits of a long and slow discharge at a very low rate without sulphation trouble being encountered.

Quite a new development, however, is the Block battery, now available in H.T. as well as in L.T. types. The usual lead grid is omitted and only the active material employed, thereby resulting in a marked reduction in size and weight for a battery of given voltage and capacity. The Milnes H.T. accumulator, although not a new development, is now considerably improved. It makes use of nickel-cadmium plates and a non-corrosive alkaline solution, which combination is capable of withstanding rough usage



Belling-Lee Class "B" three-point connector.

without suffering damage. A special series-parallel switch is fitted so that the battery may be re-charged from an L.T. accumulator.

Mains Components

This year there is a marked increase in the number of "stripped" mains transformers and chokes available to the home constructor. This type, sometimes referred to as the manufacturers' type, is supplied without terminals, the ends of the windings being left sufficiently long to join to other components in the set, or in the power pack. This makes for a much cleaner appearance of the set, for the transformer is usually mounted so that all the leads pass directly through to the underside of the baseboard. A special feature is made of this type by Bulgin, while a further example is the Sound Sales ranges.

Electrostatic screening of the primary and totally enclosed windings are two other features that have been further



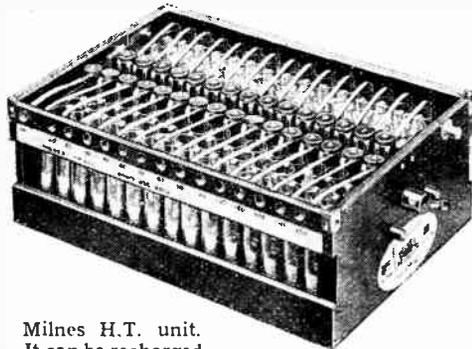
Siemens 120-volt H.T. battery for Class "B" use.

developed this year; examples of up-to-date practice are the B.S.R., Davenset, Ferranti, Godwinex, Igranic, R.I., Wearite, and Varley models, in addition to several other makes.

New Components and Accessories—

On the whole, battery eliminators take much the same form as hitherto; compact models no larger than an average H.T. battery and easily stowed away in a portable set still predominate. J. Dyson have re-designed their range of Godwinex units, and H. Clarke & Co. (M/cr.), Ltd., have introduced several new Atlas models, of which some are designed especially for use with Q.P.P. and Class "B" receivers.

A new range of A.C. and D.C. models has been introduced by Telsen, and Ferranti have some improved types also. As in the past, many of these models incorporate small trickle chargers for the L.T. battery. Bulphone Radio, Ekco,

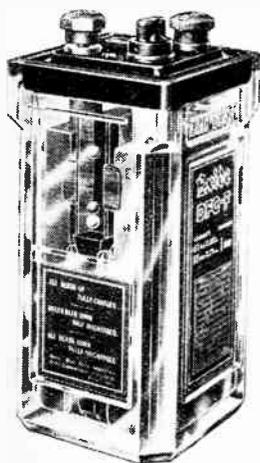


Milnes H.T. unit.
It can be recharged
from the L.T. battery.

Mains Power Radio and Regentone are further examples of H.T. units embodying the most up-to-date features.

Battery Charging

There are many listeners whose sole interest in radio is its entertainment value, and the technicalities of the science have always been and will for ever remain a mystery. However, there is nothing unusual in this, for to enjoy to the full many of the pleasures of life it is quite unnecessary to know why and how those things that give us pleasure are brought about. Consequently the upkeep and maintenance of the wireless apparatus is left to those who have made this their particular business in life. Battery charging comes within this category, for in recent years battery service stations have opened up

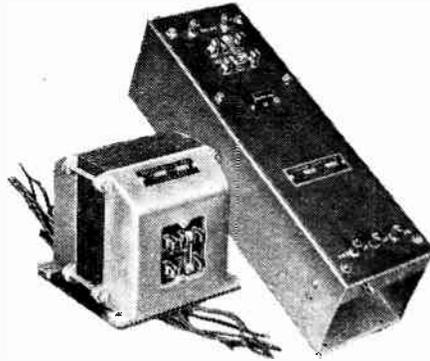


Exide series "D" mass-type cell with gravity floats.

in every locality large and small. Equipment for this purpose has, however, developed rapidly, and to-day there is a very large selection of charging sets designed especially for the service engineer. The Newton range is a particularly fine example of modern practice, for it includes models of from six to fifty amperes output and arranged so

that several different sizes of batteries can be handled by the one set.

Partridge and Wilson have further developed their Davenset series, and now have models to meet all requirements,



Sound Sales mains transformer and Westkit eliminator kit.

while Crypto have introduced a new range with valve rectifiers, and one styled the "Karadio" charger for home use, which is suitable for both wireless and car starter battery charging. It utilises a valve rectifier and adjusts itself automatically for 2-, 4-, 6-, and 12-volt batteries. Mains Power Radio have developed a range of battery service station charging sets also.

Home charging of L.T. accumulators is being catered for more extensively than hitherto, for Heyberd have introduced a range of units using Philips valve rectifiers which handle car and radio batteries, while a further example is the Sound Sales model.



B.S.R. fully screened mains transformer.

Westinghouse metal rectifiers have received their annual overhaul, with the result that the H.T.6 and H.T.7 styles are now dropped and replaced by one model, the H.T.12. This gives an output of 30 mA. at 200 volts, and is more in keeping with present-day requirements. There is, also, an H.T.13 model having particularly good regulation, which has been introduced for use where Q.P.P. or Class "B" amplification is employed.

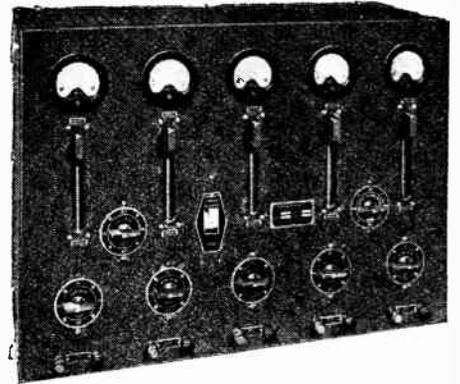
The improvement effected in modern receivers is not without its price, for with increased sensitivity trouble is now being experienced from electrical interference to a far greater extent than ever before. Whilst home domestic appliances offer little difficulty in their treatment, since condensers suitably disposed will effectively silence them, the interference produced

from similar apparatus elsewhere cannot always be dealt with quite so easily.

Interference of this nature is either brought in by the mains or picked up by the aerial. In the case of the former a mains filter will generally suffice to eliminate the trouble, and several very useful units are now available, the principal firms making them being Belling and Lee, British Blue Spot, Bulgin, and T.C.C.

Interference Suppressors

So far as the second mentioned cause of the trouble is concerned, it is now generally accepted that only the vertical portion of the aerial comes within the field of interference, and that by the use of a screened down-lead almost entire immunity can be ensured. Typical examples of interference

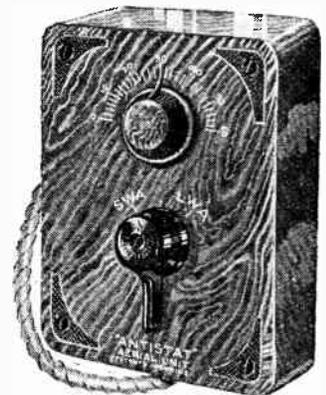


Davenset type M.G.C.5 five-circuit battery charger.

suppressors of this type are the British Radiophone Receptu Anti-Static Down-lead, the Lamplugh Silver Ghost Antistat aerial unit, and the Bifco Static cut-out, made by the Osduie Manufacturing Co.

The small tubular pattern fixed condenser with wire ends for suspending in the wiring has been further developed this year, for with sets being condensed into still smaller compass there is naturally a demand for any component not requiring baseboard space. In this style there are now a number of low-voltage dry electrolytic condensers in capacities up to 50 mfd. or so, and suitable for grid circuit decoupling. Dubilier, Telsen, and T.C.C. have extended their respective ranges to include this pattern.

The cylindrical type electrolytic smoothing condenser maintains its well-merited popularity, and while not materially dif-

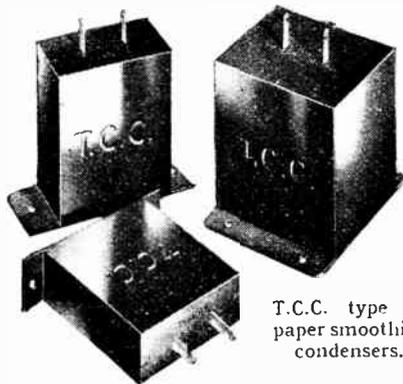


Lamplugh Antistat aerial unit.

New Components and Accessories—

ferent in general form has, in most cases, been subject to sundry minor improvements. Telsen now have a range in this pattern.

Paper dielectric smoothing condensers

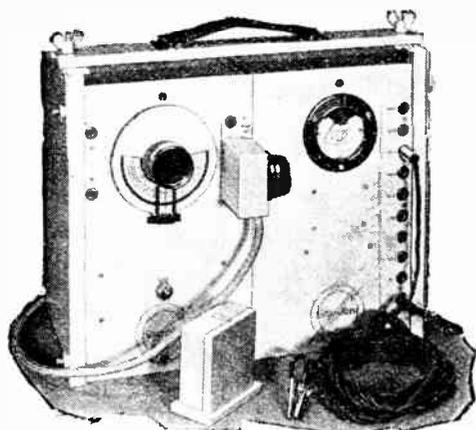


T.C.C. type 87 paper smoothing condensers.

have been improved by all the makers of this style; working voltages are higher, without material increase in price, and a larger margin of safety is allowed. A typical example is the T.C.C. type 87, which, rated at 450 volts D.C. working, will withstand surges up to 650 volts, and they are tested at 1,500 volts D.C.

Set Testing Apparatus

Quite a casual examination of the modern receiver as shown at Olympia suffices to show that it is far from being a simple, straightforward piece of apparatus, and should it fail to function in a satisfactory manner the non-technical user will



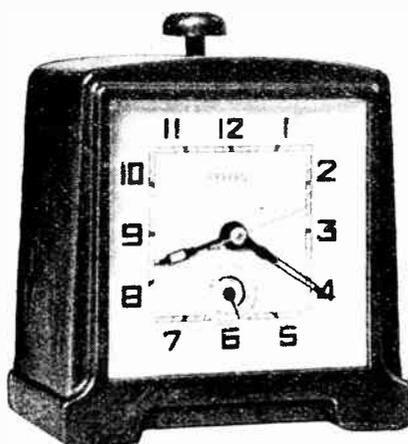
Standard Telephones radio service test set in portable form.

soon find himself in a quandary if he endeavours to assume the mantle of the service engineer. Servicing has now become a highly technical profession, and can be undertaken only by those adequately equipped for the purpose. As a consequence the requirements of the service engineer are being catered for more fully this year than ever in the past. Special apparatus is a necessity, and no longer a luxury, for the accurate and rapid diagnosis of faults and failures occasionally encountered in present-day sets. That they are few and far between is to the credit of our manufacturers, but when trouble is encountered it is usually a matter for the expert to rectify. So Standard Telephones and Cables, Ltd., have intro-

duced a range of radio service test sets, made up in separate units, which can be acquired from time to time, and so eventually building up a complete equipment for overhauling and servicing the most complicated receiver yet developed for broadcast use.

These comprise a modulated oscillator, output meter, and attenuators, each unit separate and self-contained. The first would suffice for everyday tests and adjustments; with the output meter added, visual indications and measurements replace aural tests, and with the help of a calibrated attenuator overall curves of the receiver can be taken. And these units are quite reasonable in price.

The Radiolab complete valve and test set is another example of portable equipment for the service man, while for the expert as well as for the amateur experimenter is the range of Avonmeters, to



Ferranti electric alarm clock.

which has now been added the Avonminor, an inexpensive version of the larger instruments. Then, of course, there is the exceptionally wide range of Ferranti meters. Incidentally, the last named firm have considerably extended their range of electric clocks, and one of the latest models now embodies an alarm mechanism.

Gramophone Pick-ups.

It is a tribute to the general excellence of modern pick-up design that very few changes have been found necessary in the



New R.I. Auto-Parafeed transformer for parallel feed auto-coupling.

established makes exhibited at last year's show. When the electrical reproduction of gramophone records first became popu-

lar a number of pick-ups made their appearance which contained the essential magnet, armature and pick-up coil, but of which very little was known regarding the output characteristic. When constant frequency test records became generally available all these crude attempts at design died a natural death,



The Bowyer-Lowe "Mark IV" pick-up is supplied in two types with different frequency characteristics.

and it is safe to say that in all the makes now on the market the frequency characteristic conforms to the fundamental principles of design which are accepted as giving the best possible quality of reproduction from records.

That the output characteristic is completely under control is exemplified in the latest Bowyer-Lowe Mark IV pick-up. This has a frequency range from 25 to 6,000 cycles and an average output of the order of 1 volt R.M.S. In the standard model there is a pronounced rise of output in the bass to compensate for deficiencies in the average amplifier and loud speaker as well as in recording, but an alternative model can be supplied at the same price in which the bass response is adjusted to give exact compensation for the necessary restriction in amplitude in recording.

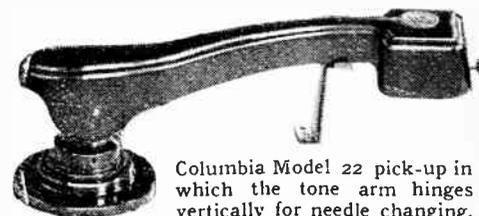
The new Celestion P2 pick-up is another good example of design in relation to commercial requirements. The price is moderate and by careful damping and reduction in the mass of the moving parts



Celestion P2 pick-up and volume control.

record wear has been enormously reduced without in any way affecting the excellence of the frequency characteristic. The self-contained volume control is typical of the modern tendency towards neatness of exterior appearance.

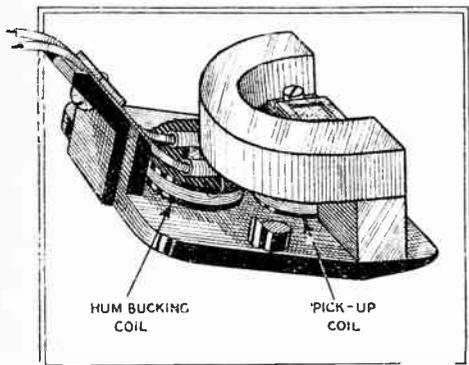
Most readers will be familiar with the principle of hum-bucking in moving coil loud speakers in which a low resistance coil coupled to the field winding and connected in series with the moving coil is used to neutralise any ripple superimposed on the magnetic flux. A similar



Columbia Model 22 pick-up in which the tone arm hinges vertically for needle changing.

New Components and Accessories—

principle has been applied in the new Columbia No. 22 pick-up, the object in this case being to overcome interference from the synchronous type of gramophone motor. The hum-bucking coil, which is of similar dimensions to the pick-up coil,



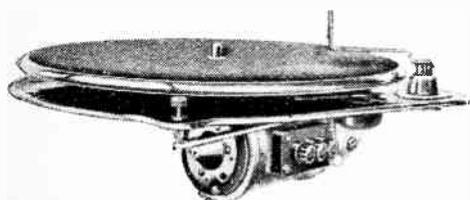
A hum-bucking coil is fitted in the Columbia pick-up to neutralise motor interference.

is mounted close to the latter on the base of the pick-up head, but is not influenced by the fluctuations due to the movement of the needle. Both coils, however, are cut by any stray field arising from the motor and as the coils are connected in opposition any interference from this source is cancelled out.

Many owners of receiving sets who subsequently wish to extend their use to gramophone reproduction are already in possession of portable gramophones of the acoustic type. In order to make use of the existing turntable and motor, Belling-Lee, Ltd. have introduced a special pick-up designed to clip on to the side of the gramophone case. The unit includes a volume control and can be readily detached if it is desired to use the portable in the normal way. The same underlying idea is to be found in the Itonia "Pick-up" portable gramophone, which is provided with interchangeable sound heads for acoustic or electrical reproduction, and is sold complete at the very reasonable price of £3 10s.

Motors and Playing Units

As in the case of pick-ups, the design of the electric gramophone motor would appear to have reached a state of equilibrium in relation to present-day demands.



The new B.T.H. "Truspeed-D.C." gramophone motor.

The high-speed self-starting synchronous motor and the slow-speed induction motor with governor share the honours of supply-

A POCKET OLYMPIA

Next week's issue of *The Wireless World* (dated August 25th) will include a complete illustrated report, prepared by our Technical Staff, of new apparatus shown by each exhibitor at the Olympia Radio Show.

ORDER YOUR COPY NOW.

ing the requirements of those with A.C. mains, while high-speed and slow-speed types are equally popular in the D.C. and universal class.

A revival of interest in battery radio gramophones has created a new demand for clockwork gramophone motors. A complete motor board equipped with a double spring motor, pick-up and volume control has been introduced since the last Show by the Garrard Engineering and Manufacturing Co., Ltd., and makes an



Garrard radio-gramophone conversion unit with double spring clockwork motor.

excellent conversion unit for incorporation with a battery receiver chassis employing the modern types of economical output stage.

A Badge of Service

Wireless League Opens New Campaign

A CAMPAIGN to give the *coup de grâce* to the inexperienced "dabbler" in the radio trade has been initiated by the Wireless League through the reorganisation of the scheme for the registration of approved wireless traders and repairers inaugurated a few years ago by a joint committee of the Radio Society of Great Britain and the Wireless League. The work will in future be continued and extended under the sole auspices of a sub-committee of the League.

Selected service engineers, whose premises, apparatus and personal technical abilities have been approved by a committee of prominent people in the radio world, will be accorded the support of the Wireless League. For example, when a trade service engineer has satisfied the League's certified radio engineer that he can render practical and efficient service, all members



of the Wireless League in his area will be notified and will be recommended to place full confidence in him for all radio service work. He will be entitled to display the League's "service" sign, which, in due course, should become recognised as a badge of status similar to those of the big motor-ing organisations.

It is believed that listeners in general will be glad to take advantage of the scheme, as at present there are few visible guarantees that the average wireless trader is able to tackle the problems which must of necessity arise in providing the public with such a delicate and complicated piece of apparatus as a wireless set.

FOREIGN BROADCAST GUIDE

BEROMÜNSTER

(Switzerland).

Geographical position : 47° 12' N. ; 8° 10' E.
 Approximate air line from London : 480 miles.
 Wavelength : 459.4 m. Frequency : 654 kc/s.
 Power : 60 kW.
 Standard time : Central European (coincides with B.S.T.).

Standard Daily Transmissions.

10.0 B.S.T., sacred service and concerts (Sun.); 12.28, time signal, weather, news; then continuous broadcast until 19.00, time signal, weather, talks; 19.45, main evening programme; 21.30, news, etc., dance music or concert. Usually closes down at about 22.15.

Language : German only.
 Announcers : Man and woman.

Call : *Hallo! Hier Schweizerischer Landessender studio Berne (or) Basle (or) Zurich*, according to the city providing the programme.

Interval signals : The Berne, Basle and Zurich studios each possess a distinctive musical call as under :

BERNE



BASLE



ZURICH



Closes down with good-night greetings in German; Berne usually giving them in dialect: *Guete nacht mitander schlafts alle recht wohl*. The Zurich and Berne studios follow up with their local "signature tunes," the former, *La Re traite*, the latter, *The Berner Marsch*.

Associated transmitters: Basle, 244.1 m. (1,229 kc/s) 0.5 kW.; Berne, 245.9 m. (1,220 kc/s) 0.5 kW.

Radio Amateur Call Book

THE Summer edition of the semi-official list of all known amateur transmitters of the world is now available. The main list, which gives their call signs, names and addresses, occupies nearly 204 closely printed pages and is, we believe, the only complete list of its kind published.

The supplementary information includes a list of the principal short-wave commercial stations of the world, short-wave Broadcasting stations, and those transmitting Press and Weather reports, the International "Q" code, the "R" (Audibility), and the "T" (Tone) codes. Published in Chicago, U.S.A.

Copies may be obtained in Great Britain from Mr. F. T. Carter; Flat A, Gleneagle Mansions, Streatham. Price 6s. 6d., post free, for single copies, or 21s. for the four quarterly issues.

OLYMPIA is open daily from 11 a.m. to 10 p.m till Thursday, 21 AUGUST

BROADCAST BREVITIES

By Our Special Correspondent

Fight in Television Studio

AUGUST 22nd is, I understand, to be referred to as the birthday of B.B.C. television though it marks the first anniversary of regular transmissions. The term "birthday" is considered to suggest a permanency at Broadcasting House which television does not officially possess. But there is no harm in describing August 22nd as a television Boxing Day, as it were, for, as first exclusively forecast in these columns, that day will be the first occasion of a boxing match before the television transmitter.

Two Challengers

Studio Bb will be decked out as a boxing ring in which Archie Sexton (who is challenging Jock McAvoy for the Middleweight title) and Laurie Ruiteri (who is challenging Len Harvey for the Light Heavyweight title) will make history with their fists for ten or fifteen minutes.

The Looker-in

By the way, there are still so few "lookers-in"—their number cannot at the present time exceed 500—that the television artistes sometimes ask before their turn whether they are likely to have an audience or whether, it being a fine evening, he will be out.

A Missed Opportunity at Olympia

The fact that there are no television demonstrations at Olympia is astonishing, for never have the prospects for the art been more rosy than now. At last people are talking television and wondering whether it really is something which can be installed in the ordinary home.

In Days to Come

When television does come, it may mean a respite for the unfortunate people who are doomed to spend their lives as neighbours of loud speaker fiends. When people can look at a programme, they may lose the urge to hear the music at full blast. Until that time I fear there is little hope for the aurally sensitive.

Still the Silly Season

THE silly season has now reached its apogee, and I suppose that from now onwards the news stories will gradually grow more and more sensible.

They are chuckling at Broadcasting House over the journalistic confusion between the outside broadcasts van, which jogs around the Northern seaside resorts (why never the Southern?), and the mobile transmitter which, in spite of its seventy-foot telescopic mast, manages to creep around the country fairly unobtrusively in its search for ideal transmitter sites.

But An Idea Emerges

Stories are now about that the "O.B." van carries a seventy-foot mast, and that the B.B.C. is hoping to get together a fleet of mobile transmitters.

Incidentally, this latter is not such a bad idea. What do you think?

Have You Memorised the Sections?

NOT one listener in a hundred can describe the size and characteristics of Sections A, B, C, D or E of the B.B.C.



(Photo: Duxter, Paris)

DRAMA ON THE ETHER. Although the French broadcasting stations do not adopt the B.B.C.'s multi-studio methods in radio drama, plays are often rendered very effectively. Here is a new photograph of "La Troupe Théâtrale" broadcasting a comedy from Eiffel Tower.

orchestra. One old lady of my acquaintance believes that Section C is so named because it avoids flats and sharps.

Combination X

Is it still too much for the B.B.C. to be good enough to give these sections more suitable designations? If so, then why not be consistent by calling Henry Hall and his Boys Combination X?

The Bach Cantatas

THAT the Bach Cantatas are to be resumed beginning on Sunday, September 17th, is no cause for moaning, especially as the B.B.C. has wisely decided they will be heard on alternate Sundays.

The Cantatas will be given during the 4.50 to 5.30 p.m. period when the disgruntled can tune in an alternative.

The original complaints were perhaps justified because the B.B.C. over-estimated the public demand by broadcasting a Cantata every Sunday.

Ten years ago it might have been prudent to make the Cantata a monthly affair, but public taste has undoubtedly risen in the past few years, and I do not believe that the new arrangement will constitute an overdose.

Politics on the Ether

THE absence of talks during the summer programme period has emphasised their value and the greatly improved standard which they have reached in recent months.

After the glut of so-called "light" music (much of it has been heavy, without being high-brow) listeners will turn with relief to the vigorous talks and debates which are promised us during the coming winter.

Uncensored Politics

One of the most attractive series should be the weekly uncensored political talks, the first of which will be given on October

12th. The speakers will be Mr. Ramsay MacDonald, Mr. Stanley Baldwin, Mr. J. H. Thomas, Major Oliver Stanley, Sir Herbert Samuel, Mr. Walter Runciman, Mr. George Lansbury, Mr. Arthur Greenwood, and Sir Stafford Cripps.

The talks will last for fifteen minutes each, and the speakers will be entirely unfettered. What is equally important is that listeners will be unfettered in the use of the switch.

The Ulster Grand Prix

TOMORROW the International Ulster Grand Prix, the fastest road race in the world, will be described in a broadcast running commentary by Major Vernon Brook and H. W. McMullan. The course is more than twenty miles and consists of ten laps, a total of 205 miles. Major Brook will be stationed at the starting point and Mr. McMullan at Muckamore Corner. National programme listeners will hear the commentary in two sections, the first at 1.45 to 2.45 p.m., and the second, describing the last phase, from 4.30 to 5.15 p.m.

Padded Corners

The Grand Prix course is at Carnaghtie, Co. Antrim, and the race is organised by the Ulster Motor Cycle Club. From the start at the Grand Stand and petrol-filling pits there is a slight downward slope to Nutts cross-roads; then an unpleasant hump-backed bridge at Dundesert; after that straight on to Thorn Cottage, a bad corner turning at less than right-angles. Then a sharp climb to Killead Vicarage.

The next points are Aldergrove Aerodrome, downhill to Greenmount Corner, up to Rectory Corner, with a massive stone wall padded with bedding, in case . . . ! So to Muckamore Corner, acute right-hand turn and into the seven-mile-and-a-half straight down to Clady Corner, the worst of the lot, where the massed spectators leave a bare six-foot passage for the riders.

Problems of Electrical Interference

The Cure is Beyond the Scope of the Radio Engineer Alone

By A. Morris, B.Sc., M.I.E.E.

DURING the year 1928 John R. Carson, in concluding an analysis of yet another of the many methods proposed for the reduction of atmospheric disturbances, wrote: "The conclusions of this study are entirely negative; that is, no appreciable gain is to be expected from balancing arrangements. This is quite in agreement with the conclusion drawn over ten years ago by John Mills. . . . In fact, as more and more schemes are analysed and tested, and as the essential nature of the problem is more clearly perceived, we are unavoidably forced to the conclusion that static, like the poor, will always be with us."

This statement referred to atmospheric disturbances, and it is fortunate that the position in regard to the interference to radio reception arising from the operation of electrical machinery is not quite so hopeless. Radio engineers concerned with broadcasting have devoted much attention to this aspect of the performance of their equipment and their efforts. Aided by the experience of the communications engineer in his struggle with atmospherics and unwanted transmissions, and assisted by the co-operation of the radio industry generally, some improvement of the position has resulted.

Control of Interference at the Source

When, however, after all possible modifications of the receiving equipment have been made the relative strengths of signal and interference pick-up cannot be made sufficiently favourable, the unaided efforts of the radio engineer come to an end and he is powerless to improve matters alone. Fortunately, unlike the case of atmospheric disturbances, control over the source of the interference can almost always be exercised. This control, however, is in the hands of other sections of the electrical industry, and with the greater development of all forms of radio communication the need for the exercise of this control becomes greater.

The efforts of the radio engineer have been mainly directed to the development of interference-free low-loss radio frequency transmission systems, and to the limiting of the receiver pick-up exclusively to an aerial located in a situation essentially remote from interfering fields.

The transmission system may take the form of an electrostatically screened single wire line or "lead in," or of a balanced double wire transmission line, preferably electrically stabilised by enclosure in a metal sheath. Reflection losses at the two

ends of either of these systems may be minimised by the use of impedance-matched transformers, whilst propagation losses may be limited by the provision of suitable conductors and dielectric. Commercial forms of each of these transmission system items are now available.

For ranges within a fraction of a wavelength from an item of electrical plant the strength of the so-called "direct" radiation from it diminishes rapidly with distance. Thus, at 5ft., 10ft., 20ft., and 40ft. from such a source the strength is approximately 0.01, 0.001, 0.00018, and 0.000018 respectively of the strength at a distance of one foot. By placing an aerial

IN this article, contributed by a radio engineer of the Post Office, it is pointed out that although a good deal may be done to assist in suppressing electrical interference at the receiver, there is a definite limit beyond which the radio engineer is unable to progress, and the real solution of the problem rests with electrical engineers whose equipment produces the interference. This statement entirely endorses the point of view held by "The Wireless World," which has consistently urged the need for legislation to control interference caused by electrical apparatus and machinery.

at a distance from such a source and connecting it to a receiver via an interference free transmission line, it is clear that the strength of the directly propagated interference pick-up from the local source in question may be effectively limited; the greater the separation between aerial and interferer the greater the freedom from interference. In this connection it should be borne in mind that whilst separating distances of about thirty yards to fifty yards which are necessary for some intensely interfering items of plant—are possible in some cases, such separations cannot be easily arranged in the case of the ordinary home set. This circumstance limits the possibilities of the method.

The mains-propagated interference from electrical plant is frequently carried considerable distances before being released as interfering radiation. This makes it necessary to provide for even greater separations than would otherwise be necessary. Furthermore, the removal of the aerial to a position remote from the locality of the receiver and of the local interferer

will not necessarily remove it from an interfering source situated at other premises; indeed, the contrary effect may result.

In the case of distant interfering sources the signal-to-noise ratio of the aerial system cannot be improved by the normally practicable application of the anti-interference devices which have been mentioned. Aeroplane and motor car interference with ultra-short waves is a case in point.

In regard to the radio-frequency transmission systems which have been referred to, whilst they render the receiver essentially free from the effect of the interfering fields through which they pass, they necessarily also limit to the same degree the input to the receiver of "wanted signal." This is a disadvantage in the case of some domestic installations where pick-up on the lead-in is relied upon to ensure a satisfactory signal. Furthermore, such transmission systems introduce other losses of signal due to inherent imperfections of impedance-matching of the transformers for other than a particular band of frequencies, as well as to conductor and dielectric losses.

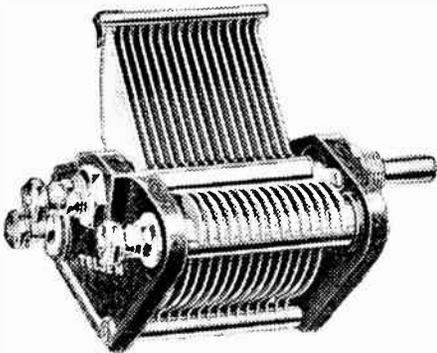
In all cases where the loss of signal strength from the above causes necessitates the operation of the receiver at relatively high gain, the consequent increase of receiver background noise may prove disadvantageous.

Dependence upon the Electrical Engineer

It will be clear from the foregoing that even with screened receivers and specially designed transmission lines, unless the aerial can be placed outside the field of interference, real elimination cannot be effected. The application of the principles previously described are, however, of special value in some cases, especially where the cost of their elaboration is justified. They have been utilised, for example, in the design of special aerial systems for use in the demonstration of the performance of radio receivers in large departmental stores. In such cases a large proportion of the interference is local in character, and the system, as already pointed out, is primarily suited to this circumstance. Another example is the large apartment building where a single well-designed aerial, elevated well above the roof of the building, can, by means of a radio frequency distribution system, embodying radio-frequency amplifiers, be made to furnish adequate pick-up for as many as 3,000 apartments, special provision being made to prevent interaction between the receivers.

In conclusion, it is desired to emphasise that in presenting this account of the efforts made by the radio engineer to help himself in this matter of electrical interference, there is no adversely critical intent in pointing out to the manufacturer as well as to the listener that, in the opinion of the author, the radio engineer's contribution is necessarily limited, that it can achieve only amelioration of the conditions, and that the complete and only satisfactory solution of the problem rests with the suppression of electrical interference at the source—this has yet to be accomplished,

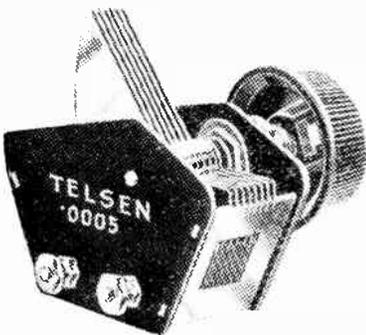
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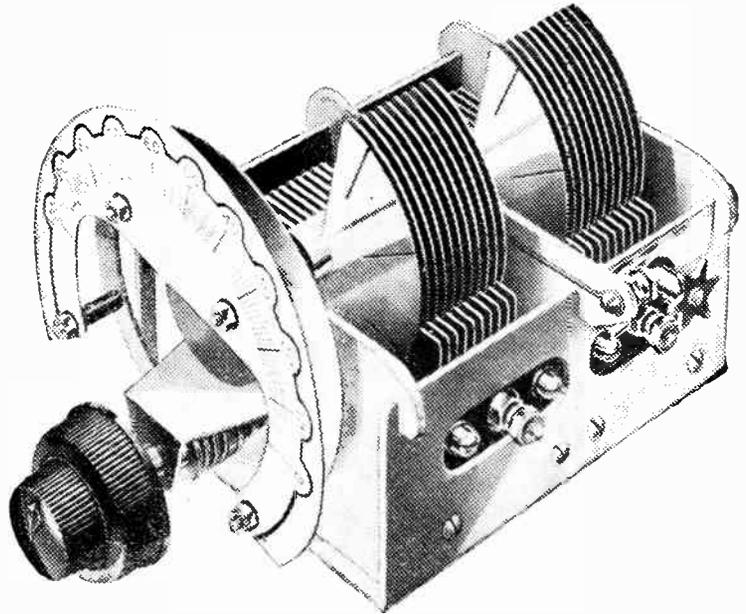
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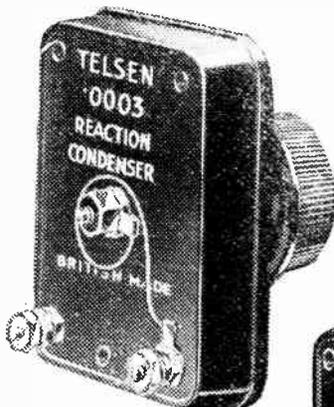
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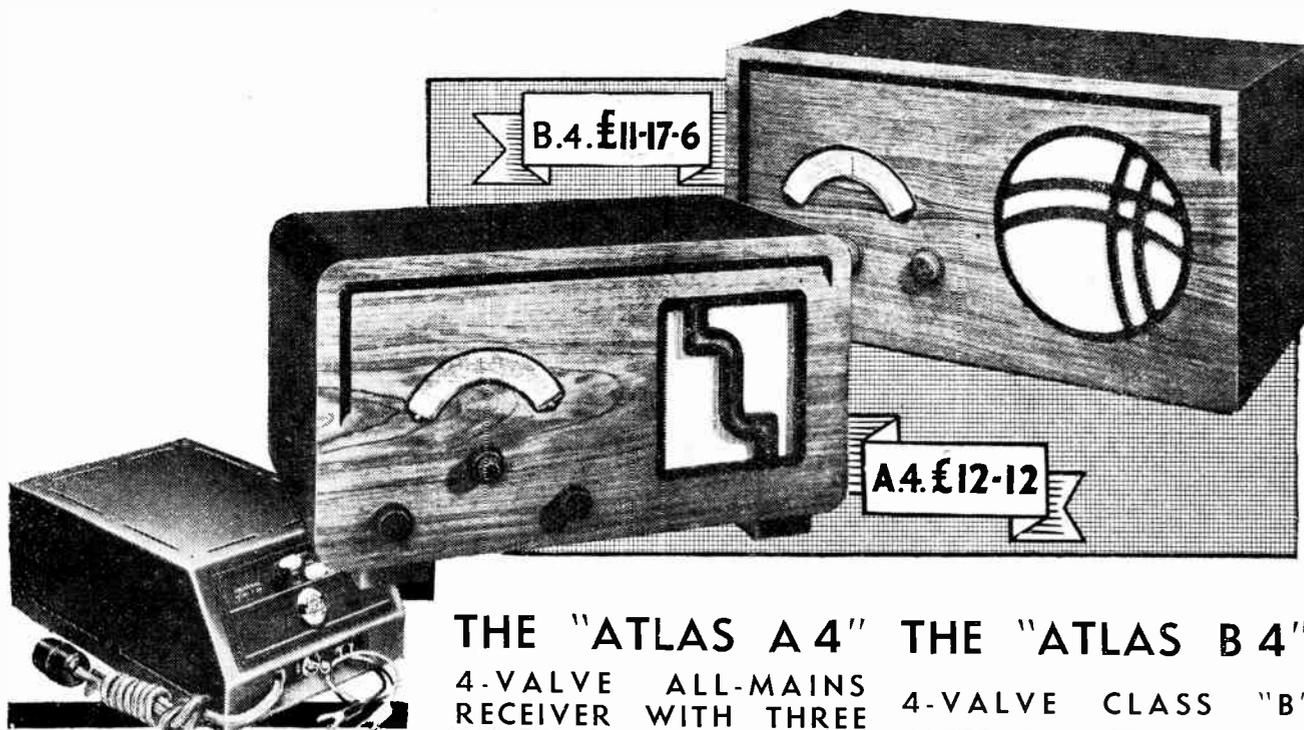
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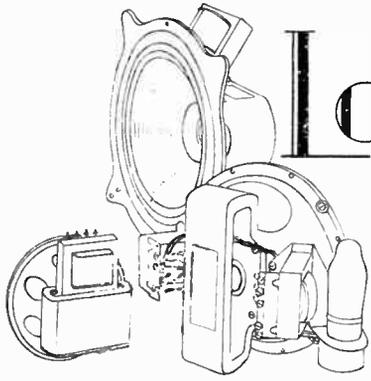
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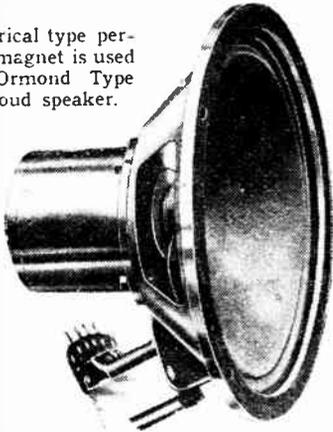
LOUD SPEAKER TENDENCIES

The Season's New Types at Olympia

THE small moving-coil loud speaker unit continues to hold its popularity with set manufacturers and home constructors, and, as far as the number and variety of makes are concerned, is well ahead of any other type. Units with permanent magnet fields are most in evidence, as they are readily adaptable to receiving sets of every type.

Research still continues in the direction of approaching the efficiency of the energised field magnet without unduly increasing cost, and there can be no doubt that a definite improvement has been achieved in the total flux energy provided for a given price. The composite class of magnet in which a cobalt steel centre pole is used in conjunction with a chrome steel yoke has proved very popular, and there is a continued demand for the two-claw type of magnet. Instead of the

A cylindrical type permanent magnet is used in the Ormond Type R494 loud speaker.

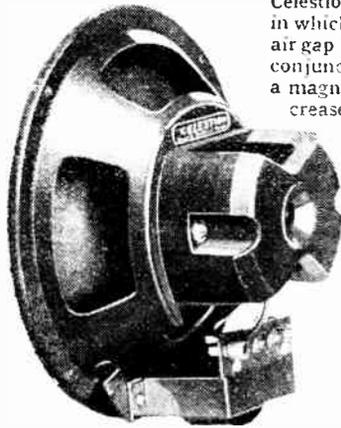


forged bar method of construction adopted last year, however, the body of the magnet is now cast with an integral top plate, so that the proportion of soft iron is reduced to that required for the centre pole. After manufacturing a considerable number of magnets of both these types, Messrs. Darwins, Ltd., have found that they lend themselves to a considerable improvement in the matter of ageing.

While on the subject of magnet design, it is interesting to note that a return to the cylindrical pot type of magnet has been made with considerable success as regards efficiency, reliability and low price in the Ormond Type R494 units.

In the early stages of the development of the small permanent magnet unit some trouble was experienced in providing sufficient mechanical rigidity to ensure reliability as regards freedom of the moving coil in the air gap. To overcome this trouble two courses are open to the

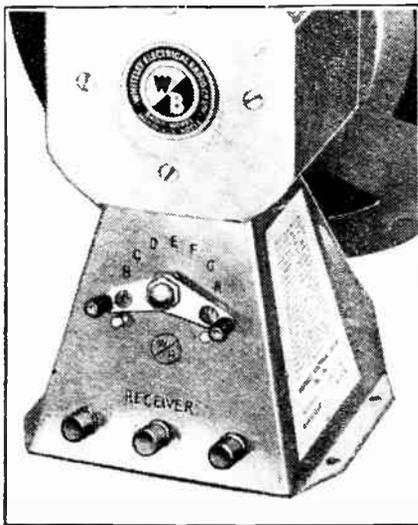
designer. Either he may increase the air gap to give wider clearances, in which case a larger and more expensive magnet will be required, or the narrow air gap



Celestion PPM19 in which a wider air gap is used in conjunction with a magnet of increased size.

may be retained and special precautions taken to ensure lateral rigidity and accuracy of alignment.

Celestion, Ltd., have adopted the former course in their PPM9 and PPM19 permanent magnet units. The extra cost of the magnet, however, has been offset by improved methods of production, so that prices show no increase over last year's figures. Lateral rigidity has been increased by an improved design of



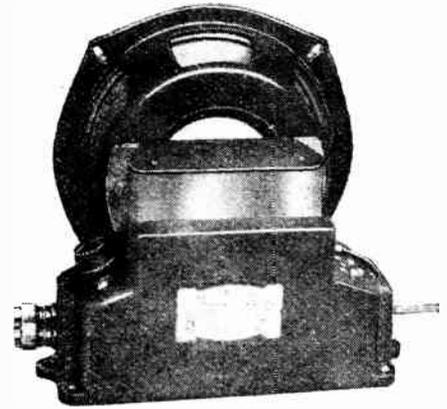
Fine adjustment of the output transformer ratio is provided in W.B. "Microlode" loud speakers.

centring spider and to prevent the ingress of filings and other extraneous matter to the air gap the fields are magnetised after the unit has been assembled.

In the new R. and A. "Alpha" unit special attention to the method of aligning the diaphragm and moving coil has made practicable the use of exceedingly small clearances. It has been customary

for the diaphragm supporting member to be called upon to take also the weight of the field magnet, but in the new R. and A. design a separate pressed member located by a bush on an extension to the centre pole of the magnet supports the diaphragm both at its surround and apex to an accuracy of the order of 0.0005in. Not only is the diaphragm system independent of any damage which may occur to the outer frame of the unit, but there is the additional advantage that if necessary the diaphragm assembly may be removed for inspection or cleaning without fear of upsetting the alignment.

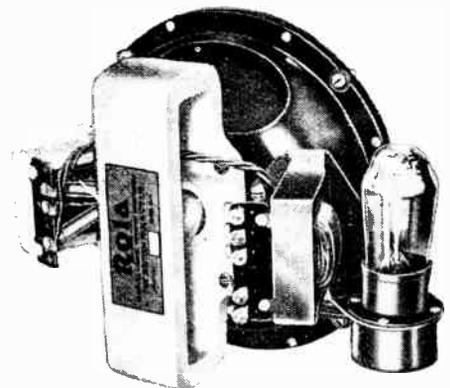
Another step in the direction of insuring the purchase against loss due to



Sonochorde Class "B" loud speaker unit.

mechanical or electrical failure has been adopted in the case of the new Magnavox permanent magnet moving-coil loud speakers which are supplied in a sealed dust-proof bag and carry a guarantee for one year provided that the seal is unbroken.

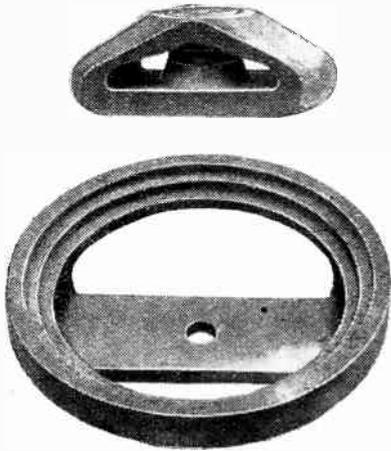
Universal output transformers have in most cases been extended in scope to make them suitable for connection to push-pull outputs of the Class "B" and Q.P.P. Units without transformers, for use as extension loud speakers, are also being supplied in large numbers.



Rola Class "B" speaker amplifier unit.

Loud Speaker Tendencies—

Exceptionally accurate matching with the output stage is possible in the new W.B. "Microlode" loud speaker. In all, seventeen alternative ratios are available,



Swift Levick magnets for portable set and car radio loud speaker units.

and the required value is rapidly selected by a switching system incorporating two arms. Not only does this system enable the maximum efficiency to be derived from the loud speaker output stage combination but it is also possible, by choosing ratios adjacent to the optimum, to modify the quality of reproduction for special requirements. The system is equally adaptable for single power output valves and Class "B" or Q.P.P. amplification.

Another unit of more than usual interest is the latest "Earl" moving-coil loud speaker, in which a volume control is incorporated between the secondary of the speech transformer and the moving coil. This takes the form of a low-impedance potentiometer connected in such a manner that the sensitivity at full volume is not impaired, and that there is no loss of the higher frequencies at the lower end of the volume range. When the control is turned to the minimum position the moving coil is automatically disconnected, an arrangement which is of great advantage where an extension loud speaker is used.

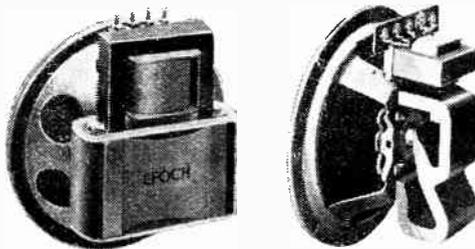
Loud speaker units incorporating a complete Class "B" stage with driver and output transformers are now being produced by the majority of manufacturers. These units are ready for attachment to the output terminals of existing receivers, when the power valve automatically becomes the driver valve for the Class "B"

stage. The addition of one of these units to an obsolete battery set will result in a remarkable improvement in volume and quality without putting a prohibitive load on the H.T. battery.

Car Radio Units

Miniature moving-coil units have received a considerable impetus from the new vogue of car radio receivers. There is also a definite tendency towards the employment of loud speakers of this type in portable sets. In both cases space is of prime importance, and the overall depth from back to front must be kept as low as possible. The magnet manufacturers have not been slow in producing special types for this purpose, and two examples made by Swift, Levick and Sons, Ltd., serve to illustrate this trend. In one case the magnet is designed to fit inside the cone and to work with a re-entrant moving coil, and in the other the magnet system is circular and serves also as a supporting ring for the periphery of the diaphragm.

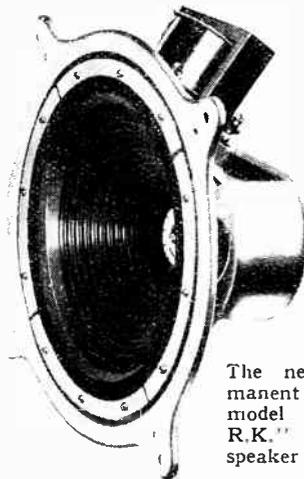
The Goodmans "Auto" loud speaker is an example of the form of construction in which the whole of the chassis is included in the magnetic circuit. It has an overall diameter of 6 3/4 in. with a maximum depth of only 2 1/2 in.



Epoch "Super Dwarf" unit.

Amplion "Sonette" miniature loud speaker.

The new Sonochorde "Baby Midget" loud speakers employ a more conventional magnet system, but do not occupy any more space from back to front, and the diaphragm diameter is only 4 1/4 in. (5 in. overall). Another example of special construction in the interests of a reduction of depth is to be found in the Grampian

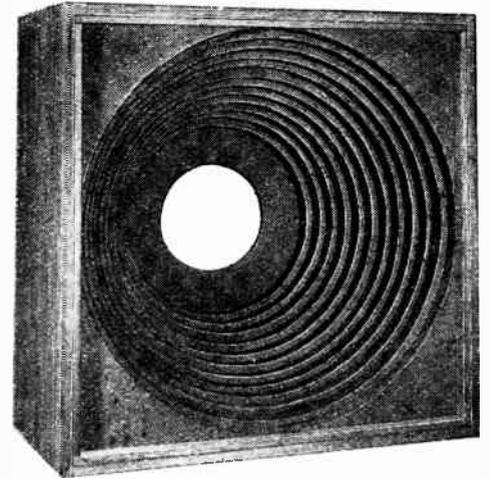


The new permanent magnet model "Senior R.K." loud speaker chassis.

"Owl" energised unit in which the field core is wound as a flat slab not unlike a section of a power transformer, while the Amplion "Sonette" is notable for

the compact and efficient design of its permanent magnet.

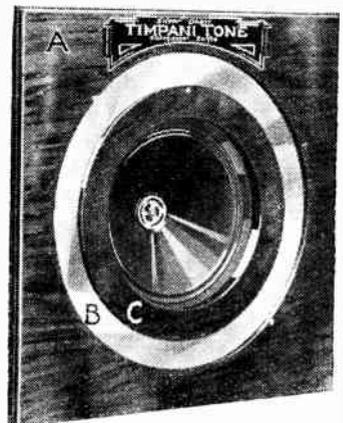
At the other extreme the "super" type



Osborn non-resonant box baffle.

of moving-coil loud speaker for superlative quality of reproduction is well represented this year, and firms such as the G.E.C., Baker Selhurst, Ferranti, Epoch, and B.T.H. have again catered adequately for this market.

The performance of a loud speaker is affected considerably by the type of baffle with which it is used. The box baffle has become deservedly popular on account of its compactness in relation to the effective area, but it is now fully realised that adequate precautions must be taken to eliminate internal reflections which give rise to accentuation of frequencies in the region of 150 cycles. The trouble is overcome by filling in the corners of the box, and in

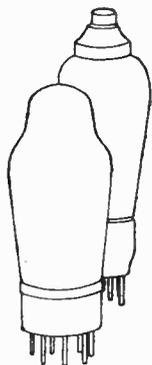


Lamplugh "Timpani Tone" baffle. (A) Laminated outer frame. (B) Sheet metal ring. (C) Inner mounting ring.

the new box baffle shown by Chas. A. Osborn a sound-absorbing material made from pulped sugar-cane is used, and is built up to form a succession of stepped rings of gradually increasing diameter.

Another baffle which is likely to attract a good deal of attention is the "Timpani Tone," of Lamplugh Radio, Ltd. This includes a ring of heavy-gauge rolled copper, approximately 3 in. wide, surrounding the loud speaker diaphragm, and it is claimed that a definite tone, which can be controlled by altering the area or the metal of the membrane, is given to the general reproduction.

THE NEW VALVES



SO rapid has been the development of the multiple-valve that it is still customary to think of it as a rarity and something of a curiosity. It comes as a surprise, therefore, to find that practically every valve firm is exhibiting at least one type. The duo-diode-triode is the most usual, and it consists essentially of three separate valves—two diodes and one triode—sembled in a single glass envelope with a common cathode and fitted to a seven-pin base.

The chief purpose of this valve is for providing signal rectification, delayed automatic volume control, and L.F. amplification in a simple and inexpensive manner. Generally, one diode is used as a detector for demodulation purposes,

The Show Portrays the Growth of the Multiple-valve.

and the A.C. model is by far the commonest. The Ferranti H₄D, the Marconi MHD₄, the Mazda AC HLDD, the Osram MHD₄, the Six-Sixty 4DDTAC, and the Micromesh and Mullard specimens are all of the A.C. type, but Marconi and Osram have a D.C. model, the DHD, with a heater rated at 20 volts 0.25 ampere, and Mullard have a type with a heater designed for operating at 25 volts 0.18 ampere.

In the battery range Mazda are showing the first battery duo-diode-triode, the L2DD, the triode portion having an A.C. resistance of 10,000 ohms with a mutual conductance of 1.6 mA/V.

Mullard have also a single-diode-tetrode in their A.C. range, and, as its name implies, this consists of the combination of a single diode with a screen-grid valve. Although the primary purpose of this valve is to replace the ordinary screen-grid detector, it is by no means improbable that one of its chief applications will be found in conjunction with the duo-diode-triode to provide quiet delayed automatic volume control.

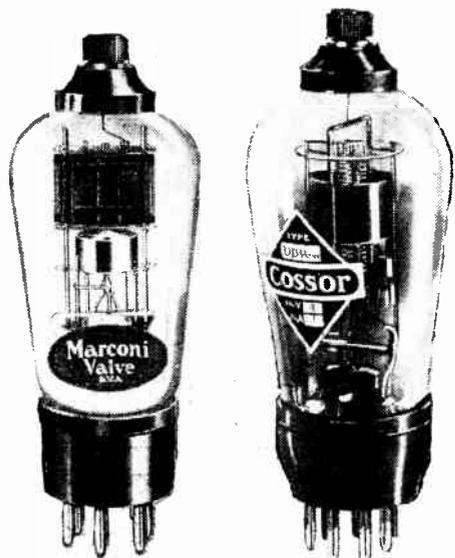
The Cossor multiple-valve is a duo-diode-pentode, the pentode portion being a screened variable- μ pentode. The diode system is intended to give signal rectification with delayed A.V.C., but the bias voltages are also applied to the control grid of the pentode which acts as the first L.F. amplifier. A.V.C. thus operates on both pre-detector and post-detector stages, and it is claimed that this results in a practically perfect control.

Class "B" Ranges

No description of multiple-valves would be complete without the inclusion of the Class "B" types, for these really consist of two triodes mounted in the same bulb. In most cases they are operated with zero grid bias, and their chief virtue is extreme economy in battery power while providing quite large volume with good quality. Cossor have two types, the 220B, rated for an output of 1 watt, and the 240B, rated for 2 watts, while Ferranti, Mullard, and Six-Sixty all list specimens. The Mazda PD220 is unusual in that it is operated at zero bias with normal anode voltages, but requires a very small negative grid

bias when its full rated voltage is applied. The B₂I type of both Marconi and Osram, however, requires an appreciable bias with all anode voltages, and under its maximum rated conditions it needs from 4½ to 6 volts, and it is then capable of an output of 2 watts. These valves are claimed to have an unusually high input impedance and to be free from parasitic oscillation.

Turning from the multiple types, we find a new class of multi-electrode valves, the foremost of which is undoubtedly the Ferranti Heptode, for it has no less than seven electrodes. The valve is of the Pentagrid type, and fulfils the functions of a variable- μ first detector valve and a separate triode oscillator for superheterodyne frequency changing purposes. Next in order come the H.F. pentodes. These are essentially similar to the ordinary screen-grid types, but include an additional electrode, the chief function of which is to increase the voltage handling capacity of the valve. As a result, overloading is less likely to occur than with older valves, and the benefit of this change is most noticeable in a battery set where the H.T. supply is usually limited. So far the variable- μ battery

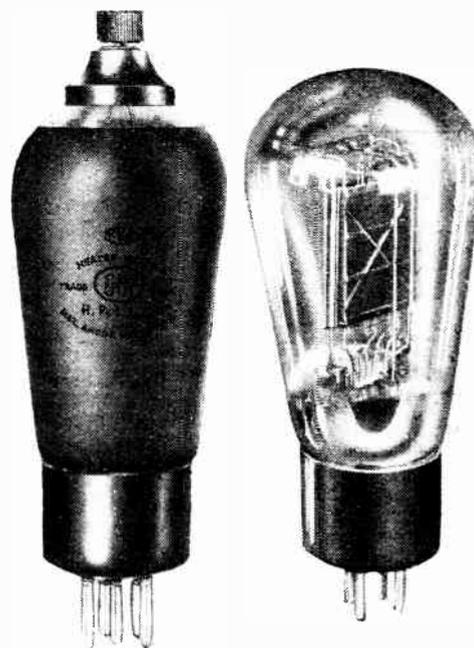


Marconi MHD₄ duo-diode triode.

Cossor DD Pen. duo-diode triode.

and the other as an over-biased rectifier for providing the biasing voltage for delayed A.V.C., while the triode acts as a simple first stage L.F. amplifier. Many variations are possible, however, and the two diodes may be used to give push-pull detection with or without simple A.V.C.; alternatively, one diode may give signal rectification and produce the steady voltage for biasing purposes, while the triode acts as an amplifier of both the L.F. voltages and the D.C. potential and the other diode provides the necessary delay action—this system is known as delayed amplified A.V.C.

Although a common cathode is provided for the different sections of the valve, the diode anodes are screened from the triode assembly and the grid connection of the latter is brought out to a terminal at the top of the bulb in order to minimise common coupling between the different circuits. So far the duo-diode-triode is available chiefly in mains types,



Six-Sixty HP1.A.C. H.F. pentode.

Mullard DO.26 output triode.

H.F. pentode has appeared only in the Marconi and Osram ranges.

Cossor, Ferranti, Marconi, Mazda, Micromesh, Mullard, Osram, and Six-Sixty all have H.F. pentodes in their A.C. mains ranges, and most firms are marketing them in both ordinary and variable- μ types. The latter is the more generally useful for amplification purposes, of course, and the non-variable-

The New Valves—

mu models are chiefly for detector-oscillators and detectors. Most firms, too, are now making indirectly heated rectifier valves for the H.T. supply.

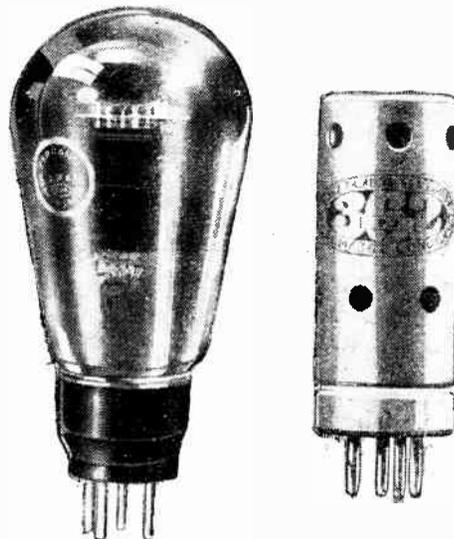
The introduction of Class "B" working has given a new lease of life to the battery set, and so stimulated improvements in battery valves. Both Marconi and Osram have introduced several low consumption screen-grid valves, and the 362 Radio Valve Co. are showing the "Toledo" range of unbreakable battery valves with a metal construction. In the A.C. type Marconi and Osram Catkin valves now replace the ordinary types of the same list numbers, but have not yet been further extended.

Mullard have brought out a large triode output valve, the DO26, rated for 400 volts and rated for 25 watts anode dissipation, while Marconi and Osram have a 16 watts pentode, the PT16, which is of the directly heated type. Mazda have a new pentode rated for 250 volts anode and screen supplies which is capable of giving an output of nearly $3\frac{1}{2}$ watts with a signal input of only 2.6 volts R.M.S. This is the type A.C.2/Pen.

Although not strictly speaking valves, the Westinghouse metal rectifiers are conveniently classed as such, since they can replace the diode for signal rectification and A.V.C. purposes. Two types are available, each in a single or push-pull model, with different input voltage ratings.

It will thus be apparent that there are two distinct trends visible in valve de-

sign—that towards multiple valves, and that towards multi-electrode valves. The former is exemplified by the combination diode types and the Class "B" valves, whereas the latter is brought out in the Heptode and pentode types. Each system may have its practical merits, but



Ferranti LP4
2½-watt triode.

362 Toledo
battery valve.

there is no doubt that the multiple-valve is less interesting technically than the multi-electrode type, for it may always be replaced by a suitable number of ordinary valves, and it involves no new principles. The multi-electrode valve, however, represents a distinct advance, for its performance cannot be duplicated by any combination of ordinary types.

READERS PROBLEMS

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.

L.F. Coupling Units

A READER has a parallel-fed transformer coupling unit, in which the internal connections are inaccessible; he wishes to use the unit with a value of coupling resistance differing from that included in it.

There is no objection to doing this, and it does not follow, as our correspondent seems to think, that the characteristics of the unit will be impaired by using an external resistance. If it is desired to use a feed resistance of lower value than at present, it might be more convenient to connect an external shunt resistance of such a value that the two, in parallel, are equal to the desired resistance.

5-metre Reception

A USER of the Ultra Short Wave Two (described in *The Wireless World* of June 16th) finds that, although sensitivity is good, there is a tendency for reception to be marred by what he describes as a "rushing" noise. This is present even when the controlling resistance R₂ is "all in."

Here we have a fairly certain indication that the detector H.T. voltage employed is unduly high. It will be found that some valves work best with a low anode potential—even lower than was recommended in the original article.

Another query relating to the same set deals with the adjustment of the small semi-variable condenser C₁, which is inserted (electrically) at the mid-point of the tuning coil. The adjustment of this condenser, though not difficult, is fairly critical. Being in series with the tuned circuit, its capacity has an effect on the tuning range covered; if the capacity be too high, the 5-metre wavelength may be unreceivable, or at any rate will come too near to the zero point of the tuning condenser. On the other hand, the use of too low a capacity in this position will make it impossible to produce self-oscillation.

Loss or Gain?

A DIODE detector, plus an L.F. stage, is roughly equivalent in sensitivity to an ordinary grid detector alone. This will serve as an answer to a correspondent who proposes to change over to diode detection, but a few words of qualification may be added.

When the original set included no provision for reaction, the substitution of a diode should lead to noticeably improved sensitivity and selectivity. This is not because the actual rectification efficiency of

the diode is higher, but because reversed reaction will no longer be present.

With the help of reaction, on the other hand, the out-of-phase feed-back effect in a grid detector may be neutralised, and extra sensitivity added as well. In this case, the substitution of a diode (without reaction) will lead to a reduction in the effective range of the set.

Low Anode Volts

WRITING on the subject of his Class "B" Ferrocart receiver (*The Wireless World*, April 7th), a reader states that the voltage on the detector anode, as measured by a high-resistance meter, amounts to less than 10 volts. He goes on to ask whether this would account for the fact that sensitivity is low, and it is impossible to obtain proper reaction effects.

A good deal depends on the interpretation of the expression "high resistance" as applied to the meter, but if our querist's instrument is a good one the measurement he has made would indicate definitely that there is a defect in the anode circuit of the detector valve. This defect might take the form of a partial short-circuit, or an excessively high series resistance. Short-circuits might exist in the reaction condenser, the anode by-pass condenser C₉, or in the decoupling condenser C₁₀. An excessively

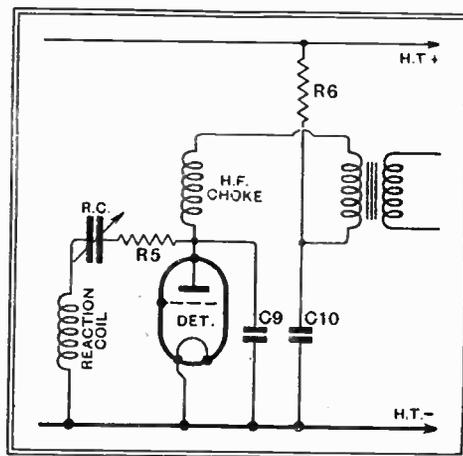


Fig. 1.—The detector anode circuit of the Class "B" Ferrocart receiver.

high series resistance might be found in the H.F. choke, the transformer primary winding, or, more probably, in the decoupling resistance R₆. A part of the original circuit diagram is reproduced in Fig. 1.

As the decoupling resistance R₆ is of a fairly high value, it is natural that the voltage on the anode should read low with any meter, but with a good instrument at least 20 or 30 volts.

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.

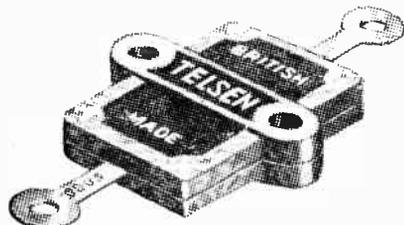
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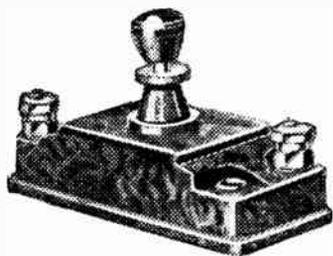
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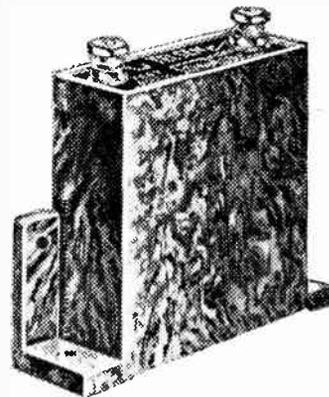
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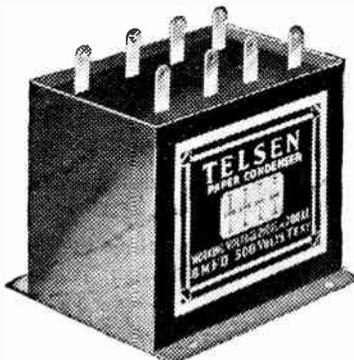
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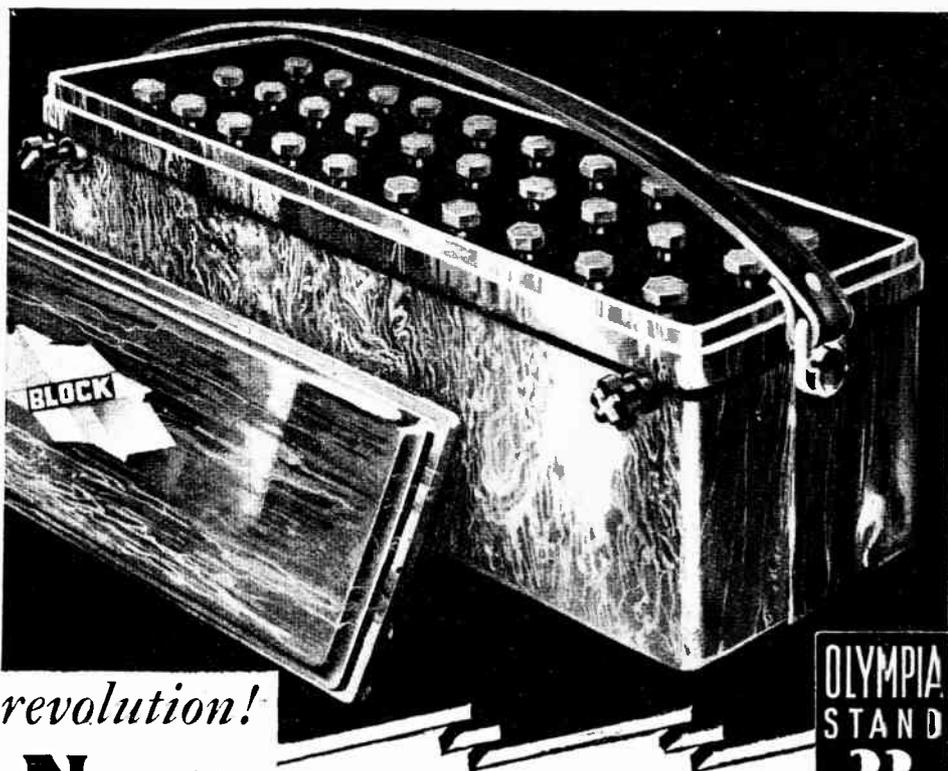
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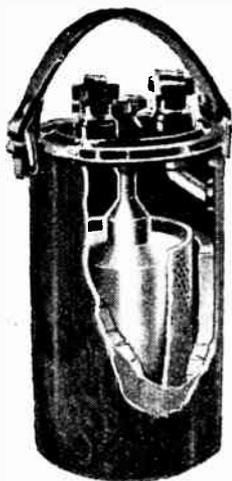
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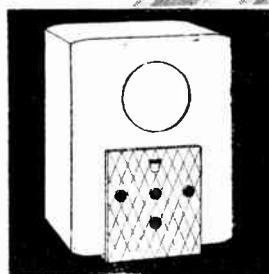
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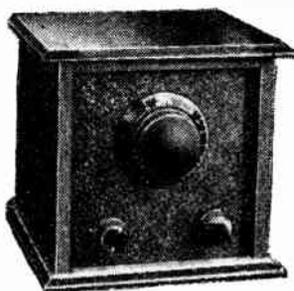
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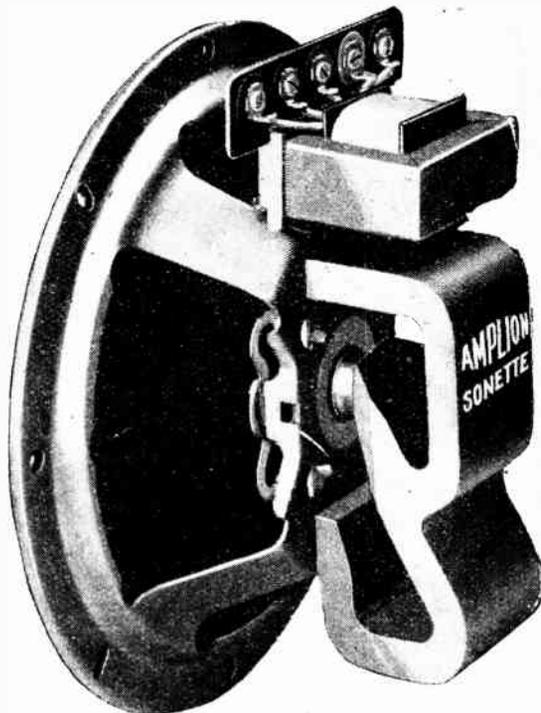


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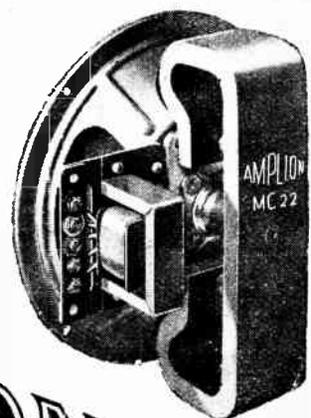
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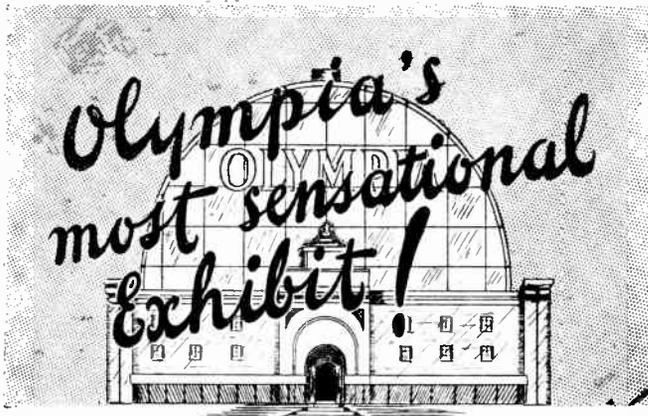
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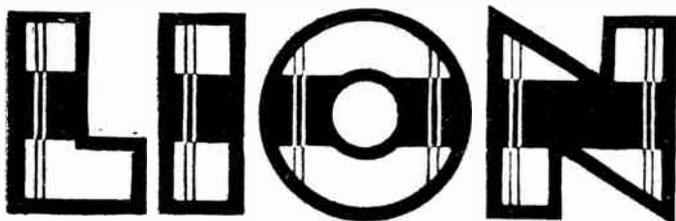
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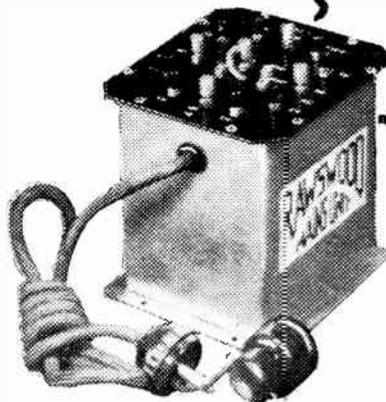
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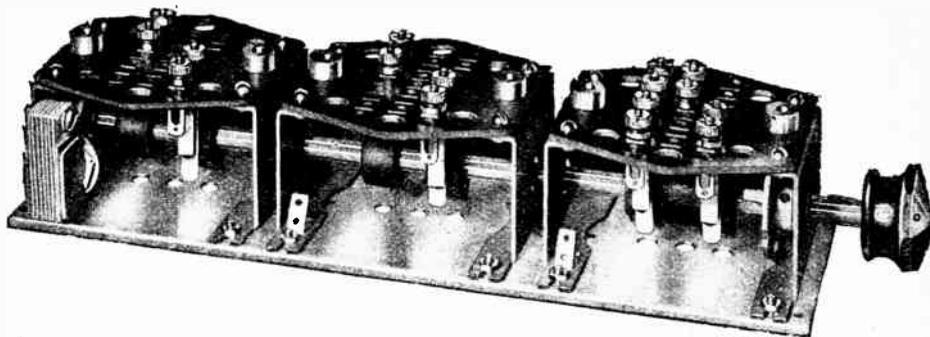
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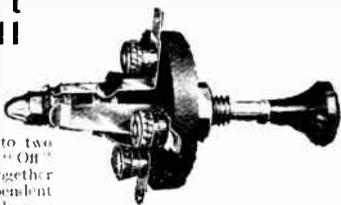
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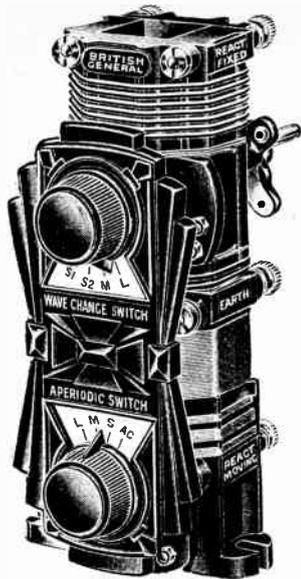


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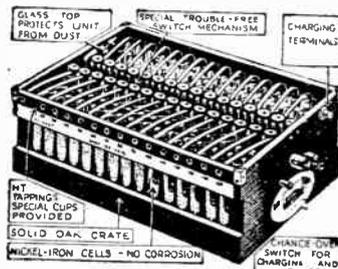
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Thousands of radio enthusiasts are flocking to Stand 242. "..... there's that H.T. Unit affair that recharges itself from the L.T. There must be a catch in it you know. Let's go see....." They come, they examine the Milnes Unit with great care, they probe us with the most searching questions. Then, convinced that there really is no catch, they go thoughtfully away with one of our descriptive booklets, to ponder quietly on why, for years, they have been throwing money away on dry batteries and lead acid H.T. accumulators. If you are visiting Olympia call at our Stand. We shall be happy to tell you all you want to know about the

MILNES H.T. SUPPLY UNIT



—the most efficient and economical form of H.T. supply. If you are not able to get to Olympia, send the coupon to-day for our Big Free Book which tells you how you can ensure a lifetime of trouble-free radio.

MILNES RADIO CO., CHURCH ST., BINGLEY Yorks.

Please send free descriptive book. No obligation.

NAME _____
ADDRESS _____
_____ B.7.

PRICES IN GT. BRITAIN

90 v. **£3.3.0** 100 v. **£3.9.5**

120 v. **£4.2.3** 150 v. **£5.1.6**

Hire Purchase terms from 6/3 per month.

Keir Dawson - Bradford.



IF YOU CAN AFFORD TO

BUY

PARMEKO

THE SATISFACTION OBTAINED WILL WELL REPAY YOU

PARTRIDGE & MEE, LTD.
LEICESTER AND LONDON.

SPECIALISTS IN HIGH QUALITY TRANSFORMERS, CHOKES, SPEAKERS, AMPLIFIERS



A Satisfied User of the Ideal Aerial

"RECEPTICON"

INSULATED COPPER AERIAL

"Recepticon" 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 "Recepticon" 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.,
NEW SAWLEY, Nr. NOTTINGHAM.

PRICES.	
25 ft.	7 1/2 d.
50 ft.	1/3
75 ft.	1/10
100 ft.	2/6

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

An Invitation
to You —

To Inspect
THE WORLDS
BEST
MAGNETS

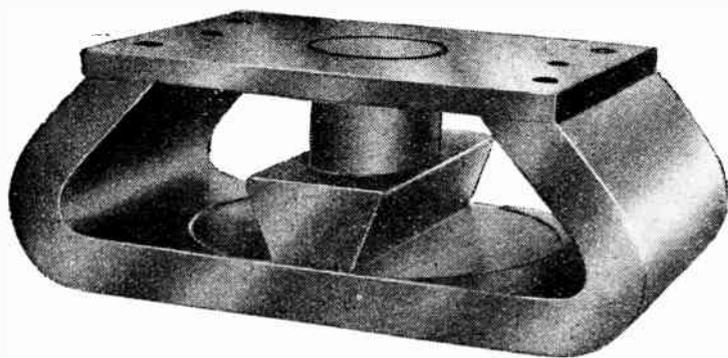
Darwin

AT
STAND
NO.
43
OLYMPIA

**COBALT STEEL
PERMANENT
MAGNETS**

We extend to you a cordial invitation to visit our Stand at Olympia. Here will be displayed a full range of the famous Darwin Magnets, in various stages of manufacture. We feel sure you will find our exhibit both interesting and instructive.

Our Technical Department will be happy to advise you on all magnet problems.



Darwins Ltd
CORRECT MAGNET DESIGN

Head Office: Fitzwilliam Works, SHEFFIELD.
London Office: 29 31, Regent St., S.W.1.

at last—

**UNIVERSAL
VALVES**

ONE VALVE
FOR BOTH
A.C. AND D.C.

MAINS

"They should prove a blessing alike to the trade and the private owner."

SUNDAY REFEREE,
May 21 May 28.

"Success has come with the advent of the new type TUNGSRAM MAINS VALVE." — AMATEUR WIRELESS, June 17.

"No mains transformer required." — WIRELESS WORLD, June 9.

Any circuit can be built with these Universal D.C.-A.C. Valves. All valves, including rectifier, indirectly heated — less hum than with ordinary A.C. Valves. Economical — only 35 watts mains consumption.

Full range available— Variable Mu, Screen grid, High-slope Detector, L.F., Multi Grid Output, Double Grid Frequency Changer, Rectifier, H.F. Pentodes. Also Barretter (current regulator).

Type.	Use.	Ampl. F.	Imped.	Output.	Price.
R 2018	Detector	40	13,000	—	10/6
G 2018	G.P.—L.F.	25	7,000	.350	10/6
P 2018	Power	10	2,500	.750	13/-
PP 2018	Multigrid output	80	30,000	1,400	17/-
S 2018	Screen grid	400	333,000	—	14/6
SE 2018	Vari-mu Screen grid (Slope—1.2mA V)	—	—	—	14/6
HP 2018	H.F. Pentode	5,000	2,000,000	—	14/6
HPE 2018	H.F. Pen. Vari-mu	2,000	1,000,000	—	14/6
V 2018	Half-wave Rectifier	—	—	70 mA	10/6

All Tungsram Universal Valves are indirectly Heated and take 0.18 ampere at 20 volts.
A Barretter Type 180 R is also available, which has—
Normal Voltage Drop ... 100 volts.
Normal Working Limits ... 80-120 volts.
Transient Limits ... 70-140 volts.
Current 180 mA ± 2%, Price 5/6.

Write for particulars

**UNIVERSAL
TUNGSRAM
VALVES**

*Phone: MUS. 5053.

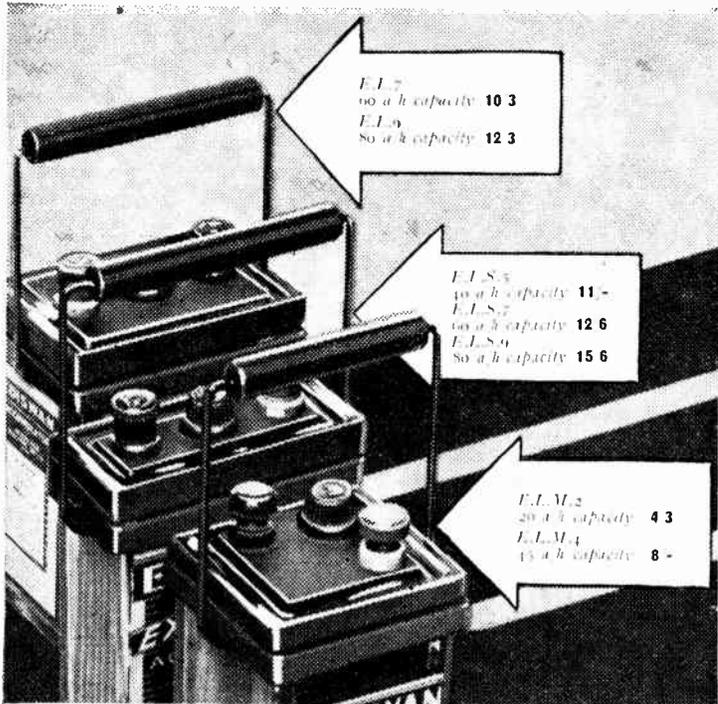
TUNGSRAM ELECTRIC LAMP WKS. (G.B.) LTD.
72, OXFORD STREET, LONDON, W.



EDISWAN

The name that means 'EXCELLENCE'

YOU GET
BETTER SERVICE
FROM THESE
ACCUMULATORS



E.L.7
60 a.h. capacity 10 3
E.L.9
80 a.h. capacity 12 3

E.L.S.5
40 a.h. capacity 11 -
E.L.S.7
60 a.h. capacity 12 6
E.L.S.9
80 a.h. capacity 15 6

E.L.M.2
20 a.h. capacity 4 3
E.L.M.4
15 a.h. capacity 8 -

Balanced capacity—that is the secret of the extra and better service which Edison Swan "Extra-life" accumulators give you. It means that the positive and negative plates are designed to function in exact electrical balance. This makes quicker charging and slower discharging possible without damaging the plates. You get better service and longer life than with ordinary cells.

All good radio dealers sell them

EDISWAN EXTRA-LIFE ACCUMULATORS



THE EDISON SWAN ELECTRIC CO. LTD.
PONDERS END, MIDDLESEX

EDISWAN—the Better Service Batteries

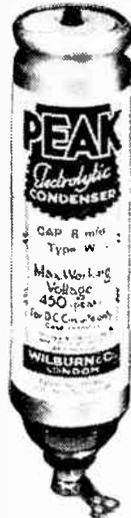
B227

A few words about the 1933/4

PEAK

CONDENSERS and policy

The PEAK policy—highest quality, lowest prices, implemented by the introduction of our now famous Type 1500 Condensers, has been fully justified.



Type W.

That this policy, the general need of which has been referred to by the Editor of this journal, will be continued and where possible intensified during the coming season, goes without saying.

Convincing and practical proof of the above statement will be found in our new illustrated list, which will be sent free on request, and which should be in the hands of every "Wireless World" reader.

In order to receive the advantage of these low prices you are not asked to sacrifice "something in quality or finish." On the contrary, you are

being encouraged to purchase an article of the highest repute, fully guaranteed, and bearing the name PEAK.



Type T.12.

PEAK CONDENSERS are constructed according to the soundest and most modern methods.

PEAK CONDENSERS use only first grade materials of unimpeachable origin.

PEAK CONDENSERS are made with the most up-to-date and efficient machinery.

PEAK CONDENSERS are an absolutely all-British product made in a British factory by British labour, financed by British capital.

PEAK CONDENSERS offer easily the finest value on the market.



Type C.B.7.

- Type W 4 mfd. - 4/3 each
8 mfd. - 4/9 each.
- Type T.12 2400 V. D.C. Test.
800 V. D.C. Working.
All capacities from .1 mfd. to 8 mfd.
4 mfd. - 11/6 each
- Type C.B.7. 1500 V. D.C. Test.
500 V. D.C. Working
All capacities from .01 mfd. to 8 mfd.
4 mfd. - 6/- each.
- Type M. All capacities from .0001 to .1 mfd.
9d. to 1/- each.
- Type S. All capacities from .005 mfd. to .1 mfd.
1/6 each.



Type M.



Type S.

Illustrated above are a few of the types included in the extensive range of Peak Condensers. There is one to suit every need.

WILBURN & CO.

Wheatsheaf House, Carmelite Street, E.C.4

Telephone No.: CENTRAL 6810.

Northern Agents: W. ANDREW BRYCE & CO.,
Tile Street, Bury, Lancs.



"Although I had heard that it was really an amazing instrument, I did not expect quite such a transformation. I have demonstrated it before many local enthusiasts and all have marvelled at the effect."

"Upon fitting the 'Novotone' the results were most surprising. Moving Coil Speakers that we thought were the last word in purity on Radio Gramophone work, were improved beyond measure."

"The 'Novotone' is a wonderful instrument and does all you claim for it. In fact, on hearing a record with it and then without it, is just like listening to the original orchestra and then to a gramophone record of the same piece of music."

"I am more than delighted with it. It has brought notes out from my records that I had no idea were there."

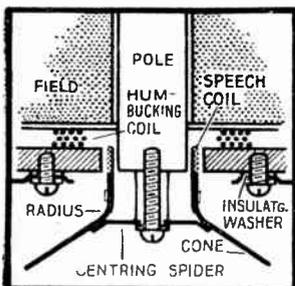
Write now for a free descriptive booklet, "Realism from Records," which fully explains the application to your Radio Gramophone of this remarkable instrument.

... is not a catch phrase designed to persuade the public to buy a component of doubtful value, but adequately describes the effect produced by fitting the 'NOVOTONE' Compensator to a Gramophone amplifier. These extracts from users' letters fully bear out this statement.



THE 'NOVOTONE' COMPENSATOR

GAMBRELL BROS. LTD., MERTON ROAD, SOUTHFIELDS, S.W.18.
Telephone: Putney 3641.



JUST ONE of the **FOUR** IMPORTANT NEW FEATURES IN SPEAKER DESIGN

to be seen on **STAND 249** at the **RADIO EXHIBITION.**

Notice the marked radius at the neck of the cone. This definitely prevents the concertina effect which produces resonances in the upper register and increases the transfer of power to the air.

EARL MANFG. CO., LTD., AVENUE WORKS, HANOVER PARK, S.E.15.

Phone: New X 0422 (3 lines).

VORTEXION

Transformers of Superlative Quality for the **NEW MONODIAL**

Massively built: of best quality material. Varnished paper interleaving subjected to 2,000 volts test between windings. An exceptionally large safety factor. The regulation of our Super Model is within 2%.

- Super Shrouded - 26 -
- Normal Shrouded - 22 -
- Open Type - 20 -

Write to-day for full details. Guaranteed for 12 months.

VORTEXION

182 The Broadway, Wimbledon, S.W.19
Phone: Liberty 2814.



'The finest speaker I ever heard'—

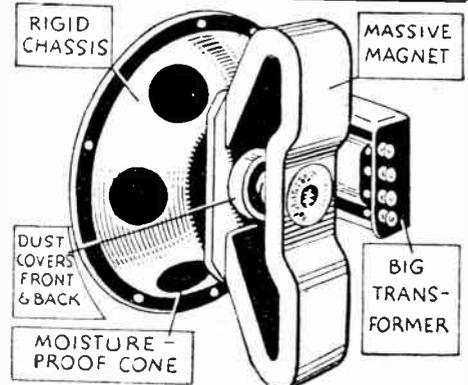
That's what everybody says about the

WHARFEDALE MOVING COIL SPEAKER

Even wireless dealers agree that the Wharfedale Speaker hasn't an equal at the price, and dealers are not given to throwing bouquets at manufacturers—they would sooner heave brickbats. The Wharfedale reproduces every note true to nature, from the highest treble to the deepest bass. The secret lies in the unusually massive magnet and generously proportioned transformer. Dust protection of the vital air-gap is a refinement which guarantees consistent quality.

PROVE IT for yourself when you visit **RADIOLYMPIA**. Wharfedale Speakers are exhibited on the stand of **J. DYSON & CO., LTD.** **T. 17**

- BRONZE WHARFEDALE **39/6** (as illustrated)
 - POPULAR BLUE WHARFEDALE **32/6**
 - DE LUXE GOLDEN WHARFEDALE **63/-**
- The perfection of reproduction.
All suitable for Class B and all usual output valves.



Send for Free Catalogue.

WHARFEDALE WIRELESS WORKS, 62, LEEDS ROAD, BRADFORD, YORKS.

Please send Free Catalogue of Wharfedale Speakers. No obligation.

Name:
Address:
C.I

The SERADEX BATTERY CHARGER

(For A.C. Mains 200 to 250 v 50 cycles upwards).

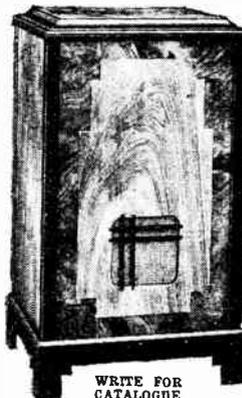
All units entirely enclosed in metal cases, with only meter and controls visible. Photographs and illustrated lists for stamp.

Type	Output	Price complete
V.R.328a	1-10 cells at up to 1.3 amps.	£3.5.0
V.R.1326a	1-20 cells at up to 1.3 amps.	£4.4.0
V.R.367c	1-18 cells on each line. Total output 6 amps. (3 split outputs and economy switch fitted)	£9.10.0

Full particulars from your dealer or

TREVOR PEPPER, WAKE GREEN ROAD, BIRMINGHAM, 13.

A NEW OSBORN RADIO CABINET



Model No. 259. An Ultra-Modern Radiogram. Cabinet in beautifully figured walnut. Mouldings and base lacquered black to give contrast to figured Walnut. 3' 2" high, 1' 9" wide 1' 5" deep. Height between motor-board and baseboard 12". Height for pick-up 4 1/2". Opening at back. Top panel above fret will be cut to your specification—a paper pattern must be forwarded. Baffle included. Hand polished. Takes any type of gramophone motor—electric or spring models. Accommodates baseboard 18" x 14" or smaller. Hole in baffle cut to your specification. **PRICES:** Matched Ready to Assemble, Kit of Parts: Oak £1-15-0. Walnut or Mahogany £2. Assembled Ready to Polish: Oak £2-10-0. Walnut or Mahogany £2-15-0. Assembled and Polished: Oak £3-5-0. Walnut or Mahogany £3-10-0. **ALL MODELS CARRIAGE PAID.**

Osborn Super Acoustic Baffle Board. Prevents 90% speaker worry. Any size hole cut from 18" x 18" to 24" x 24" 5/8" x 30" x 30" 8" x 36" 36" x 11 3/8". Carriage paid U.K. Send for free sample.

RADIOLYMPIA STAND 202 GALLERY
CHAS. A. OSBORN, Dept. W.W., Broom Works, Arlington Street, New North Road, London, N.1. Tel.: Clerkenwell 5095. Showrooms: 21, Essex Road, Islington, N.1. Tel. Clerkenwell 5631.

WRITE FOR CATALOGUE.

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

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; 260, 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.

HARTLEY - TURNER

AT OLYMPIA?

Do you choose your Loud speaker by Looking at it?

DEMONSTRATION AT OLYMPIA IS FORBIDDEN,

so we are not exhibiting, as we believe that LISTENING to a loud speaker is the only thing that matters. Our customers know that we have produced a loud speaker which distorts less than any other, and we should like to prove it to you. We are holding demonstrations every afternoon and evening, and you may hear the Promenade Concerts in comfort either at our OWN ROOMS or at the

LONDON RADIO SUPPLY Co.,
11, Oat Lane, Noble St., E.C.2.

If you cannot call, write for our 32-page booklet, "New Notes in Radio," sent for a 1d. stamp, which explains to you how

REALISM

in radio can now be obtained.

HARTLEY TURNER RADIO LTD.,

Thornbury Rd, Isleworth, Middlesex.

Telephone: Hounslow 1854.

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 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.

Mains Equipment.—Contd.

(This advertisement continued from first column.)

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 1/2 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 B.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 200v. 30 m.a. Eliminators, 110 or 220 input with 4v. 4a. winding; 37/6.

VORTEXION.—Transformers made to your specification. All standards in stock. Phone all hours.

VORTEXION (S. A. Brown), 182, The Broadway, Wimbeldon. Tel.: Liberty 2814. [3117]

SERADEX Radio Products Again Specified by "The Wireless World."

MODERN Battery Four Kit of Eight Resistors as Specified; 5/5.

NEW Monodial Superhet Resistor Kits, kit A19 resistors, 12/9; kit B, for power unit, including tapped power resistor, 6/10; mains transformer, as specified, £1/17/6.

SERADEX Tubular Condensers, suitable for modern Battery Four, 0.005 to 0.1 mfd., 8d. each.

SERADEX Battery Chargers, models from 30/-; see advert, page 46; illustrated lists of full range available shortly.

SERADEX Glass-wound Resistors are Essential for Serious Work, our guarantee that these are accurate to within 2 1/2% of marked values was confirmed by "The Wireless World" in issue for 16/6 33; illustrated lists for stamp.

ORDER from Your Dealer or Direct from Makers, mentioning dealer's name and address.

TREAVOR PEPPER, Wake Green Rd., Moseley, Birmingham. [3276]

N.P. for Battery Chargers; see our display on page 44.—Nash Products, Ltd., Stechford, Birmingham, 9. [3292]

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

A.C. Charging Plant (valve) unused; List £18/18; offered £6/18/6.—Jersey, Cunmor Hill Estate, Oxford. [3202]

180 Accumulator Chargers, 1/2 amp., 2-6v., in ventilated metal case, with mains flex (Westinghouse rectifiers), 10/8; 1 1/2 amp., 21/-; 7 days' trial.—Arden Agency, Wollaston, Wellingborough. [3201]

FOR Sale.—Hobart constant potential charger, with starter, input 200-40 D.C., output 7 1/2v. 60a., cost £55, accept £20 or nearest offer; electro dynamic converter, 200-40 input, 230v. 180 W. output A.C., accept £12.—"Weklons," 268, Sutton Rd., Southend-on-Sea. [3263]

RECEIVERS FOR SALE.

PHILIP'S Super Inductance 5-41, 1933, as new; bargain, £14; owner changing to D.C.—J. Noel, 3, Grenville St., Brunswick Sq., W.C.1. [3280]

CLIMAX All-electric 200-250 A.C. Band Pass Three, in walnut cabinet, complete with valves and moving coil speaker; listed £16/16, unopened, £8/3, c.o.d., carriage paid. [3211]

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]

AMPLIFIER, 5 watts output, real quality, with R.K. Senior speaker, gram. motor, Webster pick-up, all A.C., ideal demonstration outfit; 11 guineas; details.—The Myrtles, Neddum Market. [3273]

SAVAGE C-8W. Portable Amplifier, complete, microphone, film Industries L.S.6 unit and horn speaker (little used in Tote Club); bargain, £15.—Apply W. S. Smith, Central Club, 145, Barking Rd., E.16 Alb. Dk. 2643 [3270]

SHORT Wave 4 valve, gets America on moving coil speaker in modern case, £5 10; also 2-valve D.C. all mains, Pentode output moving coil speaker, self contained, in small case, £5; both sets new and unused. H. Churchman, 21, Charnock Rd., Clapton, London. [3286]

"WIRELESS WORLD" New Monodial, built and supplied as kits; your old Monodial converted, including components and valves, £11; trade supplied.—London Radio Development Services, Ltd., 56, Hazel Rd., Kensal Rise, N.W.10. Phone: Willesden 0385. [2987]

LATEST 1934 Armstrong 4-valve chassis, incorporating gramophone amplifier, scientifically designed for either direct or alternating current working, without any alteration whatever, remarkable station puller, magnificent tone, price 75/-; fully guaranteed, demonstrations here or 14 days' approval.—Armstrong Manufacturing Co., 100, King's Rd., N.W.1. [3281]

MAINS EQUIPMENT

VORTEXION, Wimbledon, for 99.9% reliable transformers.

IF You Haven't Tried Them Yet Ask Someone who has, or call and inspect complimentary letters.

ALL Standard Models Delivery by Return; all secondaries centre tapped.

GUARANTEED 12 Months, and within 5% normal and 2 1/2% super models, neat shrouding, with detachable feet, as used by Government Departments, etc., etc.

VORTEXION.—New monodial transformer, 200-250, 50 cycles, 425-0-425, 120 m.a., 4v. C.T. 3a., 4v. C.T. 1a., 4v. C.T. 1a., 4v. C.T. 6a., screened primary, open type, 20/-; shrouded, 22/-; super shrouded, 26/-; 10 henry choke, 5/6; 20 henry choke, 8/6.

VORTEXION.—Ferrocarril 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/-.

(This advertisement continued in third column.)

Write for Illustrated Catalogue of **RADIO-GRAMPHONE CABINETS**

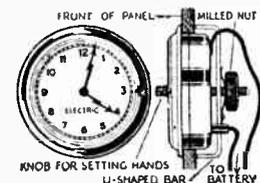
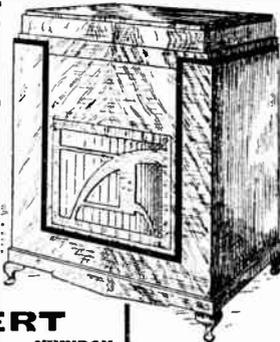
of a exclusive modern design, made by craftsmen, intelligently figured Oak, Walnut or Mahogany, post free.

REMARKABLE VALUES. Cabinet: made to order a speciality.

Makers, under license, of the **HOWE BOX BAFFLE** Recommended by the B.B.C. Full details on request.

GILBERT

Cabinet Maker SWINDON Est. 1886 Estimates Free.



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 1/4" dia. in any panel up to 1/2" thick. Easy to fix—no screws required. Only 1/2" 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.8
Telephone: Riverside 6897.

COMPLETE WITH BATTERY POSTAGE 6D



The Silver Ghost Confidence Bond!

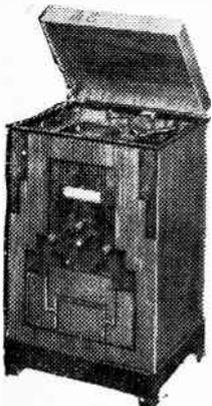
I have pleasure in introducing to Wireless World readers the "Silver Ghost" Confidence Bond which introduces a Personal touch between you, your Supplier and the Factory. A Bond! ensuring quality, good faith and satisfaction with every "Silver Ghost" Product. Get to know the Bond and see the new "Silver Ghost" Products at Olympia.

The "ANTISTAT"
A new screened tuned Aerial Unit consisting of 75 feet of screened Cable and special Control Unit.
PRICE **21/-**

"TIMPANI TONE" Baffle
Something entirely new in Baffles. Adds brilliance, richness of tone and prolongs the overtones. Standard size 16" x 16", 7 1/2" hole.
PRICE **15/-**

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Lamplugh Radio Ltd. Coventry.
Silver Ghost Reproducers. MASTERS OF SOUND

**AMAZING VALUE SAY THE CRITICS
THE NEW H.S.P. AUTOMATIC
RADIOGRAM**



**GARRARD AUTO
RECORD CHANGER,
SELECTIVITY
M. COIL SPEAKER,
HANDSOME WALNUT
CABINET.
A.C. OR D.C.**

**25
GNS.**

Send for **LISTS.**

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Address.....

The Radiogram of Distinction, as illustrated.
Agencies vacant in certain areas.

**H. S. P. WIRELESS Co. Ltd.,
LANGFORD WORKS,
WESTON-SUPER-MARE.**

Mains Equipment.—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 New Monodial Super Model, 425-0-425v. 120 m.a., 4v. 3a., 4v. 1a., 4v. 1a., 4v. 6a., 17/6, post 1/3; super model, 24/-, post 1/3; chokes for same, 10h., 20h., 16/6 the pair, post 1/-.
HOYNE'S—250-0-250v. 60 m.a., 4v. 1-2a., 4v. 2-4a.; 10/-, post 9d.
HOYNE'S—250-0-250v. 60 m.a., 4v. 1-2a., 4v. 2-4a.; 4v. 2a.; 12/6, post 1/-.
HOYNE'S—350-0-350v. 60-70 m.a., 4v. 2-3a., 4v. 3-4a., 12/6, post 1/-; Ferrocart III model.
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.5 or 7; 10/-, post 9d.
HOYNE'S—230v. 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., M. Wembleton, S.W.19. Tel.: Liberty 3303. [3107]

CABINETS.

RADIO-GRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon. [1586]

DYNAMOS, ETC.

D.C.C. Rotary Converter, D.C. to A.C., 230v., 90w., nearly new; what offers?—Probert, "Gla-bury," Park Place, Eltham, S.E.9. [3288]
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. [3225]

LOUD-SPEAKERS.

BAKER D.C. Super Power, 1933; £3.—76, Dulley Rd., Ilford. [3260]
B.T.H. RK 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.—O. H. Seekamp, First Avenue House, High Holborn, London, W.C.1. 4th floor; office No. 582a. Phone No.: Holborn 6669. [1425]

"BAFFAMP"—New amplifying box baffle unit, latest invention for your speaker, greatly improves tone and power, without resonance; 12in., 12/6; 15in., 17/6; 18in., 21/-; 24in., 25/-; direct from factory, carriage paid.—2, Chatham St., Ramsgate. [3216]

30/- !!!—B.T.H., R.K. moving coil speakers, 6in. cone, new and unused, guaranteed; these speakers are the type as used in cinema sound equipment; suitable for public address work; weight 30lb., and are vastly superior to the cheap speakers now on the market, 100 volts, 150 volts, and 200 volts D.C.
27/6 !!!—6-volt D.C. speakers, as above; £2/7/6 speaker as above for 100-250 volts A.C., complete with field rectifier.

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.
UNUSED "Davenset" £3/7/6 Battery Charger. £4/10; carriage paid, cash with order or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. Advance 3668. [3253]

CHAL ELECTRIC offer Brand new boxed set manufacturers' surplus Rola Speakers, all fitted hum buckers, state if Power or Pentode Transformer F6 110-175v. D.C. (2,000 ohms); 90-130v. D.C. (2,500 ohms); 150-200v. D.C. (4,700 ohms); 200-250 D.C. (6,500 ohms) listed at 35/-, at 18/-; F7 voltages as above list, 47/6, at 25/- each; permanent magnets F6P.M. listed at 49/6, at 28/-; F7P.M. listed £3 at 33/-; Ultra 95P.M., a real hefty job with Power-Pentode transformer listed £4/15, at 47/6; Rola Dual Compensated (2) F6 list £3/10, at £2; (1) F6 and (1) F7 list £4/5, at 47/-—All goods Carriage Paid, Cash with Order, or C.O.D.—Chal Electric, 6, Conduit St., London, W.1. [3221]

PICTURE RECEIVER APPARATUS.

TELEVISION Motors, used, guaranteed, 19/9; constructor, 9d.; write list.—A.C.R. Co., 230, High St., N.W. [3271]

TRANSMITTERS.

XTALS, 1.75 m.c., 4/6; 3.5 m.c., 6/-; unground, 9d.—G5VV, 14, Halliley St., Dewsbury, Yorks. [3267]

VALVES.

AND Another Large Purchase of Set Manufacturers' Stock, guaranteed brand new, and any valve differing from the makers characteristics will be exchanged free; all latest types.
H.L.210s, H210s, I210s, 210H.L.s, 210H.F.s, P.M.1H.P.s, H.P.M.2s, P.M.2As, L.P.2s, 220Ps, 215Ps, D.H.s, 41M.H.L.s, M.H.4s, A.C./H.L.s, A.C./2H.L.s, 354Vs, 10C./3H.L.s, 1821s, M.L.4s, A.C./Ps, 164Vs, 104Vs, P.M./24s, 442B.U.s, 1807s, 84V.B.s, 84Vs, M.S.4Bs, M.S./H.A.s, A.C./S.G.s, A.C. S2, 41M.S.G.s, P.S.B.s, 215/S.G.s, P.M.12s, P.M.12As, Pen.4Vs, V.M.S.4s, M.M.4Vs, P.T.41s, P.T.41Bs, D.P.T.s, A.C. Pens., 620Ts, 680Ps.
ALL the Above Valves at Full List Prices; prompt delivery.
NEWMAN, 303, Roman Rd., E.3. [2892]

**CHALLIS
TRANSFORMERS**

**MAINS
TRANSFORMERS
FOR ALL
PURPOSES.**

**SET MAKERS AND
CONSTRUCTORS.**

SEND YOUR
ENQUIRIES TO

**CHALLIS
TRANSFORMERS Ltd.
—RUGBY—**

**EMPIRE STATION
RECEPTION**

**SCOTT SESSIONS
"EQUATOR - SUPER"**
(Battery Operated Model)



WORLD - WIDE orders or enquiries are arriving by every post. Send for full details or refer to the "Wireless World" Test Report — July 14th issue.

**SCOTT SESSIONS & CO.
Radio Engineers
MUSWELL HILL, LONDON, N.10**
Cables: "Tropiset, London."
Contractors to H.M. Government Depts., &c.

COIL WINDING MACHINES

For hand or power drive. Semi- or fully-automatic feed. Machines for winding self-supporting coils; and for resistance windings.

**ETA TOOL CO.,
METCALF, STREET, LEICESTER.**

• THE PIONEER MANUFACTURERS OF MOVING COIL REPRODUCERS •

To give you
QUALITY
Reproduction—



all that is BEST is embodied in these REPRODUCERS

Every part that goes to build the NEW "PERMAG" has been chosen, made and tested with the most scrupulous care. Nothing has been left to chance. For example, the NEW 4-layer speech coil makes the "PERMAG" still more sensitive... its tone more life-like. The NEW Transformer is unusually efficient and allows a perfect match with any O.P. valve. But why not hear a NEW "PERMAG" and judge for yourself? You'll be glad you're able to buy such an excellent reproducer at such a reasonable price. You can see and hear the NEW "PERMAG" at

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RADIOLYMPIA

If you cannot come along, we shall only be too glad to send you full details of this and other "BAKER" Products if you will fill in and post the coupon.

The NEW "PERMAG" class only, in two models: 1 (Universal Model) complete with Transformer to match P.S.P. or Pen. valves, chassis only, 41/-; and 2 (Class B Model) to match Class B valves, in Rexine covered cabinet, 47/-. In handsome Walnut cabinet, 59/-. Tone Control for use with Cabinet Models 3/6.

BAKER

BAKER'S "Selhurst" RADIO,
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Without obligation, send me full details of your complete NEW range of models.

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Address

My usual Radio Dealer is:

Name

Address

• COUPON •

Valves.—Contd.

All Types of Brand New American Valves in Stock, first class makes; 247s, 235s, 224s, 236s, 237s, 233s, 245s, 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.
WARD, 12, Tredegar Rd., Bow, E.3. Advance 3668. [3277]

COMPONENTS, ETC., FOR SALE.

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.

RADIOPHONE 3-gang new, without drive type, 424s, 21/-; set Varley H.P.19 coils, 21/-; set 3 Colvern intermediates, new, 24/-; 5,000 ohm pot, Radiophone, new, 2/6.

LAMPLUGH Junior P.M. Speakers, 13/6; Rich and Bundy, 101 and 102 chokes, 20/- each; Ryalls high grade public address microphones, 45/-; chassis 3v and rectifier for A.C.200-250v. V.M.HILLPEN., complete, £4/10; Magnavox D.C. speaker for same, 15/6.

VARLEY Q.P.P. Input Transformer, 9/-; Varley Q.P.P. output choke, 10/-; Cossor P220 valves, 4/6; Ekco A.C. 18 eliminator, 37/6; Ekco A.C.25 eliminator, 47/6; Weston projecting 0.2 m.a. meters, 20/-; Elliott 0.240v. A.C. meters, projecting 2 1/4 in., face radio type, 25/-.

TC.C. Condensers, 250v., working, 4x4x1x1x0.5, 3/-, post 9d.; Lamplugh D.C. speakers, 2,200 ohm, new, 9/6; Polar 3-gang tub, 10/-; Polar Star 3-gang, 15/-; Climax D.C. eliminator, 14/6; Lissen D.C. eliminator, 12/6.

K.B. 6v. I.R. m.c. speaker, new, 7/6; Lotus new 4-gang, fully screened, 15/-; Igranic mains transformers, 460v., full wave, 7.5v., 4v., 8v., 15v., to clear, 11/- each, brand new, 120 m.a. output; Igranic half wave 550v., 60 m.a., 7.5, 7.5, 6/-, new; Telsen mains transformer, 350v., etc., 9/-; P.M.14, 4/-.

RYALLS RADIO, 33, 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., Thursdays 1 o'clock, Saturday 6 p.m.

R. [3199]

PREMIER Summer Sale.

10% Discount on All Orders of £1 or Over.

MANY Prices Reduced Apart from Discount.

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. (Inland carriage forward.)

ELMINATOR Kits, including Transformer, Westinghouse metal rectifier, Pse 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/-.

EBONITE Sheets for Charging Boards, 24in. x 24in. x 3/16in., 3/- each.

TC.C. Condensers, 2 mf., 750v. working, 3/6; 4 mf., 6/-; 4 mf., 400v. D.C. working (300v. A.C.), 4/-.

IM.P., 500v. working, 1/6; 4 mf., 200v. working, 2/6; 0.5 mf., 1,500v. working, 1/6; 4 mf. Electrolytic (aqueous type), 440v. working, 5/-, 8 mf., 3/6.

DUBILIER Condensers, 0.01 mica, 6d.; 0.01 mica, 1,000v. working, 1/-, mica.

POLAR 3-gang 0.0005 Condensers, split end vanes, totally screened, disc drive; 6/11

AMSCO Triple gang 0.0005 Condensers with trimmers, 4/11.

ORMOND 0.0005 Condensers, 1/3; 2-gang semi shielded, 2/6.

WESTERN ELECTRIC Mains Transformers, input 200-250 volts, output 500-500 volt, at 150 milliamp., 4v. 4a., 4v. 2.5a., 4v. 2a., 4v. 1a., 4v. 1a., massive job; 19/6.

TC.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; 200-0-200v., 4v. 1a., 4v. 3a., 4/6.

All Premier Guaranteed Mains Transformers have engraved terminal strips with terminal connections, input 20-250 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, 25/-.

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 Transformer, output 135v. 80 m.a., for voltage doubling, 8/6; 4v. 3-3a. 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/-.

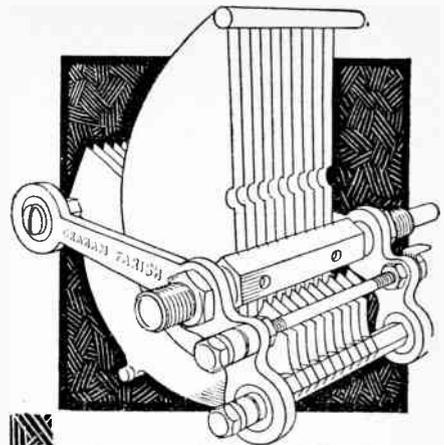
PREMIER Mains Transformers, output 350-0-350 volts, 90 m.a., 4v. 3.5a., 4v. 2-3a. (both c.t.), with screened primary; 15/-.

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.)



The New
ZELOS
Variable
Condenser
built for
Modern needs

A superb component, possessing extreme rigidity of construction, mechanical perfection of moving parts and high electrical efficiency. Negligible H.F. loss, large accessible terminals, shaft provides easy ganging. Capacity .0005.

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EACH

Ensure a safe and efficient Aerial and Earth. The new AEROFICIENT KIT provides all you need. 6/6 complete

Send for copy of New Catalogue ready shortly.

GRAHAM FARISH PRODUCTS

Advertisement of GRAHAM FARISH, LTD., Bromley, Kent.

Expor. Office: 11/12, Fenchurch St., E.C.3.

For PERFECT VOLUME CONTROL — WATMEL POTENTIOMETERS

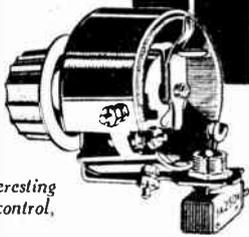
Our Policy this year is to specialise in Potentiometers. You can, therefore, be certain when purchasing a Watmel Potentiometer that you are obtaining the very best from a firm that is concentrating on this type of component.

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 5/3

Please write for the interesting Watmel book on volume control, Free.



WATMEL WIRELESS Co. Ltd., Imperial Works, High Street, EDGWARE. Telephone: Edgwar. 0323

6 NEW SEE THEM ALL ON STAND 213

- 1. A NEW SOUND SPEAKER**
A quality product Moving Coil Speaker embodying a new principle.
- 2. A NEW SOUND SPEAKER UNIT**
A Class B Unit complete with our new m/c Sound Speaker.
- 3. A NEW SOUND UNIT**
The first and still the finest Unit for converting Battery Sets to Class B.
- 4. "WESTKIT"**
The very latest development in Power Packs.
- 5. CATHODE RAY TELEVISION**
Apparatus incorporating Sound Sales Mains Transformer. Exhibited by courtesy of EDISWAN.
- 6. MAINS TRANSFORMERS**
A new range approved by Westinghouse and, the latest

MONODIAL MODELS

Descriptive Literature "W" on request.

Specified by  the Experts

SOUND SALES LTD., Tremlett Grove Works, Junction Road, Highgate, N.19

Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)

A MPLION 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.

F ILAMENT Transformers, polished and engraved terminal boards, N.P. terminals 4v. 3-4a., 5v. 10v. 3a. 6/6; 12v. 1a., 5v.; 4v. 4-6a., 6/6; 14v. 4a., 6/6; 22v. 1a. c.; 6v. 2a., 5v.; 9v. 1a., 5v.

P REMIER Chokes, 40 m.a., 25 hys., 4v.; 65 m.a., 30 hys., 6v.; 150 m.a., 30 hys., 10/6.

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

P REMIER 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.

H EAVY Duty Variable Resistances, wound on slate, 2,000 ohms 1 amp., 500 ohms 2 amp., 250 ohms 1 amp., 50 ohms 2 amp., 20 ohms 4 amp., any value; 3/6, a real bargain.

B RITISH RADIOPHONE: Wire Wound Potentiometers, with mains switch incorporated, 5,000 ohms, 10,000 ohms, 50,000 ohms, 100,000 ohms, 250,000 ohms, any value; 3/6.

S PECIAL Offer T.C.C. Condensers, type 121, 2 mfd., 1,500v. working; 5/6.

P REMIER 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.

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

P REMIER D.C. Eliminators, output 120v. at 20 m.a., S.G. and 100v. taps; 15/6.

A CCUMULATOR Chargers, 200-250 volts A.C., all incorporating Westinghouse metal rectifiers; 2, 4, and 6v. at 1/2 amp., 12/6; 2, 4, and 6v. at 1 amp., 17/6; 12v. 1a., 27/6; 6v. 2a., 35/6; 12v. 2a., 35/6; 12v. 1.5a., 30/6; 6v. 2a., 39/6; 12v. 3a., 42/6.

A MPLION High Inductance Chokes, resistance 2,500 ohms 8 hys. 60 m.a.; 5/6.

W ESTINGHOUSE Metal Rectifiers: 120v. at 20 m.a., 6/6; 180v. at 30 m.a., 8/6; 8v. at 1/2 amp., 6/6; 6v. at 1 amp., 9/6.

K OLSTER GRANDES 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 Motor, 100-250v.; 30/- complete.

R OIA Type 1.5 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.

A MPLION Moving Coil Speakers, type L.M.614, 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.

W ESTERN ELECTRIC Condensers, 250v. working, 1 mfd. 5d., 2 mfd. 1/6; 500v. working, 1 mfd., 1/6; 400v. working, 3 separate 4 mfd. condensers, 8/6.

T.C.C. Condensers, 250v. working, 4 4x1 mfd., 3/6; 300v. working, 4x4x2 2x2 mfd., 6/-; 300v. working, 4x4x2x1 mfd., 6/-; 6x4x2x2x2 mfd., 375v. working, 6/11.

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.

W IRE Wound Potentiometers, 15,000 ohms, 1/6; Central Potentiometer volume controls, 50,000 ohms, 2/6; wire wound Climatrol Potentiometer, 50,000 ohms, 2/6; Carbonists, logarithmically wound Potentiometers, 6,000 ohms, 1/6.

FOR Callers only.—The following valves, guaranteed new:

THE Last Few Western Electric 4211-D Valves, 10v. 5a. filament, 750-1,000v. plate, 50-65 m.a., impedance 3,500 ohms, amplification factor 12; cost £5; to clear at 15/6.

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; Crabtree 5-amp. sunk switches; T.C.C. 0.1 mfd. condensers.

HARLEY Pick-ups with arm and volume control; 12/6.

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. [3289]

GILBERT INDUSTRIES Parcels.

"A" August 4 and August 11, still available by return of post. We are sorry for delay in delivery of condenser parcels, in some instances. From this issue, adequate supplies by return, as under.

ONE 8 mfd. (tapped 4+4), one 4 mfd. T.C.C., one 15 mfd. electrolytic T.C.C., one decoupling pack 2+0.5+0.5+0.5+0.1, 6 small useful condensers; all new and unused, post paid; 10/-.

GILBERT INDUSTRIES, Ltd., 519, London Rd., West. [3282]

GENUINE Manufacturers' Suplus by Leading Makers.

DOUBLE Smoothing chokes mounted sound robust job, 120 m.a., 14-28 Henrys each, usual price 35/6, our price 6/6 each, 9d. postage; single ditto, 4/6 each.

CHOKES, small, iron cored, 2,000 ohms for output or choke coupling; 1/6 each, 3d. postage.

A.C. H.T. Eliminator 220 V to 240 V with 4 tappings; total output 150 V at 25 m.a.; for use with D.W.2 or Phillips 1821 valve; price 35/6, carriage 1/3.

MAINS Transformers for Eliminators, output 250-0-250 M at 60 M/A., 4 V at 1 Amp; state input when ordering; price 6/6, postage 9d.

14 mfd. Block Condensers, 250 V a.c. working, 6-4-2-1-1, 4/- each, postage 6d.

(This advertisement continued on next page.)

ELECTRADIX BARGAINS

DIXMIPANTA, A.C. or D.C.

A small A.C. Test Meter that is really a VEST POCKET TESTER. A wonderfully versatile moving-iron, multi-range meter for service on A.C. jobs.



No projecting terminals. THREE ranges of volts: 0-7.5, 0-150, 0-300 and 0-75 m.a.

Used for MILLIAMPS reads 0-12 m.a. From Test Reports on the DIXMIPANTA: Wireless World:

"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."

Popular Wireless: "One of the most attractive devices of its kind I have ever had come my way." "It fulfils its purposes every bit as well as a whole team of separate and more expensive meters."

S. G. BROWN'S BATTERY SUPERSEDER makes H.T. from your L.T. 2-volt battery, rectified and smoothed. 3 tappings. A boon to those who are not on the mains. Reduced from £3 15/- New and Guaranteed, 37/6.



SELENIUM CELLS. Light sensitive resistance, gold grids, moisture-proof, L to D ratio 5 to 1. 5/- each. Mounted in Bakelite, 7/6. Super Model in Oxy-brass body with window, 10/6.

PHOTO CELLS. 45 Photo Cells for Talks, Light Tests, Timing Controls, etc., at bargain prices. Response to light 50 microamps. per lumen. 40 watt lamp, 75 c.m. King B.T.P., 15/6; R.C.A., 25/6; Holders, 1/-; Beck Prisms, 5/6; Focus Lens, 3/6.

TELESCOPES. Cooke monocular prism R.F., with 9-mile distance scale, 7 1/2 in. long, weight 3 1/2 lb., sale 17/6. Naval Gun, Sighting Telescopes, internal focus ring, 24 in. long, 2 in. dia., weight 6 lb., magnification 6, for short and long range. Cost £25. Sale, 17/6. Spotting Telescopes, 17 in. x 1 1/2 in., by Watson 25/-, 120 lb. Pressure Gauges, 2/6. Watch movements, 1/6.

MICROPHONE BUTTONS for all purposes 1/-, Volume Controls, 6d. Announcers No. 11 Mikes, 5/6; Pedestal type, 18/6. 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 diaphragm, 55 m.m., 4d. Panel Brackets, pivoted, 5/6. Reed Receiver Unit for Amplifier making, 3/6. Headphones, 2/3 pair. Veeder 10,000 Counters, 1/-, Leaflet with diagrams free if stamped envelope sent.

PARCELS of experimental odd coils, magnets, wire, chokes, condensers, switches, terminals, etc., post free. 10 lbs. 7/-, 7 lbs. 5/6, 1,000 other Bargains in New Sale List W.

ELECTRADIX RADIOS, 218, UPPER THAMES STREET, LONDON, E.C.4

FIRST CLASS REPRODUCTION

AN UNREPEATABLE OPPORTUNITY TO SECURE A REAL B.T.H.

R. K. LOUDSPEAKER

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 200 volts D.C. Send cash with order or C.O.D.

R. K. SPEAKER Originally listed at £6. 6. 0 Now offered for **30/-** A.C. MODELS £2. 10. 0

Telephone: Holborn 9609
O. H. SEEKAMP, FIRST AVENUE HOUSE, HIGH HOLBORN, LONDON, W.C.1. 4th Floor. Office No. 382a.

STAMPINGS for TRANSFORMERS and CHOKES

INSTRUMENT and RESISTANCE WIRES

Lumen ELECTRIC CO.

Send for Lists

9, Scarisbrick Ave., Litherland, LIVERPOOL, 21.

MAKE A RADIOGRAM OR GRAMOPHONE

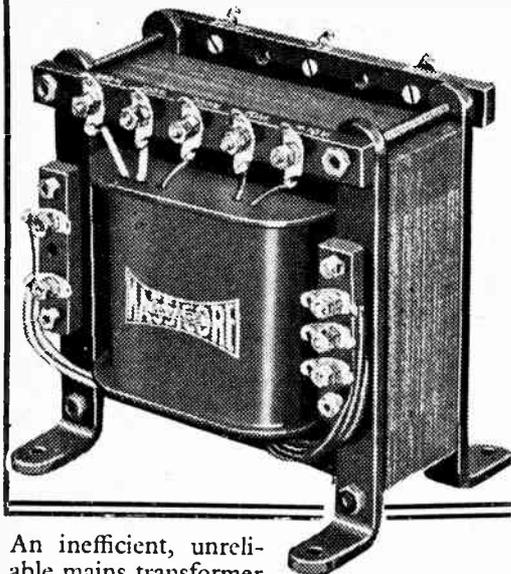
Our 64 page Illus. List for 3d. will tell you how, and show you a great variety of Spring and Electric Motors, Turntab e., Tone Arms, Soundboxes, Horns, Loudspeakers, Pick-ups, Cabinets, Hinges, Lids, Slays, Door-locks, Knobs, Handles and Catches. Also Receivers, Kits, complete Gramophones, Accessories, Springs, Needles and Repair Parts at lowest prices wholesale or retail.



THE REGENT FITTINGS CO., W.O. (Est. 30 years) 120, Old Street, London, E.C.1.

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

AS DEPENDABLE AS THE MAINS THEMSELVES



An inefficient, unreliable mains transformer can cause you endless trouble. It pays to go to Savage. Every Savage "Massicore" instrument (whether it's made specially to your own requirements or a standard model) is generously designed, built with scrupulous care from the best of materials and thoroughly tested before it leaves the factory—a sound job. Send to-day for complete list of standard Savage specifications. You will find it useful.

SAVAGE MAINS TRANSFORMER FOR "THE WIRELESS WORLD" "NEW MONODIAL SUPER"

Type N.M.S. 425-0-425. 120 m.A. 4 V. 3 A. centre-tapped. 4 V. 6 A. centre-tapped. 2 x 4 V. 1 A. centre-tapped with electrostatically screened primary. Price, with terminals, 48/- Manufacturers' model, 42/-

SAVAGE

GUARANTEED
MAINS EQUIPMENT
W. BRYAN SAVAGE
56/58, CLERKENWELL ROAD, E.C.1.

Phone: Clerkenwell 3068/9.

Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)

RESISTANCES, wire wound, finest quality at ridiculous prices: 3,000, 5,000, 8,000, 40,000, 65,000 ohms, all 5 Watt, worth 3/6 each; 6d. each, post 3d.
WIRE Wound Potential Dividers, 60 Watt wound three sections, 4,500 ohms, 3,000 ohms, 2,000 ohms, 1/6 each, postage 4d.; 5 Watt ditto, 20,000 ohms, 20,000 ohms, 20,000 ohms, 1/- each, postage 3d.
POTENTIAL Dividers wound 2 sections, 5 Watt; 40,000 and 23,000 ohms; 40,000 and 80,000 ohms; 40,000 and 100,000 ohms; 30,000 and 50,000 ohms at 1/- each, postage 3d.
POTENTIAL Dividers wound 5 sections, 5 Watt; 250, 165, 100, 100, 100 ohms; 1/6, postage 3d.
Separate 60 Watt Resistances on One Tube, 2,500 ohms and 500 ohms, 1/6 each, postage 4d.
Separate Resistances on One Tube, 2,500 ohms, 1,000 ohms, 80 ohms; 1/- each, postage 3d.
100,000, 200,000, and 300,000 ohms 1 Watt Type Resistances at 4/6 per dozen, postage 3d.
2 MEG. 0.1 Meg. 0.5 Meg Leaks; 0.001, 0.0001, 0.015 fixed condensers all 3/- per dozen, postage 3d.
R. C. Coupling Units, 1/- each, postage 3d.

1 MFD Condensers, 250 V d.c. working, 6d. each, postage 2d.; 4 mfd condensers, 250 V d.c. working, 1/6 each, postage 4d.
GOODS Order value 20/-, carriage free.
EACH Article is tested before despatch and guaranteed first class manufacture; cash with order; all goods despatched same day.—Surplus Radio, 32, Queensway, Ponders End, Middx. [3252]

MILDMAY RADIO EXCHANGE offers the Following Sound and Perfect.
IRRADIANT A.F.6, 17/-; A.F.5, 15/-; O.P.M.10, 14/-; O.P.M.12, 12/6; O.P.40, 10/-; O.P.1, 1-1, 7/6.
VARLEY Square Peak Coils, 7/-; Pentamut outputs, 9/-; Hypercore chokes, 20-30H, 50 m.a., 8/6; Bulsin transcomplers, 6/-; B.T.H. 2-1, 4/6; Polar 3-gangs, 12/-; 2-gangs, 10/-; Clydon 2-gang extenders, 14/-; Lissen 3-gang superhet coils, 14/-.
B.T.H. Junior Pick-ups, 14/-; Edison Bell De Luxe type, 12/6; Kingston Home Recorders, for making records, 5/- complete.
CROSSIT 5 valve A.C. Mains Kit, made up with valves; 6d.
R.G.D. 4-valve 2 S.G. D.C. Mains Radio Gram, brand new; original price 48 guineas, £18.
5-Valve E.R.P. Portables, complete valves and batteries; £3.
THE Above Post Paid.

24, Mildmay Grove, London, N.1.
 (TELEPHONE) 5001. [3297]

SOUTHERN RADIOS Wireless Bargain.—Set manufacturer's guaranteed surplus:—
VARIABLE Condensers.—British Radiophone 4-gang superhet type, fully screened and trimmers, 0.0005, 8 9 (list 45/-); dial, es-utechon and knob, for same, 4/- (list 8/6); Hydra block condensers, brand new, 16 mfd., 2+2+8+2+1+1, 1,000 volt test (made for Canadian Mar-comphone Co.), 8/9; 4 mfd., 2/6; 2 mfd., 1/9; 1 mfd., 1/-; all 750 volt.
CRAMPTON Motors.—Electric gramophone motors, working on all voltages and cycles, D.C. or A.C., non-interference type, absolutely dead silent, £2/2 (listed at £2/15); A.C. only, 2/7/6 (listed at £2/10).
SPEAKERS.—Celestion Soundex permanent magnet, 16/- (list 27/6); Rola F6 permanent magnet, 28/- (listed 49/6); D.C. mains energised, 2,500 to 6,500 ohms, complete with humbucking coils and transformers, 16/6 (list 39/6); Peter Grassman dynamic speakers and chassis, 10/6 each (list 35/-); G.E.C. Stork speakers, complete in magnificent cabinet, 19/6 (list £3/15); Ormond speakers, complete in cabinets, 10/- (list 25/-).

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, 21X.), 35/- each (list 70/-); Ready Radio Meteor screen grid 3-valve kit, less valves, 26/-; with 3 Mullard valves (P.M.12a, P.M.21X., P.M.2a), 49/- (list £5/7/6); Universal Radio 3-valve kits, ready assembled on chassis, 12/6 (list 45/-).
READY RADIO S.T.400 Kits, as specified by Scott Taggart £2/19/6 each (list £4/17/6).
READY RADIO Meteor Screen Grid 3-valve "A" Kit, complete with cabinet, permanent magnet speaker (less valves), £3/7/6, with 3 Mullard valves, £4/10 (list £9/17/6); Mullard Radio for Million variable A.C. kit, complete with 3 Mullard A.C. valves (Pen. 4V, 354 V, 84V), £3/10 (list £6/10); all kits brand new, in original sealed cartons.
B.T.H. Junior Pick-ups, complete with tone arm and volume control (1933), 17/6 (list 25/-); British General Band Pass tuning units, 10 K.C. aerial or anode, 5/- (list 14/6); H.M.V. tone controls, 1/6 (list 12/6); headphones, slightly shop soiled, but perfect, 2/9 per pair.
A.L. Goods Guaranteed Brand New, carriage paid. (Please note: Branches at 46, Lisle St., London, W.C.2, and 271/2, High Rd., Willesden Green, N.W.10, are now open. Please send all post orders to 323, Euston Rd., N.W.1.—Southern Radio, 323, Euston Rd., London, N.W.1 (near Warren St. Tube). Phone: Museum 6324. [3301]

EPTON'S Money Saving Radio Bargain Bulletin. Free! —Epton, 95, New Rd., Chingford, E.4. [3287]
EBURY BRIDGE RADIO offer the Following Stupendous Bankrupt and Surplus Bargains.
A.C. H.T. Eliminators, 200-250v, 50v., output 150v. 30 m.a., 2 nos. tapings, one fixed one variable A.C. kit, house rectified, finest components, guaranteed; special summer price 25/-, post 1/3.
GENUINE Reisz P.A. Microphones for Finest Results on Amplifiers up to 60 watts, straight line response, 55/-; plated stand, with oxy base and rubber suspension, 15/- extra, post free.
EX Ekco Mains Transformers, tapped 200-250v, 50v. input, outputs 350-0-350v, 60-70 m.a., 4v. 2a., 4v. 3 to 4a. C.T., 9/6 post 9d.; a real bargain.
EX Ekco Smoothing Chokes, 50h. 50 m.a., C.L., ideal for above transformers; 5/6, post 6d.
PHILIPS Mains Transformers, 200-250 volts input, output 200-0-200v, 40 m.a., 4v. 1a., 4v. 3a.; a real snip, 4/6, post 9d.
PHILIPS Heavy Duty Smoothing Chokes, 50 henry 75 m.a., 4/6, post 9d.
WESTINGHOUSE Metal Rectifiers, 120v. 15 m.a., 3/-; 120v. 20 m.a.; 3/3, post 6d.

(This advertisement continued on next page.)

acknowledged THE WORLD'S BEST



The most popular and efficient type of fixed resistance for all general purposes. "Better than wire wound." All values 50 ohms to 5 megohms.

100 deg. F. Temperature rise.

Ohms	Milliamps	Ohms	Milliamps
1,000	40	30,000	6.75
2,000	35	40,000	6
3,000	29	50,000	3.5
20,000	8		

Other values pro rata Heavy Duty type, approximately double the above ratings.

OHMITE RESISTANCES

1/6 EACH

HEAVY DUTY TYPE 2/3

Ensure a safe and efficient Aerial and Earth. The new AEROFICIENT KIT provides all you need. 6/6 complete.

Send for copy of New Catalogue ready shortly.



Advertisement of GRAHAM FARISH, LTD., Bromley, Kent.

Export Office: 11/12, Fenchurch St., E.C.3.

RELIABLE SHORT-WAVE RECEPTION

with the **TRIX**

"EXPLORA"

ALL-MAINS SUPERHET



One - Knob Tuning.
Constant dial settings.
Tropical Finish.
Tone Control.
Provision for pick-up.

Chassis, including Moving Coil Speaker, Valves and Royalties: **£24.10.0**

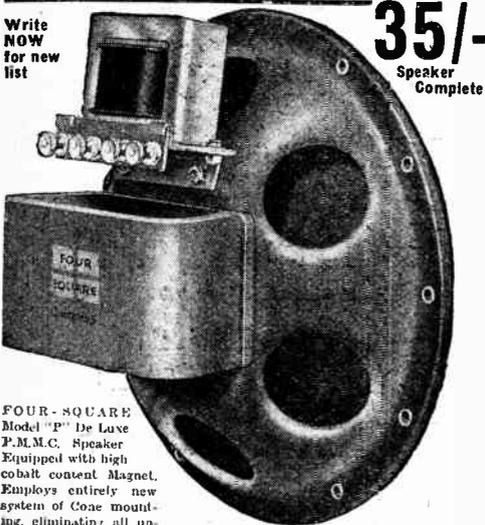
Send for full details and test reports.

Battery Model in Production.

MADE BY THE MAKERS OF **TRIX QUALITY AMPLIFIERS**

Eric J. Lever (TRIX LTD.), 8/9, Clerkenwell Green, London, E.C.1.
Phone: Clerk 3014.3. Cable: TRIX 1110 SMITH, LONDON.
Contractors to H.M. Government.

Write NOW for new list



35/-
Speaker Complete

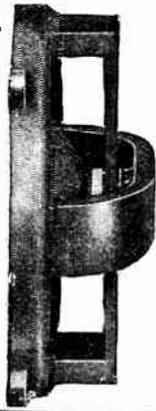
FOUR-SQUARE Model "P" De Luxe P.M.M.C. Speaker Equipped with high cobalt content Magnet. Employs entirely new system of Coax mounting, eliminating all undesirable resonances. Extreme sensitivity with full Bass response gives performance in the highest class.

OLYMPIA, AUG. 15 to 24

STAND No. 109

FOUR-SQUARE Auto P.M.M.C. Speaker for portable receivers. Unique design embodies entire chassis in magnetic system. Diam. 6 1/2". Depth, ONLY 2 1/2". Price, including Universal Radio Transformer, 27/6.

GOODMANS
69, St. John St., LONDON, E.C.1



Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)

WONDERFUL Summer Offer of Electric Clock Movements for A.C. mains; 16.6, post 6d.; write for full details.

D.C. Motors, G.E.C. (U.S.A.), 220 volts, 1/4 h.p., 1,140 revs., compound wound, double ended shaft, make fine grinder or dynamo, 230v, 1.5 amps., nearly new condition, guaranteed; 22/6; real bargain.

SEND Us Your Enquiries for D.C. to A.C. Rotary Converters; cheapest and best in the trade.

SEND for Our Bargain List, which is now ready; all goods 3 days approval against cash or c.o.d.

EBURY BRIDGE RADIO CO., 33, Ebury Bridge Rd., S.W.1 (near Victoria Station, No. 11 bus to Ebury Bridge). Sloane 8407. [3298]

MAYFAIR RADIO Offers Brand New Surplus Stock, all guaranteed, carriage paid; cash with order or c.o.d.

AUTOMATIC Record Changers, Garrard A.C. 200-250, listed £10, at £7/10; sealed crates (6 only), radio gram cabinets (last 20), H.M.V., figured walnut (polished), as used in 70 guinea job, overall 40x27x20, take chassis up to 27-20, cost to make £12, at £5 each, carriage and packing 8/-; extra; pick-ups, Harlie (1933), complete with volume control, list 27/6, at 15/-; B.T.H. Senior (1933), with volume control, list £2/2, at 28/-.
SMOOTHING Condensers, G.E.C., Murphy, etc., 800 test, 250 A.C. working, 1 mfd., 1.1; 2 mfd., 1/9; 4 mfd., 2/6; all the following 1,500 test, 500 A.C. working, 1 mfd., 1/9; 2 mfd., 2/4; 4 mfd., 4/-; multiple banks, separate tappings, 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+1+1, at 7/6.

ASK for Special Quotation for Anything You May Require.

MAYFAIR RADIO, 31, George St., Hanover Sq., London, W.1. [3284]

NORTH LONDON WIRELESS MART, 54, Malden Rd., N.W.5, offers the following manufacturers' surplus, all guaranteed.

CELESTION Soundex P.M., M.C. speakers, with universal output transformers, in sealed boxes; 15/-.

WEARITE Mains Transformers, 350-0-350v., 60 m.a., 2.0-2v. 2 amps., 2.0-2v. 3 amps., 12/6.

RADIO for the Million.—1933 kits (battery), complete with valves in sealed cartons, carriage paid; £3/3.

T.C.C. Condensers—2 mfd., 250v. D.C., 1/6; 1 mfd. ditto, 1/-; Edison-Bell fixed condensers, boxed, all sizes, 3/- dozen. [3265]

WEST END RADIO STORES Special Exhibition Bargains—N. and K. Farrard Inductor speakers, genuine, boxed, 22/6 (70/- list).

BRITISH H.P.8 Transformers, 200v, 180ma., 4v. 3a. and 4v. 1a., 4/9; Henlybird 350-0-350v., 60ma., 4v. 4a., 4v. 2a., 6/6.

WATES Distance Relays 3 1/11, list 9/6; Wates 4 in 1 meters 2 1/1; Wates test meter 3 1/1, list price 8/6.

EDISON Bell Transformers, 400-0-400v., 6v., 7.5v., and 4v. 5a., 15/-; Harlie 27/6; pick-ups 13/6.

T.C.C. 4 mfd., 400v. working cond. terminals type 80, 3/6; T.C.C. 4 mfd. 250v., 2/6; T.C.C. 8.25 mfd. tapped cond., 2/6. 250v. w.; all as new.

UTILITY 2-gang 0.0005 cond., external trimmer, 3/6; Edison Bell R.C. units, complete, 1/6.

LARGE Selection Wates 2 watt Resistances, 3J, each; Edison Bell wire wound with holders, 9d.

BARGAINS in Mains Transformer, speakers, chassis, etc. for callers; only; postage extra on all orders under £1.

WEST END RADIO STORES, 14, Lisle St., Leicester Square, and at 382, Colindale Ave., Brixton, S.W. [3278]

SPECIAL Clearance Bargains.—Projectors (9, 16 and 35 mm.), 30/-; Cameras, from 20/-; everything for Movies, Walkies and Talkies; inspection invited.

ILLUSTRATED ENTERPRISES, 159, Wardour St. (facing Film House), London, W.1. Phone: Gerrard 6889. [3004]

PEPPER offers the following under usual money back guarantee, cash or c.o.d., on three days approval; carriage paid over £2; R.I. goods advertised are second-hand.

TELSEN W181 Loudspeakers, 5/11; Tudy 8-pole units, 7/6; Watmel units, 4 1/1; Epoch E8's (2,500 fields), 13/6.

GARRARD 11a Motors, complete, 15/6; Marconi pick-up, 25/-; Bulgin ditto, 17/6; Phonovox, 10/6.

H.M.V. 2-gang, semi-screened (similar to Radiophone), new, 4/3; Polar 3-gang, 6/3.

COLLYERN K.B.I.C., 10/6; K.G.C., 4/9; Varley Square-peak, with 0.04 mfd., 7/9; Lissen dual range, 3/11; Wearite 0.2, 4, 3; 0.3, 2/6.

FERRANTI B1 Chokes, 10/6; Pye 20H, 4/6; R.I. Hypercores, Pentamans, 9/3; Telsen 100H, 2/11; power grid, 4/3.

FERRANTI A.F.6's, 15/-; A.F.3, 12/6; O.P.M.3, O.P.M.5, 12/6; O.P.3c, O.P.4c, for push-pull, 9/11.

MULTITONE Toco 4:1, with potentiometer, 12/9; Paratels, 4/6; Hypermus, 3/3; Niclets, 3/11; Bulgin Transcouplers, 6/9; Marconi Ideals, 2.7:1, 6:1, 5/3; R.I. O.P.P. inputs, 7/11.

BRITISH GENERAL Super Transformers, 6/11; ditto multi-ratio output, 5/9; Telsen ditto, 5/9; ditto, 1:1, 5/9; ditto, Pentode model, 5/9; R.I. Pentamans, 9/11.

MAINS Transformers, Mullard L.T., 5/11; 400-0-400v., 120 m.a., 4v. 2.5a., 4v. 2.3a., 4v. 2.3a., super finish, 22/6.

NEW Copies of Our Surplus Lists Left, containing many hundreds of genuine bargains.

TREVOR PEPPER, 48, Wakegreen Rd., Moseley, Birmingham, 13. [3275]

SAFETY from Lightning Guaranteed with "Peaces" Patent Combined Earth Switch and Lead-in Tube, 10in. 3/6, 12in. 4/-, postage paid; fix one to-day and be safe.—Stott's, Clare Hill, Huddersfield. [3189]

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. [10355]

TELSEN Superhet Coils, 15/6 set, Magnavox "Magna" D.C.142, 8 1/2in. cone, 37/6; Cossor Melody Maker, 1932, with valves, 45/-; numerous other bargains, write for list. B-ton, 13, Ashville Rd., Leytonstone, E.11. [3290]

103

"WIRELESS WORLD"

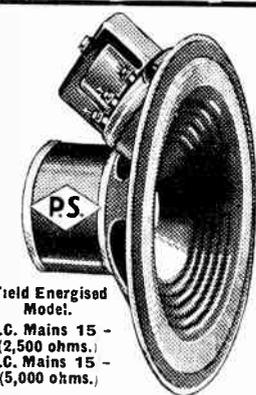
READERS WILL FIND SOUND EQUIPMENT OF GREAT INTEREST ON STAND

103

TANNOY

PRODUCTS

(GUY R. FOUNTAIN LTD.),
Canterbury Grove, West Norwood,
London, S.E.27.



NEW MOVING-COIL SPEAKER

15/-

Field Energised Model.
A.C. Mains 15 - (2,500 ohms.)
D.C. Mains 15 - (5,000 ohms.)

Guaranteed high-grade Permanent Speaker. A BARGAIN PRICE. A wonderful opportunity! Cobalt magnet, moulded diaphragm. Tapped in-put transformer for Power or Pentode.

PETO SCOTT CO. LTD. 77, City Road, London, E.C.1
62, High Holborn, London, W.C.2

NEW "KINVA" PRODUCTS

- Iron-Dust-Core Screened H.F. Choke, Type I.D.C. 200,000 M.H. - - 4/6
- Type D 2-range "Steepslope" Heterodyne and "Splash" Filter - - 7/6
- Type A.3 "Steepslope" Filter - - 13/6
- Type 110K Super-Het. Band-Pass Intermediate, screened - - each 9/6

Complete Range of Highest Grade Mains Transformers and Chokes.

Illustrated Price List with Full Details on Request.

KINVA POSTLETHWAITE Bros. KINVER, STOURBRIDGE



ALUMINIUM COIL COVERS

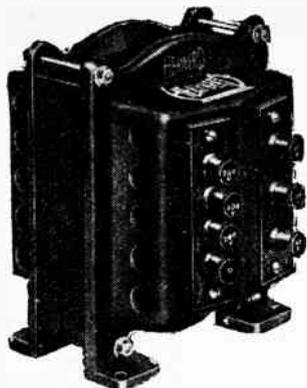
Manufacturer.
WHITE BROS. & JACOBS LTD.
CHALK FARM ROAD, N.W.1
TRADE ONLY
Telephone: GULLIVER 5146.

Notice to TRADERS

The new **W/B MICROLODE**—all parts for the new MONODIAL SUPERHET, and most of the NEW COMPONENTS and ACCESSORIES are AVAILABLE IMMEDIATELY to the trader from

LEONARD HEYS: FARADAY HOUSE
HENRY STREET, BLACKPOOL.
ELEVEN YEARS EXPERIENCE IN THE WIRELESS TRADE

HEYBERD



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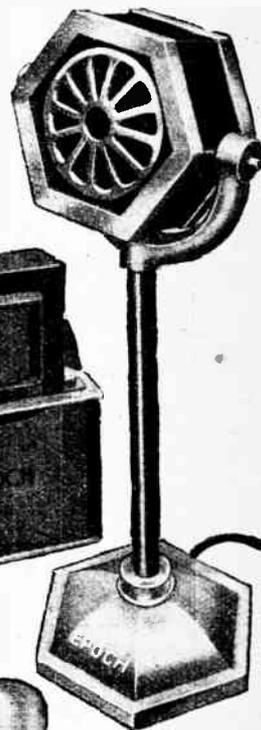
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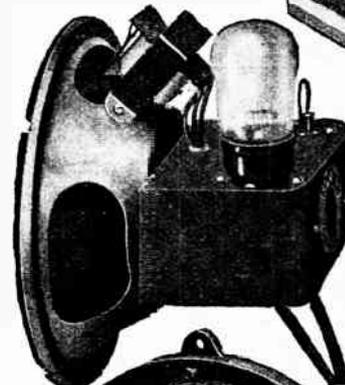
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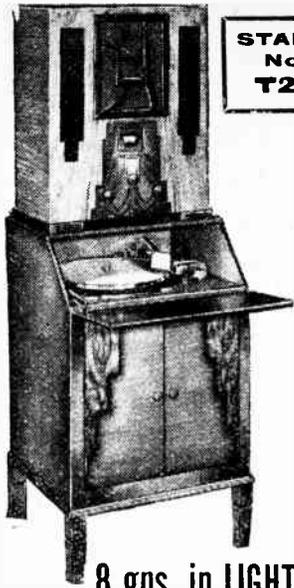


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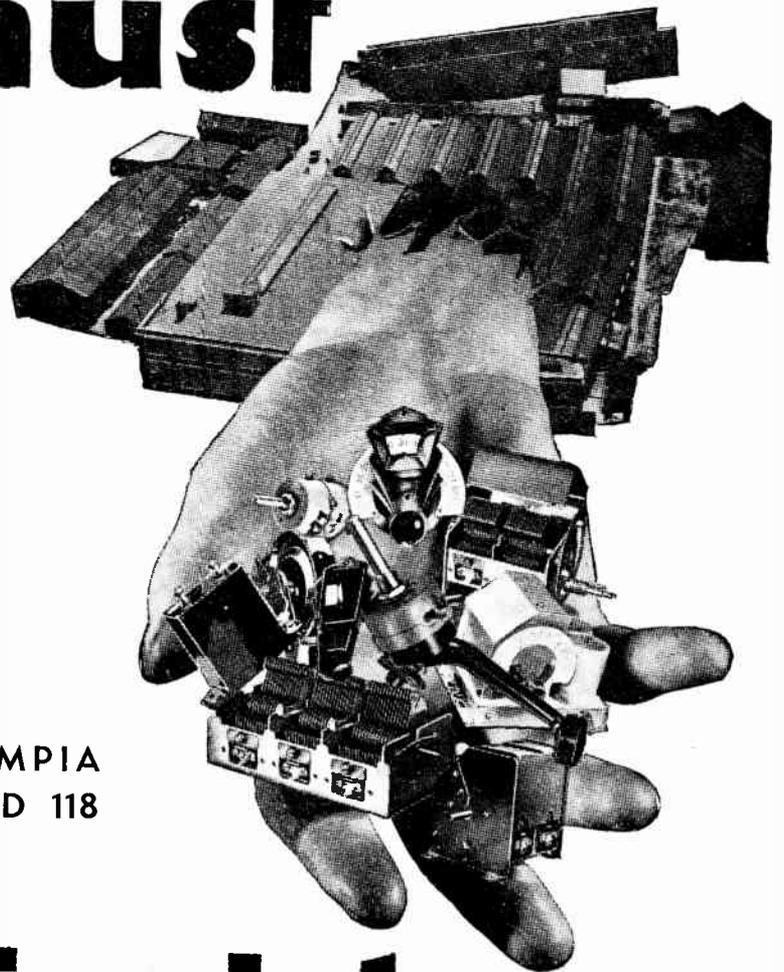
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WEDNESDAY

AUGUST THE TWENTY-THIRD

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL LONDON REGIONAL MIDLAND REGIONAL NORTH REGIONAL WEST REGIONAL SCOTTISH REGIONAL BELFAST** Promenade concert from Queen's Hall. "The Game," a play, by Philip Wade.
- BRESLAU** 8.20 p.m. Brahms' Pianoforte Concerto in D minor (Op. 15), by Hermann Hoppe and the Silesian Philharmonic Orchestra.
- BUDAPEST COPENHAGEN HAMBURG HEILSBURG** 9.50 p.m. Pianoforte recital, by Ernst Dohnányi.
- ROME** 8.30 p.m. Comic opera: "La grotta di Trofonio," by Salieri, and "L'Occasione fa il ladro," by Rossini.
- STOCKHOLM** 8.5 p.m. Acts I and II of "I Cavalieri de Ekebù," by Zandomai, from the Royal Opera House.
- STRASBOURG** 8.30 p.m. Symphony concert from the Casino, Vichy.
- VIENNA** 7.0 p.m. The Wiener Symphoniker, conducted by Josef Holzer.

ABROAD

Programme. 6.55, Talk for Housewives. 7.0, See Prague. 8.0, Sketch (László-translated from Hungarian by M. Holly). 8.25, See Brno. 9.25, See Prague. 10.15 (approx.), Close Down.

BREMEN.—See Hamburg.

1.0 p.m., Le Journal Parlé. 1.10, Concert by the Symphony Orchestra, conducted by Jean Kumps: Carnaval romain (Berlioz); Selection from Die Dorf- und Stadtmusikanten (Mozart); Prélude à l'après-midi d'un faune (Debussy); Rhapsody, España (Chabrier). 5.0, Dance Music from the Continental Palace Hotel, Blankenberghe. 6.0, Talk. 6.15, Gramophone Music. 6.30, Concert by the Little Station Orchestra, conducted by Leemans: 1930, Prélude scénulaire (Leemans); Symphonic Sketch, Renouveau (Brusselmans); Petite Suite for Violin (Frémolle); Crémignon (Gillon); Elan (Douliez); Spanish Dance for Pianoforte (d'Argvères); Chevauchée fantastique (Brenta). 7.15, Talk on Gardens. 7.30, Medical Talk. 8.0, Extracts from the Septet (Beethoven), on Gramophone Records. 8.20, The Pearl—One Act Comedy (Vieret). 9.0, Concert from the Kursaal, Ostend, followed by Le Journal Parlé and Dance Music from the Kursaal, Ostend.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Station Symphony Orchestra, conducted by Kumps; Soloist: Heistractee (Bass). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Radio Orchestra, conducted by Walpot; Soloists: Nini de Boel (Songs) and Harry Collin (Tenor); Egyptian March (Joh. Strauss); Waltz from The Sleeping Beauty (Tchaikovsky); Overture, The Swallows (Hirschmann); Songs; Spanish Suite, La Feria (Lacôme); Tenor Solos; Ballet Music from Coppelia (Delibes). 5.0, Dance Music, relayed from the Kursaal, Ostend. 6.10, Reading. 6.30, De Boeck Pianoforte Recital by Mme. Simone Hays; Petites Pièces; Scherzo-valse; Toccata No. 2; Valse lente; Capriccio. 7.0, Gramophone Records. 7.30, Horticultural Review. 8.0, Concert by the Radio Orchestra, conducted by Walpot: Indian March (Sellenick); Overture, Les Saltimbanques (Ganne); Bells across the Meadow (Kettelbey); Selection from Show Boat (Kern); Waltz, Dans l'azur (Paradis); Ballet égyptien (Luigini). 8.45, Recitation. 9.0, Concert, relayed from the Casino, Knocke; Soloist: Gerard Wouters (Bass); Suite from Othello (Coleridge Taylor); The Dragonfly (Maes); Aria from The Queen of Sheba (Gounod); Ballet Music from La Princesse de la Mer (Cluytens); Aria from Don Carlos (Verdi); Scènes napolitaines (Massenet). After the concert, Le Journal Parlé and Dance Music, relayed from the Casino, Knocke.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: March (Hilfinger); Waltz, An die Schönen, grünen Narenta (Komzak); Selection from Lucia di Lammermoor (Donizetti); Selection from The Circus Princess (Kálmán); Intermezzo (Elliott); Suite on Themes of Johann Strauss

(Morena); Romance (Tchaikovsky); Prelude (Rachmaninov); Melody (Nigrini); Moto perpetuo (Weiss-Irving). In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Romanian Music on Gramophone Records. 7.40, Educational Talk. 8.0, Violin Recital. 8.30, Talk. 8.45, Flute Solos. 9.15, Cello Solos. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—Also relayed on 840 metres from 6.0 p.m. till Close a Down.—5.0 p.m., Concert from the Café Donaukorso. 6.0, Radio Report of the Rowing Championship. 6.30, Recital of Hungarian Songs, with Cigány Music Accompaniment. 7.30, Reading. 8.0, Concert by the Budapest Concert Orchestra, conducted by Tibor Polgar: Comedy Overture (Farkas); Sommerabend (Kodaly); Miniatures (Polgar); Old Dance Songs (Bela Bartok); Hungarian Rhapsody (Lósonezy); Tanzimpressionen (Siklos). 9.30, News. 9.50, Pianoforte Recital by Ernst Dohnányi: St. François d'Assise (Liszt); Consolation in D flat (Liszt); Valse Impromptu (Liszt); Abend bei den Szecklern (Bela Bartok); Barentanz (Bela Bartok); Three Pianoforte Pieces, Op. 43 (Dohnányi). 10.30, Weather. 10.35, Concert of Cigány Music from the Café Ostende.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time and Chimes from the Town Hall and Weather. 12.5 p.m., String Ensemble Concert relayed from the Wivex Restaurant. 2.0, Interval. 3.0, Gramophone Music. 3.30, Concert by the Radio Orchestra, conducted by Launy Gröndahl: Overture, Youth and Madness (Dupuy); Intermezzo from the Symphony in B flat (Svendsen); Two Icelandic Melodies for Strings (arr. Svendsen); Selection from Il Trovatore (Verdi); Schatzwälder (Joh. Strauss); Overture, Le Brasseur de Preston (Adam); Aubade and Berceuse (Rosenberg); Selection from The Bartered Bride (Smetana); Romance in C for Strings (Sibelius); Légende (Thomé); Oriental March (Andersen). In the interval at 4.15 (approx.), Programme for Women. 5.35, Exchange and Fish Market Prices. 6.20, Talk. 6.30, French Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.30, Agricultural Talk. 8.0, Time from the Town Hall. 8.5, Concert of French Music by the Radio Orchestra, conducted by Emil Reesen: Selection from the Concerto for Strings (Lully-Weingartner); Selection from Concerto No. 2 for Strings (Rameau). After the concert, Weather. 8.30, Tartuffe—Comedy in Five Acts (Molière). 9.45, Gramophone Records of Galli-Curci. 10.0, News. 10.15, Orchestral Concert, conducted by Emil Reesen: Overture (Lehar); Selection from Sylvia (Delibes); Spanish Dance No. 4, Villanaca (Granados); In a Chinese Temple Garden (Kettelbey); Kaiserwälder (Joh. Strauss); Suite, Summer Days (Coates). 11.0, Concert, relayed from the Arena. In the interval at 12 Midnight, Time 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.—11.0 a.m. to 6.0 p.m., Programme in English by the I.B.C. 11.0, The Happy Hour. Part I: Orchestral Concert. Signature Tune; Evolution of Dixie (Lake); Pulcinello (Aletzer); Bohemian Song (Boidi); La Source (Delibes); In the Gloaming (Chaminade); Suite, Ballet égyptien (Luigini); Violin Solo, Salut d'amour (Elgar); Baehanales from The Seasons (Glazunov); Selection from Naila (Delibes); Part II: Dance Music by Jay Wilbur and his Band (Electrical Transcriptions); I've got the World on a String; One Tiny Tear; Don't tell a Soul; Goodnight, but not Good-bye; And so I married the Girl; What makes you so adorable?; Put a little Springtime; Her name is Mary; How are You?; Stormy Weather; I shall still keep smiling along. Moonlight on the River; Signature Tune. 4.30, Programme for Children. 5.0, Concert for Portsmouth and Southsea Listeners. Signature Tune, The Night by the Sea; Intermezzo, Liebesfred (Kreislner); Humoresque No. 7, Op. 101 (Dvorak, arr. Schmidt); Serenata (Toselli); Selection from Die Fledermaus (Strauss); Song, Take a pair of Sparkling Eyes (Sullivan); The Scarf Dance (Chaminade); Sleight Bells (Lindeman). 5.30, Gramophone Concert for Isle of Wight Listeners: Song, La Donna e mobile, from Rigoletto (Verdi); Waltz, Gold and Silver (Lehar); At the Races, by Flannagan and Allen; Xylophone Solo, The Dripping Well (Abbey); Song, Blaze Away; Pianoforte Solo, Rustle of Spring (Sinding); The Warblers' Serenade (Perry); Handsaw Solo, Un peu d'amour (Silesu); Signature Tune. 6.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music: Signature Tune; Bells of Normandy; They all do the Rumba; We belong together; I've told every little Star; No more Love; The Song is you; What more can I ask?; The Song is Old Owl said Hoo; Brighter than the Sun; Get Happy; All over Italy; Chansonnette; Standing

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.30 p.m., Time Signal, Stock Exchange Quotations, Weather Forecast, and Gramophone Music. 6.0, Programme for Children. 6.45, News. 7.0, Gaelic Talk. 7.15, German Lesson. 7.30, Time Signal. 7.31, Pianoforte Recital by Victor Love. 7.50, Baritone Solos by Myles J. Kelly. 8.5, Station Octet. 8.30, Soprano Solos by Josephine Hennessy. 8.45, The Station Octet. 9.0, The Bathroom Door—Comedy, by Mrs. V. Fleming-Moran and Company. 9.30, Songs and Stories by Fay Sargent. 9.45, Sponsored Programme. 10.45, News, Weather, and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Radio Trio. 8.0, Request Gramophone Records. 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes, Weather and Exchange. 10.5, Concert by the Radio Orchestra. 11.0, Relay from the Ayuntamiento. 12 Midnight (in the interval) News. 1.0 a.m. (Thursday), 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 Chamber Music. Franco Ruggiero (Pianoforte), De Santis Bruno (Soprano) and Arcangelo Masotti (Cello). Pianoforte Solo: Prelude, Choral and Fugue (Franck). Soprano Solos: (a) Triste voglia (Guernieri). (b) Nuit d'Espagne (Massenet). Cello Sonata in G minor (Beclès); Rhapsody No. 12 (Liszt). Soprano Song, Primavera (Milk). Cello Solos: (a) Allegro (Vandini). (b) Adagio (Bocherini). (c) Scherzo (Van Goens). 9.40, Quintet Concert: Overture, Il Natale di Pierrot (Monti); Baccarolle (Madun); Muchachas hermosas (Pennati-Malvezzi); Selection from Andréa Chénier (Giordano); Winter Landschaft (Lincke). Talk in the interval. 10.30, Dance Music from the Gran Caffè del Levante. 10.50, News in Albanian. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.0 p.m., Concert by the Station Orchestra. 7.0, Gramophone Music. 7.20, Talk. 8.0, Concert: Andante from the Quartet Op. 3 (Mendelssohn); Extracts from the Quartet in E flat, No. 3 (Mozart). 8.30, La Traviata—Opera (Verdi), on Gramophone Records. 10.30, News and Time Signal. 10.35 (approx.), Cigány Music, relayed from the Potrosacka Zadruga Restaurant.

BERLIN

DEUTSCHLANDSENDER (Reichssender), 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News, followed by Report of the Round Germany Flight, 1933 (on Gramophone Records). 2.10, Concert, relayed from Hamburg. 3.0, Programme for Children. 3.30, Weather and Exchange. 3.45, Reading (Rudolf Huch). 4.0, Concert by Massed Nazi Bands, relayed from the Funkgarten. March, Märkische Heide (Lincke). 6.0, Poems. 6.5, Religious Address: The German Christian Movement, and Organ Solos. 6.55, Talk on the Radio Exhibition. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, To-day's Motto. 8.5, See Berlin (Witzleben). 10.0, News. 10.45, Weather. 11.0, See Munich. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.0 p.m., See Berlin Deutschlandsender (Reichssender). In the interval at 4.40-5.20, Three Radio Reports: (a) A Flight Over Berlin in the Hindenburg, (b) By Sea from Swinemünde to Pillau, (c) On the Train from Berlin to Hamburg. 6.5, See Berlin Deutschlandsender (Reichssender). 6.40, The Witzleben Station informs its Listeners... 6.45, Topical Talk. 7.0, Transmission for all German stations, relayed from Munich. 8.5, A Relay from the Radio Exhibition. 10.0, News. 10.15 (approx.), Concert of Waltzes by the Station Orchestra, conducted by Arthur Andrae: Die Romantiker (Lanner); Waldnixe (Ertl); Tesoro mio (Beucchi); Natursänger (Ziehrer); Fideles Wien (Komzak); Moonlight on the Alster (Fetras). In the interval at 11.0, Talk: What they are saying in Berlin. 11.20, Dance Music, relayed from the Spreegarten, Treptow. 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, News. 7.40, Gramophone Music. 7.55, Lottery Results. 8.0, Agricultural Report. 8.15, News. 8.30, Gramophone Concert. 9.0, Symphony Concert.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—5.55 p.m., Hungarian Transmission: Edward Grieg

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.45 p.m., Time and News. 2.5, Classical Music on Gramophone Records. 2.45, Agricultural Prices. 3.0, Concert by a Nazi Band, conducted by Peter Cygauek. Upper Silesian March (Kraus); Jubel—Ouverture (Bach); Ein Fest in Aranjuez (Demersennann); Waltz, Tales from the Vienna Woods (Joh. Strauss); Selection from Lilac Time (Schubert-Berté); Hymn and March from Aida (Verdi); Rhapsody on a Bavarian Folk Song (Pfitzinger); Potpourri, Schön ist die Jugend (Rhode). 4.40, See Berlin (Witzleben). 5.20, Agricultural Prices. 5.25, Duet Recital by Lotte Badewitz (Soprano) and Lisa Rosbach-Seebach (Contralto). Willkommen (Cursehmann); Husarenlied (Kirchner); Drauss' ist alles so prächtig (Sülicher-Jürgen); Liebes Mädchen hör' mir zu (Haydn); Das Waldhorn (Sülicher); Schummerlied des deutschen Knaben (Kirchner). 5.50, Radio Report from a Coke Works. 6.15, Chamber Music. Sonata (Handel) for Pianoforte and Two Violins; Ballad in D minor Op. 36 for Pianoforte and Violin (Wagner); Am Kanin, Op. 19 (Voelkel). 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, See Munich. 8.20, Pianoforte Concerto in D minor, Op. 15 (Brahms) by Hermann Hoppe (Pianoforte) and the Silesian Philharmonic Orchestra, conducted by Ernst Prade. 9.0, News. 9.10, Symphony No. 3 in D minor (Bruckner), by the Silesian Philharmonic Orchestra, conducted by Ernst Prade. 10.10, Time and News. 10.30, Political Press Review. 10.50, Talk on the Theatre. 11.10 (from Gleiwitz), Schrammel Concert by the Schrammberg Musical Society. 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—7.0 p.m., See Prague. 8.0, Cello Recital by Svoboda: La Lamentation (Gabriel Marie); La cinquantaine (Gabriel Marie); Trümmerei (Schumann); Minuet (Bocherini); Canzonetta (d'Ambrosio); Allegro appassionato, Op. 43 (Saint-Saëns). 8.25, Moravian Folk Songs. In an interval, Ondráš, the Robber—Sketch (Martinek). 9.25, 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 Radio Orchestra, conducted by Charles Walpot; Soloists: Nini de Boel (Songs) and Harry Collin (Tenor):

AUGUST 23rd

WEDNESDAY

continued

on the Corner; Put a little Springtime in the Winter of their lives; Nightfall; Wanderer; I don't want to go to Bed; Signature Tune. 11.0, Concert of Light Music. Veterans of Variety; Selection from The Belle of New York (Kerker); The Skaters' Waltz (Waldeuteufel); Marta (Simon); Les Millions d'Arlequin (Drigo); Glow-Worm Idyll (Lincke); The Old Spinning Wheel (Hill); Veterans of Variety. 11.30, Concert by the I.B.C. (Ireland), Ltd. Organ Solos: (a) Signature Tune, Come back to Erin; (b) Waltzland Selection (arr. Stoddon), (c) Ca c'est Madrid (O'Henry); Violin Solo, Waltz, Op. 39 (Brahms); Organ Solo, Glow-Worm Idyll (Lincke); Song, A-Roving (Terry); Organ Selection from Cavalleria rusticana (Mascagni); Song, Dance away the night; Organ Solos: (a) Waltzland Selection (arr. Stoddon), (b) Signature Tune, 12.5 a.m. (Thursday), News Bulletin in English. 12.10 (approx.), Club Concert for Ashburn Listeners. Octets: (a) Signature Tune: The Chum Song, (b) Spring Song (Mendelssohn); Song, Danny Boy; Octet, Romance (Rubinstein); Song, The Second Minuet (Beslay); Octet, Torcaador et Andalouse (Rubinstein); Wiener Blut (Strauss); Violin Solo, Poème (Fibich); Nxylophone Duet with Orchestra, Dance of the Nymphs (Bireh); Song, The Crystal Spring; The Old Spinning Wheel (Hill); The Way to the Heart (Lincke); Song, The Wraggle Taggle Gypsies; Serenade d'amour (von Bloi); Signature Tune. 1.0, Dance Music; Signature Tune, Bells of Normandy; It's within your power; All over Italy; Piccinimies' Heaven; Her name is Mary; Moon Song; What more can I ask; Get Happy; Something came and got me in the Spring; A little Street where old friends meet; Wheezy Anna; Dreaming; A Ghost of a Chance; In the Valley where the blue birds sing; I'm playing with Fire; The Girl in the little Green Hat; Sweetheart; Signature Tune. 1.57, I.B.C. Goodnight Melody. 2.0, 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.—1.20 p.m., Concert of Opera Music by the Station Orchestra, conducted by Hans Rosbaud; Soloist: W. Oswald (Tenor); Overture, Czar and Carpenter (Lortzing); Tenor Solos: (a) Song from Undine (Lortzing), (b) Air from Czar and Carpenter (Lortzing); Overture, Martha (Flotow); Tenor Solos: (a) Aria from Der Waffenschmidt (Lortzing), (b) Aria from Undine (Lortzing); Overture, Oberon (Weber). 2.10, News. 2.30, Special News for the Saar District. 2.40, Topical Talk. 3.0, Weather. 3.10, Time and Exchange. 3.30, Programme for Young People: With a Collapsible Boat from Ulm to Constantinople. 4.25, Exchange. 4.30, Concert Relay. 5.45, Exchange. 6.0, Talk: Plants and Animals of the Rhin District. 6.25, Topical Talk. 6.45, Review of the Day's News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, See Munich. 8.25, See Stuttgart. 9.10, Concert by the Station Orchestra, conducted by Dr. Reinhold Merten; Soloist: Max Zimolong (Horn); Overture, Blindekuh (Joh. Strauss); Songs from Operetta; Waltz on Themes from Jung Heideberg (Millöcker); Java from Cloelo (Lehar); Marching Song, Wenn man über Pünzig ist (Lehar); Selection from Polenblut (Nedbal); Songs from Operetta; March from Herbstmänover (Kalmán); Waltz from Casanova (Lincke); March from Der Generalkonsul (Reinhardt). 10.25, 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.

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.—4.0 p.m. (from Bremen), Concert conducted by Franz Koenecke, relayed from the Limer Bremen; Overture, Die Matrosen (Flotow); Brise de mer (Leoneavallo); Träume auf dem Ozean (Gungl); Extracts from the Ocean Suite (Koenecke); Sailors' Dance (Bantock); Potpourri, Echo der Welt (Zimmer); March, Ueber den Ocean (Vos). 5.0, Dialogue between Dr. J. Süss and a Ship's Carpenter. 5.30, Hamburg, Bremen and Lübeck.—Report on Events in the Senates and Houses of Burghesses of the Hanseatic Free Cities. 6.0, Talk: The Music of Konradin Kreutzer. 6.15, Albert Petersen reads from his own Works. 6.45, Exchange and Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, See

Munich. 8.25, Joan of Arc—Opera in Three Acts (Verdi). 10.40, Time and News. 11.0, Concert of Light 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 Concert. In the intervals at 1.20 and 2.0, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Market Prices. 3.20, Talk: Hints for the Housewife. 3.35, Programme for Children. 4.0 (from Danzig), Talk for Parents: Educational Problems and the Modern Boy. 4.30, Concert by the Königsberg Opera House Orchestra, conducted by Wolfgang Briekner. In the interval at 5.0, Review of Books. 5.45, East Prussian Poets—Talk on A. K. Tielon, on the Twenty-third Anniversary of his Death. 6.15, Market Prices. 6.25, Song Recital. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, See Munich. 8.25, Weather and News. 8.30, Chamber Music of the Romantic Period, by the Brunier Quartet: Harp Quintet (E. T. A. Hoffmann); Quartet in D Minor (Schubert). 9.30, Talk: New Ideas in Geology. 10.0, Weather and News. 10.20 (approx.), Concert by the Station Orchestra, conducted by Eugen Wilken: Wedding March (Bosch); Overture, The Force of Destiny (Verdi); Prelude and Sicilienne from Cavalleria rusticana (Mascagni); Autumn Song (Louticavallo); Selection from Andrea Chénier (Giordano); Rakoczy Overture (Keler-Bela); Veil Intermezzo from Mona Lisa (Max von Schillings); Ballet Music from Undine (Lortzing); Waltz, Paysage d'Autonne (Waldeuteufel). 12 Midnight (approx.), 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.). 10.40 a.m., Concert by the van der Horst Ensemble. In the interval at 11.40, Police Notes and Gramophone Music. 12.55 p.m., Pianoforte Recital: Partita in B (Bach); Waltzes Op. 39 (Brahms); Jeux d'eau (Ravel); Reflets dans l'eau (Debussy). In the intervals, Gramophone Music. 1.40 to 2.10, Interval. 2.10, Gramophone Music. 2.40, Bible Reading. 3.10, Organ Recital by Kloek. In an interval at 3.40, Gramophone Music. 4.40, Programme for Children. 5.40, Gramophone Music. 6.10, Talk. 6.40, Police Notes. 6.55, Religious Report. 7.10, Gramophone Music. 7.25, Talk. 7.40, Military Band Concert, conducted by Louis de Moreé; Marche (Vlesing); Concert Overture (Saint-Saëns); Old Dutch Songs (Valerius); Suite from Henry VIII (Saint-Saëns); Schumann Potpourri (Mann); Marche solennelle (Dorrenbaan-Moreé); Three Pieces (Popper-Rehl); Selection from Madeline (Schuyler); Mendelssohn Potpourri (Rehl). In the interval at 8.40, Legal Talk, and at 9.40, News. 10.10, Gramophone Music. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 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, Concert by De Notenkrakers. In the intervals, Gramophone Music. 1.40 p.m., Gramophone Music. 2.10, Organ Recital by Jong. 2.40, Programme for Children. 5.10, Song Recital by de Booy. 5.35, Gramophone Music. 5.50, Song Recital (contd.). 6.10, Recitation. 6.40, Gramophone Music. 7.25, Piccolo Solos. 7.40, News. 7.55, S.O.S. Announcements. 7.57, Orchestral Concert, conducted by de Groot; Overture, Czar and Carpenter (Lortzing); Selection from Boris Godunov (Mussorgsky); Suite from The Tale of Czar Saltan (Rimsky-Korsakov); Stenka Rasin (Kubat); La Tsarine (Ganne). 8.40, Dramatic Programme. 9.10, Concert (contd.): In the Sunny South (Bodewalt-Lampe); An Evening in Havana (Filipevic); The Girl from Brazil (Romberg); Mondnacht in Rio de Janeiro (Wertheimer); Selection from Rio Rita (Tierney). 9.40, Concert by the Zanglust Male Voice Double Quartet. 10.0, Concert by De Flierefluiter.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 1.15, Radio Concert. 8.0, Amusement Guide and News. 8.15, Radio Concert. 8.45, News and Weather Report. 9.0, Gala Concert relayed from Cannes.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.5 p.m., Talk: Polish Scouts at Códólló. 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.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert by the Fröhliche Fünf. 12.30 p.m., Concert conducted by Eysoldt. In the interval at 12.50, News. 1.20, Gramophone Concert. In the interval at 2.0 (approx.), News. 2.30, Interval. 3.0, Handwork for Children. 3.30, Market Prices and Time. 3.50, Programme for Young People. 4.30, Reading. 4.50, Recitation. 5.0, Gramophone Concert. 5.30, Talk for Women. 5.50, Political Address. 6.0, Concert, conducted by Eysoldt. 6.45, Announcements. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Monthly Review of World Politics. 8.25, News. 8.30, Concert of Folk Music. 9.0, A Summer Evening in Camp—Programme arranged by Baumgarten. 10.10, News. 11.0, Serenade, relayed from Munich. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon, Weather and Time. 12.5 p.m., Orchestral Concert, conducted by Philipp Werner. Waltz, Die Schönbrunner (Lannér); Selection from William Tell (Rossini); Two Russian Dances (Bullerian); Allegro quasi andantino (Schubert); Ballet Scene from Kassyva (Delibes); Selection from The Daughter of the Regiment (Donizetti); Deutscher Jubelumsarmarsch (Joh. Strauß); Spanish Caprice in A, Op. 34 (Rimsky-Korsakov); Waltz, Wild Roses (Ganglberger); In the Shadows (Finck); Ernst und Scherz fürs Wiener Herz (Konzak). In the interval at 1.0 p.m., News. 2.0, News. 2.30, Talk: Motoring. 3.0, Talk on the Frobenius Expedition. 3.35, Exchange Quotations. 4.0, Choral Concert for Young People. 4.45, Talk: The 1933 Radio Exhibition. 5.0, König Drosselbart—a Fairy Play in Six Parts (Dörte Jähn-Heise). 5.50, Exchange, Weather and Time. 6.0, Review of Books. 6.20, Talk: Germany's Export Trade. 6.50, Review of the Day's News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Readings. 8.30, Agricultural Notes. 8.40, Songs and Dances in the Rocoeco Style—the Station Orchestra, conducted by Theodor Blumer, with Soloists. Minuet (Boelcherini); Der Graf bot seine Schätze mir (Hiller); Dreier (Jakob Häbel); German Dances (Schubert); Two Pieces (Weber); (a) Was zieht zu deinem Zauberkreise, (b) Der kleine Fritz an seine jungen Freunde; Styrian Dances (Lannér); Duet from Aljine (Wenzel Müller); Waltz, Hofballtänze (Lannér); Two Old Viennese Melodies: (a) Mei Schatz is a Schneider, (b) Die Wäschetourel vom Himmelportgrund; Martha-Quadrille (Joh. Strauss, sen.); Bräderlein fein (Drechsler); Abschied (Wenzel Müller); Waltz, Loreley-Riesenklinge (Joh. Strauss, sen.); Hobbellied (Kreutzer); Minuet and Finale from the Sonata in G for Pianoforte (Haydn); Wiener Damen-Ländler, Op. 67 (Schubert); Pianoforte Solo, Grätzer Walzer, Op. 91a; Radetzky-Marsch (Joh. Strauss, sen.). 10.10, News. 10.20 (approx.), Concert from Heilsberg. 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—7.0 p.m., Programme for Children. 7.30, Literary Programme. 8.0, Song Recital. 9.30-10.0, Programme in English by the I.B.C., International Broadcasting Club Concert: Trees; Duet, I travel the Road; An old Violin; Selection from Countess Maritza (Kálmán); Waltz, The Blue Danube (Joh. Strauss); Albumblatt; Selection from White Horse Inn (Benatzky); Roses from the South (Joh. Strauss). 10.0, Dance Music. 10.30, Popular Programme. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—7.30 p.m., Symphony No. 3 in C Minor for Organ (Saint-Saëns) on Gramophone Records. 8.15, Racing Results. 8.20, Popular Luxembourg Songs and Duets. 8.50, News in French. 9.0, Military Band Concert, conducted by Fernand Mertens, relayed from La Place d'Armes. 10.0, News in German. 10.10, Selection from Der Bettelstudent (Millöcker) on Gramophone Records. 10.30, Dance Music on Gramophone Records.

LWOW

788 kc/s, 381 metres; 16 kW.—7.5 p.m., Gramophone Music. 7.20, Miscellaneous Items. 7.40, See Warsaw. 9.0, News. 9.10, See Warsaw. 10.40, Gramophone Music. 11.0 (approx.), Close Down.

LYONS

LA DOUA (PTT), 644 kc/s, 465.8 metres; 1.5 kW.—6.15 p.m., Radio Journal. 7.30, Radio Gazette for Lyons and the South-East. 8.30, Orchestral Concert of Light Music. 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, with Gramophone Records, and Dance Music. 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time, and Political Review. 11.20 (approx.), Faust—Play (Goethe), with Incidental Music. Radio Adaptation by Martín Becerra. 1.15 a.m. (Thursday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.30 p.m. (approx.) till Close Down. See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.5 p.m., Concert by the Ostrava Miners' Band. 7.0, See Prague. 8.0, Song Recital by Karel Kügler. 8.25, See Brno. 9.25, See Prague. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—1.45 p.m., Weather. 2.45, Weather Report. 3.0, Concert of Music by Berlioz, Gounod, Delibes, Rubinstein, and Massenet. In the interval, Literary Talk: Mark Twain, Ili and Petrov. 3.55, Time. 4.0, Talk: The Sub-Tropical Districts of the Soviet Republic. 4.30, Literary Programme. Part I: The History of the Soviets' Industrial Development. Part II: Reading from a New Foreign Book. 5.30, Programme Announcements. 5.45, Topical Talk. 6.30, Theatre Review. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5, Press Review.

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.—4.25 p.m., Concert by the Lorenz Jais Orchestra. 5.20, Talk on the Natural Sciences. 5.40, Talk: Constructive and Destructive Revolutions, V. 6.0 (from Nürnberg), Orchestral Concert, conducted by Willy Böhm. 6.55, Time and Announcements. 7.0, Transmission for all German Stations: Symphony Concert by the Station Orchestra, conducted by Hans A. Winter, and the Station Choir. Soloists: Martha Martensen (Soprano), Marius Anderson (Tenor), and Max Hartmann (Baritone). Selection from The Seasons (Haydn); Pastoral Symphony No. 6 in F (Beethoven). 8.0, Monthly Review of International Politics. 8.35 (from Nürnberg), Concert by the Scharische Orchestra; conducted by Michael Bayer; Overture to a Comedy (Böhm); Waltz, Luue de miel (Waldeuteufel); Gavotte, Aus galanter Zeit (Meyer-Heilmund); Liebesszene (Köpping); Harlequin's Serenade (Dreyer); Waltz, Der Himmel hängt voller Geigen (Ziehrer). 9.30, Brautseban (Looking out for a Wife)—Rustic Scene (Philipp Weichand). 9.45, Bavarian Music. 10.20, Time and News. 11.0, Serenade by the Georg Ebner Orchestra. 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., Gramophone Concert. 6.30, Programme for Girls. 7.0, Announcements and News. 7.30, Recital of Norwegian Songs by Conrad Arnesen. 8.0, Time Signal. 8.1, Reading. 8.30, Concert by the Station Orchestra, conducted by Hugo Kraumm. Soloist: Georgy de Martens (Harp). Suite for String Orchestra (Bach); Introduction and Allegro for Harp and Orchestra (Ravel); A Somerset Rhapsody (Gustav Holst); Allegro from the Suite, Op. 36 (Alnnes); Rhapsody in C (Dohnanyi). 9.30, Agricultural Report. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Old Dance Music by Per Bolstad (Violin), Henrik Lund (Violin), and Eger Bjørnson (Pianoforte). 10.45, Modern Dance Music on Gramophone Records. 11.30 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolaro Notes, Tourist Report, Agricultural Notes and Giornale Radio. 8.20, Time and Announcements. 8.45, Un curioso accidente—Comedy in Three Acts (Carlo Goldoni). In the intervals and after the Comedy, Gramophone Music. 10.45, News.

AUGUST 23rd WEDNESDAY continued

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 Review. 7.0, Le Journal Parlé. 8.30, Symphony Concert, conducted by Eduard Flament. The Unfinished Symphony (Schubert); Invocation (Edouard Flament); Prelude to Vénéloupe (Faure); Overture, L'épreuve villageoise (Grétry). 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, Concert of Chamber Music. 8.25, Cello and Pianoforte Recital by Jean Vaugois and Gendron: Sonata (Samarini); Habanera (Ravel); Jota (Falla); Spanish Songs (Falla). 9.15, Roy Fox and his Band and Soloists, relayed from the Casino, Deauville. 10.45, 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: Jack Baby (Loyaux); You (Cazes); Syncope (Kreisler); Arab March (Ganne). 8.0, Weather and Press Review. 12 Noon, Educational Talk. 12.15 p.m., Rossini Opera Music on Gramophone Records: Overture and Seven Airs from The Barber of Seville; Overture and Four Arias from William Tell; Overture, The Thieving Magpie; Overture, Semiramis. In the intervals at 1.0, Market Prices, News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange. 7.0, Agricultural Notes and Racing Results. 7.10, Gramophone Music: Selection from The Dollar Princess (Fall); Serenade (Waldan); Aria from The Fair Maid of Perth (Bizet); L'heure exquise (Hahn); Chinese Serenade (Siede); Egyptian Serenade Amina (Lincke); Selection from La Bohème (Puccini). 7.50, Commercial Prices and News. 8.0, Le vital Procès de Jeanne d'Arc—Gramophone Records. 8.30, News and Weather. 8.40, Fashion Review. 8.45, Operetta Music on Gramophone Records: Overture, Orpheus in the Underworld (Offenbach); Duet and Air from La petite mariée (Lecocq); Selection from Le Jour et la Nuit (Lecocq); Two Airs from Miss Decima (Audran); Selection from La Mascotte (Audran); Selection from The Merry Widow (Lehár); Overture, Countess Maritza (Kálmán). In the interval at 9.15, Press Review and News.

PITTSBURGH

KDKA, 950 kc/s, 306 metres; 50 kW. Relay by W3XK on 48.86 metres and 25.27 metres.—7.30 p.m., KDKA Home Forum. 8.0 to 9.30, New York Relay. 8.0, Betty and Bob. 8.15, Words and Music. 8.30, Happy Days in Dixie. 9.0, Southern Symphonies. 9.30, Frances Ingram. 9.45, News and Markets. 10.0, Programme to be announced. 10.15, Tarzan of the Apes. 10.30, Larry Larson, from New York. 10.45, Orphan Annie, from New York. 11.0, News and Piano Classique. 11.15, Sports Notes and a Song. 11.30, Pittsburgh Spotlights. 11.45 to 2.0 a.m. (Thursday), New York Relay. 11.45, Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, Eva LeGalliene. 12.30, Essex House Ensemble. 1.0, The Nomads. 1.30, Potash and Perlmutter. 1.45, Phil Cook. 2.0, Programme to be announced. 3.30, Cracker Barrel.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by Parik. Dramatic Overture (Buisson); Norwegian Dances Nos. 1-4, Op. 35 (Grieg); Selection from Polenbitt (Nedbal); Russian Romance (Friml); Carnival of the Elves (Raaseh). 3.55 to 4.0, Exchange. 5.45, Gramophone Music. 5.55, Talk: Poland's Coastline. 6.5, Agricultural Report. 6.10, Gramophone Music. 6.25, News in German. 6.30, German Transmission: Talks. 7.0, Chimes and News. 7.10, Popular Programme. 7.45, Talk. 8.0, Pianoforte Recital by Emil Hajek. 8.25, See Brno. 9.25, Popular Concert. 10.0, Time and News. 10.15, News in French. 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. (from Lausanne), Gymnastics. 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, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Geneva), Gramophone Music. 7.0 (from Lausanne), Talk. 7.25 (from Lausanne), News. 7.30 (from Lausanne), Talk. 8.0 (from Geneva), Un garçon de chez Vercy—Comedy in One Act (Lahiche). 8.35 (from Geneva), Accordion Solos by Roger Rozzo. 8.50, Concert by the Radio-Suisse Romande Orchestra, conducted by Léon Hoogstoel: Overture, Egmont (Beethoven); Symphony in E flat (Mozart); Prelude to Klovanschtchina (Mussorgsky); Introduction and Gopak from The Fair at Sorotchinsk (Mussorgsky); Rhapsody, Es-pañola (Chabrier). 9.50, News. 10.0 (from

(Geneva), Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.0 p.m., Review of Foreign Affairs. 6.30, Famous Singers on Gramophone Records. 7.0, Weather Report. 7.3, Agricultural Talk. 7.30, Concert by the Station Orchestra, conducted by Valerie Berdiakov, relayed from Dzintari. Soloists: Eduards Vinerts (Violin) and Ludwig Jucht (Double Bass). Symphonic Poem, Don Juan (B. Strauss); Pacific No. 231 (Honegger); Concert Duet for Violin and Double Bass (Bottesini); Hungarian Rhapsody No. 1 (Liszt). In the intervals, News and Weather. After the Concert, News and Light Music on Gramophone Records.

RJUKAN.—See Oslo.

ROME

Call 1RO, 660 kc/s, 441 metres; 50 kW. Relay by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres, from 5.15 p.m.—12.30 p.m., Gramophone Music. 1.0, Orchestral Concert: Melody in Blue (Eschobar); Canzone di maggio (Manno); An Old, old Story (Culotta); Cradle Song (Dvorak); Fantasticamente (d'Amato); Selection from Rose Marie (Friml); Rumba, Moná (Ansaldó); Melody (Buchbinder); Waltz (Gray); Melody (Nichols). In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 2.0, Time and Announcements. 4.30, Giornale Radio, Exchange and Report of the Royal Geographical Society. 4.45, Children's Radio Review. 5.10, Weather. 5.15 to 6.0, Orchestral Concert: March (Benatzky). Cello Solos: (a) Le Cygne (Saint-Saëns). (b) Scherzo (Van Goens). Rumba, Madama (Almaby); Festa in Val d'Aosta (de Nardis); Sul Nilo blu (D'Anzi); Second Little Suite (De Micheli); I would like to be you (Aaken); Scunpre allegro (Ansaldó). 6.40 (Naples), Shipping and Sports Notes. 6.45, Doppolavoro and Tourist Report. 6.57, Report of the International Institute of Agriculture (in Italian and English). 7.10, Tourist Report. 7.20, News in Foreign Languages. 8.0, Time, Announcements and Gramophone Music. 8.15, Medical Talk. 8.25, Giornale Radio and Sports Notes. 8.30, Comic Opera Programme: (a) La grotta di Trofonio (Salieri). (b) L'occasione fa il ladro (Rossini). Talk in the interval. Dance Music after the Programme. 10.55, 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., Pop Concert, from New York. 9.30, Mountain Ballads by Bradley Kincaid. 9.45 to 10.0 (approx.), Lady Next Door, from New York. 12.45 a.m. (Thursday), Stock Reports and Baseball Scores. 1.0, Variety Programme, from New York. 1.30, Popular Programme. 1.45, New York State Fair Programme. 2.0, Ferde Grofé's Orchestra, from New York. 2.15, Popular Programme. 2.30, Variety Programme. 3.0, Variety Programme from New York. 3.30, Ship of Joy, 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.—6.15 a.m. (from Basle), Gymnastics. 6.35, Interval. 11.59, Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from Berne), Bizet Concert on Gramophone Records. 12.30 p.m., Time and News. 12.40 (from Berne), Gramophone Records by Famous Artists (Tauber, Gitta Alpar, Schützendorff and Curt Bois). 1.25 (from Berne), Time, Weather and Exchange. 1.35, Interval. 5.0 (from Berne), Programme for Children. 5.30 (from Berne), Light Music on Gramophone Records. 6.30 (from Zürich), Talk: Spun Yarns and their Industrial Value. 7.0 (from Zürich), Time, Weather and Market Prices. 7.15 (from Zürich), Gramophone Concert. 7.30 (from Zürich), English Lesson. 8.0 (from Zürich), Hans Roelli Song Recital by Elisabeth Sprenger. 9.0, News. 9.10 (from Zürich), Symphony Concert. 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; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Programme for Children. 5.30, Accordion Music and Reading. 6.15, Gramophone Music. 7.15, Weather and News. 7.30, Talk: The Vikings. 8.0, Introductory Talk to the following Relay. 8.5 (approx.), Acts I and II of I cavalieri di Ekebu—Opera (Zandonai), relayed from the Royal Opera House. 9.30, Reading. 9.45, Weather and News. 10.0, Dance Music by

the Enders Orchestra, relayed from the Bern Hall. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Variety Music. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Popular Music on Gramophone Records. 2.0 to 3.30, Interval. 3.30, Orchestral Concert, conducted by Brouillac, relayed from the Casino, Vichy: Overture, The Bohemian Girl (Balié); Two Airs from La farce du cuvier (Dapunt); Symphonic Suite from L'attaque du moulin (Bruneau); Melody. Prelude and Dance (Barat); Selection from Le roi d'Ys (Lalo); Waltz (Fahrbach). 5.0, Talk in German on Electricity. 5.15, Light Music on Gramophone Records. 6.0, Trio Concert, relayed from Lille, 1,130 kc/s, 265.4 metres. 7.0, Insurance Report. 7.15, Talk in German: The Part Played by Capitalism in the Work of Production. 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in German, Lottery Results and Announcements. 8.30, Symphony Concert, relayed from the Casino, Vichy. Conductor, Paul Paray. Soloist, Nadine Khouzam-Fabiano (Pianoforte): Symphony in C, No. 2 (Schumann); Two Norwegian Dances (Grieg); Pianoforte Concerto No. 4 (Saint-Saëns); Joyeuse marche (Chabrier). 10.0, Press Review. 10.15, Orchestral Concert, relayed from the Grand Kléber Tavern: March (Smetski); Waltz, Künstlerleben (Joh. Strauss); In a Persian Market (Ketelbey); Fantasia on Swiss Airs, Helvetia (Léopold); Potpourri of Popular 1933 Music (Dostal). Vibraphone Solo: Selection from The Merry Widow (Lehár). 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, conducted by Karl Assmus, relayed from Baden-Baden: Prelude to and Entr'acte from Der Corregidor (Hugo Wolf); Suite, Caucasian Sketches (Ippolitov-Ivanov); Rondo, Die Wut über den verlorenen Groschen (Beethoven); Burlesque, Harlekinstreiche (Schrodler); First Suite from Peer Gynt (Grieg); Prelude to the Fifth Act of King Manfred (Reinecke); Waltz Potpourri, Zeller Abende (Thiele); Gallop, In d'Zug (Blon). 1.15 p.m., Time and News. 1.30, Richard Strauss Song Recital by Elizabeth Schumann (on Gramophone Records): All mein Gedanken; Hat gesagt, bleibt's nicht dabei; Morgen; Schlechtes Wetter; Ständchen; Wiegenlied; Freundliche Vision. 2.0 to 2.15, Concert arranged by the Post Office. 2.30 to 2.40, See Frankfurt. 3.0, Talk on Weimar. 3.30 (from Freiburg), Programme for Children. 4.30, Concert Relay. 5.45 (from Karlsruhe), A Walk through the Timber Exhibition. 6.10, Talk: Theodor Körner. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, See Munich. 8.25, Die Fahnenweih zu Kragling—a Radio Play (Ludwig Thoma, arr. Artur Anwander). 9.10, See Frankfurt. 10.25, Time and News. 11.0, See Munich. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.15 p.m., Dance Music. 6.30, Songs from Operettas. 6.45, Hawaiian Guitar Music. 7.0, Chansonnettes. 7.15, News. 7.30, Music by a Viennese Orchestra. 7.45, Opera Music. 8.0, La Valse (Ravel). 8.15, Popular Music. 8.30, Violin Solos. 8.45, Instrumental Music. 9.0, Concert by La Sirène Toulousaine, conducted by Ichac: March, L'auscitaine (Rivière); Overture, Le lac des fées (Auber); Selection from le timbre d'argent (Saint-Saëns); Fantasia for Two Clarinets; Overture, Light Cavalry (Suppé); Suite, Esquisse provençale (Popy); Allegro, Souvenir de Turin (Andrieu). In the interval, Light Music. 10.15, News. 10.30, Concert for Listeners in Morocco. 11.15, Songs from Sound Films. 11.30, Variety Music. 12 Midnight, News. 12.5 a.m. (Thursday), Military Music. 12.15, Instrumental Solos. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m., Song and Pianoforte Recital by Thea Mendiotta (Soprano) and Zita Lana. Pianoforte Solos: (a) Sonata in G (Galuppi), (b) Allegro from the Sonata in C (Cherubini), (c) Etude (Paganini-Liszt). Songs: (a) Morgengruß (Schubert), (b) L'eco di Boboli (Gordigiani), (c) Dove scintillano (Boschi). Pianoforte Solos: (a) Eroica (Liszt), (b) Prelude (Scriabine), (c) Two Mazurkas (Chopin). Songs: (a) Bella porta di rubini (Respighi), (b) Le chiacchiere (Pallone). 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., Song Recital.

6.0 to 6.5, Weather. 6.40, Giornale Radio, Doppolavoro Notes and Gramophone Music. 7.0, Time, Tourist Report and Gramophone Music. 7.10, Agricultural Notes and Market Prices. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, Announcements, Giornale Radio, Sports Notes and Weather. 8.15, Medical Talk. 8.30, A Comedy in Three Acts. After the Comedy, Dance Music. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 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, 602 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 Wiener Symphoniker, conducted by Josef Holzer. In an interval at 1.0 p.m., Time and News. 2.0, Interval. 3.0, Time and Announcements. 3.20, Talk on Landscape Photography. 3.35, Talk: Mattsee, the Bathing Strand near Salzburg. 4.0, Chamber Music on Gramophone Records. 4.30, Talk: The Salt Mines of Austria. 4.55, Travel Talk: Round the Ossachersee. 5.20, Soprano and Pianoforte Recital by Lily Claus and Otto Binder. 6.10, The Evolution of Transport—from Sledges to Motor Lorries. 6.35, Talk: German Forests. 7.0, Forest and Moorland—concert by the Wiener Symphoniker, conducted by Josef Holzer: March, Piff-Paff-Puff (Lassletzberger); Vogelsang (Popp); Waltz, Dorfswalben aus Österreich (Jos. Strauss); Song, Vogel im Walde (Taubert); Sohn der Heide (Keler Bela); The Forge in the Forest (Michaelis); From the Bohemian Forest (Dvorak); Die Post im Walde (Schäfer); Waldquelle (Kockert); Polka-Mazurka, Eichkätzchen (Eikenberg); Im Wald und auf der Heide (Zizok); Seliges Waldchermis (Kienzl); Melody (Gillet); Serenade, Heidenacht (Kockert); Song, Heideröseln (Schubert); Waltz, Tales from the Vienna Woods (Joh. Strauss); Weidmannsheil (Reckling). In an interval at 7.35, Time and Announcements. 8.30, Talk: Towns between Stream and Mountain. 9.5, Topical Talk. 9.35, Talk on the German Catholic Conference in Vienna. 9.40, News. 9.55, Dance Music on Gramophone Records.

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, 959 kc/s, 312.8 metres. 12.5 p.m., Orchestral Concert, conducted by Szule, relayed from the Bagatela. Soloist: Lederman (Violin). Overture, The Italian Girl in Algiers (Rossini); Boston Waltz, Françoise (Szule); Slav Dance (Dvorak); Selection from La Traviata (Verdi). Violin Solo: Serenade d'amour (Sulima). Oberek (Szule). In the intervals, Polish Press Review and Weather Report. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music and Announcements. 4.0, Concert by the Poznan Opera House Orchestra, conducted by Tyllja, relayed from Ciechocinek. 5.0, Topical Talk. 5.15, Song Recital by Ziolkowska (Soprano) and Junelli Trembicki (Bass): Aria from Robert le Diable (Meyerbeer); Aria from Salvatore Rosa (Goumez); Aria from Don Giovanni (Mozart); Idéale (Tosti); The Golden Calf Aria from Faust (Gounod); La divinité du Styx (Gluck); Aria from Beatrix Cenci (Rozycki); Le temps des lilas (Chausson); La prison (Faure); Mephistopheles' Serenade from Faust (Gounod); Aria from Simon Boccanegra (Verdi); Polonaise from Halka (Moniuszko); Verborgene Liebe (H. Wolf); Zueignung (R. Strauss); C'était la folie de l'amour (Gretchaninov). 6.15, Talk. 6.35, Recital of Arias and Songs. 7.5, Light Music on Gramophone Records. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Reading. 8.0, Pianoforte Recital by Smidowicz: Sonata in A flat Op. 26 (Beethoven); Andantino and Traumeswirren (Schumann); Prelude in G sharp minor and Polka (Rachmaninov); Serenade (Schubert-Liszt); Etude in E flat (Paganini-Liszt). 8.50, Radio Journal. 9.0, Answers to Agricultural Correspondence. 9.10, Concert of Songs and Vibraphone Solos. 10.0, Dance Music. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music (contd.).

WILNO

533 kc/s, 563 metres; 16 kW.—4.0 p.m., See Warsaw. 7.5, Talk: Wilno in Polish Literature. 7.20, Review in Lithuanian. 7.35, Programme Announcements. 7.40, See Warsaw. 9.0, Humorous Monologue. 9.10, See Warsaw. 11.0 (approx.), Close Down

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—8.10 p.m., Announcements. 8.30, Concert by the Station Orchestra: Soloist, Rudolf Tulacek (Double Bass). 10.0, Light Music by the Station Orchestra. 10.30, Weather and News. 10.40, Dance Music by the Tellemann-Pacola Jazz Band. 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 2.30 p.m., Time Signal, Stock Exchange Quotations, Weather Forecast, and Gramophone Music. 6.0, Programme for Children. 6.40, News. 7.0, French Lesson. 7.15, Travel Talk by Aoiie Laaffe. 7.30, The Station Octet. 7.50, Flute Solos by Mairtin Cearbhall. 8.0, Mezzo-Soprano Solos by Nan Daly. 8.10, Pipe Solos by Liam Andrews. 8.20, Baritone Solos by Robert Irwin. 8.30, Flute Solos (contd.). 8.40, Baritone Solos (contd.). 8.50, Two Sketches, by the Studio Players. In an interval at 9.5, Music by the Station Octet. 9.45, Sponsored Programme. 10.45, News, Weather, and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Radio Trio. 8.0, Request Gramophone Records. 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes, Weather and Exchange. 10.5, Concert by the Radio Orchestra: March (Brep-sant); Waltz from A Waltz Dream (O. Straus); Summer Evening (Grieg); Melody (Heykens); Novelletta for Violin (Calulli); Près du berceau (Moszkowsky); Overture, Pique Dame (Suppé). 11.0, Comedy in Three Acts (Isaac Pacheco and Agustín Martín Becerra). 12 Midnight (in the interval), 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 (approx.). Quartet Concert by the Mandoline Quartet: Overture, Flora (Anelli); Mattinata (Amadei); Carillon (Silvestri); Suite marinaresca (Amadei); Overture, Piccolo eroi (Mantente); Sweet Melancholy (Munier); Minuet, Mascherine eleganti (Coletta); Fiori sparsi (Sartori); Ecossaise (Schubert); Idillio campestre (Amoroso); Poem, Flores Andinas (De Giovanni); Pattinando (Amadei). In the interval, Amusement Notes. 10.30, Gramophone Music. 10.50, News in Albanian. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.30 p.m., Gramophone Music. 7.0, Talk. 7.30, Concert by the Station Orchestra. 8.30, Programme relayed from Ljubljana, 522 kc/s (574.4 metres). 10.30, Time and News. 10.35 (approx.), Dance Music on Gramophone Records.

BERLIN

DEUTSCHLANDSENDER (REICHSENDER) 183.5 kc/s, 1,635 metres; 60 kW.—2.10 p.m. (approx.). Concert from Heilsberg. 2.50, Programme for Children. 3.10, Talk: The Wonders of Nature—Plants and the Sun. 3.30, Weather and Exchange. 3.45, Reading from the Works of Rudolf Huch. 4.0, Orchestral Concert, conducted by Eugen Sonntag, relayed from the Funkgarten: Overture, Alessandro Stradella (Plotow); Fröhliches Wandern (Kaun); Waltz, Wo die Zitronen blühen (Joh. Strauss); Selection from Tosca (Puccini); Rhapsody, España (Chabrier); Overture, Der Bärenhäuter (Siegfried Wagner); Norwegian Dances (Grieg); Waltz, Die Kosenden (Lanner); Selection from Firenze ridente (Raffaelli); Three Heroic Marches (Orlth). In an interval at 5.0, Report from the Exhibition: The Listener at the Exhibition. 6.0, Poems. 6.5, Radio Report for Young People. 6.30, Agricultural Talk. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Today's Motto. 8.5 (approx.). Concert, relayed from the Radio Exhibition. The Augmented Station Orchestra, conducted by Clemens Schmalstieg, Soloists, Margarete Pfahl (Soprano) and Domgraf-Fasshaender (Tenor). 10.0, News. 10.25, Radio Report of the Round Germany Flight, 1933 (on Gramophone Records). 10.45, Weather. 11.0, Programme from Langenberg.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.0 p.m., Recitation: Summer (Anacker). 6.10, Talk by Fritz Johnske: My Experiences at the Microphone. 6.30, Talk on Pomerania. 6.40, The Witzleben Station informs its Listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations. Concert of Music from Braudenburg, Silesia and the East Mark, with Commentary. 8.5, Songs, relayed from the Municipal Theatre Square in Stettin. 8.15, The Unfinished Symphony in B minor (Schubert) by the Station Orchestra, conducted by Otto Frickehoeller. 8.40, Talk: Six Young Hitlerites on a Journey to Italy. 9.0 to 1.0 a.m. (Friday), A Dance Evening. Claire Waldoff (Songs), the Station Orchestra conducted by Willy Hahn, the Station Choir conducted by Heitzkarl Weigel and Eric Helgar (Tenor). In the intervals at 10.0 (approx.), News, and at 11.0, Police Notes. 1.0 a.m. (Friday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

THURSDAY
AUGUST THE TWENTY-FOURTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Variety programme, from the Radio Exhibition, Olympia.
LONDON REGIONAL Running commentary on the Rydal Sheep Dog Trials.
MIDLAND REGIONAL Orchestral programme.
WEST REGIONAL Choral programme.
BELFAST String orchestral concert.

ABROAD

BRUSSELS (No. 1) 9.0 p.m. Concert, conducted by Karel Candael, from the Casino, Knocke.
BRUSSELS (No. 2) 9.0 p.m. The Symphony Orchestra, conducted by Kumps.
FRANKFURT 9.0 p.m. Mozart concert, by the Station Orchestra.
HILVERSUM 9.10 p.m. Quintet concert.
LAHTI 7.30 p.m. The Station Orchestra, conducted by Georg Schneevoigt.
MUNICH 9.0 p.m. Act III of "Siegfried," by Wagner, from the Prince Regent Theatre.
STRASBOURG 8.30 p.m. Military Band concert, relayed from Metz.
TOULOUSE 9.0 p.m. Delibes concert.
TURIN 8.30 p.m. Opera: "Andrea Chénier," by Giordano.
VIENNA 7.15 p.m. Salzburg Festival programme. Opera: "The Egyptian Helen," by Richard Strauss.

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. 8.0, News. 8.15, Gramophone Music. 8.30, Une Danseuse est morte—Comedy in Three Acts (Le Barry).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.25 p.m., Gramophone Music. 6.40, Educational Talk. 6.55, Talk for Housewives. 7.0, 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.—12 Noon, Concert by the Small Silesian Philharmonic Orchestra, conducted by Hermann Behr: Overture, Der Bettelstudent (Millöcker); Ballet Music from La Gioconda (Ponchielli); Waltz, Wiener Bonbons (Joh. Strauss); Overture, The Crown Diamonds (Auber); Five Concert Dances (Mozart); The Nutcracker Suite (Tchaikovsky); Shawl Polka (Strauss); Mazurka, Humoresque (Dvorák); Pesther-Walzer (Lanner). 2.5, Grieg Concert on Gramophone Records. 3.0, Agricultural Prices. 3.30, Holiday Suggestions—Eastern Silesia. 3.40, Book Review. 4.0, Peter Schulz Song Recital by Elise Schönlzel (Soprano). 4.30, Programme for Children. 5.0, Programme from Berlin (Witzleben). 5.10, Concert by the Jaener Orchestra, relayed from Bad Flietsberg: Festival Overture (Leutner); Waltz, Les sirènes (Waldteufel); Slav Rhapsody Friedemann; In der Waldschmiede (Eilenberg); Selection from I Pagliacci (Leoncavallo). In an interval at 5.30 (approx.), Agricultural Prices. 6.0, Programme to be announced. 6.20, Discussion by Workers and their Leaders. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Military Band Concert, relayed from Brieg. 8.40, Report of the Military Manoeuvres at Neuhammer. 9.30, Concert from Brieg (contd.). 10.10, Time and News. 10.25, See Berlin Deutschlandsender (Reichsender). 10.55, Talk: Silesian Nazis in Norway.—11.10, Dance Music from Berlin (Witzleben). 1.0 a.m. (Friday), Close Down.

BRNO

878 kc/s, 332 metres; 35 kW.—6.5 p.m., Gramophone Music. 6.25, German Transmission: News and Talks on Sociology and Economics. 7.0, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

N.I.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Little Station Orchestra, conducted by Leemans.

5.0, Concert by the Radio Orchestra, conducted by Charles Walpot: March, Wien bleibt Wien (Komzak); Waltz from The Chocolate Soldier (O. Straus); Light Overture (Luizini); Selection from Ciboulette (Hahn). 5.30, Programme for Children. 6.0, Talk on Art. 6.15, Extracts from Show Boat (Kern) on Gramophone Records. 6.30, Concert by the Little Station Orchestra, conducted by P. Leemans: Overture, Queen for a Day (Adam); Suite, Cortège (Lachmaun); Fantasia on Old Swedish Songs (Söderman); Chant d'automne (Guillemin); Selection from Fleur de Thé (Lecocq); Japanese Procession, Akita (Bourmœre). 7.15, Talk for Workers. 7.30, Sports Review. 8.0, Concert by the Radio Orchestra, conducted by Charles Walpot: March (Souza); Selection from The Land of Smiles (Lehár); Gavotte (Delisle); Waltz, Mon rêve (Waldteufel); Selection from Hans, the Flute Player (Ganne); At Port Said (Armandola); Knights of the King (Kotelbey). 8.45, Talk. 9.0, Concert, conducted by Karel Candael, relayed from the Casino Knocke. Soloist: François Laug (Pianoforte); Norwegian Rhapsody (Lalo); Concerto in A Minor (Schumann); In the Steppes of Central Asia (Borodin); The Flight of the Bumble Bee (Rimsky-Korsakov); Pianoforte Solos: (a) Waltzes and Mazurka (Chopin), (b) El vito (Infante); Overture, Oberon (Weber). After the Concert, Le Journal Parlé and English Music on Gramophone Records.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Orchestral Concert, conducted by Leemans: Overture, Jean de Paris (Boieldieu); Selection from Rigoletto (Verdi); Une soirée chez Hullebroeck; Gramophone Music: (a) Songs from The Czarevitch (Lehar), (b) Song from Martha (Plotow); La Source (Delibes); Spanish Dance (Moszkowsky). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert of Light Music. 5.0, Concert by the Symphony Orchestra, conducted by Kumps: Spain—as seen by Composers of other Lands; Fantaisie espagnole (Gevaert); Spanish Caprice (Rimsky-Korsakov); Spanish Suite, La Feria (Lacôme). 5.45, Programme for Children. 6.30, Spanish Caprice (Tchaikovsky), on Gramophone Records. 6.45, Programme for Women. 7.12, K.V.R.O. Announcements. 7.15, Review of Films and Books. 7.30, Review for Women. 8.0, Concert by the Symphony Orchestra, conducted by Kumps: Symphonie Pathétique (Tchaikovsky). 8.45, Address by M. l'Abbé Jacobs. 9.0, Concert by the Symphony Orchestra, conducted by Kumps; Soloist, Sterkens (Tenor): Overture, Rienzi (Wagner); Prelude-Lyrique and Scherzo (Brenta); Songs: (a) Adelaide (Beethoven), (b) Aria from Fidelio (Beethoven), (c) Aria from The Magic Flute (Mozart); Ballet Music from Faust (Gounod). 9.55, Evening Prayer. 10.0, Le Journal Parlé. 10.10, Extract from La Tra-

viata—Opera (Verdi), on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Dance Music by the Marcel Zaharia Syncop Accorders Jazz Band, relayed from the Lido, in an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Gramophone Music. 7.40, Educational Talk. 8.0, Song Recital. 8.20, Concert by the Station Orchestra, conducted by Rogalski; Soloist, Radulesco (Violin): Overture, The Magic Flute (Mozart); Violin Concerto in B flat (Mozart); Verklärte Nacht for Strings (Schönberg). In an interval at 9.0, Talk. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 880 metres from 6.30 p.m. till Close Down.—5.0 p.m., Choral Music. 6.0, Talk. 6.30, Concert from the Municipal Park. 8.0, Review of Foreign Politics. 9.30, News. 9.50, Recital on two Pianofortes: Sonata in F Minor (Dolmányi); Sonata in B flat (Radnai). 10.30, Weather. 10.35, Concert from the Café Simphon.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Town Hall Chimes and Weather. 12.5 to 2.0 p.m., Concert from the Hotel d'Angleterre. 2.40, Pianoforte Recital: Pastorale and Caprice (Scarlati); Allegro and Prelude (Ph. E. Bach); Intermezzo in E flat (Brahms); Waltz in C Sharp Minor (Chopin). 3.0, Concert from the Wivex Restaurant. 4.45, Programme for Boys. 5.35, Exchange and Fish Market Prices. 5.50 (from the Aalborg Studio), Talk on Smuggling. 6.20, English Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.16, Talk: Grundtvig, the Poet. 7.45, Danish Lesson. 8.10, Concert of Famous Rhapsodies by the Radio Orchestra, conducted by Lanny Gröndahl: Norwegian Rhapsody No. 2 (Svendsen); Slav Rhapsody in G Minor (Dvorak); Second Hungarian Rhapsody (Liszt); Dutch Rhapsody, Piet Hein (van Anrooy). Weather after the Concert. 8.55, Talk: Questions of the Day—New Educational Regulations. 9.25, Jazz Music. 9.40, Chinese Lyrics. 10.0, News. 10.15, Concert of Old Danish Music by the Radio Orchestra, conducted by Lanny Gröndahl; Soloists, Fritz Dietzmann (Cello); Concerto for Cello and Orchestra, Op. 34 (Siegfried Salomon); Theme with Variations for Pianoforte, Op. 40 (Carl Nielsen). 11.15, Dance Music from the Wivex Restaurant. In the interval at 12 Midnight, Town Hall Chimes. 12.30 a.m. (Friday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m. to 6.0 p.m., Programme in English by the I.B.C. 11.0, The Philco Happy Hour. Part I. Orchestral Music: Signature Tune; Valse bluette (Drigo); Valse septembre (Godin); Selection from Wild Violets (Stolz); Spanish Gipsy Dance (Marquina); Violin Solo: Old Viennese Dance (Vogelin); Air from La Bohème (Puccini); Waltz, Mon rêve (Waldteufel); Ke-sa-ko (Chapulin); Part II. Dance Music by the Rhythm Rascals (Electrical Transcriptions): Peter, Peter; There's a Light in your Window; The Old Kitchen Kettle; I'm one of the Lads of Valencia; Look what you've done; Sing a New Song; No more love; Da, dar, dadar; Pagan Moon; Maybe I love you too much; Waiters on Parade; Strangers; Signature Tune. 4.30, Programme for Children. 5.0, Concert of Songs and Orchestral Music for Worthing and Littlehampton Listeners: Signature Tune; The Night by the Sea; Memories for the Fireside; They cut down the Old Pine Tree (Raskin). Orchestra: Ginger Snaps (Bourdon); Roses at Dawning (Kapper); Rebels are out (Tambridge). Orchestra: Morgenblätter (Strauss); My Darling (Heymann); Memories for the Fireside. 5.30, Ordet Concert for Brighton and Hove Listeners: Golliwog's Cake Walk (Debussy); Waltz, Der Rosenkavalier (R. Strauss); Song, I love the Moon (Rubens); Intermezzo from Cavalleria Rusticana (Leoncavallo); Meditation from Thaïs (Massenet); Song, The Floral Dance (Moss); Ballet Music from Rosamunde (Schubert); Spring Song (Mendelssohn); Signature Tune. 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. Trumpets; Signature Tune; Bells of Normandy; Same old Moon; Really Blue; Hello! It's a Glory; Just an Echo in the Valley; You're getting to be a habit with me; Lower come back to me; Sophisticated Lady; Any Time, any Day, anywhere; Under my Umbrella; Stormy Weather; I wake up smiling; And so I married the girl; My Women; Night after Night; A Little Street where old Friends meet; Signature Tune. 11.0, Club Concert for Chestfield Listeners. Part I. Organ Music and Songs: Signature Tune. The Chum Song; Butterflies in the Rain (Myers); Berceuse from Jocelyn (Godard); Song, Little Sweetheart of the Mountains; Sanctuary of the Heart (Kotelbey); Tiptoe through the Tulips (Burke); Song, My old

AUGUST 24th THURSDAY continued

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 11.0. Interval. 11.0, Chimes, Time, News. 11.15 (approx.), Jotas by Jose Chacon. 11.30, Municipal Band Concert relayed from Rosales. 1.15 a.m. (Friday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.45 p.m. till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.5 p.m., Gramophone Records. 6.15 till Close Down, See Prague. 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—1.45 p.m., Weather. 2.15, Literary and Art Review. 2.45, Weather Report. 3.0, Extracts from Figaro—Opera (Mozart). 3.55, Time. 4.0, Talk: The Pioneers of Technical and Agrarian Achievement in the Soviet. 4.30, A Radio Play (Serafimovitch). 5.30, Concert for Young People. 6.0, Concert, relayed from the Central Park: Italian Symphony (Mendelssohn); Italian Songs (Hugo Wolf); Romances (Grieg). 9.0, News. 9.30, Programme Announcements. 9.55, Chimes from the Red Square. 10.5, Press Review in English. 10.30, Press Review.

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., Orchestral Concert, conducted by Powolny: Persian March (Strauss); Singende Fontaine (Niemann); Overture, Bastien und Bastienne (Mozart); Waltz, Rudolfsklänge (Joh. Strauss); Introduction to and Chorus from Rienzi (Wagner); German Dances (Schubert); Selection from Aida (Verdi); Turkish March (Beethoven); Potpourri, Wien bei Nacht (Kozmak). 5.45, Talk: Agrarian Policy in Bavaria. 6.5, Folk Song Recital. 6.25, Talk: The Seven Hills of Kampala and the Source of the Nile. 6.45, Time, Weather and Agricultural Report. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Orchestral Concert. 8.50, Talk on the following Transmission. 9.0, Act Three of Siegfried—Opera (Wagner) relayed from the Prinz-Regenten Theater. 10.20, Time and News.

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.—5.0 p.m., Light Music relayed from the Lyche Restaurant. 6.0, Reading. 6.30, Divine Service relayed from Trondheim 605 kc/s, 495.8 metres. 7.0, Announcements and News. 7.30, Musical Programme. 8.0, Talk on Poultry Keeping. 8.30, Song Recital by Ragna Nilssen: Two Songs (Ulfrstad); Three Songs (R. Strauss); (a) Ich trage meine Mühle, (b) Traum durch die Dämmerung, (c) Morgen; The Dreary Steppe (Greechaninov); Song (Rachmaninov); Two Arias from Turandot (Puccini). 9.0, Talk: A Summer Day on Madagascar. 9.20, Gramophone Music. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Saxophone and Accordion Solos. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolarvo and Agricultural Notes and Giornale Radio. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Variety Concert. 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., (Preliminary Review. 7.0, Le Journal Parlé. 8.30, Gramophone Concert: Part I, Acts 1 and 2 of Faust (Gounod); Part II, Variety Music. 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. 7.50, Sponsored Talk. 7.55, Gramophone Music. 8.20, Humorous Song Recital by René Hérent. 9.0, Variety Music, relayed from the Restaurant de la Forêt, Le Touquet. 11.0, 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 Records; Melody (Sauer); Melody in F (Rubinstein);

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12.30 p.m., Gramophone Music. 12.50, News. 1.0, Concert, conducted by Eysoldt: March, Frühlings Einzug (Blon); Overture, Der lustige Krieg (Strauss); Erinnerung (Renée); Spanish Dance No. 4 (Sarasate); Schumann Potpourri (Urbach); Ave Maria (Schubert); Suite (Frederiksen); Waltz, Mein Juwel (Lincke); Einzug der Rosenkönigin (Rhode); Marionetten-Bräutzug (Rathke); March, Regimentskinder (Fueik). In the interval at 2.0 (approx.), News. 2.30, Interval. 3.0, Programme for Children. 3.30, Market Prices and Time. 3.50, The German National Anthem—Radio Sequence with Gramophone Records. 4.30, Talk. 4.40, Legal Talk. 5.0, Gramophone Concert. 5.30, Anecdotes. 5.45, Talk: The German Language. 6.0, Concert. Leonie Blüher (Pianoforte), Therese Sarata-Knermann (Violin) and Mathias Durben (Cello): Sonata in A minor, Op. 105, for Violin and Pianoforte (Schumann); Variations on a Theme of Schumann, Op. 9 (Brahms); Fantasiestücke, Op. 88, for Pianoforte, Violin and Cello (Schumann). 6.45, Announcements. 7.0, Transmission for all German stations relayed from Berlin (Witzleben). 8.0, News. 8.5, Concert conducted by Eysoldt. 9.0, Steel and Bread. 10.5, News. 10.30, Light Music and Dance Music. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

759.9 kc/s, 389.6 metres; 120 kW. Relayd by Dresden, 941 kc/s, 319 metres.—12 Noon, Weather and Time. 12.5 p.m., From Italy, Gramophone Concert: Overture, The Barber of Seville; Duets from Cavalleria rusticana (Mascagni); Songs: (a) Song (Cali-fano), (b) Napoli (Scipia); Mandoline und Pianoforte: Give me thy kisses (Giovale); Aria from La Bohème (Puccini); Aria from I Pagliacci (Leoncavallo); Torna, o Sordiento (de Curtis); Selection from The Force of Destiny (Verdi). 1.0, News. 1.15, Soloist Concert. Contralto Solos: (a) Unter Blüten (R. Trunk), (b) Freundliche Vision (R. Strauss). (c) Hoffnung (Grieg). (d) Ein kleines Lied (Siegfried Kuhn); Pieces for Flute and Pianoforte (Theodor Blumer): (a) Bolero Op. 54, (b) Vision Op. 54. Bass Solos (Schubert): (a) Prometheus, (b) Fahrt zum Hades. Contralto Solos: (a) Freude soll in deinen Werken sein (von Schillings), (b) Nimmersatte Liebe (Hugo Wolf). Serenade for Flute and Pianoforte Op. 54 (Theodor Blumer); Waltz (Theodor Blumer); Ballad, Archibald Douglas (Löwe). 2.0, News. 2.10, Art and Cinema Notes. 2.30, A Visit to the Forestry Festival in Kameuz. 3.0, Programme for Young People. 3.35, Exchange Quotation. 4.0, Concert from Heilsberg. 5.30, Talk on Taxation. 5.50, Exchange, Weather and Time. 6.0, Book Review. 6.25, Talk: Mussolini and Nietzsche. 6.50, Review of the Day's Events. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Talk. 8.20, Concert of Light Music by the Station Orchestra, conducted by Theodor Blumer. Soloist: Franz Hammerla (Clarinet); Prelude (Humperdinck); Rigolotto Fantasia for Clarinet and Orchestra (Verdi); Italian Caprice Op. 45 (Tchaikovsky); Waltz, Hesperus-Bahnen (Jos. Strauss); A.B.C. Potpourri (Kozmak). 9.30, Leopold van Anhalt-Dessau—A Radio Play (Hans Martin). 10.30, News and Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—7.0 p.m., Concert by the Station Orchestra. 8.0, Programme for Women. 8.30, Song Recital. 9.15, Guitar Duets. 10.0, Orchestral Concert. 10.30, Weather and News. 11.0 (approx.), Close Down

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—German Programme. 7.30, German Music by the Station Orchestra, conducted by Henri Pensis. 8.20, Racing Results. 8.25, Talk for Children. 8.35, Gramophone Music. 8.50, News in French. 9.0, Arias from Opera by Elisabeth Corty: Arias (Puccini) from: (a) Turandot, (b) La Bohème, (c) Gianni Schicchi, (d) Madame Butterfly; Elsa's Dream from Lohengrin (Wagner). 9.30, Orchestral Concert. In the interval at 9.50, News in German. 10.25, Dance Music on Gramophone Records.

LWOW

788 kc/s, 381 metres; 16 kW.—6.35 p.m., See Warsaw. 7.20, Miscellaneous Items. 7.40, See Warsaw. In an interval at 9.0, Reading. 10.40, Gramophone Music. 11.0 (approx.), Close Down.

LYONS

LA DOUA (PTT), 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. 8.30, Programme relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres, followed by News.

Blut (Jos. Strauss); Mazurka, Aus dem Schwarzwald (Müllöcker); Waltz, Bad'ner Mad'ln (Kozmak); Minuet (Haydn); Polka (Waldteufel); Königsberger Handelsfrauen (Haak); Waltz, Tales from the Vienna Woods (Joh. Strauss); Gallop, Spute Dich (Lincke). 3.0, Agricultural Prices and Exchange. 3.30, Reading for Young People. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Euryanthe (Weber); Selection from Othello (Verdi); Erotica (Grieg); An den Frühling (Grieg); Norwegian Rhapsody No. 3 (Svendsen); Ballet Music from Hamlet (Thomas); Selection from Der Kuhreigen (Kienzl); Overture, Idomeuco (Mozart). In the interval at 5.0 (approx.), Book Review. 5.55, Talk: The Equipment of Bombing Planes. 6.15, Agricultural Prices. 6.25, Agricultural Talk. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, News. 8.10, See Berlin Deutschlandsender (Reichsender). 9.45, English Lesson for Beginners. 10.15, 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, Concert by the K.R.O. Orchestra, conducted by Gerritsen: Overture, The Nuremberg Doll (Adam); In the Temple of the Bells (Yoshitomo); Pas des Fleurs (Delibes); Lortzing Potpourri (Urbach); Two Norwegian Dances (Grieg). Gramophone Music: Blumen Kusso (Siede); Waltz Potpourri (Rohrreht); Selection from Polenblut (Nedbal); Silver Cloud (Ketylby); Bruder von Rhein (Blankenburg). 1.40 till Close Down, Programme of the Christian Radio Society (N.C.R.V.). 1.40, Gramophone Music. 3.10, Interval. 3.40, Bible Reading, followed by Song and Organ Recital. 4.40, Gramophone Music. 4.55, Soprano Song Recital by Mia Dorel. 5.55, Gramophone Music. 6.25, Dressmaking Lesson. 6.40, Police Notes. 6.55, Religious Information. 7.10, Press Review of the Week. 7.40, Organ Recital by Jan Zwart. 8.40, Religious Address. 9.10, Quintet Concert, Quartet No. 28 in C (Mozart); Quartet in G (Locatelli); Serenade in Op. 25 (Beethoven); Trio in G (Haydn). 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. Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). —10.10 a.m., Concert conducted by Otto Hendriks. Gramophone Music in the intervals. 11.40, Concert by the Wireless Orchestra, conducted by Nico Treep: Porta Hungarica (Morena); Selection from I Pagliacci (Leoncavallo); Pas des Fleurs (Delibes); Serenade (Lacôme); Jota e Tripolis (Lacôme); Gramophone Music; Mroecan Patrol (Jessel); Die kleine Kompanie (Ganglberger); Kirschblütenfest (Dieker); Selection from Schön ist die Welt (Lehar); Gramophone Music: Waltz, Telegrammen (Joh. Strauss); Glow Worm Idyll (Lincke); Fairy Feet (Finck); Overture, Der Waffenschmid (Lortzing). 1.40 p.m., Recitations. 2.10, Quartet Concert. 3.25 to 3.40, Interval. 3.40, Programme for Hospitals. 4.10, Gramophone Music. 4.40, Programme for Children. 5.20, Gramophone Music. 6.40, Light Music by Paul Godwin and his Orchestra. 7.10, Pianoforte Recital by Ruda Firkusny: Two Bohemian Melodies (Smetana); Three Melodies ('Chopin): (a) Two Preludes, (b) Mazurka, (c) Polonaise, Op. 53; Cradle Song and March (Jirak); Humoresque (Suk); Polka (Martin). 7.40, Time and News. 7.45, Concert of Light Music by Paul Godwin and his Orchestra. 8.40, A Radio Play. 9.5, Concert by the Wireless Orchestra, conducted by Nico Treep; Soloist: Hermann Kruyt (Pianoforte). In the interval from 9.40 to 9.55, Gramophone Music. 10.40, News. 10.50, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Radio Concert. 1.0, News. 1.15, Visite de Riquette—Sketch (R. Poletti). 8.0, Amusement Guide and News. 8.10, Fashion Review. 8.20, Radio Concert. 8.45, News and Weather Report. 9.0, Louis Abiatte Festival Programme.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.15 p.m., Sports Talk. 7.30, Announcements and Gramophone Music. 7.40 till Close Down, See Warsaw.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

utch; Roses of Picardy (Haydn Wood); /eymouth Chimes (Howgill). Part II. reherstral Music: Selection from The Gipsy rincess (Kalman). Violin Solo: Cavatina Raffi. Mignonette (Friml); The Warbler's erenade (Perry). Pianoforte Solo: The es' Wedding (Mendelssohn); Waltz, itter Sweet (Coward); Waltz, Wine, /omen and Song (Strauss); Signature ure. 12.5 a.m. (Friday), News Bulletin in nglish. 12.10 (approx.), Light Music: The ill in the Forest (Eilenberg); Twilight everies and you (Robert). Guitar Solo: icking my Way (Lang-Kress); Live, Love nd Laugh (Helmann); Under the Double gle (Tappari). 12.30, Dance Music: Signa- ure Tune, Bells of Normandy; Junk Man- ues; Fiddlin' Joe; Underneath the Har- m Moon; I've got the World on a String; ink Elephants; Nine Little Miles from en-Tennessee; I hate to leave you now; ly Gal Sal; Signature Tune. 1.0, Military and Concert: Old Comrades; Floradora tuart); Song, Ho Jolly Jenkin (Sullivan); 'a'cest Paris (Padilla); Cupid's Army Sieveri-Ibanetz); Song, Lily of Laguna tuart); Jolly Fellows (Vollstedt). 1.30, and Music: Signature Tune, Bells of rmandy; Hot Feet; Honeysuckle Rose; 'hansonette; The Diety Glide; My Pretty irl; You're driving me crazy; Sadie the kater; Rockin' Chair. 1.57, I.B.C. Good- ight Melody. 2.0, Close Down.

LENSBURG.—See Hamburg.

LORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Relayd by Cassel, 1,220 kc/s, 245.9 metres; and riar, 1,157 kc/s, 259.3 metres.—3.30 p.m., Programme for Young People. 4.25, Ex- change. 4.30, Concert from Berlin (Witz- leben). 5.45, Exchange. 6.0, Talk: The Eternal Philistine. 6.25, Talk: The First German Colonists in Venezuela. 6.45, Review of the Day's News. 7.0, Transmission for all Ger- man Stations, relayed from Berlin (Witz- leben). 8.0, Concert by the Station Orchestra, conducted by Dr. Reinhold Merten: March, Fanfarenklänge (Fueik); Waltz, Vom Rhein zur Donau (Keler-Bela); Selection from Die sieben Schwaben (Müllöcker); Overture, Der Jöttergatte (Lehar); Waltz, Sommerlust (Lincke); Cavalry March from Simpleus (Joh. Strauss); Overture, Das Modell (Suppé); Waltz from Polenblut (Nedbal); March from Bocaccio (Suppé). 9.0, Mozart Concert with Literary Interludes. The Station Orchestra, conducted by Hans Ros- baud. Soloists: Lilly Trantmann (Soprano), Gustav Lenzowski (Violin), Otto Plath (English Horn) and Hans Rosbaud and Dr. Reinhold Merten (Pianoforte). Pianoforte Duet: Andante and Variations. Adagio for English Horn and Strings. Sonata in C for Violin and Pianoforte. Songs: (a) Als Luise die Briefe ihres ungetreuen Liebhabers ver- brannte, (b) Einsam ging ich jüngst im Haine, (c) Komm, liebe Zither, (d) Abend- empfindung. Concerto in E flat for Horn and Orchestra. 10.20, Time and News. 11.0 (approx.), Programme from Berlin (Witz- leben).

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.—6.0 p.m., Erwin von Clarnann Song Recital by Peter Mark- wort (Tenor): Reiterlied; Nun bin ich wieder weit vor Dir; Mein Städtchen liegt so ferne; Frühlingsnacht; Wiener Lied; Sternklare Nächte; Schwarz, blond oder braun; Sitz des Abends ich fröhlich beim Wein. 6.25, Book Review. 6.45, Frankfurt Exchange. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Witz- leben). 8.0, Lünkenalarm—Comedy in Three Acts (Paul Schurke). 9.0 (from Hanover), Concert of Old Hanoverian Military Music by a Nazi Band: March (Selle); Pastoral Overture (Prince George Hanover); Military Rondo (Merkel); Abendglocken (Prince George Hanover); Regimental March; Esterhazy-Walzer (Gerold); Polonaise in A Flat (Gerold). 10.0, Time and News. 10.20, Topical Talk. 10.30, Dance Music, relayed from Berlin (Witzleben). 1.0 a.m. (Friday), Close Down.

HANOVER.—See Hamburg.

HEILSBURG

(Germany), 1,085 kc/s, 276.5 metres; 60 kW. Relayd by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert. In the interval at 1.20, News. 2.0, Concert of German Dances by the Small Station Orchestra, conducted by Eugen Wilcken: Gallop, Leichte

AUGUST 24th THURSDAY continued

Mes Joies (Liszt); Siciliana (Respighi). 8.0, Exchange, News and Weather. 12.0 Noon, Protestant Address. 12.30 p.m., Gramophone Concert: Selection from Thousand and One Nights (Strauss); Comme les Roses (Lama); Serenade (Toselli); Midnight Bells (Heuberger-Kreisler); Alter Beifrain (Heuberger-Kreisler); Waltz (Vogel); Air from The Czarevitch (Lehár); Estrellita (Ponce); Lagartarinas (Guerrero); El Relicario (Padilla); Mario Mari (di Capua); Valce bluette (Drigo); Duet from The Merry Widow (Lehár); Auprès de ma Blonde (arr. Chomel); Old Viennese Waltz (Kreisler); Duet from La Mascotte (Andran); Saltarelle from Les Brigands (Offenbach); City of Love (Heymann); Au temps des Valse (Comard); Love Song (Hollmann). In the intervals at 1.0 p.m., Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange. 7.0, Agricultural Notes and Racing Results. 7.10, Gramophone Music: Again (Gibbons); Quand l'amour meurt (Cremieux); Carinos (Araujo); Bernade (Guerrero); Consuelo (Alond); Les Lilas (Doelle); Quera dios (Fernandes Esperon); Gueza (Gianuzzi); Tango (Maldren); Ciorgina (Bracale); Borracho (Tanca). 7.50, Market Prices and News. 8.0, Symphony No. 6—The Pastoral (Beethoven), on Gramophone Records. 8.30, News and Weather. 8.45, Romantic Music on Gramophone Records: Symphonie fantastique (Berlioz); Overture, Der Freischütz (Weber); Invitation to the Dance (Weber). 9.15, Press Review and News. 9.30, Modern Music on Gramophone Records: Overture, Patrie (Bizet); Bourrée fantasque (Chabrier); Le Cygne (Saint-Saëns); Spring Song (Gounod); Ballet Music from Coppélia (Delibes); Bouton d'Or (Piernc); Introduction to the First Act of Ferval (d'Indy); Mazurka from Isoline (Messager); Sara-bande (Dukasse); Couronnement de la Muse du Peuple (Charpentier); La Ronde des Saisons (Busser); Paysage (Mahm).

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Pioneers. 7.45, KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Words and Music, from New York. 8.45, Federation Pennsylvania Women. 9.0, Thursday Special, from New York. 9.30, News and Markets. 9.45, Thursday Special, from New York. 10.0, Programme to be announced. 10.15, Tarzan of the Apes. 10.30, Larry Larson, from New York. 10.45, Orphan Annie, from New York. 11.0, News and Piano Classic. 11.15, Sports Notes and a Song. 11.30, Pittsburgh Spotlights. 11.45 to 12.45 a.m. (Friday), New York Relay. 11.45, Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, Concert Footlights. 12.45, News of the Air. 1.0 to 3.30, New York Relay. 1.0, Captain Diamond. 1.30, John Fogarty. 1.45, Floyd Gibbons. 2.0, Death Valley Days. 2.30, Wayne King's Orchestra. 3.0, Goldman Band.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., Gramophone Music. 3.55-4.0, Exchange. 5.25, Programme for Children. 5.45, Gramophone Music. 5.55, Legal Talk. 6.5, Agricultural Report. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Review of New Books and Agricultural Report. 7.0, Chimes and News. 7.10, Military Band Concert relayed from the Kralovska Obora. 8.10, Concert by the Municipal Orchestra, conducted by Robert Manzer, relayed from Karlsbad; Soloist: Eugen Kalix (Pianoforte); Overture, Abu Hassan's Slippers, Op. 16 (Morales); Symphonic Poem, The Forest Dove (Dvorák); Piano-forte Concerto No IX in E Flat (Mozart); Symphony No. 1 in G (Kalinnikov). 10.0, Time and News. 10.15, Light Music. 11.0 (approx.). Close Down.

RABAT

721.1 kc/s, 416 metres; 6 kW.—12.30 p.m., Concert of Popular Music. 2.0 to 4.0, Interval. 4.0, Gramophone Music. 5.0 to 7.0, Interval. 7.0, Arab Programme: News and Gramophone Music. 7.45, Journal Parlé and News. 8.0, Concert: Overture, Der Vampyr (Marschner-Tullins); Mira bianca luna (Rossini); Waltz from The Girl in the Taxi (Gilbert-Dorier); Song from Parysatis (Saint-Saëns); Lullaby (Greechaninov); Selection from Quo Vadis (Nougues-Rudd); Quartet from Faust (Gounod); Cello Solo: Mazurka (Jenkinson-Chatari); Aria from the Bartered Bride (Smetana); Suite, Scènes pittoresques (Massenet-Mouton); Duet from Lakmé (Delibes); Adagio (Beethoven-Fielt); Scherzo (Schubert-Wenginger). In the interval, Talk. 10.0, Gramophone Music.

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, Interval. 12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News. 12.40 (from Geneva), Financial Notes. 1.10 (from Geneva), Gramophone Concert. 2.0, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Geneva), Dance Music.

4.15 (from Geneva), Talk by Georges Verdene. 4.40 (from Geneva), Dance Music. 5.30, Interval. 7.0 (from Geneva), Programme for Mountain-Lovers. 7.30 (from Geneva), News. 8.0, Concert by the Radio-Suisse Romande Orchestra, conducted by Echehard; Soloist: Francis Bodet (Trumpet); Concerto grosso (Handel); Suite, Airs de ballet (Gluck-Motelle); Prelude to Serval (d'Indy); Suite in D for Trumpet (d'Indy); Symphonic Legend, La forêt enchantée (d'Indy). 9.0 (from Lausanne), Chamber Music by the d'Evian Trio. Third Trio (Beethoven); First Trio (Mendelssohn); 9.50, News. 10.0 (from Lausanne), Popular Programme. 10.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.0 p.m., Popular Programme. 6.40, Latvian Songs. 7.0, Weather Report. 7.3, Legal Talk. 7.30, Concert by the Station Orchestra, conducted by Valeri Berdiaiev, relayed from Dzintari; Symphonie fantastique (Berlioz); Symphonie Poëu, Nevermore (Morawski); Spanish Caprice (Rimsky-Korsakov). In the intervals, News and Weather. After the Concert, News and Dance Music. 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 180, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 280, 11,810 kc/s, 25.4 metres, from 5.15 p.m.—12.30 p.m., Gramophone Music. 1.0, Humorous Talk. 1.5, Orchestral Concert. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 2.0, Time and Announcements. 4.30, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.0, Reading. 5.15, Weather. 5.15 to 6.0, Vocal and Instrumental Concert: Luigi Chiarappa (Cello); Guglielmo Castello (Baritone), and O. Parisini (Soprano); Cello Solos: (a) Pastorale (Couperin-Cassado), (b) Balletto (Rossini-Albini); Baritone Solo from Il figliu prodigo (Ponchielli); Duet from Thais (Massenet); Cello Solos: (a) Andante cantabile (Scriabati), (b) Spanish Dance (Popper); Soprano Solo from Zanetto (Mascagni); Duet from Amico (Mascagni). 6.40 (Naples), Shipping and Sports Notes. 6.45, Dopolavoro Notes and Tourist Report. 7.10, Agricultural Report. 7.20, News 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, Variety 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. (Friday), Stock Reports and Baseball Scores. 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 Resumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,200 kc/s, 245.9 metres. 6.15 a.m. (from Basle), Gymnastics. 6.35, Interval. 11.59, Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from Zürich), Ländler and Yodeling Songs on Gramophone Records. 12.30 p.m., Time and News. 12.40, (from Basle), Concert by Siegfried Kreimo and his Orchestra. 1.25 (from Basle), Time, Weather and Exchange. 1.35, Interval. 5.0 (from Zürich), Concert by the Little Radio Orchestra, conducted by Max Scherbaum. 6.0, (from Zürich), Gramophone Music. 6.30 (from Basle), Talk: German Art. 7.0, Time, Weather and Traffic Report. 7.10 (from Basle), Italian Opera Music on Gramophone Records. 7.45 (from Basle), Italian Lesson. 8.30 (from Basle), Recital of Violin Sonatas. 9.15, News. 9.25 (from Basle), Music Anecdotes. 9.40 (from Basle) Honour in Piano-forte Music—A Recital. 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 243 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 Sundsvall), Studio Service. 5.30, Gramophone Music. 6.15, A Visit with the Microphone. 6.45, Galli-Curi Song Recital on Gramophone Records. 7.0, Talk relayed from Norrköping, 1,292 kc/s (232.2 metres). 8.0, Violin Recital by Roman Dukstulsky; Intermezzo (Granados-Cassado); Romance (Stanek-Laumenskienes); Melody (Stanek-

Laumenskienes); Serenade (Cassado); Die Biene (Schubert). 8.15, Conflict—Comedy (Olsen). 9.45, Weather and News. 10.0, Orchestral Concert: Oriental Suite (Joyce); Hungarian Rhapsody No. 2 (Liszt); Melody (Rubinstein); Russian Boston (François); Dance of the Hours from La Gioconda (Ponchielli); Potpourri (Löfgren). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert. 12.45 p.m., News. 1.0, Time Signal and Exchange. 1.5, Gramophone Concert. 2.0, Programme for Children. 3.0, Interval. 3.30, Concert, conducted by Brouillac, relayed from the Casino Park, Vichy. Soloist: Vigoureux (Trombone). Overture, Masaniello (Auber); Two Polonaises (Schubert-Levadé); Scènes alsaciennes (Massenet); Adoration (Filippucci); Selection from Madame Butterfly (Puccini); Trombone Solo, Marche héroïque (Saint-Saëns). 5.0, Elocution Lesson. 5.15, Extracts from La Bohème—Opera (Puccini), on Gramophone Records. 6.0, Talk in German: Delacroix and Delacroix. 6.15, Talk for Women. 6.30, Song and Duet Recital by Suzanne Grunenwald (Soprano) and Jean Hazart. Soprano Solos (Liszt): (a) Enfant si j'étais roi, (b) Oh quand je dors, (c) Loreley; Rondels (Hazart): (a) Les biens dont vous êtes la Dame, (b) Une fois me dites oui, (c) Le souvenir de vous me tue, (d) Adieu vous dis, la lune à l'oeil; Soprano Solos (Rubinstein): (a) Le fils d'Asra, (b) Le songe, (c) Le rêve du prisonnier; Obsession (Montfort); Soprano Solo, Lithuanian Song (Chopin); Duets (Saint-Saëns): (a) Viens, (b) Pastorale; Songs (Bretagne): (a) Nous avons respiré, (b) Tu viendras un jour, (c) Je me sens près de vous, (d) Tons sourire; Soprano Solo, La mort d'Ophélie (Saint-Saëns); Duets: (a) Cueillets les bouquets (Godard), (b) Les dames de Lormont (Franck). 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in German and Announcements. 8.30, Military Band Concert, conducted by Captain Granger, relayed from the Esplanade, Metz. March (Charpentier); Overture, Prometheus (Beethoven); La lettre de Manon (Gillet); Air de ballet, Les Anémones (Missa); Potpourri (Kelsen); Prelude, Duet and Barcarolle from The Tales of Hoffmann (Offenbach); Prelude to Le déluge (Saint-Saëns); Serenade, Chanson de Pierrrot (Granger); Selection from Werther (Massenet); Polka, Champagne (Tourneur). In the interval Press Review. 10.0 (approx.), Close Down.

STUTTART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiberg, 527 kc/s, 570 metres.—1.15 p.m., Time and News. 1.30, Concert from Langenberg. 2.0, Concert arranged by the Post Office. 2.30, Spanish Lesson. 3.0, Military Band Concert of March Music, relayed from Donaueschingen. Conductor: Hans Husadel. 4.0, Programme for Children. 4.30, Concert by the Badenweiler Orchestra, relayed from Badenweiler. Conductor: Albert Hitzig. Coronation March from Die Folkinger (Kretschmer); Overture, Die Fledermaus (Joh. Strauss); Aquarellen-Walzer (Jos. Strauss); Mozart Potpourri (Urbach); Selection from The Mastersingers (Wagner); Norwegian Rhapsody (Svendens); Selection from The Maid of the Black Forest (Jessel); Von Pestel-Marsch (Detlaff). 5.45 (from Freiberg), Talk: Literature in Alsatian Dialect. 6.10 (from Freiberg), Talk: In praise of Work. 6.35, Time and Announcements. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Talk: An Italian Girl's Travels in Germany. 8.20, Concert, relayed from Berlin (Deutschlandsender). 10.0, Time and News. 10.25, Der Schäferlauf—Radio Report (Carl Struve), on Gramophone Records. 11.0, Dance Music (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.15 p.m., Instrumental Solos. 6.30, Military Music. 6.45, Popular Music. 7.0, Dance Music. 7.15, News. 7.30, Operetta Music. 7.45, Overture 1812 (Tchaikovsky). 8.0, Accordion Solos. 8.15, Music by a Viennese Orchestra. 8.45, Songs from Sound Fiims. 9.0, Delibes (Concert: Ballet, La Source; Overture and Two Arias from Lakmé; Ballet Music from Coppélia. 9.45 (approx.), Operetta Music. 10.0, Orchestral Music: Serenade (Piernc); De-mande et réponse (Taylor); The Dancing Doll (Poldini). 10.15, News. 10.30, Concert for Listeners in Morocco. 11.15, Opera Music: Il pleure from Le Jongleur de Notre Dame (Massenet); Je suis l'oiseau and Ouvrez-vous non front, from Grisélidis (Massenet); Duet from Faust (Gounod). 11.30, Light Music. 12 Midnight, News. 12.5 a.m. (Friday), Chansonnettes. 12.15, Opera: Fantasia: (a) Il Guarany (Gomez), (b) La princesse jaime (Saint-Saëns). 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 p.m., Orchestral Concert. 6.0 to 6.5, Weather. 6.40, Giornale Radio, Dopolavoro Notes and Gramophone Music. 7.0, Time, Tourist Report and Gramophone Music. 7.10, Agricultural Notes and Market Prices. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, Announcements, Giornale Radio, Sports Notes and Weather. 8.20, Talk on the following Transmission. 8.30, André Chénier—Opera in Four Acts (Giordano). In the intervals, Talk, Art Notes and 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 Wiener Symphoniker, conducted by Josef Holzer. In an interval at 1.0 p.m., Time and News. 2.0, Interval. 3.0, Time and Announcements. 3.20, Talk: German Athletic Championships. 3.30, Programme for Children. 3.55, Sound Film Music on Gramophone Records. 4.35, Programme for Young People. 5.0, Programme for Women. 5.25, Soprano and Pianoforte Recital by Irene Réthy and Hedwig Apfel: Songs (Brahms): (a) Mädchenlied, (b) Sommerabend, (c) Der Schmied; Maria Wiegand (Reger); Hat dich die Liebe beirührt (Mars); Song from Die tote Stadt (Korngold); Variations on German Folk Songs (Müller); (a) Ein Männlein steht im Walde, (b) Das Laub fällt von den Bäumen, (c) Der Jäger aus der Kurfürst; Pianoforte Pieces (Hoeck): (a) Nocturne, (b) Schatten, (c) Grottesque; Pianoforte Pieces (Friedmann): (a) Nocturne, (b) Kampfspiel, (c) Dance from the Cycle, Aus der Kinderzeit; Pianoforte Pieces (Geyer): (a) Wiegenlied, (b) Oriental Scherzo. 6.5, Talk. 6.30, Talk: Life and Customs among Mountain Dwellers. 7.0, Time and Announcements. 7.15, Salzburg Festival Programme: The Egyptian Helen—Opera in Two Acts (R. Strauss), relayed from the Festspielhaus. In an interval at 8.25, Announcements. 10.0, News. 10.15 to 10.30, Announcements about the Catholic Conference in the Hungarian and Czechoslovakian Languages. 10.30, Popular Music on Gramophone Records.

VATICAN CITY

15,120 kc/s, 19.84 metres (morning), and 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.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from Torun Cathedral. 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. 3.35, Gramophone Music. 3.45, Talk for Boy Scouts. 3.50, Gramophone Music. 4.0, Radio Play for Children. 4.30, Vocal Duets. 5.0, Talk. 5.15, Mandoline Concert. 6.15, Talk, relayed from Poznan, 896 kc/s, 335 metres. 6.35, Jazz Music of the Past Ten Years—Programme by Olga Lada (Soprano) and Altenberg and Rybczynski (Pianoforte). 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Reading. 8.0, Concert by the Station Orchestra, conducted by Oziminski. Soloist: Gadejska (Soprano). Overture, Die Fledermaus (Strauss); Selection from The Tales of Hoffmann (Offenbach); Intermezzo from Naila (Delibes); The Dream on the Vistula (J. Hellmesberger); Arias and Songs; Tarantella (Godard); Chopiniana (Schmitt); Arias and Songs; Waltz, Tales from the Vienna Woods (J. Strauss); Mazurka (Namyrowski). In the intervals, Radio Journal and Agricultural Report. 10.0, Dance Music, relayed from the Europa Café, Cichocinek. 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.—4.0 p.m., See Warsaw. 7.10, Programme Announcements and Miscellaneous Items. 7.20, Answers to Correspondence. 7.40, See Warsaw. 9.0, Recitations. 9.10, Programme from Warsaw. 11.0 (approx.), Close Down.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—8.10 p.m., Announcements. 8.30, Musical Programme from Ljubljana, 522 kc/s, 574.7 metres. 10.30, News and Weather. 10.40, Dance Music from the Esplanade Hotel. 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 2.30 p.m., Time Signal, Stock Exchange Quotations, Weather Forecast and Gramophone Music. 6.0, Programme for Children. 6.45, News. 7.0, Readings. 7.15, Literary and Dramatic Talk by Aodh de Blacain. 7.30, Time Signal. 7.31, The Station Odet. 7.50, Baritone Solos by J. G. Hearne. 8.5, The Station Odet (contd.). 8.20, The Devil's Star—Sketch by The Mimmers. 9.0, Soprano Solos by Pearl Macconkey. 9.15, Traditional Fiddle Solos by Charles O'Brien. 9.30, Variety Programme by Mike Nono. 9.45, Sponsored Programme. 10.45, News, Weather and Close Down.

BARCELONA

EAJ1, 860 kc/s, 346.8 metres; 8 kW.—7.0 p.m., Trio Concert: Selection from I Paggiacci (Leoncavallo); Romance (Chopin); Albumleaf (Masccheroni); Chanson brève (Demare); Serenade, Mi amor (Margutti); Selection from Manon (Massenet); Moment musical (Schubert). 8.0, Request Gramophone Concert. 8.30, Exchange. 9.0, Gramophone Concert, followed by News. 9.0, Chimes from the Cathedral, Messages of Seamen, Exchange and Market Prices. 9.10, Orchestral Concert: March, Imperial Edward (Souza); Selection from El barquillero (Chapi); Waltzes from The Dollar Princess (Fall); Andantino (d'Ambrosio); Selection from The Count of Luxembourg (Lehár); Serenata del Burattino (Mignone); Melody (Masccheroni); Hungarian Dance No. 1 (Brahms). 11.15, Reading of Poems. 11.30, An Opera, on Gramophone Records. In the interval at 12 Midnight, News. 1.0 a.m. Saturday, Close Down.

BARI

112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Report, Tourist Talk and Dopo-avoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35, Concert of Opera Music. Soloists: Milena Barbiero (Soprano) and Franco Signorile (Tenor). Overture, Tra Diavolo (Auber); Soprano Solo: Adolescente ancor, from Dejanice (Catalani); Tenor solo: E lucean le stelle, from Tosca (Puccini); Selection from Ernani (Verdi); Soprano Solo, Ora non soffro, from Lodoletta (Mascagni); Tenor Solo: Amor ti vieta, from Fedora (Giordano); Overture, Norma (Bellini); Soprano Solo, Senza mamma, from Stor Angeli-a (Puccini); Tenor Solo: Testa lorata, from Bohème (Leoncavallo); Intermezzo from I quattro rusteghi (Wolfferrari); Soprano Solo, Poveri fiori, from Adrienne Lecouvreur (Cilea); Tenor Solo from Madame Butterfly (Puccini); Selection from I Paggiacci (Leoncavallo). In the interval, Literary Notes. 10.30, Dance Music from the Gran Caffè del Levante. 10.50, News in Albanian. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

397 kc/s, 430.4 metres; 2.8 kW.—6.0 p.m., Gramophone Music. 6.30, Humoresques. 7.0, Song Recital by Amy Wünsche andovic. 7.50, Talk. 8.30, Viola and Pianoforte Recital by Lotte Hammerschlag and Carl Bamberg. Sonata in C minor (Bach); Sonata in D (Nardini); Chaconne in G minor (Vivaldi). 9.15, Oboe Recital by Pintek. 9.45, Concert by the Station Orchestra. 10.30, Time and News. 10.35 (approx.), Dance Music relayed from the Ratnicki Dom Restaurant. 11.10, Dance Music on Gramophone Records.

BERLIN

DEUTSCHLANDSENDER (Reichssender). 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Topical Talk. 2.10, See Stuttgart. 3.0, Programme for Girls. 3.30, Weather and Exchange. 3.45, Reading (Rudolf Huel). 4.0, Gala Concert by two Nazi Bands, relayed from the Funkgarten: Festival March from the Concerto in E flat (Beethoven); Jubel-Ouverture (Flotow); Waltz, The Blue Danube (Joh. Strauss); Ballet Suite (Popy); Japanese Romance (Moret); Die Fürstensteiner (Rissmann); Selection from The Gipsy Baron (Joh. Strauss); Sailors' March, From Shanghai to Helioland (Buechholz); Waltz, Moonlight on the Aster (Petras); Three Marching Songs (Rissmann); Fantasia on the Song, Ich hatte einst ein schönes Vaterland (Ailbont); Waltz, The Blue Danube (Joh. Strauss); March Potpourri. Als wir marschierten (Schmidt-Hagen); March, Frisch, wie kühles Morgenrauen (Rissmann). 6.0, Poems. 6.5, Talk for Workers. 6.30, Topical Talk. 6.50, Weather and News. 7.0, Transmission for all German Stations: Rheims—Radio Play of the Great War (Friedrich Bethege). 8.0, Today's Motto. 8.5, See Berlin (Witzleben). 10.0, Weather and News. 10.45, Weather. 11.0, Report on the Round Germany Flight. 11.10, Dance Music from Frankfurt. 12.30 a.m. (Saturday), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.0 p.m., Talk: How our Programme is made up. 6.15, Review with Gramophone

FRIDAY

AUGUST THE TWENTY-FIFTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Promenade concert from Queen's Hall.
- LONDON REGIONAL** Relay from the Argyle Theatre, Birkenhead.
- MIDLAND REGIONAL** "The Town Topics," a concert party entertainment, relayed from Leamington Spa.
- NORTH REGIONAL** "Frivolous Hour" of wit and nonsense in music and literature.
- SCOTTISH REGIONAL** Harry Gordon and his Company, relayed from Aberdeen.
- BELFAST** Two comedies: "Peter's Mistake" and "The Mistress of the Abbey Farm," by Mary Allan MacGregor.
- ABROAD**
- BARI** 8.35 p.m. Concert of opera music.
- COPENHAGEN** 10.40 p.m. Trio concert.
- EIFFEL TOWER** 8.30 p.m. Beethoven's "Moonlight Sonata," played by Marie-Antoinette Pradier.
- HEILSBURG** 8.10 p.m. Max von Schilling's memorial concert, by the Königsberg Opera House Orchestra.
- MUNICH** 8.40 p.m. Opreetta: "Das Verwünschte Schloss," by Millöcker.
- STOCKHOLM** 10.0 p.m. The Station Orchestra.
- VIENNA** 8.0 p.m. The Vienna Chamber Orchestra, conducted by Karl Auerieth.
- WARSAW** 8.0 p.m. Symphony concert, conducted by Szulc.

Illustrations: The Development of Flying as a Sport. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Berlin Deutschlandsender (Reichssender). 8.5, Variety Programme relayed from the Radio Exhibition. The Station Orchestra, conducted by Max Bing, and Soloists. 10.0, Weather and News. 10.25, Talk, with Illustrations, relayed from the Radio Exhibition: Electrical Musical Instruments. 11.0, Dance Music from London, Budapest and Frankfurt.

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, News. 7.55, Lottery Results. 8.0, Gramophone Music. 8.30, Symphony Concert.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.40 p.m., Gramophone Music. 6.55, Talk for Housewives. 7.0, 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.—1.5 p.m. (approx.), Classical Music on Gramophone Records. 1.45, Time and News. 2.5, Instrumental Concert on Gramophone Records. 3.0, Agricultural Prices. 3.20, Programme for Young People. 4.0 (from Gleiwitz), Alois Heindzcek Song Recital, by Agnes Weiss (Soprano), with the Composer at the Piano; Sommerabend; Welch ein Schwestern; Im Feld ein Mädchen singt; Traumwald; Ehenewgitter; Am Weiber; So in die still verschneite Nacht; An Sie; Der goldene Morgen. 4.30, Max Mohr reads from his own works. 4.50, Concert from Berlin (Witzleben). 5.30, Agricultural Prices. 5.35 (approx.), Talk: Let us have a German National Theatre. 6.0, Literary and Musical Programme in Memory of the Battle of Katzbach, relayed from Liegnitz. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.5, See Berlin (Witzleben). 10.0, Time and News. 10.20, Topical Review: Germany and Austria. 10.30, Talk: Modern German Art. 10.45, Bilder von Rügen, Op. 4 (Kämpf), for Harmonium. 10.45, See Frankfurt. 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: News, Sports Notes, Topical Talk and Talk on Art. 7.0, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R.; 590 kc/s, 509 metres; 15 kW.—12 Noon, Animals—A Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Little Station Orchestra, conducted by Leemans: Cortège catalan (de Séverac); Overture, Le roi l'a dit (Delibes); Waltz, The Passing of Salome (Joyce); Potpourri, Fortissimo (Kálmán); Minuet for Violin (Mozart); Joujou d'amour (Demare); Selection from The Vagabond King (Friml). 5.0, Concert by the Station Orchestra, conducted by Kumps: Norwegian Rhapsody (Lalo); Valse triste (Sibelius); Pastorale for Wind Instrument (Pierné); Suite, Les heures (Goyens); Solveig's Song (Grieg); Romance in F (Rubinstein-d'Indy); Beulenians marie sa fille (Van Oost). 6.0, Talk: Motor Cars from the Point of View of the Amateur. 6.15, Quartet from the Grand Fugue, Op. 133 (Beethoven). 6.30, Pianoforte Recital by Marguérite Melin; Gavotte and Variations (Rameau); Capriccio (Brahms); La marche d'eau fraîche (Ibert); Die Spinnerin (Mendelssohn). 6.50, Sonata in C Minor (Grieg) on Gramophone Records. 7.15, Talk. 7.30, Legal Talk and Literary Review. 8.0, Military Programme by the Station Orchestra, conducted by Jean Kumps. 8.45, Talk. 9.0, Concert from the Kursaal, Ostend, followed by Le Journal Parlé, and 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, Orchestral Concert, conducted by Leemans: Overture, Mozart (Hahn); Waltz, Ange d'amour (Rubinstein); Caucasian Dance, Lesghinka (Waldteufel); Selection from Le Cid (Masset); Violin Solo, Slav Dance (Dvorak-Kreiser); L'Elfe dans la plaine (Brusselsmans); Serenade, Pour elle (Mateu); Selection from Der Kuhreigen (Kienzl); One-Step, Belle of Barcelona (Payne). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert of Light Music. 5.0, Dance Music from the Casino, Knocke. 6.0, Orchestral Concert, conducted by Leemans: Overture, The Merry-makers (Coates); Russian Melody, Douinka (Wekser); Suite, Scènes foraines (Mignan); Flute Solo: Hungarian Pastoral Fantasia (Doppel); Selection from Madame l'Archiduc (Offenbach); Soloist couchant (Brusselsmans); Ke-Sa-Ko (Chapuis); Chant slav (Douliez); Anvil Chorus from Il Trovatore (Verdi). 7.0, Talk: Popular Romanian Music, with Pianoforte Illustrations. 7.30, Wireless Review. 8.0, Gramophone Concert: Symphony No. 4, Op. 129 (Schumann); Melody (Le Rabbin); Melody (arr. Kozitsky); Priere à

Notre-Dame (Boellmann); Prelude to Mona Lisa (von Schillings). 8.45, Reading (R. Herrman). 9.0, Concert, followed by Dance Music, relayed from the Casino, Knocke. In the interval, Journal Parlé.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Popular Romanian Music by the Fania Luca Orchestra. In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Educational Talk. 7.40, Carmen—Opera in Four Acts (Bizet) on Gramophone Records. In the intervals, Radio Journal. After the Opera, Dance Music by the Marcel Zaharia Syncop Accorders Jazz Band, relayed from the Lido.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.30 p.m. till Close Down.—5.40 p.m., Concert. 7.0, Talk. 7.30, Concert by the Hungarian Harpsichord Quintet. 8.20, Recital by Ilona Tosnady and Bela Naday. 9.10, Sonata Recital. 10.10, News. 10.30, Concert by the Opera House Orchestra, conducted by Fridl; Selection from Sakuntala (Goldmark); Suite from Pierrette's Veil (Dohnanyi); Old Hungarian Dances (Szabados); Serenade (Weiner); Alla danza ungherese (Farkas).

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Town Hall Chimes and Weather. 12.5 p.m., Concert from the Bellevue Strandhotel. 1.0, Relay of the Opening of the Radio Exhibition. 3.0, Concert by the Radio Orchestra, conducted by Emil Reesen. Soloist: Max Freuller (Songs). Turkish March from The Ruins of Athens (Beethoven); Waltz, Telegrammen (Joh. Strauss); Overture, I promessi sposi (Ponchielli); Aragonessa (Fall); Selection from Manon (Massenet); Two Pieces from the Suite, Caucasian Sketches (Ippolitov-Ivanov); Danish Songs; Overture, Vert-Vert (Offenbach); Selection from Funny Face (Gershwin); Polka for String Orchestra, La caressante (Sokolov); Waltz, Red Roses (Lehár); Two Pieces from the Ballet Suite, Maskarade (Lacome). 5.0, Reading of New Danish Literature. 5.35, Exchange and Market Prices. 5.50, Talk in English: The Abolition of Slavery. 6.20, German Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.30, Talk: The History of the Theatre. 8.0, Town Hall Chimes. 8.2, Programme by Per Luntzon. 8.10, Modern Music, by Louis Preils Instrumental Ensemble. 9.0, Relay from the Radio Exhibition. 9.10, Danish Choral Music. 9.30, Modern Music (contd.). 10.0, News. 10.15, Modern Music (contd.). 10.40, Trio Concert: Trio in A, Op. 38, No. 1, for Violin, Viola, and Cello (Bocherini); Trio in D for Violin, Viola, and Cello (Bocherini). 11.0, Dance Music from the Lodberg-Restaurant. In the interval at 12 Midnight, Town Hall Chimes. 12.30 a.m. (Saturday), Close Down.

GORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m. to 6.0 p.m., Programme in English by the I.B.C. 11.0, The Happy Hour. Part I: Orchestral Music. Signature Tune: Animal Antics (Wark); Beautiful (Gillespie); Selection from The Beggar's Opera (Gay); Egyptian Serenade, Amina (Lincke); I kiss your Lips (Rydolph); Pianoforte Solo: Selection from He Wanted Adventure (Waller and Tunbridge); The Old Spinning Wheel (Hib); Veterans of Variety. Part II: Dance Music by Jack Hylton and his Band (Electrical Transcriptions). Wear a Great Big Smile; Pop Gun; Rockabye; Waltzing in a Dream; Moon Song; I sigh for you, Rio Rita; Picaninny's Heaven; Out in the Open; Signature Tune. 4.30, Programme for Children. 5.0, Concert of Musical Comedy Selections for Southampton and Winchester Listeners. Signature Tune, The Night by the Sea; Selection from White Horse Inn; Song, A Bachelor Gay, from The Maid of the Mountains (Tate); Violin Solo: Indian Love Call, from Rose Marie (Friml); Air from The Chocolate Soldier (O. Straus); Song, The Desert Song (Romberg); Selection from Lilac Time (Schubert-Berte). 5.30, Gramophone Concert for Bournemouth and Weymouth Listeners. London Flute Quartet. Dance of the Elves (Grieg); Jack Hulbert: The Flies Crawled up the Window, Julian Rose; Mrs. Blumberg's Boarding House; Banjo Solo: Flapperette (Grieg); Anthony Somers; I travel the Road (Thayer-Parsons); Marek Weber and his Orchestra: Waltz, Künstlerleben (Joh. Strauss); Violin Solo: Spanish Dance (Fall); Signature Tune. 6.0 to 10.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. Dance Music, Signature Tune: Bells of Normandy; Eerie Moon; Bass Drum Dan; Farewell to Arms; Hey! young Fella; Fiddlin' Joe; I hate to leave you Now; New Kinda Blues; I wanna count Sleep; You're driving me Crazy; Sadie, the Skater; Crying and Sighing; Just an Echo in the Valley; Any Time, Any Day, Anywhere; Honey-suckle Rose; Mahogany Hall Stomp; High Society; Signature Tune. 11.0, Club Concert for Buxton Listeners. Signature Tune, The Chum

AUGUST 25th

FRIDAY

continued

Song; A Midsummer Night's Dream (Mendelssohn); Aria from Carmen (Bizet); Invitation to the Waltz (Weber, arr. Woodhouse); The Butterfly (Nevin); Pianoforte Solo: On Wings of Song (Mendelssohn); Song, in the Gloaming (Harrison); The Mill in the Forest (Eilenberg). Part II: Songs, Rebels are Out (Tunbridge); The Old Spinning Wheel (Hill); Dance away the Night (Thompson); Castles in the Sand (Sandford); Songs of the Western Front; Softly Awakes my Heart, from Samson and Delilah (Saint-Saëns); Selection from Wonder Bar (Katscher); Signature Tune. 12.5 a.m. (Saturday), News, Bulletin in English. 12.10 (approx.), Instrumental Music, Banjo, Heather Bloom (Kirby); Hawaiian Guitar Medley; Violin Solo: Caprice viennois (Kreisler); Accordion: Yip-Taddy-Lay (Cobb and Flynn); Piccolo Solo: Deep Blue Sea (Brewer). 12.30, Dance Music. Signature Tune, Bells of Normandy. Hobo, you can't ride this Train; Eerie Moon; I've told every Little Star; Saratoga Swing; We belong Together; Connoisseur's Album of Hot Rhythm Music; Heebie Jeebies; My Darling; Fiddlin' Joe; Signature Tune. 1.0, Military Band Concert. Post Horn Gallop (Koenig); Valse triste (Sibelius); Song, The Driver of the 8.15 (Longstaffe); A life on the Ocean Wave Amoretentänze (Gungl); Song, Bohemia (Ross); Overture, Zampa (Herold). 1.30, Dance Music. Signature Tune, Bells of Normandy, Underneath the Harlem Moon; I've got the World on a String; Just an Echo in the Valley; Sadie, the Shaker; Something came and got me in the Spring; Rocky Road; Crying and Sighing; The Dixy Glide; Signature Tune. 1.57, I.B.C. Good-night Melody. 2.0, 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.—6.0 p.m., Reading: Johann Oberlier (Adolf Wilbrandt). 6.20, Talk: The Dangers of National Decadence. 6.45, Review of the Day's News. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin Deutschlandsender (Reichsender). 8.0, Programme to be announced. 8.15 (approx.), Programme from Stuttgart. 9.25, Report: The Saar Demonstration at the Niederwald Memorial. 9.35, See Stuttgart. 10.15, Time and News. 10.45, Dance Music. Part I: From London. Part II: From Budapest. Part III: Frankfurt Dance Music.

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., Gerhard Menzel reads from his own works, with Introductory Talk. 6.25, Talk: German Heroes—the Heroic Struggle of the Warship Königsgberg. 6.45, Frankfurt Exchange and Hamburg Egg Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Political Talk. 8.10, Programme from Berlin (Witzleben). 10.0, Time and News. 10.20, Topical Programme. 10.30, Violin and Harpsichord Recital by Werner Schmalhaeck and Gerhard Gregor: Sonata in E for Harpsichord and Violin (Bach); Harpsichord Solos: (a) The Bells (Bird), (b) The Little Windmills (Cuperin), (c) Le Coucou (Daquin), (d) Gavotte (Martini). 11.0, Concert, relayed from Frankfurt. 12.30 a.m. (Saturday), 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., Gramophone Concert of Popular 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. 3.30, Programme for Children. 4.0, Talk for Women. 4.30, Orchestral Concert, relayed from the Kurgarten, Zoppot. Conductor: Karl Tutein. Overture, All Baba (Cherubini); Selection from Fidelio (Beethoven); Two Legends (Dvorak); Slav Rhapsody (Friedmann); Chorus from Rienzi (Wagner). In an interval at 5.0 (approx.), Suggestions for Excursions. 5.30, Radio Report of the Round Germany Flight. 6.0, Orchestral Concert. 6.15, Agricultural Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin Deutschlandsender (Reichsender). 8.0, Political Notes and News. 8.10, Max von Schillings Memorial Concert by the Königberg Opera House Orchestra, conducted by Erich Seidler. 9.35 (from Danzig), Reading (Georg Britting). 10.5, Weather and 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 a.m., Concert by the K.R.O. sextet. 1.40, Interval. 1.55, Gramophone Music. 2.40, Soprano, Violin and Pianoforte Recital. 3.40, Gramophone Music. 3.55, Organ Recital by Dreissen; Overture, The Nuremberg Doll (Adam); Kashmiri Love Song (Woodford-Finden); Serenade (Romberg); The Clock and the Dresden Figures (Ketekel); Schubert Potpourri (Finck); Gramophone Music; Concert Waltz in E (Moszkowsky); Parla (Tosti); Czardas (Monti); The Dancing Doll (Poldini); Andantino (Lemare); Pastoral Dance (German); The Merry-maker's Dance (German). 4.55, Concert by the K.R.O. Boys, conducted by Lustenhouer, and Gramophone Music. 6.40, Police Report. 6.55, Medical Talk. 7.13, Concert by the K.R.O. Orchestra, conducted by Gerritsen; Overture, L'epreuve Villageoise (Grétry); Suite from Le roi s'amuse (Delibes); In the Steppes of Central Asia (Borodin); Dream Children (Elgar); Ballet Music from La Gioconda (Ponchielli). 8.10 (approx.), News. 8.15, Songs and Recitations by Pierre Francken. 8.40, Concert by the K.R.O. Orchestra, conducted by Gerritsen; Soloist: Kees Hartvelt (Violin); Overture, Prometheus (Beethoven); Violin Concerto (Bach); Overture, Semiramis (Rossini); Selection from Carmen (Bizet); Grand galop chromatique (Liszt). In an interval at 9.10, Songs and Recitations by Pierre Francken. 10.10 (approx.), News. 10.15, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 160 kc/s, 1,875 metres; 8.5 kW.—11.40 a.m. to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time and Gramophone Music. 12.10 p.m., Concert by Paul Godwin and his Orchestra. In the interval, Gramophone Music. 1.55, Gramophone Music. 2.10, Recitation. 2.40, Gramophone Music. 3.40-8.10, Programme of the Workers' Radio Society (V.A.R.A.). 3.40, Concert by De Notenkrakers: España (Dreyer); Neu Wien (Strauss); Melody (Volpatti); Pensa a te (Tosti); April (Tosti); Waltz (Webster); Melody (Lucchesi); Gramophone Music: Romance in F sharp minor (Tchaikovsky); Elégie (Tchaikovsky); Spanish Dance (Sarasate); Intermezzo (Schirman); Chanson (Schirman); Ici la V.A.R.A. (de Groot). 4.30, Programme for Children. 5.10, Concert by the Small Station Orchestra, conducted by de Groot; Eens (Nobel); Rakoczy Overture (Kelder); Méditation (Vieuxtemps); Minuet (Bocherini); Ein Supper bei Suppe (Morena). 5.40, Accordion and Pianoforte Recital. 5.50, Concert (continued): Polka Potpourri (Lindemann); Gipsy Song (Baldi); Trümmerei (Schumann); Ein Melodientraum (Frisch). 6.20, Talk on Palestine. 6.40, Concert by De Hiere-fluiters, and the Twinkling Five. 7.40, Talk. 8.10, A.V.R.O. Programme: Orchestral Concert relayed from the Kurhaus, Scheveningen; The Orchestra of the Hague, conducted by Carl Schuricht. In the interval at 8.40, Talk. 9.40 till Close Down. V.A.R.A. Programme. 9.40, News and Religious Information. 9.55, Gramophone Music. 10.40, Organ Recital by Jong; Butterflies in the Rain; Melody (Abraham); Selection from The Bird Fancier (Zeller); Selection from Carmen (Bizet). 11.10, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 8.0, Amusement Guide and News. 8.10, Esperanto Lesson. 8.30, Radio Concert. 8.54, News and Weather Report. 9.0, Symphony Concert conducted by Feline, relayed from the Pinède.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.5 p.m., Talk: Heroes. 7.20, Announcements and Gramophone Music. 7.35, Sports Notes. 7.40, See Warsaw. 10.40, Dance Music. 11.0, The Letter Box in French.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12.30 p.m., Concert of Rheinisch Music by the Station Orchestra, a Male Voice Choir, and Soloists. 12.50 (in the interval), News. 1.20, Concert,

conducted by Eysoldt. In the interval at 2.0 (approx.), News. 2.30, Interval. 3.0, Talk: Employment instead of the Dole. 3.15, Talk. 3.30, Market Prices. 3.50, Programme for Young People. 4.30, Reading. 5.0, Concert by the Fröhliche Fünf. 5.30, Talk on Fascism. 6.0, Concert by the Station Orchestra, conducted by Kneip. Soloists: Else Suhrmann (Soprano); Mogel (Clarinet), and Marga Bäuml (Guitar). March (Haas); Ländler for Clarinet and Guitar (Kneip); Folk Song (Reger); Bohemian Folk Dance for Violin, Clarinet, and Guitar; Three Poems; Intermezzo for Small Orchestra; Seit ganz mein Auge (Reger); Ländler for Clarinet, Violin, and Guitar; Short Story; Heimat (Reger); Polka for Clarinet, Violin, and Guitar; Dance for Wind Instruments; Minuet for Violin and Pianoforte (Beethoven); Das Magdlein und der Spatz (Reger); Three Poems; My Mother; Serenade for Clarinet and Guitar; Stopp-Galopp. 6.45, Announcements. 7.0, Transmission for all German Stations, relayed from Berlin Deutschlandsender (Reichsender). 8.0, News. 8.5, See Berlin (Witzleben). 10.0, Radio Report. 10.30, Talk: Coming Events in West Germany. 10.45, Dance Music from London, Budapest, and Frankfurt. 11.30 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.—Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon, Weather and Time. 12.5 p.m., Concert from Sondershausen. March, Standardenweibe (Paul Georgy); Jagdhärsch (Himmelsstoss); Titanenmarsch (Karl Stork); Marcia moderata from the Notturmo, Op. 34 (Spohr); March, Frühlingsgrüsse Theo Rüdiger); Triumphal March (Gottfried Weber); Standardenführer Volt-Marsch (Stork). 1.0, News. 1.15, The Joys and Sorrows of Love—Gramophone Concert. Violin Solos: Liebesleid (Kriesler); Liebesleid (Kreisler); Love Duet from Madame Butterfly (Puccini); Pianoforte Solo: Liebesträume (Liszt); Aria from L'elisir d'amore (Donizetti); Song, Gretchen am Spinnrad (Schubert); Love Duet from Tristan und Isolde (Wagner). 2.0, News. 2.10, Notes on Art. 2.20, Poetry Recital (Schaefer). 2.35, Talk for Women. 3.0 to 4.0, Concert of Classical Opera and Operetta Music, by the Leipzig Symphony Orchestra, conducted by Theodor Blumer. Overture, Titus (Mozart); Ballet Music from Armide (Gluck); Selection from Der Freischütz (Weber); Overture, Gasparone (Milköcker); Waltz from Katze und Maus (Joh. Strauss); Selection from Bocaccio (Suppé). 4.10, Concert by the Station Orchestra, conducted by Theodor Blumer. March, Mit Standarden (Blum); Overture, Marinarella (Fucik); Second Italian Suite (Beethoven); Selection from Der Tenor der Herzogin (Künneke); Waltz from Der Opernball (Heuberger); Cadet March (Souza); Overture, Indra (Flotow). 5.10, Review of Books. 5.30, Exchange, Weather and Time. 6.0, Talk: A Child talks about School. 6.25, Talk: Wenigerode. 6.50, Review of the Day's Events. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Orchestral Concert, conducted by Otto Wartnek, relayed from Sondershausen. Soloist: Gerda Nette (Pianoforte); Partita for Orchestra (Otto Wartnek); Pianoforte Concerto in A Minor, Op. 51a (Schumann). 9.51, Austria—a Revue. 10.10, Gneisenau—Literary Programme. 10.30, News. 10.40 (approx.), Concert by the Emdé Orchestra. Festspiel-Marsch (Blankenburg); Overture, Le Postillon de Longjumeau (Adam); Canzonetta and Valse lente (Eduard Schütz); Selection from The Pearl Fishers (Bizet); The Awakening of the Spring Flowers (Hanns Löh); Waltz, Märchen aus dem Orient (Joh. Strauss); Serenade, Oto-Gygi (Liding); Selection from Ihre Hoheit, die Tänzerin (Walter Goetze); In a Gipsy Camp (Dreyer); March, Weidmanns Heil (Reckling). 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—7.0 p.m., Orchestral Concert. 8.0, Nature Talk. 8.30, Programme from Belgrade, 697 kc/s, 430.4 metres, followed by Weather and News. 10.30, Gramophone Music. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—Dutch Programme. 7.30 p.m., Symphony Concert on Gramophone Records. 8.0, Racing Results. 8.5, Concert of Dances by the Station Orchestra: Polovtsian Dances (Borodin); Bayader's Dance (Rubinstein); Spanish Dance (Moszkowski); Norwegian Dance (Grieg). 8.50, News in French. 9.0, Orchestral Concert, conducted by Emile Boeres, relayed from Mondorles-Bains; Soloists: Gustave Grossele (Violin), and Venant Panké (Songs); Selection from The Desert Song (Romberg); Violin Solo, La Havannaise (Saint-Saëns); Luxembourg Potpourri

(Emile Boeres); Aria from Le Roi de La hore (Massenet); Aria from Benvenuto Cellini (Berlioz); First Serenade (Widor); Potpourri, Eisblumen (Leuchner). In an interval at 9.45, News in German. 10.25, Dance Music by the Station Jazz Band.

LWOW

788 kc/s, 381 metres; 16 kW.—7.5 p.m., Gramophone Music. 7.20, Miscellaneous Items. 8.0, See Warsaw. In an interval at 9.0, News. 10.40, Gramophone Music. 11.0 (approx.), Close Down.

LYONS

LA DOUA (PTT), 644 kc/s, 465.8 metres; 1.5 kW.—6.15 p.m., Radio Journal. 7.30, Radio Gazette for Lyons and the South-East. 8.30, Orchestral Concert, followed by News.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal and Gramophone Music. 9.15, News. 9.30 to 11.0, Interval. 11.0, Chimes, Time and News. 11.20 (approx.), Symphony Concert on Gramophone Records. Overture, Romeo and Juliet (Tchaikovsky); Escales Nos. 1 and 3 (Ibert); The Unfinished Symphony (Schubert); Passacaglia in C minor (Bach); Selection from The Three-cornered Hat (Fallá). 1.15 a.m. (Saturday), News and Announcements. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.15 p.m. (approx.) till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—2.50 p.m. Concert by the Station Orchestra, conducted by Plichta. 3.55, See Prague. 4.0, Interval. 5.45, See Prague. 6.5, Tourist Report. 6.15, Talk: Names. 6.25, See Prague. 10.30 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—1.45 p.m., Weather Bulletin. 2.45, Weather Report. 3.0, Concert. 3.55, Time. 4.0, Talk: The Bumper Soybean Harvest. 4.30, Literary Programme. 5.30, Programme Announcements. 5.45, Topical Talk. 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. (from Nürnberg), Orchestral Concert. 5.45, Talk: The Middle Classes and the Revolution of 1848. 6.5 (from Nürnberg), Song Recital by Li Mörike (Soprano). 6.25, Talk on Nietzsche. 6.45, Time, Weather and Agricultural Report. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Survey of Austrian and German Relations. 8.25, Zither Recital. 8.40, Das verwünschte Schloss—Operetta (Milköcker). 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 metre; 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.—6.0 p.m., Light Music by the Radio Comet Octet. 6.30, Recitation. 7.0, Announcements and News. 7.30, Pianoforte Recital by Inger Mikkelson. 8.0, Time Signal. 8.1, Talk. 8.30, Concert by the Station Orchestra, conducted by Hugo Kramm; Symphony No. 6 in F (Beethoven); Overture, Tannhäuser (Wagner). 9.30, Foreign Market Report. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Humorous Talk. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Notes, Tourist Report, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Concert of Opera Music, conducted by La Rosa Parodi. 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).—6.45 p.m., Theatre Review. 7.0, Le Journal Parlé. 8.30, The Moonlight Sonata (Beethoven).

AUGUST 25th

FRIDAY

continued

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, Interval. 12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News. 12.40 (from Geneva), Gramophone Concert. In the interval at 1.0 (from Geneva), Financial Notes. 2.0, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Geneva), Gramophone Music. 4.0, (from Geneva), Programme for Women. 5.0, Report from the Watchmakers' Exhibition at La Chaux-de-Fonds. 6.0, Interval. 7.0 (from Lausanne), Talk: In a Cinema Operator's Cabin. 7.30 (from Lausanne), News. 7.35 (from Lausanne), Answers to Correspondents. 8.0, Report from the Exhibition at La Chaux-de-Fonds. 8.30 (from Lausanne), Concert by an Accordion Club and the Radio Lausanne Orchestra, conducted by Moser. 9.50, News. 10.0, Concert. 10.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—5.30 p.m., Acts I and II of La Bohème—Opera (Puccini). 7.0, Weather Report. 7.3, Medical Talk. 7.30, Orchestral Concert, relayed from Bulduri. In the intervals, News and Weather. 9.30, News, followed by Act III of La Bohème—Opera (Puccini).

RJUKAN.—See Oslo.

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relay by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres; from 5.15 p.m.—12.30 p.m., Gramophone Music. 1.0, Orchestral Concert of Light Music. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 2.0, Time and Announcements. 4.30, Giornale Radio and Exchange. 4.45, See Turin. 5.15, Weather. 5.20 to 6.0, Vocal and Instrumental Concert. Antonio Tattoli (Violin), Augusta Quaranta (Soprano), and Angelo Parigi (Tenor). Violin Solos: (a) Piece en forme de habanera (Ravel). (b) Jota (Fallas). Soprano Solos: (a) Canto di cacerato (Mule). (b) Papillons (Fauré). (c) Aria from Francesca da Rimini (Zandonai); Violin Solos: (a) Waltz, Op. 64, No. 2 (Chopin-Huberman), (b) Caprice (Paganini-Kreisler); Tenor Solos: (a) Fidi, Fidi (Pasquini), (b) Quel ruscelletto (Paradis). (c) Tuscane Serenade (Fauré). 6.40 (Naples), Shipping and Sports News. 6.45, Dopolavoro Notes and Sports Review. 6.57, Report of the International Institute of Agriculture (in Spanish). German and French. 7.10, Agricultural Notes. 7.20, News in Foreign Languages. 7.40, Giornale Radio. 8.0, Time, News and Sports Notes. 8.15, Sponsored Gramophone Concert. 9.15, Il cavallo di Troia—Comedy in One Act (Piero Orestano). 9.45, Song Recital by Vella Capuano (Soprano); Berceuse of Jocelyne (Godard); Aria from Philémon et Baucis (Gounod); La zingara e l'uccellino (Benedict). 10.0, Dance Music. 10.55, 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., Haber and Curtis, Duets. 9.15, Musical Programme, from New York. 9.30, Talk: The Mind Age. 9.35, Mountain Ballads by Bradley Kincaid. 9.45 to 10.0 (approx.), South Sea Islanders, from New York. 12.45 a.m. (Saturday), Stock Reports and Baseball Scores. 1.0, Cities Service Concert, from New York. 1.30, WGY Farm Forum. 2.0, Popular Programme, from New York. 2.30, Variety Programme, from New York. 3.0, WGY Players in At the Country Club. 3.30, Lum and Abner, 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.—6.15 a.m. (from Basle), Gymnastics. 6.35, Interval. 11.59, Time Signal from Neuchâtel Observatory, and Weather. 12 Noon (from Zürich), Concert by the Radio Orchestra, conducted by Neppach. 12.30 p.m., Time and News. 12.40, Concert (cont'd.). 1.25 (from Zürich), Time, Weather, and Exchange. 1.35, Interval. 5.0 (from Basle), Programme for Children. 5.30 (from Basle), Concert by the Radio Quartet. 6.30, Concert by the Swiss Radio Orchestra, conducted by Neppach. 7.0 (from Berne), Time, Weather, Market Prices, and Tourist Notes. 7.20 (from Berne), Talk for the Seventieth Birthday of Otto von Greizer. 7.30, Music by the Schiffmann String Quartet. 7.40, Song Recital. 8.10, Schmocklerliedli—Dialect Programme. In the interval at 9.15 (approx.), News. 10.25 (from Berne), Dance Music by the Heimberg Ländler Band. 11.0 (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., Programme for Boy Scouts. 5.25, Hawaiian Guitar Music. 5.45, Reading. 6.15, Gramophone Music. 7.15, Weather and News. 7.30, Talk: The Air—The Highway of the Future. 7.50, Military Band Concert, conducted by Per Grundström. March (Ascolone); Hydro-paths-Walzer (Gungl); Overture, The Merry Wives of Windsor (Nicolai); Sailor's Dance (Tronbäck); Slav Rhapsody No. 2 (Friedsmann); Selection from Bocaccio (Suppé). 8.45, Song Recital by O. W. Douglas. 9.15, Legal Talk. 9.45, Weather and News. 10.0, Concert by the Station Orchestra. Overture, Orpheus in the Underworld (Offenbach); Potpourri, Servus Wien (Dostal); Schön Rosmarin (Kreisler); Country Gardens (Grainer); Gern hab' ich die Frauen geküsst from Paganini (Lehár); Waltz, Iberia (Hellmesberger); Kálmán Potpourri, Fortissimo (Feigel). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Gramophone Music. 2.0, Interval. 3.30, Concert conducted by Brouillac, relayed from the Casino Park, Vichy. Soloist, René Bas (Violin); Overture, Si j'étais roi (Adam). Violin Solo: Romance (Svendsen); Air à danser, from Le roi s'amuse (Delibes); Petite suite espagnole (Vidal); Selection from The Mastersingers (Wagner); Concert Waltz (Schulhoff). 5.0, Literary Talk: Erckmann-Chatrain. 5.15, Gramophone Concert. 6.0, Chamber Music 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, Gramophone Music. 8.0, Press Review in German and Announcements. 8.30, Concert conducted by Paul Paray relayed from the Casino, Vichy. Soloist, Cahuzac (Clarinet); Le chasseur maudit (Franck); Clarinet Concerto (Mozart); Ballet Music from La Péri (Dukas); Overture, Tannhäuser (Wagner). 10.0, News.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.—Relayed by Freiburg, 527 kc/s, 570 metres.—2.10 p.m., Concert of Swabian Folk Music. 3.45 to 4.0 (from Mannheim), Talk: Sunday Excursions. 4.30 (from Karlsruhe), Concert of Popular Music by the New Karlsruhe Philharmonic Orchestra, conducted by Rudolf Kurt Gulir. 5.45, Talk: The New Income Tax Regulations for the Year 1932. 6.10 (from Karlsruhe), Talk. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, See Munich. 8.10, Variety Concert. 9.25, See Frankfurt. 9.35, Theodor Körner—a Radio Picture on the One Hundred and Twentieth Anniversary of his Death—Programme of Music and Literature (arr. Curt Elwenspöck). 10.15, Time and News. 10.45, See Frankfurt. 12 Midnight (approx.), Close Down.

SUNDSYALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.15 p.m., Accordion Music. 6.30, Songs. 6.45, Instrumental Solos. 7.0, Scènes pittoresques (Massenet). 7.15, News. 7.30, Opera Music. Selection from the Tales of Hoffman (Offenbach); Invocation from The Damnation of Faust (Berlioz); Aria from Alceste (Gluck). 7.45, Viennese Music. 8.15, Opera Arias. 8.30, Military Music. 8.45, Opera Music. Prelude to Faust (Gounod); Forest Murmurs from Siegfried (Wagner); Death of Isolde from Tristan and Isolde (Wagner). 9.0, Extracts from Il est charmant—Sound Film (Moretti). 9.30, Instrumental Music. 9.45, Songs from Sound Films. 10.0, Opera Music. 10.15, News. 10.30, Concert for Listeners in Morocco. 11.15, Songs from Operettas. 11.30, Orchestral Music. 11.45, Violin Solo. 12 Midnight, News. 12.5 a.m. (Saturday), Songs. 12.15, Argentine Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—4.45 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.—4.45 p.m., I Ballili—Italian Youth Movement Programme. 5.15, Chamber Music. Viola Solos: (a) Chanson Louis XIII and Pavane (Couperin-Kreisler), (b) Pregliera (Martini), (c) Tambourin (Rameau); Trio, Op. 37, for Two Oboes and Eng-

lish Horn (Beethoven); 'Cello Sonata in G Minor (Eccles); Viola Solos: (a) Allegro from the Sonata in D (Bach), (b) Chanson à berceur et à danser (Antok); 'Cello Solos: (a) Chanson de matin (Elgar), (b) Piece en forme de Habanera (Ravel), (c) Papillon (Popper). 6.0 to 6.5, Weather. 6.40, Giornale Radio, Dopolavoro Notes and Gramophone Music. 7.0, Time, Report of the Royal Geographical Society and Gramophone Music. 7.10, Agricultural Notes and Market Prices. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, Announcements, Giornale Radio, Sports Notes and Weather. 8.15, Sponsored Music. 8.30, Variety Programme. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning); and 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. 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 Wiener Symphoniker, conducted by Josef Holzer. March, Alte Kameraden (Teike); Overture, Ein tolles Mädel (Ziehrer); Kuss-Walzer (Joh. Strauss); Song and Czardas (Lehár); Serenade (Foselli); Im Helenthal (Schenel); Spanien muss es sein (Speyer); Intermezzo, Puppenspiel (Meyer); Selection from The Little Dutch Girl (Kálmán); March (Alceter); In the Harbour of Port Said (Arran-dola); Intermezzo, Enfin seuls (Fechner); Waltz, Mein Herz hängt an Wien (Ziehrer); Wolga-Lied (Lehár); Cécilia (Strecker); Intermezzo, Wonntraum (Meyer-Helmund); Selection from Die Fledermaus (Joh. Strauss); Flieger-Marsch (Dostal); In the interval at 1.0 p.m., Time and News. 2.0, Interval. 3.0, Time and Announcements. 3.20, Talk: The Vienna Autumn Fair, 1933. 3.30, Talk for Women. 3.55, Ballet Music from Opera on Gramophone Records. 4.50, Talk: Gothic Script. 5.15, Concert. André Diehl (Bass), Lucian Horwitz ('Cello) and Herta Gröger (Pianoforte). Suite Op. 6 for 'Cello and Pianoforte (Gál); Michelangelo-Lieder (Wolf). 5.55, Tourist Report. 6.10, Talk: Sport. 6.25, Sports Report. 6.35, Reading from the Works of Hans Fraungruber. 7.0, Choral Concert. In the intervals at 7.35, Time and Announcements. 8.0, Concert by the Vienna Chamber Orchestra, conducted by Karl Auerieth. Soloists: Ida and Loris Margaritis (Pianoforte) and Anton Kamper (Violin); Pastoral (Bach-Cui); Concerto in F for Two Pianofortes (P. E. Bach); The Halfner Serenade in D for Violin (Mozart). 9.30, News. 9.45, Trio Concert relayed from the Hotel Krantz-Ambassador.

WARSAW

212.5 kc/s, 1,411 metres; 210 kW.—11.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Orchestral Concert, conducted by Szulc, relayed from the Bagatela March (Koperski-Szulec); Overture, Russian and Ludmilla (Glinka); Waltz from Nala (Delibes); In a Persian Market (Ketilbey); Suite, Caucasian Sketches (Ippolitov-Ivanov); Tango, La Gioconda (Szulec); Mazurka (Szulec). In the interval, Polish Press Review and Weather Report. 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, Maritime and Colonial Report. 4.0, Gramophone Music. 5.0, Book Review. 5.15, Light Music from the Gastronomica Café. 6.15, Talk: Modern Poland. 6.35, Choral Concert. 7.5, Gramophone Music. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Topical Talk. 8.0, Symphony Concert, conducted by Szulc. Soloist: Totenberg (Violin); Overture, Euryanthe (Weber); Fifth Symphony (Beethoven); Violin Concerto in D (Tchaikovsky); Selection from The Golden Cockerel (Rimsky-Korsakov). In the intervals, Radio Journal and Hints for the Week-End. 10.0, Dance Music. 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.—5.0 p.m., Talk. 5.15, See Warsaw. 7.5, Miscellaneous Announcements. 7.20, Review of 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 Notes. 8.10, Announcements. 8.30, Programme from Belgrade. 10.30, News and Weather. 10.40, Light Music by the Ruslan Orchestra. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

Marie Antoinette Pradier. 9.0, Symphony Concert, conducted by Edward Amment: A Mediterranean Cruise (Jadocicz); Selection from Madame Butterfly (uccini); Soleil couchant (Brussemans); etc for Strings (William Boyce); Waltz, digrammen (Gungl). 10.0 (approx.), Close own.

PARIS

OSTE PARISIEN, 914 kc/s, 328.2 metres; 1 kW.—7.0 p.m., Gramophone Music. 7.5, sponsored Talk. 7.15, Le Journal Parlé. 30, Concert. 8.0, Agricultural Notes. 8.5, ramophone Music. 8.30, Concert by the tation Orchestra: Overture, The Pearl of rasil (David); Suite of Waltzes (Litoff); ight in the Bay of Palma (Turina); Two eeces in Old Style (Samazeuilh); Poupai-r Minnet (Godard); Suite from La fête reux Thérèse (Hahn); Dérivissement, Le aptème de la ligne (Casadesus); Nocturne om the First Suite (Massenet); Mascade (acôme); Dance (Janacek); Minuet from ie Sonatina (Ravel); Waltz No. 1 (Dvorak); ie Magic Lantern (Godard); La montag-rde (Filipucci). 10.3, News.

PARIS

ADIO PARIS, Call CFR, 174 kc/s, 1,725 etres; 75 kW.—7.30 a.m., Weather and hysical Culture. 7.45, Gramophone Re-rds: Valse des Musettes (Puig-Silber-); Cri-Cri (Lombardo); Coucou (Jonas-); Happy Days are here again (Ager-). 8, Weather and Press Review. 12.30 p.m., iennese Music on Gramophone Records: So unzt man nur in Wien (Weelz); Selection om The Dollar Princess (Fall); Wine, /oman and Song (Strauss); Wiener Prater-eben (Translateur); Overture and Finale om the Second Act of Die Fledermaus (Strauss); Gold and Silver (Lehár); Air om Paganini (Lehár); Selection from A /altz Dream (O. Straus); Two Airs from iter Sweet (Coward); Donauwellen (Ivanovici); Two Airs from The Merry /idow (Lehár); Waltz (Ravel). In the ntervals at 1.0 p.m., Exchange, News and eather, and at 1.30, Exchange. 2.0, Ex-ange. 3.45, Exchange and Market Prices. 0, Agricultural Notes and Racing Results. 0, Social Assurance Report. 7.20, gramophone Records: Overture, Le Roi d'Ys (Lalo); Aria from Alceste (Gluck); Phaeton Saint-Saens). 7.50, Market Prices and ews. 8.0, Gramophone Concert. Songs by me, Marie Craus in the intervals. Part 2. Opera Music: Overture, Tannhäuser agner); Song; Selection from The Bar-ered Bride (Smetana); Air from Maitre athelin (Bazin); Overture, Mignon (Thomas); Wine Song from Les Dragons de illars (Maillart); Air from Le Pré aux erres (Herold); Overture and Passépied om La Basoche (Messager). Part II. Oer-tta Music: Selection from Le Petit Duc (Legoué); Air from Mlle. Nitouche (Hervé); tallet Music from Virginia (Bruncau); Duet rom La Fanfette du Temple (Messager); ection from Bédé (Christiné); Air from he Merry Widow (Lehár); Selection from oimeau (Beydts); Air from The Chocolate olider (O. Straus); Selection from The ertout Song (Romberg); March from Nina losa (Romberg). In the intervals at 8.30, ews and Weather, at 8.40, Review by Pierre eize, and at 9.15, Press Review and News.

PITTSBURGH

DKA, 980 kc/s, 306 metres; 50 kW. Re-ayed by W8KK on 48.86 metres and 25.27 etres.—4.0 to 5.0 p.m., U.S. Marine Band, rom New York. 7.30, KDKA Rome Forum. 8.0 to 9.30, New York Relay. 8.0, Betty and Bob. 8.15, Words and Music. 8.45, at Kennedy. 9.0, Gene Quaw Orchestra. 1.30, News and Market Report. 9.45, Arcadians, from New York. 10.0, Programme to be announced. 10.15, Tarzan of the Apes. 10.30, Larry Larson, from New York. 10.45, Orphan Annie, from New York. 11.0, News-Reeler. 11.15, Sports Notes and a Song. 11.30, Pittsburgh Spot-ights. 11.45 to 1.30 a.m. (Saturday), New York Relay. 11.45, Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, Rondoliers. 12.30, Orchestral Concert. 1.0, Variety Programme. 1.30, Potash and Perlmutter. 1.45, Kane and Kanner. 2.0, Let's Listen o Harris. 2.30, Popular Programme. 3.0, First Nighter.

ORSGRUND.—See Oslo.

PRAGUE

14 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Moravská-Ostrava. 3.55 to 4.0, Ex-ange. 5.45, Gramophone Music. 5.55, olitical Talk. 6.5, Market Prices. 6.15, ramophone Music. 6.25, News in Ger- man. 6.30, German Transmission—Talk with Illustrations: Norwegian Folk Songs. 6.0, Chimes and News. 7.10, Talk: Water. 7.25, The Wanderer—Play (Vildrac). 8.10, song Recital by Julie Maxianova, with itar Accompaniment. 8.35, Schrammel oncert. 9.0, Concert by the Station Or- chestra, conducted by Isa Krejci. Soloist: Holzknecht (Pianoforte). Overture, The Junning Peasant (Dyorkák); Fantasia in C or Pianoforte and Orchestra (Jesek); Scherzo from the Symphony Op. 6 (Bort-ciewicz); Wallenstein's Camp Op. 14 (Sme-tana). 10.0, Time and News. 10.15, Russian ews. 10.30 (approx.), Close Down.

SATURDAY AUGUST THE TWENTY-SIXTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL Instrumental concert. LONDON REGIONAL Promenade concert from Queen's Hall. MIDLAND REGIONAL Orchestral concert. NORTH REGIONAL Variety programme. WEST REGIONAL Orchestral programme from the National Museum of Wales. SCOTTISH REGIONAL Recital of Sir Walter Scott's songs. BELFAST The Supremes, a concert party, from Whitehead.

ABROAD

- BARI 8.35 p.m. Operetta: "The Geisha," by Jones. BRESLAU 8.20 p.m. Operetta: "Die Fledermaus," by Johann Strauss. BRUSSELS (No. 2) 9.0 p.m. The Symphony Orchestra, conducted by Kumps. COPENHAGEN 8.30 p.m. Old dance music. HAMBURG 4.0 p.m. Concert, by the Philharmonic Orchestra. ROME 8.30 p.m. Opera: "Andrea Chénier," by Giordano. TOULOUSE 11.45 p.m. Selections from operettas. VIENNA 6.30 p.m. Concert by the Wiener Symphoniker. WARSAW 9.30 p.m. Chopin recital, by Sztompka.

Opera (Lehár), relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres.

Four old French Songs. Menutri est mon coeur (De Greef); Le due d'Albe (De Greef); Les cloches du soir (De Taeye); Romanian Song (Jongen); Waltz, Suite from Der Rosenkavalier (R. Strauss); Slav Dance (Chabrier). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Radio Orchestra, conducted by Charles Walpoy. Soloist: Rubenau (Tenor). March, Sambre et Meuse (Planquette); Waltz, Santiago (Corbin); Selection from Lakme (Delibes); Tenor Solos: (a) Ständchen (R. Strauss), (b) L'émir d'Amour (Knops), (c) Barcarolle from A Masked Ball (Verdi); Fanciful Etchings (Ketilbey); Jazz Fantasia (Candrix). 4.45, Talk. 5.0, Dance Music from the Continental Palace Hotel, Blankenberghe. 6.0, Talk. 6.15, Extracts from the Quartet, Op. 125, No. 1 (Schubert), on Gramophone Records. 6.30, Concert by the Little Station Orchestra, conducted by Leemans. Soloist: Derrison (Cello); Scottish March (Debussy); L'airone (Brussels); Spanish Serenade (Laurys); Selection from Gwendoline (Chabrier); Barcarolle for Cello (Collin); Ma poupée chérie (de Sévère); Spanish Dance, Zambra (Granados). 7.15, Talk: The Belgian Painter Xavier Mellery. 7.30, Le Journal Parlé. 8.0, Concert by the Little Station Orchestra, conducted by Leemans. 8.45, Reading (Poupeye). 9.0, Concert from the Kursaal, Ostend, followed by Le Journal Parlé, and Dance Music from the Kursaal, Ostend.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish.—12 Noon, Concert by the Radio Orchestra, conducted by Walpoy. Soloists: Rubenau (Tenor), and Remes (Humorist). 1.0 p.m., Le Journal Parlé. 1.10, Massenet Concert by the Symphony Orchestra, conducted by Kumps. Overture, Phédre, Scènes alsaciennes; Pastorale mystique; Ballet Music from Hérodiade. 4.45, Literary Review. 5.0, Dance Music from the Kursaal, Ostend. 6.0, Brahms Song Recital on Gramophone Records. Der Tod, das ist die kühle Nacht; Auf dem Kirchhofe; Nicht mehr zu dir zu gehen; Die Botenschaft; Ständchen. 6.15, Talk. 6.30, Gramophone Concert. Songs of France (arr. Casadesu); Serenade (Saint-Saëns); Serenade (Haydn); La Follia (Corelli); Canzonetta (Mendelssohn); Romance, La Nuit (Rubinstein-Corné); Waltz (Holz); The Sacred Hour (Ketilbey); Memories of Grieg (Urback). 7.15, Literary Review. 7.30, Agricultural Review. 8.0, Italian Symphony (Mendelssohn), by the Symphony Orchestra, conducted by Kumps. 8.45, Recitations. 9.0, Concert by the Symphony Orchestra, conducted by Kumps. Soloist: Mlle. Van den Bergh (Pianoforte). Overture, Der Freischütz (Weber); Concerto for Piano, Violin and Orchestra (Grieg); Pavane pour une Infante défunte (Ravel); Musiquette (Poot); Mephisto-Waltz (Liszt). 10.0, Le Journal Parlé. 10.10, Dance Music from the

Continental Palace Hotel, Blankenberghe. 11.0, Gramophone Concert of Light Music.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Sibiceano Orchestra. In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Gramophone Music. 7.40, Educational Talk. 8.0, Baritone Solos by Artur Gofman. Cavatina from Faust (Gounod); Aria from Tannhäuser (Wagner); Aria from Lakmé (Delibes); Aria from Benvenuto Cellini (Eugène Diaz); Aria from Thais (Massenet). 8.20, Concert by the Station Orchestra. 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 7.0 p.m. till Close Down. 6.0 p.m., Concert of Gypsy Music. 7.0, Talk. 7.30, Military Band Concert. 9.0, News. 9.20, Hungarian Music on Gramophone Records. 10.20, Tides Report. 10.25, Gypsy Music from the Café Baros.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Town Hall Chimes. 12.2 to 2.0 p.m., Concert from the Wivex Restaurant. 2.30, Gramophone Concert. 3.0, Programme for Children. 3.30, Instrumental Concert. 5.30, Exchange and Market Prices. 5.50, Nicolas Steno. 6.20, French Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.30, Talk on Engineering. 8.0, Time Signal, and Reading. 8.30, Old Dance Music. March, MacMahon (Lumbye); Waltz, Morgenblätter (Joh. Strauss); Mazurka (Möller); Mirella (Munch-Lassen). 9.0, Songs from Operetta. Two songs from La Fille de Madame Anot (Lecocq), and Four songs from The Drum Major's Daughter (Offenbach). 9.20, Old Dance Music (contd.). Festmarch (Möller); Polka, Cotillon (Jensen); Waltz (Fahrbach); Ballad-Mazurka (E. Strauss); Waltz, The Blue Danube (Joh. Strauss); Recreations Galop (Jensen). 10.0, News. 10.15, Reading. 10.30, Folk Dances for Clarinet, Violin, Viola and Double Bass. 10.55, Pianoforte Solos. 11.10, Old Dance Music (contd.). Eifelmarch (Fahrbach); Waltz, Dreamland (Fueick); Mazurka, Rosige Laune (Joh. Strauss); Polka, Britta (Lumbye); Waltz, Resignation (Lumbye); Mazurka, Liebeszauber (E. Strauss); Waltz, Abendsterne (Lanner); Polka, Kosakenritt (Müllcker); Japanese Galop (Möller). 12 Midnight, Town Hall Chimes and Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m. to 12 Noon, Programme in English by the I.B.C. 11.0 a.m., The Happy Hour; Part I: Orchestral Concert: Signature Tune; Overture Medley (arr. Carl Peters); Woodland Peace (Favilla); My Lady dainty (Hesse); Selection from Show Boat (Kern); The Grasshoppers' Dance (Buclossi); Waltz (Kälman); The Busy Bee (Bendix); Lazy Pete (Kernsten); Part II: Dance Music (Electrical Transcriptions); Falling Star (Heymann); Come out Vienna (Herbert-Strauss); Where are you to-night? (Crawford); Dance pretty Lady (Herbert-Strauss); Old Man Harlem (Armichad); I gotta right to sing the blues (Arden); Here is my heart (Henderson); You are too beautiful (Rodgers); Signature Tune. 12 Noon to 4.30 p.m., Programme in French. 4.30 to 6.0, Programme in English by the I.B.C. 4.30, Programme for Children: Music, Stories, and Birthday Greetings. 5.0, Concert for Tunbridge Wells and Isle of Thanet Listeners: Tango Band: Signature Tune, The Night by the Sea; Will you dance through life with me (Swalbach); La Paloma (Yradier); Song, In Old Madrid (Cardew); Old Vienna Moon (Lebert); Plegaria; Song, Let's put out the lights (Berlin); Play, Fiddle, Play (Lawrence); Adios Juventud (Collago). 5.30 to 6.0, Concert of Light Music for Dover and Folkestone Listeners: Rhapsody in Blue; Xylophone Solo, The Huntsman (Nelson); Song, There's something about a soldier (Gay); The Ghost Walk; Violin Solo, Souvenir (Drida); Song, The Second Mimet (Besly); Granny's Photo Album (Greer); Pianoforte Solo, Butterflies in the rain (Reaves-Myers); Signature Tune. 6.0 to 11.0, Programme in French. 11.0 till Close Down, Programme in English by the I.B.C. 11.0, Dance Music: Signature Tune, Bells of Normandy; Bass Drum Dan (Trumbauer); I hate to leave you now (Armstrong); Underneath the Harlequin Moon (Gordon); Pink Elephants (Woods); Nine little miles from Ten-Ten-Tennessee; Liebestraum (Liszt); I wanna count sheep (Young); Any time, any day, anywhere (Young); Signature Tune. 11.30, Concert given by the I.B.C. (Ireland), Ltd.: Signature Tune, Come back to Erin; Orchestra, Colonel Bogey (Alford); Violin Solo, Song of Songs (Moya); Banjo, Finger Tricks (Pietro); Orchestra with Organ, Tales from the Vienna Woods (Strauss); Cornet Solo, The Carnival of Venice (Briccialdi); Hawaiian Trio, Aloha (Bowers); Novelty Orchestra, That tiny teashop (Raymond); Xylophone Solo, Snappy Sticks; Signature Tune. 12.5 a.m. (Sunday), Late News Bulletin in English. 12.10 (ap-

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Corle, 1,337 kc/s, 224.4 metres.—1.30 to 2.30 p.m., Time, Signal, Weather Forecast and Gramophone Music. 6.0, Gramophone Concert. 6.45, News. 7.0, Talk on Dublin Castle, by John Brennan. 7.15, Gaelic Talk. 7.30, Time Signal. 7.31, The Station Octet. 7.50, Mezzo-Soprano Solos by Gertrude Mortimer. 8.5, When the Moon was full—Play, by the Dublin Repertory Society. 8.35, The Station Octet (contd.). 8.50, Harp Solos by Treasa Nic Chormaic. 9.5, Bass Solos by Thomas Keane. 9.25, Traditional Trio Music. 9.45, Sponsored Programme. 10.45, News, Weather Forecast and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert: Selection from Tannhäuser (Wagner); Second Norwegian Dance (Grieg); Serenade, Invano (Amadei); Minnet from the Sonata No. 2, Op. 49 (Beethoven); Abendlied (Schumann); Selection from The Tales of Hoffmann (Offenbach); Czardas, Parisi (Michiels). 8.0, Request Gramophone Concert. 8.30, Exchange, followed by Programme for the Centenary of the Renaissance of the Catalan Language. 9.0, Gramophone Music. 9.15, Anti-War Talk, followed by Gramophone Music and News. 10.0, Chimes from the Cathedral, Exchange and Market Prices. 10.5, Orchestral Concert. 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 Report, Tourist Talk and Dopolavoro Announcements. 8.20, Giornale Radio, Sports Notes and Weather. 8.30, Time and Announcements. 8.35, The Geisha—Operetta in Three Acts (Jones). In the interval, Notes on Art and Reading. After the Operetta, News in Albanian. 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, Sonata (Mendelssohn) for Violin and Pianoforte, by Milan Dimitrijević and Dmitrije Gerasimenko. 7.30, Gramophone Music. 7.40, Concert by the Station Orchestra. 8.30, Concert relayed from Novisad. 9.40, Talk. 10.10, Time and News. 10.15 (approx.), Yugoslav Song Recital by Milan Timotic. 11.0, Dance Music on Gramophone Records.

BERLIN

DEUTSCHLANDSENDER, REICHSSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Concert from Munich. 2.50, See Langenberg. 3.0, Concert from Breslau. 3.30, Weather. 3.45, Festival Programme for Children, relayed from the Funkgarten. 4.30, Concert from Berlin (Witzleben). In an interval, Radio Report by Children relayed from Children's Festival in the Funkgarten. 6.0, Poems. 6.5, See Langenberg. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Today's Motto. 8.5 (approx.), Concert by the Philharmonic Orchestra, conducted by Alois Melichar, the Oskar Joost Orchestra and Soloists, relayed from the Radio Exhibition. 10.0, Weather and News. 10.45, Weather. 11.0, Report on the Round Germany Flight. 11.10, Dance Music. 12.30 a.m. (Sunday), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.0 p.m., Orchestral Concert, conducted by Alfred Engel: Waltz, Braune Kameraden (Draeger); Waltz, Morgenblätter (Joh. Strauss); Overture, Maritima (Wallace); Helmsman's Song and Sailors' Chorus, from The Flying Dutchman (Wagner); Ballet Music from Rosamund (Schubert); March Potpourri, Als wir marschieren (Schmidt-Ilagen); Selection from Carmen (Bizet); Hitler-Mussolini March (Muzilli); Overture, Die schöne Galathee (Suppé); Hungarian Dances Nos. 5 and 6 (Brahms); Luna-Walzer (Lincke); Jäger-Marsch (Kroeger); March, Deutschland Heil! (Baldamus). In an interval at 5.0, Report on the Radio Exhibition and Comparison with the London Radio Exhibition. 6.0, Reading of Sports Literature. 6.20, Time Signal from the German Stations. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Political Address. 7.0, Transmission for all German Stations, relayed from Breslau. 8.5, See Berlin Deutschlandssender (Reichssender). 10.0, Weather and News. 10.25 (approx.), Report on the Round Germany Flight. 10.30 (approx.), Dance Music by the Egon Kaiser Band, relayed from the Zoological Gardens. In an interval at 11.0, Topical Report. 1.0 a.m. (Sunday), 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, Sports Notes. 7.45, News. 8.0, Gramophone Concert. 8.30, Gipsy Love—

BRATISLAVA

1,076 kc/s, 279 metres; 11 kW.—7.0 p.m., See Prague. 7.55, See Brno. 9.5, See Moravská-Ostrava. 10.0, See Prague. 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.—1.5 p.m., Gramophone Concert. 1.45, Time and News. 2.5, Gramophone Concert. 2.25, Book Review. 2.50, Concert by the Station Orchestra, conducted by Friedrich Weisshaupt: Introduction to and Chorus from Carmen (Bizet); Selection from Tieland (d'Albert); Waltz from Die Puppe (Bayer); March, Prunk und Ruhm (Velde); Arabian Gold (Rust); Ich liebe dich (Grieg); Erotica (Grieg); March, Durch Kampf zum Sieg (Blom). 3.45, Agricultural Prices. 4.0, See Berlin (Witzleben). 5.10, Film Review. 5.25, Programme Announcements. 5.45, Reports by Nazi Leaders. 5.50, Contralto Song Recital by Lizzie Glassmann: Songs (Brahms). (a) Ein Wanderer, (b) Die Maimacht, (c) Ständchen; Songs (Schumann), (a) Erstes Grün, (b) Die Lotosblume, (c) Wer machte dich so krank, (d) Die alte Laute, (e) Der Nussbaum, (f) O ihr Herren. 6.50, Weather and News. 7.0, Transmission for all German Stations: By the Banks of the Oder—Radio Report on a Landscape and its People. 8.0, Legal Talk. 8.20, Die Fledermans Operetta (Joh. Strauss). In an interval at 10.10 (approx.), Time and News. 11.0, News. 11.15, Dance Music, relayed from Berlin (Witzleben). 1.45 a.m. (Sunday) (Also relayed by Zeesen on 31.38 metres). Concert by the Station Orchestra, conducted by Fritz Koschinsky: Overture, Der Wildschütz (Lortzing); Waltz, Die Schönbrunner (Lanner); Suite in Six Movements, Deutsches Barock (Pachernegg); Overture, Ace of Hearts (Künneke); Pizzicato Polka (Strauss); Waltz, Acceleration (Joh. Strauss); Overture, Fatinitza (Suppé). 2.45 (approx.), Close Down.

BRNO

876 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: News and Talk on Music, with Gramophone Illustrations. 7.0, See Prague. 7.10, Pianoforte Recital by Marie Dvoráková: Three Pieces (Chopin); (a) Nocturne in F Sharp, (b) Waltz in C Sharp Minor, (c) Waltz in A Flat; Liebestraume (Liszt); Rhapsody No. 12 (Liszt). 7.40, See Prague. 7.55, Variety Programme. 9.5, See Moravská-Ostrava. 10.0, See Prague. 11.20 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Symphony Orchestra, conducted by Jean Kumps. Soloist: Avert (Baritone). Scènes pittoresques (Massenet);

AUGUST 26th **SATURDAY** continued

Club Concert for Staveley Listeners; Part I: Octet: Signature Tune, The Chum; Hungarian Dance in A minor (Brahms); Spring Song (Mendelssohn); Because (d'Hardelot); Toreador et d'Alouze (Rubinstein); Romance (Rubin); Part II: Gramophone Records: Ad of H.M. Welsh Guards, Down South (Yddleton); Sketch, Mrs. Or-field as her fortune told; Orchestra, Gavotte in B flat andel, arr. St. Denis); Song, I don't work a living (Lee); Balalaika Orchestra, zurka (Wieniawski); Song, That's my pie (Ellison); Xylophone Solo, Spanish (Moszkowski); Orchestra, Waltz vorites (Ancliffe); Signature Tune, 1.0 Adelaide; Song, Around the Corner (H.Kassel); Mandoline Solo, Capriccio zurka (Arienzo); Sketch, The haunted one; Song, For good or for bad (Pearson); net Solo, Carnival of Venice (Bricciadi); ig, I raised my hat (Pola); Orchestra, ses from the South (Strauss), 1.30, Dance ic: Signature Tune, Bells of Normany; en my little Pomeranian met your little ginese; In the Valley of the Moon; Shuffle to Buffalo; Hiawatha's Lullaby; Bass am Dan; Leave a little for me; It's a ry; Honey-suckle Rose; Signature Tune, 7, I.B.C. Goodnight Melody, 2.0 (approx.) se Down.

ENSBURG.—See Hamburg.

ORENCE.—See Turin.

FRANKFURT

57 kc/s, 259.3 metres; 17 kW. Relayed Cassel, 1,220 kc/s, 245.9 metres, and er, 1,157 kc/s, 259.3 metres.—12 Noon, odies of Spain—Gramophone Concert; Festival in Seville (Albeniz); Spanish psody (Chabrier); Habanera and Sed- ulla from Carmen (Bizet); Prelude to d Farandole from L'Arlésienne (Bizet); o Spanish Dances (Moszkowski); Jota n La vida breve (Falla); Granada and taluna (Albeniz); Spanish Serenade lazunoy; Tango (Albeniz); Bolero aveb). 1.15 p.m., News and Weather. 0, Concert from Stuttgart. 2.0 (in an erval). News, 2.30, Week-End Variety ogramme. 3.20, Weather. 3.25, Time d Exchange. 3.30, See Stuttgart. 4.25, change. 4.30, Concert from Berlin itzleben). 5.45, Exchange. 6.0, Reading ndwig Hebold). 6.25, Time. Programme ouncements, Weather and Exchange. 0, Review of the Week. 6.50, Review of e Day's Events. 7.0, Transmission for e German Stations, relayed from Breslau. 5, Bezauberndes Fräulein—Operetta onatzky). 10.0, Programme to be an- nounced. 10.20, Time and News. 11.0, See unich. 12 Midnight, Close Down.

EDRIKSSTAD.—See Oslo.

ELBURG.—See Stuttgart.

ENEVA.—See Radio-Suisse Romande.

ENOA.—See Turin.

EIWITZ.—See Breslau.

ETEBORG.—See Stockholm.

IAZ.—See Vienna.

AMAR.—See Oslo.

HAMBURG

11 ha (in Morse), 806 kc/s, 372 metres; 1.5 W. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; inover, 530 kc/s, 566 metres; and Kiel, 92 kc/s, 232.2 metres.—4.0 p.m., Concert the Hamburg Philharmonic Orchestra, nducted by José Eibenschütz; Overture, ng Stephen (Beethoven); Valse triste (Debussy); Die Mär von tapieren Schneider n (Zimmer); Selection from Der Pfeifer ng (Max von Schillings); Radio March (Eibenschütz); Dance of the Sylphs and ngarian March from The Damnation of us (Berlioz). 5.0, From my Life—Remin- isces by Prof. Will. Wisser on the Occa- sion of his Ninetieth Birthday. 5.30, ictory Programme. 6.30 (from Kiel), Reli- gious Address. 6.50, Weather. 7.0, Trans- mission for all German Stations, relayed n Breslau. 8.0, Political Talk. 8.10, See rlin (Deutschlandsender). 9.0, Concert the Hache Municipal Orchestra and ont Choir, relayed from Itzehoe. 10.0, me and News. 10.20, Topical Talk. 10.30, ncert, relayed from Berlin (Witzleben). he interval at 11.0, Report on the Ger- ny Flight—Bremen.

ANOVER.—See Hamburg.

HEILSBURG

185 kc/s, 276.5 metres; 60 kW. Relayed by anzig, 662 kc/s, 453.2 metres.—11.30 a.m., ncert by the Small Station Orchestra. Con- ictor: Eugen Wilcken. Overture, Joan of e (Verdi); Caro mio ben (Giordano); Suite, Campagna (Micheli); Selection from The nken Bell (Respighi); Overture, Ekmont teethoven); Ständchen and Scherzo (R. rauss); Schubert Potpourri (Urbach). 1.5 m., Gramophone Concert of Variety Music. he intervals at 1.20 and 2.0, News. 2.30, ogramme arranged by the Post Office, with ramophone Records. 3.0, Agricultural ices and Exchange. 3.30, Programme for oung People. 4.0, Protestant Address. 4.20, ncert by the Small Station Orchestra, con- icted by Eugen Wilcken; March, Mit hnung und Tücke (Wilcken); Overture, itinizza (Suppé); Waltz Intermzzo, Im einrausch (Pätzig); Melody (Fillippucci); ection from Manon Lescaut (Puccini);

Waltz, Auf sanften Wogen (Esslinger). In an interval at 4.50 (approx.). Report on the A.D.A.C. Motor Races. 5.30, Talk: The Work of the National Aviation Association. 5.50, Political Talk. 6.5, Programme An- nouncements. 6.15, Agricultural Prices. 6.25, Bach Organ Recital by Gert Broede, relayed from the University; Choral, Ich ruf zu Dir, Herr Jesu Christ; Sonata No. 1 in E flat; Choral, In Dir ist Freude. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, See Berlin Deutschlandsender (Reichsender). 10.0, Weather and News. 10.25, 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. to up 4.40 p.m.).— Programme of the Catholic Radio Society (K.R.O.).—11.55 a.m., Sextet Concert: 1.25 to 1.40 p.m., Interval. 1.40, Programme for Young People. 2.10, Programme for Children. 3.40, Gramophone Music. 4.55, News in Esperanto. 5.10, Gramophone Music. 5.40, Concert by the K.R.O. Boys. Soloist: Mossel (Songs). 6.0, Press Review. 6.25, Concert (contd.). 6.40, Police Notes. 6.55, Gramophone Music. 7.5, Talk. 7.25, Concert (contd.). 8.10 (approx.), News. 8.15, Recitations. 8.30, Orchestral Concert of Light Music; Hispania (Dreyer); Overture, Das Leben ein Traum (Eilenberg); Waltz, Acceleration (Strauss); Selection from Das Puppen- städle (Fall); Strandpromenade (Zeileck); Max and Moritz (Zimmer). 9.10, Talk on Wireless. 9.30, Concert (contd.): Poetry and Prose (Fetras); Selection from Lilac Time (Schubert-Berte); Algerian Scene (Kotthey); Küissen ist keine Sünd (Eysler); March, Liberty Bell (Souss). 10.10, Gramophone Concert. 11.40 (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, Concert by the Small Station Orchestra, conducted by de Groot. 1.40, Gramophone Music. 2.25, Talk. 2.40, Concert by De Flierefontiers. 4.10, Film Talk. 4.30, Gramophone Music. 4.40, Organ Recital by Jong. 5.10, Recitation in Dialect. 5.25, Concert by the Amsterdams Orchestral Society, conducted by Diepenbeek; Selection from The Queen of Sheba (Gounod); Overture, Fra Diavolo (Auber); Gold and Silver (Lehar); Selection from Lohengrin (Wagner). 5.55, Recitation in Dialect. 6.10, Concert (contd.): Old Comrades (Teike); Overture (Smith); Golden Rain (Wald- tonfel); Selection from The Pearl Fishers (Bizet). 6.40, Concert by a Mandoline Orchestra. 6.55, Orchestral Concert (contd.): De kamer van koophandel (Gsell); Overture, Oberon (Weber); Selection from The Huguenots (Meyerbeer-Van Diepen- beek); Entry of the Gladiators (Fucik). 7.25, Mandoline Concert (contd.). 7.40, News. 7.55, Press Review. 7.57, Orchestral Con- cert, conducted by de Groot. Soloist: Mlle. Marie Vos (Soprano). Overture, Meeres- stille und glückliche Fahrt (Mendelssohn); Extract from Der Freischütz (Weber); In- vitation to the Dance (Weber). 8.25, Piano-forte Duets. 8.40, Concert (contd.): Overture, Mignon (Thomas); Air from Mign- on (Thomas); Air from The Merry Wives of Windsor (Nicolai); Overture, The Merry Wives of Windsor (Nicolai). 9.10, Piano- forte Duets (contd.). 9.25, Address. 9.40, Concert (contd.): March Potpourri (Ciere); Selection from Der Bummelbaron (Kollo); Waltz from The Dollar Princess (Fall). 10.10, Recitation. 10.25, Concert (contd.): At Maxim's (Lehar); Waltz from Die geschiedene Frau (Fall); Air from Lilac Time (Schubert-Berte); Waltz from The Gipsy Princess (Kálmán); Salut d'amour (Elgar); March from The Bird Fancier (Zeller). 10.55, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 1.15, Radio Concert. 8.0, Amusement Guide and News. 8.10, Press Review. 8.15, Film Review. 8.30, Radio Concert. 8.45, News and Weather Report. 9.0, Symphony Concert, conducted by Quantart, relayed from Cannes.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.5 p.m., Talk on Science. 7.25, Announcements and Gramophone Music. 7.40, See Warsaw. 11.35, Dance Music.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Con- cert by the Fröhliche Fünf. 12.50 p.m., News. 1.0, Concert. In the interval at 2.0 (approx.). News. 2.30, Concert. In the in- terval from 2.50 to 3.51, Gramophone Report of the Round Germany Flight. 3.59, Market Prices and Time. 3.50, A Rhienish Legend. 4.0, Agricultural Talk. 4.20, Reading. 4.30, Talk; Excursions in the Rhineland and West- phalia. 5.0, Gramophone Concert. 5.30, Ger- man for Germans. 5.40, A Tailor before the Microphone. 6.5, Report of the Round Ger- many Flight. 6.20, Talk: Prince Louis Ferdinand and Theodor Kömer. 6.50, News. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, News. 8.5, See Berlin, Deutschlandsender (Reichsender). 10.0, News. 10.25, Light Music and Dance Music. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon, Gramophone Concert. 1.15 p.m., News. 1.30, Concert from Langenberg. 2.30, Wireless Notes. 2.45, Programme for Children. 3.30, Review of Periodicals. 3.45, Market Prices. 4.0, Theodor Körner—a Radio Play (Max Zeilbig). 4.40, Recital of German Folk Songs. 5.10, Talk: The German Language. 5.30, A Modern Dictionary. 5.40, Talk: War Exploits of an Aeroplane. 6.0, Concert by the Dresden Orchestra, conducted by Hellmesberger; Overture, Enryantze (Weber); Selection from Rigoletto (Verdi); Hungarian Rhap- sody No. 2 (Liszt); Jubelwalzer (Joh. Strauss); Homage March from Sigurd Jorsalfar (Grieg). 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Variety Programme. 10.5, A Radio Report. 10.25, News. 10.35 (approx.), Dance Music, relayed from Dresden. 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—7.0 p.m., Concert by the Station Orchestra. 8.0, Re- view of Foreign Affairs. 8.30, Song Recital. 9.15, Gramophone Music. 9.30, Weather and News. 9.45, Concert by the Station Orches- tra. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. French Pro- gramme.—7.30 p.m., French Music on Gram- ophone Records. 8.5, Talk in French: Luxem- bourg. 8.15, Racing Results. 8.20, French Songs. 8.50, News in French. 9.0, Concert of French Music by the Station Orchestra; Suite, Scènes alsaciennes (Massenet); Sere- nade (Gounod); España (Chabrier); Car- naval romain (Berlioz). 9.45, News in Ger- man. 9.55, Concert by the Station Orches- tra; Overture, Hamlet (Tchaikovsky); Indian Can- zonetta (Dvorak); Boxing (Schoenmaker); Selection from Phi-phi (Christine-Salabert). 10.30, Dance Music on Gramophone Records.

LYONS

LA DOUA (PTT), 644 kc/s, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Music. 7.15, Musical Programme. 7.30, Radio Gazette for Lyons and the South-East. 8.30, Operetta Programme relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres, followed by News.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal and Re- quest Gramophone Records. 9.15, Radio Journal. 9.30 to 11.0, Interval. 11.0, Chimes, Time and News. 11.20 (approx.), Song Re- cital with accompaniment by the Station Sextet, followed by Literary Programme. 1.15 a.m. (Sunday), News. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.— 8.30 p.m. (approx.) till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., Concert by a Brass Band, relayed from Petrvald. 7.0, See Prague. 7.10, Song Recital by Marie Tauber Proske. 7.40, See Prague. 7.55, See Brno. 9.5, Concert of Light Music, conducted by Plichta. 10.0, See Prague. 11.30 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—1.45 p.m., Weather Report. 2.45, Weather Forecast. 3.0, Trio Concert of Music by Ravel, Falla, Albeniz and Cassado. 3.55, Chimes. 4.0, Agricultural Talk. 4.30, Literary Programme. 5.30, An Operetta for Young People. 6.30, Concert relayed from the Central Park; Symphony (Liszt); Con- certo (Rachmaninov); Arriettes oubliées

(Debussy); Suite (Ravel); Nuages (De- bussy). 9.0, News. 9.30, Programme An- nouncements. 9.55, Chimes from the Red Square. 10.5, Press Review in English. 10.20, 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., Orchestral Concert, conducted by Leopold Brunner; Overture, Flotte Bursche (Suppé); Waltz, The Blue Danube (Joh. Strauss); Selection from La Traviata (Verdi); The Mill in the Black Forest (Eilen- berg); Sailors' Chorus from The Flying Dutchman (Wagner); Waltz, Künstlerleben (Joh. Strauss); Entry of the Guests into the Wartburg, from Tannhäuser (Wagner); King Frederick March. 5.45, Brandfackeln über Ostpreussen—Radio Play of the Battle of Tannenberg, August, 1914 (Karl von Bremen). 6.30, Serenade, Op. 3, for Two Violins and Viola (Hösl). 6.45, Wireless Notes. 7.0, Transmission for all German Stations, relayed from Breslau. 8.5 (approx.), Programme from Berlin (Deutsch- landsender). 10.20, Time and News. 11.0, Dance Music. In the interval, Songs by Mimi Thoma. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTTODEN.—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., Gramophone Music. 5.45, Pro- gramme for Children. 6.15, Violin and Handorgan Fiddle Recital of National Music. 6.45, Talk on Economics. 7.0, Announce- ments and News. 7.30, Talk: Modern Archi- tecture in Oslo. 8.0, Time signal. 8.1, Con- cert by the Station Orchestra, conducted by Hugo Kramm; Marche tartare (Ganne); Overture, The Thieving Magpie (Rossini); Rubinstein Potpourri (Urbach); Waltz, Dorfschwalben aus Oesterreich (Jos. Strauss); Mignon (Tosti); Pierrette (Ande- ran-Wingar); Viennese Potpourri (Morena); Ritornella (Olsen); Two Pieces (Melling); Two Pieces (Peterson-Berger); Albumblatt (Grieg); Norwegian Dance (Grieg); A Night in St. Petersburg (Meyer-Helmund); Waltz, Moonlight on the Alster (Fetras); Norwegian March (Olsen). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Recitation and Songs. 10.45, Dance Music on Gramophone Records. 11.30 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Notes, Tourist Report, Agricul- tural Notes and Giornale Radio, and Sports Notes. 8.20, Gramophone Music. In an in- terval at 8.30, Time and Announcements. 8.45, Il re di chez Maxim—Operetta in Three Acts (Costa). In the intervals, Book Review and News. 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. (Pre- liminary and 6-dot signals). 6.45 p.m., Theatre Review. 7.0, Le Journal Paris. 8.30, Dramatic Programme: (a) Le Jeu de l'Amour et du Hasard (Marivaux), (b) Portefeuille (Octave Mirbeau). 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 Paris. 7.30, Gramophone Music. 7.50, Talk: The Event of the Week. 8.0, Gramophone Music. 8.30, Bach Concert. 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 a.m., Weather and Physical Culture. 7.45, Gramophone Music: Cavatina (Raff); Poème (Fibich); Sarabande (Furund); Spanish Dance (Saratsate). 8.0, Weather and News. 12 Noon, Military Band Concert on Gramophone Records: Paris-Belfort (Farrigoul); Allegro vivace from Roma (Bizet); March, Merle et pinson (Rey- naud); Fanfare Dionysiaques (Schmitt); Les fanees de Rospenden (Goguillot); Vers l'avenir (Gevaert); Old Panama; March, King Cotton (Souss); Rondo brillant (Weber); Parejito (Boronat); All Brands (Benter). 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, Agricultural Report. 7.10, Gramophone Concert: Selection from Hans the Flute Player (Ganne); Joyeux retour (Avignon); Dorfschwalben aus Oesterreich (Jos. Strauss); Hawaii; Selection from Yes (Yvain); Les lilas (Doelle); Melody (Mayk); Waltz, The Blue Danube (Joh. Strauss).

AUGUST 26th SATURDAY continued

7.50, Commercial Notes and News. 8.0, Gramophone Concert: Le bal de la reine (Paradis); Chante mon futiau (Clouere-Maupas); Elisabeth from Wonder Bar (Katschler); Melody (Heymann); Melody (Burke); Comme autrefois (Carre); Glow Worm Gavotte (Lincke); Amarrillo; Selection from Enkvez-moi (Gaboroch); Pourquoi je t'aime (Bosc); Au moulin (Gillet); Chanson du facteur (Chantrier); Selection from Miss Decima (Audran); I love you (Sundy); Selection from The Girl in the Taxi (Gilbert-Fetras); Mado (Vacher); The Ocean (Spencer); Ballet Music from Les deux pigeons (Messenger); Les cadets de Brabant (Turine). In the intervals at 8.30, News and Weather, and at 9.15, Press Review and News.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayed by W8KX on 48.86 metres and 25.27 metres.—7.30 to 10.0 p.m. New York Relay. 7.30, Concert Echoes. 8.0, Words and Music. 8.30, Wealth of Harmony. 9.0, Dance Masters. 9.30, Concert Favorites. 10.0, Programme to be announced. 10.15 to 11.0, New York Relay. 10.15, Casino Orchestra. 10.30, Neil Sisters. 10.45, Orphan Annie. 11.0, News and Piano Classique. 11.15, Sports Notes and a Song. 11.30, A Recreer—Bill and Alex. 11.45 to 12.30 a.m. (Sunday). New York Relay. 11.45, Hotel Montclair Orchestra. 12.0 Midnight, Ross Perdon, Baritone. 12.15, Annie, Judy and Zeke. 12.30, Jack Pettis' Orchestra. 1.0, Jack Denny's Orchestra, from New York. 1.30, Philharmonic Orchestra, from New York. 3.15, Behind the Law.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by Parik. 4.0, Interval. 5.45, Gramophone Music. 5.55, Reading. 6.5, Agricultural Report. 6.10, Gramophone Music. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Talk with Gramophone Illustrations: The Chief Cities of Europe—Athens. 7.0, Chimes and News. 7.10, Concert by the Leonid Schulakovsky Vocal Quartet. 7.40, Medical Talk. 7.55, See Brno. 9.5, See Moravská-Ostrava. 10.0, Time and News. 10.15, Brass Band Concert. 11.30 (approx.), Close Down.

RABAT

721.1 kc/s, 415 metres; 6 kW.—12.30 p.m., Concert by the Symphony Orchestra, conducted by Marcel Sallin. Caravan (Scarsola); Serenade (Ross); Overture, Les noces de Jeannette (Masse); Song; Viola Solo; Selection from Mirella (Gounod-Borelli); Scene from Hejre Kati (Hubay); Song. Selection from Girolle-Girolia (Lecocq-Tavan); Berceuse (Gaubert-Charmettes); Cupidon (Louis-Roché). In the interval, News. 2.0, Interval. 4.0, Gramophone Concert. 7.0, Arab Programme. Concert of Andalusian Music. 7.45, Le Journal Parle and News. 8.0, Concert. Selection from La fille de Madame Angot (Lecocq-Tavan); Song from Le Grand Mogol (Audran); Selection from Elle est à vous (Yvain-Salabert); Song from Les Saltimbanques (Ganne); Selection from La jolie parfumeuse (Offenbach-Tavan); Song from Vêronique (Messenger); Selection from The Gipsy Princess (Kálmán-Salabert). 9.0, Gramophone Concert.

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, Interval. 12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News. 12.40 (from Geneva), Gramophone Concert. 1.0 (from Geneva), Financial Notes. 1.10 (from Geneva), Gramophone Concert (contd.). 2.0, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Lausanne), Concert by the Radio Lausanne Orchestra, conducted by Moser. 5.30, Interval. 7.0 (from Geneva), Talk on Films. 7.30 (from Geneva), News. 8.0, Concert by the Radio Suisse Romande Orchestra, conducted by Echonard; Overture, Le roi la dit (Delibes); Ballet Fantasia, Javotte (Saint-Saëns); Waltz, Die Romanziker (Lanner); Suite in Old Style (Delibes); Wedding March of a Doll (Lecocq); Selection from Funny Face (Gershwin). 9.0 (from Lausanne), Dramatic Programme. 9.50, News. 10.0 (from Lausanne), Dance Music. 10.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.0 p.m., History Talk. 6.30, Pianoforte Recital. 7.0, Weather Report. 7.3, Agricultural Talk. 7.30, Concert of Ballet Music. Suite from Raymond (Glazunov); Valse des fleurs (Tchaikovsky); Waltz Song for Soprano; Suite from Swan Lake (Tchaikovsky); Dance

of the Hours from La Gioconda (Ponchielli). In the intervals, News and Weather. 9.30, 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, 25.4 metres; from 5.15 p.m.—12.30 p.m., Gramophone Music. 1.0, Orchestral Concert of Light Music. In the intervals from 1.15 to 1.20, Talk on Photography, and from 1.30 to 1.45, Giornale Radio. 4.30, Giornale Radio, and Report of the Royal Geographical Society. 4.45, Children's Radio Review. 5.10, Weather. 5.15 to 6.0, Orchestral Concert. Spanish March (Gioacchino); Melody (Weiss); Canzonetta nostalgica (de Micheli); Waltz, Du du, du (Stolz). Selection from White Horse Inn (Stolz-Benatzky); Selection from Madame Butterfly (Puccini); Tes yeux (Demaret). 6.40 (Naples), Shipping and Sports Notes. 6.45, Lesson in Morse, and Dopplavoro Notes. 7.0, Tourist Report. 7.10, Agricultural Report. 7.20, News in Foreign Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Gramophone Music. Giornale Radio and Sports Notes. 8.20, Talk on the following Transmission. 8.30, André Chénier—Opera in Four Acts (Giordano); Giornale Radio in the interval.

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 and Baseball Scores. 1.0 to 3.0, New York Relay. 1.0, Musical Programme. 1.30, Antobal's Cubans. 2.0, Soloist. 2.15, Musical Programme. 2.30, K-7, Secret Service Spy Story. 3.0, B. A. Rolfe and his Orchestra, from New York, followed by Orchestra 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.—6.15 a.m., Gymnastics. 6.35, Interval. 11.59, Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from Berne), Chamber Music on Gramophone Records. 12.30 p.m., Time and News. 12.40 (from Berne), Operetta Music on Gramophone Records. 1.25 (from Berne), Time, Weather and Exchange. 1.30 (from Zürich), Answers to Correspondence. 1.45 (from Zürich), Book Review. 2.15 (from Zürich), Gramophone Concert. 2.45 (from Zürich), Programme to be announced. 3.30, Interval. 5.0 (from Zürich), Concert by the Stradella Accordion Club. 5.30 (from Zürich), Gramophone Music. 6.0 (from Zürich), Medical Talk. 6.30 (from Basle), Talk: Photography in the Mountains. 7.0, Chimes. 7.20 (from Basle), Animals in Music—Gramophone Concert. 8.0 (from Basle), Talk: Animal Representation in Art. 8.30 (from Basle), Cello Duets by Jehanne Rauchi-Godot and Siegfried Rehberg. 9.0, News. 9.10 (from Basle), Concert by the Frohsinn Male Voice Choir and the Oberwil Choral Society. 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.—4.0 p.m., Concert of Operetta Music by Gösta Sjöbom's Orchestra: Selection from (a) Showboat (Kern), (b) Ball in Savoy (Abraham), (c) Nina Rosa (Romberg), (d) The Dubarry (Müllacker-Mackeben). 4.30, Choral Concert, conducted by Sven Lillja. 5.5, Programme for Children. 5.45, Gramophone Music. 6.45, Talk: A Summer Tour through Seven European Countries. 7.15, Weather and News. 7.30, Old and Modern Dances. 8.0, Dance Music. In an interval at 9.45, Weather and News. 12 Midnight (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Light Music on Gramophone Records. 2.0, Legal Talk in French. 2.15, Gramophone Music. 2.45, Talk on Music: Gluck. 3.0, Interval. 3.30, Concert conducted by Brouillac relayed from

the Casino Park, Vichy. Soloist, Amalou (Violin): Overture, Light Cavalry (Suppé). Violin Solo: Romance (Faure); Three Interludes and Preludes from La Habanera (Laparra); Melody Suite. La Source (Delibes); Selection from Le pré aux clères (Hérold); Waltz, Le pas des fleurs, from Nida (Delibes). 5.0, Gramophone Music. 5.15, Pianoforte and Song Recital by Strub (Pianoforte). Lisbeth Schmidt (Songs) and Gillig (Bass). Bass Solos: (a) Two Arias from The Creation (Haydn), (b) Aria from The St. John Passion (Bach), (c) Hymn to the Sun (Rameau). Pianoforte Solos: (a) Passacaglia (Handel), (b) Fantasia in D minor (Mozart). Songs: (a) Chanson pour le petit cheval (de Séverac), (b) Petit bonhomme (Roussseau). Three Bass Solos (Delmas). Songs: (a) Sonnez matines (Hüe), (b) Il ne pleut plus (de Bréville). Pianoforte Solo: Theme and Variations (Chevillard). Bass Solos (Moreau): (a) La vache, (b) L'escargot, (c) L'écureuil. 6.15, French Lesson. 6.30, Music of the Older Generation—Literary and Musical Programme with Gramophone Records. 7.0, Tourist Talk. 7.15, Agricultural Talk. 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in German. 8.30, Military Band Concert relayed from Colmar: Alsace et Lorraine (Zayoux); Puppchen (Gilbert); Selection from The Girl in the Taxi (Gilbert); Suite, Mascarade (Lacome); Waltz, Künstlerleben (Joh. Strauss); Ballet Music from Coppelia (Delibes); Le joyeux trompette (Allied). In the interval, Press Review. 10.0, 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.—1.0 p.m. (from Freiburg), Concert by the Freiburg Kampfbund Orchestra, conducted by Willi Döhrmann; March, Heil Freiburg (Körner); Alsatian Peasant Dances (Märklin); Potpourri, Kreuz und Quer durch den Schwarzwald (Husadel); Austrian Folk Dances (Pacherwegg); Serenade for Strings (Köhler); Badener Landmarsch (Häflele); Fest in Aranjuez (Demersmann); Three Polkas (Joh. Strauss); (a) Tritsch-Tratsch, (b) Annen, (c) Krenzfidel; Swedish Wedding March (Södermann). 2.30, Time and News. 2.50, Readings (Anna Förtsehl). 3.0, Song Recital. Part I: Swabian Songs: Das taube Mütterlein (Schwab); Frühlingsahnung (Hans Süßmuth); Ständchen (Süßmuth); Warte! (Fader); Das Fensterlein (Gabriel-Süßmuth). Part II, Sileher Songs: O wie herbe ist das Scheiden; In der Ferne; Loreley; Untreu; Wohin mit der Freud; Die Lore. 3.30, Programme for Young People. 4.30, Dance Music on Gramophone Records. 5.45, Talk with Gramophone Illustrations: The Japanese Theatre. 6.30, Time and News. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, See Frankfurt. 10.20, Part Relay of a Military Band Concert, relayed from Um Stadium. 10.25, Time and News. 11.0, See Munich. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.15 p.m., Chansonnettes. 6.30, Accordion Solos. 6.45, Operetta Music. 7.0, Spanish Songs. 7.15, News. 7.30, Military Music. 7.45, Selection from El Amor Brujo (Fallá) by a Symphony Orchestra. 8.0, Cello Solos. 8.15, Opera Music: Selection from Les Dragons de Villars (Maillart), Carmen (Bizet) and Tosca (Puccini). 8.30, Music by a Viennese Orchestra. 9.0, Song Recital, followed by Opera and Sound Film Music. 10.0, Orchestral Music. 10.15, News. 10.30, Concert for Listeners in Morocco. 11.15, Popular Music. 11.30, Instrumental Solos. 11.45, Operetta Music: Selection from La Mascotte (Audran). Rip van Winkle (Planquette) and L'eau à la bouche (Parès-Vau Paris). 12 Midnight, News. 12.5 a.m. (Sunday), Orchestral Music. 12.15, Balalaika Music. 12.30, 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, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.40 p.m., Gramophone Music. 6.0 to 6.5, Weather. 6.40, Giornale Radio, Talk, Gramophone Music and Dopplavoro Notes. 7.0, Time, Tourist Report and Gramophone Music. 7.10, Agricultural Notes and Market Prices. 7.20, News in Foreign

Languages. 7.40, Gramophone Music. 8.1 Announcements. Giornale Radio. Sport Notes, Weather and Gramophone Music 8.30 (approx.). Programme of Variety Items and Dance Music. In the intervals, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 50.2 metres (Evening); 10 kW. 11.0 to 11.15 a.m., Religious Announcements in Various 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, 1,051 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.3 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—11.00, Concert by the Wiener Symphoniker conducted by Josef Holzer. In the interval at 1.0 p.m., Time and News. 2.0, Interval. 3.0, Time and Announcements. 3.20, Talk in English by Frey Bradley; Sport in Austria and England. 3.50 Zither Concert. 4.25, Variety Items. 4.50 Talk: The New Haydn Organ in the Barm herzige-Kirche. 5.0, Orchestral Concert, relayed from Bad Ischl: Procession of the Guilds from The Mastersingers (Wagner); Waltz, Frühlingsmorgen (Joh. Strauss); Selection from The Queen of Sheba (Goldmark); Intermezzo from Mignon (Thomas); Potpourri, Wiener Extravaganze (Hummer); Ich wär so gern einmal verliebt (Kreiser); Serenade, San Remo (Hummer); March, Alle Ehren ist Osterreich voll (Nowotny). 6.0 Talk with Gramophone Records: The South Sea Islands in Song. 6.30, Concert by the Wiener Symphoniker, conducted by Car Alwin: Overture, William Tell (Rossini); Ballet Music from Otello (Verdi); Prelude-Intermezzo and Homage March from Signor Jorsalfar (Grieg); Waltz, Spätrenklinge (Jos Straus); Overture, Orpheus in the Under world (Offenbach). 7.30, To-day's Motto Talk. 8.0, Reading (Langer). 8.30, See Rome. In the interval at 10.0, News.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.5 a.m., Time Signal and Fanfare from Toruń Cathedral. 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. 4.0, Programme for Invalids, relayed from Lwow, 788 kc/s, 381 metres. 4.30, Gramophone Music. 5.0, Talk. 5.15, Pianoforte and Cello Recital. Sonata in G Minor, Op. 19 for Pianoforte and Cello (Rachmaninov); Improvptu and Preludium in E, Op. 15 (Scriabin); Jardins sous la pluie (Debussy); Two Etudes (Rachmaninov); Hindoo Song (Rimsky-Korsakov); The Flight of the Bumble Bee (Rimsky-Korsakov); Orientale (Cui); Scherzo (Góard); Tambourin chinois (Kreisler). 6.15, Talk from Czapow, 959 kc/s, 312.8 metres. 6.35, Arias and Songs. 7.5, Gramophone Music. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Reading. 8.0, Concert by the Station Orchestra, conducted by Gorzyski. Soloist: Chaveau-Zakrzewski (Tenor). March (Lehar); Waltz, Wine, Woman and Song (J. Strauss); Two Tango Songs: Selection from The Goisha (Jones); Two Songs; Air from Schön ist die Welt (Lehar); Rumba from Schön ist die Welt (Lehar). 9.5, Radio Journal. 9.15, Horticultural Talk. 9.30, Chopin Recital by Sztompka. Nocturne in F Sharp, Op. 15; Nocturne in D Flat, Op. 27; Nocturne in C Sharp Minor, Op. 27; Mazurka in D, Op. 30; Mazurka in B Minor; Mazurka in D, Op. 33; Polonaise in E Flat Minor, Op. 26. 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, News for Members of the Polish Polar Expedition.

WILNO

533 kc/s, 563 metres; 16 kW. 4.0 p.m., Programme for Invalids, relayed from Lwow, 788 kc/s, 381 metres. 4.30, See Warsaw. 7.5, Miscellaneous Items. 7.20, Lithuanian Review. 7.35, Programme Announcements. 7.40, See Warsaw. 8.0, Gramophone Music. 9.5, See Warsaw. 9.15, Agricultural Press Review. 10.25, See Warsaw. 12.0 Midnight (approx.), Close Down.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—8.10 p.m., Announcements. 8.30, Orchestral Concert; Soloists, Milica Prica (Soprano), Petar Serljink (Bass). 10.30, News and Weather. 10.40, Dance Music by the Tellemann-Paola Jazz Band. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.



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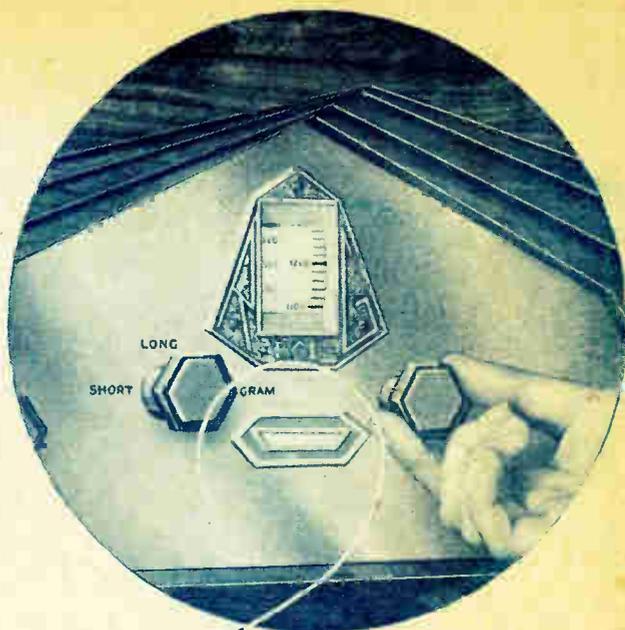
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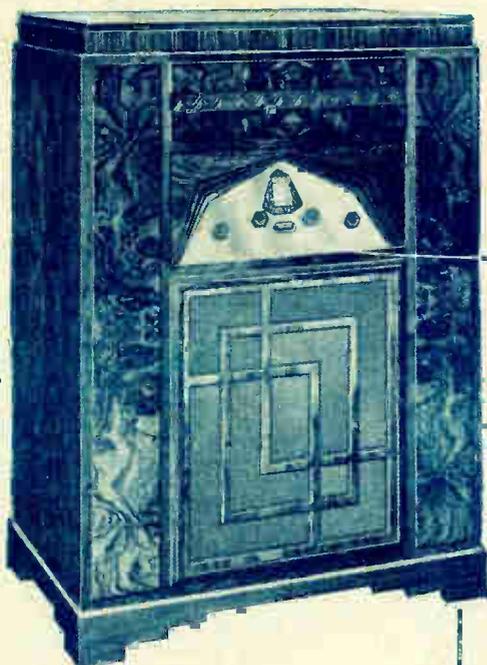
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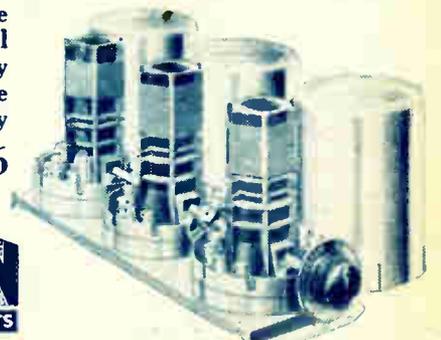
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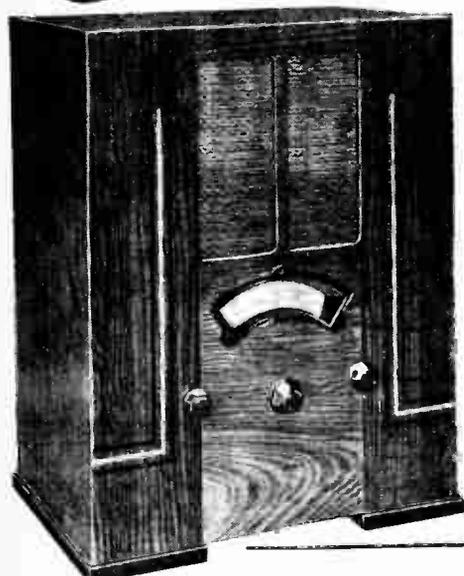
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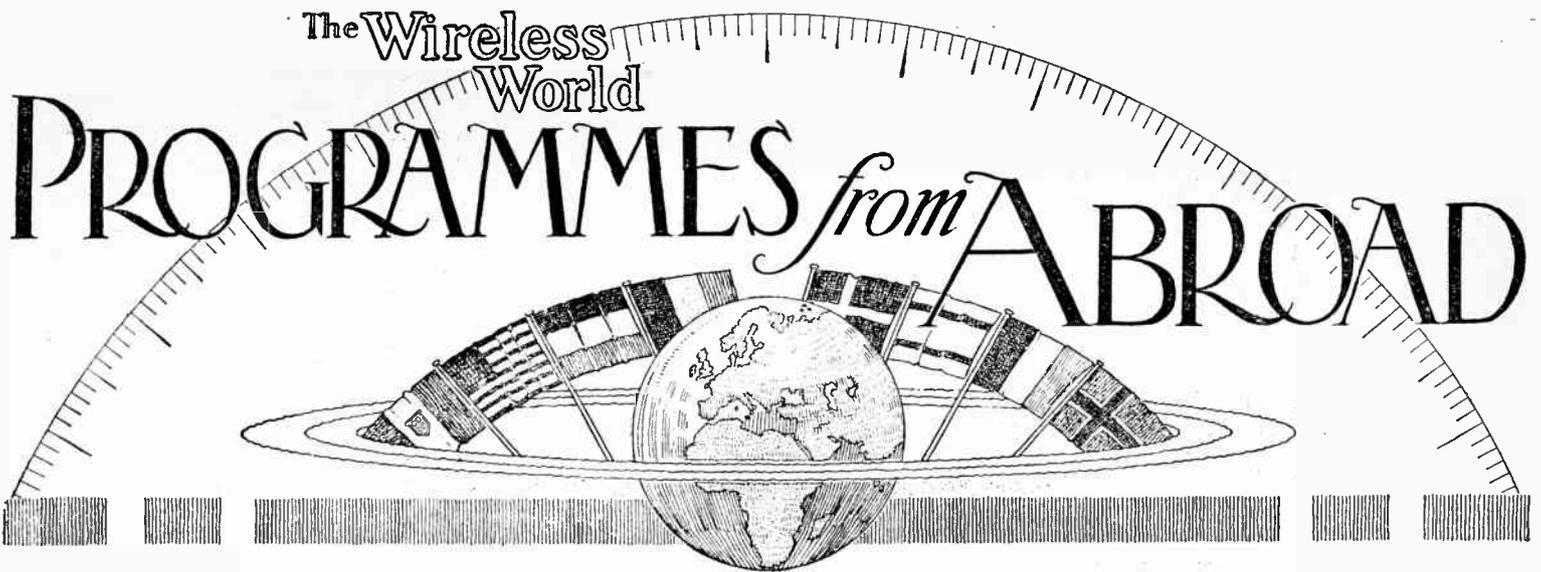
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**Broadcasting Stations
Arranged in Alphabetical
Order**

**Times and Details of
Full Week's Foreign
Transmissions**

(Stations with an Aerial power of 50 kW and above in heavy type)

Station.	Tuning Positions.	Metres.	Kc.	kW.	Station.	Tuning Positions.	Metres.	Kc.	kW.
Aberdeen		214.3	1400	1	Gävle (Sweden)		204.1	1470	0.2
Agen (France)		453.2	662	0.25	Geneva (Switzerland). (<i>Relays Sottens</i>)		760	395	1.3
Ål-sund		447.1	671	0.35	Genoa, IGE (Italy). (<i>Relays Turin</i>)		312.8	959	10
Algiers (Algeria)		363.6	825	13	Gleiwitz (Germany). (<i>Relays Breslau</i>)		253.1	1185	5
Almeria, EAJ18 (Spain)		252	1193	1	Göteborg (Sweden). (<i>Relays Stockholm</i>)		321.9	932	10
Ankara (Angora) (Turkey)		1538	195	7	Graz (Austria). (<i>Relays Vienna</i>)		352.1	852	7
Athlone (Irish Free State)		413	725	60	Grenoble (France)		568.1	528	2
Augsburg (Germany). (<i>Relays Munich</i>)		560	536	0.25	Halmstad (Sweden)		215.6	1391	0.2
Baku, RV8 (Russia)		1260	238	10	Hälsingborg (Sweden)		201.3	1490	0.25
Barcelona, EAJ1 (Spain)		348.8	860	7.6	Hamar (Norway). (<i>Relays Oslo</i>)		575	521.5	0.7
Barcelona, EAJ15 (Assoc. Nat.) (Spain)		252	1193	1	Hamburg (Germany)		372.2	806	1.5
Bari (Italy)		269.8	1112	20	Hanover (Germany). (<i>Relays Hamburg</i>)		566	530	0.25
Basle (Switzerland). (<i>Relays Beromünster</i>)		244.1	1229	0.5	Heilsberg (Germany)		276.5	1085	60
Belfast (N. Ireland)		242.3	1238	1	Helsinki (Finland). (<i>Relays Lahti</i>)		368.1	815	10
Belgrade (Yugoslavia)		430.4	697	2.5	Hilversum (Holland). (<i>Koortyk. Experiment. 50 kW. after programme hours.</i>) (<i>Exchanges wavelengths with Huizen every three months.</i>)		1875	160	8.5
Bergen (Norway)		364.1	824	1	Hörby (Sweden). (<i>Relays Stockholm</i>)		257.1	1167	10
Berlin, No. 1, Witzleben (Germany)		419.5	715	1.5	Hudiksvall (Sweden). (<i>Provisional</i>)		222.9	1346	0.15
Berlin (Deutschlandsender). See Zeesen		1635	183.5	60	Huizen (Holland). (<i>7 E W before 4.40 p.m.</i>) (<i>Exchanges wavelengths with Hilversum every three months.</i>)		296.1	1013	20
Berlin. (<i>Relay Station</i>)		283.6	1058	0.5	Innsbruck (Austria). (<i>Relays Vienna</i>)		283.6	1058	0.5
Berne (Switzerland). (<i>Relays Beromünster</i>)		245.9	1220	0.5	Juan-les-Pins, Nice (France)		249.6	1202	0.8
Beromünster (Schweizerischer Landessender) (Switzerland).		459.4	653	60	Kaiserslautern (Germany). (<i>Relays Munich</i>)		560	536	1.5
Béziers (France)		219.9	1365	1.5	Kalmar (Sweden)		247.7	1211	0.2
Boden (Sweden). (<i>Relays Stockholm</i>)		1229.5	244	0.6	Kalundborg (Denmark). (<i>Relays Copenhagen</i>)		1154	260	7.5
Bolö (Norway)		453.2	662	0.5	Karlskrona (Sweden)		195	1530	0.2
Bolzano (Italy)		368.1	815	1.0	Karlstad (Sweden). (<i>Relay Station</i>)		230.6	1301	0.25
Boras (Sweden)		207	1450	0.15	Katowitz (Poland)		408.7	734	16
Bordeaux Lafayette, PTT (France)		304	986	13	Kaunas (Kovno) (Lithuania)		1935	155	7
Bordeaux, Sud-Ouest (France)		237.2	1265	3	Kharkov, RV4 (Russia)		938	320	20
Bournemouth. (<i>Relay Station</i>)		288.3	1040	1	Kharkov, RV20 (Russia)		368.1	815	10
Bratislava (Czechoslovakia)		273.8	1076	13.5	Kiel (Germany). (<i>Relays Hamburg</i>)		232.2	1292	0.25
Bremen (Germany). (<i>Relays Hamburg</i>)		269.8	1112	0.25	Kiev, RV9 (Russia)		1035	290	36
Breslau (Germany)		325	923	60	Klagenfurt (Austria). (<i>Relays Vienna</i>)		453.2	662	0.5
Brno (Brum) (Czechoslovakia)		341.7	878	35	Königsberg (East Prussia). (<i>Relays Heilsberg</i>)		217	1382	0.5
Brussels No. 1, Velthem (Belgium). (<i>French Programme.</i>)		509	589	15	Kosice (Czechoslovakia)		293.5	1022	2.6
Brussels II, Velthem (Belgium). (<i>Flemish Programme.</i>)		338.2	887	15	Kristiansand (Norway)		235.5	1274	0.5
Bucharest (Roumania)		394.2	761	12	Kristinehamn (Sweden)		202.7	1480	0.25
Budapest (Hungary)		840	357	18.5	Lahti (Finland)		1796	167	40
Budapest No. 1, Lakihegy (Hungary)		550	545	18.5	Langenburg (Germany)		472.4	635	60
Cadiz (Spain)		335	896	5	Lausanne (Switzerland). (<i>Relays Sottens</i>)		680	441.2	0.6
Cassel (Germany). (<i>Relays Frankfurt</i>)		245.9	1220	0.25	Leipzig (Germany)		389.6	770	120
Copenhagen (Denmark)		281.2	1067	0.75	Leningrad (Russia)		857	350	100
Cork (Irish Free State)		224.4	1337	1	Leningrad, RV70 (Russia)		348.8	860	10
Cracow (Poland)		312.8	959	1.7	Lille, PTT (France)		265.8	1128.5	1.3
Danzig. (<i>Relays Heilsberg</i>)		453.2	662	0.5	Limoges, PTT (France)		293.5	1022	0.7
Daventry National. (N.-W. Stn. G58W on 25.53 m.)		1554.4	193	30	Linz (Austria). (<i>Relays Vienna</i>)		245.9	1220	0.5
Dresden (Germany). (<i>Relays Leipzig</i>)		318.8	941	0.25	Lisbon CT IAA (Portugal). (<i>Short-wave Station on 31.25 m.</i>)		282.2	1063	2
Eiffel Tower, FL, Paris		1446	207.5	13	Ljubljana (Yugoslavia)		574.7	522	7
Eskestuna		245.9	1220	0.2	Lodz (Poland). (<i>Relay Station</i>)		235	1283	1.65
Falun (Sweden)		307	977	0.5	London National (Brookmans Park)		261.5	1147	50
Fécamp, Radio-Normandie (France)		225.9	1328	10	London Regional (Brookmans Park)		355.9	843	50
Fleusburg (Germany). (<i>Relays Hamburg</i>)		227.4	1319	0.5	Luxembourg		1190	252	200
Florence, IFI (Italy). (<i>Relays Turin</i>)		500.8	599	20	Lwow (Lemberg) (Poland)		381	788	16
Frankfurt-a.-M. (Germany)		259.3	1157	17	Lyons (Radio-Lyon) (France)		284.8	1053	0.7
Fredriksstad (Norway). (<i>Relays Oslo</i>)		368.1	815	0.7	Lyons la Doua, PTT (France)		465.8	644	1.5
Freiburg-im-Breisgau (Germany). (<i>Relay Station.</i>)		569	527	0.25	Madona (Latvia). (<i>Relays Riga</i>)		450.3	606	20
Galicia, EAJ4 (Spain)		368.1	815	0.2					

BROADCASTING STATIONS ABROAD (In Alphabetical Order).

Station.	Tuning Positions.	Metres.	Kc.	kW.	Station.	Tuning Positions.	Metres.	Kc.	kW.
Madrid, EAJ7 (Union Radio). (After 7.0 p.m.)		424.3	707	2	Rennes, PTT (France)		271.5	1105	1.3
Magdeburg (Germany)		283.6	1058	0.5	Reykjavik (Iceland)		1200	250	21
Magyarovar (Hungary)		209	1430	1.25	Riga (Latvia)		525	571	15
Malmö (Sweden). (Relay Station)		230.6	1301	1.25	Rjukan		447.1	671	0.15
Marseilles, PTT (France)		315.8	950	1.6	Rome, 1RO. (S.-W. Stn., 2RO on 25.4 m.)		441.2	680	50
Midland Regional		398.9	752	25	Säffle (Sweden). (Relays Stockholm)		245.9	1220	0.4
Milan (Italy). (Relays Turin)		331.5	905	50	Salzburg (Austria). (Relays Vienna)		218.5	1373	0.5
Milan (Vigentino) (Italy). (Relays Rome)		453.2	662	4	Samara, RV16 (Russia)		575	521.5	1.2
Minsk Koloditschi, RV10 (Russia)		1105	271.5	35	San Sebastian, EAJ8		453.2	662	0.6
Miskolc (Hungary)		209.8	1430	1.25	Scottish National (Falkirk)		288.3	1040	50
Monte Ceneri (Switzerland)		1154	260	15	Scottish Regional (Falkirk)		376.4	797	50
Montpellier (France)		286	1049	0.8	Seville, EAJ5 (Union Radio) (Spain)		368.1	815	1
Moravska Ostrava (Czechoslovakia)		263.8	1137	11.2	Sofia (Bulgaria)		318.8	941	0.5
Moscow, Imini Stalina (Russia)		424.3	707	100	Sottens (Radio Suisse Romande) (Switzerland)		403.8	743	25
Moscow (Russia)		1000	300	100	Stalino, RV26 (Russia)		385.1	779	10
Moscow, RV2 (Experimental) (Russia)		720	416.6	20	Stamboul (Turkey)		1200	250	5
Moscow, Popoff RV58 (Russia)		1117	268.5	40	Stavanger (Norway)		240.6	1247	0.5
Moscow, RV1 (Old Komintern) (Russia)		1481	202.5	500	Stettin (Germany)		283.6	1055	0.5
Moscow, WZSPS (Trade Union) (Russia)		1304	230	100	Stockholm, SASA (Sweden)		435.4	689	55
Motala (Sweden). (Relays Stockholm)		1354.4	221.5	30	Strasbourg, PTT (France)		345.2	869	11.5
Mühlacker (Stuttgart) (Germany)		360.6	832	60	Sundsvall (Sweden). (Relays Stockholm)		542	554	10
Munich (Germany)		533	563	60	Sverdlovsk, RV5 (Russia)		825	363.6	50
Naples, INA (Italy). (Relays Rome)		318.8	941	1.5	Swansea		245.9	1220	0.12
Newcastle		211.3	1420	1	Tallinn (Esthonia)		298.8	1004	11
Nimes (France)		237.2	1265	1	Tampere (Finland). (Relays Helsinki)		558.6	537	1
Norrköping (Sweden). (Relay Station)		230.6	1301	0.25	Tashkent, RV11 (Russia)		1170	256	25
North National (Manchester)		301.5	995	50	Tiflis, RV7 (Russia)		1071	280	10
North Regional (Manchester)		480	625	50	Toulouse, PTT (France)		255.1	1176	0.7
Notodden (Norway). (Relays Oslo)		447.1	671	0.08	Toulouse (Radiophonie du Midi) (France)		385.1	779	8
Novosibirsk, RV6 (Russia)		1380	217.5	100	Trier (Germany). (Relays Frankfurt)		259.3	1157	2.3
Nürnberg (Germany). (Relays Munich)		238.9	1256	2	Trieste (Italy)		247.7	1211	10
Nyireghaza (Hungary). (Relays Budapest)		267.4	1122	6.25	Trollhätten (Sweden)		230.6	1301	0.25
Odessa, RV13 (Russia)		450.4	666.7	10	Tromsø		453.2	662	0.1
Ornsköldsvisk (Sweden)		206	1460	0.2	Trondheim (Norway)		495.8	605	1.2
Oslo (Norway)		1083	277	60	Tunis-Kasbah (Tunisa)		1350	222.2	0.5
Ostersund (Sweden). (Relays Stockholm)		770	389	0.6	Turin (Italy)		273.7	1096	7
Oulu (Uleaborg) (Finland)		690	434.6	1.5	Turku (Abo) (Finland). (Relays Helsinki)		245.9	1220	0.5
Palermo (Italy)		542	554	3	Uppsala (Sweden). (Relays Stockholm)		453.2	662	0.15
Paris, Ecole Supérieure PTT		447.1	671	7	Valencia (Spain)		267.6	1121	1.5
Pecs (Hungary)		209.8	1430	1.25	Varberg (Sweden)		249.6	1202	0.3
Petrozavodsk, RV29 (Russia)		779	385	10	Vienna (Bisamberg) (Austria)		517	580	100
Pietarsaari		245.9	1220	0.5	Viiipuri (Viborg) (Finland). (Relays Helsinki)		291	1031	13.2
Plymouth		218.5	1373	1.5	Warsaw 1 (Poland)		1412	212.5	120
Pori (Finland)		453.2	662	1	Warsaw, No. 2 (Poland)		214.3	1400	10
Porsgrunn. (Relays Oslo)		453.2	662	0.7	West Regional (Washford Cross)		309.9	968	50
Poste Parisien (France)		328.2	914	60	Wilno (Poland). (Relay Station)		563	533	16
Poznan (Poland)		334.4	897	1.9	Zagreb (Yugoslavia)		307	977	0.75
Prague (Czechoslovakia)		488.6	614	120	Zeesen Königswusterhausen (Germany). (S.-W. Stn. DJA on 31.38 m., DJB on 19.73 m., DJC on 49.83 m., DJD on 21.51 m., DJE on 16.86 m.)		1635	183.5	60
Rabat (Morocco)		416.4	720.5	5					
Radio, I.L., Paris		370.1	810.5	0.8					
Radio Paris, C.F.R.		1725	174	75					
Radio Vitus (Paris). (S.-W. Stn. on 43.75 m.)		307	977	0.7					

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent B.S.T.)

Metres.	kc/s.	Call Sign.	Station.	Tuning Positions.	Metres.	kc s.	Call Sign.	Station.	Tuning Positions.
62.56	4,795	VE9BY	London, Ont. (Canada). (Sun. 07.00)		31.29	9,585	GSC	Empire Broadcasting, Zone 3	
54.52	5,502	W2XBJ	Brooklyn, N.Y. (U.S.A.). (Relays WCGU)		31.28	9,585	W3XAU	Philadelphia, Pa. (U.S.A.). (Relays WCAU)	
50.26	5,970	HVJ	Vatican State, Rome. (Daily 20.00)		31.0	9,675	T14NRH	Heredia (Costa Rica). (Daily 23.00 and 03.00)	
50.0	6,000	RW59	Moscow (Relays Trade Union Stn.)		30.0	10,000	EAQ	Aranjuez (Spain). (Daily 22.30, Sat. 18.00)	
49.87	6,020	DJC	Zeesen (Germany)		28.98	10,350	L5X	Buenos Aires (Argentina). (Daily 21.30)	
49.67	6,042	W1XB	Miami Beach, Florida (U.S.A.)		26.83	11,180	CT3AQ	Funchal (Madeira). (Tues. and Thurs. 11.30-13.30)	
49.6	6,048	W3XAU	Philadelphia, Pa. (U.S.A.). (Relays WCAU)		25.63	11,705	FYA	Pontoise (France). (Colonial Stn. E-W, daily 20.30)	
49.58	6,050	GSA	Empire Broadcasting, Zones 4-5		25.6	11,720	VE9JR	Winnipeg (Canada). (Daily ex. Sat. and Sun. 18.45)	
49.5	6,060	VQ7LO	Nairobi (Kenya Colony). (Daily 17.30)		25.53	11,750	GSD	Empire Broadcasting, Zones 1 & 4	
49.34	6,080	W2XCX	Kearny, N.J. (U.S.A.). (Relays WOR)		25.5	11,760	DJD	Zeesen (Germany)	
49.22	6,095	VE9GW	Bowmanville, Ont. (Canada). (Daily 21.00)		25.45	11,790	W1XAL	Boston, Mass. (U.S.A.)	
49.2	6,098	ZTJ	Johannesburg (S. Africa). (Weekdays 10.00, 15.00 [Sat. 15.30] and 18.00, Sun. 14.00 and 17.30.) (Temporarily suspended)		25.4	11,810	ZRO	Prato Smeraldo, Rome. (17.00 and 20.30)	
49.18	6,100	W3XAL	Bound Brook, N.Y. (Relays WJZ)		25.36	11,830	W2XE	Wayne, N.J. (U.S.A.). (Relays WABC)	
49.1	6,110	VUC	Calcutta, India. (Daily 14.00)		25.34	11,840	W9XAA	Chicago, Ill. (U.S.A.). (Relays WCFB)	
48.86	6,140	W8XK	East Pittsburg, Pa. (U.S.A.). (Relays KDKA)		25.28	11,865	G8E	Empire Broadcasting, Zone 2	
48.8	6,147	VE9CL	Winnipeg (Canada). (Daily ex. Sun. 01.30)		25.27	11,870	W8XK	East Pittsburg, Pa. (U.S.A.). (Relays KDKA)	
48.35	6,205	HKC	Bogota (Colombia). (Daily 16.00)		25.14	11,933	FYA	Pontoise (France). (Colonial Stn. N-S)	
48.2	6,220	2RO	Rome (Italy)		23.38	12,830	CNR	Rabat (Morocco). (Sun. 12.30)	
46.69	6,425	W3XL	Bound Brook, N.J. (U.S.A.). (Relays WJZ irregular)		20.5	14,630	XDA	Chapultepec (Mexico). (Daily 20.30)	
45.38	6,611	RW72	Moscow (Relays Trade Union Stn.)		19.9	15,075	T14NRH	Heredia (Costa Rica). (Sat., Sun., Mon. 17.00 and 22.00)	
45.0	6,667	FMSKR	Constantine (Algeria). (Mon. and Fri. 23.00)		19.84	15,120	HVJ	Vatican State, Rome. (Daily 11.00)	
43.75	6,860	—	Radio Vitus, Paris. (Daily 20.30)		19.81	15,110	G8F	Empire Broadcasting, Zone 5	
41.7	7,195	VSIAB	Singapore (Malay States). (Sun. and Wed. 16.30)		19.73	15,200	DJB	Zeesen (Germany). (Daily 16.00-24.00)	
40.3	7,443	HBQ	Radio Nations, Prangins (Switzerland). (Sun. 23.00-23.15)		19.72	15,210	W8XK	East Pittsburg, Pa. (U.S.A.). (Relays KDKA)	
38.7	7,797	HBL	Radio Nations, Prangins (Switzerland). (Sun. 23.00-23.45)		19.68	15,244	FYA	Pontoise (France). (Colonial Stn. E-W)	
33.50	8,928	TGX	Guatemala City (S. America)		19.56	15,340	W2XAD	South Schenectady, N.Y. (U.S.A.). (Daily 19.00)	
31.58	9,500	PRBA	Rio de Janeiro (Brazil). (Daily 22.30)		16.9	17,750	HSP	Bangkok (Siam). (Sun. and Tues. 22.00)	
31.54	9,510	GSB	Empire Broadcasting, Zones 2, 4, 5		16.88	17,770	GSQ	Empire Broadcasting, Zone 2	
31.48	9,530	W2XAF	Schenectady, N.Y. (U.S.A.). (Relays WGT)		16.87	17,780	W3XAL	Bound Brook, N.J. (Weekdays 11.00)	
31.38	9,560	DJA	Zeesen (Germany). (Daily 23.00)		16.86	17,790	DJE	Zeesen (Germany)	
31.35	9,570	W1XAZ	East Springfield, Mass. (U.S.A.). (Relays WBZ)		13.97	21,470	GSH	Empire Broadcasting, Zone 3 (Daylight working)	
31.3	9,580	HBL	Radio Nations, Prangins (Switzerland). (Sun. 23.00-23.45)		13.92	21,540	W8XK	East Pittsburg (Relays KDKA)	

FOREIGN SUNDAY PROGRAMMES

AUGUST THE TWENTY-SEVENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL LONDON REGIONAL** Service from the Congregational Church, Worthing. Roman Catholic service from Saltley, Birmingham.
- MIDLAND REGIONAL** Orchestral concert from Droitwich Spa.
- NORTH REGIONAL** Service from Hexham Abbey, Northumberland.
- WEST REGIONAL** Service from Gilgal Baptist Church, Porthcawl.
- SCOTTISH REGIONAL** Service from Govan Old Parish Church, Glasgow.

ABROAD

- BERLIN (Deutschlandsender)** 4.0 p.m. Concert from the Funkgarten.
- BUCHAREST** 8.0 p.m. Two operettas by Offenbach: "Monsieur Choufleuri" and "Le Mariage aux Lanternes."
- HEILSBURG** 9.0 p.m. Operetta music from the Kurgarten, Zoppot.
- LEIPZIG** 2.40 p.m. Wagner concert by the Symphony Orchestra, conducted by T. Blumer.
- PITTSBURGH** 8.0 p.m. National Opera concert.
- POSTE PARISIEN** 8.0 p.m. Operetta: "Les deux Pêcheurs," by Offenbach.
- PRAGUE** 6.15 p.m. Opera: "Die Abreise," by d'Albert.
- TOULOUSE** 9.0 p.m. Concert version of opera "Thais," by Massenet.
- TURIN** 8.30 p.m. Three operas: "La Grotta di Trofonio" (extracts), by Antonio Salieri; "Emiral," by Bruno Barilli, and "L'occasione fa il ladro" (extracts), by Rossini.
- WARSAW** 8.0 p.m. The Station Orchestra, conducted by Oziminski.

Song Recital by Rosette Huszka, 8.0, Sports Notes and News, 8.20, The Hotel Viktoria Mystery—Radio Play (Moly), 10.20, Weather and Sports Results, 10.30 (approx.), Dance Music by the New Brighton Boys' Dance Band, relayed from the Café Floris, 11.15, Concert by the Apud Toll Cigány Band, relayed from the Café Patra.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relay by Kalundborg, 260 kc/s, 1,153.8 metres.—8.27 a.m., Weather, 8.30, Gymnastics, 9.0, Talk, 10.0, Divine Service, relayed from the Cathedral, 11.30, Weather and News, 11.40, News, 12 Noon, Time and Chimes from the Town Hall, 12.5 p.m., Concert by the Carl Rydahl's Instrumental Ensemble, 1.0, Talk in English, 1.20, Talk in German; North East German Literature, 1.40, Talk in French, 2.0 (also relayed by Skamlebaek on 31.51 metres), Divine Service Relay, 3.15, Fifty Years' Anniversary Programme of the Danish Red Cross Society, Talks, Recitations, Readings and Orchestral Music, 4.0, Concert by the Station Orchestra, conducted by Emil Keesen. Soloist: Lis Mogensen Witte (Songs), 5.50, Programme for Children, 6.20, Talk: The Intellectual Life of France in the Twentieth Century, 6.50, Weather, 7.0, News and Sports Results, 7.15, Time Signal, 7.30, Talk, 8.0, Time Signal from the Town Hall, 8.1, Concert by the Station Orchestra, conducted by Lanny Grondahl, Selection from The Gordian Knot (Puccini); Concerto grosso for Two Violins, Cello and Harpsichord, 8.30, Concert by the Arion Male Voice Choir, conducted by Kerckhoffs, relayed from the Radio Exhibition, After the Concert, Weather, 9.0, Radio Play Competition: Relay of the Second Prize Play, 9.10, Concert by the Station Orchestra, conducted by Lanny Grondahl, 10.0, News, 10.10, Reading (Gustav Wied), 10.30, Trio in F, Op. 42 (Gade), for Piano, Violin and Cello, by Folmer Jensen, Otto Fessel and Rudolf Dietzmann, 11.0, Dance Music by the Richard Johansen Band, relayed from the Lødbjerg Restaurant, In the interval at 12 Midnight, Time and Chimes from the Town Hall, 12.30 a.m. (Monday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m. till 12 Noon, Programme in English by the I.B.C. 11.0, The Happy Hour: Part I, Orchestral Concert; signature Tune; Overture, Figaro (Mozart); Ballet from the Petite Suite (Debussy); Waltz Song from La Bohème (Puccini); Scherzo from A Midsummer Night's Dream (Mendelssohn); Violin Solo; Caprice Basque (Sarasate); Idylle Bretonne (Gennin); Salut d'amour (Elgar); March from Tannhäuser (Wagner); Part II, Dance Music: Stay out of my Dreams; Castles in the Sand; Sweetheart Darlin'; Something came and got me in the Sprung; Falling Star; Drifting down the shallows; I can't remember; I'll see you in the morning; Signature Tune, 12 Noon till 2.0 p.m., Programme in French, 2.0-7.30, Programme in English by the I.B.C. 2.0 Orchestral Concert for South Coast Listeners; Signature Tune, The Night by the Sea; Selection from He Wanted Adventure, Part I (Waller-Tunbridge); Humoresque (Dvorak); The Blackbird in the Apple Tree (Lubbeck); Waltzes from A Waltz Dream (O. Strauss); Chanson bohémienne (Beldi); Fairy Tales of Ireland (Coates); Ay, ay, ay (Freire); The Fortune Teller (Herbert), 2.30, Gramophone Concert: Radezky March (Strauss); Room for the Faetotum, from The Barber of Seville (Rossini); Beautiful (Gillespie); Dear old Croones (Lauder); Organ; Snacks in Bars (Egerer); The Woman should stick to her Man (Hda); The Clock and the Dresden Figures (Ketteby); Scherzo from A Midsummer Night's Dream (Mendelssohn), 3.0, Light Music: The Ghost Walk; I raised my Hat; Mama Inez; Letting in the Sunshine; Moonlight at Sanssouci; Jolly Old Ma, Jolly Old Pa; That Tiny Teashop; Dubnuschka Potpourri, Part 2, 3.30, I.B.C. Members' Request Half Hour: Blaze away (Holzmann); The Wedding of the Rose (Jessel); I don't work for a Living (Lee); Rhapsody in Blue (Gershwin); The Porter's Love Song (Johnson); Brother, can you spare a Dime? (Gorney); Drifting down the Helyman (Monaco); Live, love and laugh (Helyman); Signature Tune, 4.0, Judge Rutherford's Address, 4.15, Programme for Children, 4.30, Shredded Wheat Descriptive Adventure Story, 5.0, The Second of a Series of Concerts given in Co-operation with Major Stevens: Waltz, Roses from the South (Joh. Strauss); Violin Solo: Indian

ATHLONE
725 kc/s, 413 metres; 60 kW. Relay by Cork, 1,337 kc/s, 224.4 metres.—8.30 p.m., Time Signal, 8.32, Lily Fagan's Instrumental Trio, 8.50, John MacDonagh and Company in Original Songs and Sketches, 9.50, Soprano Solos by Edie O'Dwyer, 10.5, Violin Solos by May Collin, 10.20, Bass Solos by J. C. Browner, 10.35, Lily Fagan's Instrumental Trio, 11.0, Time, News and Close Down.

BARCELONA

EADJ, 850 kc/s, 348.8 metres; 8 kW.—2.0 p.m., Gramophone Music, 2.30 (in the interval), Theatre Notes, 3.0, Concert by the Radio Sextet, 4.0, Programme for Hospitals and Benevolent Institutions with Gramophone Records, 5.0, Interval, 6.30, Agricultural Talk in Catalan and Gramophone Music, 7.0, Concert by the Radio Orchestra and Eusebio Curasusan (Tenor), 9.0, Dance Music from the Hollywood Bar Dance Hall, 10.0, Musical Comedy Music on Gramophone Records, 11.45, Chess Lesson, 12 Midnight, Close Down.

BARI

1,112 kc/s, 269.8 metres; 30 kW.—10.45 a.m., Agricultural Report, 11.5, Bible Reading, 11.55, Sacred Music from the Church of San Domenico, 1.0 p.m., Giornale Radio, 1.10 to 2.15, Gramophone Concert, In the interval 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, 8.32, Concert of Songs and Operetta Music, In the interval Talk, 10.30, Gramophone Music, 10.50, News in Albanian, 10.55, News.

BASLE.—See Schweizerischer Landessender.

BERLIN

DEUTSCHLANDSENDER (REICHSENDER), 183.5 kc/s, 1,635 metres; 60 kW.—6.0 a.m., Gymnastics, from Berlin (Funkstunde), 6.15, Press Review, followed by the Day's Motto and Harbour Concert from Hamburg, 8.0, Agricultural Notes, 8.30, Service from St. Mary's Church, 9.30, Reading of Sacred Poems, 9.50, Talk: Avoiding Explosions on Ships, 10.5, Weather from Berlin (Funkstunde), 10.10, Interval, 10.45, Weather Report for Ships, 11.0, In the Village Inn, 11.30, See Leipzig, 12 Noon to 2.0 p.m., Concert from Berlin (Funkstunde), 2.0, Programme from Hamburg, 3.0, Programme for Children, 3.30, Talk: Legend and National Character, 4.0, Concert from the Funkgarten, Conductor: Prof. Gustav Havemann, Coronation March from Die Folkinger (Kretschmar); Overture, Der Freischütz (Weber); Italian Caprice (Chajkovsky); Kaiserwalzer (Joh. Strauss); Pesther Karneval (Liszt); Overture, Rienzi (Wagner), 5.0, See Frankfurt, 6.0, Radio Report of the Round Germany Flight, 1933, 6.20, Talk: In Africa and the South Seas, 6.40, Gramophone Concert, 7.50, Sports Notes, 8.5, Programme from Berlin (Funkstunde), 10.0, News, 10.45, Weather, 11.0, See Munich, 12 Midnight (approx.), Report on the Round Germany Flight, 1933.

BERLIN

(FUNKSTUNDE), 715 kc/s, 419.5 metres; 1.5 kW.—11.30 a.m., See Leipzig, 12 Noon, Concert by the Reichswahr, 2.0 p.m., Talks for Garden City Dwellers, 3.0, Programme for Young People, 3.30, See Berlin (Deutschlandsender), 5.0, Programme to be announced, 6.0, Radio Report from Magdeburg, 6.15, Concert from Stuttgart, 7.0, All sorts and conditions—Housewife, Working Man, Peasant and Brainworker before the Microphone, 7.30, Funkstunde on the Themes—Two Radio Pictures of a Day in London, 7.50, Sports Notes, 8.0, Lottery Announcements, 8.5, The Hand Grenade Programme from the Radio Exhibition, 10.0, Weather and News, 10.15 (approx.), Dance Music from the Delphi Palace, In the interval from 11.0 to 11.10, Talk: The German Revolution as seen through Foreign Eyes, 1.0 a.m. (Monday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—4.0 p.m., Promenade Concert by the Municipal Orchestra, conducted by Motal, relayed from Trnčanské Teplice, 5.30, Talk: Corsica, 5.45, Gramophone Music, 6.0, Folk Songs, 6.40, Gramophone Music, 6.55, Talk for Housewives, 7.0, See Prague, 7.5, See Moravská-Ostrava, 7.55, See Prague, 9.0, Concert relayed from Kosice, 1,022 kc/s, 293 metres, 10.0, See Prague, 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relay by Gleiwitz, 1,184 kc/s, 253 metres.—10.0 a.m., Instrumental Concert, 11.0, Concert from the Schauspielhaus, 12 Noon, See Berlin (Funkstunde), 2.0, News, 2.10, Talk: The Radio Exhibition, 2.30, Talk: The Battle of Tannenberg, 3.0, Programme for Children, 3.35, Reading, 4.0, Concert by the Silesian Philharmonic Orchestra, conducted by Hermann Behr, 5.0, See Frankfurt, 6.0, Reading of Speeches, 6.20, Das Münchener Kind und der Gabeljunge—A Radio Sequence of the Tegegnese, 7.0, Sports Notes, 7.20, Blücher Festival on the One Hundred-and-Twentieth Anniversary of the Battle of Katzbach, 8.5, See Berlin (Funkstunde), 10.0, Austria, 10.20, Time and News, 10.45, Dance Music from Berlin (Funkstunde), In the interval from 11.0-11.10, Talk on the German Revolution, 12.30 a.m. (Monday), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—5.30 p.m., Recital of Russian Songs by Eugene Kotechak, 5.50, Radio Report, 6.0, See Prague, 7.5, See Moravská-Ostrava, 7.55, Recitation, 1,022 kc/s, See Prague, 9.0, Concert from Kosice, 1,022 kc/s, 293 metres, 10.0, See Prague, 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—9.45 a.m., Culinary Notes, Pigeon Racing Results and Schools' Announcements, 10.0, Gramophone Music, 11.0, Concert by the Small Station Orchestra, conducted by Lecmans, 12 Noon, Concert by the Station Symphony Orchestra, conducted by Kumps, Soloist: Lefevre (Baritone), 1.0 p.m., Le Journal Parlé, 1.10, Concert by Sykes and his Orchestra, relayed from the Scala, Ostend, 1.30 (in an interval), Monologues on Gramophone Records, 2.15 to 3.15, Relay from the Congrès Joiciste de Liège, Programme by Singing and Speaking Choirs, 5.0, Dance Music by Mickey's Club Jazz Attraction, relayed from the Casino, Knoeke, 5.30, Football Results, 6.30, Programme for Children, 7.0, Gramophone Records, 7.15, Religious Address, 7.30, Wireless Notes and Review of Music, 8.0, Gramophone Records: Overture, Prince Igor (Borodin); Symphony No. 1, Op. 39 (Sibelius), 8.45, Les Aveugles—Sketch (de Ghelderode after Breughel), 9.0, Concert relayed from Kursaal, Ostend, After the Concert, Journal Parlé, followed by Dance Music by Robert Kers and his Cabaret Kings and a Tango Orchestra, 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., Concert by the Small Station Orchestra, conducted by Lecmans, 11.0, Gramophone Concert of Variety Music, 12 Noon, Concert by Sykes and his Orchestra, relayed from the Scala, Ostend, 1.0 p.m., Le Journal Parlé, 1.10, Concert by the Station Symphony Orchestra, conducted by Kumps; Overture, A Midsummer Night's Dream (Mendelssohn); Suite for Two Flutes, Trumpet and Strings (d'Indy); Piece for Four Horns (Charlier); Ballet Music from La Korrigane (Widor), 5.0, Dance Music by Robert de Kers and his Cabaret Kings and an Argentine Tango Band, relayed from the Kursaal, Ostend, 5.30, Sports Notes, 6.30, Gramophone Concert, 7.15, Religious Address, 7.30, Review of Music, 8.0, Concert by the Small Station Orchestra, conducted by Lecmans, 8.45, Recitation (Edgar Allan Poe), 9.0, Orchestral Concert, relayed from the Casino, Knoeke, Conductor and Soloist: Martha Lutz (Violin), Airs (Joh. Strauss); (a) Overture, Die Fledermaus, (b) Frühlingsstimmung, (c) Suite from Eine Nacht in Venedig; Violin Solos: (a) Rondo (Mozart), (b) On a Theme by Corelli (Tartini), (c) Scenes from the Czarinas (Hubay); Overture, The Gipsy Baron (Joh. Strauss); Waltz, The Blue Danube (Joh. Strauss); Polka, Pizzicato (Joh. Strauss); The Emperor Waltz (Joh. Strauss) After the Concert, Le Journal Parlé and Dance Music by Mickey's Club Band, conducted by Ludo Langlois, relayed from the Casino, Knoeke.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Rumanian Music by the Gira Tomesco Orchestra, In an interval at 6.0, Radio Journal, 7.0, Reading, 7.20, Gramophone Music, 7.40, Educational Talk, 8.0, Two One-Act Operettas (Offenbach): (a) Monsieur Choufleuri (b) Le Mariage aux lanternes, In the intervals, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.30 p.m. till Close Down.—9.15 a.m., News, 10.0, Divine Service, 11.0, Sacred Music and Address from a Church, After the Programme, Radio Report, 12.15 p.m., Concert by the Karl Bura Cigány Band, relayed from the Ketter Restaurant, 1.45, Gramophone Music, 3.0, Agricultural Talk, 3.45, Radio Report of the International Rowing Championship in Budapest, 4.30, Talk, 5.0, Orchestral Concert, 6.20, Radio Report (contd.), 7.0, Talk, 7.30,

AUGUST 27th

SUNDAY

continued

Love Call (Friml); Blumengeflüster (Blon); Song, The Old Spinning Wheel (Hill); Xylophone Solo: On the Track (Simpson); Song, Mountain Lovers (Squire); Memories of Paris (Christine); Selection from Music in the Air, Part 2. 5.30, Lowestoft Concert: Songs of the Sea; The Busy Bee (Bendix); Orchestra: Nautical Moments, Part 1 (arr. Winter); Four Jolly Sailors (German); Orchestra: Over the Waves (Rosas); Sea Shanty, The Drunken Sailor (Terry); Blow the Man down; The Merchant Ship; Sheandoah; The Rio Grande (Harris); More Nautical Moments, Part 2 (arr. Winter); Signature Tune. 6.0, Club Concert for Gloucester Listeners: Part 1, Orchestral Music; Signature Tune, The Chum Song; Overture, Il Seraglio (Mozart); Waltz from The Sleeping Beauty (Tchaikovsky); Morris Dance and Torch Dance from Henry VIII (German); Song, Droop not, Young Lover (Händler); Air de ballet (Drigo); Prelude to Carmen (Bizet); Song, A fine old English Gentleman (arr. Wheatley); Suppé Potpourri (Moreau); Part 2, Military Band; Naval Patrol (Williams); Amoretentänze (Gungl); Xylophone Solo: Fairy Tiptoe (Fredericks); Hobomoko (Jessel); Loin du bal (Gillet); Præctidium (Jännefeldt); Fiddlesticks (Robbins); Ca c'est Paris (Padilla); Signature Tune. 7.0, Organ and Song Recital: Potted Overtures (Engelman); In the Valley of the Moon (Tobias); Weymouth Chimes (Hawgill); Song, Peter, Peter (Woods); Hold me (Schuster); Rain on the Roof (Ronell); Song, I've got the World on a String (Arlen); My Wishing Song. 7.30-9.0, Programme in French. 9.0 till Close Down, Programme in English by the I.B.C. 9.0, Pianoforte and Song Recital: The Match Parade (Wehle); Selection from The Desert Song (Romberg); That Futuristic Rag (Bloom); Song, You've got me crying again (Schuster); Still I love her (Gaskill); Song, Me and Mine are doing fine (Connelly); When Day is done (Kalscher); Selection, He wanted Adventure (Waller). 9.30, Talkie Time, Music and Up-to-Date Review of the Films: The Shadow Waltz from The Gold Diggers; You are too beautiful; There's Magic in the Air, from The Only Girl; Love Songs of the Nile, from A Night in Cairo; Hits from Forty-Second Street; Heaven will protect an Honest Girl, from This Week of Grace; In the Park in Paris, from A Bedtime Story; You don't understand, from Falling for you. 10.0, Gramophone Concert: A Birthday Serenade (Lincke); The Old Folks at Home (Foster); The Fairy Garden, from The Mother Goose Suite (Ravel); Fiddlin' Joe (Cavanagh); Serenata (To-elli); Rose, Mousse (Bose); Clapham and Dwyer's Fairy Tales; Softly awakes my Heart, from Samson and Delilah (Saint-Saëns). 10.30, Concert of Dance Music: I cover the Waterfront; The Gold-Diggers' Song; Sweetheart Darlin'; Have you had a Good Day To-day; I wish I had Wings; I can't remember; My Love Song; Leave me in the Gloaming; Lover; When the Wild, Wild Roses bloom; Pop Gum; Stormy Weather; Waltzing in a Dream; I've got to sing a Torch Song; Dancing Buttery; My, oh my; I can't remember. 11.30, Concert given by the I.B.C. (Ireland), Ltd.: Signature Tune, Come Back to Erin; Once on the Rhine (Ostermann); General Mulcahy (Brase); Song, Love's Pleading (Pecora); Cocur brisé (Gillet); Pianoforte Solo: Sweetheart, I'm dreaming of you (Brody); Minuet No. 1 (Paderewski); Song, Come back to Sorrento (de Curtis); Irish Medley (arr. Somers); Signature Tune. 12.5 a.m. (Monday), News Bulletin in English. 12.10 (approx.), Tango Band: The Song of the Rose; I'll keep you in my Heart always; Jalouse (Gade); Julian; There was a poor Musician. 12.30 Dance Music (Electrical Transcriptions): Sweep; Bjawatha's Lullaby; You don't understand; This Lovely Rose; In a Second-Hand Store; Dance Pretty Lady; I cover the Waterfront; Come out Vienna. 1.0, Dance Music; Signature Tune, Bells of Normandy; I gotta Right to sing the Blues; The Old Spinning Wheel; You are too beautiful; In the Valley of the Moon; I'll see you in the Morning; Castles in the Sand; Drifting down the Shalimar; Something came and got me in the Spring; Falling Star; Spanish Eyes; Where are you To-Night; That's what Life is made of; Look what I've got; Peter, Peter; In the Park in Paris; One Tiny Tear; Signature Tune. 1.57, I.B.C. Good-night Melody. 2.0, 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.—11.0 a.m., Report on the Round Germany Flight, from the Böblingen Aerodrome. 11.30, See Leipzig. 12 Noon, See Berlin (Funkstunde). 1.0 p.m., Gramophone Concert. 2.30, Talk arranged by the Wiesbaden Board of Agriculture. 2.40, Rural Programme. 3.30, Programme for Young People. 4.30, See Leipzig. 5.0, Probable Relay of the Massed Meeting Saar Manifestation at the National Monument on the Niederwald. 6.0, Programme to be announced. 6.25, Humorous Interlude. 6.55, Sports Notes. 7.0, Programme to be announced. 8.0, See Munich.

10.20, Time and News. 10.45, Programme from Berlin (Funkstunde).

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

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., See Leipzig. 12 Noon, See Berlin (Funkstunde). In the interval at 1.0, Time and Weather. 2.0 (from Bremen), Programme for the Hitler Youth. 3.0 (from Hanover), Der kleine Rosengarten (Hermann Löns), with Music by Hans Dreyling. The Lower Saxon Vocal Quartet and the Station Orchestra. 4.0, Concert by the Small Station Orchestra, conducted by Gerhard Maasz. 5.30, A Merry Yachting Excursion—Programme in Dialect. 6.35, Folk Song Recital by Gertrud Schmidt and Bernard Jaksecht (Songs), Gerhard Gregor (Pianoforte) and the Small Station Orchestra. 7.15, Readings—Travels and Adventures. 7.45, Sports Report. 8.0, Weather. 8.5, See Berlin (Deutschlandsender). 10.0, Time, Weather and Announcements. 10.20, Hanover, Bremen and Lübeck—A Weekly Review of the Hansa-Sea Free Cities. 10.35, Dance Music, relayed from Berlin (Funkstunde).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—11.15 a.m., Programme of Literature and Music on the One Hundred and Twentieth Anniversary of the Death of Theodor Körner. 12 Noon, See Berlin (Funkstunde). 2.0, Modern Dance Music by the Small Radio Orchestra, conducted by Eugen Witke. 2.40 (from Danzig), Programme for Young People. 3.10, Chamber Music for Violin and Pianoforte. 3.40, Two Narratives. 4.10, Concert by the Königberg Opera House Orchestra, conducted by Wolfgang Brückner. 5.30, Summer Programme of Literature and Music (arr. Maczurat). 6.10, Pianoforte Recital. 6.40, Reading in Dialect. 6.50, Sports Notes. 7.0 (approx.), Programme to be announced. 8.0, Military Band Concert in commemoration of the Battle of Tannenberg. 9.0, Concert of Operetta Music from the Kurgarten, Zoppot; The Zoppot Municipal Theatre Orchestra, conducted by Karl Tutein, with Soloists; Songs: (a) Song from Schön ist die Welt. (b) You are my heart's delight, from The Land of Smiles (Lehár); Waltz from Gasparone (Müllcker); Duets from The Gipsy Princess (Kalmán); Duet from Der Bettelstuden (Müllcker); Song from Der Bettelstuden (Müllcker); March from The Gipsy Baron (Joh. Strauss). 10.0, News. 10.15 (approx.), Dance Music from Berlin (Funkstunde). 12 Midnight (approx.), 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. to 4.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 11.55, Gramophone Music. 12.10 p.m., Keteibey Concert by the K.R.O. Orchestra, conducted by van 't Woud; Ual Romano; Silver Cloud; In a Chinese Temple Garden; Wedgwood Blue; By the Blue Hawaiian Waters; In a Persian Market; Algerian Scene; In the Moonlight; Sanctuary of the Heart; Dance of the Merry Mascots. In the interval at 12.40, Talk: The Care of the Blind. 1.35, Gramophone Music. 1.50, Literary Talk. 2.10, Concert by the K.R.O. Boys. 2.40, Musical Programme by the P.H.O.H.I. 3.40, Divine Service on the occasion of the Pilgrimage to Lourdes. 4.40 to 7.30, Programme of the Christian Radio Society (N.C.R.V.). 4.40, Gramophone Music. 5.0, Divine Service Relay. 6.25, Religious Programme. 7.30 till Close Down, K.R.O. Programme. 7.30, Talk. 7.55, Concert by the K.R.O. Orchestra, conducted by Gerritsen; Soloists, van 't Woud (Saxophone) and Boshart (Pianoforte); Overture, Hans Heiling (Marschner); Selection from Hansel and Gretel (Humperdinck); Waltz, Seid unschlagen Millionen (Strauss); Sonata in Four Parts for Saxophone (Schulhoff); Der Nibelungen-Flammenzeichen (Ubach); Hymn to the Sun (Rimsky-Korsakov); Overture, The Bohemian Girl (Balfe); Selection from Le Tribut de Zamora (Gounod); Gramophone Music; Ballet Music from Faust (Gounod). In an interval at 8.40, News. 10.20, Epilogue by the Small Choir, conducted by Pickkers. 10.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM; 160 kc/s, 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, Pigeon Flying Notes. 8.42, Horticultural Talk. 9.10, Orchestral Concert, conducted by de Groot. 10.0, Recitation. 10.20, Concert (contd.). 11.10, Address. 11.40 to 4.40 p.m., Programme of the Allgemeine Vereinigung Radio Omroep (A.V.R.O.). 11.40, Time Signal. 11.41, Concert by the Wireless Orchestra, conducted by Nico Treep. In the interval, Talk: Floriculture in Holland. 1.40, Weekly Book Talk. 2.10, Pianoforte Recital by Susanne de Meyere; Prelude, Air, and Finale (Franck); Ondine (Ravel); Jeux d'eau (Ravel). 2.40, Concert relayed from the Kührhaus, Scheveningen. The Orchestra of The Hague, conducted by Sam Swaap. Soloist: Annie Mesritz (Violin). Overture, Figaro (Mozart); Ciacona (Vitali); Symphony No. 9 in G (Haydn); Overture, Le Roi d'Ys (Lalo); Poème (Chausson); French Military March (Saint-Saëns). 4.10, Gramophone Music. 4.40, V.A.R.A. Programme: Choral Concert and Gramophone Music. 5.40 to 7.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 5.40, Book Review. 6.25, Divine Service, from a Church. 7.40 till Close Down, A.V.R.O. Programme. 7.40, Time Signal. 7.41, News. 7.55, Concert of Musical Comedy Music by the Wireless Orchestra, conducted by Nico Treep. Soloists: Gretha Weyn-Schenck-Hogenbirk and Henk Viskil (Songs). Overture, Frau Luna (Lincke); Arias from: (a) Das Lied der Liebe (Joh. Strauss-Korngold), (b) The Bird Fancier (Zeller); Two Arias from Cagliostro in Wien (Joh. Strauss); Selection from The Merry Peasant (Fall); Arias from (a) A Kiss in Spring (Kalmán), (b) Schön ist die Welt (Lehár); Waltz from The Little Dutch Girl (Kalmán); Arias from: (a) A Kiss in Spring (Kalmán); (b) The Land of Smiles (Lehár); Carrambolina-Carrambolotta (Kalmán). 8.55, Gramophone Music. 9.10, Concert by Paul Godwin and his Orchestra. In the interval, Gramophone Music. 10.50, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 349 metres; 0.8 kW.—8.0 p.m., Amusement Guide and Sports Notes. 8.15, Radio Concert. 9.0, News. 9.15, Radio Concert. 10.0, Answers to Correspondents. 10.30 till Close Down, Programme in English by the I.B.C. 10.30, Orchestral Concert. Potpourri, Sasehinka, Part II (Schirmann); Marienklänge (Strauss); Angero (Franco); Gipsy Moon (Borzanov); The Cossack Wedding Fete (Krier); Lazy Pete (Kersten); Pierrette's Wedding (Jordan); Frohsinn auf den Bergen (Fetras). 11.0, Gramophone Concert. Do you recall (Flanagan); Adios, Goodbye (Fernandez); Juanita (Norton); To my First Love (Löhner); You'd better ask me (Löhner); What a perfect combination (Kalmán); The Fairies' Gavotte (Kohn); On the Banks of Allan Water (Trad); Waltz, The Blue Danube (Joh. Strauss). 11.30, Military Band Concert, El Alamo (Favaloyes); Le Réve passe (Krier); A Merry Hunting Day (Partridge); Gaiety Echoes, Part 2, Fire Star (Carter); Post Horn Gallop (Koenig); Quand Madelon (Bousquet); Scottish Patrol (Williamson). 12 Midnight, Dance Music. Tap Your Feet; I may never pass your way again; Miss Elizabeth Brown; A Boy and a Girl were Dancing; Do you Recall? What more can I Ask? Can't we meet Again? Brighter than the Sun; Misty Mornin'; Dip your brush in the Sunshine; Saratoga Swing; Let a little pleasure interfere with Business; My Heart's to Let; I'm playing with Fire; When you've fallen in Love; Sittin' in the Park. 12.57 a.m. (Monday), I.B.C. Good-night Melody. 1.0 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW. 11.10 a.m., Report on the Round Germany Flight. 11.40, Talk: The Revolution in Education. 12 Noon, See Berlin (Funkstunde). 1.0 p.m., Orchestral Concert conducted by Eysoldt. 2.55, Talk: People and Race. 3.15, Concert by the Fröhliche Fünf. 4.0, An Account of Wegener's Greenland Expedition, by Kurt Herdemerten, a Member of the Party. 4.30, Schubert Concert. 5.0, See Frankfurt. 6.0, Report of the Fiftieth Kaiserberg Gymnastic Festival, relayed from Duisburg. 6.25, A Modern German Catechism—Two Readings: (a) Of Faith and Truth (Hanns Johst), (b) The German can do anything (Schaffner, 1931). 6.35, Reading from the Turkish Diary of a German Airman. 7.0, Variety Programme. 7.45, Sports Report. 8.5, See Berlin (Funkstunde). 10.0, News. 10.20, The Round Germany Flight, 1933. 10.45, Dance Music from Berlin (Funkstunde). 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—10.45 a.m., Talk on the 11.30 Transmission. 11.0, See Deutschlandsender. 11.30, Herr Jesu Christ, du höchstes Gut—Cantata (Bach), by the

Gewandhaus Orchestra, the St. Thomas's Choir, and Soloists. 12 Noon, Concert by the Radio Orchestra, conducted by Theodor Wünschmann; Overture, Zampa (Hérold); Selection from Madame Butterfly (Puccini); Clog Dance from Czar and Carpenter (Lortzing); Gondoliera from The Third Suite (Franz Ries); Waltz, Die Werber (Lanner); Three Pieces for String Orchestra: (a) Die sieben Schwaben, (b) Dornröschen und der Prinz, (c) Der Wolf und die Geiseln; Intermezzo, Op. 117 (Brahms-Egg); Selection from Djanidhe (Bizet); Two Pieces from the Romantic Suite (Bullerian); Overture, Der dumme August (Galller); Bei den Wiener Schrammeln (Recktenwald); Kinderlieder-Marsch (Ziehrer). In the interval at 1.0 p.m., Talk: The German Nation and the German Contemporary Poet. 2.0, Weather and Time. 2.5, The Week's Programme. 2.25, Agricultural Notes. 2.40, Wagner Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer; Prelude and the Death of Isolde, from Tristan and Isolde; Entry of the Guests into the Wartburg, from Tannhäuser; Walther's Prize Song, from The Mastersingers; Overture, Ranzel. 3.20, Radio Report of the Round Germany Flight, 1933. 3.50, A Radio Report from the Prussian Police Station at Erfurt. 4.30, Concert of Popular Music. 6.0, Humorous Programme, with Songs. 7.0, Hugo Wolf Lieder Recital by Albert Fischer (Bass). 7.30, Topical Talk. 8.0, See Munich. 9.0, Choral Concert and Wind Instrument Music, relayed from the Market Square, Zittau. 9.45, Three Swabian Legends. 10.5, News, followed by Dance Music Relay. 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—8.0 a.m., Review of the Paris Morning Press, relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres. 10.0, Tourist Report, from Toulouse. 10.15, Concert, relayed from Vichy. After the Concert, Relay from Paris (Ecole Supérieure). In the interval at 4.0 p.m. (approx.), Tourist Report from Toulouse. 8.45, Orchestral Concert, conducted by Gaston Bilet; Soloists, Clody Lamotte (Soprano) and Claudius Rougenet (Baritone); Overture, Carnaval romain (Berlioz); Jota aragonesa (Saint-Saëns); Second movement from Les Préludes (Liszt); Impressions d'Italie (Charpentier); L'apprenti sorcier (Dukas); Overture, Tannhäuser (Wagner). After the Concert, News.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—9.0 to 10 a.m., Topical Review. 3.0 p.m., Chimes, Time, and Concert of Light Music. 5.0 to 8.0, Interval. 8.0, Chimes and Dance Music. 9.30 to 11.0, Interval. 11.0, Chimes, Time and Song Recital by Freire (Baritone). 11.30, Municipal Band Concert from Rosales, followed by Dance Music. 1.30 a.m. (Monday), Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.45 p.m. till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.5 p.m., Talk with Illustrations by a Military Band; Pagan Ritual Dances of Old Moravia. 7.55, See Prague. 9.0, Concert, relayed from Kosice, 1,022 kc/s, 293 metres. 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., See Leipzig. 12 Noon, The Saur at the National Monument on the Niederwald. 1.0 p.m., Time, Weather and Programme Announcements. 1.10, The Round Germany Flight, 1933—Radio Report. 1.30, Gramophone Concert. 2.30, Political Talk. 2.50, Programme for Children. 3.20, Concert of Operetta Music by the Station Orchestra, conducted by Karl List. 4.5, Towns on the Inn—Wasserburg—Radio Sequence (Hermann Weingert). 4.30, See Leipzig. 5.0, Flowers: Vocal and Instrumental Concert with Recitations in the intervals. 5.45, Talk: Heroism and Loyalty. 6.5, Zither Solo. 6.25, Der lachende Erbe—A Village Comedy in Three Acts (Max Ferner and Wilhelm Köhler). 7.45, Weather and Sports Notes. 8.0, Concert by the Station Orchestra, conducted by Karl List. Soloists: Elisabeth Hallstein (coloratura-Soprano), Renate von Aschoff (Soprano), and Adolf Bruno Winkler (Violin). 10.0, Austria. 10.20, Time and News. 11.0, Serenade by the Radio Schrammel Orchestra. Interlude by Hanna Rodweg (Songs). 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTTODEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 815 kc/s, 368.1 metres; Hamar, 542 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 622 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.

AUGUST 27th

SUNDAY

continued

10.50 a.m., Chimes. 11.0, Divine Service from the Garrison Church. 1.0 p.m., Report of the Light Athletics Championship, relayed from the Bislet Stadium. 5.15, Gramophone Concert. 6.15, Agricultural Talk. 6.45, Song Recital by Roi Tellauder. 7.15, Weather and News. 7.30, Talk. 8.0, Time Signal. 8.1, Concert by the Station Orchestra, conducted by Kraum. Overture, The Bohemian Girl (Balfe); Military Symphony (Haydn); Danse macabre (Saint-Saëns); Three Norwegian Melodies (Grieg); Symphonic Poem, The Moldau (Smetana); Norwegian Rhapsody (Lalo). 9.20, Dialogue. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Report on the Trotting Races at the Bjerkeban. 10.20, Light Music. 10.50, Dance Music on Gramophone Records. 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 to 2.0, Light Music. In an interval at 1.30, Time, Announcements, and Weather. 5.30 to 6.30, Gramophone Music. 8.0, Dop-lavoro Notes, Giornale Radio, and Sports Notes. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. Symphony Concert, conducted by La Rosa Parodi. 10.20, 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. 1.15, Weather. 1.30 to 2.30, Concert by The Jean Ibois Orchestra. Amoret-tänzle (Gungl); Melody (Bach); Chanson bohémienne (Baldy); Wiener Bonbons (Joh. Strauss); Selection from Le roi s'amuse (Delibes); Arabesque (Debussy); Peer Gynt Suite (Grieg); Turkish March (Mozart). 6.45, Le Journal Parlé. 8.30, Gramophone Concert. Part I: Extracts from Faust—Opera (Gounod). Part II: Variety Music. 10.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—10.0 a.m., Gramophone Music. 10.20, Sponsored Concert. 11.0, Sponsored Programme. 11.30, Organ Recital. 12.15 p.m., Sponsored Concert of Sound Film Music. 12.45, Sponsored Programme. 12.50, Half-an-Hour of Fantasy by Paul Weill. 1.30, Sponsored Programme. 2.0, Interval. 7.0, Journal Parlé. 7.5, Sports Notes. 7.15, Gramophone Music. 7.30, Catholic Review. 8.0, Les deux pêcheurs—One Act Operetta (Offenbach). 8.30,

Recital of Beranger's Lyrics by Louis Morot. 9.10, Concert by the Ray Ventura Orchestra and Soloists, relayed from the Casino, Beauville 11.0, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—7.45 a.m., Gramophone Music: A Trip on the Volga (Borelert); Ambade printanière (Lacombe); Danse (Gramadas); Pas des échappés (Chaminade). 8.0, Press Review and Weather. 8.30, Physical Culture. 12 Noon, Address by the Reverend Father Pade: Divine Providence. 12.20 p.m., Sacred Music: The Lord's Prayer (Bussy); Paris Angelicus (Frank). 12.45, Gramophone Concert. 5.30, Gramophone Music. 6.0, Variety Concert. 7.0, Concert of Popular Music. 8.0, Music Hall Programme on Gramophone Records. In the intervals at 8.30, News, Sports Notes and Weather, and at 9.15, Press Review and News. 10.30 to 11.15, Programme in English by the I.B.C. Orchestral Concert: Overture, Light Cavalry (Suppé); Stay out of my Dreams (Petkera); Selection of Wilfred Sanderson's Songs; Selection from White Horse Inn; Frühlingsstimmen (Strauss); Musical Comedy Switch (arr. Hall); Selection from The Arcadians (Monckton); In a little Second-hand Store (Nelson); Old Faithful March (Holzmann).

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relay by W3XK on 48.86 metres and 25.27 metres.—5.15 to 6.15 p.m., Radio City Concert, from New York. 7.0, Boys of Wynne-castle. 7.15 to 10.0, New York Relay. 7.15, Radio Forum. 7.30, Variety Concert. 8.0, National Opera Concert. 9.0, Gould and Shelter. 9.15, Symphonette. 9.30, Organ Recital. 10.0, Vesper Services. 11.0, News, followed by Among Masters. 11.15, Weather and Sports Results. 11.30, Jack Pettis' Orchestra. 12 Midnight to 1.30 a.m. (Monday), New York Relay. 12 Midnight, Borah Minnevitich. 12.15, Jules Langle. 12.30, Wisdom of the Ages. 1.0, Concert. 1.30, Pathé News of the Air. 1.45 to 4.0, New York Relay. 1.45, Floyd Gibbons. 2.0, Gulf Headliners. 2.30, Goldman Band. 3.30, Orchestral Concert.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW. 12.15 p.m., Military Band Concert. 1.30 to 1.45, Agri-

cultural Talk. 4.0, See Bratislava. 5.30, Gramophone Music. 6.0, German Transmission: Review of the Musical Programme of the Czechoslovak Broadcasting Stations. 6.15 (approx.), Die Abreise—Opera in One Act. (d'Albert). After the Programme, News. 7.0, News. 7.5, See Moravská-Ostrava. 7.55, Talk by E. Bohuslav, the Blind Actor: My Reminiscences. 8.10, Concert by the Czech Teachers' Choral Society, conducted by Anton Bednar. 9.0, Concert from Kosice, 1,022 kc/s, 293 metres. 10.0, Time and News. 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.—9.40 a.m., Chimes. 9.45 (from Lausanne), Protestant Service, relayed from the Chapelle des Terreaux. 11.0 (from Lausanne), Gramophone Concert. Part I: Requiem Mass (Verdi), by the Choirs, Soloists and Orchestra of the Scala, Milan. Part II: The Pastoral Symphony (Beethoven), by the Berlin Opera House Orchestra. 12.30 p.m., News and Weather. 12.40 (from Lausanne), Gramophone Concert 2.0 to 3.30, Interval. 3.30, Programme for Children. 5.30 to 7.0, Interval. 7.0 (from Lausanne), Religious Address. 7.45, Sunday Sports Talk. 8.0, Concert by the Radio-Suisse Romande Orchestra, conducted by Echemard. 9.0 (from Lausanne), Recitations. 9.25 (from Lausanne), Dutch Song Recital by Mlle. Maria de Petit. 9.50, News and Weather. 10.0 (from Zürich), Report on the Cycling Tour of Switzerland. 10.30 (approx.). Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—12.40 p.m., Weather Report. 1.0, Divine Service Relay. 5.30, Afternoon Concert. 8.45, Programme for Children. 9.30, Weather Report. 9.40, Musical Programme. 10.0, Chimes and News. 10.30, Reading. 11.0, Pianoforte Concerto in B flat minor (Tchaikovsky) on Gramophone Records, followed by Dance Music. 2.5 a.m. (Monday), 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, from 5.0 p.m.—10.0 a.m., News, Sports Notes and Amusement Guide. 10.30 Agricultural Report. 10.45, Bible Reading. 11.0 to 12 Noon, and 12.30 to

1.45 p.m., See Turin. 1.45, Gramophone Music. 2.0, Time and Announcements. 5.0 (Naples), Programme for Children, Shipping and Sports Notes. 5.15 to 6.30, Vocal and Instrumental Concert. Sports Notes and Weather in the intervals. 7.30, Sports Notes and News. 8.0, Time and Announcements. 8.30, Sports Notes. 8.45, Variety Concert. 10.55, News.

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.—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. to 3.45 a.m. (Monday), New York Relay. 12.45, Russian Symphonic Choir. 1.0, Variety Programme. 2.0, Manhattan Merry-Go-Round. 2.30, American Album of Familiar Music. 3.0, Popular Programme. 3.15, Impressions of Italy. 3.45, Sunday at Seth Parker's, 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.—10.0 a.m. (from Berne), Protestant Service. 10.45 (from Berne), Old and New Sacred Music. 11.25 (from Berne), Bach Orchestral Music on Gramophone Records. 11.30 (from Berne), Literary Programme. 12.0 Noon (from Berne), Programme of Marches of the Nations. 12.30 p.m., Time, Weather and News. 12.40 (from Zürich), Concert by the Station Orchestra, conducted by Neppach. 2.30-5.0, Interval. 5.0 (from Berne), Programme to be announced. 5.30 (from Berne), Gramophone Concert, Part I: Requiem (Mozart); Part II: Mozart Song Recital. 6.30 (from Berne), Programme to be announced. 7.0 (from Berne), Time and Sports Notes. 7.10 (from Berne), Pianoforte Recital by Emmy Zopf. 7.40 (from Berne), Talk: How the Lake of Biene was discovered. 8.0 (from Berne), Programme to be announced. 9.0, News. 9.10 (from Berne), Programme to be announced. 9.45 (from Berne), Dance Music. 10.15 (from Berne), Sports Notes.

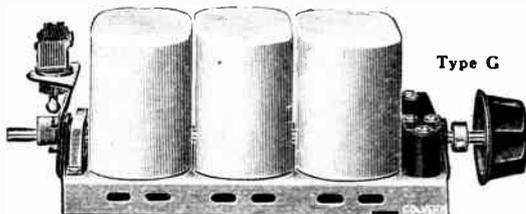
SOTTENS.—See Radio-Suisse Romande.

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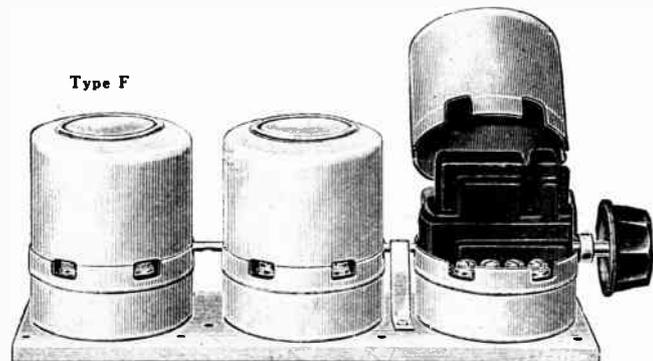
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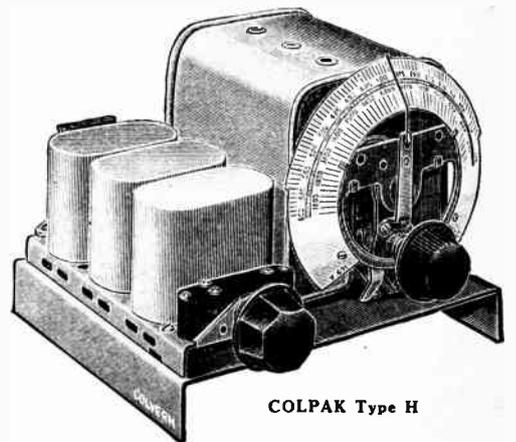
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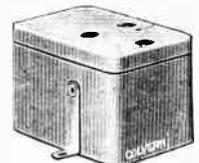
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AUGUST 27th

SUNDAY

continued

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STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—10.0 a.m., Protestant Address in German, from the Church of St. William. 11.0, Sacred Music on Gramophone Records. 11.30, Catholic Service in French. 12 Noon, Light Music on Gramophone Records. 12.45 p.m., News. 1.0, Time Signal. 1.2, Variety Music on Gramophone Records. 2.0, Dance Music on Gramophone Records. 3.0 to 3.30, Interval. 3.30, Orchestral Concert from the Casino, Vichy. Conductor: M. Brouillac. Overture, Le songe d'une nuit d'été (Thomas); Ballet and Theme with Variations from Coppélia (Delibes); Ballet Music from Le Cid (Massenet); Soloist Item; Violin Solo: Meditation from Thaïs (Massenet); Selection from The Prophet (Meyerbeer); Invitation to the Waltz (Weber-Berlioz). 5.0, Gramophone Music. 5.15, Orchestral Concert of Variety Music, conducted by Roskam. 6.0, Medical Talk. 6.15, Talk on Sport. 6.30, Pianoforte Recital. 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in German. Lottery Results and News. 8.30, Dramatic Programme in French: (a) Le Démon Jeu—Play in One Act (Henri Picard). (b) En attendant le train—Play in One Act (Jean Boydeaux). (c) Jeanne-Rose—Play in One Act in Verse (Alida and Pierre Cabel). (d) Ainsi soit-il—Play in One Act (Jean Boydeaux). 10.30, Press Review in French and News. 10.35, Dance Music from the Savoy. 12 Midnight, Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—11.0 a.m., Radio Report of the Round Germany Flight, 1933, from the Böblingen Aerodrome. 11.30, See Leipzig. 12 Noon, See Berlin (Funkstunde). 1.50 (from Karlsruhe), Accordion Recital. 2.30 (from Karlsruhe), Agricultural Talk. 3.0, Ländler aus Berchtesgaden, Op. 46 (Adolf Jensen) by Kurt Abbrecht (Pianoforte). 3.30, See Frankfurt. 4.30, See Leipzig. 5.40, Report of the Motor Cycle Races from Hockenheim (on Gramophone Records). 6.0 (from Pforzheim), Concert by the Pforzheim Symphony Orchestra, conducted by Hans Leger: Overture, The Flying Dutchman (Wagner); Selection from Preciosa (Weber); Andante cantabile (Tchaikovsky); Romance (Kempter); Intermezzo from Cavalleria rusticana (Mascagni); Selection from I Pagliacci (Leoncavallo). 7.0, News. 7.30, Reading from Jobiade (Karl Arnold Kortum). 7.50, Aida—Opera in Four Acts (Verdi) on Gramophone Records. 10.20, Time and News. 11.0 (approx.), Programme from Berlin (Funkstunde). 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—11.0 a.m., Dance Music. 11.30, Music by a Viennese Orchestra. 11.45, Light Music. 12 Noon, Military Music. 12.15 p.m., Operetta Airs. 12.30, News. 12.45, Opera Music. 1.0, Amusement Guide and Market Prices. 1.5, Sound Film Music. 1.15, Instrumental Solos. 1.30, Orchestral Music. 1.45, Opera Music. 2.0, Programme by a Symphony Orchestra. 2.30, Chansonnettes. 2.45, Agricultural Report. 3.0, Symphonic fantastique (Berlioz). 3.30, Programme by a Viennese Orchestra. 3.45, Opera Music. 4.0, Hunting Horn Solos. 4.15, Orchestral Music. 4.30, Operetta Airs. 4.45, Organ Solos. 5.0, Dance Music. 5.45, Accordion Solos. 6.0, News. 6.15, Orchestral Music. 6.30, Opera Airs. 6.45, Military Music. 7.0, Songs for Choir. 7.15, News. 7.30, Opera Airs. 7.45, Light Music. 8.0, Operetta Music. 8.15, Sound Film Music. 8.30, Violin Solos. 8.45, Programme by a Symphony Orchestra. 9.0, Concert Version of Thaïs—Opera (Massenet). 10.0, Music by a Viennese Orchestra. 10.15, News. 10.30, Concert for Listeners in Morocco. 11.0, Readings. 11.15, Orchestral Music. 11.45, Chansonnettes. 12 Midnight, News. 12.5 a.m. (Monday), Programme by an Argentine Band. 12.15, Light Music. 12.30, Close Down.

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 to 11.40, Agricultural Talk. 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, 599 kc/s, 506.8 metres.—9.40 to 9.55 a.m., Giornale Radio. 10.40, Agricultural Notes. 11.0, Mass from the Church of the Annunciation, Florence. 12 Noon to 12.15 p.m., Bible Reading. 12.30, Orchestral Concert. In the interval at 1.0, Time and Announcements. 1.30, Sponsored Music. 1.45 to 2.0, Gramophone Music. 4.30, Orchestral Concert. Sports Notes in the Interval. 6.15, Weather, and Gramophone Music. 6.30 to 6.45, Giornale Radio and Sports Notes. 7.0, Time and Dopplavoro Notes. 7.10, Gramophone Concert. 8.0, News, Giornale Radio, and Sports Notes. 8.20, Talk on the following Transmission. 8.30, Extracts from La grotta di Trofonio—Opera-Comique in Two Acts (Antonio Salieri). 9.20, Talk on the following Transmission. 9.30, Emiral (Barilli). 10.20, Talk on the following Transmission. 10.30, Extracts from (c) L'occasione fa il ladro—Opera in One Act (Rossini). In the intervals, Talk and Theatre Notes. After the Programme, 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 in connection with the Twenty-fifth Anniversary of the German-Austrian National Costume Society, relayed from Salzburg. 12 Noon, Symphony Concert by the Wiener Symphoniker, conducted by Dr. Hans Pless. Soloist: Hedda Ballon (Pianoforte). Symphony No. 2 in D, Op. 36 (Beethoven); Fantasia in G for Pianoforte and Orchestra (Tchaikovsky); Overture, Russian and Ludmilla (Glinka). 1.15, Concert of Light Music by the Wiener Symphoniker, conducted by Josef Holzer. 1.50, Time and Announcements. 2.10, Agricultural Talk. 2.30, Radio Report of Procession of the German-Austrian National Costume Society, relayed from Salzburg. 3.0, Chamber Music by the Gottesmann Quartet: String Quartet in D (Mozart); String Quartet in B flat, Op. 18, No. 6; Movement from the String Quartet in C Minor (Schubert). 4.0, Inauguration and Blessing of the New Haydn Organ in the Monastery Church of the Barmherzigen Brüder. 4.40, Review of Books. 5.5, Concert from Bad Hall. 6.30, Reading (Franz Joseph Engel). 6.55, Pianoforte Recital by Helen Perkin: Sonata in C (Scarlatti); Tocata on the Call of the Cuckoo (Pasquini); Arlequin (Couperin); Ertöt' uns durch dein' Güte (Bach-Rummel); Reflets dans l'eau (Debussy); Four Preludes (Helen Perkin). 7.35, Time and News. 7.45, Volk in Not—a German Epic of the Napoleonic Period, arranged by Karl Schönherr, from the Poems of Austrian Poets. 10.0, Time and News. 10.15, Concert of Light Music by the Wiener Symphoniker, conducted by Josef Holzer.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—10.0 a.m., Programme Announcements. 10.5, Divine Service, relayed from Poznan, 896 kc/s, 335 metres. After the Programme, Sacred Music on Gramophone Records. 11.57, 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 Szule; Soloist, Marie Wilkomirska (Pianoforte); Symphony No. 1 in G Minor (Kalinnikow); Overture, In the Tatra (Zelenski); Polish Fantasia (Paderevski); Spanish Caprice (Rimsky-Korsakov). 2.0, Talk for Fruit-Growers. 2.15, Agricultural Report and Weather Forecast. 2.20, Popular Music on Gramophone Records. 2.45, Veterinary Talk. 3.5, Popular Music on Gramophone Records. In the interval, News. 4.0, Topical Talk. 4.15, Programme for Children. 4.30, Bass Solos by Gochel-Tarnawa. 5.0, Talk. 5.15, Popular Polish Music by the Rail-way Symphony Orchestra and Silesian Chorus, relayed from Katowice, 734 kc/s, 408 metres. 6.0, Light Music on Gramophone Records. 6.35, Programme Announcements. 6.40, Miscellaneous Items. 7.0, Dramatic Programme, relayed from Lwow, 788 kc/s, 381 metres. 7.40, Answers to Technical Correspondence. 8.0, Concert by the Station Orchestra, conducted by Oziminski; Soloist, Michalowski (Bass); March from Aida (Verdi); Selection from The Barber of Seville (Rossini-Schreimer); Three Songs (Schubert); Two Songs: (a) La Priere (Moniuszko), (b) L'Angelus (Zelenski); Ballet Suite from Faust (Gounod); Walpurgis Night (Mendelssohn). 8.50, Radio Journal. 9.0, Programme from Lwow. 10.0, Dance Music. 10.25, Sports Notes. 10.40, Aviation Weather Report and Police Notes. 10.45, Dance Music (contd.).

ZURICH.—See Schweizerischer Landessender.

MONDAY

AUGUST THE TWENTY-EIGHTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL LONDON REGIONAL MIDLAND REGIONAL NORTH REGIONAL WEST REGIONAL SCOTTISH REGIONAL BELFAST** "The Mulberry Bush," a play, by E. M. Delafield. Promenade concert from Queen's Hall.
- Orchestra programme.
- "Both Sides of the Picture." What holidays mean to the manageress of a seaside hotel.
- Vocal and instrumental recital.
- Orchestral concert.
- Orchestral concert.

ABROAD

- BARI** 8.45 p.m. Opera: "Don Pasquale," by Donizetti.
- BUCHAREST** 8.0 p.m. String Quintet (Op. 77), by Dvorak, played by the Metzner Quintet.
- COPENHAGEN** 8.1 p.m. Modern operetta music, by the Station Orchestra.
- HEILSBURG** 8.5 p.m. Schubert's "Trout" Quintet in A (Op. 114), by the Brunier Quartet.
- HILVERSUM** 7.40 p.m. Orchestral concert, conducted by Manks.
- LEIPZIG** 10.45 p.m. The Symphony Orchestra, conducted by T. Blumer.
- STRASBOURG** 8.45 p.m. Gala concert from Vichy.
- STUTTGART** 9.20 p.m. Schubert's Trio in B flat (Op. 99), from Freiburg.
- TOULOUSE** 8.45 p.m. Concert version of opera "Cavalleria Rusticana," by Mascagni.
- TURIN** 10.0 p.m. Concert of chamber music.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.25 p.m., Organ Recital by Ledvina, relayed from the Franciscan Church; Choral (Honegger); Choral (Joncén); Grand Sonata in C Minor, Op. 80, No. 5 (Guilmant). 6.55, Talk for Housewives. 7.0, See Prague. 7.10, See Brno. 8.0, See Moravská-Ostrava. 8.45, See Prague. 10.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW.—Relayed by Gliwitz, 1,184 kc/s, 253 metres.—1.0 p.m., Weather. 1.5, Gramophone Concert of Music by the Great Masters. 1.45, Time and News. 2.5, Gramophone Concert of Light Music. 3.0, Market Prices. 3.20, Review of Books on War. 3.40, Reading: An Old Cab. 4.0, Concert by the Station Orchestra, conducted by Bruno Janz, soloist; Elfriede Nidner (Soprano); Overture, Ilka (Doppler); Ballet Suite (Gyldenmark); Three Songs (Grieg): (a) Zur Rosenzeit, (b) Die Prinzessin, (c) Ein Selwan; Waltz, Kroll's Balklänge (Lunbye); Aquarellen-Waltzer (Joh. Strauss); Four Songs (Grieg): (a) Ich liebe dich, (b) Letzter Frühling, (c) Hoffnung, (d) Die alte Mutter; Rhapsody in C (Dobnanyi); Three Songs (Grieg): (a) An das Vaterland, (b) Guten Morgen, (c) Bros; Overture, Semiramis (Rossini). 5.30, Weather. 5.32 (approx.), Talk on German Culture. 5.50, Topical Talk. 6.10, Talk The German Dentists' Conference at Breslau. 6.30, Talk: The Silesian Peasant. 6.50, Weather, News and Market Prices. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Extracts from Don Cesar—Opera-Comique (Delinger). 9.0, General News. 9.10, Concert by the Silesian Philharmonic Orchestra, conducted by Ernst Prade and the Radio Choir. Soloists: Käthe Heibig (Soprano), Herbert Heldrich (Tenor), and Gerhard Bertrammer (Baritone). A Faust Overture (Wagner); Idyll—Romantic Cantata for two Solo Voices, Choir and Wind Instruments (Streeck); An die Natur—Cantata for Mixed Choir, Soprano, String Orchestra and Pianoforte (Düster). 10.0, Time and News. 10.20, Wireless Technical Talk. 10.30, Talk: The Black Forest. 10.50, Talk: Eliminating Wireless Disturbances. 11.0 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—7.10 p.m., Concert by Petr Nevald and his Village Band. 8.0, See Moravská-Ostrava. 8.45, Song Recital by Marie Flalová (Coloratura-Soprano); Waltz, Diva (Alberto); Bolero from Sicilian Vespers (Verdi); Pearl Waltz (Arditi). 9.10, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Manon—Opera (Massenet) on Gramophone Records. In the interval at 1.0 p.m.,

Le Journal Parlé. 5.0, Concert by the Station Symphony Orchestra, conducted by Kumps; Overture, Tartuffe (La Gueye); Fete polonoise (Chabrier); Poeme heroique (Joncén); Humorous piece (Caludi); Ballet of the Seasons (Verdi). 6.0, Talk on the Battle of Charleroi with Soldier's Songs. 6.30, Sonata for Violin and Pianoforte, followed by Walloon Airs on Gramophone Records. 7.15, Walloon Report. 7.30, Film Review. 8.0, Concert by the Station Orchestra, conducted by Walpot; Marche heroique (Saint-Saëns); Valse des Blondes (Ganne); Lonsties on fete (Marsiek); Violin Solo; Serenade gracieuse (Collin); Three Pieces for Small Orchestra (Mawet). 9.0, Concert, relayed from the Kursaal, Ostend. After the concert, Le Journal Parlé, followed by Dance Music by Robert Kers and his Cabaret Kings and the Orquesta tipica de tangos Argentinos, relayed from the Kursaal, Ostend.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Meistofele—Opera (Boito) on Gramophone Records. In the interval at 1.0 p.m., Le Journal Parlé. 5.0, Concert by the Radio Orchestra, conducted by Walpot; Selection from Milenka (Blockx); Waltz, Frühlingstimmen (Strauss); Overture, The Nuremberg Doll (Adam); Air (Kettelbey); Selection from Madame Butterfly (Puccini); Girl (Poot). 5.45, Programme for Children. 6.30, Gramophone Records: Waltz from Les Cent Vierges (Lecocq); Cydalise et le Chevre-Pied (Pierce); La Proposition Nocturne (Rabaud); Impressions of Damascus (Koutgell). 7.15, Talk for Ex-Servicemen. 7.30, Pirreke Pierrewit. 8.0, Concert by the Station Orchestra, conducted by Kumps; Overture, Mignon (Thomas); Minuet (Boccherini); Tarantella (Rossini); Suite, The Flute of Sans-souci (Graener); Serenade (Gilson); Dance (de Boeck); Scene and Waltz from Gretina Green (Guirand). 8.45, Notes on Stamp Collecting. 9.0, Concert, conducted by Candel, with Songs by the Belgian Vocal Trio, relayed from the Casino, Knocke; Flemish Fantasia (Strauven); Nocturne fantasque (De Schrijver); Trio from William Tell (Rossini); Hungarian Dances (Brahms); Songs; Overture, Light Cavalry (Suppé). After the concert, Le Journal Parlé, followed by Dance Music by the Mickey's Club Jazz Attraction, relayed from the Casino, Knocke.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: March (Blon); Waltz (Lineke); Overture-heroique (Pitru); Selection from André Chénier (Giordano); Selection from Gasparone (Müllacker); Cockney Suite (Kettelbey); Réve angélique (Rubinstein); Souvenir de Bitolie (Karastoyanov); Russian Dance No. 3

(Bullerian). In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Gramophone Music. 7.40, Educational Talk. 8.0, String Quintet, Op. 77 (Dvorak) by the Metzner Quintet. 8.30, Talk. 8.45, Harp Recital. 9.10, Orchestral Concert, relayed from the Iordachesco Restaurant.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.20 p.m. till Close Down.—4.0 p.m., Programme for Women. 5.0, Concert by the Racz Cigany Band. 6.10, Reading. 6.40, Cello Recital by Wilhelm Palotai. 7.20, Variety Programme by Alexander Pethes and Georg Denes. 8.0, See Vienna. 9.30, News. 9.50, Concert by the Lajos Veres Cigany Band relayed from the Café Ostende. Soloist: Paul Kalmár (Folk Songs). 11.0, Dance Music from the Hotel Royal.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.—Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time Signal and Chimes from the Town Hall. 12.5 p.m., Concert by the Max Skalka String Ensemble, relayed from the Hotel d'Angleterre. 2.0, Interval. 2.50, Talk for Housewives. 3.0, Concert by the Station Orchestra, conducted by Launy Gröndahl. Soloist: Ellen Margrethe Harvey-Samuel (Pianoforte). American Patrol (Mencham); Prelude to Hansel and Gretel (Humperdinck); Waltz, Mein Lebenslauf ist Lieb und Lust (Jos. Strauss); Songs from Shakespeare's Time (arr. Borch); Albumblatt (R. Strauss); Slav March (Morena); Pianoforte Solo: Gaspard de la nuit (Ravel); Overture (Kuhlau); Potpourri (Sealabrini); Waltz (Labitzky); Skumringssaug (Bärresen); Movement from the Suite, Landlige Billeder (Glass); Jubilee March (Allin). 5.0, Gramophone Concert. 5.30, Exchange and Fish Market Prices. 5.45, Talk. 6.15, Elementary English Lesson. 6.45, Announcements. 6.54, Wireless Notes. 7.0, News. 7.15, Time Signal. 7.30, Talk: The Importance of Gymnastics for Children. 8.0, Time Signal from the Town Hall. 8.1, Concert of Modern Operetta Music by the Station Orchestra, conducted by Emil Reesen. March (Hirsch); Selection from Bitter Sweet (Coward); Selection from The Three Musketeers (Friml); Apache Dance from Paula macht alles (Raimann); Waltz from The Carnival Fairy (Kálmán); Selection from Smebeams (Gershwin); Fox-trot from Die tolle Lola (Hirsch). After the concert, Weather. 9.0, A Visit with the Microphone to a Poultry Farm. 9.20, Recital by Famous Singers, on Gramophone Records. 9.50, Reading. 10.10, News. 10.25, String Quartet in E flat, Op. 127 (Beethoven), by the Brenning-Bache Quartet. 11.5 (approx.), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—6.35 p.m., Pianoforte Recital: Chaconne (Bach-Busoni); Four Preludes (Chopin): (a) in C sharp minor Op. 45, (b) in B Op. 28, (c) in B flat, (d) in F sharp; Barcarole (Chopin); Minuet (Suk); Rhapsody (Dobnanyi); Reflets dans l'eau (Debussy); The Juggler (Tsch). 7.20, Miscellaneous Items and News. 7.35, Programme Announcements. 7.40, See Warsaw. In the intervals at 9.0 and 10.25, News and Sports Notes. 11.0 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m. to 12 Noon, Programme in English by the I.B.C. 11.0 a.m., The Philco Happy Hour. Part I, Orchestral Music: Signature Tune; The Dwarf's Patrol (Rathke); My Lady Dainty (Hesse); Die Spieluhr des Pompadours (Noack). Xylophone Solo: On the Track (Simpson); Spanish Serenade (Herbert); Chinese Serenade (Herbert); Pan and the Wood Goblins (Rathke); Moss Rose (Bose); Selection from The Gypsy Princess (Kálmán). Part II, Dance Music: The Shadow Waltz; That's what life is made of; I've got to sing a Torch Song; Spanish Eyes; The Old Spinning Wheel; Look what I've got; Waltzing in a Dream; In the Park in Páree; Signature Tune. 12 Noon, French Programme. 4.30 to 6.0, Programme in English by the I.B.C. 4.30, The Nursery Corner: Music, Story, and Birthday Greetings. 5.0, Military Band Concert for Chichester and Boggor Listeners: Signature Tune, Night by the Sea; The Mad Major (Alford); Selection, More Melodious Memories. Part I, Xylophone Solo: Overture, Light Cavalry (Suppé); L'entente cordiale (Allier); Selection from Floradora (Stuart). Xylophone Solo: Xylophonia (Greer); Serenade (Heykens); Cupid's Army (Ibañez). 5.30, Concert for Hastings and Eastbourne Listeners: Selection from Music in the Air; Jolly Good Company; Songs, Letting in the Sunshine (Gay). Pianoforte Solo: Still I Love Her (Gaskill); Cuban Serenade (Herbert); Eastern Serenade (Herbert). Song: I raised my Hat (Pola); The Song of the Nightingale (Albouth); Pale Volga Moon (O'Hagan); Signature Tune. 6.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. Dance Music by the Theolians: Signature Tune, Bells of Normandy; In the Park in Páree;

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.30, Time, Weather, Stock Report and Gramophone Music. 6.0, Programme for Children. 6.45, News. 7.0, Gaelic Talk. 7.15, Talk: A Caravan Tour in the West of Ireland. 7.30, Time Signal. 7.32, The Station Orchestra. 7.50, Mezzo-Soprano Solos by Elizabeth Downey. 8.5, A Sketch by Mai Neville and Company. 8.35, The Station Orchestra. 8.55, Variety Programme by T. C. Earls and A. J. Thornton. 9.15, Traditional Songs by Patrick Parle. 9.30, Fiddle and Accordion Solos by Harpur and Bates. 9.45, Sponsored Programme. 10.45, News and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Radio Trio. Selection from Madame Butterfly (Puccini); Gavotte (Lully); English Doll (Gillet); Largo, from Xerxes (Handel); Serenade from Don Giovanni (Mozart); Nocturne from Cocorico (Ganne); Selection from Lilac Time (Schubert). 8.0, Request Gramophone Records. 8.20, Sports Notes. 8.30, Exchange and Talk. 9.0, Gramophone Music and News. 10.0, Chimes, Weather and Exchange. 10.5, Humorous Review of the Week's Events in Verse. 10.15, Concert by the Radio Orchestra. 11.0, Soprano Song Recital by Raimunda Llorc. Air from La Mascotte (Audran); Aria from Lakmé (Delibes); Ständchen (Schubert); Aria from The Magic Flute (Mozart). 11.30, Dance Music from the Casino San Sebastian. 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 Report, Tourist Talk and Dopolavoro Notes. 8.20, News in Albanian. 8.25, Giornale Radio. 8.30, Time and Announcements. 8.35, Weather. 8.45, Don Pasquale—Opera in Three Acts (Donizetti). In the intervals, Theatre Notes and Miscellaneous Announcements. After the Opera, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—5.55 p.m., Time Signal and Programme Announcements. 6.0, Yugoslav Songs. 6.30, Recitations. 7.0, Rimsky-Korsakov and Glinka Songs by the Glinka-Russian Choir. 7.30, Violin Recital by Andrija Hauser: Violin Concerto No. 2 (Wieniawski); Waltz Caprice (Wieniawski); Mazurka (Bartók); Souvenir of Moscow (Wieniawski). 8.15, Serbian Songs. 8.45, Concert by the Station Orchestra. 10.10, Time Signal and News, followed by Cigany Music from the Rudnicanin Restaurant.

BERLIN

DEUTSCHLANDSENDER (REICHSENDER), 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert—Famous Choirs. 3.0, Talk for Women. 3.30, Weather and Exchange. 3.45, Review of Books—Legends of the German Race. 4.0, Concert from Breslau. 5.0, Talk: Scandinavia—Germanic Legends. 5.25, Concert of Music by Max Anton; The Deutschlandsender Chamber Orchestra, conducted by the Composer; Soloists, Rudolf Peterka, Gertrud Baumann (Songs), and Paul Eggert (Pianoforte); Pianoforte Pieces (Max Anton); Three Songs from the Japanese Song Cycle; String Trio in E (Geyerhaas). 6.0, Poems. 6.5 (approx.), Dialogue on Sport. 6.25, Relay from the Radio Exhibition. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Today's Motto. 8.2 (approx.), Concert from Stuttgart. 9.0, Diensthare Geister (Ministering Spirits)—A Radio Sequence (Gerte Illing). 10.15, Weather and News. 10.45, Weather. 11.0, Concert from Hamburg. 12.30 a.m. (Tuesday) (approx.), Close Down.

BERLIN

(FUNKSTUNDE), 715 kc/s, 419.5 metres; 1.5 kW.—6.15 p.m., Goethe-Lieder—Song Recital by Jennie von Thillo (Soprano). 6.40, The Funkstunde informs its Listeners... 6.45, Topical Talk. 7.0, Transmission for all German Stations relayed from Hamburg. 8.0, Lottery Announcements. 8.5, Unfamiliar Parts of Berlin—A Radio Report (on Gramophone Records). 8.30, The Eroica Symphony in E flat, Op. 55 (Beethoven), by the Station Orchestra, conducted by Otto Frickehöfer. 9.15, Goethe Memorial Programme by the Station Orchestra, conducted by Otto Frickehöfer. Talk; Poems; Scenes from Egmont—with Music by Beethoven. 10.0, News. 10.15 (approx.), Dance Music from the Zoological Gardens. In the interval from 11.0 to 11.5, Topical Talk.

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, News and Racing Results. 7.35, Talk: Bordeaux a Century Ago. 7.50, News. 8.5, Gramophone Concert. 8.45, Gala Concert, relayed from the Salle des spectacles, Vichy (see Strasbourg).

AUGUST 28th

MONDAY

continued

Castles in the Sand; I'll do my best to make you happy; When my little Pomeranian met your little Pekinese; My Darling; Memories of your Waltz; Peter, Peter, Stormy Weather; Let's put out the Lights; In the Valley of the Moon; My Woman; I can't remember; Selection from The Cat and the Fiddle (Kern); All over Italy; Hiawatha's Lullaby; Live, love and laugh; Signature Tune. 11.0, Talkie Time. Music and Up-to-date Review of Films: Moon Song from Hello Everybody; You're getting to be a Habit with me, from Forty-Second Street; You don't understand, from Falling for You; One little Drink, from The Song of the Flame; Come out Vicma, from Waltz Time; There's something about a Soldier, from Soldiers of the King; I got Rhythm, from Girl Crazy; Selection from The Crooner. 11.30, Club Concert for Cheltenham Listeners. Part I. Gramophone Records: Signature Tune, Clum Song; Veterans of Variety, Part I; A Radio Roundabout, Part I (arr. Koock); Dance of the Sylphs (Berlioz); Mazurka (Wieniawsky); The Vagabond (Vaughan Williams). Clapham and Dwyer: Making a Talkie; by the Blue Hawaiian Waters (Ketebe); Selection from Patience (Sullivan). 12.5 a.m. (Tuesday), News Bulletin in English. 12.10 (approx.). Club Concert. Part II. Tango Band: Adios Muchachos; Cordeob; Tanga Hispana; Paso doble Flora Castellana; Luz de Granada. 12.30, Dance Music (Electrical Transcription): Sittin' in the Dark; Hyde Park Corner; That's my Home; What a Lady Josephine must have been; Farewell to Arms; Little Miss Muffet; Her Name is Mary; Out in the Open. 1.0, Dance Music by the Ibcollans: Signature Tune, Bells of Normandy; You've got me; Put on your Old Gray Bonnet; Sweetness; Whispering; My favourite Band; Rocky Road; Music hath Charms; Sadie the Shaker; Give me a Tune; Loving them all; This is my Love Song; I got Rhythm; With Summer coming on; Sylvia; Just another Dream of You; I wake up smiling; Signature Tune. 1.57, I.B.C. Goodnight Melody. 2.0 (approx.). Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Relayed by Casel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., See Munich. 5.45, Economic Notes. 6.0, Talk: Edward Burne-Jones for the Centenary of his Birth. 6.30, Variety Item. 6.45, Topical Talk. 6.50, Time and News. 7.0, Transmission for German Stations, relayed from Hamburg. 8.0, Concert of Opera Music by the Radio Orchestra, conducted by Hans Koschard. Soloist: Emmy Bettendorff (Soprano). 9.25, Literary Programme. 9.45, Pianoforte Recital. Humoresque in G Minor, Op. 20, No. 5 (Reger); Norwegian Wedding March, Op. 19, No. 2 (Grieg); Ballad, No. 1 in G Minor (Chopin); La Campanella (Paganini-Liszt). 10.15, Time and News. 10.45, See Leipzig.

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, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Gramophone Music. 6.15, The Birth of a Village—Radio Report from Rütben bei Lübb. 6.45, Exchange. 6.50, Weather. 7.0, Transmission for all German Stations. The Hamburg Coat-of-Arms—Radio Play (Walter), with music by the Station Choir and Orchestra. 8.0, Political Address. 8.10 (from Bremen), Concert of German Songs, by the Eintracht Choral Society. 9.10, Relay from the Hamburg State Theatre. 9.50, Topical Talk. 10.0, Time, Weather and News. 10.20, Pianoforte Music a Century Ago—Recital by Werner Schröter. Rondio in E flat (Hummel); Three Etudes from Op. 2 (Henselt); Romance from the Sonata Op. 125 (Spohr); Polacca brillante (Weber); Perpetuum mobile (Weber). 10.50, (from Kiel), Concert by the Orchestra of Unemployed Musicians, conducted by Hans Döring. March (Gehrmann); Overture, Martha (Plotow); Waltz, Lustige Brüder (Vollstedt); Mazurka (Apricico (Millöcker); Song, Noch sind die Tage der Rosen (Baumgartner); March (Zimmer); Selection from Gri-Gri (Lincke); Schlager Potpourri (Borchert); Indigo March (Strauss).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 562 kc/s, 453.2 metres.—1.5 to 2.30 p.m., Gramophone Concert. In the intervals at 1.20 and 2.0, News. 3.0, Market Prices. 3.30, Lieder Recital by Werner Giesevis. Songs (Richard Trunk): (a) Ecce homo, (b) An die Liebe, (c) Die Stadt, (d)

Schmerz. Songs (Schumann): (a) Der Knabe mit dem Wunderhorn, (b) Dein Angesicht, (c) Ich wahne nicht, (d) Geständnis. 4.0, Concert by the Small Radio Orchestra, conducted by Eugen Wilcken. Romantic Overture (Keler-Bela); Variations on the song, Kommt ein Vogel geflogen (Reektenwald); Delirien-Walzer (Jos. Strauss); Wedding Day on Troldhaugen (Grieg); Selection from Tosca (Puccini); Russian Rhapsody (Mauus); Potpourri of Johann Strauss, Milläcker and Suppe Music (Ziehrer); Overture, Il Guarany (Gomez). In the interval at 5.0, Talk: Anniversaries of the Week. 5.30, Talk: The Milling Industry in East and West Prussia. 6.0, Wireless Technical Talk. 6.15, Agricultural Prices. 6.25 (from Danzig), Talk: National Socialist Ideas in the artistic Danzig of former times. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Political Address and Weather. 8.5, The Trout Quintet in A, Op. 114 (Schubert) by the Brunier Quartet. 8.50, Frederick the Great—Radio Play (Alfred Schulz-Escher). 9.50, String Quartet in F, Op. 41 (Schumann) by the Brunier Quartet. 10.5, News and Weather.

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.). 11.40 a.m., Police Announcements. 11.55, Gramophone Music. 12.10 p.m., Organ Recital by Jan Zwart. 1.40, Gramophone Music. 2.25, Talk on Cooking. 2.55, Gramophone Music. 3.10 to 3.40, Interval. 3.40, Bible Reading, Baritone Solos and Organ Recital. 4.40, Programme for Children. 5.40, Gramophone Music. 6.10, Answers to Correspondence. 6.40, Police Announcements. 6.55, Religious Information. 7.10, Answers to Correspondence. 7.40, Orchestral Concert, conducted by Manks; Overture, Cyrano de Bergerac (Wagenaar); Ballad on a Norwegian Melody (Röntgen); Pastoral Suite (Schäfer); Potpourri of Old Dutch Peasant Songs (Slop); Suite (Gluck-Mottl); Selection from Liebig (Wagner); Selection from Il Traviatore (Verdi); Overture, Post and Peasant (Suppé). In the intervals at 8.40, Recitation, 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 Allgemeine Vereeniging Radio Omroep (A.V.R.O.). 10.40 a.m., Cello and Organ Recital by Henk van Wezel and Piet van Egmond. 11.40, Time Signal. 11.41, Concert of Light Music by the Rentmeester Orchestra. 1.55 p.m., Gramophone Music. 2.10, Recitation. 2.40, Trio Concert. In the intervals, Gramophone Records. 3.25 to 3.40, Interval. 3.40, Trio Concert (cont.). 4.10, Talk with Gramophone Illustrations: Minnets and Blues. 5.10, Concert of Light Music by Paul Godwin and his Orchestra. In the intervals, Gramophone Music. 6.40, Book Review. 7.10, Pianoforte Recital. 7.40, Time Signal. 7.41, News. 7.55, Vocal and Orchestral Concert.—The Station Orchestra, conducted by Marini, and Songs by Members of the Italian Opera. 9.40, Gramophone Music. 9.55, Concert by the Station Orchestra, conducted by Trep; March Potpourri (Voitschach); Waltz, Over the Waves (Rosas-Pacherweg); Chinese March (Klose); Rose mousse (Bosc); Hands across the Sea (Souza). 10.25, Gramophone Music. 10.40, News. 10.50, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 1.15, Radio Concert. 8.0, Amusement Guide, Exchange and News. 8.10, Sports Review. 8.30, Radio Concert. 8.50, News and Weather. 9.0, Literary Programme.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.20 p.m., 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. Relayed by Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., News. 6.25, Concert by a Mandoline Orchestra. 6.50, Talk. 7.15, Tenor and Baritone Song Recital: Aria from Tosca (Puccini); Mandolinata (Tagliarini); Romance from The Demon (Rubinstein); Barcarolle (Malow); Duet from Piina Kelder (Valentinova); Duet, Marinen (Vilhoja). 7.40, Recitations. 8.0, Concert by the Station Orchestra: Overture, Ruy Blas (Mendelssohn); Viennese Melody (Leopold); Serenade (May); Waltz from Gipsy Love (Lehár); Prince Frederick March (Blankenburg). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Orchestral Concert, conducted by Eysoldt. March, New Germany (Zimmer); Overture, Der Wildschütz (Lortzing); Cavatina (Raff); Ballet Suite from Sylvia (Delibes); Gavotte (Reger); Selection from The Daughter of the Regiment (Donizetti); Slow Waltz, Träume der Nacht (Schmalstieg); Rustle of Spring (Sinding); Spring Song (Schürmann). In the interval at 2.0 (approx.), News. 2.30, Market Prices. 3.30, Economic Notes and Time. 3.50, Harvest—Radio Sequence for Young People. 4.30, Reading. 4.55, Political Announcement. 5.0, Mozart Concert on Gramophone Records. 5.30, Talk: Employment of Artists. 5.40, Talk for Parents: The Children in the Garden. 6.0, Concert. Soloist: Trude Fischer-Demau (Songs). March (Lincke); Overture, Rosamunde (Schubert); Three Lieder (Trunk), (a) Stilles Lied, (b) Meine Mutter hat's gewollt, (c) Den Andern; Selection from The Gipsy Baron (Strauss); Three Lieder (Wolf); (a) Verborgenheit, (b) Über Nacht, Über Nacht, (c) Der Freund; The Merry Postilion (Pesse). 6.45, News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, News. 8.5, The Spirit of the Fighting Line—Radio Sequence (Hans Richter). 9.0, Hitlerite Youth on the March. 10.0, News. 10.45, Concert from Leipzig. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres. Transmits at intervals from 12 Noon, Weather and Time. 12.5 p.m., Gramophone Concert of German Folk Songs. 1.0, News and Programme Announcements. 1.15, Concert of Chamber Music: Serenade for Flute and Pianoforte (Friedrich Grimm); Three Studies for Violin, Cello and Harp Op. 4 (Rudolph); Harp Solo from Lucia di Lammermoor (Donizetti); Two Pieces (Pesse); (a) Neckerel, (b) Träumerei; Suite for Cello and Pianoforte Op. 27 (Grimm). 2.0, News. 2.10, Art and Film Notes. 2.30, Talk: The Marvels of Chemistry. 3.10, Talk for Women. 3.35, Exchange. 4.30, Concert from Munich. 5.30, Review of German Books. 5.50, Exchange, Weather and Time. 6.0, Talk. 6.25, Talk: The Battle of Tannenberg, 1914. 6.50, Review of the Day's News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0 (from Weimar), Concert by the Weimar Orchestra: Overture, Jery und Bätely (Reichardt); Selection from Orpheus and Eurydice (Gluck); Overture, Erwin und Elmire (Anna Amalia); Verwandlung Aetons in einen Hirsch (Dittersdorf); Symphony in D (Mozart). 9.0, News. 9.10, Report on Sunday's Transmissions. 9.30, The Spirit of Freedom—A Körner Legend (Paul Beyer). 10.40, News. 10.45, A Summer's Evening—Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer. Soloist: Hans Kunz (Bari-tone). Lustiges Volksleben, from Sommer-tag auf dem Lande (Gade); Three Pieces (Grieg): (a) Beim Sonnenuntergang, (b) Am schönsten Sommerabend war's, (c) Zur Johannisnacht; Two Pieces from Summer Life Op. 27 (Louis Glass): (a) Twilight, (b) Peasant Festival; Two Pieces (Schubert): (a) Der Abend, (b) Am Meer; Barcarolle for Pianoforte from The Seasons (Tchaikovsky); Tanz unter der Dorfleinde (Reinecke); Two Pieces (Brahms): (a) Unbewegte laue Luft, (b) Ständchen; Two Pieces (Josef Marx): (a) Waldseligkeit, (b) Nocturne; A Summer's Night in Madrid (Glinka). 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—7.0 p.m., Orchestral Concert. 8.0, Talk on Cattle-Rearing. 8.30, Programme from Zagreb, 977 kc/s, 307 metres, followed by Weather and News. 10.0, Gramophone Music. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—Swiss Programme. 7.30 p.m., Honegger Concert on Gramophone Records. 8.5, Concert of Light Music by the Station Orchestra, conducted by Henri Pensis. 8.50, News in French. 9.0, Song Recital. In an interval at 9.20, Lyrics (Conradt Ferdinand Meyer). 9.45, News in German. 9.55, Orchestral Concert. 10.25, Dance Music on Gramophone Records.

LWOW

788 kc/s, 381 metres; 16 kW.—7.20 p.m., Miscellaneous Announcements. 7.40, See Warsaw. In the interval at 9.0, Reading. 10.40, Gramophone Music. 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, Gala Concert, relayed from Vichy (See Strasbourg). After the Relay, News.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Climes, Exchange, News, Sports Notes and Topical Talk. 9.15, Topical Review. 9.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 1 kW.—8.45 p.m. (approx.) till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.10 p.m., See Brno. 8.0, Talk for Parents. 8.15, Talk. 8.45, Song Recital. 9.10, See Prague. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—1.45 p.m., Weather. 2.45, Weather. 3.0, Musical and Literary Programme. 4.0, Talk. 4.30, Dramatic Programme. 5.30, An Opreffa for Young People. 6.0, Concert from the Central Park. 9.0, News. 9.30, Programme Announcements. 9.55, Climes. 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Künerslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert by the New Symphony Orchestra, conducted by Hellmut Fritz: Overture, Anacreon (Clerubini); Andante from the Surprise Symphony (Haydn); Scandinavian Suite (Torjussen); Selection from Norma (Bellini); Bolero brilliant (Leybach); Waltz, Tales from the Vienna Woods (Joh. Strauss); Boceaccio March (Suppé). 5.45, Educational Talk. 6.25, Pianoforte Recital by Fritz Hübsch. 6.55, Reading: Von Menschentum zu Menschentum (Kayssler), with Introductory Talk. 6.45, Time, Weather, and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0, Talk on the following transmission. 8.10 (from Nürnberg), Der Wildschütz—Opéra-Comique in Three Acts (Lortzing), relayed from the Stadttheater. 10.20, Time and News. 11.0, Programme from Leipzig. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTTODEN.—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; Nottodden, 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. Intermezzo (Flügel); Appassionata (Ackermann); Gavotte from Paris and Helen (Gluck); Serenade to Toscanini (Murzilli); Offenbach Potpourri (Urbaach); Siciliano (Pergolesi); Melody (Wenrich); Birthday Serenade (Lincke); Gipsy Waltz (Cremieux); Souvenir de Capri (Bece); Galop (Salabert). 6.30, Recitation. 7.0, Announcements, Weather and News. 7.30, Agricultural Talk. 8.0, Time Signal. 8.1, Halfdan Cleve Pianoforte Recital by Mme. Berit Cleve. 8.30, Talk on the United States. 8.45, Flute and Clarinet Recital. 9.10, Political Review. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Accordion Duets. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Notes, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Concert of Chamber Music. Scala (Pianoforte), Castagna (Bassoon), Grignani (Tenor). Pianoforte Solos: (a) Prelude (Blumenfeld), (b) Le vent dans la plaine (Debussy), (c) Capriccio (Mendelssohn); Bassoon Solo: Concertino with Variations on a Theme of Rossini (Berr); Tenor Solos: (a) Lyric (Martinego), (b) Oriental Nocturne (Castagna); Bassoon Solos: Romance (Castagna); Bassique (Tillmetz); Tenor Solos: (a) Ballad (Mascagni), (b) Aria from I Pagliacci (Leoncavallo); Pianoforte Solo: Rhapsody No. 13 (Liszt). 10.15, 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., Talk on the Theatre. 7.0, Le Journal Parlé. 8.45, Concert from Vichy. See Strasbourg. 11.15 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—7.0 p.m., Gramophone Music. 7.5, Le Journal Parlé. 7.30, Hot Jazz on Gramophone Records. 8.0, Song and Duet Recital by M. and Mme. Adeline-Dangerville. 8.30, Literary and Musical Programme by Dorval: Adieu Suzon (Alfred de Musset-Thomé); Recitation, La patrie édie (Paul Guigou); Rappelle-toi (Alfred de Musset-

AUGUST 28th

MONDAY

continued

Thomé). 9.10, Sponsored Gramophone Concert. 10.10, 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: The Death of Isolda, from Tristan und Isolde (Wagner); Waltz from Romeo and Juliet (Gounod); Gilda's Aria from Rigoletto (Verdi); Aria from the Magic Flute (Mozart); Ophelia's Aria from Hamlet (Thomas); Aria from Manon (Massenet); Song of the Bells from Lakmé (Delibes); Micaëla's Aria from Carmen (Bizet); Prayer from Tosca (Puccini); Aria from Carmen (Bizet); Aria from Werther (Massenet); Aria from Mirella (Gounod); Air from Hérodiade (Massenet); Softly awakes my heart, from Samson and Delilah (Saint-Saëns); Tenor Solo from William Tell (Rossini); Forest Murmurs from Siegfried (Wagner); Tenor Solos: (a) Aria from La Bohème (Puccini), (b) Aria from Mirella (Gounod); Baritone Solos: (a) Sous le regard, from Le Jour et la Nuit (Lecocq); (b) Air from Le Grand Mogol (Andran); Bass-Baritone Solos: (a) Sérénade from Don Giovanni (Mozart), (b) The Death of Valentine from Faust (Gounod), (c) Aria from Cavalleria rusticana (Mascagni); Bass Solos: (a) Melody from Mirella (Gounod), (b) Cradle Song from Louise (Charpentier); Bass Solos: (c) The Golden Call from Faust (Gounod), (d) Calumny Aria from The Barber of Seville (Rossini); Aria from The Huguenots (Meyerbeer). In the interval at 1.20, Exchange, News and Weather, and at 1.30, Exchange, 2.0, Exchange, 3.45, Exchange, 7.0, Agricultural Prices. 7.10, Gramophone Concert of Popular Music. 7.50, Commercial Prices and News. 8.0, Comedy Programme on Gramophone Records: (a) Acts II and IV of Marius (Panol), (b) Sur le Siège (Lavedan), (c) Le petit malade (Courteline), (d) Le Gora (Courteline). 8.15 (in an interval), Review by Paul Rehoux. 8.45, Gala Concert, relayed from the Salle des Spectacles, Vichy. See Strasbourg. 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., Pontiac and Home Forum. 8.0, Betty and Bob, from New York. 8.15, Words and Music, from New York. 8.45, Human Values. 9.0, Radio Guild, from New York. 10.0, Uncle Tom and Betty. 10.15, Tarzan of the Apes. 10.30, Larry Larsen, from New York. 10.45, Orphan Annie, from New York. 11.0, Press News. Recler. 11.15, Sports Notes and a Song. 11.30, Pittsburgh Spotlights. 11.45, Lowell Thomas, from New York. 12 Midnight, Amos 'n' Andy, from New York. 12.15 a.m. (Tuesday), Programme to be announced. 12.30 to 3.0, New York Relay. 12.30, Meyer Davis' Orchestra. 1.0, Yesterday and Today. 1.30, Potash and Perlmutter. 1.45, Gould and Sheffer. 2.0, Smetich Minstrels. 2.30, Melody Moments. 3.0, Silver Toppers.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—12.25 p.m., See Warsaw. 12.35, Interval. 12.59, Time Signal and Chimes from the Town Hall. 1.3, Gramophone Concert. 2.0, Financial Notes and Market Prices. 2.10, News. 2.15, Interval. 6.10, Topical Talk. 6.15, Talk on Penang, relayed from Lwów, 788 kc/s, 381 metres. 6.35, Pianoforte Recital, relayed from Cracow, 959 kc/s, 312.8 metres. 7.20, Miscellaneous Items and News. 7.35, Theatre News, and Programme Announcements. 7.40, 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., Concert by the Station Orchestra, conducted by Otakar Párik. 3.55, Exchange. 4.0, Interval. 5.45, Gramophone Music. 5.55, Talk. 6.5, Agricultural Report. 6.10, Gramophone Music. 6.15, Talk. 6.25, News in German. 6.30, German Transmission: Talks: (a) The World and the Economic Crisis, (b) Gardening. 7.0, Chimes and News. 7.10, See Brno. 8.0, See Moravská-Ostrava. 8.45, Violin Recital by Amalie Bartfeldová. Sonata in E flat (Biber); Sérénade (Cerný); Tango Op. 165 No. 2 (Albéniz-Kreisler); Spanish Dance (Falla-Kreisler). 9.10, Jan Vanhal Concert for the Hundred and Twentieth Anniversary of his death. The Station Orchestra, conducted by Otakar Jeremias. Soloists: Nelly Gaierova (Soprano), Anton Modr (Guitar) and Kredha (Harpisielord). 10.0, Time and News. 10.15, Talk in German: German Schools in Czechoslovakia. 10.30 (approx.), Close Down.

RABAT

721.1 kc/s, 416 metres; 6 kW.—1.0 p.m. till 3.0 p.m., Gramophone Concert of Variety Music. In an interval at 2.0 (approx.), Talk on Heraldry. 5.0 to 6.0, Gramophone Music. 8.30, Gramophone Music. 9.0, Sponsored Gramophone Concert. 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 to 6.30 a.m. (from Lausanne), Gymnastics Lesson. 12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News and Weather. 12.40 (from Lausanne), Gramophone Concert. 1.0 (from Lausanne), Financial News. 1.10 (from Lausanne), Gramophone Concert. 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 Moser. 5.0 (from Lausanne), Programme for Children. 5.30 to 7, Interval. 7.0 (from Geneva), Talk on Films. 7.30 (from Geneva), Weather and News. 8.0, Concert by the Radio-Suisse Romande Orchestra, conducted by Echenard: Sérénade for Wind Instruments, No. 11 (Mozart); Rondino (Beethoven); Piece (Martino). 9.0 (from Lausanne), Concert of Russian Music by Mme. Tatiana Berdez (Songs) and Mischa Ignatieff (Balalaika Music). 9.50, News and Weather. 10.0, Report on the Cycle Tour of Switzerland. 10.30 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme. 9.30, Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News. 10.30, Reading. 11.0, Popular Music by the Radio Quartet with Songs.

RIGA

572 kc/s, 525 metres; 15 kW.—7.5 p.m., Programme of Dialogues and Popular Songs. In the interval at 8.0, News. 9.0, Weather and News. 9.20, Schubert Chamber Music on Gramophone Records.

RJUKAN.—See Oslo.

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relay by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres from 5.15 p.m.—12.30 p.m., Gramophone Concert. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 2.0, Time and Announcements. 4.30, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Weather. 5.15, Concert. Olga Rogio-Cesarò (Pianoforte), Virginia Brunetti (Soprano) and Guglielmo Bordini (Bass). Concert Allegro (Granados); Soprano Solos: (a) O, del mio dolce ardor (Gluck), (b) Solveig's Song (Grieg); Bass Solos: (a) Arioso from Attila (Verdi), (b) Aria from Faust (Gounod), (c) The Two Grenadiers (Schumann); Pianoforte Solos (Albéniz): (a) Malaguita, (b) Scuidillas. Soprano Solos (Rossini): (a) Aria from Othello, (b) L'invito. 6.40 (Naples), Shipping and Sports Notes. 6.45, Dopolavoro Notes and Tourist Report. 7.10, Agricultural Prices. 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, Concert of Light Music, conducted by Calotta. Reading in the interval. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

WGY, 790 kc/s, 379.5 metres; 50 kW. Relay by at intervals by W2XAF on 31.48 metres, and by W2KAD on 19.55 metres.—9.0 p.m., Book News by Levere Fuller. 9.15, Soloist, from New York. 9.30, Mountain Ballads by Bradley Kincaid. 9.45 to 10.0 (approx.), Lady Next Door and Children's Programme, from New York. 12.45 a.m. (Tuesday), Stock Reports and Baseball Scores. 1.0, Societyland Sketch, from New York. 1.30, Felix Ferdinand's Burgomasters. 1.45, Ferde Grofe's Orchestra, from New York. 2.0, A. and F. Gipsies, from New York. 2.30, Horse Sense Philosophy. 2.45 to 3.30, New York Relay. 2.45, Musical Programme. 3.0, Contended Programme. 3.30, A Revue, 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.—5.30 p.m. (from Berne), Gramophone Concert, Part I: Descriptive Pieces. Part II: Viennese Waltzes. 6.30 (from Zürich), Talk. 7.0, Time and Weather. 7.5 (from Zürich), Gramophone Concert. 7.30 (from Zürich), Elementary English Lesson. 8.0 (from Zürich), Concert by the Station Orchestra. 8.30, Italian Programme, relayed from Lugano. 9.0, Weather and News. 9.10 (from Zürich), Organ Recital. 10.15 (approx.), Close Down.

SEVILLE

815 kc/s, 368.1 metres; 1.5 kW.—3.0 to 4.0 p.m., Variety Programme. 10.0, Concert. Pasodoble, Les fogueres de San Juan (Torregrossa); Rosalinda (de Fuentes); Le Jardin féérique (Bayle); Aria (Goldmark); Kartinka (Sorozobal); Turkish March from The Ruins of Athens (Beethoven); Yo siempre te espero (Bos and Salado); Selection from Doña Francisquita (Vives); Trümmerei (Schumann); Aria from A Masked Ball (Verdi); Overture, The Merry Wives of

Windsor (Nicolai); Dance Music. In the interval, News, Exchange, Market Prices 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., Violin and Pianoforte Recital of Bulgarian Music by Boris Nicolov and Carrado Gozzo. 5.30, Gramophone Music. 6.30 (from Göteborg), Talk: The Risk of Explosions in the Home. 7.0, Recital of Swedish Folk Songs by Ester Berggren. 7.15, Weather and News. 7.30, Reading. 8.0 (from Göteborg), Concert by the Liseberg Orchestra, Festival Overture (Lentner); Norwegian Rhapsody No. 2 (Svendens); Waltz, Neu Wien (Jos. Strauss); Sérénade (Denza); Valse elegante (Ponchi); Selection from The Bird Fancier (Zeller). 8.45, Talk. 9.15, Choral Concert, conducted by Felix Körling, relayed from Halmstad, 1,391 kc/s, 216 metres. 9.45, Weather and News. 10.0, Chamber Music by the Barkel Quartet and Carl Tillius (Pianoforte). Pianoforte Quartet No. 1 in G minor (Mozart); Pianoforte Quintet in F minor (Franck). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Light Music. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Gramophone Records of Well-known Overtures. 2.0 to 3.30, Interval. 3.30, Orchestral Concert from the Casino, Vichy. Conductor: M. Brouillat. Overture, La Princesse Jaune (Saint-Saëns); Two Pieces (Godard): (a) Brésilienne, (b) Carillon from Jocelyn; Ballet Music from Polyette (Gounod); Soloist Item; Rhapsody on Airs from the Pays d'Ore (Lacombe); Selection from Mignon (Thomas); Telegrams (Strobl). 5.0, Gramophone Music. 5.15, Orchestral Concert, conducted by M. Roskam. Selection from The Count of Luxembourg, Gipsy Love, Eva and Red Roses (Lellier). 6.0, Talk on the Cinema. 6.15, Topical Talk in German. 6.30, Orchestral Concert, conducted by Maurice de Villers. Suite, En voyage (Gabriel-Marie); Overture, Stradella (Flotow); Selection from Hansel and Gretel (Humperdinck); Bal à la Cour (Pierné); Waltz, Acclamations (Waldteufel). 7.30, Time and News. 7.45, New Gramophone Records. 8.15, Press Review in German. Lottery Results and News. 8.45, Gala Concert, relayed from the Salle des Spectacles, Vichy. The Orchestra and Choir, conducted by Paul Paray. Soloists: Mme. Durand-Texte (Pianoforte) and Mme. Eide-Norena (Songs). Antlar (Rimsky-Korsakov); Concerto in E flat for Pianoforte and Orchestra (Liszt); Cantique de Raeme (Faure); La tragédie de Salome (Schmitt); Aria from Der Freischütz (Weber); Le festin de l'araignée (Roussel); March from Tannhäuser (Wagner). 11.15, Press Review in French and News.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relay by Freiburg, 527 kc/s, 570 metres.—12 Noon, Promenade Concert from the Schlossplatz. 1.0 p.m., Gramophone Music. 1.15, Time and News. 1.30, Concert from Langenberg. 2.0, Concert 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, Talk on Sport and Gymnastics. 6.10 (from Freiburg), Dialogue on Max Dantheidey, on the Fifteenth Anniversary of his death. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0 (from Baden Baden), Orchestral Concert, conducted by Karl Assmus. Overture, Così fan tutte (Mozart); Symphony in One Movement (Mozart); Potpourri of Mozart Music; Overture in Italian Style (Schubert); German Dances (Schubert); Gondola Song from A Night in Venice (Joh. Strauss); Perpetuum mobile (Joh. Strauss); Gavotte from The Queen's Kerchief (Joh. Strauss). 9.0, Talk: In Praise of Truth. 9.20 (from Freiburg), Trio in B flat Op. 99 (Schubert). 10.0, Reading from the Works of Arthur Kuhnert. 10.20, Time and News. 10.45 (approx.). See Leipzig. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.15 p.m., Accordion Solos. 6.30, Chansonnettes. 6.45, Redemption (C. Franck) by a Symphony Orchestra. 7.0, Sound Film Music. 7.15, News Bulletin. 7.30, Music by a Viennese Orchestra. 8.0, Opera Airs: Selection from (a) Hamlet (Thomas), (b) Hérodiade (Massenet), and (c) Le Cid (Hodouin). 8.15, Operetta Music: Napolitana from The Czarevitch (Lehar); Selection from Mann-zaire Nitouche (Hervey); Selection from A Waltz Dream (O. Strauss). 8.30, Instrumental Solos. 8.45, Concert Version of Cavalleria Rusticana—Opéra-comique (Mascagni). 9.30, Military Music. 9.45, Songs

for Choir. 10.0, Accordion Solos. 10.15, News. 10.30, Concert for Listeners in Morocco. 11.15, Sponsored Programme. 11.30, Sound Film Music. 11.45, Orchestral Music. 12 Midnight, News. 12.5 a.m. (Tuesday), Programme by a Viennese Orchestra. 12.30, 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 to 6.5, Weather. 6.40, Giornale Radio, Dopolavoro Notes and Gramophone Music. 7.0, Time, Tourist Report and Gramophone Music. 7.10, Agricultural Notes. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News and Weather. 8.15, Sponsored Concert. 9.15, Comedy in One Act. 10.0, Concert of Chamber Music. Paolo Della Torre (Soprano), Renato Russo (Pianoforte) and Virgilio Brun (Violin). Pianoforte Solos: (a) Naehltide, (b) Etude in F; Soprano Solos: (a) Son come falletta (Anon), (b) Donne vaghe (Paisiello), (c) Song (Schubert), (d) Song (Schumann); Violin Solos: Melody from the Fire Bird (Stravinsky), (b) Malagueña (Albeniz); Pianoforte Solos: (a) Caprice (Niemann), (b) Cracovienne fantastique (Paderewski), (c) Roumanian Dance (Alfano); Soprano Solo: (a) Traum durch die Dämmerung (Strauss), (b) Song (Brahms), (c) Botschaft (Brahms); Movements from the Sonata in G for Violin and Pianoforte (Gianandrea Gavazzeni). 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.—12 Noon, Concert by the Wiener Symphoniker, conducted by Max Schönherr. In an interval at 1.0 p.m., Time and News. 2.0, Interval. 3.0, Time and Announcements. 3.20, Talk on the Ried Festival. 3.30, Talk: A Walk through Old Vienna. 3.55, Gramophone Music. 4.35, Programme for Young People. 5.0, Talk on Max Reger. 5.25, Song and Pianoforte Recital by Hilde Kretschmayr (Soprano) and Felicitas Lewinter: Soprano Solos (Brahms): (a) Bei dir sind meine Gedanken, (b) Sommerabend, (c) Der Kranz, (d) Felleinsamkeit, (e) Sapphische Ode, (f) Dort in den Weiden; The Girl and the Nightingale (Granados); Ballad (Brahms); Der heilige Franziskus auf den Wogen schreitend (Liszt). 6.5, Talk: Church Paintings and Plastic Art in Austria from 1680-1880. 6.25, Books of Reference in Connection with the Week's Talks. 6.30, Talk: Feminine Genius. 6.55, Concert by the Wiener Symphoniker, conducted by Rudolf Weirich. Soloist: Rose Merker (Soprano); Overture, Coriolanus (Beethoven); Soprano Solos: Recitative and Aria from Fidelio (Beethoven); Two Orchestral Pieces and Soprano Aria from The Queen of Sheba (Goldmark); Brühnigle's Aria from The Dusk of the Gods (Wagner). In an interval at 7.30, Time and News. 8.0, Concert of Viennese Music by the Vienna Male Voice Choir, the Wiener Symphoniker, the Pepi Wiehart Selrammel Quartet, and Soloists. Conductor: Josef Holzer. 9.30, Topical Talk. 9.45, News. 10.0, Popular Music on Gramophone Records.

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. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.45, Traffic Report. 3.50, Gramophone Music. 4.0, Violin and Tenor Solos. 5.0, Talk in French. 5.15, Light Music relayed from the Gastronomica Café. 6.15, Talk on Penang, relayed from Lwów. 6.35, Pianoforte Recital, relayed from Cracow, 959 kc/s, 312.8 metres. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Literary Talk. 8.0, Rund um die Liebe—Operetta in Three Acts (O. Straus). In the intervals, Answers to Agricultural Correspondence and Radio Journal. 10.0, Dance Music. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music (cont'd.).

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—7.55 p.m., Book Review. 8.10, Announcements. 8.30, Concert by the Station Orchestra; Soloist, Ivan Sterle (Tenor). 10.0, Light Orchestral Music. 10.30, Weather and News. 10.40, Concert by the Ruslan Orchestra. 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 2.30, Time, Weather, Stock Report and Gramophone Music. 6.0, Programme for Children. 6.40, News. 7.0, Gaelic Reading. 7.15, Talk for Women Drivers. 7.30, Time Signal. 7.32, Pianoforte and Violin Recital by Mrs. Boxwell and Bay Jellett. 7.55, Contralto Solos by Nora Finn. 8.10, A Play. 8.40, Soprano Solos by Jean Nolan. 8.55, Selection by the Station Orchestra. 9.15, The Concert Six in Variety. 9.45, Sponsored Programme. 10.45, News and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Radio Trio: Selection from Faust (Gounod); 'Cello Solo (Popper); Adagio and Allegretto from the Moonlight Sonata (Beethoven); Selection from Thais (Massenet); Cantabile, Diana (Lefebvre); Norwegian Dance No. 3 (Grieg). 8.0, Request Gramophone Concert. 8.30, Exchange and Talk in Catalan. 9.0, Gramophone Music. 9.15, Talk on Football, followed by Gramophone Music (contd.) and News. 10.0, Chimes, Weather, Messages for Seamen, and Exchange. 10.5, Sponsored Programme. 10.30, Concert by the Radio Orchestra: Le oracion del torero (Turina); Suite, Scènes pittoresques (Massenet). 11.0, Talk on Astronomy. 11.15, Concert from the Café Español. 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., Agricultural Report, Tourist Talk and Dopolavoro Announcements. 8.20, News in Albanian. 8.25, Giornale Radio. 8.30, Time and Announcements. 8.35, Weather. 8.45, Concert by a Mandoline Quartet: Overture, Gli Oriazi e Curiazi (Cimarosa); Fiumi sparsi (Sartori); Notte di luna (Salvetti); Gavotte, Visione lontana (Hamud); Danza amantita (Hamud); Selection from Martha (Plotow); Overture, San Giusto (Bittelli); Arab Piece, Leonardo di Cairo (Maletto); Elegy (Marucelli); Military Scherzo (Marucelli); Gavotte (Billi-Mignone); Fantasia, Fichi di Napoli (Bacci). In the interval, Art Notes. 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., National Songs. 6.30, Talk. 7.0, Gramophone Music. 7.20, Trio for Clarinet, 'Cello, and Pianoforte (Beethoven). 7.50, Talk. 8.30, Programme from Zagreb, 977 kc/s, 307 metres. 10.30, Time Signal and News, followed by Dance Music on Gramophone Records.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Gramophone Concert of Popular Music. 3.0, Programme for Young People. 3.30, Weather and Exchange. 3.45, Talk on Frisian Legends—The Frisians fight with the Dwarfs. 4.0, See Leipzig. 5.0, Topical Talk. 5.20, Concert of Operetta and Sound Film Music. 6.0, A Poem. 6.5 (approx.). Programme for Young People. 6.55, Weather. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, To-day's Motto. 8.5 (approx.). Political Cabaret (Goetz Stoffregen), with Music by Walter Gronostay. 8.50, Symphony Concert, relayed from Swinemünde; Conductor, Paul Scheinpflug; Soloist, Erich Röhm (Violin); Violin Concerto in A Minor, Op. 21 (Trapp); Symphony, Scheherazade (Rimsky-Korsakov). 10.0, Weather and News. 10.20, Talk: The Future of German Sport. 10.45, Weather. 11.0, Light Music and Dance Music by the Herbert Fröhlich Band. 12.30 a.m. (Wednesday), Close Down.

BERLIN

FUNKSTUNDE, 715 kc/s, 419.5 metres; 1.5 kW.—6.15 p.m., Review of Books. 6.40, The Funkstunde informs its Listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, Lottery Announcements. 8.5, The Green Canopy—a Radio Sequence of the Woods, with Choral Music. 9.0, Schumann Recital by the Steiner Quintet and Rurhard Kaiser (Bass-Baritone). Nine Songs: (a) Talisman, (b) In der Fremde, (c) Auf einer Burg, (d) Auf das Trinkglas eines verstorbenen Freundes, (e) Die rote Banne, (f) Der Schatzgräber, (g) Auf dem Rhein, (h) Der Husar, (i) Sehnsucht-lied des Narren; Pianoforte Quintet in E Flat, Op. 21. 10.0, News. 10.30 (approx.). See Hamburg. In the interval from 11.0 to 11.5, Topical Talk. 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.—6.30 p.m., Radio Journal. 7.30, News and Racing Results. 7.40, Lottery Results. 7.45, News. 8.0, Gramophone Music. 8.30, Concert of Classical and Modern Music.

TUESDAY

AUGUST THE TWENTY-NINTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL LONDON Promenade concert from Queen's Hall.
The Regional Revellers, concert party programme.
REGIONAL NORTH Brass Band concert.
REGIONAL WEST "Moorland and Torland," a programme for Devon lovers.
REGIONAL SCOTTISH Excerpt from the Theatre Royal, Edinburgh.
REGIONAL BELFAST "The Old Master," a comedy, by Christie Gilbert.

ABROAD

BRUSSELS (No. 2) 9.0 p.m. Concert by the Station Orchestra.
BUDAPEST 9.50 p.m. Chamber music.
COPENHAGEN 9.55 p.m. Weckerlin Bergerette recital, by Edith Dam, with harpsichord accompaniment.
EIFFEL TOWER HAMBURG 8.30 p.m. Symphony concert, conducted by Flament.
LANGENBERG 10.30 p.m. The Philharmonic Orchestra, conducted by Gerhard Maasz.
MUNICH 8.5 p.m. Dances from the fifteenth to the twentieth centuries, played on old instruments.
OSLO 9.20 p.m. Act III of opera: "Ludwig der Springer," by Adolf Sandberger, conducted by the composer.
RADIO PARIS 8.30 p.m. The Station Orchestra, conducted by Kramm.
WARSAW 8.0 p.m. Gounod's "Faust," on gramophone records.
8.0 p.m. The Station Orchestra, conducted by Oziminski.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.25 p.m., Slovak Songs. 6.55, Talk for Housewives. 7.0, See Prague. 8.35, See Moravská-Ostrava. 9.15, 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.—1.0 p.m., Weather. 1.5 (approx.). A Soldier's Life—Gramophone Concert. 1.45, Time and News. 2.5, Gramophone Concert of German Songs. 3.0, Market Prices. 3.15, Review of Books. 3.35, Programme for Children. 4.0, Recital on two Pianofortes: Sonata in D (Mozart); Variations on a Theme of Haydn, Op. 56 (Brahms). 4.30, Talk on and Reading from the Works of Three Young Silesian Poets—Alfons Kalka, Heinz Joachim Kieker, and Hannes Paesler. 5.0, Recital of Songs by Charlotte Stendner-Mody (Soprano). 5.30, Agricultural Market Prices. 5.35, Topical Talk. 6.0, Soloist Concert. 6.25, Talk: The Nationalisation of Industry. 6.50, Weather, News, and Market Prices. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, Worker No. 602—a Radio Play (Heinz Bierkowski). 9.0, Austria. 9.20, Recital of Sea Chanties. 10.10, Time and News. 10.30, Political Press Review. 10.50, Talk: The Youth Hostal Movement. 11.10, Dance Music from the Admiralspalast. 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.15 p.m., Talk for Workers. 6.25, German Transmission: News, Talk for Workers and Agricultural Report. 7.0, See Prague. 7.10, Concert by an Orchestra of Unemployed Musicians, conducted by Leopold Sule. 7.52, See Prague. 8.35, See Moravská-Ostrava. 9.15, A Play (N. Gogol, translated by Dr. P. Durdik). 10.0, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Request Gramophone Records. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Leemans; Turkish March (Mozart); Largo (Händel); Minuet (Boccherini); Romance in F (Beethoven). 1.30, Concert for Horn (Mozart), by Ferdinand Bauduin. 1.45, Orchestral Concert (contd.): Gavotte from Armide (Gluck); Musette and Tambourin (Rameau); Sarabande (Bach). 5.0, Eisenberg Concert by the Station Orchestra, conducted by Charles Walpot. 5.30, Programme for Children. 6.5, Medical Talk. 6.15, Concert of Chamber Music by Marcel Hebrant (Pianoforte), Georges Toussaint (Trumpet), and Jean Rooses (Violin); Trumpet Solo, Fantaisie

caprice (Goeyens); Pianoforte Solo, Ronde des sylphes (Liauponov); Trumpet Solo, Souvenir d'Angleterre (Duhem); Introduction to the Fourth Violin Concerto (Vieuxtemps); Pianoforte Solo, Fantasia on the Name BACH (Liszt); Trumpet Solo, Pièce héroïque (Strauven); Violin Concerto in A Minor (Bach). 7.5, Gramophone Records. 7.15, Film Review. 7.30, Talk for Women and Art Notes. 8.0, Concert by the Symphony Orchestra, conducted by Jean Kumps; Soloist, Broos (Viola); Suite in D (Bach); Viola Concerto (Händel); Aux étolles (Duparc); Legende for 'Cello and Orchestra (Florent Schmitt); Dance Suite (Pierné). 8.45, Talk. 9.0, Concert from the Kursaal, Ostend, followed by the Le Journal Parlé and La création du monde—Negro Ballet (Milhaud), 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.—12.0 Noon, Concert by the Small Station Orchestra, conducted by Leemans; March from Sigurd Jorsalfar (Grieg); Caprice (Bruselmans); Vieja Castilla (Capri); Selection from The little Dutch Girl (Kálmán); Gramophone Records: Oriental Romance (Herbert-Haines); The Barbary Organ (Candiolo); Selection from Gri-Gri (Lincke). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert. 5.0, Concert by the Station Symphony Orchestra, conducted by Jean Kumps; Overture, Raymond (Thomas); Le Cygne (Saint-Saëns); Bourrée fantasque (Chabrier); Meditation from Thais (Massenet); Italian Caprice (Tchaikovsky). 5.45, Programme for Children. 6.30, Concert by the Small Station Orchestra, conducted by Leemans; Oriental Procession (Leemans); Serenade (Bridge); Pieces for Pianoforte (Veremans); Suite from The Sleeping Beauty (Tchaikovsky). 7.0, Gramophone Music. 7.15, Talk. 7.30, Tourist Report. 8.0, Concert by the Radio Orchestra, conducted by Charles Walpot; Soloist, Hank Didama (Tenor); Solidariteitslied (Brecht-Eisler); Selection from Der Bettelstudent (Millocker); Waltz from The Count of Luxembourg (Lehar); Four Songs; Waltz Potpourri (Freudenthal). In the interval, Baas Boven baas—Sketch (de Boy). 9.0, Concert by the Station Symphony Orchestra, conducted by Kumps; Soloist, Hank Didama; March from Judas Maccabees (Händel); Waltz from Faust (Gounod); Three Songs; Venetian and Neapolitan Tarantellas (Liszt); Waltz, Accelerationen (Strauss). In the interval, A Sketch. 10.0, Le 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 Motoi Orchestra. In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Gramophone Music. 7.40, Educational Talk. 8.0, Bass Song Recital by Edgar Istratty. 8.20, Con-

cert by the Station Orchestra: Overture (Rust); Ballet Suite from Kassya (Delibes); Selection from The Czarevitch (Lehar); Selection from Viktoria and her Hussar (Abraham); Waltz, Estudiantina (Waldteufel); March, Frühlingsklüder (Blankenburg). In an interval at 9.0, Talk.

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., Programme for Young People. 5.0, Talk. 5.30, Pianoforte Recital by Lili Baranyi. 6.10, Talk. 6.40, Orchestral Concert, conducted by Polgar. 8.10, News. 8.30, The Lajos Kiss' Cigany Band relayed from the Hotel St. Gellert. 9.50, Chamber Music: Trio in B flat (Mozart); Trio in E minor, Op. 33 (Goldmark). 10.15, Weather. 10.50, Talk in English: The Battle of Mohacs in 1526. After the Talk, Concert from the Café Rajnapark: Soloist: Paul Fokete (Popular Songs).

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time Signal and Chimes from the Town Hall. 12.5 p.m., Concert by the A. Bendix String Ensemble, relayed from the Wivex Restaurant. 2.0, Interval. 3.0, Concert by the Louis Prell Instrumental Ensemble, Spanish March, Hispania (Dreyer); Overture, Morning, Noon and Night (Suppé); Torna a surriento (Curtis); Selection from The Circus Princess (Kálmán); Vor einer alten Spieluhr (Mueller-Melhorn); Zigeun erfest (Heykens); Quick-Silver (Caplat); In a Persian Market (Kettelbey); Study in Blue (Savino); Waltz, Gold and Silver (Lehar); Serenade (Tosti); Angels and Imps (Dieker); Notre mélancolie (Denaret); Melody (Heykens); Spanish March (Gyldmark). In an interval at 3.45 (approx.), Reading. 5.0, Programme for Children. 5.30, Exchange and Fish Market Prices. 5.45, Talk. 6.15 to 6.54, Elementary German Lesson. 6.45, Weather and Wireless Notes. 7.0, News. 7.15, Time Signal. 7.30, Talk: The University of Aarhus. 8.0, Time Signal from the Town Hall. 8.1, Symphonic Suite, Op. 8 (Nielsen) by Ove Peters (Pianoforte). 8.20 (approx.), Weather. 8.25, Haecvnen—Play in Three Acts, arranged for Radio (O. Münster). 8.55, Weckerlin Bergerette Recital by Edith Dam, with Harpsichord Accompaniment; Chantons les amours de Jean; Menuet de Martini; Philis plus avare que tendre; Je connais nu berger discret; Le soleil levant. 10.10, News. 10.25, Recital of Russian Music from Town and Country. 10.55, 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.

GORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.5 p.m., Talk: Old Cracow. 7.20, Miscellaneous Items and News. 7.35, Programme Announcements. 7.40, See Warsaw. In an interval at 9.0, News. 10.0, Sports Notes. 10.5, Song Recital. 10.55, See Warsaw. 11.0 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m. till 12 Noon, Programme in English by the I.B.C. 11.0, The Happy Hour. Part I—Orchestral Concert: Signature Tune; Waltz, Aclamations (Waldteufel); Pizzicato from Sylvia (Delibes); Selection from The Yeoman of the Guard (Sullivan); Pianoforte Solo: The Wasps (Holbrook); Souvenir de Capri (Beccia); The Golden Musical Box (Krome); Intermezzo, Liebesfreud (Kriesler); Waltz, Morgenblätter (Strauss). Part II—Dance Music: Peter, Peter; I lay me down to sleep; One Tiny Tear; You're mine, you; Old Man Harlow; Merry-go-round; Here is my heart; Sophisticated Lady; Signature Tune. 12 Noon to 4.30 p.m., Programme in French. 4.30 to 6.0, Programme in English by the I.B.C. 4.30, The Nursery Corner: Music, Story and Birthday Greetings. 5.0, Concert for Torquay and Exeter Listeners: Signature Tune, The Night by the Sea; Overture, Mignon (Thomas); Entry of the Little Fauns (Pierné); Song: My Lovely Celia (arr. Lane Wilson); Minuet from Petite Suite (Debussy); Song: Sign no more Ladies (Stevens); Liebestraum (Liszt); Song: Comin' through the Rye (arr. Swart); Selection from Die Fledermaus (Joh. Strauss). 5.30, Organ Recital for Plymouth and Devonport Listeners: Potted Overtures (Engelmann); Ca c'est Madrid (O'Henry); Bitter Sweet Waltz (Coward); My Wishing Song (Burke); Xylophone and Organ Duet; Down South (Myddleton); The Old Spinning Wheel (Hill); Clockwork (Mayer); Snacks in Bars (Eggerer); Signature Tune. 6.0 to 10.0, Programme in French. 10.0 (approx.) till Close Down: Programme in English by the I.B.C. 10.0, Dance Music by the Heblants: Signature Tune, Bells of Normandy; Hold me; Something came and got me in the Spring; And so I married the girl; Sing a New Song; Under my Umbrella;

LWOW

788 kc/s, 381 metres; 16 kW.—7.20 p.m., Miscellaneous Announcements. 7.40, See Warsaw. 10.40, Gramophone Music. 11.0 (approx.), Close Down.

LYONS

LA DOUA (PTT), 644 kc/s, 465.8 metres; 1.5 kW.—6.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Relay 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, News of the Day, and Request Gramophone Records. 8.30, Talk and Gramophone Records. 9.15, Topical Review. 9.30, Interval. 11.0, Chimes, Time, and Topical Review. 11.15 (approx.), Rigoletto—Opera (Verdi) on Gramophone Records. 1.15 a.m. (Wednesday), Topical Review. 1.30 (approx.), Chimes and Close Down.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.45 p.m. (approx.) till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by Plichta: Overture, Donna Diana (Reznicek); Ballet Music (Nedbal); Waltz (Provanzik); Melody (Silving); Serenade (Kostal); Viennese Waltz (Delmas); Pompadour March (Labsky). 3.55 to 4.0, See Prague. 5.45, Gramophone Music. 5.55, See Prague. 6.5, Talk. 6.15, See Brno. 7.0, See Prague. 8.35, Concert of Folk Music. 9.15, See Brno. 10.0, See Prague. 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—1.45 p.m., Weather. 2.45, Weather. 3.0, Concert. 4.0, Agricultural Talk. 4.30, Radio Play (Uspenski). 5.20, Programme Announcements. 5.45, Topical Talk. 6.30, Light Music and Dance Music. 9.0, News. 9.30, Programme Announcements. 10.5, Press Review in English. 10.30, Newspaper 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: Legal Aspects of Marriage. 6.5, Pianoforte Sonata in A, Op. 31 (Beethoven), by Ally Bienenfeld. 6.25, Talk: The Problem of the Bavarian Frontier. 6.45, Time and News. 7.0, Transmission for all German Stations, relayed from Leipzig. 7.0 (from Nürnberg), Wind Instrument Concert: March, Empor zum Licht (Blumenburg); Overture, Nakis Hochzeit (Lincke); Waltz, Bräuseler Spitzen (Schmidt-Lerke); Polka for Trumpet, Dorfspitzen (Höhne); Potpourri, Alte Wiener Volksmusik (Kouzak); Badenweiler-Marsch (Fürst). 9.0, National Socialist Party Report. 9.20, Third Act of Ludwig der Springer—Opera (Adolf Sandberger), conducted by the Composer. 10.20, Time and News.

NAPLES.—See Rome.

NOTTODEN.—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.—5.0 p.m., Concert relayed from the Café de Théâtre. 6.0, Programme for Housewives. 6.45, Song Recital. 7.0, Announcements, Weather and News. 7.30, Trio for Violin, Cello and Pianoforte (Hegge). 8.0, Talk. 8.30, Concert by the Station Orchestra, conducted by Kramm: Overture, The Daughter of the Regiment (Donizetti); Ballet Suite from Hiawatha (Coleridge-Taylor); Two Pieces (Johnson); Extracts from the Fourth Symphony (Schumann); Nocturne (Borodin); Entr'acte Music and Hungarian Song (Grossmann); Legend (Melartin); Fantasia on Mendelssohn's Songs without Words (Baqnit); Kleiner Wiener Marsch (Kreislner). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Recitation. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Notes, Tourist Talk, Agricultural Notes, and Giornale Radio. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcement. 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., Talk on the Theatre. 7.0, Le Journal Parlé. 8.30, Symphony Concert, conducted by Flament: Overture, A Midsummer Night's

Programme for Children. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Overture (Suppé); Frühlingsstimmen (Joh. Strauss); Fallende Blätter (Carena); Spanish Serenade (Mello); Selection from The Bartered Bride (Smetana); Czardas No. 8 (Michiels); Overture, Der Generalkonsul (Reinhardt); Troujours ou jamais (Waldteufel); Ritorina (Caroso); Dance of the Merry Masots (Keteleby); Selection from Gri-Gri (Lincke); March, Sereuissimus (Mello). In the interval at 4.50 (approx.), Book Review. 5.30, Talk: Veit Stoss. 6.0, Dialogue: The German Stage. 6.15, Agricultural Prices. 6.25, A Discussion for Workers. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, Weather. 8.5, See Berlin (Funkstunde). 9.0, Reading. 9.40, Talk: Agricultural Policy in the New State. 10.10, Political Press Review, Weather and News.

HILVERSUM

Announced HUIZEN, 1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Catholic Radio Society (K.R.O.).—11.55 a.m., Police Notes. 1.25-1.40, Interval. 1.40, Programme for Women. 2.40, Gramophone Music. 2.55, Pianoforte Recital by Willem van den Andel: Sonata quasi una fantasia, Op. 27 (Beethoven); Minuet No. 1, Op. 14 (Paderewski); Four Pieces (Chopin); (a) Mazurka No. 2, Op. 68, (b) Fantaisie impromptu, Op. 66, (c) Nocturne No. 2, Op. 15, (d) Scherzo in B minor, Op. 20. In the intervals at 3.15, Recitation, and at 3.30, Gramophone Music. 4.10, Recitation. 4.25, Gramophone Music. 5.10, Talk on Esperanto. 5.20, Concert by the KRO Boys, conducted by Lustenhouwer: Soloist: Mossel (Songs). In the intervals, Gramophone Music. 6.40, Police Notes. 6.55, Talk. 7.15, Gramophone Music. 7.25, Talk. 7.40, Concert by the Station Orchestra, conducted by Gerritsen: Soloist: Mme. Jo Hendriks-Zalsman (Songs); Overture, Alceste (Gluck); Air (Handel); Overture, Genevieve (Schumann); Air (Handel); Waltz from Der Rosenkavalier (R. Strauss); Le Mariage des Roses (Franck); Le secret (Faure); Paysage (Hahn); Selection from Eugene Onegin (Tchaikovsky); Monastery (Borodin); Overture, The Merry Wives of Windsor (Nicolaï); March (Wierst); Selection from The Gipsy Princess (Kalmán); Suppé Waltz Potpourri (Theile). In the intervals, News and Gramophone Music. 10.10, News. 10.15, Gramophone Music. 10.25, Concert by the KRO Boys, conducted by Lustenhouwer. 11.10, 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.). 10.10 a.m., Popular Music by the Otto Hendriks Ensemble. In the intervals, Gramophone Music. 12.10 p.m., Gramophone Music. 1.10, Pianoforte and Violin Recital. In an interval at 1.40, Reading. 2.40, Gramophone Music. 3.25 to 3.40, Interval. 3.40, Pianoforte Recital. 4.10, Concert by a Children's Choir. 4.40, Programme for Children. 5.10, Concert by the Station Orchestra, conducted by Treep: Overture, Ten Maids and No Man (Suppé); Valse ariette (Gounod); Selection from Lakmé (Delibes); Ballet Music from Undine (Lortzing); Künstlerleben (Fétras); Holzschuhentanz (Fétras); Selection from The Merry Widow (Lehar); Potpourri of Waldteufel Music (Weinger); Puppenspiele (Lederer); Goldkäferchen Brautwerbung (Aramandola); March (Lincke). In the intervals, The Three Synopators. 7.10, Talk. 7.40, Time Signal. 7.41, Weather and News. 7.45, Light Music by Paul Godwin and his Orchestra. Soloists: Ehler and Hahn (Cither). 9.40, Songs by the Zandvoort Male Voice Choir, conducted by Hamel. 10.0, Concert by the Station Orchestra, conducted by Treep. Soloist: Eva Liebenberg (Songs). 10.40, News. 10.50, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.5 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 1.15, Radio Concert. 8.0, Amusement Guide, Exchange, and News. 8.10, Agricultural Report. 8.25, Radio Concert. 8.45, News and Weather. 9.0, Concert, conducted by Marc César Scott, relayed from Monte Carlo.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.5 p.m., Light Music. 7.20, Announcements and Gramophone Music. 7.35, Sports Talk. 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., Relayed by Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Orchestral Concert. 7.0, Talk. 7.25, Song Recital. 7.50, Recitations. 8.15, Cello Recital: Three Pieces (Bach): (a) Adagio, (b) Prelude, (c) Courante in D minor; Ave Maria (Schubert); Song (Halvorsen); Polonaise (Popper). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Eysoldt: March, Hoch Heidecksburg (Hierser); Overture, The Italian Girl in Algiers (Rossini); Dance and Waltz from Coppelia (Delibes); Symphonie Poem, Helvetia (Scasola); Tango and Waltz from the Modern Dance Suite (Niemann); Three Dance Melodies (Derksen); Ballet Scene, Zigeunerfest (Lehar); March Potpourri, Jung Deutschland (Weninger). In the interval at 2.0, News. 3.0, Programme for Children. 3.30, Exchange and Time. 3.50, Talk: German Writers' Homage to German Research Workers. 4.15, Talk: The Care of Inebriates. 4.30, German History in Gravestones: A Walk through the Old Cemetery in Bonn, a Radio Picture with Pianoforte Music. 5.0, Choral Music. 5.30, Topical Talk. 5.40, Talk: Agriculture and Industry. 6.0, Czar and Carpenter—Opera (Lortzing) on Gramophone Records. 6.45, Weather, Sports Notes, and Exchange. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, First General News. 8.5, Dance Music through the Centuries—Dances from the Fifteenth to the Twentieth Centuries played on old Instruments. 10.9, News. 10.20, Review of the Week.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW., Relayed by Dresden, 941 kc/s, 319 metres.—2.0, News. 2.20, Talk: Air and Sunshine in the Cities. 3.0, Review of Books for Young People. 3.35, Exchange 4.0 (from Dresden). Concert by the Dresden Orchestra, conducted by Ernst Schiekeltanz: Overture, Die Atrikareise (Suppé); Suite from Shakespeare's Tempest (Humperdinck); Moly on the Shore (Gräinger); Selection from Aida (Verdi); Minuet (Habert); Selection from The Yellow Jacket (Lehar); Waltz, Samt und Seide (Zielner); Overture, Die Schweizerfamilie (Weigl); Six German Dances (Haydn); Two Marches (Joh. Strauss): (a) Indigo March, (b) Persian March; Two Pieces from Schelerezade (Rimsky-Korsakov); Turkish March (Mozart); Waltz, Wiener Bonbons (Joh. Strauss). 5.50, Exchange, Weather and Time. 6.0, Talk: Through Lapland. 6.20, Talk: Making a Living out of Stone and Sand—Mussolini's Desert Colony at Tripoli. 6.50, Review of the Day's News. 7.0 (from Dresden), Transmission for all German Stations. Concert of German Chamber Music, by the Dresden String Quartet and Soloists. Military March for Pianoforte (Four Hands) (Schubert); Minuet and Finale from the String Quartet in D, No. 67, Op. 5 (Haydn); First Movement from the Sonata in B Minor for Flute and Pianoforte, No. 1 (Bach); Largo and Allegro from the Sonata in B flat for Violin and Pianoforte (Mozart); Songs with Pianoforte Accompaniment: (a) Der Strom, der neben mir veransteht (Brahms), (b) Es träumte mir, Op. 57, No. 4 (Brahms); Andante con Variazioni, from the Serenade in D, Op. 25 (Beethoven); Songs: (a) Im tiefen wald verborgen, Op. 2, No. 4 (Pfitzner), (b) Ist der Himmel darum in Lenz so blau (Pfitzner); Vogel als Prophet from Waldszenen for Pianoforte Quartet (Schumann); Andante from the Pianoforte Quintet (Schumann). 8.0, Between Two Worlds—Literary and Musical Sequence in commemoration of Walter Flex (arr. Walter Eberhardt 1931). 8.45, Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen. 9.45, The Story of Roskaum Edelin—a Radio Play (Werner Wilk). 10.15, News. 10.30 (approx.), Concert of Light Music. 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—7.0 p.m., Orchestral Concert. 8.0, Talk on Bee-Keeping. 8.30, Pianoforte Recital. 9.30, Weather and News. 10.0, Orchestral Concert. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW.—Belgian Programme. 7.30 p.m., Concerto No. 5 for Violin and Orchestra (Viextemps), on Gramophone Records. 8.5, Concert by the Station Orchestra. 8.50, News in French. 9.0, Pianoforte Recital. 9.45, News in German. 9.55, Concert of Light Music by the Station Orchestra. 10.25, Dance Music on Gramophone Records.

Sweetheart Darlin'; Moon; One little Quarrel; Look what I've got; Roll along Kentucky Moon; Shuffle off to Buffalo; Lover come back to me; Bugle Call Rag; The Old Spinning Wheel; The Flies crawled up the Window; That's my Home; Signature Tune. 11.0, Talkie Memories and up to date Reviews of the Films: Selection from The King of Jazz (Whiteman); Tiptoe through the Tulips; Nobody's using it now; Live, Laugh and Love; Falling in Love again; To-day I feel so happy; I'm in the Market for You; Selection from The Big Pond. 11.30, Club Concert for Circencester Listeners: Signature Tune, The Chum Song; Overture Potpourri (arr. Leggett); Kashmiri Song (Woodforde-Finlen); Oh wasn't that a wide Ribber; Around the Volga; Swing along; The Wayside Shrine; Barefoot Trail; Selection from Waltzes from Vienna (Joh. Strauss). 12.5 a.m. (Wednesday), News Bulletin in English. 12.10 (approx.), Club Concert (cont'd): Twenty Million People; If I ever get a job again; I'm one of the Lads of Valencia; Let me explain; Put a little Springtime; Signature Tune. 12.30, Dance Music by Jack Payne and his Band: The Old Spinning Wheel; Farewell to Arms; Hiawatha's Lullaby; Let bygones be bygones; I can't remember; When the morning rolls around; In the Valley of the Moon; Lover of my Dreams. 1.0, Dance Music by the Hecolians: Signature Tune, Bells of Normandy; Under my Umbrella; Honeysuckle Rose; And so I married the Girl; Underneath the Harlem Moon; Body and Soul; You're getting to be a Habit with me; Chansonnette; You're beautiful to-night my Dear; Mahogany Hall Stomp; Rum Tum Rhythm; Hobo, you can't ride this Train; Drifting under a Summer Moon; I gotta right to sing the Blues; Hello; You are too beautiful; I hate to leave you now; Signature Tune. 1.57, I.B.C. Goodnight Melody. 2.0, 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. 5.45, Economic Notes. 6.0, A Discussion on Afghanistan. 6.25, Talk: The Timber Trade. 6.45, Topical Talk. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.5, Franzl wird Zimmermann—Radio Play (Sorembé). 8.50, Talk: Marriage. 9.25, Loewe Ballad Recital by Kurt Wichmann (Baritone). 10.25, Time and News. 10.45, See Stuttgart.

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, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—5.30 p.m., Variety Programme. 6.10, Sound News Service: Military Manoeuvres. 6.25, Talk on German Naval Heroes. 6.45, Frankfurt Exchange and Hamburg Egg Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, See Breslau. 9.0 (from Bremen), Concert: March, Germania (Keil); Overture, The Bohemian Girl (Balté); Waltz, Künstlerleben (Joh. Strauss); Selection from Oberon (Weber); Potpourri, Mit Hörnerschall und Lustgesang (Reckling); Piccolo Duet, Finkenschlag (Wiggart); March, Zum Städtchenaus (Meissner); Army March No. 9, The Duke of Brunswick. 10.0, Time and News. 10.20, Topical Talk. 10.30, Concert by the Hamburg Philharmonic Orchestra, conducted by Gerhard Maasz: Overture, Euryanthe (Weber); German Forest Idyll Op. 40 (Niemann); Slav Dance No. 2 (Dvorak); Swedish Rhapsody (Lindberg); Ein Märchen (Niedde); Dance Fantasia (Leoncavallo); Selection from I Pagliacci (Leoncavallo); Overture, Karneval in Rom (Joh. Strauss); March, Fähr's Vaterland (Müllacker).

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. (from Danzig), Concert by a Police Band. Glückauf (Faus); Festival Overture (Fischer); Fantasia on Four German Folk Songs (Schmidt); Die Liebe zum Volke (Suppé); Horch, die alten Eichen rauschen (Stieheritz); Erzherzog-Albrecht-Marsch (Konzak); Schönfeld-Marsch (Zielner); Festival Overture on Dutch Melodies (Blätternann); Soldatenleben (Kéler-Béla); Das treue deutsche Herz (Weninger). 1.1 p.m., Time and Weather. 1.5, 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. 3.30,

AUGUST 29th

TUESDAY

continued

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.—4.45 p.m., 1 Balliata—Italian Youth Movement Programme. 5.15, Dance Music from the Savoy. 6.0 to 6.5, Weather. 6.40, Giornale Radio, Dopolavoro Notes and Gramophone Music. 7.0, Time, Report of the Royal Geographical Society, and Gramophone Music. 7.10, Agricultural Notes. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News, Weather and Gramophone Music. 8.30, Talk on the following Transmission. 8.35, Il Pierrot nero—Operetta in Three Acts (Hajos). In the intervals: Talk and Literary Notes, 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 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, 218.5 metres.—12 Noon, Concert by the Wiener Symphoniker, conducted by Josef Holzer. In an interval at 1.0 p.m., Time and News. 2.0, Interval. 3.0, Time and News. 3.20, Talk: German Graphic Art. 3.40, Gramophone Records of Schubert and Wagner Music, conducted by Max von Schillings. 4.45, Talk for the Stuzberg Exhibition: The Reconstruction of Austria. 5.5, Talk: German Light Athletics in the International Championships. 5.20, Song and Pianoforte Recital by Grete Pohl (Soprano) and Hilde Adler. 6.0, Talk on the Vienna Jubilee Fair. 6.10, Talk: The New Guinea Exhibition in the Natural History Museum. 6.35, Talk: Research as a Voluntary Labour Service. 7.0, Cello Recital by Stefan Auber. Sonata for Cello and Pianoforte in D, Op. 102, No. 2 (Beethoven); Adagio and Allegro (Bocherini). 7.35, Time and Announcements. 7.45, Concert of Opera Music by the Volkoper Orchestra, conducted by Karl Anderieth. Soloists: Wanda Aebel (Soprano) and Albert Feller (Tenor). Overture, The Kiss (Smetana); Tenor Aria from Rigoletto (Verdi); Soprano Aria from Eugen Onegin (Tchaikovsky); Tenor Aria from The Tales of Hoffmann (Offenbach); Selection from The Queen of Sheba (Goldmark); Liebesszene from Feuersnot (R. Strauss); Duet from Tosca (Puccini); Soprano Aria from L'Africaine (Meyerbeer); Duet from Aida (Verdi). 9.25, Notes on the Catholic Conference. 9.40, News. 9.55, Concert. Part I, relayed from the Leihar-Saal. Gustav Macho (Violin), Hans Quizerer (Cello), and Dr. Eugen Billig and Gustl Heintze (Pianoforte). Part II, relayed from the Krantz-Ambassador Hotel. The Schrammel Trio and Soloists.

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., Popular Concert, conducted by Szule, relayed from the Café Bagatella; Hussars' March (Szule); Overture, The Black Domino (Auber); Waltz, Künstlerleben (Joh. Strauss); Selection from Flossi (Szule); Moment musical (Schubert); Mazurka (Szule). In the intervals, Polish Press Review and Weather Report. 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.45, Aviation Notes and Anti-Gas Drill. 3.50, Gramophone Music. 3.55, News. 4.0, Symphony Music on Gramophone Records. 5.0, Answers to Correspondence. 5.15, Polish Dance Music, by the Górzynski Quartet. 6.15, Talk. 6.35, Song Recital. 7.5, Light Music on Gramophone Records. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Topical Talk. 8.0, Concert by the Station Orchestra, conducted by Oziminski. Soloist: Downar-Zapolska (Soprano). Wedding March (Mendelssohn); Scherzo from A Midsummer Night's Dream (Mendelssohn); Berceuse and Prelude (Jännefelt); Valse caprice (Rubinstein); Melody No. 2, Op. 16 (Paderewski); Gipsy Dance from Manru (Paderewski); Four Songs (Bereza); Ballet Music from Hamlet (Thomas); Two Arias from Thaïs (Massenet); Polonaise from the Third Suite (Tchaikovsky). In the intervals, Radio Journal and Agricultural Report. 10.0, Dance Music, relayed from the Café Europe, Cichociemnie. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music Relay (contd).

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—8.10 p.m., Announcements. 8.30, Recital of Old Pianoforte Music. 9.0, Soprano Song Recital. 9.30, Recital of Greek Pianoforte Music. 10.0, Yugoslav Song Recital by Jovan Milekovic. 10.30, Weather, News and Programme Announcements. 10.40, Dance Music. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

Dream (Mendelssohn); Marche aux flambeaux (Meyerbeer); Hyde Park (Jalowicz); Nocturne (d'Agreves); Florentine Serenade (Moret); Selection from Le Jongleur de Notre Dame (Massenet); Valse romantique (de Séverac); Le Marchand de sable qui passe (Roussel); Scherzo (Mussorgsky). 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, Organ Recital. 8.0, Nouvel album (Poldini), for Pianoforte, by Edouard Gendron. 8.30, Concert by the Station Orchestra, conducted by Laclaux; Soloist, Michèle Bréal (Songs); Overture, Mirella (Gounod); Chanson du berger and Cantilène (Gounod); Symphonie Suite from I Pagliacci (Leoncavallo); Ballet Music from Déclama (Maréchal); Romance for Violin and Orchestra (Bagners); Melody (Hirschmann); Ballet Music from Faust (Gounod); Prière et Chanson de Florian (Godard); Waltz, Au clair de lune (Godard); Songs (Vidal); Dance Suite from La Maladetta (Vidal). 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: Overture, The Bartered Bride (Smetana); Les Méneurs (Richepin); Wiener Praterleben (Translatour); Colimette (Weckerlin); Air Varié for two Cornets (Wittmann); Il a des Galons (Bousquet); Bella Elisa (Közer); Tango (Albeniz); Un Homme en Habit (Borel Clerc-St. Granier); Potpourri of Spanish Airs (Dros); Quand l'amour meurt (Créuieux); Stéphanie Gavotte (Czibulka); Séduction (Mario Cazes); Melody (Lehar); Souvenir de Rouen (Soubirou); La Chanson du Vagabond (Richtmann); Partir avec vous (Borel Clerc); Santiago (Corbin); Zapateado (Sarasate); Nostalgie (Pizarro); Waltz (Vogel); Trois petites pièces montées (Satie); Reviens (Christine); Vivons nos Rêves (Green-St. Granier); L'Enclume (Borel Clerc); The Blue Danube (Joh. Strauss); Pacific (Jack Payne); Badenmädle (Kozak); Le Sapin (Dupont); Sur la Rance (Avignon); On the Waters of Minnetonka (Lietrance); Rupture (Leojac); Rose d'Asie (Paddy). In the interval at 1.0, Exchange, News, and Weather; and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 7.0, Agricultural Notes. 7.10, Gramophone Music; Hawaiian Guitar (Scott); Tex Yeux (Bonincontro); Paradise of Dreams (Fisher); Un Million (Moretti); Christina (Gottler); Sandi (Aurelli); Funi-culi-Funi-cula (Deuza); (Gluh-wirnichens Wachtparade (Welhe); Melody (Green); Selection from The Chocolate Soldier (O. Straus); Al Fresco (Herbert). 7.50, Commercial Prices and News. 8.0, Faust—Opera (Gounod), on Gramophone Records. In the interval at 8.30, News, Weather, and Sports Notes; 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., KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Smiths Play Bridge. 8.30, Words and Music, from New York. 8.45, Congress of Clubs Period. 9.0, Meredith Wilson Orchestra, from New York. 9.15, Jack Walton's Orchestra, from New York. 9.30, News and Market Report. 9.45, Programme to be announced. 10.0, Casino Orchestra, from New York. 10.15, Tarzan of the Apes. 10.30, Larry Larsen, from New York. 10.45, Orphan Annie, from New York. 11.0, News and Piano Classique. 11.15, Sports Notes and a Song. 11.30, Pittsburgh Spotlights. 11.45 to 2.30 a.m. (Wednesday), New York Relay. 11.45, Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15 a.m. (Wednesday), Radio in Education. 12.45, Ray Heatherton. 1.0, Pastoral. 1.30, Adventures in Health. 1.45, Floyd Gibbons. 2.0, Miniature Theatre. 2.30, Programme to be announced. 3.0, Musical Memories, from New York.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—12.25 p.m., See Warsaw. 12.35, Interval. 12.59, Time Signal and Chimes from the Town Hall. 1.3, Gramophone Concert. 2.0, Market Prices. 2.10, News. 2.15, Interval. 6.0, Talk on Beekeeping and Agriculture. 6.15, See Warsaw. 7.20, Miscellaneous Items and News. 7.35, Theatre Notes and Programme Announcements. 7.40, See Warsaw. 10.0, Time Signal, Sports and Police Notes. 10.15, Dance Music from the Esplanade Café. 11.0 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Moravská-Ostrava. 3.55, Exchange. 4.0, Interval. 5.45, Gramophone Music. 5.55, Talk: A few Words to the Younger Generation. 6.5, Market Prices. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Concert by the Karlsbad Vocal Quartet. 7.0, Chimes and News. 7.10, Topical Talk. 7.35, Saxophone Solos by Vilem Fleischlians; Waltz (Jeremias); Humoresque (Vedral); Foxtrot (Zoubek). 7.50, Talk: How Folk Songs help us to understand a Language. 8.5, Microphone Re-

port from a Street, with Gramophone Records. 8.35, See Moravská-Ostrava. 9.15, See Brno. 10.0, Time and News. 10.15, Talk in English: Five Years of University Summer Schools. 10.30, 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.—6.15 to 6.50 a.m. (from Lausanne), Gymnastics Lesson. 12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News and Weather.—12.40 (from Lausanne), Gramophone Concert. 1.0 (from Lausanne), Financial News. 1.10 (from Lausanne), Gramophone Concert. 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 Moser. 5.0 (from Lausanne), Programme for Women. 5.30 to 7.0, Interval. 7.0 (from Geneva), Talk. 7.25 (from Geneva), Answer and News. 7.45 (from Geneva), Answers to Correspondence. 8.0 (from Lausanne), Our Animal Friends—A Musical and Literary Programme. 9.50, News and Weather. 10.0, Report on the Cycle Tour of Switzerland. 10.30 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme. 9.30, Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News. 10.30, Reading. 11.0, Pianoforte Solos by Emil Thoroddsen, followed by Arias on Gramophone Records.

RIGA

572 kc/s, 525 metres; 15 kW.—7.5 p.m., Tchaikovsky Concert by the Station Orchestra. In the interval at 8.0, News. 9.0, Weather and News. 9.15, Humorous Programme. 9.40, 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, from 4.45 p.m. (approx.).—1.0 to 2.15 p.m., Orchestral Concert. In the intervals from 1.30 to 1.45, Giornale Radio and Exchange, and at 2.0, Time and Announcements. 4.30, Giornale Radio and Exchange. 4.45, See Turin. 5.10, Weather. 5.15 to 6.0, Orchestral Concert of Light Music. 6.40 (Naples), Shipping and Sports Notes. 6.45, Wireless Signals and Dopolavoro Notes. 7.0, Tourist Report. 7.10, Agricultural Notes. 7.20, News in Foreign Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Sponsored Music. 8.30, Sports Notes. 8.45, Variety 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 19.55 metres.—12.45 a.m. (Wednesday), Stock Reports and Baseball Scores. 1.0 to 3.30, 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 Orchestra. 3.0, Lives at Stake. 3.30, National Radio Forum, 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 Berna, 1,220 kc/s, 245.9 metres.—5.30 p.m. (from Basle), Light Music on Gramophone Records. 6.30 (from Berne), Programme for Young People. 7.0, Time and Weather. 7.5, Concert by the Station Orchestra. 7.55 (from Berne), Talk: Family Portraits. 8.25 (from Berne), Talk on the Violin. 9.0, Weather and News. 9.10, A Musical Drama (Hubert Pataký). 10.15 (approx.), Close Down.

SEVILLE

815 kc/s, 368.1 metres; 1.5 kW.—9.30 to 10.0 a.m., News Bulletin. 3.0 to 4.0 p.m., Variety Programme. 10.0, News, Exchange and Weather Report. 10.15 (approx.), Extracts from La Traviata—Opera (Verdi). 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.—8.5 p.m., Folk Music. 5.30 (from Sundsvall), The Practical Corner. 5.50, Variety Programme. 6.15, Gramophone Music. 6.55, Greetings from Iceland by Helli Hjörvar. 7.15, Weather and News. 7.30, Talk: Judaism and Christianity in the Twentieth Century, relayed from Uppsala, 662 kc/s, 453.2 metres. 8.0, Pianoforte and Violin Recital of Cigány

Music by Károly Szénássy and Rosa Cegledi, relayed from Malmö, 1,301 kc/s, 231 metres. 8.30, Talk, relayed from Malmö. 9.0, Concert of Operetta Music by the Station Orchestra. Soloist: Karin Ygberg (Songs). Overture, The Bird Fancier (Zeller); Selection from Tip-Toes (Gershwin); Aria (Offenbach); Aria from Le petit Faust (Hervé); Air (Jones); Selection from The Princess Ti-Ta-Pa (Stolz); March from Bocaccio (Suppé). 9.45, Weather and News. 10.0, Orchestral Concert of Swedish Music: March (Söderman); Swedish Folk Tunes (Söderman); Suite from Turandot (Atterberg); Rhapsody (Kallstenius); Melody (Bromm); Summer Suite (Liljefors); Polish Festival (Lindberg). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Light Music. 12 Noon, Orchestral Concert, conducted by Maurice de Villers. Overture, Oberon (Weber); Selection from The Magic Flute (Mozart); Suite from A Midsummer Night's Dream (Mendelssohn); Bohemian March (Filipucci); Waltz, Sphärenklänge (Jos. Strauss); Selection from Paganiuni (Lehar); Suite Carnavalesque (Thomé); Rhapsody Juive (Moufret); Russian March (Ganne). 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 on French Authors killed in the War. 5.15, Orchestral Concert, conducted by Roskam. Selection from White Horse Inn (Benatzky); Waltz Potpourri, No. 3 (Robrecht); Selection from Phi-Phi (Christine); Waltz, In the Valley of the Moon (Tobias and Burke); Love is the Sweetest Thing (Aubke); Two Stop, Caramba (de Bozi). 6.0, Talk on Gastronomy. 6.15, Topical Talk. 6.30, Talk with Gramophone Illustrations on Beethoven. 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in German. Lottery Results and Announcements. 8.30, Pfliferda—Concert of Old Alsatian Dances composed and arranged by Jean Gantz. The Vogesia Municipal Orchestra, conducted by Charles Schaad, relayed from Ribeauvillé. In the intervals, Recitations by Georges Boesch. After the Programme, 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.—12 Noon, Orchestral Concert, relayed from Baden-Baden. Conductor: Karl Assmus. Badenweiler-Marsch (Fürst); Overture, La dame blanche (Boieldieu); Strandbilder (Blon); Czardas from Der Geist des Wojewoden (Grossmann); Introduction to Act III and Bridal Chorus from Lohengrin (Wagner); Schumann Potpourri (Schreiner); Waltz, Wiener Mad'ln (Ziehrer). 1.15 p.m., Time and News. 1.30, Choral Music 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 Frankfurt. 5.45, Talk for Amateur Photographers. 6.10 (from Mannheim), Talk on Budapest. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, Talk: Things you should know. 8.20, Midsummer—Talk with Gramophone Illustrations. 9.0, See Munich. 9.20, Dance Music from Langenberg. 10.0, Report on the Care of Disabled Ex-Servicemen. 10.15, Time and News. 10.45, Orchestral Concert, conducted by Franz Dolezal: Hindenberg-Marsch (Esterl); Was der Wald erzählt (Zimmer); Overture, Der Bettelstudent (Müllöcker); Potpourri, Von Wien durch die Welt (Hrubý); Argonner Marsch (Männecke); Minuet (Mozart); Tambourin (Gossec); Waltz, Tales from the Vienna Woods (Joh. Strauss); La Paloma (Yradier); Im Rosengarten (Saussoici); Deutschemeister-Regiment-marsch (Alibout). 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.15 p.m., Sound Film Music. 6.30, Music by an Argentine Band. 6.45, Military Music. 7.0, Operetta Music. 7.15, News. 7.30, Overture, William Tell (Rossini). 7.45, Light Music. 8.0, Programme by a Viennese Orchestra. 8.30, Opera Music: Cavatina from William Tell (Rossini); Air from La Favorita (Donizetti); Air from Philémon et Baucis (Gounod). 8.45, Cello Solos: Zigeunerweisen (Sarasate); Allegro appassionata (Saint-Saëns); Moment Musical (Schubert). 9.0, Song Recital. 9.30, Concert: Fireworks (Stravinsky); Kermesse villageoise (Filipucci); Mazurka in B Minor (Chopin); Potpourri of Overtures (Leggett); Valse lumineuse (Ganne). 10.0, Orchestral Music. 10.15, News. 10.30, Concert for Listeners in Morocco. 11.15, Orchestral Music. 11.30, Russian Songs. 11.45, Military Music. 12 Midnight, News. 12.5 a.m. (Wednesday), Dance Music. 12.30, Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—4.45 p.m., till Close Down, See Turin.

TRONDHEIM.—See Oslo.

The Exhibits which Made Radiolympia

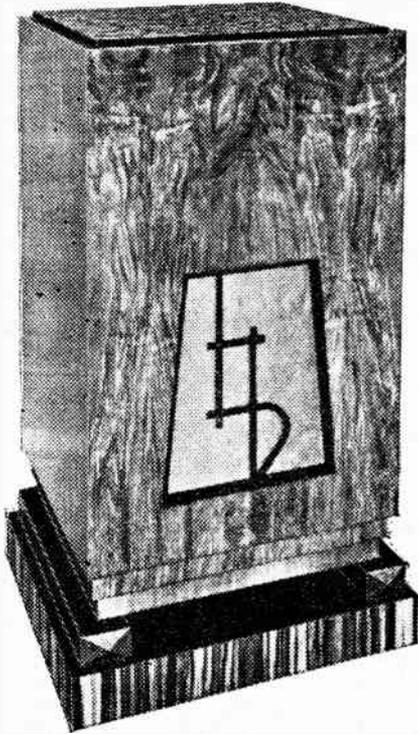


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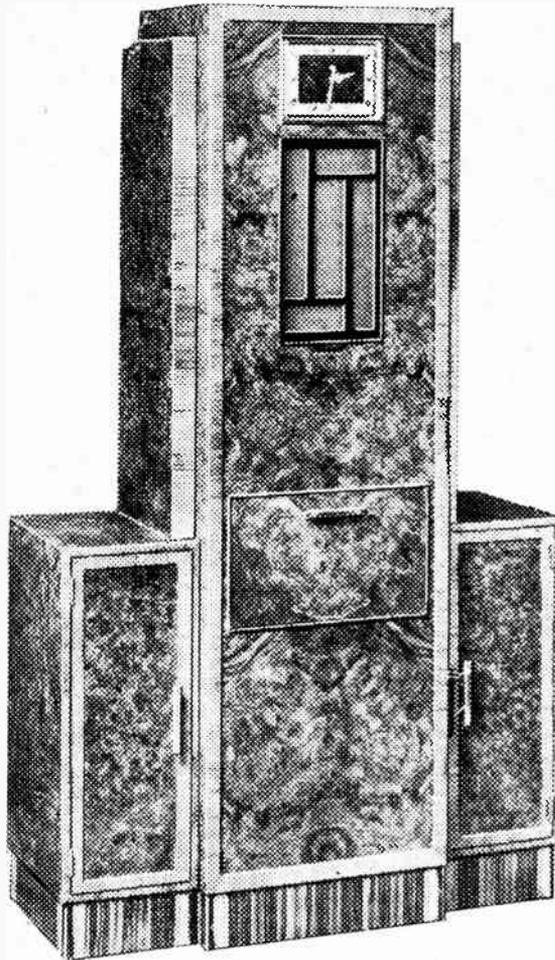
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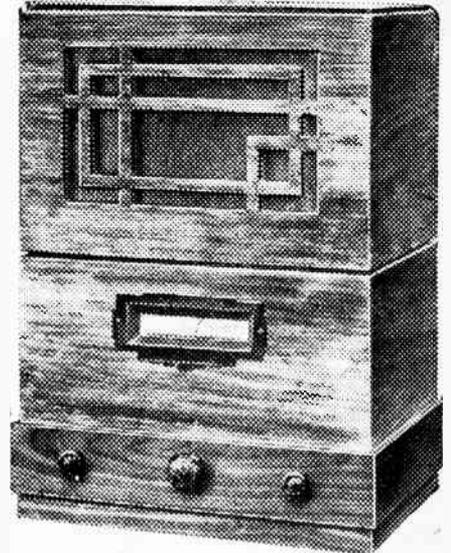
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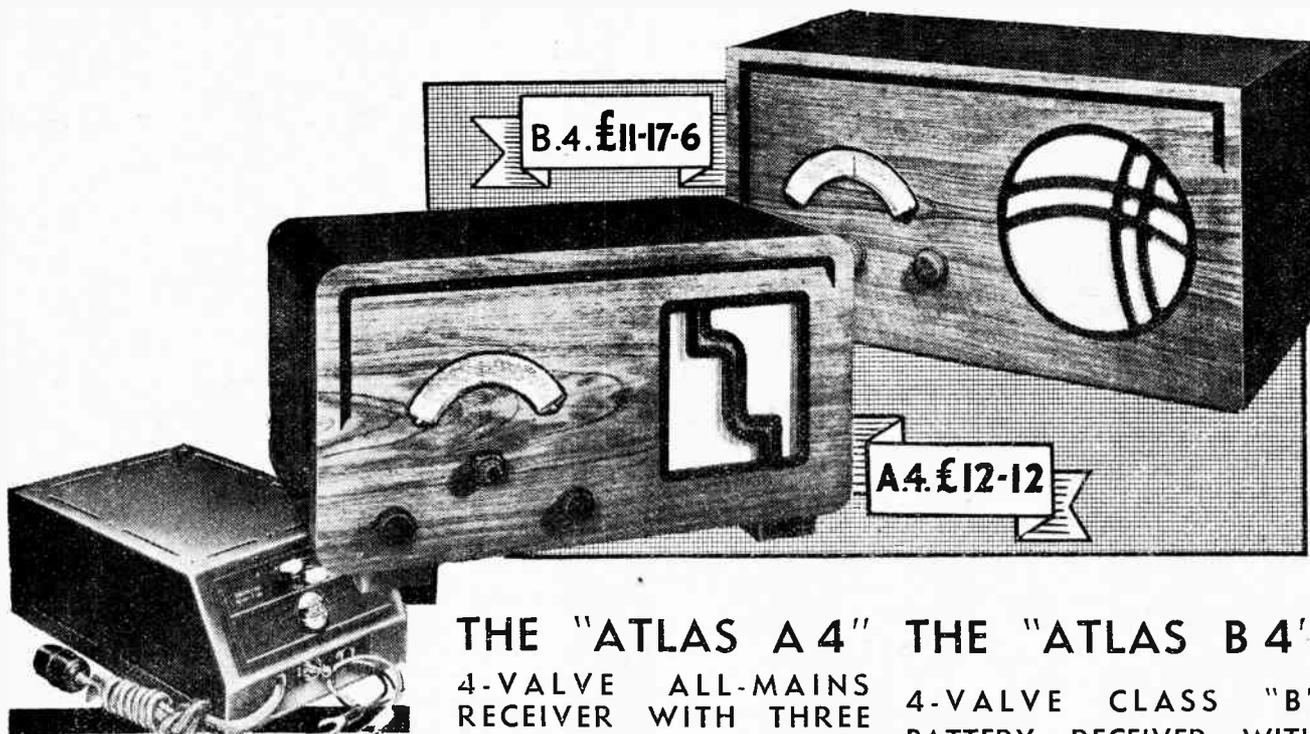
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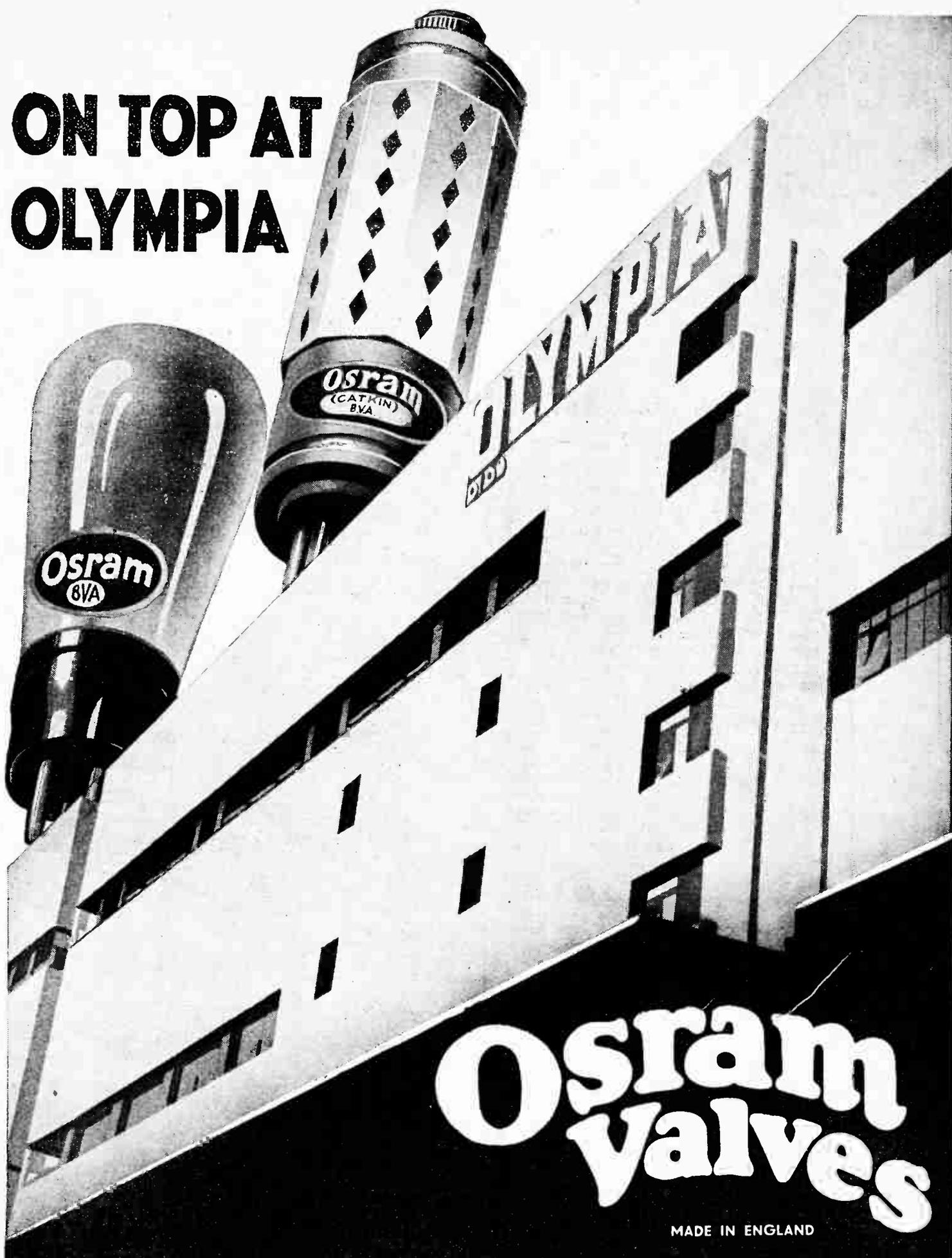
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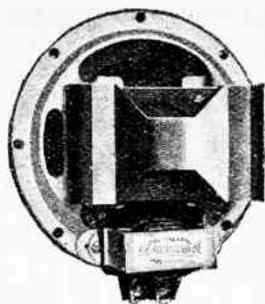
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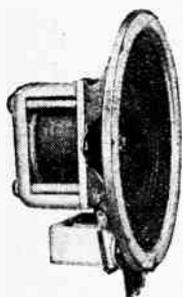
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OVERALL DIA.	- -	5 in.
CONE	" - -	4 1/2 in.
DEPTH	- -	2 3/8 in.

Field excited types
2,500 or 6,500 ohm
field

Permanent Magnet
model

17/6 **21/-**

Both complete with either power or pentode transformer.

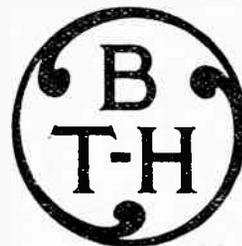
Class "B" transformer 1/6 extra.

SONOCHORDE REPRODUCERS LTD.

1, WILLES DEN LANE, N.W.6.

'Phone : Maida Vale 6066 (5 lines).

Only the best is good enough

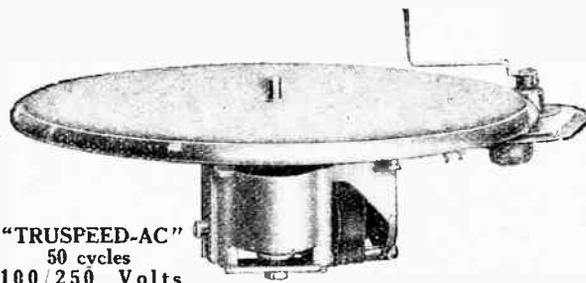


ELECTRIC GRAMOPHONE MOTORS

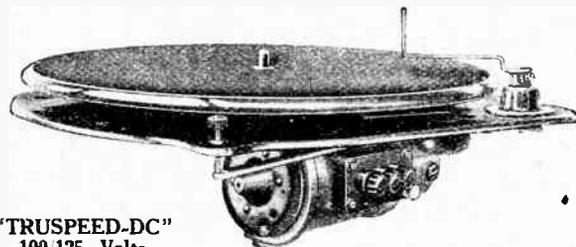
Made for all standard Voltages A.C. and D.C.

Four distinct models from which to choose

All equipped with automatic stop switch
Your local dealer stocks them!



"TRUSPEED-AC"
50 cycles
100/250 Volts

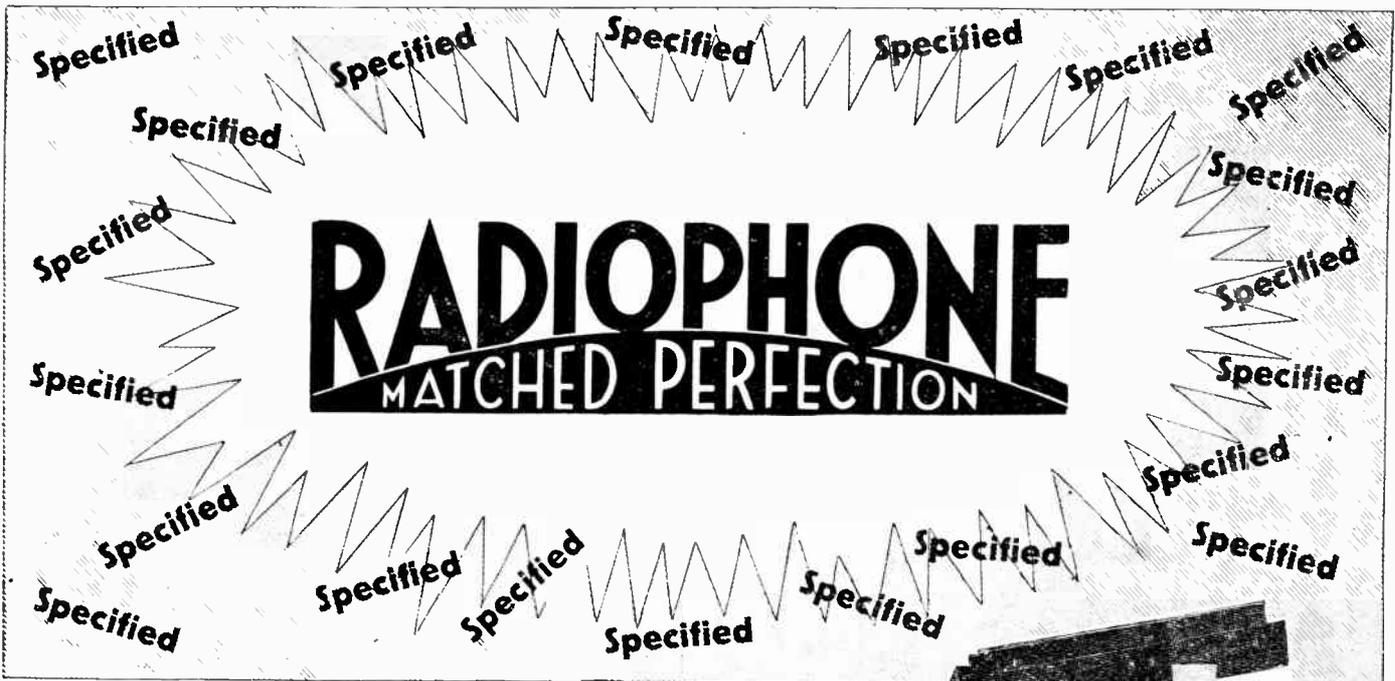


"TRUSPEED-DC"
100/125 Volts
200/250 Volts

BTH RUGBY

THE BRITISH THOMSON-HOUSTON COMPANY, LIMITED, RUGBY, ENGLAND A1536-N

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.



"MATCHED PERFECTION"
Scoops the Pool!

BRITISH RADIOPHONE matched perfection components are specified by practically every designer in practically every set of note.

Why is this? Why are the British Radiophone products chosen in preference to others?

The answer is to be found in their quality and reliability. They are all matched to perfection. Many undergo no fewer than sixteen separate and exacting tests before release for sale.

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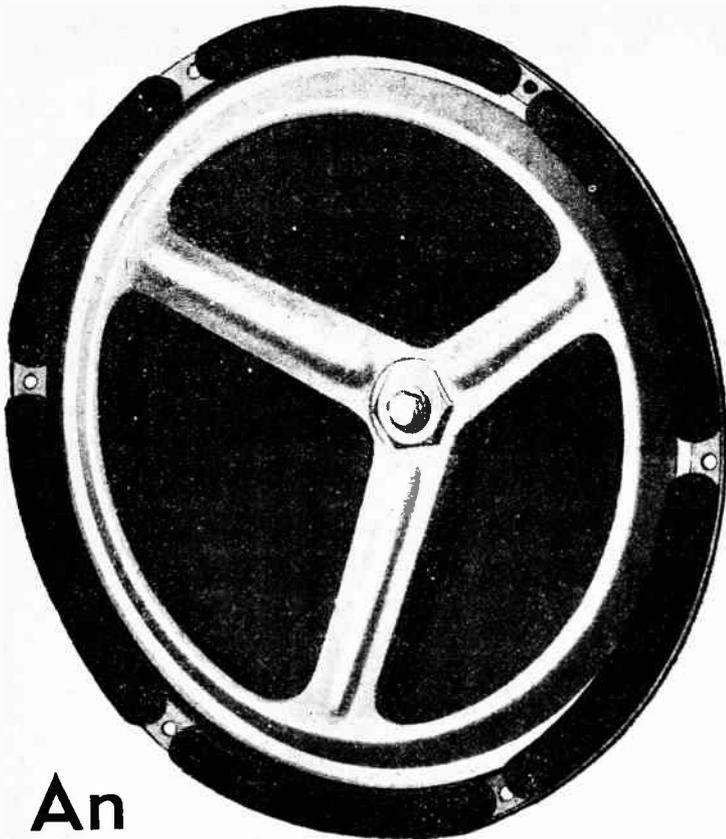
Whether you're building afresh this year or merely reconstructing use British Radiophone "matched perfection" and be sure of satisfaction.

BRITISH RADIOPHONE LTD., ALDWYCH HOUSE, ALDWYCH, W.C.2. Tel.: Holborn 6744.



SPECIFIED FOR
Wireless World NEW MONODIAL SUPER
3-gang Superhet Condenser with Cover Type
424A **30/-**
1 Full Vision Disc Drive Type 582A **8/6**

Insist on
"MATCHED PERFECTION"



An **R & A** masterpiece—
a new principle of
construction—the

The ALPHA P.M.C. Reproducer, with its revolutionary principle of design and construction, its immunity from damage, ingenious system of diaphragm support and brilliance of reproduction is an outstanding achievement. It handles inputs as high as 7 watts undistorted A.C. without distress.

Two Models are available—STANDARD MODEL with 6 ratio Transformer, and MODEL B with Universal Transformer for Class B operation. Dia. 10½" Depth 5¼".

"ALPHA"
P.M. MOVING COIL
REPRODUCER.

The ALPHA has a flux density of 9,000 lines per sq. c.m. IN THE GAP, thus ensuring high sensitivity and successful operation from the output of an average super power valve. Its unique method of construction results in immunity from variation in fidelity of reproduction. The new R. & A. Leaflet contains full details of this reproducer, and is sent free on request.

52/6

WITH TRANSFORMER.

The 1934 "CHALLENGER" series
of P.M.C. Reproducers comprises 5 Models—



EACH MODEL
35/-

Diameter 8½" Depth 3¾"

Standard Model for use with Super Power and Pentode Outputs. Includes 3 ratio Transformer.

- OTHER "CHALLENGER" MODELS—
TYPE "B" for Class B Amplification (B8 for Cossor, and B15 for Mullard and Mazda Class B Valves).
"P." An Extension Instrument for Commercial Receivers.
"Q" for Quiescent Push-Pull (15,000 ohms Plate-to-Plate Load).

The New Leaflet contains full details of R. & A. 1934 Models. Write for a copy.

Reproducers & Amplifiers Ltd.,
FREDERICK STREET, WOLVERHAMPTON.

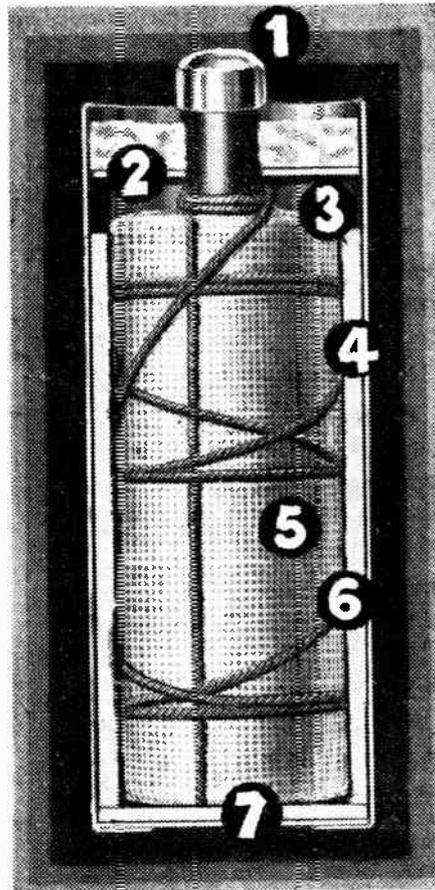
Holden



EDISWAN

'The name that means 'EXCELLENCE'

**Why EDISWAN H.T.
will give you
EXTRA service**



Here is the answer. These special features clearly demonstrate Ediswan superiority. You can get Ediswan Batteries in all standard sizes, including portable types—Standard or Super Capacity—at the usual prices.

- 1 A brass cap tightly affixed to the carbon rod forms the positive connection.
- 2 The cell is sealed by means of a waxed washer over which paraffin wax is poured. This washer assists in centralising the sac in the cell.
- 3 An air space is left between the top of the sac and the washer to allow for the expansion of the electrolyte during discharge.
- 4 A substantial zinc container which forms the negative pole of the cell.
- 5 The sac consists of a highly efficient depolariser, tightly compressed round the carbon rod, the whole being securely wrapped and tied.
- 6 Electrolytic paste of a special chemical composition which fills the space between sac and zinc container and activates the cell.
- 7 A waxed paper disc which insulates the sac from the bottom of the zinc container.

EDISWAN
H.T. BATTERIES



THE EDISON SWAN ELECTRIC CO. LTD.
PONDERS END, MIDDLESEX

EDISWAN—the Better Service Batteries

B255

CONTENTS

RADIO POWER UNITS—and how to build them.

NOTES ON A.C. POWER UNITS.

OPERATING RECEIVERS ON D.C. MAINS.

ABOUT T.C.C. ELECTROLYTIC CONDENSERS.

ELIMINATION OF INTERFERENCE.

FOUR T.C.C. POWER UNITS (A.C.) with full constructional details.

ROTATING RESISTANCE CALCULATOR.



YOUR MAINS PROBLEMS

—this Book answers them all

- What size Eliminator do I need?
- How can I cut out Mains Hum?
- How can I eliminate Interference?
- When should I use an Electrolytic?
- How do I build an A.C. Power Pack?
- What special precautions for D.C.?
- What resistance do I need?

T.C.C.

ALL-BRITISH
CONDENSERS

The Telegraph Condenser Co., Ltd., Wales Farm Rd., N. Acton, W.3.

GET YOUR COPY

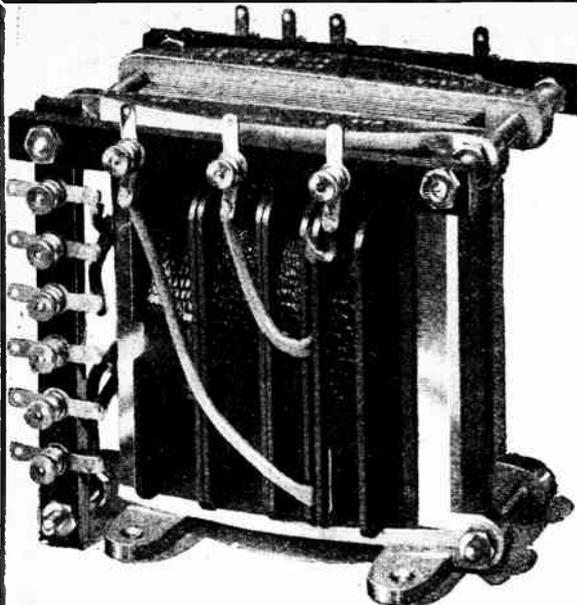
COUPON. To the Publicity Dept., The Telegraphic Condenser Co., Ltd., Wales Farm Rd., N. Acton, London, W.3.
Please send me a copy of your book "The Design and Construction of Radio Power Units," for which I enclose six penny stamps to cover cost and postage.

NAME

ADDRESS

W.W. 25.8.33

Please write in block letters.



SPECIFIED for the "WIRELESS WORLD" NEW MONODIAL SUPERHET —THE "SENSATION" OF OLYMPIA

We feel very gratified that within a few weeks of the introduction of our revolutionary Type 2A7 "Pentagrid-Converter" Valve, same has been selected for incorporation in the remarkable new "Monodial" Set, described in this issue. Numerous British-Made Lyons—"B.A.T." (Best-After-Test) Products have also been specified, proof positive of their sterling merits. The complete selection is:—

FOR THE RECEIVER UNIT:

- 1 "B.A.T." Type 728 Toggle Switch, 3 amps. 250 v. 1/6
- 2 "B.A.T." Type 6728 D.P.D.T., Q.M.B. Switches @ 3/9 7/6
- 1 Type P-58, 5,000 Ohms W.W. Volume Control 5/6
- 1 Tapered Volume Control, 250,000 Ohms 6/6
- 1 Special 2-Ohm W.W. Power Resistance 1/6
- 1 Complete Kit of 18 "B.A.T." Precision Resistors, as specified, at 10½d. per Watt 17/6
- 1 LYONS-SYLVANIA Type 2A7 PENTAGRID-CONVERTER VALVE, with Grid-Clip 17/6
- 1 USA-Pattern 7-Pin (Medium) Valveholder 2/-

FOR THE POWER UNIT:

- 1 Complete Kit of 6 "B.A.T." Precision Resistors, at 10½d. per Watt 7/-
- 1 "B.A.T." (BEST-AFTER-TEST) MAINS TRANSFORMER, with correct length colour-coded leads, exactly to specification, Catalogue No. 262 50/-

SHOULD YOU EXPERIENCE DELIVERY DELAYS,
WRITE TO US, AND WE WILL IMMEDIATELY ASSIST YOU.
WE GUARANTEE EVERYTHING FROM STOCK.

CLAUDE LYONS LTD.

76, OLDHALL STREET, LIVERPOOL, 3
40, BUCKINGHAM GATE, WESTMINSTER, S.W.1.



LYONS-SYLVANIA
TYPE 2A7
"PENTAGRID-CONVERTER"
VALVE (See
"WIRELESS
WORLD" ISSUE
JUNE 9, PAGES
407-9)
ONLY... 17/6

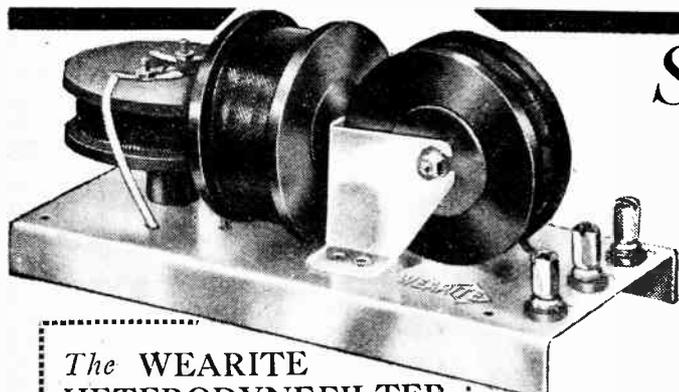
LYONS' "B.A.T."
(Best-After-Test)

MAINS

TRANSFORMER

No. 262 . . . 50/-

GOOD STOCKS. NO WAITING.
ORDER YOURS NOW!



The WEARITE HETERODYNEFILTER

Of the three sectional type this unit is designed to give a sharp cut off at 3,500 cycles and is successfully employed as a Heterodyne Whistle Filter and also as a Scratch Filter following a pick-up Impedance approx 10,000 ohms.

PRICE
15/-

LIST No. W.M.3

Specially built for the NEW MONODIAL SUPER-HET

These two Wearite components, specially designed and built to the specifications of the designer of the New Monodial, carry with them the usual Wearite guarantee for accuracy and reliability. Use these components and get results as per the designer's own Monodial.

MAKE CERTAIN—USE THESE TOO!

- Two Wearite Screened H.F. Chokes
Type H.F.P. Price 3/6 each
- One Wearite Potentiometer
5,000 ohms, Type Q.V.C. Price 4/6

Regd. Trade Mark



POST THIS COUPON FOR THE NEW WEARITE BOOK

COUPON To Messrs. WRIGHT & WEARE, Ltd.
740 High Road, Tottenham, London, N.17.

Please send me a copy of your new booklet, No. S32, giving full details of your components and how to use them, together with technical data. I enclose 3d. in stamps to cover cost and postage.

NAME.....

ADDRESS.....

Please write in block letters.

The WEARITE MAINS TRANSFORMER T.22.C

A thoroughly workmanlike job with characteristics guaranteed to conform in every particular to the designer's requirements.

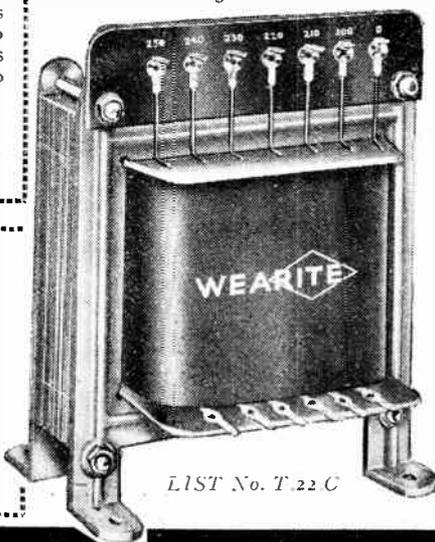
Primary tapped for use on 200-250 volt supplies.

Output voltages

- 425V-0-425V at 120 m.a.
- 2V-0-2V at 6 amps.
- 2V-0-2V at 3 amps.
- 2V-0-2V at 1 amp.
- 2V-0-2V at 1 amp.

PRICE
50/-

Specially Shielded primary winding.



LIST No. T.22.C

BENJAMIN

RADIO PRODUCTS

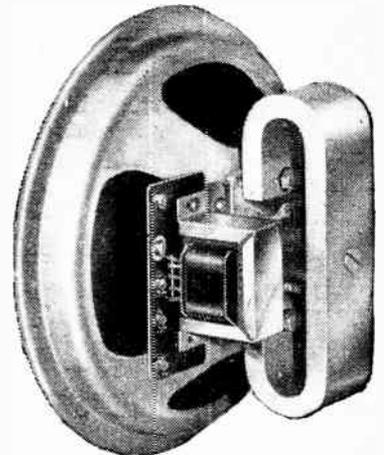
MAGNAVOX MOVING-COIL SPEAKERS



A noteworthy addition to the Benjamin programme this year is a range of Magnavox Permanent Magnet Speakers. The most striking quality about these speakers is their sensitivity and quick response to transients, resulting in exceptionally lively attack.

“STANDARD” model (left, shown in its sealed dustproof bag) - - £1-17-6

“SENIOR” model (right) - - £3-3-0



MAINS - ENERGISED MODELS

“Wireless World” readers will be interested in the new “Magna” and “Standard” Series. The new “Magna” models surpass anything yet produced and without a doubt represent the highest standard of single speaker efficiency yet attained in the science of sound reproduction.

“MAGNA” D.C. 144	£2 10 0
“MAGNA” D.C. 152	£3 0 0
“STANDARD” D.C. 144	£1 15 0
“STANDARD” D.C. 152	£2 5 0

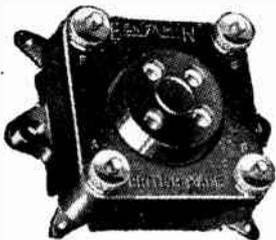
DUAL-COMPENSATED RANGE

Every enthusiastic constructor will appreciate the beautiful and correct tonal balance afforded by Magnavox Dual-compensated pairs of speakers. Permanent Magnet and mains-energised models are available.

“STANDARD” D.C. 144/144	£3 5 0
“MAGNA” D.C. 152/144	£5 0 0
PERMANENT MAGNET MODEL 252/254	£5 0 0

Write for complete data sheets giving transformer details and prices of Magnavox Speakers.

BENJAMIN VALVEHOLDERS



The Clearertone 4-pin valveholder for modern receivers. The entire platform is fully sprung and is equipped with positive grip sockets.

Price 1/6



The Vibrolider, the most popular of all 4-pin valveholders. Dustproof base and safety stop to prevent injury to spring contacts.

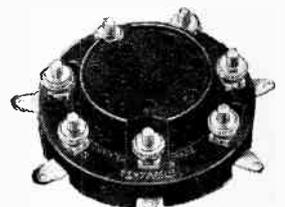
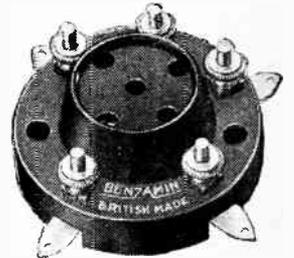
Price 10d.

The new Benjamin 5-pin valveholder with self-cleaning contacts. Fitted with soldering tags and easy wiring reversible terminals.

Price 10d.

The 7-pin holder specially designed for class “B” and all other 7-pin valves. Equipped with easy wiring reversible terminals. The terminal holes in valve platform are counter-sunk for flush under-chassis mounting.

Price 2/-



Stocked by all dealers, manufactured and sold by,
THE BENJAMIN ELECTRIC LTD.
 TARIFF ROAD, TOTTENHAM, N.17.

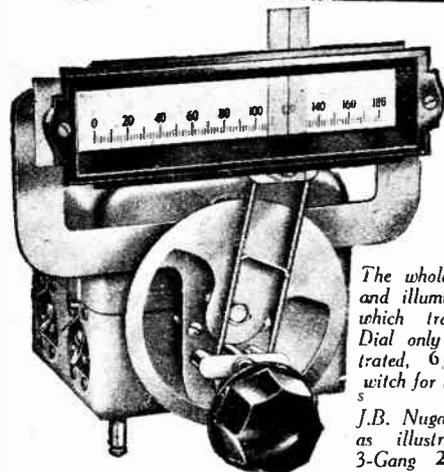
BENJAMIN AND MAGNAVOX PATENTS AND REGISTERED DESIGNS

Advertisements for “The Wireless World” are only accepted from firms we believe to be thoroughly reliable.



JUST ANOTHER WAY OF SAYING—

Whatever the circuit, the experienced constructor will always choose "J.B." . . . whether he needs a simple tuning condenser or a modern multi-stage Gang. For tuning iron-cored coils, in particular, the accurate matching found in J.B. Gangs becomes imperative; and the mechanical rigidity of "J.B." ensures the permanence of this matching. In fact, the J.B. Gangs have proved so very satisfactory for use with these new coils that their general design will remain unchanged.



**NEW J.B.
STRAIGHT
LINE DIAL**

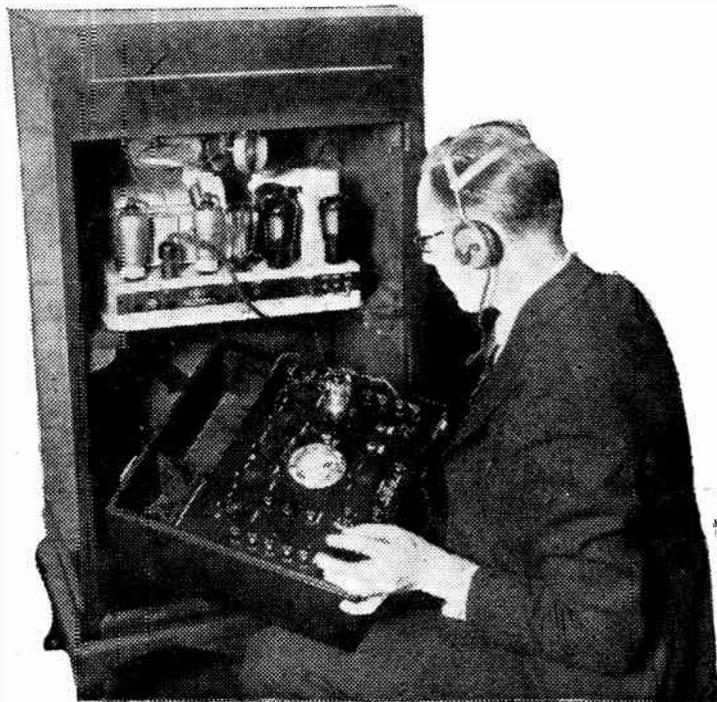
The whole scale always on view and illuminated by a lampholder which travels with the cursor. Dial only: type S.L.1. as illustrated, 6/6; type S.L.2 with witch for lamp, 7/6.

J.B. Nugang with cover and dial as illustrated, 2-Gang 21/6; 3-Gang 26/6; 4-Gang 35/-.

PRECISION INSTRUMENTS

Advertisement of Jackson Bros. (London) Ltd., 72 St. Thomas' St., London, S.E.1. Tel. Hop 1837

This is the way to Service



MODERN SETS

WITH
The

RADIOLAB

COMPLETE VALVE & SET TESTER

THE NEW MODERN BRITISH RADIO SERVICE INSTRUMENT which is in effect a **COMPLETELY EQUIPPED PORTABLE RADIO LABORATORY** containing every piece of apparatus necessary to adequately service modern sets and valves. There is no other instrument like it marketed—nothing so complete—so simple in use—more accurate—of such splendid appearance and sound construction to withstand many years of use.

Every SERVICE ENGINEER WILL WANT A "RADIOLAB"—and we make it easy for you—modern production methods, using the best quality materials and workmanship, have enabled us to produce an instrument of the **RADIOLAB'S** class at

£12 . 12 . 0

REMEMBER cheap test sets are not economical, they are never accurate—never complete—and are soon scrapped.

THE RADIOLAB will outlast a dozen cheap outfits and moreover it will never become obsolete as it caters for the new 7-pin valves, just making their appearance, in addition to all existing types.

"The Wireless

World" says:

"The most versatile instrument of this type we have examined; furthermore, it is particularly well made."

We would take this opportunity of thanking the large number of members of the trade and general public who so warmly welcomed the initial appearance of this modern set analyser of Radiolympia.

NO TIME LIKE THE PRESENT: LET'S GET ACQUAINTED

FILL IN THIS COUPON.

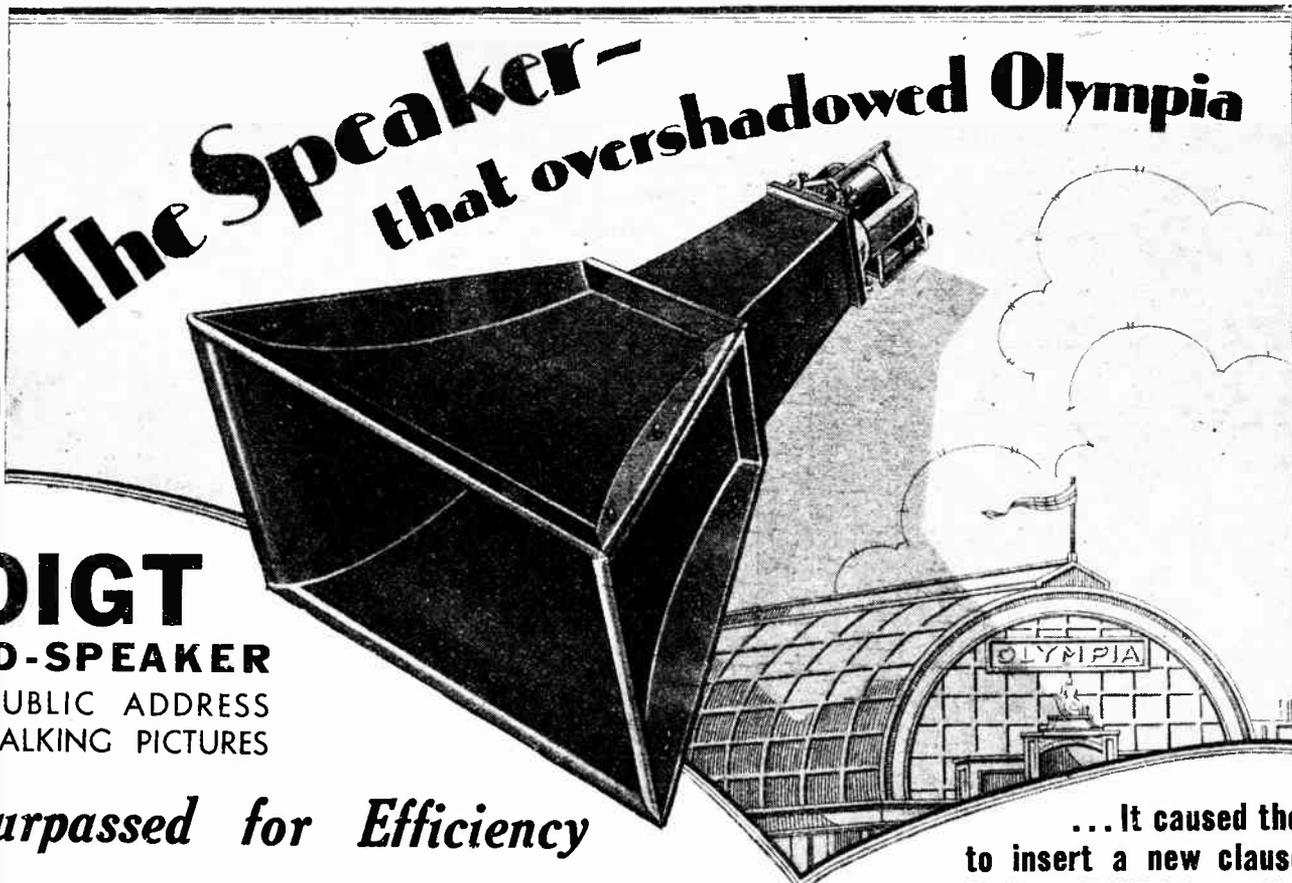
To **RADIOLAB MANUFACTURING CO.**, Sandridge Works, ST. ALBANS. Specialists in High-grade Laboratory Apparatus.

Please send me, without obligation, a **FREE** copy of your interesting service booklet "SET TESTING WITH THE RADIOLAB," together with terms you can allow me.

NAME

ADDRESS

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.



The Speaker - that overshadowed Olympia

★
VOIGT
LOUD-SPEAKER
FOR PUBLIC ADDRESS
AND TALKING PICTURES

Unsurpassed for Efficiency

VOIGT PATENTS LTD.
announce that they are continuing
the manufacture of these Speakers
and can now deliver from stock.

SPECIFICATION.

Magnet gap, 2 mm. Flux density, 16,000-17,500 gauss under working conditions. Field consumption, 40 watts. Field voltages, 6, 12, 33, 66, 100, 200, 400. Speech coil resistance, 15-17 ohms. Aluminium wire. Impedance at normal frequencies, 30-35 ohms. Diaphragm, 6" diameter. Tapped speech coil choke for tone control. Efficiency believed to be about 25-35%.

HORNS: VOIGT TRACTRIX

4' mouth (wood collapsible) over-all length, including unit, 4' 10"
3' " (metal all-weather) " " " " 3' 5"
2' " (wood collapsible) " " " " 2' 10"

PRICE, D.C. MODELS, ex works

Unit with standard 4' mouth horn	..	..	..	£22 10 0
Unit with small 2' mouth wood horn	..	..	..	£18 10 0
Units only	..	..	..	£14 10 0

For A.C., a Field Supply Rectifier is required.

Some Horns and Units available for hire by arrangement



3' Mouth Metal Open Air Model

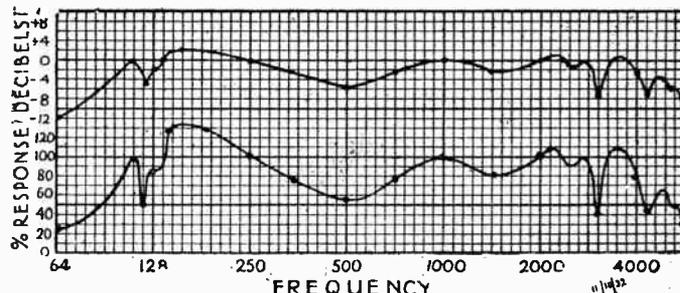
Write for full particulars

... It caused the R.M.A. to insert a new clause in the Radio Exhibition Agreement

In 1930 when Messrs. Edison Bell Ltd. were demonstrating an early model of this Speaker on their stand at the Radio Exhibition, the volume was so great that the Organising Committee made a formal request for the cessation of demonstrations, it being alleged that additional amplification was in use. After inspection the Committee were satisfied that the great volume was due to extreme efficiency alone and they could not object to demonstrations that year. Since then a clause has been included in the Radio Exhibition agreements to prevent demonstration of cinema type speakers.

The Voigt Loudspeaker gives from three to four times greater volume than an ordinary moving coil loudspeaker fed from the same amplifier, while the quality is definitely unsurpassed.

In an advertisement in *The Wireless World* of 21st October, 1932, the characteristic curve of a typical EDISON BELL VOIGT SPEAKER was published as a challenge to other manufacturers. The curve then published is repeated here. No other manufacturer has yet published a characteristic curve of his speaker in the advertisement columns of this Journal.



Voigt Speaker with 4' mouth horn. Curve taken with mike on axis Decibel scale ratio, 20 DB to 1 octave.

VOIGT PATENTS LTD.
Specialists in High Grade Electro Acoustics
Laboratory & Works : The Courts, Silverdale, Sydenham, London, S.E.26.
Tel. : Sydenham 4114.
Registered Office : 22, Castle Street, E.C.2. Tel. : National 8372.

NEW and Improved



DUBILIER ELECTROLYTIC CONDENSERS

These popular High Voltage Dry Electrolytic Condensers have been still further improved, and are now even better value than ever.

- 4mfd. (500 v. D.C. working) 4/6
- 8mfd. (500 v. D.C. working) 5/6

New types of dry electrolytic condensers are now available including low voltage types. Types 3001, 3002 and 3003, which are fitted into wax impregnated cardboard tubular containers with rubber-covered connecting wires; types 401 and 402, which are enclosed in an aluminium container designed for one-hole fixing, type A.D. which is supplied in a rectangular metal container and is employed for smoothing out hum due to rectified A.C. supply on low voltage moving-coil speakers.

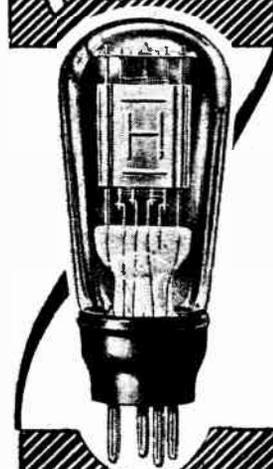
- Prices: Type 3003 (25uF 00 v.) 4/-
- Type 401 (10uF 50 v.) 2/6

Our new catalogue gives details and prices of the full range. Write for your copy!

Dubilier Condenser Co. (1925) Ltd.
Victoria Road, N. Acton, W.3.

E6

Combine
HIGH QUALITY



with
LOW PRICES

THE BEST BETWEEN AERIAL AND EARTH

The HIVAC range comprises a series of first quality inexpensive 2-volt valves that are second to none for efficiency. Whatever the circuit, there's a HIVAC to suit. For efficiency with economy, fit HIVAC in all stages.

THE HIVAC VALVE GUIDE "W" gives our complete range and a comparative table of equivalent high efficiency valves at low cost.

WRITE NOW FOR A FREE COPY

Here are 5 types for Modern Circuits:

H210 Grid Det. or Oscillator in Superhets.	} 4/6
L210 1st stage L.F. Amplifier or Anode Bend Det. and Driver.	
B220 Class-B. Anode-anode load 14,500. A.C. output in milliwatts, 1,250	} 10/6
VS210 Vari-mu H.F. Amplifier.	
Y220 Multi-Grid, low consumption.	} 12/6

IMPORTANT.—Hivac Valves are British Made in our own Factory.

From all dealers. If any difficulty, send us P.O. and address of nearest dealer.

HIVAC
THE SCIENTIFIC
VALVE

HIGH VACUUM VALVE CO., LTD., 113-117 FARRINGDON ROAD, E.C.1.

● **"LET'S HAVE A MAINS COMPONENT TO OUR OWN SPECIFICATION"**



"I notice that several of the Sets described in the Radio Press specify DAVENSET Chokes and Transformers. If they are good enough for the experts they are certainly good enough for me. And besides, I notice

that Davenset Engineers specialise in making to individual specification. Let's tell them what we want."

DAVENSET CHOKES AND TRANSFORMERS

FREE:

Write for a copy of "Mains Transformers and Power Smoothing Chokes for Radio and Industrial Purposes."

PARTRIDGE WILSON AND COMPANY

Dept. 29, Davenset Wrks, LEICESTER

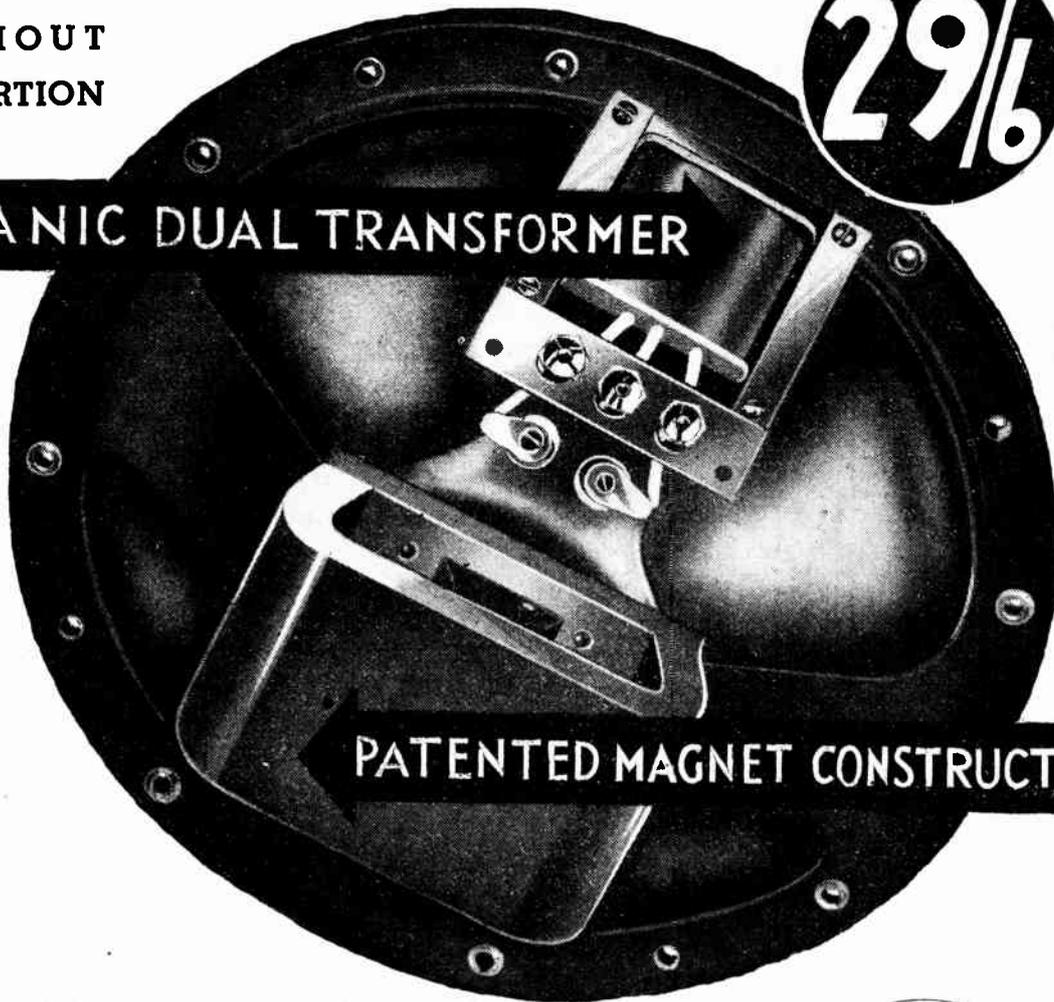
SCOTTISH BRANCH: 200, St. Vincent Street, GLASGOW, C.2.

TRIUMPH OF NEW IGRANIC SPEAKER

EFFICIENT REPRODUCTION FROM
THE SMALL OUTPUT RECEIVER AS WELL
AS HEAVY VOLUME
WITHOUT
DISTORTION

29/6

IGRANIC DUAL TRANSFORMER



PATENTED MAGNET CONSTRUCTION

- The patented magnet construction overcomes all amplitude distortion.
- Every frequency in its true proportion, perfect maintenance of tonal balance.
- The Igranac D.9, thanks chiefly to the patented magnet construction, has earned the preference of the experts. In quality of reproduction and price it fears no rival.

Write for fully illustrated Catalogue
No. U. 352 to Igranac Electric Co.
Ltd., 149, Queen Victoria Street,
London, E.C.4.



PERMANENT MAGNET
MOVING-COIL LOUDSPEAKER

If unable to obtain Igranac Components from
your local dealer, we will supply you post free
direct on receipt of remittance and the name of
your dealer.

HEAR IT AT YOUR DEALERS NOW

CVS-91



SUPREME

AMONG TABLE RADIO SETS

BECAUSE

- IT IS A SUPERHET SEVEN
- IT HAS CONCERT TONE & VOLUME
- IT HAS DELAYED AUTOMATIC VOLUME CONTROL
- IT HAS A SPECIAL STATIC SUPPRESSOR
- IT HAS ADJACENT CHANNEL SELECTIVITY

and

BECAUSE

- IT IS BUILT BY

This set, the latest and finest of table receivers (the Superhet Concert Seven), has been designed to include within the scope of a table set the performance and quality of tone previously associated only with instruments of the largest size and price.

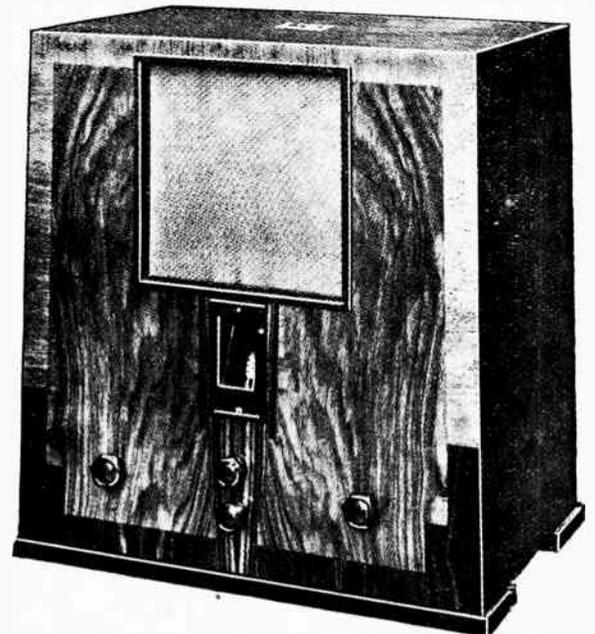
Combining as it does the very latest improvements in radio science, such as delayed automatic volume control (which eliminates fading of long-distance programmes), static suppressor (which prevents the amplification of any signal in the "mush" areas), and real adjacent channel selectivity—this superb instrument provides not only a range of stations sufficient to satisfy the inveterate station hunter, but also a tone to please the most sensitive musical ear.

To prove its supremacy as a radio instrument needs but a fractional turn of the tuning knob—to prove its supremacy as a musical instrument, *just listen!* Here is the realism of the Concert Hall itself—a tone that is true to life! The technically minded will find further details to interest them in the brief specification below.

But besides being good to hear, the set is also remarkably good to look at. Its cabinet of modern design in figured walnut, and of the finest workmanship, is acoustically designed. Altogether, an instrument you will be pleased to listen to, pleased to look at, and, since it is made by "His Master's Voice," proud to own. Price 22 Gns. (or by Hire Purchase).

BRIEF SPECIFICATION: Superhet Concert Seven Model 467

Seven-valve (inc. rectifier) superheterodyne circuit. Marconi valves. Automatic Volume Control. Illuminated Scale with wavelengths and station names. Duplex tone control. Moving coil, mains-excited, loudspeaker. Sockets for gramophone pick-up. Power to operate three additional loudspeakers. Height, 1 ft. 7½ ins. Width, 1 ft. 5¼ ins. Depth, 11½ ins.



"HIS MASTER'S VOICE"

TRUE-TO-LIFE RADIO & RADIO-GRAMOPHONES

The Wireless World

THE
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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

The Show

Some General Observations

AS one Show succeeds another year by year, it is always of interest to try to sort out from amongst the mass of new impressions received what are really the outstanding influences of a general character which make each Show differ from its predecessor.

The Olympia which has just closed its doors maintained the tradition in being undoubtedly better than any of its predecessors. In the matter of the arrangement of the Exhibition notable improvements have been made; gangways were wider—a point which may seem trivial but is actually of the greatest importance when you visit the Show, especially at crowded times, for it enables you to get about and to see stands without inconvenience. Exhibitors, too, either through better organisation or as a result of the experience which their personnel has gained, were able to give better attention to the enquiries of the public. This impression was gained as a result of standing by and watching the procedure at a number of stands.

Interest in Foreign Programmes

On the technical side one was impressed with the extraordinary increase in the number of sets designed for extreme sensitivity and selectivity, and superheterodynes undoubtedly predominated amongst sets of a type which could be described as new. These sets of extreme sensitivity can scarcely be regarded as necessary for the reception of the B.B.C. programmes alone, because now that alternative programmes are becoming a rarity in the B.B.C. policy, selectivity and sensitivity of a very high order is scarcely necessary for their reception, except in areas rather remote from a B.B.C.

transmitter; so that we can at once assume that the reason for these sensitive and selective sets is the increasing desire on the part of the public to be able to regard all Europe as a source of programmes, and undoubtedly to-day the need for alternative B.B.C. programmes is less than it has ever been in the past, by reason of the power and efficiency of the majority of the Continental transmitters which offer a constant choice of programme material at excellent strength and quality.

Quality and Price

One tendency at the Exhibition gives us cause for a little uneasiness, not perhaps in respect of this year's models so much as because of what might lie before us for next season. We refer to the attempt of nearly all manufacturers to bring down their prices to what we regard as almost a dangerous figure. From the public's point of view we are, of course, entirely in favour of wireless sets being obtainable as cheaply as possible, but this cheapening must never be allowed to result in a lowering of the standard of quality of reception. There is not, fortunately, this year much indication that manufacturers have sacrificed performance to price, but we believe that the limit has just about been reached and, since we are ourselves determined to do everything in our power to prevent a sacrifice in performance, and especially of quality, in future designs, we believe that the sets of this season will never again be equalled in value. Almost certainly there will be a rise in prices with next season's sets, except, perhaps, in the case of those manufacturers who will be shortsighted enough to continue a policy of cheapening and put out sets which can only be a disappointment to unfortunate purchasers. All this leads us to the logical conclusion that anyone who is wavering on the question

of the purchase of a set will find that it is an investment to make a careful choice and buy this season.

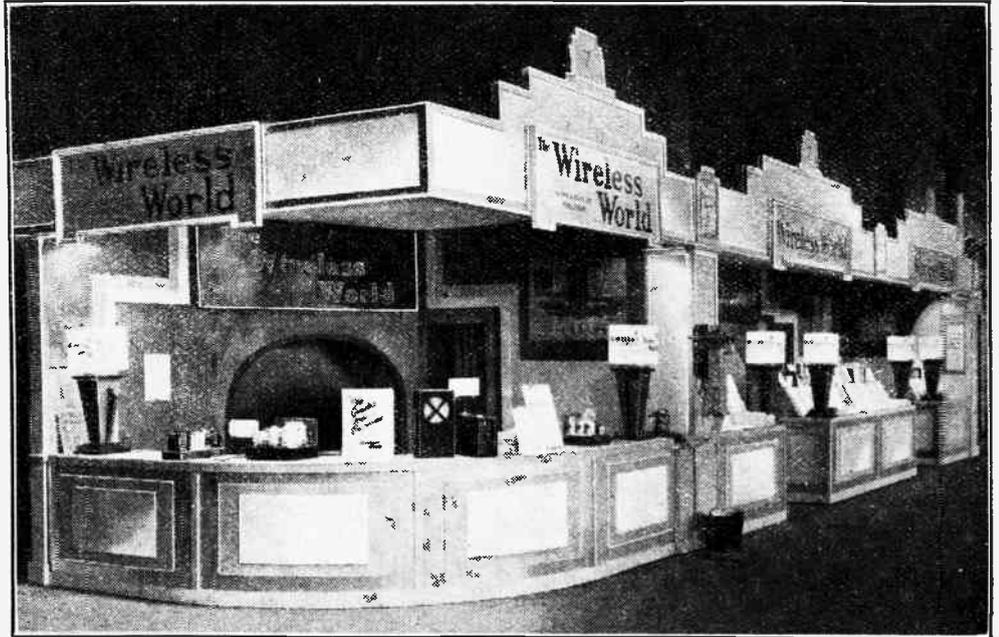
The Rival Show

Returning to the Show itself, an innovation this year was the B.B.C. theatre and variety performance, which gave the visitor an insight into what goes on behind the scenes in the studios. This was a departure which we venture to prophesy will not be seen again in connection with a wireless show. It has been an interesting experiment, but one which, in our view, in spite of the fact that the fullest credit is due to the B.B.C. for the excellent way in which it was conducted, and the enterprise shown in arranging for it, was undoubtedly a mistake. The theatre, built especially for these performances, which were given three times a day, accommodated some 2,000 spectators, and, since it was widely advertised and made a popular appeal, the attendance in the Olympia Show itself suffered badly in consequence. Visitors attending Olympia who gained admission to the B.B.C. theatre had little time to see anything else, to the considerable discomfiture of those exhibitors who had incurred heavy expenditure in anticipation of a constant stream of visitors to their stands.

Again, broadcasting, by its very nature, appeals to the ear, and it is, in our opinion, a bad advertisement for broadcasting to impress upon the

listener what he is missing through inability to see the performance as given before the microphone. We have constantly in the past expressed the view that the B.B.C. should have no other approach to the public than through the medium of broadcasting.

grammes by the listener through the medium of his set. The B.B.C. theatre at Olympia cannot be regarded as having been anything but a most serious rival to the success of the Olympia Radio Show. When television has developed to the point where



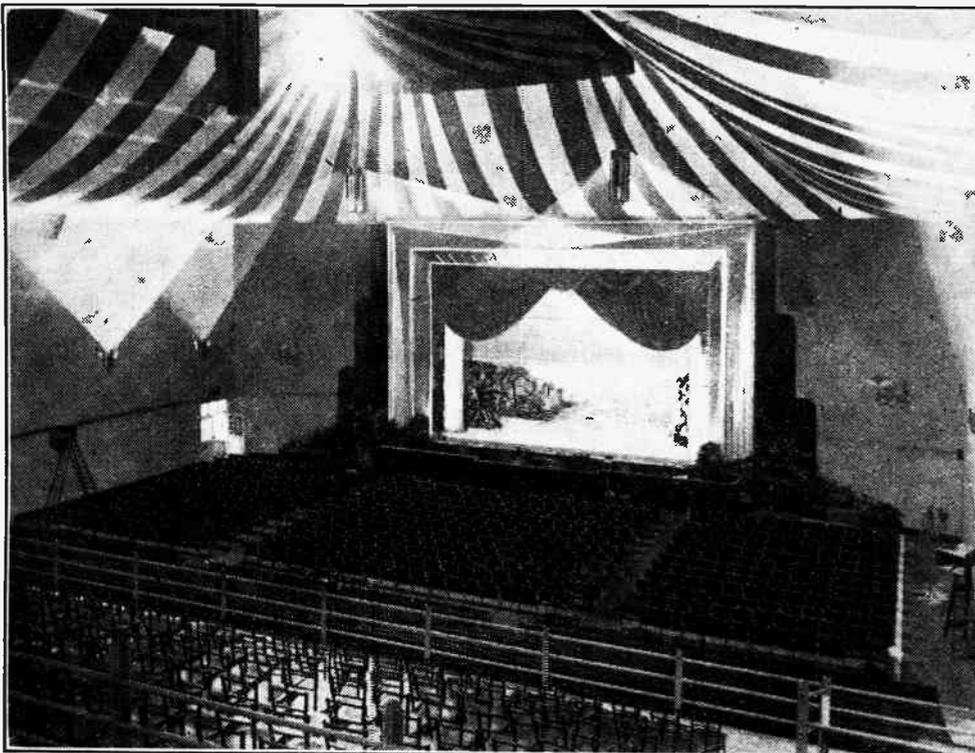
The Wireless World stand at Olympia as it appeared just before public admission to the Show.

We have repeatedly expressed our disapproval of the B.B.C. running their own Concert Hall as at present in Broadcasting House, or, in fact, adopting any policy whereby the public is entertained by means other than the monopoly of broadcasting granted to the B.B.C. and enjoyment of the pro-

grammes by the listener through the medium of his set. It is of definite entertainment value, then broadcasting will be able to combine sight and sound in the listener's receiver as a legitimate combination coming within the scope of the B.B.C.'s activities.

Television

On the subject of television we should mention as of special interest the fact that television sets for the present thirty-line transmissions of the B.B.C. were shown at Olympia. These are no longer experimental sets but can be recommended to the public as being capable of receiving television in its present state satisfactorily. Not until now have we been prepared to make a statement of this kind, but here are sets on the mirror-drum principle developed by the Baird Company which, in our view, from practical experience, do full justice to the present transmissions, bearing in mind, of course, that these thirty-line transmissions are limited in the definition which they can give. So that whilst they are of the utmost interest as indicating possibilities of television and giving pictures of the performers of surprising clearness, the transmissions themselves would probably not be regarded as having yet reached a point where they are of real entertainment value capable of sustaining the interest of those who are merely interested in results.

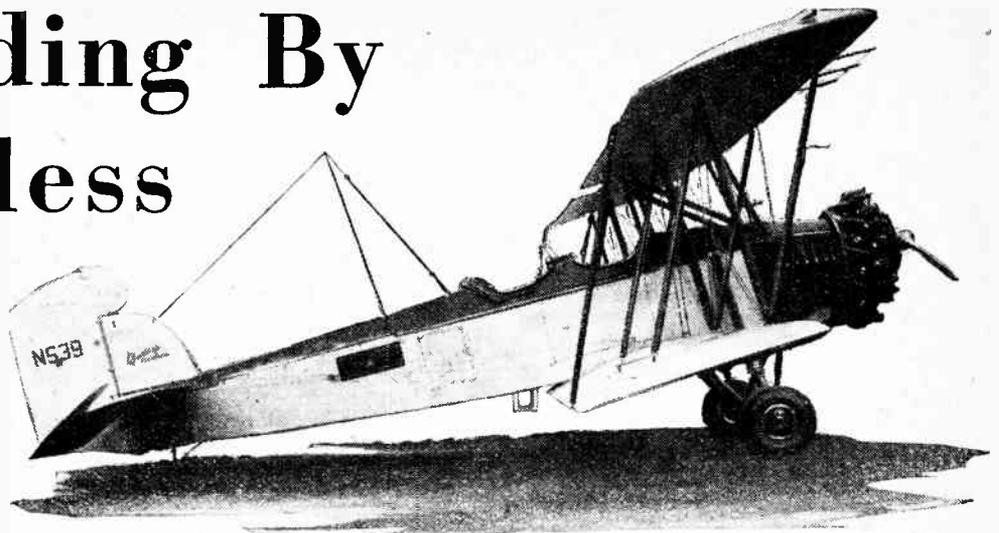


The B.B.C. Theatre at Olympia built specially for the Show and accommodating some two thousand spectators.

Fog Landing By Wireless

Ultra Short Waves at the Aerodrome

(By a New York Correspondent)



An American Bureau of Standards 'plane fitted with fog-landing radio gear as described in the article. For practice landings the pilot's cockpit is shrouded over with a canvas cover.

ONE of the great hazards in aircraft transportation is fog. Although a pilot can follow a radio beacon course from one point to another unerringly, and although he is in constant touch with the ground by radio, getting weather reports from a great number of stations, he is still "up in the air" if he arrives at his destination in a fog.

Wireless, of such great aid to the ocean or air navigator, has now found a way to bring any properly equipped 'plane down to the ground in safety. Not long ago a radio engineer of the American Bureau of Standards left the Newark airport with his pilot for a week-end in Washington. Monday came and they were due back in Newark. But the fog between the two cities kept all aircraft on the ground.

Fog-landing, however, was the business of this engineer and his pilot. They were accustomed to it. Many times they had taken off in fog or with a covering hood over their cockpit, and had come down again safely. So they took off at once, heading up into a soupy fog which almost immediately obscured the ground beneath them.

It was not difficult to follow the radio

beacon during the three-hour flight from Washington to Newark, though, flying at 3,000 feet, they could see nothing but mist. By radio 'phone they communicated with Newark, requested that the fog equipment be turned on and that advice be given

visible radio beam) to the ground, and landed in perfect safety. Not until their wheels were nearly on the ground did their eyes perceive what their wireless equipment has told them.

It was an ideal demonstration of the fog-landing equipment which for several years has been in process of development at Washington under the immediate direction of H. Diamond. For months he had tested the system on a small field near the Capitol, and despite bad landing conditions due to a small runway, rough terrain off the runway, tall chimneys near the field, and other obstacles, had shown to the satisfaction of many pilots that blind landing could be made safe.

The next step seemed to be to show what the system could do on a large airport. So they chose one of the busiest in the world, that at Newark, New Jersey, which serves New York City.

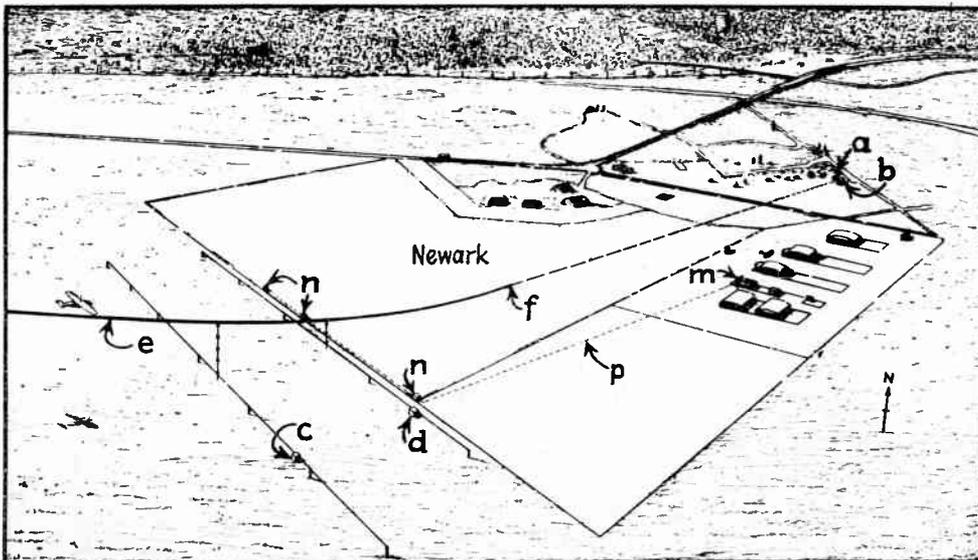
A Path of Waves

The apparatus was moved from Washington and set up in Newark. Many new demonstrations were made. Pilots were taught to use the landing beam and to have faith in it. It now seems that similar installations will very soon be made at all of the more important airports in the United States.

The system employs ultra-short waves by means of which a path curving upward from the ground at the proper angle can be set up for the pilot to follow to the ground. A radio beacon enables him to find the airport in good weather and bad, day or night, rain or shine. If he keeps on his course—and this is not difficult—he will receive signals until he is exactly over the beacon transmitter. At the instant of coincidence with the transmitter location the signals stop. Then, by a slight retuning of the beacon receiver, he can pick up another signal, also a directive beacon, which is parallel in the ether with the physical direction of the runway on the ground. Once he has orientated his 'plane properly with respect to this new beacon he knows that the runway is

THE use of miniature beacons and vertical "walls" of signals around aerodromes is proving of practical value in combating the airman's worst enemy, fog. Here is a lively description of the ultra-short-wave installation and its manner of working at Newark, America's biggest air port.

about wind conditions, etc. When they came within range of the new radio equipment they picked up the landing path beacon, got in the proper orientation with respect to the runway and the prevailing wind, followed the curving path (the in-

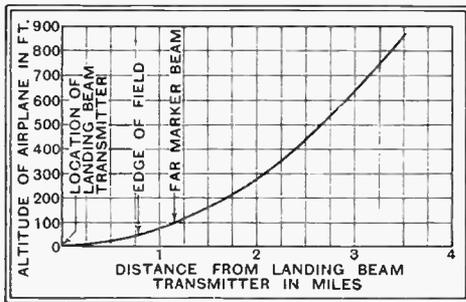


A perspective diagram of the radio layout. (a) and (b), the landing beam and runway beacon transmitters; (c) 2,000-ft. vertical marker; (d) boundary marker; (e) landing beam; (f) contact with ground; (m) headquarters and (p) communication lines.

Fog Landing by Wireless—

either directly under him or at least that he is heading into it. Since the receiver used for this purpose can be equipped with automatic volume control, in which case the grids of the h.f. amplifiers increase in bias and take less plate current as the signal becomes stronger, a plate current meter can be calibrated in miles from the air port instead of milliamperes.

Once on the runway beacon the pilot approaches the field. When he is 2,000 feet away he runs through a vertical wall of radio signals projected upward from a long, low horizontal antenna consisting of a single wire supported by posts. This vertical signal is modulated with a 1,250-cycle note. It is quite sharp, so that the pilot gets definite indication when he is directly over it. When he crosses the boundary of the field he runs through another vertical wall of signals, this one modulated

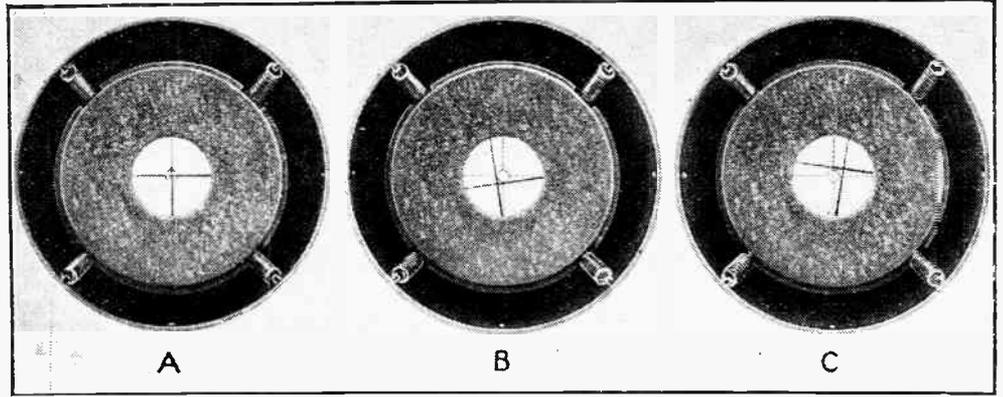


A graphic representation of the ultra-short-wave landing beam.

with a 250-cycle note.

The pilot knows now that he is not only over the runway but over the field. Therefore he can land if he can see through the fog or he can rely on the next radio device, the landing beam. This is a highly directional horizontally-polarised beam of signals on a frequency of 90,800 kilocycles (3.3 metres). This beam leaves the ground at such an angle that the pilot can follow it down without trouble or danger. If the fog is thin enough to enable him to see the ground before he reaches it he will land in the conventional manner. If it is still so thick that he cannot see the ground he will throttle down his engine and pull back the stick for a three-point landing as soon as he crosses through the wall of signals indicating that he has crossed the boundary of the field.

Since the aircraft must land into the wind, the runway beacon which he must follow on his way to the ground must be aimed in the direction the prevailing wind blows during periods of bad visibility, or the landing runway beacon transmitter may be put underground in the centre of the field and rotated by remote control to locate the runway whenever the wind condition demands. At Newark, and probably at nearly all airports, the prevailing



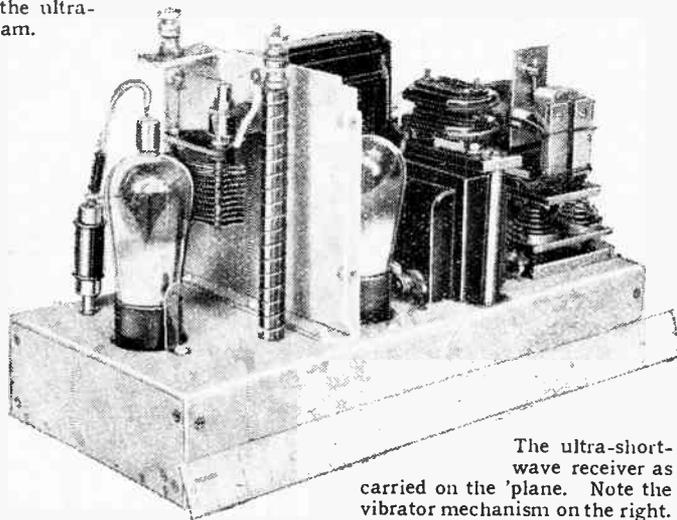
The pilot's indicating device showing the plane's position in respect of the runway and landing-beam. (A) On course; (B), below and to left of proper course; (C) Above proper course and to the right.

wind during such periods comes from one quarter, in this case from the north-east. The runway beacon transmitter is therefore located at the north-east corner of the field; by means of a goniometer the beam may be directed to any location in this quadrant.

The transmitter consists of a 200-watt, 278 kc/s oscillator modulated with two signals, 65 and 86.2 $\frac{2}{3}$ cycles, one signal going to each of two loop antennae which produce a figure eight space pattern. The intersection of these patterns produces four equisignal zones. When the pilot gets out of these zones he gets a stronger

constant, he can coast downward on the directive beam.

The cost to equip an aircraft with the system is not great provided it already has the regulation radio equipment, which consists of a receiver for picking up the weather broadcasts and for two-way 'phone communication with the ground. An a.v.c. system must be added to some of the beacon receivers; the ultra-short wave receiver is essential. This is very simple. In addition, an antenna for the landing beam must be provided. The chief cost is to the airport, where the runway beacon and the landing beam must be established. The cost, however, is small compared to the usefulness of the equipment and the safety from accident or delay due to fog or bad visibility.



The ultra-short-wave receiver as carried on the 'plane. Note the vibrator mechanism on the right.

signal from the nearer antenna, and from his receiving instrument can tell in which direction he is getting off the course.

The beacon receiver employs two vibrating reeds tuned to the above-mentioned signals. These reeds are actuated by electromagnets in the output of the receiver, and in turn, by their vibration, induce currents in pick-up coils. These currents are rectified and applied to the pointer of an instrument which tells the pilot at a glance where he is with respect to the runway.

The high-frequency transmitter uses two 500-watt valves in push-pull connected to a directive array which sends the radiation upward at the desired angle. The receiver for this signal is very simple, containing no a.v.c. circuit, so that the pilot must act as his own a.v.c. system, and by so doing, *i.e.*, by keeping the volume output

Correct Trimming Adjustment.

WHEN the operation of trimming the various circuits of a gang-tuned receiver is carried out at random, it sometimes happens that an unnecessarily large amount of trimming capacity is used throughout. The result of doing this is, of course, to restrict the wave-range covered by the receiver.

In an attempt to overcome this disadvantage, it may be decided to begin all over again, but—such is the perversity of inanimate objects—the final adjustment is often found to be very much the same as before. To avoid this possibility, and at the same time to make sure that the original adjustment is not completely lost, it is a good plan to make a reduction in the capacities of all the trimming condensers by gradual steps. To do this, the capacity of the main condenser should be increased slightly by turning the dial in a clockwise direction for a fraction of a degree, and then maximum sensitivity should be restored by re-adjustment of each individual trimmer. After repeating this process several times, if necessary, one can rest assured that the circuits are properly aligned, and further, that the smallest possible amount of trimming capacity is being used.

Notes on "The Wireless World"

MODERN BATTERY FOUR

Getting the Best Out of the New Receiver

By W. T. COCKING

EVEN in the case of a simple type of receiver, the best performance cannot be obtained unless careful attention is given to detail. In this article hints are given on operating the Modern Battery Four, which was described in the issue of August 11th. Information is included on loud speaker matching and the use of a gramophone pick-up.

ALTHOUGH capable of giving a highly satisfactory performance, the Modern Battery Four is in no way critical, and the veriest novice should not find the slightest difficulty in obtaining good results. That all too prevalent defect of the straight set—instability—has proved on test to be entirely absent, and yet the H.F. stage gives a high degree of amplification. The sensitivity, therefore, reaches a very satisfactory order. If this is to be maintained in all cases, however, the importance of making sound earth connections to the chassis cannot be too highly stressed, for poor joints are likely to lead to unwanted couplings. A poor connection to the frame of the gang con-

denser, for instance, will almost certainly lead to common resistance being introduced into the tuned circuits with a consequent reduction in both sensitivity and selectivity, and a probability of serious instability.

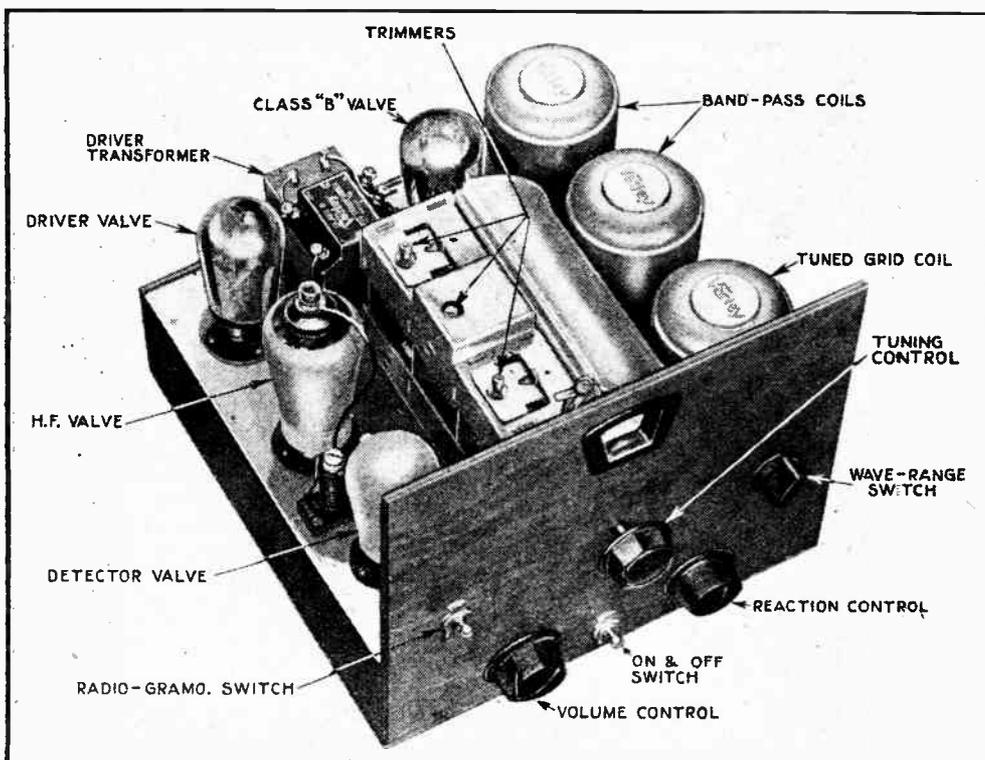
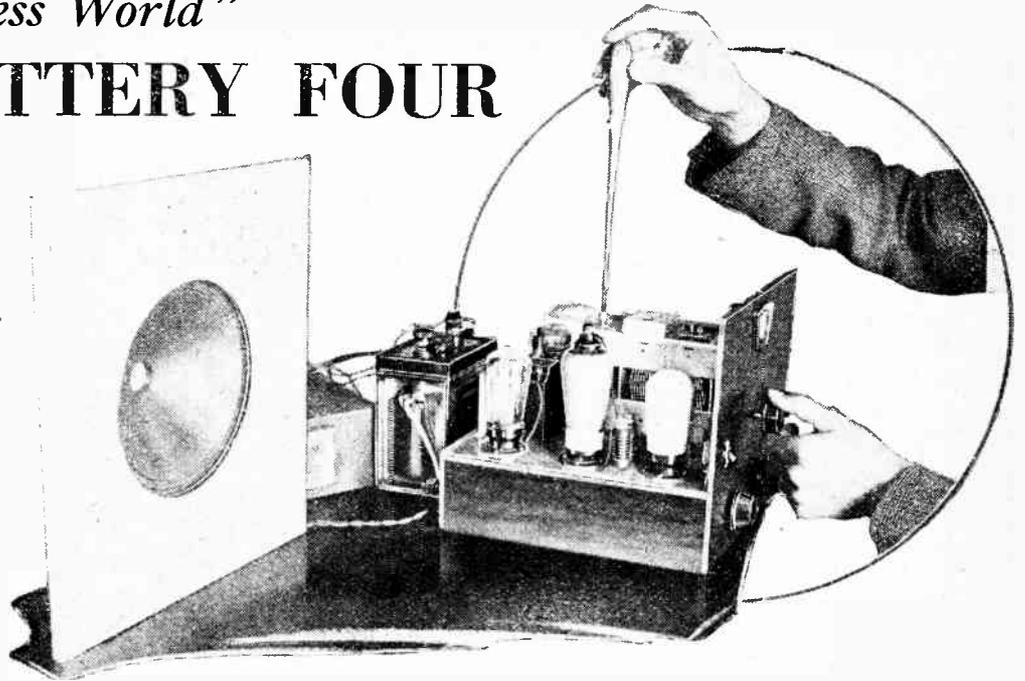
Although the sensitivity obtained through the amplification of the H.F. stage is high enough for many purposes, it may be greatly increased through the use of reaction. The chief value of reaction, however, lies in its power of increasing the selectivity, although some little skill in adjustment is necessary if its full benefit is to be obtained. The primary result of applying reaction is to increase

the amplification of signals to which the set is tuned, and it does nothing directly to reduce interference on neighbouring wavelengths. Suppose, however, that we are receiving a station at comfortable loud speaker volume without reaction, but that there is interference from a neighbouring station. If now we reduce the setting of the volume control, we shall reduce all signals equally, and it is easy to find a setting such that the interference is just inaudible. Although the wanted station will now be too weak, let us leave the control in this position, and increase reaction while re-tuning slightly. This will have the result of increasing the amplification again, but this time not of all signals equally; the increase in amplification will be obtained almost entirely for the wanted station, and not for the interference.

Matching Speaker and Valve

When maximum selectivity is required, therefore, it is a good policy to use more reaction than is necessary from the point of view of signal strength, and to keep this at its correct level by means of the volume control. As reaction has some deleterious effect upon the quality of reproduction, of course, it should not be used unnecessarily, and where signal strength and freedom from interference permit, it is wise to set the control at minimum.

Although it is intended that considerable use be made of reaction in general reception, no special attempt has been made in design to obtain a smooth run into oscillation. There is no necessity to work close to the oscillation point, and the quality suffers too severely if the attempt be made; consequently, smooth reaction is a point of minor importance. The detector operating conditions, therefore, have been chosen for high quality reproduction rather than for the best reaction effects. Smooth reaction demands a high value of grid leak and a low detector



The Modern Battery Four showing the controls and the positions of the chief components. It should be noted that the H.F. valve anode lead is not screened.

Modern Battery Four—

anode voltage, neither of which is good for quality, since the high time constant in the grid circuit leads to a loss of the upper frequencies and the low anode voltage gives rise to harmonic distortion through detector overloading.

In setting up the receiver, the ganging is the most important adjustment if the full sensitivity and selectivity are to be obtained; from the point of view of quality, however, the matching of the output valve and the loud speaker must re-

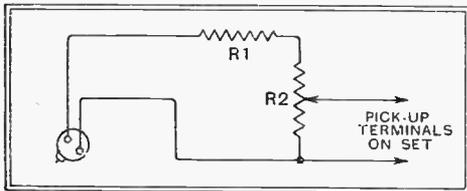


Fig. 1. The recommended pick-up connections with a sensitive pick-up. R2 should be 50,000 ohms with R1 about 250,000 ohms.

ceive careful attention. The PD220 valve specified requires a load impedance of 17,000 ohms for the best results, and a step-down Class "B" type output transformer will almost invariably be needed.

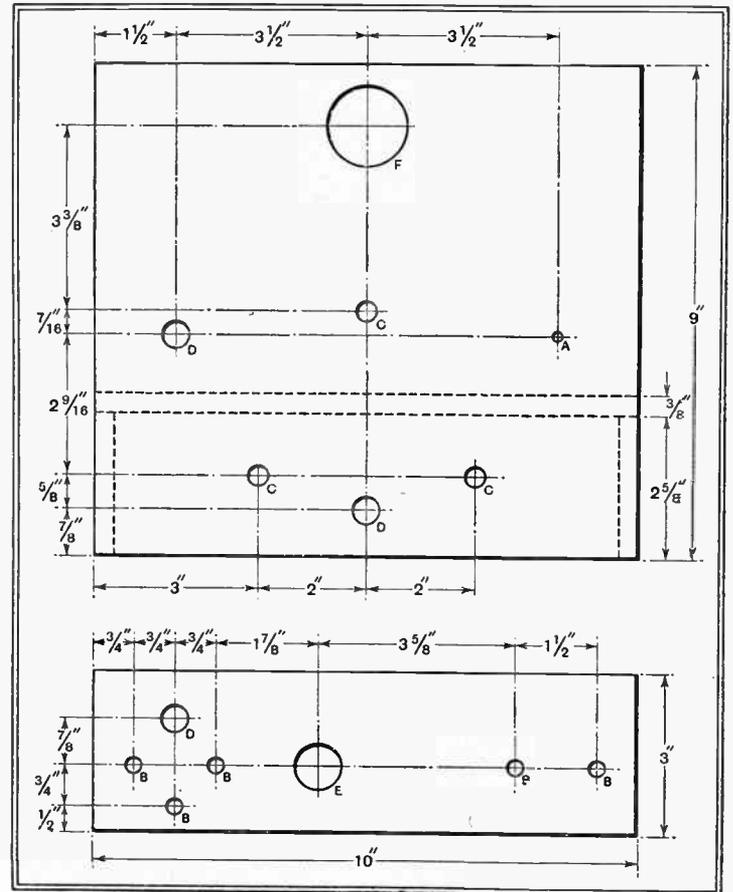
The ratio required will depend upon the impedance of the speaker and may readily be calculated by dividing 17,000 by the speech coil impedance and taking the square root of the result. Thus a 2-ohms speaker would require a ratio of

will not be directly applicable to Class "B" working, however, even if it be of the correct ratio, since its primary resistance is likely to be much too high.

Two courses are possible; the existing transformer can be dispensed with and a high ratio Class "B" type fitted instead, or the normal transformer can be retained and a low ratio Class "B" choke or transformer used in conjunction with it. Where the speech coil impedance is known, the former is the better course, since there is only one transformer in circuit to introduce losses.

It will often happen, however, that the speech coil impedance is unknown, and it is then simpler to use a low ratio Class "B" component with the ordinary transformer. If this be of the pentode type, its ratio will almost certainly

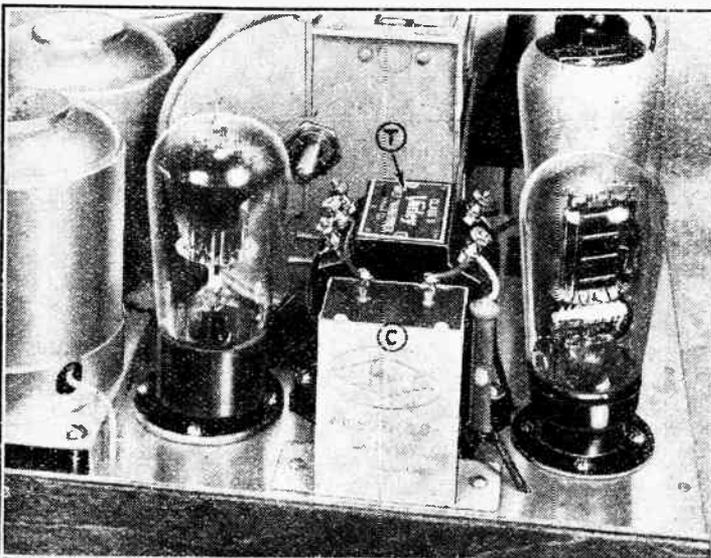
more uncertainty, but it is fairly safe to take the primary impedance as about 3,000 ohms, and an additional step-down of 2.38-1 will then be required.



The drilling dimensions of the panel and terminal strip. The diameter of the holes are as follows:—A = 1/16 in.; B = 3/16 in.; C = 3/16 in.; D = 1/8 in.; E = 3/16 in.; F = 1 1/2 in.

be such that the average primary impedance is about 8,000 ohms; therefore, an additional step-down ratio of 1.45-1 will be needed. Actually, of course, the nearest standard ratio of 1.5-1 would be entirely satisfactory. If the speaker be fitted with a triode type transformer there is

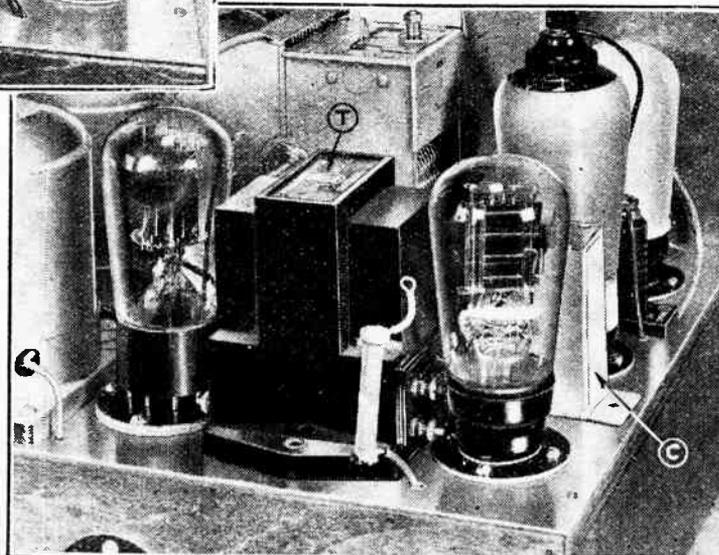
When using a speaker different from that specified, it may be found advisable to modify the values of R8 and C10 slightly. If the reproduction be too high pitched, R8 should be reduced in value, or C10 increased, or both; if the high frequencies are weak, of course, the reverse procedure should be adopted. It should be noted that by using a variable resistance of some 50,000 ohms for R8, a variable tone control can be fitted.



Where components other than those specified are employed it may prove necessary to change the layout slightly. The lower photograph shows that the use of a large driver transformer necessitates an alteration in the position of the de-coupling condenser.

92-1, and a 20-ohms speaker a ratio of 29-1. Most speakers, however, are obtainable fitted with a Class "B" transformer of the correct ratio, but in view of the different types of Class "B" valve now available, it is important when ordering to specify the kind of valve being used.

In many cases it will be desired to use an existing speaker, and this will probably be already fitted with an ordinary pentode or triode type transformer. This



The choice of valves is by no means critical, but the H.F. valve should be of the short-base variable-mu type, otherwise a 16 1/2 volts bias battery will be necessary. In the detector stage, any HL2 type valve may be used, but the driver should be selected according to the Class "B" valve employed. With the Mazda PD220 output valve, the L.2 driver is entirely satisfac-

SHORT WAVES ON THE RIVER

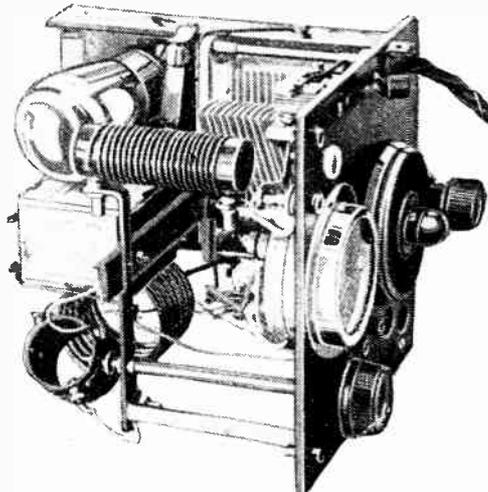
A Canoe Station for Transmission and Reception

By R. RAVEN-HART

THE Inn and the Danube are rivers which possess such attractive scenery and so rapid a current that the canoeist usually pays little attention to anything else; nevertheless, the writer felt compelled to stop and investigate when he heard recently a voice in another canoe running over the familiar phrases used for testing telephony. Thus was acquaintance made with Mr. Richter, of Vienna, and his station.

Transmitter Amidships

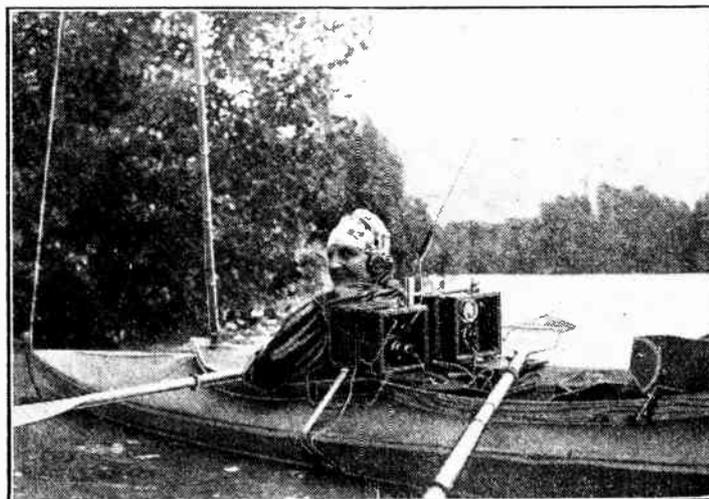
Such a set is interesting chiefly on account of its suitability for scientific testing. With a canoe the aerial shape and height can always be the same, and the earth resistance remains unchanged,



The transmitter as seen from above. An ordinary receiving valve is used.

making comparative results much more valuable than in the case of a car or other vehicle carrying radio.

As can be seen in the picture below, the transmitter and the receiver, each in its



A "close-up" showing the receiver and transmitter panels, the latter being on the right.



A view of the complete outfit. The wireless gear is compact but not cramped.

little wooden box, are found amidships between the two occupants, the pilot sitting in front and the operator aft. Actually, either individual can paddle or operate the wireless as required.

A Waterproof Key

The receiver uses three double-grid valves run in series to keep down the filament current, which is 60 mA. at 3 volts. The tuning coils are wound on old valve bases and are plugged in as required. Six pocket-lamp batteries are used, two in parallel for the filaments and four in series for the plates, and the transmitter plate and filament current are supplied by 120-volt and 4-volt accumulator batteries respectively, separately packed and stowed away right aft. A special waterproof key is used so that telegraphy can be carried on even in rain. The key is in its own little box, and keying is done through a thin rubber membrane.

The valve is of the normal receiving type. The "earth" is a wide belt encircling the boat with copper netting stitched to it. The wavelength in general use is 42 metres. Working on 42 metres the canoe has been heard at 500 km.

Modern Battery Four—

tory for an H.T. battery of some 120 volts, but if 150 volts be used in order to obtain a greater output, then it is advisable to use a P.220 type driver valve.

As explained in the constructional article, the Marconi and Osram B.21 Class "B" valves differ from others in that they require a negative grid bias of $4\frac{1}{2}$ volts for 120 volts H.T.; if this type be used, the centre tap of the driver transformer must be disconnected from the chassis, and joined instead to the negative terminal of the bias battery. When using different output valves, it is necessary to change the ratio of the output transformer, since the Marconi and Osram B.21 requires a load impedance of 12,000 ohms and the Cossor 240B a load of 8,000 ohms, as compared with the 17,000 ohms needed by the Mazda PD220.

The receiver may be used for the electrical reproduction of gramophone records, since Class "B" amplification permits a satisfactory performance to be obtained from a battery set. Owing to the large amount of L.F. amplification employed, the first valve is easily overloaded on gramophone, and quite a small input will suffice to give full loud speaker volume. Good results, therefore, are easily obtainable with insensitive pick-up types, and with a sensitive instrument, such as the Marconiphone, it is necessary drastically to control the input. The ordinary volume control does not give sufficient control for a sensitive pick-up, and it is recommended, therefore, that the arrangement shown in Fig. 1 be employed. The resistance R1 and the volume control R2 form a fixed potentiometer to limit the maximum input which can be applied to the first valve, and thus an adequate range of control is obtainable. The values should preferably be found experimentally for the apticular pick-up employed, but with the Marconiphone it has been found satisfactory to make R1 a quarter of a megohm with R2 50,000 ohms. Should the tone be found too high pitched, some form of tone control or scratch filter may readily be applied; it is often simplest, however, to connect a resistance directly across the terminals of the pick-up itself. Such a resistance should have its value experimentally determined, and it will usually be found to lie between 50,000 and 100,000 ohms.

TELEVISION

A Phantom Audience ?

IN our issue of June 16th, under the above title, we discussed the question of the number of users of television sets and urged the importance of arriving at some estimate of the total in the interests of everyone concerned with the development of television in this country.

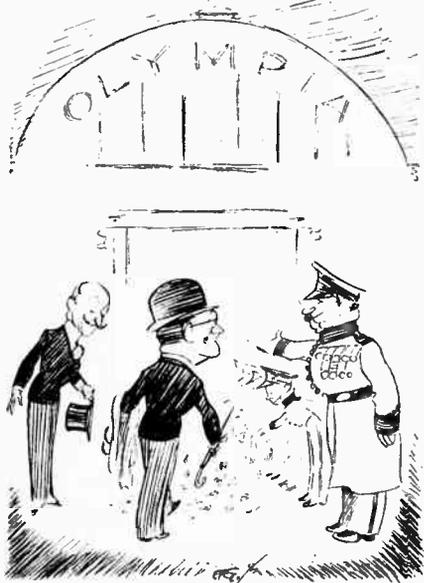
Often the B.B.C. is accused of ignoring outside suggestions, but here is a case where the hint we put forward has promptly been taken by the B.B.C., and now during each transmission listeners who see the television broadcasts are urged to send a postcard to the B.B.C. All owners of television receivers should respond to the invitation.

UNBIASED

BY FREE GRID

My Show Report

IT must be confessed that at previous Olympiads love of truth and a sense of duty to my public have compelled me to give ear to and publish complaints con-



Nothing but courtesy and kindness.

cerning not only the exhibitors and organisers of the show but the exhibits themselves. You will be surprised, therefore, that of this, the eighth radio Olympiad, I write in tones of vociferous praise, albeit with a shaking hand.

Nobody connected with this year's Show—my eye sweeps from the most exalted of the commissionaires down to the humblest radio engineer—deserves less than a mighty pæan. As for the exhibits, no words can adequately express my feelings.

First I should like to pay a tribute to the personnel, whether temporary or permanent. Commencing with the attendants at the door, I was met with nothing but courtesy and kindness, in marked contrast to the harsh military treatment of former years, dealt out not only to me but to all similarly unfortunate fellow patrons who have erred in trying to pay at the turnstiles instead of at the pay desk.

As for the custodians of the stands, I can only say that my demands for technical information were met with such a flow of mathematical data that I was carried completely out of my depth. This, of course, pleased me immensely, as I felt that I was receiving value for money.

It is, however, chiefly with the exhibits that I wish to deal. Everything which I have demanded from the manufacturers in previous years was there. You know how often in the past I have pleaded that the dials and control knobs of all radio-gramophones should be placed on the front of the cabinet in a position easily accessible from the old armchair.

True, some manufacturers had already exploited the idea in certain of their models, but hitherto none of them had adopted my suggestion that, for æsthetic reasons, a sliding door should be fitted to cover over the controls when not in use. Judge of my delight, then, to see that the manufacturers this year have gone the whole hog and given us all this and more as well. The dial itself is clear, open and perfectly comprehensible to the meanest intelligence.

The "rejector and repeat" button of the record-changing device was arranged so as to be operated by a bell push on the other side of the room. As for the record changer itself, the larger manufacturers had obviously taken cognisance of my hint that the poverty-stricken public frequently ignores the more expensive twelve- and ten-inch records in favour of the humble eight-inch type. With a commendable unselfishness, foresight and more than a touch of the *noblesse oblige* business, the manufacturers have arranged, by a simple readjustment, to accommodate a pile of these proletarian eight-inchers. Even in the less advanced types of record changer there is the throw-off lever, so that the gramophone can be used as an ordinary hand machine if desired.

A Real Surprise

I have not recovered from the surprise (I am writing this in the flurry and confusion of the Underground Railway, so forgive split infinitives) at discovering the almost universal acceptance of my demand for the fitting up of sets to cover the 10-100 metre waveband as well as the conventional "medium" and "short." The job, I am glad to notice, has been done thoroughly, and all the necessary wave-changing or short waves is done by means of specially designed switches. No half-hearted attempts have been made to fob



Happiest part of a sorry story.

us with plug-in coils. One maker, in fact, had gone so far as to rope in the "ultra shorts" from 5 to 10 metres

Later. I was just about to place an order for a modestly priced radio-gramophone containing all the features I have already mentioned when I heard a soothing voice say: "Drink this and you will feel better."

By a miracle of some sort I was in a strange bed. Bending over me was a charming nurse. This was the happiest part of a sorry story. Apparently I had got the worst of an encounter with a van when I was attempting to cross the road on my way to Olympia. The first person to recognise the prone figure in the gutter was a prominent radio manufacturer, who promptly shook hands with the driver.

B.B.C. Loves a Joke

SOON after I had put the finishing touches to my newly constructed 5- to 7-metre receiver, the data for which I lifted wholesale out of "W.W." a few weeks



To get the customary denial.

back, I was astonished to get the London Regional at truly prodigious volume on the loud speaker.

Naturally, my first thought was that the B.B.C. ultra-short-wave transmitter was in operation at last, so with a joyful heart I rang up Broadcasting House, only to get the customary denial which every Government department makes at first, no matter what the accusation.

As soon as I returned to my receiver I realised, of course, that they were pulling my leg. It is no good talking to me about getting an harmonic of the ordinary Regional transmitter, for down on the waveband on which I was operating I could only have struck the umpteenth harmonic, whereas the signal strength I was getting would have made even the second harmonic look foolish.

However, the incident shows that the B.B.C. is still human enough to enjoy a good joke, and I expect they would be ready to try it again on anyone who asked whether they were transmitting last night on 1554.4 metres. "No," they would say.

COLOURFUL RADIO

**Model
74
NEW 7-Stage
SUPER-HET
13 GNS**



Prices (A.C., D.C. or Battery types)

WALNUT FINISH
(as illustrated)

13 gns.

or 12 monthly
payments of
£1. 5. 0.

BLACK AND
CHROMIUM

14 gns.

or 12 monthly
payments of
£1. 7. 0.

OUTSTANDING FEATURES. British and Continental stations can be received at full programme strength and unsurpassed fidelity—**DELAYED Automatic Volume Control** in All-Electric Models ensuring desired volume from both distant and local stations—**One Knob Tuning**—**CLASS 'B' OUTPUT** in Battery Models permits 'All-Electric' performance—**Magnificent Bakelite Cabinet** available in two finishes, figured walnut, and black with chromium-plated fittings—**Detachable fret**; an exclusive feature permitting speaker silk to be changed to match any furnishing scheme—**New Station scale** with names and wavelengths—**Seven-stage super-het circuit** with band pass tuning—**Light-beam station selector**—**Combined on-off switch and volume control** for radio and gramophone—**Moving-coil speaker**—**Gramophone pick-up sockets** controlled by switch—**External speaker connection.**

EKCO RADIO

To E. K. Cole Ltd., Dept. W.23, EKCO Works, Southend-on-Sea.

NAME.....

A full-coloured folder will be sent to you free on receipt of this coupon.

ADDRESS.....

Send for our NEW FREE BOOKLET

HAYNES RADIO,
57, Hatton Garden, London, E.C.1. *Chancery 8023*

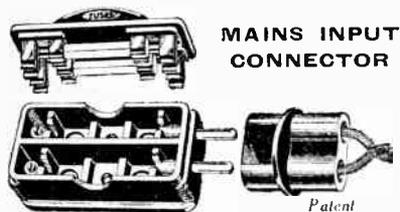


Contents:—

- Quality Receiver
- Ferrocart Three A.C. or D.C.
- A.C. Superheterodyne
- D.C. Superheterodyne
- Class B Four
- Class B Three
- Short Wave Superheterodyne
- Short Wave Attachment
- and 7-pin Valve Chart

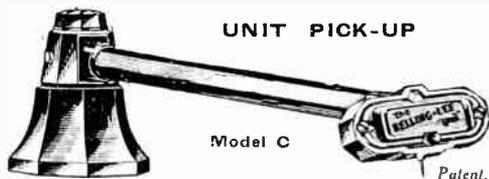


A few of Belling-Lee's latest developments



MAINS INPUT CONNECTOR

Modification of Safety Twin Fuseholder. On removing cover the fuses are instantly accessible and circuit is dead. Impossible to touch live parts of fuseholder. Flex part carrying mains entirely shrouded. Complete with 1 amp. fuses. **3/3**

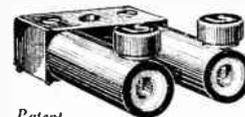


UNIT PICK-UP

Model C *Patent.*

Constructed of metal, this new pick-up follows modern design in appearance and technique. Octagon in form self-contained Volume Control, Ball Bearing Swivel. The whole arm rotates 180 degrees to facilitate needle changing and simultaneously lifts to swing clear over the record. Complete with template. **35/-** List No. 1117.

TWIN TERMINAL



Patent.

The most practical and ingenious terminal yet offered. Even for chassis mounting no terminal mount is required. Will take wire, flex, spade terminal or wanderplug. 8 assorted letterings. In pairs (no mount required). **1/6** No. 1102.

BELLING-LEE PICK-UP

Let your ear be the judge

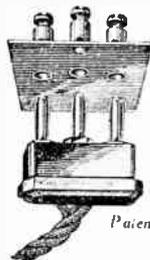


Patent.

MODEL A. Adjustable arm allows distance between needle point and centre of base to be varied from 7 1/2 inches to 9 1/2 inches. The arm should be as long as cabinet space permits. Head angle is also adjustable to obtain minimum tracking error for **27/6** different arm lengths.

Special Features.—Perfectly natural frequency response. . . . minimises needle scratch while retaining high notes and brilliancy of reproduction. . . . Minimum record wear. . . . Copper screened flex.

3-PIN PLUG



Patent.

For connections between receiver chassis and loudspeaker. Centre tap speaker transformers; field coils with connection for earthing speaker chassis, or 3 wire arrangements to carry speech and energising currents to speaker. **1/3** List No. 1119.

DISTURBANCE SUPPRESSOR

Mains leads or aerial carry high frequency interference which often ruins radio reception. The Belling-Lee Disturbance Suppressor reduces this trouble to a minimum and usually eliminates it entirely. Fuses in both mains leads for A.C. or D.C. supplies up to 250 v. **9/6** L1113. With Complete Instructions.



Patent

WRITE FOR BOOKLET "RADIO CONNECTIONS"

BELLING-LEE
FOR EVERY RADIO CONNECTION

Add. of Belling & Lee, Ltd., Cambridge Arterial Road, Enfield, Middlesex

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

Olympia's Story



THE technical staff of "The Wireless World" have spent their days at Olympia since the eve of the opening. Here, in the following pages, they present the reader with the result of their investigations. Every stand has been visited, and our staff photographers have been responsible for the illustrations which accompany the descriptions of the exhibits. Now the show moves on to Glasgow, where another exhibition opens its doors on September 1st in the Kelvin Hall.

ACTON BATTERY CO.

Sold under the trade name of Cynthex, the standard-capacity dry H.T. batteries manufactured by this firm are produced in all normal voltages, and are intended for a discharge rate of from 7 to 8 milliamps. Gold Seal and Eltax batteries are made in larger sizes, and give from 10 to 35 milliamps.

On this stand were shown Young accumulators, both for H.T. and L.T.; the latter include "mass" type and multiple-plate cells.

Acton Battery Co., Ltd., Dorland House, Regent Street, W.1.

ADEY.

A series of exceptionally small portable sets were exhibited by this firm. All



Adey compact portable receiver.

models are basically similar, but either Class "B" or pentode output stages are fitted. A feature of these sets is the Adey self-coupling valve, which includes an anode choke, wound in three sections round the base of the valve. This is available separately at the price of 6s. 6d.

Adey Portable Radio, 99, Mortimer Street, W.1.

AERIALITE.

As specialists in aerial equipment one naturally found on this stand a wide selection of aerials of various types made up into convenient lengths.

Earth tubes and aerial fixing brackets were also features of the exhibit.

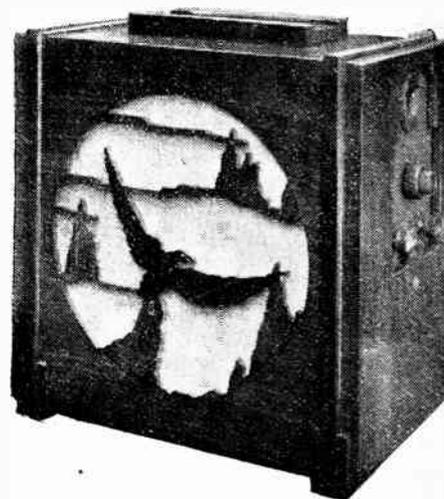
Aerialite, Ltd., 10, Amber Street, Manchester.

AERODYNE.

This firm were showing a wide range of straight sets, the smallest being the "Swift" three-valve battery set at 4 guineas; this is of the detector-L.F. type. The "Kestrel," a similar type of set but with a Class "B" output stage, is priced at £7 19s. 6d. The valves in the "Eagle" transportable are arranged as an H.F. stage, detector, L.F., and pentode output, and the price, including batteries, is 10 guineas. A five-valve superheterodyne, the "Falcon" is listed at 13 guineas, and this has a detector-oscillator frequency changer and a Class "B" output stage; a permanent magnet moving-coil speaker is included.

Hustler, Simpson, and Webb, Ltd., 317, Hoe Street, Walthamstow, E.17.

A
Stand-to-Stand
Review of the
New Season's
Products Com-
piled by the
Technical Staff
of "The Wire-
less World"



Aerodyne Eagle four-valve transportable.

ALBA.

One of the chief exhibits on this stand was the Alba Superhet 5, which is available for mains or battery operation. In the mains model the valves are arranged as a single-valve frequency changer, an I.F. stage, a screen grid second detector, and a pentode output valve, whereas the battery model has a Class "B" output valve, and a driver stage is included. The prices range from 13 guineas, according to the cabinet work. A number of straight sets was also being shown.

A. J. Balcombe, Ltd., 52, Tabernacle Street, E.C.2.

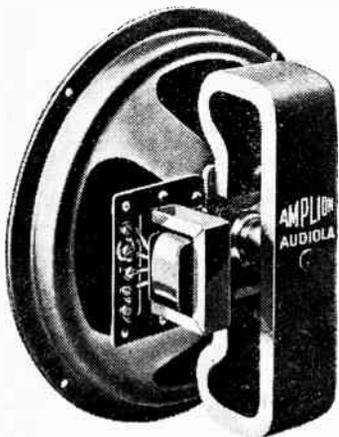
AMPLION.

Although specialising formerly in loud speakers only, Amplion's exhibits this year

Olympia's Story—

included a good range of Class "B" components, a Class "B" driver transformer in three ratios and a three-ratio tapped output choke. A binocular H.F. choke is also a new product.

The "Audiola" speaker is an addition to the P.M. range and is fitted with a universal transformer.



"Audiola" speaker fitted with universal transformer.

Midget speakers of attractive design under the name "Sonette" were of particular interest.

Amplion (1932), Ltd., 82-84, Rosoman Street, E.C.1.

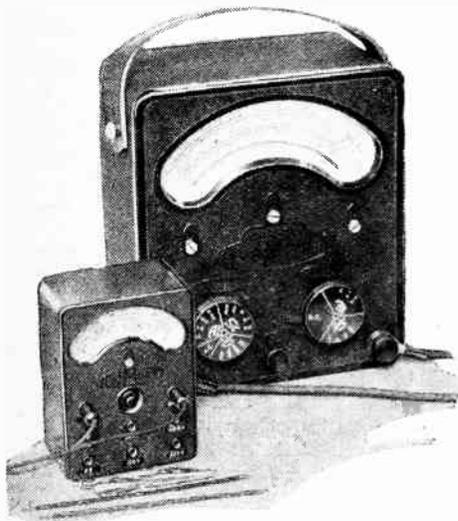
APOLLO.

This firm is well known for gramophone playing desks, and an attractive selection of these, both as table and pedestal types, are produced in both mahogany and walnut and fitted with spring or electric Garrard motors.

Apollo Gramophone Co., Ltd., 4, Bunhill Row, E.C.1.

AUTOMATIC COIL WINDER.

In addition to the two well-known Avometers there was shown this year a new



Universal Avometer and new Avominor.

junior model. Described as the Avominor, it has three voltage ranges, 0-6, 0-120 and 0-300, three current ranges, 0-6 mA, 0-30 mA, and 0-120 mA., and provision for resistance measurements up to 10,000 ohms. By the use of an external battery the resistance ranges can be extended to 0-60,000 ohms and 0-1.2 megohms. Measuring 4 in. x 3 in. x 1 1/2 in. and complete in case with leads the price is £2.

There was also an improved version of the Avodapter, that useful adjunct to the Avometers for testing voltages and currents of valves under working conditions. The price is the same, viz., 25s. for the adaptor and 7s. 6d. for the special plug.

Automatic Coil Winder and Electrical Equip. Co., Ltd., Winder House, Douglas Street, S.W.1.

B.S.R.

Amplifiers with outputs varying between 6 and 30 watts, most of which include S.G. valves in a special resistance-coupled circuit, are produced by this firm. A typical model, rated at 60 watts dissipation (15 watts A.C. output) embodies two stages of amplification followed by two of the new Mullard DO.26 valves. Full-wave rectification is carried out by two separate valves, and a multi-ratio output transformer is provided.

A self-contained radio chassis, with two H.F. stages, a triode power grid detector, and its own power supply equipment, is a new departure. The output of this apparatus, which amounts to between 1 and 2 volts, may be fed into any amplifier; indeed, it may be said that it "replaces a pick-up."



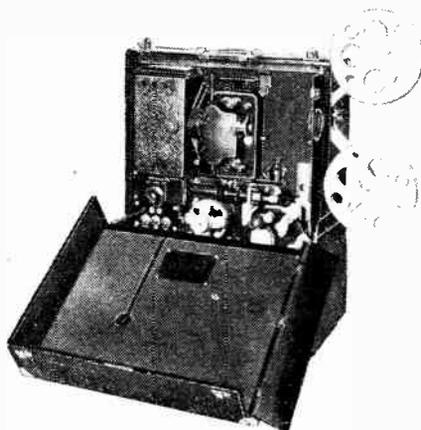
B.S.R. radio chassis for connecting to any L.F. amplifier.

The B.S.R. transformers, with special high-permeability nickel iron cores, have especially good characteristics in spite of their small size. It is stated that the output is constant within 2 or 3 per cent. between 30 and 10,000 cycles.

Birmingham Sound Reproducers, Ltd., Claremont Street, Old Hill, Staffs.

B.T.-H.

The exhibit of outstanding interest on the B.T.-H. stand was the 16 mm. Sound-and-



The projector unit of the B.T.-H. portable 16 mm. film and sound equipment.

Film Reproducer. The equipment consists of three units—all easily portable—the projector, loud speaker unit and the screen. The amplifier associated with the speaker gives 3-watts undistorted output and is, therefore, adequate for reproduction before small audiences. The speaker is the famous R.K. permanent magnet type. The equipment has many applications, especially in the field of education.

The various models of B.T.-H. electric gramophone motor comprised the principal other exhibit and the range included a universal D.C.-A.C. motor as well as the A.C. and D.C. types.

British Thomson-Houston Co., Ltd., Crown House, Aldwych, W.C.2.

BAIRD.

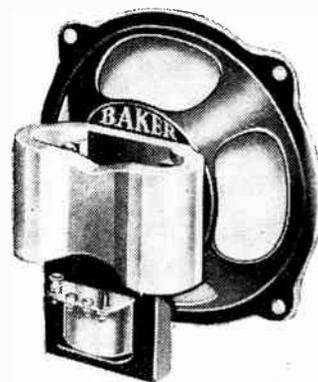
Both mirror-drum and cathode-ray televisions were on view on this stand. A special feature was being made of the Baird grid cell unit which is used in the former receiver and which is available separately at the price of £2. It is of the Kerr cell type, and requires a polarising potential of about 425 volts and a maximum modulating potential of 125 volts.

Baird Television, Ltd., 133, Long Acre, W.C.2.

BAKER.

This firm has an enviable reputation for the production of moving-coil loud speakers of the highest quality, and several examples of the "Super Power" type were shown.

In the more popular class the "Permag" unit was shown in redesigned form, and special prominence was given to the new class "B" converter which, although designed primarily for use with the Baker, may be used with equal success, from the electrical standpoint, with other units. It is housed in a cast aluminium screening box which is the correct height to fit under the "Permag" field magnet, and comprises a 1:1 driver transformer with a 300 ohm secondary, seven-pin valve holder and an output choke or transformer. A special



The new "Permag" speaker by Baker's Selhurst Radio.

plug adaptor is provided to interpose between the driver valve and its valve holder in the existing set. The price of the unit alone (without valve) is 37s. 6d., or incorporating the "Permag" loud speaker unit, 75s.

Baker's Selhurst Radio, 75-77, Sussex Road, Croydon, Surrey.

BECOL.

Ebonite in all its forms was exhibited by this firm of specialists, which produces panels, coil formers, mouldings, and extruded strips in a wide diversity of sections. The coil formers range from the smallest size, suitable for short-wave H.F. chokes,

Olympia's Story—

to those employed in winding the largest high-efficiency coils.

The productions of Postlethwaite Bros. were exhibited on this stand; whistle suppressors, screened choke, and an entirely new iron-cored H.F. choke were included.

British Ebonite Co., Ltd., Nightingale Road, Hanwell, W.7.

BEETHOVEN.

Portable or self-contained sets figure largely on the programme of this firm. The new Major model includes a fairly conventional det.-L.F. circuit, but employs iron-cored tuning coils and a moving-coil loud speaker; it is of the suitcase type.

Another recent set is the transportable with a similar circuit and also embodying a high-efficiency pentode output valve.

Montague Radio Inventions and Development Co., Ltd., Beethoven Works, Great College Street, Camden Town, N.W.1.



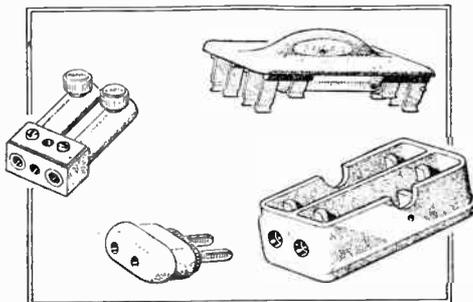
Beethoven transportable receiver.

BELLING-LEE.

Among the new items introduced this year is a range of three gramophone pick-ups. One model has been designed for easy attachment to a portable gramophone and is described as the Clip-on Unit model; of the others one incorporates a volume control. These cost 35s. each and without volume control 27s. 6d. A mains interference eliminator priced at 9s. 6d. will be found especially useful.

The other new items include a twin mains input connector embodying two fuses, and a three-pin plug and socket which is particularly suitable for connecting the loud speaker to a Class "B" valve. In addition, there is a very extensive range of indicating terminals, plugs and sockets, fuses and sundry other small but exceedingly useful parts.

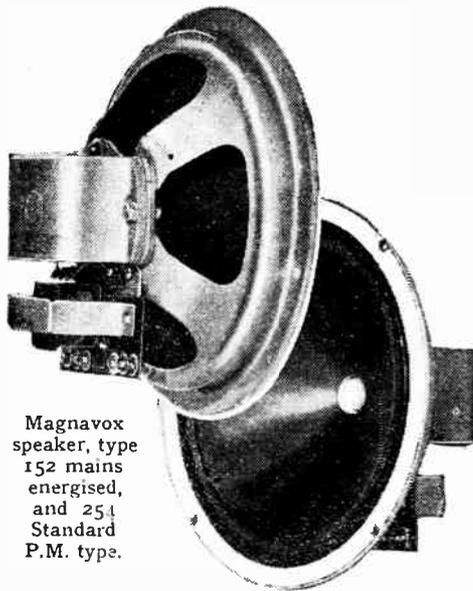
Belling and Lee, Ltd., Cambridge Arterial Road, Enfield, Middlesex.



Belling-Lee twin chassis-mounting terminal and new fused mains plug.

BENJAMIN.

This year's series of Magnavox speakers show every evidence of maintaining the high reputation they have attained.

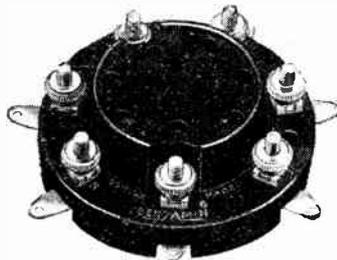


Magnavox speaker, type 152 mains energised, and 251 Standard P.M. type.

Mains energised and P.M. speakers are available in different models and a speciality is made of dual-compensated speakers, both in energised and permanent magnet types. The Magnavox-Senior P.M. is a new model. A point worthy of note is the care with which printed instructions for transformer connections have been prepared.

Benjamin products of special interest shown were Class "B" driver transformers, Class "B" universal chokes, and some new valve holders, including seven-pin types.

Benjamin Electric, Ltd., Brantwood Works, Tarriff Road, N.17.



The new Benjamin valve holder for seven-pin valves.

BLOCK BATTERIES.

The exhibits on this stand consisted of a range of H.T. and L.T. batteries of the lead-acid type but distinguished by the fact that the customary lead-grid plate is not used. The saving in weight and space conferred by this method of construction is considerable, for a 60-volt 5,000 mA. hour unit is assembled in a case measuring 14 3/4 in. x 4 3/4 in. x 5 1/4 in. high and the weight is 16lbs. The price is 37s. 6d. A 2-volt plate-less L.T. cell of 80 amp. hours capacity weighs but 6 3/4 lbs. and costs 11s. 6d.

Block Batteries, Ltd., Abbey Road, Barking, Essex.

BLUE SPOT.

Visitors to this stand had an opportunity of listening to the new 45 P.M. and 29 P.M. loud speakers which have been introduced since the last show to supplement the 99 P.M. All three models were shown in chassis as well as cabinet form, and a feature was made of the introduction of

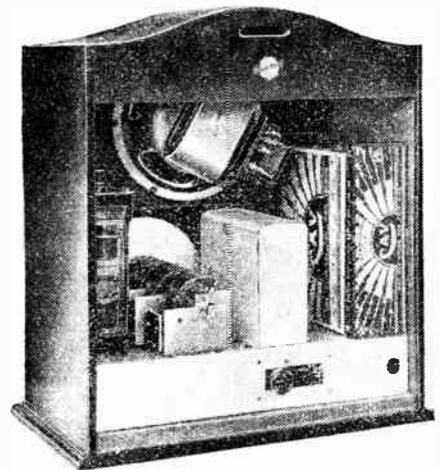
"extension" models—without transformer—for connection to receivers with low impedance output circuits.

An important recent addition to the moving-coil list is the 29/DC—an energised model supplied with 120-, 2,500- or 7,500-ohms field and costing 27s. 6d.

As regards sets, the company is concentrating on a 4-valve battery receiver with band-pass tuning, a Class "B" output stage and a moving-coil loud speaker. This set as a table model will cost £9 19s. 6d., and as a pedestal model £12 19s. 6d.

The latest Blue Spot Model 33 pick-up is a handsome looking component and has a performance curve of excellent general form. Another component shown for the first time was the 66 R.B. moving-iron loud speaker unit in which the windings have been specially arranged for Class "B" output valves.

British Blue Spot Co., Ltd., 94-96, Rosoman Street, E.C.1.

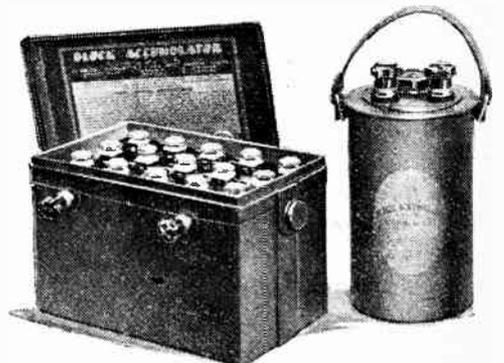


An interior view of the new Blue Spot Class "B" battery set.

BOTOLPH RADIO.

The Emperor Superhet IV occupied a prominent position on this stand. This is a four-valve set at 15 guineas, which includes automatic volume control, and a battery model is available. A Universal III model for use on either D.C. or A.C. mains without alteration was also shown.

Botolph Radio, Ltd., 119, Bishopsgate, E.C.2.



Block H.T. and L.T. batteries

BOWYER-LOWE & A.E.D.

The principal business of this firm is the manufacture of high-grade gramophone pick-ups and allied apparatus. Their latest model, the "Mark IV" pick-up, has been designed for de luxe radio-gramophones where the highest quality of reproduction is required and special attention has been

Olympia's Story—

paid to finish in order that it will blend well with expensive cabinet work. Two alternative models are available, the one giving exact compensation for reduction of bass in recording and the other with a more pronounced rise in the bass to meet special requirements. The price on this new model is 42s. The "Mark III" and "Beta" pick-ups are being continued. In addition to the standard range of wire-wound volume control resistances a new combined volume and tone control unit is being shown. This unit is self-contained in a walnut bakelite moulding and has independent controls for volume and tone, the latter being designed to give a variable top cut-off down to 1,000 cycles. The price of this unit is 10s.

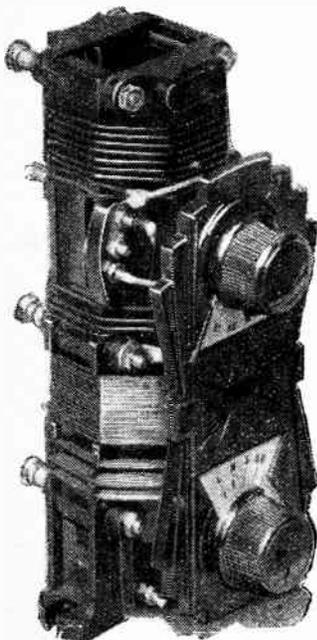
Bowyer-Lowe and A.E.D., Ltd., Diamond Works, Coombe Road, Brighton.



The Bowyer-Lowe "Beta" pick-up.

BRITISH GENERAL.

Of the many components shown on this stand the principal item of interest was the All-wave Tuner covering 14.5 to 2,000 metres and priced at 9s. 6d. It is a continuous coil with the various sections so disposed that the idle ones, which are short-circuited, introduce negligible damping. Two switches are employed, one for wave change and the other for selecting the aerial tapping most suitable for the local conditions. Flexible couplings and extension



British General new All-wave Tuner.

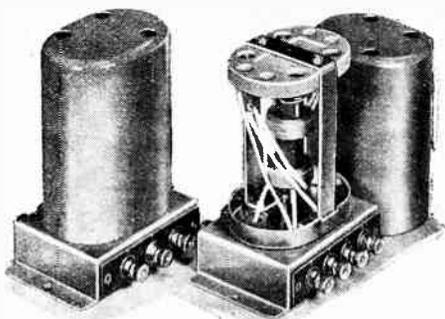
rods were shown also, thereby enabling the unit to be mounted away from the panel to avoid hand capacity effects.

Among other new components were a screened H.F. choke and a parallel feed transformer unit at 10s.

British General Mfg. Co., Ltd., Brockley Works, Brockley, S.E.4.

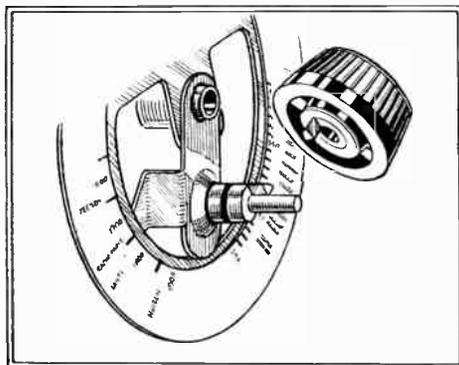
BRITISH RADIOPHONE.

A wide variety of components was shown on this stand, and the well-known Radio-



British Radiophone I.F. transformers.

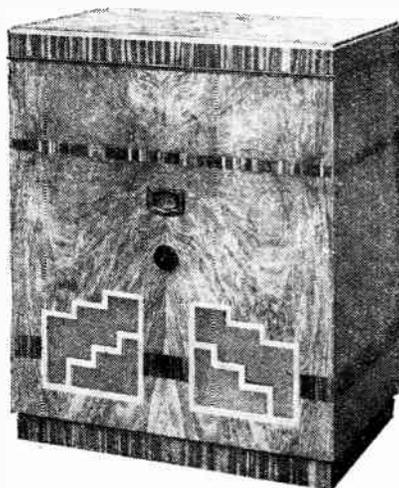
paks have been extended to include superheterodyne types and a two-H.F. straight model. The coils employed in these are also available as separate units. I.F. transformers with external trimming adjustments are now supplied at the price of 10s. Gang condensers of the straight and superheterodyne types were on view, in addition to a number of tuning dials; one of the latter deserving special mention is the dual-ratio model, with which ratios of 10-1 and 60-1 can be readily obtained.



British Radiophone dual-ratio dial.

Class "B" transformers, Q.M.B. switches, and fixed condensers formed an important part of the exhibit, while anti-static screened lead-in cable was on view; this is priced at 10s. per 15ft. The Radiophone pick-up now appears in new form, with a volume-control potentiometer neatly built into the base.

British Radiophone, Ltd., Aldwych House, Aldwych, W.C.2.



Brunswick 8-valve radiogram with dual speakers and amplified A.V.C.

BRUNSWICK.

An interesting range of superheterodynes was exhibited by this firm, comprising five, six and eight valve models. The eight valve model is specially attractive, for it includes dual loud speakers, automatic volume control, and tone control.

The tuning device renders the speakers inoperative until the desired station is tuned in, and tuning is obtained by a visual method. The automatic tone control compensates for the reduction of bass which occurs normally at low volume. Station names, as well as wavelengths, appear in projected illumination on the escutcheon.

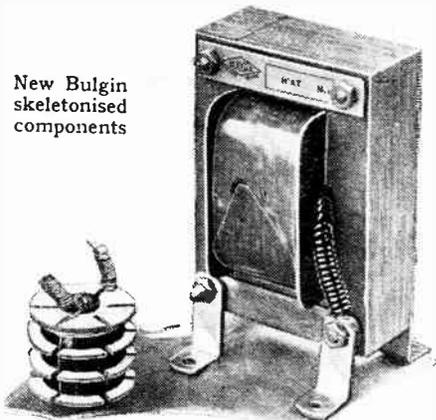
Brunswick, Ltd., 1-3, Brixton Road, S.W.9.

BULGIN.

Not only has an immense number of new components been introduced this year, but many of last season's models have been modified and improved.

The Thermal Delay Switch is now adjustable for time lag; the Transcoupler, as shown in the type "B" and priced at 12s. 6d., has a 1:4 ratio transformer and incorporates 3-watt resistances; the range of D.C. mains resistances is extended to include models suitable for the 20-volt 0.18 amp. values, while the L.F. transformers and H.F. chokes are now housed in neat bakelite cases.

So far as the new items are concerned, mention can be made here of a few only, but attention is drawn to the range of Class "B" components of which the output choke is especially interesting, since it provides seven ratios and the price is but 12s. 6d. The 3-watt volume controls ranging from 5,000 ohms to 25,000 ohms is new, and the price is 3s. 9d. in all values. There



New Bulgin skeletonised components

is a series of interference suppressor units for motors at prices of from 3s. to 12s. each.

Another innovation is a range of manufacturers' type, or "stripped," components consisting of 4-, 5- and 7-pin valve holders, five types of L.F. chokes ranging in price from 8s. 6d. to 13s. 6d., and H.F. chokes at 1s. 6d. There is a range of multiple contact Q.M.B. switches with rotary action and having four alternative "on" and "off" positions. In a three-pole pattern the price is 6s. 6d. Switches have been given considerable attention this year and the extent of the Bulgin range may be gauged by mentioning that there were about 40 types.

A. F. Bulgin and Co., Ltd., Abbey Road, Barking, Essex.

BULLPHONE RADIO.

A series of eliminators for both A.C. and D.C., together with a number of components, represent the main activities of

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this firm. There was also shown a novel type of loud speaker, embodying two entirely separate coil-driven cones mounted at each end of a cylinder about one foot long, a baffle being fitted at one end.

Bullphone Radio, New North Road, Barkingside, Essex.

BURGOYNE.

This exhibit comprised series of inexpensive battery-operated sets, sold complete with all accessories at prices varying between £3 17s. 6d. and 9 guineas. All are chassis-built, components being clamped on to the base-plate in a particularly ingenious manner without the use of screws.



Burgoyne popular receiver.

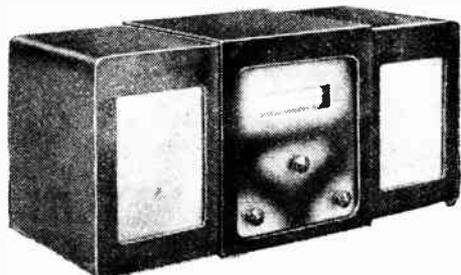
Several models are fitted with a frame, and so are completely self-contained.

Burgoyne Wireless (1930), Ltd., 34a, York Road, King's Cross, N.1.

BURRELL RADIO.

In addition to the three-valve straight set recently reviewed in *The Wireless World*, two up-to-date A.C. superheterodynes have recently been produced. The first, with four valves plus a valve rectifier, includes band-pass input, a pentode frequency changer, one I.F. stage, and a double-diode-triode second detector which provides delayed A.V.C. The output valve of this set, which costs 13 guineas, is a four-watt pentode; an exceptionally large output is a feature of all Burrell sets.

The five-valve superhet is similar; it has the same number of tuned circuits, but instead of employing a band-pass input, an H.F. stage is added, with single-tuned aerial-grid and intervalve couplings. With dual loud speakers and mounted in an ex-



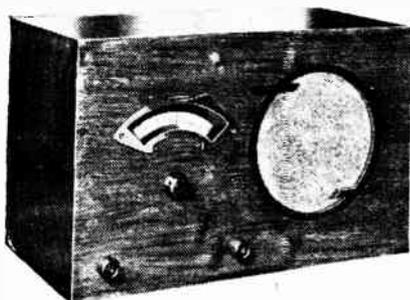
Burrell superheterodyne with twin speakers.

remely modern style of cabinet, this set costs only 17 guineas.

Burrell Radio, Ltd., 45, High Road, Willesden Green, N.W.10.

BURTON.

The new four-valve S.G. Class "B" receiver incorporates one variable-mu H.F.



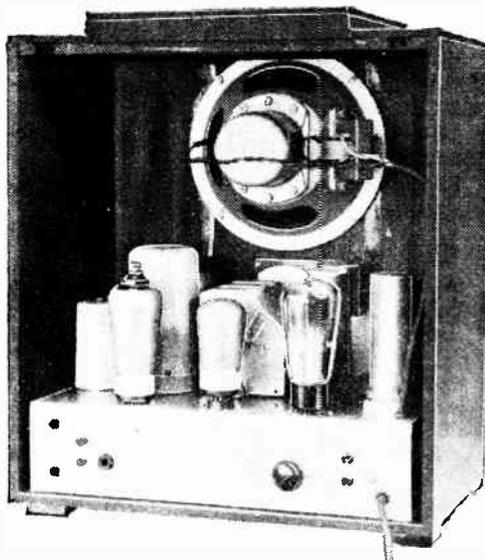
Burton S.G.4 Class "B" receiver, de luxe model.

stage, a leaky grid detector followed by a driver stage and a Class "B" output valve. A P.M. moving-coil loud speaker is fitted and the maximum power output is about two watts, yet the average total anode current is no more than 11 mA. The cabinet is of modern design, with the speaker and receiver mounted side by side and the price is £8 10s., or in a de luxe cabinet £9 2s. 6d.

The new range includes, also, a three-valve Class "B" set at £9 15s. giving one watt output, a three-valve S.G. receiver at £6 10s. and an S.G.-det.-Pen. A.C. mains receiver costing £8 19s.

To the range of components has been added a Class "B" driver transformer with two alternative ratios and a Class "B" unit for converting existing battery sets. The price of this is 35s.

C. F. and H. Burton, Progress Works, Bernard Street, Walsall.



Bush Radio SAC6 superheterodyne.

BUSH RADIO.

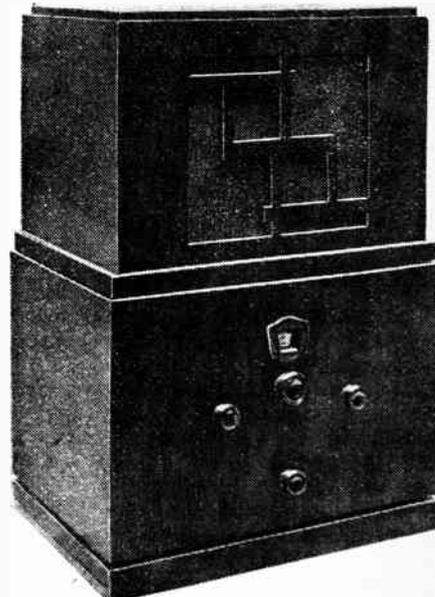
The mirror-drum television was one of the principal features of this exhibit; it includes a television receiver, and the output stage employs two 25-watt valves, one for feeding the Kerr cell and the other for the synchronising mechanism.

A number of straight sets were shown in addition to superheterodynes. Of the latter the model SAC6 is of the four-valve type, with a detector-oscillator and a pentode output valve. A Westector is used for A.V.C. purposes, and the set is priced at 16 guineas.

Bush Radio, Ltd., Woodger Road, Shepherd's Bush, W.12.

C.A.C.

A wide range of receivers and cabinets was shown on this stand. The Cambridge A.C. Three model is interesting in that a single-tuned aerial circuit with an iron-core coil is used to precede the H.F. pentode power-grid detector, which is resistance-transformer coupled to the output pentode. The price is £9 15s. The "Oxford" Ferrocart Class "B" Four is similar to *The Wireless World* Ferrocart Class "B" re-



City Accumulator Company's Cambridge Ferrocart A.C.3.

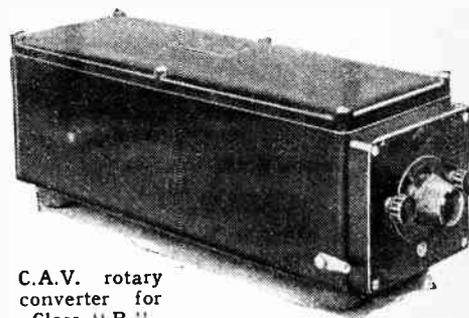
ceiver, and is priced at 10 guineas. A new superheterodyne, the C.A.C. Pentagrid Superhet, was shown, and this includes a pentagrid frequency changer and a diode-pentode second detector giving A.V.C.

Kits of parts for *The Wireless World* New Monodial Super were on view, and a special cabinet for this set is priced at £5 10s. A stamped metal chassis was also shown.

City Accumulator Co., Ltd., 18-20, Norman's Buildings, Central Street, E.C.1.

C.A.V.

Much progress has lately been made in the design of small H.T. generators, whereby the output from an L.T. battery—or even of a low-voltage house-lighting plant—may be "stepped-up" for anode supply. In addition to the well-known M.L. converters and rotary transformers shown by this firm, there is an innovation in the form of a machine of which the regulation is so good that it may be used for feeding a Class "B" output stage.

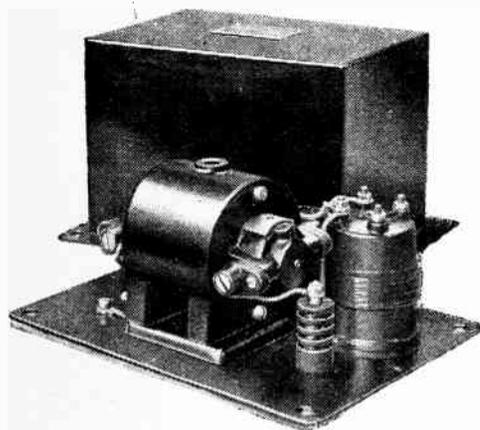


C.A.V. rotary converter for Class "B."

The most up-to-date generator of all is a model for supplying H.T. to car radio sets; it is enclosed in a weatherproof inverted case, primarily intended for mounting below

Olympia's Story —

the floorboards, and gives an output of 220 volts at 40 mA. Both 6-volt and 12-volt models are made. Many other generators,



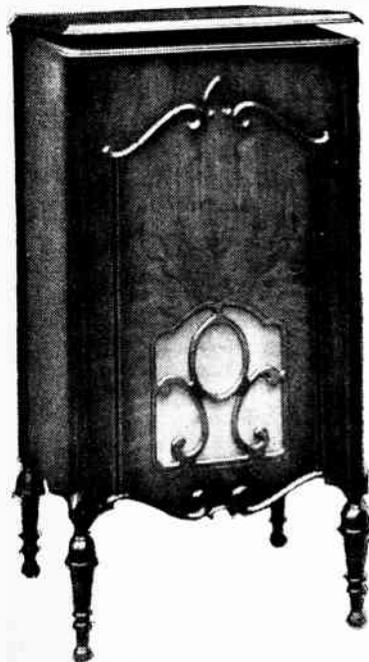
C.A.V. H.T. generator for car sets.

both of the A.C.-to-D.C. and D.C.-to-A.C. types, are available for meeting special requirements.

Among other exhibits was a synchronous gramophone motor, which represents an improvement over last year's model, but is also reduced in price. There are also mains transformers for "A" and "B" class rectifying valves, and for Westinghouse rectifiers, types H.T.9, 10 and 11.

The range of C.A.V. dry-cell and accumulator batteries is exceptionally complete, and in addition there are several new L.T. coils, including one of unusually compact, low-built design.

C. A. Vandervell, Ltd., 319, Regent Street, W.1.



For the new "Wireless World" Monodial: the Camco Gresham cabinet.

CAMCO.

Many of the older style cabinets are to be discontinued as soon as present stocks are exhausted, and of those retained for the coming season interest will centre largely on the Gresham model at £6 and the Popular at 75s., as both of these are suitable in size for housing the new *Wireless World* Monodial.

A very modern design in which the set and loud speaker are mounted side by side is

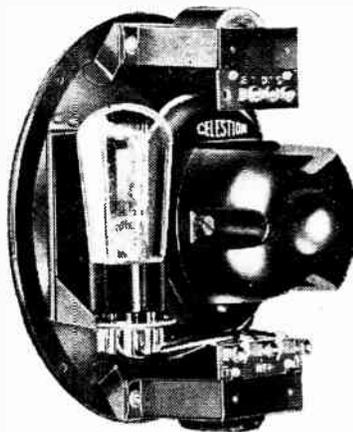
the new Daventry model which measures 11in. x 22in. x 10in. deep inside. Finished in walnut, the price is 36s., which includes a baseboard 22in. x 10in.

Carrington Mfg. Co., Ltd., 24, Hutton Garden, E.C.1.

CELESTION.

Having good reason to be well satisfied with the basic design of their existing speakers, Celestion have wisely continued their models in three ranges with little alteration except in some important matters of detail.

The S.29 "Rectone" dual speaker was exhibited. This model is supplied with two transformers, one to match the speaker input and the other to enable high-note response to be adjusted. This is done by the simple process of changing over plugs from one socket to another.



The Celestion P.M.9 Class "B" speaker chassis, complete with output stage.

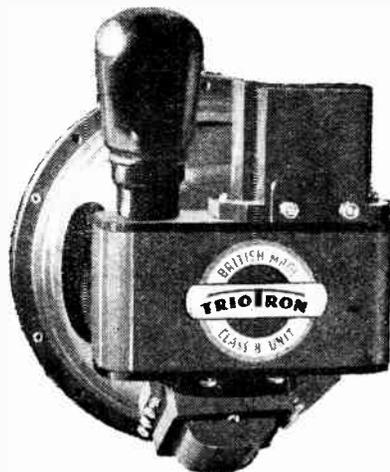
A P.M. speaker, the P.M.9, with Class "B" output stage combined, is an attractive unit, and this can be supplied complete with cabinet.

The Celestion pick-up was another interesting component.

Celestion, Ltd., London Road, Kingston-on-Thames.

CHORLMET RADIO ELECTRIC.

A midget moving-coil loud speaker with a bakelite chassis, measuring only 6½in. in overall diameter, was exhibited by this firm, which has also produced a Class "B" output unit for adding to existing sets. This appliance is completely self-contained, with a loud speaker and a valve holder for the additional valve. A similar device, but without a loud speaker, is mounted on a neat moulded bakelite base. Other ex-



Chorlmet Class "B" unit.

hibits were Stal Class "B" and Q.P.P. components, and a range of standard screened tuning coils sold at 4s. 6d. each.

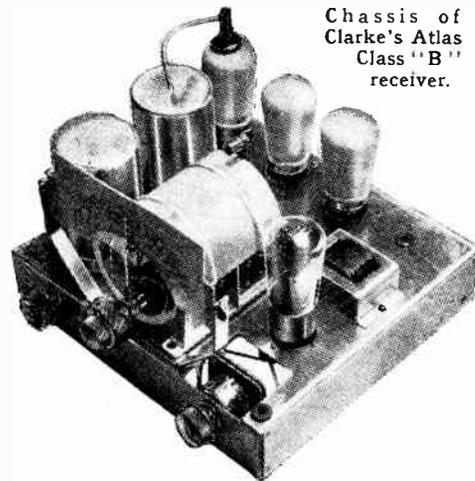
Chorlmet Radio Electric, Ltd., Stal House, Judd Street, W.C.1.

CLARKE'S ATLAS.

The range of Atlas receivers introduced last year is now considerably extended, and battery as well as A.C. sets are included. An interesting model is the Atlas A4, available in either cabinet or console form. It embodies a three-valve circuit, and is distinguished by the use of pentode valves in all positions with the exception of the rectifier. It incorporates a moving-coil loud speaker, and the price of the Console model is £13 17s. 6d.

Another interesting model is the B4, a battery-operated cabinet receiver embodying one H.F. stage, detector, driver, and Class "B" output valve. The H.T. consumption is approximately 8 mA. at 120 volts, and the price is £11 17s. 6d. An Atlas P.M. moving-coil loud speaker is fitted. A useful feature of all the Atlas receivers is the provision of a removable station-calibrated scale. Should changes take place in the allocation of wavelengths new scales could be supplied and easily fitted by the listener.

Atlas eliminators have been improved, and the range extended to include models for use with Q.P.P. and Class "B" receivers. They range in price from £2 19s. 6d. for the C.A.25 A.C. model to £6 10s. for the A.C.300; the last mentioned provides H.T. grid bias, and includes an L.T. trickle charger.



Chassis of Clarke's Atlas Class "B" receiver.

Finally, there is the Atlas range of energised and permanent-magnet moving-coil loud speakers.

H. Clarke and Co. (M/c), Ltd., George Street, Patricroft, Manchester.

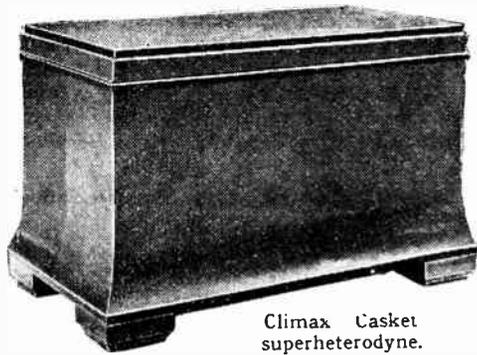
CLIMAX.

The latest Climax receiver, the Casket Superheterodyne, is mounted in a most unusual form of cabinet, which does not in any way suggest a radio set. The base is slightly raised on feet; the loud speaker is mounted on the floor in a horizontal plane and so is completely out of sight. This A.C. set, which costs 16 guineas, embodies a four-valve superheterodyne circuit with band-pass input and a special second-channel interference eliminator. The same chassis is embodied in the S.4 model, which is of more conventional appearance externally.

The Climax "straight" three-valve receiver, which has an extremely high reputation for selectivity, is now mounted in a

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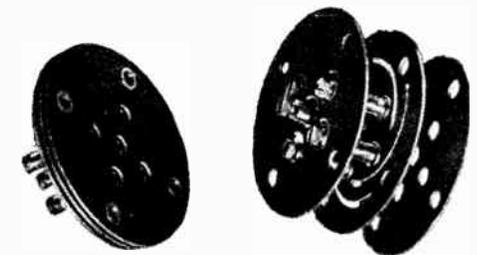
modern horizontal cabinet and is sold at the reduced price of 12 guineas. An up-to-date battery receiver, with a permanent-



Climax Casket superheterodyne.

magnet moving-coil loud speaker and pentode output, is also produced.

Climax Radio Electric, Ltd., Haverstock Works, Parkhill Road, N.W.3.



Clix "air-sprung" anti-microphonic valve holder.

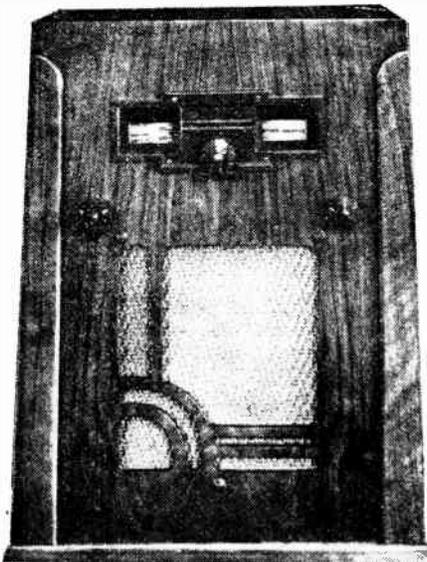
CLIX.

The new "Airsprung" anti-microphonic valve holders of the chassis mounting type formed the chief exhibit on this stand. In the 5-pin type with terminals the component is priced at 1s. 3d. A 7-pin "Floating" model is priced at 1s. A wide range of terminals and connectors was also shown.

Lectro Linx, Ltd., 79a, Rochester Row, S.W.1.

COLUMBIA.

There were few stands at Olympia where such a wide range of efficient sets could be seen as on that of Columbia, and prices varied from £5 to 90 guineas. At the latter price the star set of the stand was the "Autoradiograph de Luxe Ten," Model 640.



The Columbia CQA Battery Four.

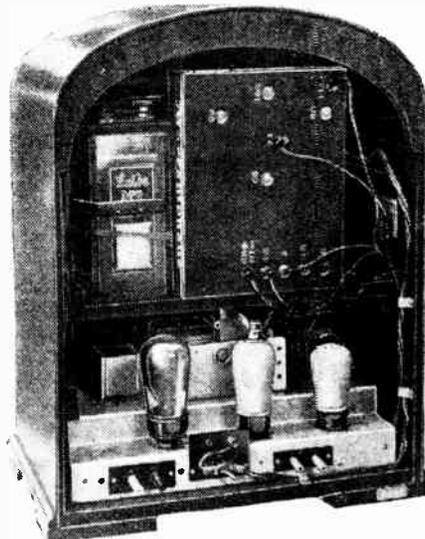
This is a console superhet. for A.C. mains, with delayed automatic volume control. Tuning is by wavelengths and stations by name. The gramophone equipment incorporates a record changer having a magazine capacity of eight records.

A more popularly priced superhet. is the Model 631, of seven valves, which also incorporates a record changer.

In straight sets, a four-valve radiogram at 23 guineas is particularly attractive.

What promises to be one of the most popular Columbia models this season is the CQA Battery Radiograph, Model 1003. Here is a set where quality of reproduction, both on radio and gramophone records, has been put before all other considerations, and this in spite of the fact that it is a battery set. The circuit of this receiver is three H.F. band-pass stages with variable- μ valve, transformer coupled to the detector, and push-pull pentode output stage. On the score of quality of reproduction it is stated that, tested on full output, the harmonic content was less than 5 per cent. The undistorted output is 1½ watts. The gramophone motor is a double-spring type, and the pick-up the standard Columbia model.

Another Columbia model at a low price is the 11-guinea CQA Battery Four, Type 1001.



Internal view of the Columbia Battery Three, Model 1005.

Tuning is by stations as well as wavelengths, and provision is made for a gramophone pick-up to be connected.

Columbia Graphophone Co., Ltd., 98, Clerkenwell Road, E.C.1.

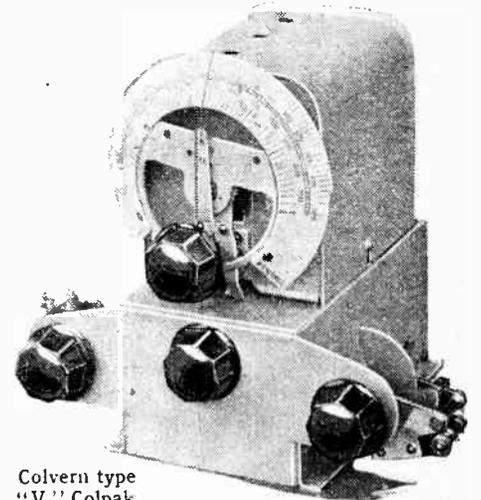
COLVERN.

The new Ferrocort coils in one form or another constituted the principal interest of the Colvern exhibit this year. The range is very extensive indeed, for there were on view the latest miniature series, also an I.F. transformer. Although the miniature type offers all the advantages of the earlier design they occupy far less space; for example, a three-coil assembly, including switch mechanism ganged with a spare toggle switch, is mounted on a panel only 6½ in. long. The price is 12s. 6d. per coil.

The I.F. transformer fitted with the new style core and described as the type FC110 embodies a variable capacity coupling, since for obvious reasons the variable mutual inductance coupling is not practicable with this style. They cost 12s. 6d. each, and the primary is tapped for the anode connection.

Two coil-and-condenser assemblies described as Colpak Tuning Units were shown.

Type H has the coils and condenser mounted side by side, and costs 57s. 6d. for a triple assembly. In the other style, type V, the



Colvern type "V" Colpak.

coils are mounted below the chassis, and the price is 62s. 6d., also for the triple model. This includes, in addition, a reaction condenser and a volume control, and, of course, Ferrocort coils are fitted.

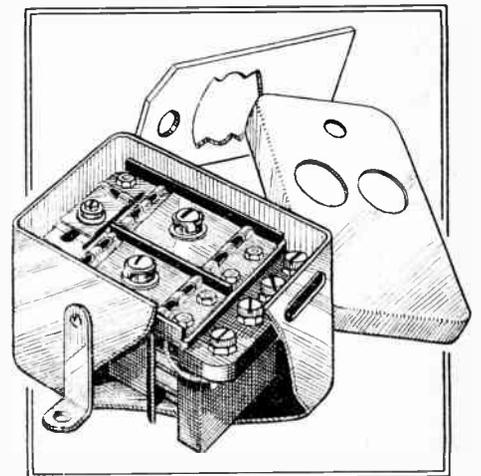
A full range of air-cored screened coils were on view.

Colvern, Ltd., Mawneys Road, Romford, Essex.

CONSOLIDATED RADIO CO.

The exhibits of this firm comprised a wide range of battery sets in portable, transportable, and cabinet form, also two mains sets. Of the battery models the most interesting is the Rolls Caydon Transportable Four, for it incorporates such modern features as full-vision wavelength scale, H.F. amplification and Class "B" output, and the price is 10 guineas. In a de luxe cabinet it costs 12 guineas.

Consolidated Radio Co., Ltd., Warple Way, Acton, W.3.



New Colvern I.F. transformer with Ferrocort core.

CORONET.

In addition to showing a selected range of manufacturers' products, this firm were featuring a range of sets of their own make. Known as the Coronet series, it includes a three-valve battery set at £4 10s. and a Class "B" three-valve model at £6 15s. A similar set embodying an H.F. stage was priced at £8 8s. Also, there were five- and seven-valve mains superhets at 13 and 16 guineas.

Faudels, Ltd., 36-40, Newgate Street, E.C.1.

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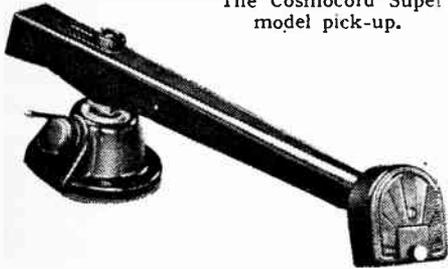
COSMOCORD.

A comprehensive range of gramophone pick-ups of moderate price was displayed on this stand, the most interesting being the Super Model at 22s. 6d. The moulded bakelite tone arm is fitted with an adjustable counterbalance weight, and a shunt-type volume control resistance is incorporated in the base.

A smooth and noiseless wire-wound potentiometer at 3s. 6d., or with switch 5s. 6d., was another well-made product of this firm.

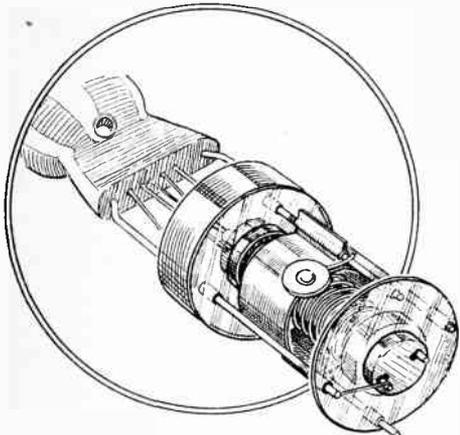
Cosmocord, Ltd., Cambridge Arterial Road, Enfield, Middlesex.

The Cosmocord Super model pick-up.



COSSOR.

All the new valves, including the latest multi-electrode types, were exhibited by Cossor, and little purpose would be served by giving a mere catalogue of recent innovations. It should be noted, however, that two different Class "B" valves are available; the original high-output type, 240 B,



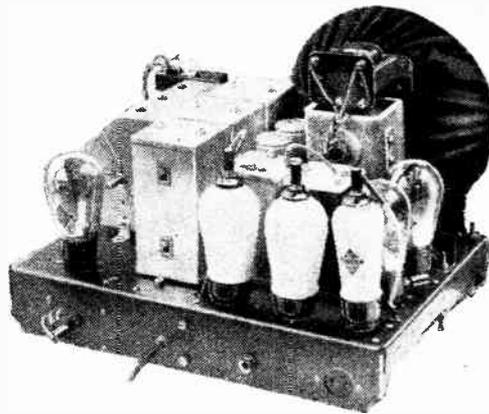
Electrode assembly of Cossor MVS PEN.

consumes 0.4 amp. filament current, while the newer type, 220.B, gives about half the output and consumes 0.2 amp. Another interesting valve is the MVS PEN, an indirectly heated H.F. pentode handling a large input and in which the suppressor grid is connected externally to a separate pin instead of being joined internally to the cathode. This gives scope for many circuit innovations; for instance, the A.C. resistance of the valve may be artificially reduced by the judicious application of a polarising voltage. A complete range of D.C. valves, consuming 0.25 amp., is now produced.

The new Melody Maker kit set is already well known. A basic straight H.F.-det.-L.F. circuit is included in all models, but in the battery versions the purchaser has the choice of pentode or Class "B" output and of a moving-iron or moving-coil loud speaker. In the A.C. mains model of the same set an energised moving-coil loud speaker is fitted.

A number of completed receivers were shown, including a very interesting battery-fed superheterodyne with the unusual

feature of a pentode driver preceding the Class "B" output stage; a pentode also serves as a combined detector-oscillator.



Chassis of Cossor battery superheterodyne.

There is also an A.C. superheterodyne planned on similar lines, but with a separate oscillator, which feeds into the suppressor grid circuit of the MVS PEN second detector.

A. C. Cossor, Ltd., Cossor House, High-bury Grove, N.5.

CROMWELL.

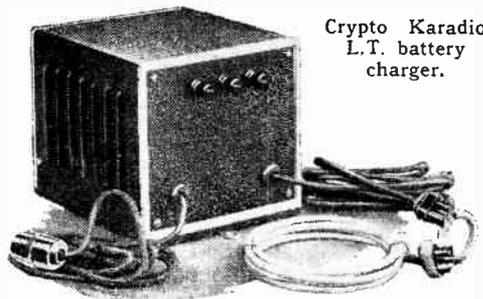
The S.H.8.B. was the chief receiver on this stand, and it is an eight-valve battery superheterodyne. There are H.F. and I.F. stages, a two-valve frequency changer, a diode second detector, driver and Class "B" output; A.V.C. is included. It is claimed that the total anode current consumption is 6 to 10 mA., and the set is priced at 18 guineas including batteries. A similar A.C. model at the same price has a 3½ watts output stage and is fitted with Q.A.V.C.

A number of interesting straight sets was shown, and a universal A.C./D.C. receiver of the three-valve type at 12 guineas was exhibited. This set is suitable for 200/250 volts supplies of either A.C. or D.C.

Cromwell (Southampton), Ltd., 32-33, Brinton's Terrace, Southampton.

CRYPTO.

As battery charging equipment is the speciality of this firm, the exhibits here



Crypto Karadio L.T. battery charger.

were of interest mainly to the service station engineer, for there is a wide range of valve rectifier types of from 1.3 to 15 amps. output, also constant potential rotary models for heavy duty purposes.

A home model, styled the Karadio charger, was shown for the first time. It has been designed for charging car and wireless batteries, and automatically adjusts itself for 2-, 4-, 6-, and 12-volt batteries, and the price is £4.

Lancashire Dynamo and Crypto, Ltd., 94, Petty France, Westminster, S.W.1.

DAGENITE.

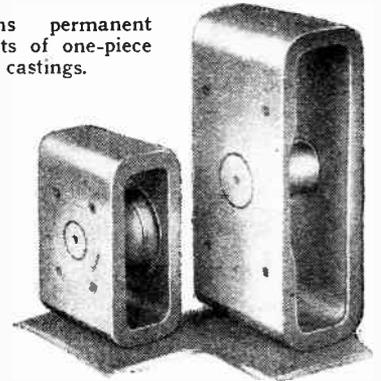
A series of accumulators of all types and all capacities and including special batteries for H.T. purposes were shown by this firm. A special cell, enclosed in an opaque moulded case and intended primarily for battery hire services, has just been introduced; in this cell a special sealing system is employed for making the joint between the pillar and lead. An acid-proof connection is obtained by the use of a rubber gasket and a vaseline cup.

Peto and Radford, 107a, Pimlico Road, S.W.1.

DARWINS.

Although of interest primarily to manufacturers of loud speakers, pick-ups, moving-coil microphones, etc., the comprehensive

Darwins permanent magnets of one-piece castings.



range of permanent magnets of up-to-date design proved in itself an education to visitors of a technical turn of mind.

Darwins, Ltd., Fitzwilliam Works, Sheffield.

DAVENSET.

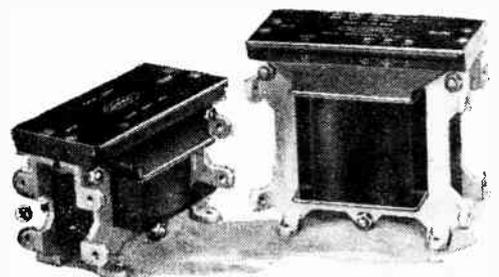
Prominent on this stand was the range of Davenset M.G.C. battery chargers fitted with valve rectifiers and embodying a mechanical overload cut-out. There are four models in the series, and the M.G.C.5 will handle both H.T. and L.T. accumulators and has five independent circuits. The prices range from 14 to 31 guineas.

A full range of mains transformers and chokes was shown, and while the same high standard is maintained, prices are now considerably lower, the reduction being as much as 20 per cent. in many cases. There was also a selection of Grippleshell aerial fittings.

Partridge, Wilson and Co., Davenset Works, Evington Valley Road, Leicester.

DAVIS MFG. CO.

The leading Davis exhibit was a five-valve superheterodyne (the Victory Model) arranged as a radio-gramophone. It includes band-pass input, a screen grid first detector, a separate oscillator, a variable-mu I.F. amplifier working at 110 kilocycles,



Davenset 30-H. 50-mA. choke and step-up mains auto-transformer.

Olympia's Story—

and a power grid detector, transformer-coupled to a pentode output valve.

The Davis Universal A.C.-D.C. set embodies an H.F.-det.-L.F. circuit, with a current-limiting barretter and 20-volt 0.18-amp. valves.

Davis Mfg. Co. (Finsbury), Ltd., 18, Christopher Street, E.C.2.

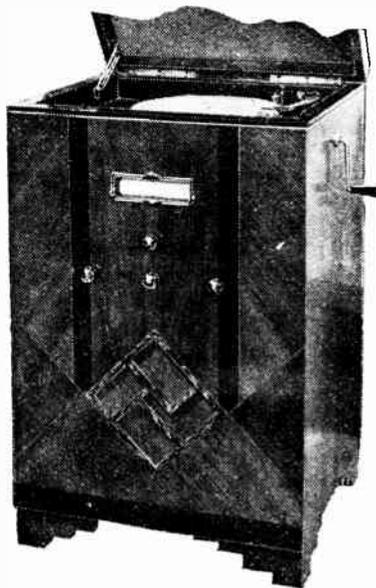
DIGGLE.

This firm has for long specialised in the manufacture of the "Reliance" charging plant of the motor-generator type. The apparatus is very robust, slow running and automatic in action. There are models for charging H.T. batteries with four circuits at 233; H.T. and L.T. batteries with eight circuits—four L.T. and four H.T.—at 160, also several large multi-circuit models.

Alfred Diggle and Co., Jane Street, Rochdale, Lancs.

DRUMMER.

This firm were showing a wide range of up-to-date battery and mains-operated receivers and radio-gramophones. Heading the list of standard models is a six-valve, including rectifier, superhet. radio-gram, fitted with an automatic record changer, and



Drummer Radio battery radio-gramophone, incorporating Class "B" output.

described as the model R.M.S.6a. It incorporates delayed A.V.C., dual loud speakers, and has seven tuned circuits. The combined frequency changer valve is preceded by one H.F. stage and followed by one I.F. amplifier fitted with a variable- μ H.F. pentode. Follows a double-diode-triode as second detector and A.V.C. control valve, and a pentode valve delivering three watts to the dual speakers. It is fitted with an automatic record changer and the price is 42 guineas, or, as a cabinet set, 19 guineas.

At the other end of the range is a four-valve battery set, the B.4, priced at 14 guineas. Here, again, an up-to-date specification is found, for band-pass tuning, Class "B" and a P.M. moving-coil loud speaker are embodied. The quiescent current is between 8 and 10 mA, and the power output 1½ watts. As a radio-gramophone with a double-spring motor, the price is 21 guineas.

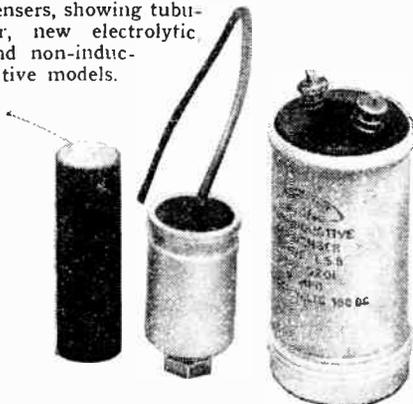
Edge Radio, Ltd., Bolton, Lancs.

DUBILIER.

The Dubilier exhibit this year was remarkable for the diversity of the new types

of condensers shown. Non-inductive condensers are now housed in a new-style cylindrical metal case which screws into a special baseboard fitting, so making changes or replacements, should the occasion arise, a very simple matter. Known as the Type 9200, an old type number by the way, they now include also the BS, LSB, LSA, LEC,

Group of Dubilier condensers, showing tubular, new electrolytic and non-inductive models.



LEG, LBG and LSG series. A 2-mfd. 9200 type of 250 volts working is now priced at 3s. 6d., while a 350-volt model of the same capacity, LEG 9200, cost 6s.

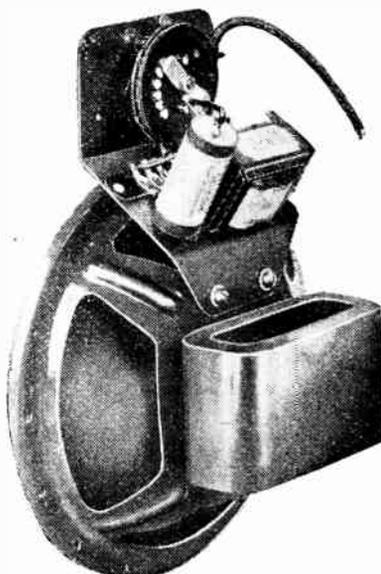
The dry electrolytic range is now very extensive; one new model which will undoubtedly be extremely popular is the type 401 at 2s. 6d., two examples being 10 mfd. at 50 volts working and 20 mfd. at 25 volts. These are suitable for grid circuit decoupling. There was a range of tubular dry electrolytics with wire ends, and, in all, some twenty-seven miscellaneous dry electrolytics are now available.

Finally, there were the Dubilier motor car suppressor resistances, for use with car radio, a set of four being priced at 10s. 6d.

Dubilier Condenser Co. (1925), Ltd., Ducon Works, Victoria Road, North Acton, W.3.

EARL.

Moving-coil speakers were shown on this stand, the feature of particular interest being a speaker having a special volume control included. The volume control is stated



Earl P.M. speaker fitted with volume control for local operation.

to act as a potentiometer of low impedance across the secondary of the speech transformer, to give a steady variation in volume without affecting the audio frequency response. The unit is particularly suitable

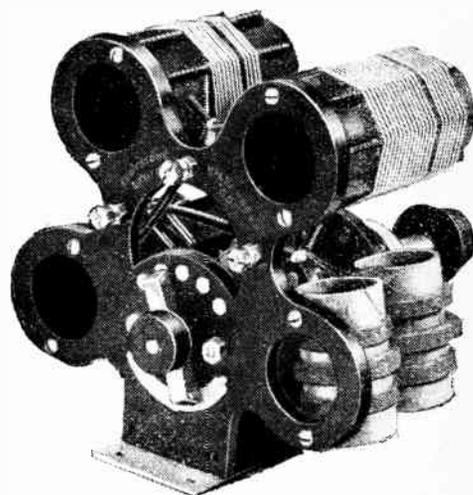
for use as an extension speaker, with local control.

Earl Mfg. Co., Ltd., Avenue Works, Hanover Park, S.E.15.

EDDYSTONE.

Among many new short-wave components which have been recently introduced by this firm of short-wave specialists is a multi-range switched coil unit. Five wave-ranges are covered by switching, each unit being entirely separate and comprising primary, secondary, and reaction windings; the switching system is cleverly devised and should be trouble-free. Different types are available, and the purchaser can exercise choice as to the wave-ranges provided.

Some of the new H.F. components are constructed of Frequentite, a new porcelain-like material which is particularly suitable for short-wave work, as its losses are exceptionally low; in addition it should stand up well to tropical conditions.



Eddystone 5-range tuning coil.

The new wide-vision tuning dial embodies a 25:1 reduction gear constructed with an exceptionally high degree of accuracy, and seems to be a very practical device for its special purpose.

One of the most interesting of the new Eddystone sets is the six-valve superheterodyne, A.C. operated and covering the short- and medium-wave ranges only. A modern horizontal cabinet contains an energised speaker.

Stratton and Co., Ltd., Balmoral Works, Bromsgrove Street, Birmingham.

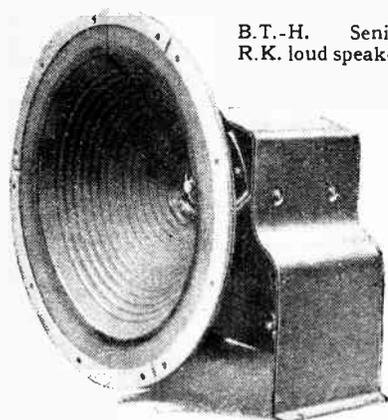
EDISWAN.

Among the wide range of Mazda valves shown, the AC.2/Pen. was particularly interesting in view of its high mutual conductance of 8 mA/V, and its output of nearly 3½ watts. A battery type duo-diode-triode, the L.2/DD, was worthy of special attention. The range of D.C. valves and H.T. rectifiers remains largely unaltered, but the A.C. range has been extended by the addition of duo-diode types and an H.F. pentode. The AC.2/Pen. is listed in a duo-diode type. A cathode ray tube was being demonstrated, and the television model is listed at 6 guineas.

The well-known B.T.-H. pick-ups were on view, and the Senior model is priced at 37s. 6d. complete with volume control; the output is about 1 volt, and the impedance at 4,500 cycles is 40,000 ohms. The range of R.K. speakers has been extended, and in addition to the Senior models, Major and Minor types were also shown. The Senior

Olympia's Story—

model is available in A.C., D.C., and permanent magnet types, the D.C. model being priced at 5 guineas.



B.T.-H. Senior R.K. loud speaker.

The Major R.K. speaker is of the D.C. type and has an 8in. cone; in chassis form it is priced at £2 17s. 6d. complete with multi-ratio output transformer. The Minor speaker is a permanent magnet type and is available in cabinet form at the price of £2 17s. 6d. complete with transformer.

A wide range of output transformers of different ratios and current ratings for R.K. speakers, head telephones, and H.T. batteries and accumulators completed the principal exhibits.

Edison Swan Electric Co., Ltd., 155, Charing Cross Road, W.C.2.

EELEX.

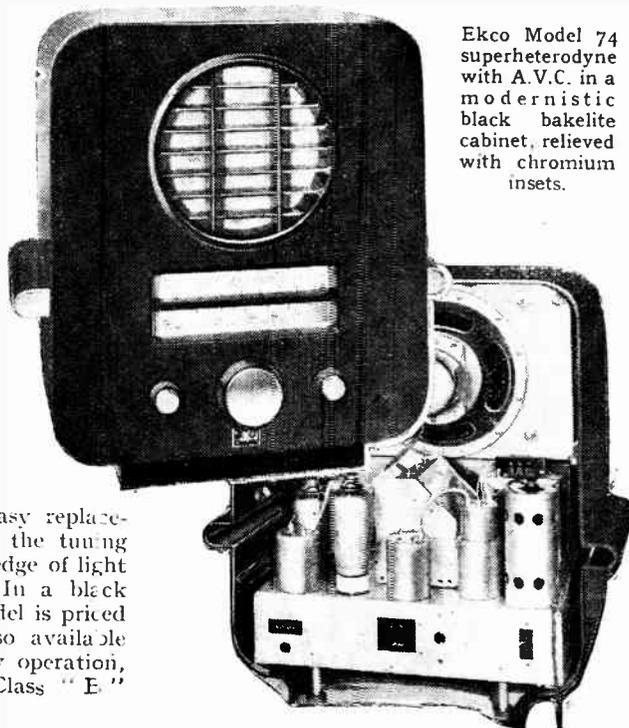
Apart from the manufacturers' products which constitute the wholesale section of this firm's activities, the most interesting exhibit was a modulated oscillator for set testing. The instrument consists of a single valve H.F. oscillator modulated by gramophone records, and the wave ranges covered are from 200 to 600 metres and 1,000 to 2,000 metres respectively. Complete in oak cabinet, with spring motor and pick-up, the price is £6 15s. Provision is made for housing the batteries in the cabinet.

In addition, there was the range of Eelex short-wave converters and the recently introduced Duplex coil and coil chassis, the price of the latter being 25s.

J. J. Eastick and Sons, 113, Bunhill Row, E.C.1.

EKCO.

The principal exhibit on this stand was undoubtedly the new Model 74 superheterodyne. This is of the five-valve type with band-pass input to the detector-oscillator, a single I.F. stage, and a duo-diode-triode second detector giving delayed A.V.C. A pentode output valve is fitted, and a valve rectifier. A special point is made of the detachable speaker grille for easy replacement of the silk backing, and the tuning indicator takes the form of a wedge of light instead of the usual pointer. In a black and chromium cabinet, this model is priced at 14 guineas. Models are also available for D.C. mains and for battery operation, and the latter is fitted with Class "E" output.



Ekco Model 74 superheterodyne with A.V.C. in a modernistic black bakelite cabinet, relieved with chromium insets.

The S.H.25 superheterodyne was also being shown, at the price of 15 guineas, and this model employs a two-valve frequency changer. A three-valve straight set in both console and radio-gramophone form was on view, and also a range of H.T. eliminators.

A car radio receiver of unusual type was exhibited. Instead of being arranged for remote control, the whole superheterodyne chassis is designed for mounting behind the instrument board. The loud speaker, of course, is a separate unit.

E. K. Cole, Ltd., Ekco Works, Southend-on-Sea, Essex.

ELDECO.

In view of the imminent sweeping changes in station wavelengths, one hardly envies the task of those who are responsible for preparing indicator dials for the new sets. In their new "Stenode" superheterodyne the



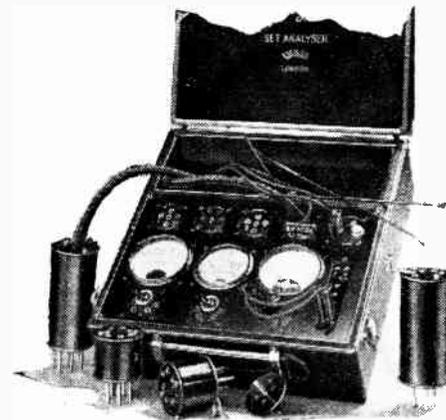
Eldeco Stenode superheterodyne with "clock" dial.

Eldeco concern have provided an ingenious solution by devising a clock-dial tuning system, which facilitates the logging of stations. Each minute represents one-quarter of a degree of condenser rotation,

and so settings may be recorded very accurately in a manner that is easy to memorise. The set includes six valves, one of which is a tone-corrector.

The Eldeco six-valve portable superheterodynes seem to be the only ones of their type in suitcase form; one of these models is fitted with the clock-dial system of tuning.

Eldeco Radio, Ltd., 62, Conduit Street, W.1.



The Emicol Set Analyser, a product of Electrical Measuring Instrument Co.

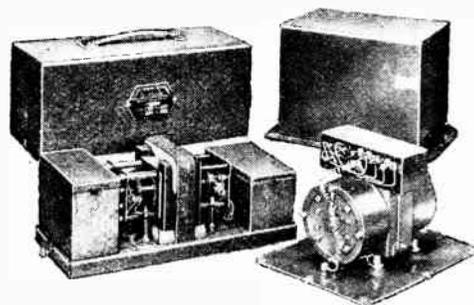
ELECTRICAL MEASURING INSTRUMENT CO.

This firm were showing a wide range of inexpensive measuring instruments of the single and multi-range type, also a very useful test set described as the "Emicol" Set Analyser at 7 guineas. It includes three separate meters, a two-range universal A.C. and D.C. voltmeter, a two-range milliammeter and a three-range moving-coil voltmeter with a resistance of 1,000 ohms per volt. Provision is made for testing four-, five-, and seven-pin type valves.

Electrical Measuring Instrument Co., Ltd., 55, Cardington Street, N.W.1.

ELECTRO-DYNAMIC.

As specialists in the design of rotary converters this firm were showing a range of machines for obtaining A.C. from D.C.



Electro-Dynamic L.T.-to-H.T. converter and new car radio H.T. generator.

supply mains, from country house lighting sets and from batteries. Also models for voltage raising using a D.C. input. Of particular interest was the new Car Radio Converter. This operates from the starter battery and gives a smoothed D.C. output of 200 volts at 40 mA. Complete in waterproof metal container for letting into the floorboards, the price is £6 4s.

Electro-Dynamic Construction Co., Ltd., Devonshire Grove, S.E.15.

ELECTRON.

The activities of this firm are devoted mainly to the production of aerial and earth equipment for indoor and outdoor use. A

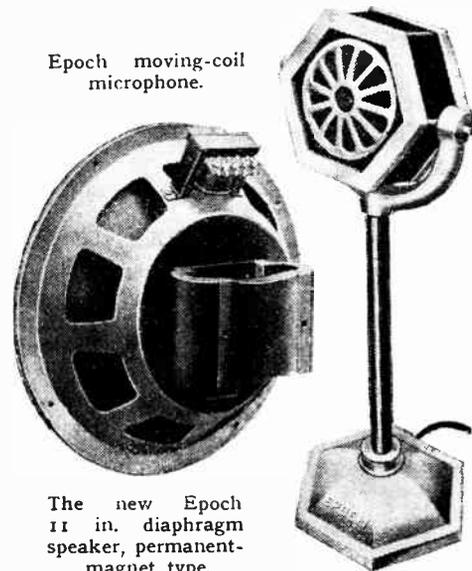
Olympia's Story—

number of very useful accessories in this category were included in their exhibit.

New London Electron Works, Ltd., East Ham, E.6.

EPOCH.

In addition to the well-known "Super-cinema," "Domino," "99," and "20th Century" ranges of moving-coil loud speakers, a number of interesting new lines have been introduced for the coming season. Of these not the least attractive is the new "Super P.M." loud speaker at the very reasonable price of £2 5s. This is fitted with an 11 in. diaphragm and has a bass response which goes down to 35 cycles. It will handle 8 watts and is fitted with a 10-ratio output transformer. The new Type "A2½" model is a robust engineering job, and is enclosed in a cast aluminium body, the front of the diaphragm being protected by a cast aluminium grille. The output transformer is totally enclosed and as in the case of the "Super P.M." is provided with 10 ratios. The price of this model is



Epoch moving-coil microphone.

The new Epoch 11 in. diaphragm speaker, permanent-magnet type.

£3 3s. For portable loud speakers and car radio sets a new miniature unit, known as the "Super Dwarf P.M.," has been produced, complete with 5-ratio transformer, at 23s. 6d. It is fitted with a 5 in. diaphragm and is designed to handle 2 watts. For those wishing to modernise their receivers by the addition of Class "B" amplification, a special adaptor has been designed for use in conjunction with the "Popular" types of Epoch loud speakers. Finally, there is the Epoch moving-coil microphone, which has been especially developed for public address work.

Epoch Radio Mfg. Co., Ltd., Exmouth House, Exmouth Street, E.C.1.

EVER READY.

As might be expected, H.T. batteries for every conceivable wireless purpose formed the chief exhibit on this stand, the types ranging from the small "Winner" series for a 6 mA. discharge to extra-heavy capacity models for a drain of 30-40 mA. Grid bias and torch batteries were also shown, as well as numerous L.T. accumulators.

Ever Ready Co. (G.B.), Ltd., Hercules Place, Holloway, N.7.

EXIDE AND DRYDEX.

Exide L.T. accumulators were classified

under four main headings this year. Series "C," the standard popular type in glass and celluloid boxes for normal discharge; mass-type cells in category "D," De Luxe type HZ for heavy discharge, and unspillable cells.

The Drydex Green Triangle range is extended, three new models being included; a 99-volt 9-volt for grid bias at 10s.; a 123-volt 9-volt at 12s. 6d., also a 126-volt battery at 11s. For Q.P.P. and Class "B" use there are Yellow Triangle models.

The Brown Triangle models are for heavy-duty work, giving from 15 to 30 mA.

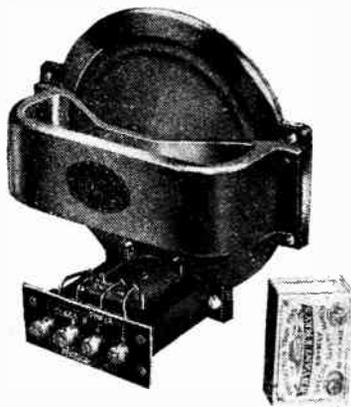
Chloride Electrical Storage Co., Ltd., Clifton Junction, near Manchester.

FERRANTI.

A display of components embracing almost every phase of wireless activity was to be found on this stand. Transformers of the ordinary, push-pull, Class "B," output, and mains types still form a large portion of this firm's products, but resistances, condensers, chokes, interference filters, eliminators, meters, loud speakers, valves, receivers, and kit sets occupied the greater part of the stand. The range of A.C. mains valves includes a duo-diode-triode and a Heptode, while there is a 2½ watts output triode valve of the directly heated type. Among the battery valves a Class "B" type was prominent.

The receivers included a five-valve model, the Lancastria, with a Heptode frequency changer, a duo-diode-triode second detector and a 2½ watts output stage. This set is priced at 15 guineas and a similar model with delayed A.V.C. and a visual tuning indicator was shown at 18 guineas. A five-valve battery superheterodyne with a Class "B" output stage and a frame aerial was priced at 17 guineas including batteries. The Gloria superheterodyne was also shown; this is a larger type with delayed A.V.C., a two-valve frequency changer, and a signal frequency H.F. stage; it is equipped with visual tuning.

Among the kit sets, the short wave receiver is deserving of special mention; it is a battery model with Class "B" output and



Ferranti M.6T speaker with universal transformer.

a screen-grid H.F. stage. Plug-in coils are used to cover the range of 15/600 metres.

The range of meters has been extended by the addition of a valve tester; the meter included is arranged for external use as a multi-range voltmeter and milliammeter. A multi-range A.C. test set was also shown.

The well-known M.1 loud speaker occupied a prominent position, but several new models were on view. The M.6T is of very modest dimensions, having a cone of only 4 in. diameter, and is priced at 31s. 6d. with universal transformer. A

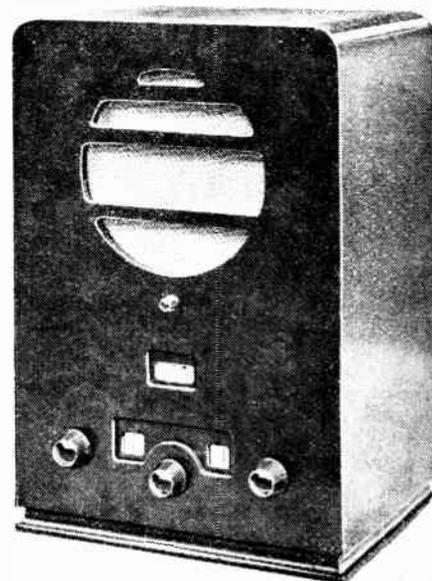
larger model, the M.5, has a 6 in. cone and is priced at 30s. without transformer.

Ferranti, Ltd., Hollinwood, Lancashire.

FILM INDUSTRIES.

A new application of the latest battery set technique was to be seen in the F.I. "Baby" public address equipment, which comprises a Class "B" output stage, preceded by a driver and an L.F. amplifying valve. This equipment is battery driven, and so is entirely self-contained; it is intended for outdoor meetings, etc., and is stated to have an acoustic range of 500 yards.

Of course, Film Industries are best known for their moving-coil loud speaker units, mainly intended for fitting to loud speakers



Ferranti Arcadia superheterodyne with Heptode frequency changer.

of the horn type. These units, together with horns of the "folded" and straight type, were exhibited, together with moving-coil microphones and various types of amplifying equipment.

Film Industries, Ltd., 60, Fiddington Street, W.1.

FULLER.

To the range of L.T. "Mammoth" accumulators in glass containers has now been added a new model, the MDG, with a 45-amp.-hour capacity. This bridges the gap between the SDGH of 25 amp.-hours and the LDGH at 60 amp.-hours rating. It is fitted with non-interchangeable terminals, large moulded filler vent, a moulded lid with polarity signs and the "Mammoth" type plates. Gravity floats are included, and the price is 8s.



Fuller new M.D.G. 45 ampere-hour slow-discharge cell, complete with carrying handle.

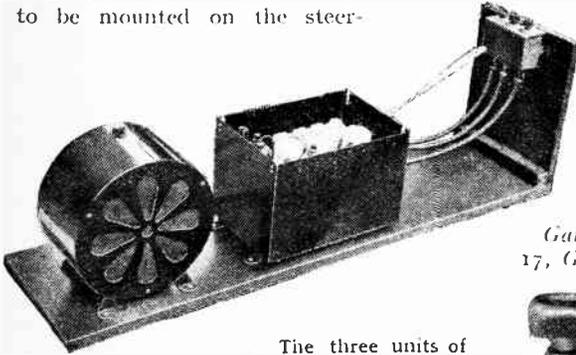
Olympia's Story—

A long range of "Standard" cells in glass boxes, many unspillable models, 10-volt H.T. accumulator units, four different types of dry cell batteries, and grid bias batteries completed a very interesting exhibit.

Fuller Accumulator Co. (1926), Ltd., Woodland Works, Chadwell Heath, Essex.

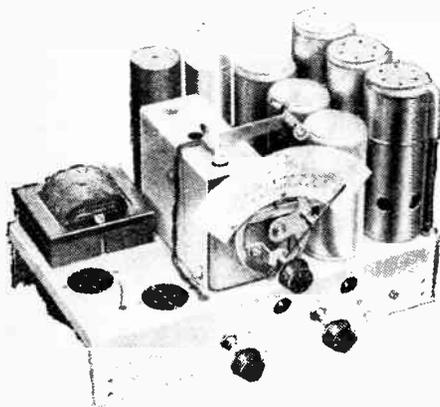
G.E.C.

One of the novel features of this firm's exhibit was the car radio receiver which is supplied in three units—a moving-coil speaker fitted with a tone control, the receiver proper which comprises a five-valve superheterodyne with A.V.C., and the remote control unit to be mounted on the steer-



The three units of the G.E.C. car radio apparatus.

ing pillar of the car. Tuning, wave-range, and volume can all be adjusted from the control unit. Among the ordinary receivers, the Superhet 8 merited special attention if only on account of the delayed quiet A.V.C. system which is incorporated. The Superhet 5 is arranged with a band-pass input circuit to the detector-oscillator, a single I.F. stage, and a screen grid second detector resistance-coupled to the pentode output valve. The table model is priced at 14 guineas, but it is also obtainable as a D.C. set and in radio-gramophone form. A six-valve battery superheterodyne with a Class "B" output stage was on view, and a three-valve battery set of the det.-L.F. type was priced at £5 17s. 6d.



Chassis of the G.E.C. Superhet 5 for A.C. mains.

A wide range of G.E.C. H.T. batteries was shown and a particular feature is made of their capacity in milliwatt-hours being guaranteed. A number of Magnet accumulators was also on view. A new permanent magnet moving-coil speaker was shown, the small model being priced at 37s. 6d. and the large at 57s. 6d. including the containing cabinet.

The well-known Catkin valve was prominent among the valves exhibited, and in

the ordinary types a duo-diode-triode was to be found among both the A.C. and the D.C. ranges. H.F. pentodes were shown in mains and battery types, and the new 16 watts dissipation pentode is of special interest. The B.21 Class "B" valve was particularly interesting in view of its unusually low resistance, which is claimed to confer freedom from parasitic oscillation. The valve is designed to work with an appreciable negative grid bias, and will give an output up to 2 watts.

General Electric Co., Ltd., Magnet House, Kingsway, W.C.2.

GARRARD.

Garrard exhibited a wide range of gramophone motors, both spring and electric types. The automatic record changer at £10, which is a very fine example of accurate and substantial workmanship, was given a special display. This firm now produces a pick-up with volume control incorporated.

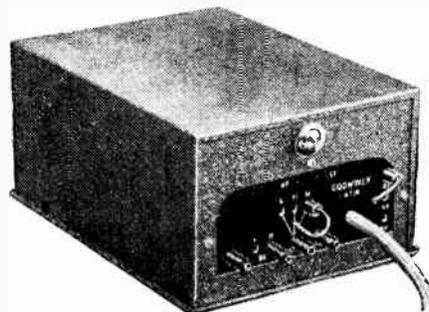
Garrard Engineering and Mfg. Co., Ltd., 17, Grafton Street, W.1.



The Garrard pick-up.

GODWINEX.

Exhibits on this stand consisted mainly of "Godwinex" eliminators in a variety of models and for all supplies, including one



An example of Godwinex eliminators.

type specially smoothed for use when the supply is from mercury arc rectification.

Transformers specially designed for use



A new circuit tester of general application by Pullin.

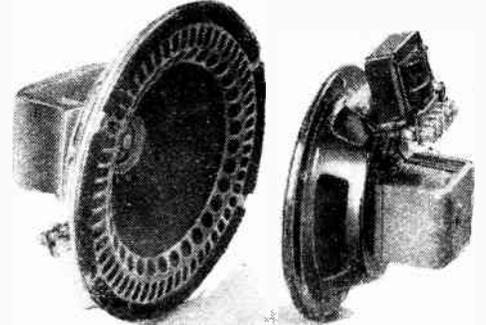
with Westinghouse metal rectifiers formed the other feature of the stand.

Another item of interest on this stand was a universal tester by Pullin, of West Ealing.

J. Dyson and Co., Ltd., 5, Godwin Street, Bradford.

GOODMANS.

A model "P" speaker with a new system of cone mounting provided this firm's most up-to-date exhibit. A neat and small speaker of 8¼ in. overall diameter, though



Two Goodmans speakers, Model P, with a new system of cone mounting, and another of energised type.

similar in other respects to the standard model, was seen in company with a still smaller model for midget radio sets measuring only 6½ in. in diameter, whilst still smaller models were also seen here.

Goodmans, 69, John Street, E.C.1.

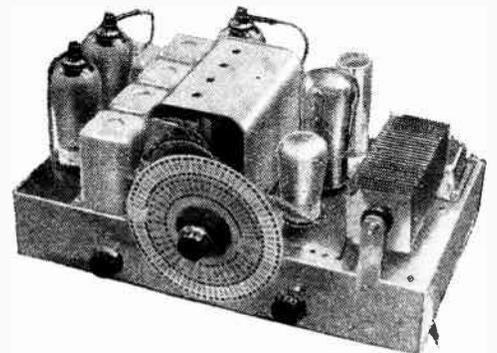
GRAFTON RADIO.

Particularly interesting was the complete television outfit shown by this firm. Separate receivers are fitted for sound and vision, the former using an up-to-date three-valve circuit feeding a moving-coil loud speaker, while for the latter one with two variable- μ H.F. stages is utilised.

The television gear is of the projector type throwing a picture 9¼ in. x 4¼ in. on to a ground screen.

Of the other sets shown, a Class "B" five-valve set at 15 guineas well exemplified the best modern practice, while an eight-stage superhet. for A.C., D.C., or of universal mains type and costing 24 guineas represented good value for money.

Grafton Radio, Ltd., 79, Lols Road, Chelsea, S.W.10.



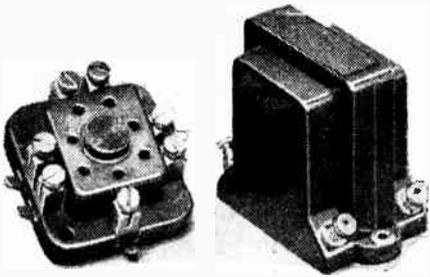
Grafton eight-stage superhet. chassis.

GRAHAM FARISH.

Even if we ignore its low price of 5s., the new Zelos variable condenser is a particularly well-made component. From the point of view of the amateur and experimenter, it has the particularly valuable feature of a removable spindle, which makes it possible to link together several of the condensers for ganged tuning. Further, for Hartley and similar circuits, where both sets of vanes are "live," the steel shaft

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may be replaced by one of insulating material to avoid hand-capacity effects.



Graham-Farish 7-pin valve holder and Pip L.F. transformer.

Among other new Graham-Farish components is the Acroficient aerial kit, which includes everything necessary for erecting an efficient aerial. There is also a new L.F. transformer, and a seven-pin valve holder.

Graham Farish, Ltd., 153, Masons Hill, Bromley, Kent.

GRAMPIAN.

This stand was devoted to moving-coil speakers of various classes, including models with multi-radio transformers and one designed specially for Class "B" amplification. With the P.M. model type P.C.X, provision is made for adding a second speaker by the inclusion of additional connections to the speaker transformer. A "Giant" model with permanent magnet is an example of a new product, whilst there is quite a selection of midget speakers.

Grampian Reproducers, Ltd., Station Avenue, Kew Gardens, Surrey.

GRANTONA.

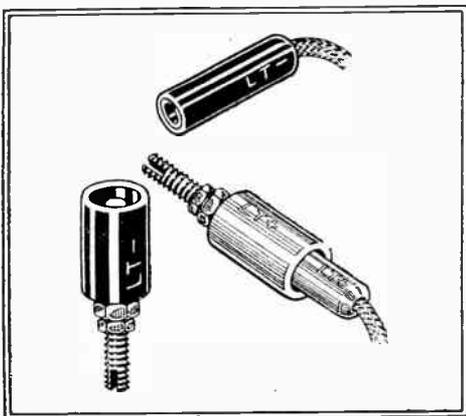
These exhibitors are specialists in diaphragms for loud speakers of the cone type, and can supply the greatest variety of sizes and shapes. They have thoroughly investigated the question of cone materials and methods of construction, and the whole process, from the raw material to the finished article, is carried through at their works at Stoke Newington.

R. O. Bridger and Co., 4, Shelford Place, Church Street, N.16.

GRIPSO.

Self-locking tags and sockets are a new Gripso product. These are designed so that the tag will not loosen from the socket and so result in a poor contact. Chassis-type valve-holders and a large variety of plugs, sockets, and connectors, complete the range of Gripso products.

Gripso Co., 28, Victoria Street, S.W.1.



Gripso insulated plugs and sockets.

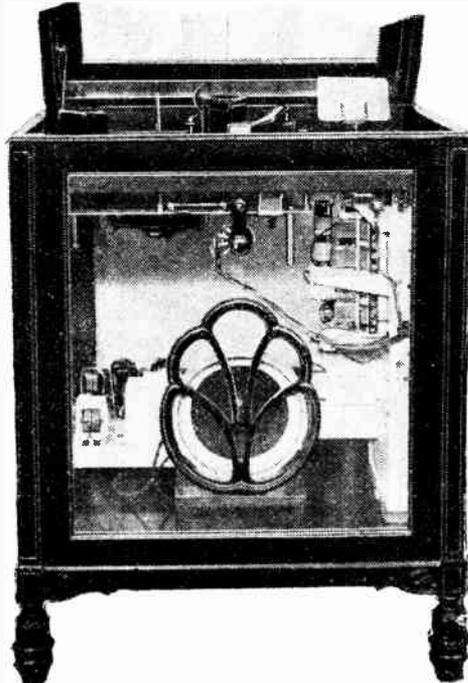
GROSVENOR.

H.T. and bias batteries for every conceivable purpose were shown on this stand.

Grosvenor Electric Batteries, Ltd., 2-3, White Street, Moorgate, E.C.2.

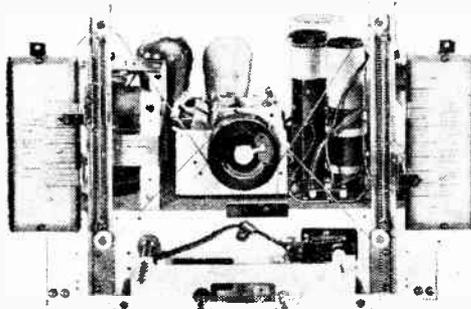
H.M.V.

Six new models have been introduced this year and all are superheterodynes. The new "Suphet Selective Five" at 15 guineas is a very fine example of an up-to-date inexpensive receiver possessing adequate selectivity to cope with modern



H.M.V. Superhet 10 Autoradiogram in glass cabinet, showing disposition of the units.

broadcast conditions. It embodies a four-stage circuit, the first valve combining the functions of oscillator and detector, one I.F. stage, a triode second detector and a pentode output valve delivering 1.6 watts maximum to the moving-coil loud speaker. The fifth valve is a mains rectifier.



Chassis of H.M.V. Superhet Selective Five receiver.

A similar chassis is incorporated in the "Superhet Radiogram Five," the additional equipment comprising a separate volume control for the gramophone, H.M.V. pick-up and an induction-type motor, and the price is 29 guineas.

An A.C. seven-valve (including rectifier) model, the "Superhet Concert Seven" comes next in order, its special features being the inclusion of delayed A.V.C. and a manual sensitivity control described as a "static suppressor." In this case one H.F. stage precedes the frequency changer,

this function being divided between two valves. Then follows a single I.F. amplifier, two metal rectifiers, one serving as second detector and one for A.V.C., one L.F. stage, and finally a PX4 output valve. A duplex tone control operates on either the lower or the upper registers. The combined medium and long wave scale is station calibrated and the price is 22 guineas.

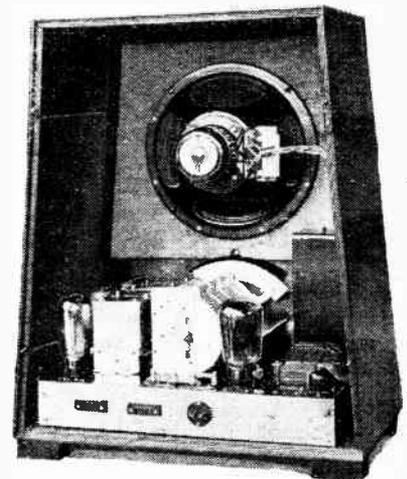
This is available also as a radio-gramophone at 48 guineas. Styled the "Superhet Autoradiogram Seven" it includes an automatic record changer with the capacity of eight records. Heading the list is the "Superhet-Ten Auto-radiogramophone" at 80 guineas. It is based on last season's model, but in its new form incorporates delayed A.V.C. and sundry other refinements. As a de-luxe model the price is 95 guineas.

A few of the well-tried H.M.V. sets are retained with slight modification. The Superhet Portable Six, for example, is now fitted with a moving-coil loud speaker and, in addition, the price is reduced to 14 guineas.

Gramophone Co., Ltd., 98, Clerkenwell Road, E.C.1.

HACKER.

The twelve-valve Ether Emperor occupied pride of place on this stand; it is a straight set with three H.F. stages and six tuned circuits of the iron-core type. A diode detector with an L.F. stage feeding the push-pull output stage is used, and separate H.T. supplies are provided for the H.F. and



"Two-H.F." Commodore receiver with A.V.C. and iron-core coils.

L.F. valves. The delayed A.V.C. system is unusual in that a special H.F. stage is provided to feed a metal rectifier for providing the bias voltages. An autodyne frequency changer is included to permit short-wave reception.

A smaller receiver, the Commodore, is priced at 18 guineas and is arranged for A.C. or D.C. mains operation. This has two H.F. stages with iron-core coils and delayed A.V.C. Many other models, including battery sets, were shown.

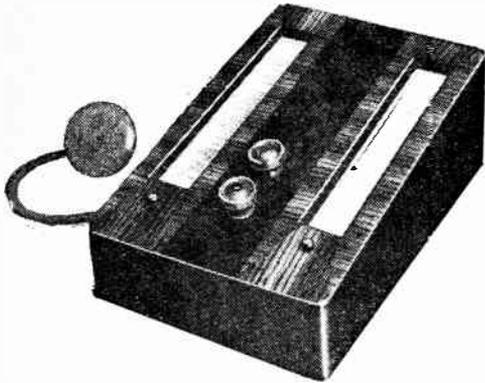
H. Hacker and Sons, Perfecta Works, Ray Lea Road, Maidenhead.

HALFORD.

One of the chief features on the Halford stand was the Telecontrol system of remote control. A small unit containing two control knobs and the calibrated tuning scales is used and connected by flexible leads to the receiver proper. Tuning and volume can both be controlled from a distant point.

Olympia's Story—

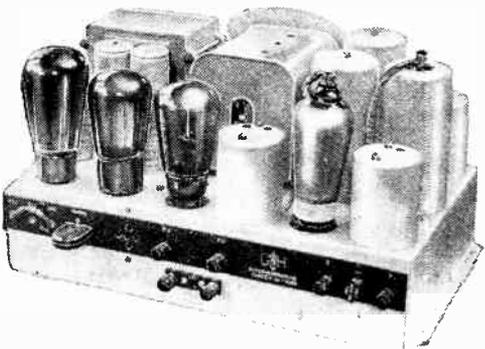
Two superheterodyne models were shown; the seven-valve type being equipped with an H.F. stage preceding the detector-oscillator and a push-pull pentode output stage,



Halford "Telecontrol" remote-control unit.

and the five-valve model not having these features. The all-wave models employ these basic chassis, but include in addition a two-valve convertor which is arranged to have an aperiodic H.F. stage before the autodyne frequency changer in order to prevent aerial radiation. The All-Wave Seven, Model 40, is priced at 30 guineas.

Halford Radio, Ltd., 39, Sackville Street, W.1.



Chassis of the Halford Berkeley superheterodyne.

HARLIE.

A useful selection of accessories were shown on this stand. Amongst them should be mentioned the "Fix-a-gram" playing desk consisting of gramophone motor and pick-up in a convenient cabinet suitable for using as a base on which to stand the set.

The Harlie pick-up with volume control incorporated and a tone selector or scratch filter are other useful components, the latter being used either as an accessory to the speaker or to the pick-up, depending upon which purpose it is required to meet.

Harlie, Ltd., Balham Road, Lower Edmonton, N.9.

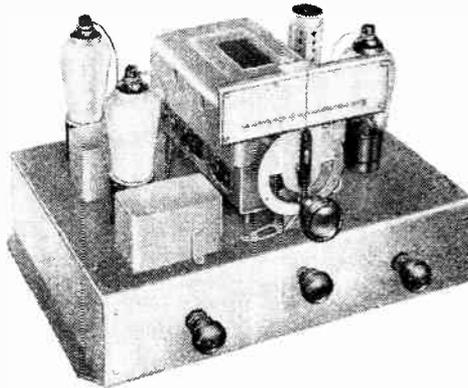


The Harlie pick-up, model 36. A volume control potentiometer is built into the tone arm support.

HAYNES RADIO.

Haynes receivers are designed to appeal to the knowledgeable and discriminating enthusiast rather than to the listener whose main concern is cabinet work. Apart from the fact that they are produced as sets of parts, bare chassis, or in completed form, they are flexible, being devised for working with alternative output units, and with single or dual speakers.

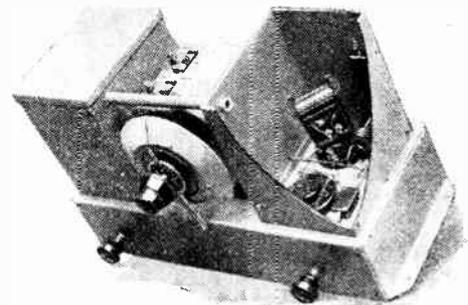
Although it is not entirely new, and does not include the most "fashionable" of circuits, the Haynes A.C. Quality Receiver may first be described. Giving an undistorted output of six watts, it embodies three tuned circuits with Ferrocart coils,



Haynes Radio superheterodyne receiver.

one H.F. stage, and two resistance-coupled L.F. stages. Such an arrangement is almost ideal for medium range and high-quality reproduction, and the set may be expected to show a considerably improved performance as compared with its predecessor.

The A.C. superheterodyne has either a two-valve or Pentagrid frequency changer, I.F. stage and a double-diode second detector giving amplified and delayed A.V.C. Ferrocart coils are used throughout, including new I.F. transformers designed to give a straight-sided resonance curve. A similar D.C. model was shown.



Haynes Radio short-wave superheterodyne converter.

A short-wave superheterodyne, two Class "B" battery receivers, a three-valve A.C. set, and a particularly workmanlike short-wave converter complete the list of main exhibits.

Haynes Radio, 57, Hatton Garden, E.C.1.

HEYBERD.

Among the several new items were two portable power amplifiers of five- and ten-watt rating respectively. Each model incorporates two stages and a valve rectifier. The controls are neatly arranged on a polished bakelite panel and the prices are £19 10s. for the H5 and £23 5s. for the H.10.

Portable battery chargers and one for home use are also new. Model AO.3 charges 2-, 6- or 12-volt batteries at one amp. and the price is 42s. 6d.

Heyberd mains transformers have been modified, plugs and sockets now being employed largely in place of terminals and a colour code is adopted.

F. C. Heyberd and Co., 10, Finsbury Street, E.C.2.



Heyberd type H.10 portable two-stage amplifier.

HELLESENS.

It is good news for battery users to hear that the Hi-Life series of Hellesen batteries, now sold at greatly reduced prices, include exactly the same type of cell as their original productions. As an example of prices, the 120-volt standard capacity now costs 11s.

A new and improved patented cell is employed in the "Super" batteries; in this series the 120-volt pattern costs 14s.

It is interesting to note that Hellesen batteries are now fitted in Aerodyne, Atlas, Cromwell, Ekco, Murphy, and Pye receivers.

In addition to the H.T. batteries, Hellesen's also make dry and wet electrolytic condensers of the high- and low-voltage types.

Hellesen, Ltd., Morden Road, S. Wimbledon, S.W.19.

HENLEY'S.

Although wire of various kinds formed a large portion of this exhibit, the chief feature was the Solon electric soldering iron, which is priced at 7s. 6d.

Henley's Telegraph Works Co., Ltd., 11, Holborn Viaduct, E.C.1.

HIGGS

Six-valve superheterodynes were to be found on this stand, and the A.C., D.C., and battery models are all priced at 18 guineas. They are essentially similar, and include band-pass input to the two-valve frequency changer, a single I.F. stage, an anode bend second detector from which A.V.C. is arranged, coupled in the case of the mains models to an output pentode, and in the case of the battery type to the driver which in turn feeds the Class "B" output stage. A universal A.C./D.C. type is also available at 20 guineas.

Higgs (Gt. Britain), Ltd., Westbourne Place, Hove, Sussex.

HIVAC.

The activities of this firm are devoted exclusively to the manufacture of an inexpensive range of 2-volt valves. Entirely British made, they include models of every type, the most recent additions being two pentode equivalents, the Y220 and the Z220, priced at 12s. 6d., each and giving power outputs of 500 and 750 milliwatts respectively. Also a Class "B" type, the B220, rated at 1,250 milliwatts output with

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an anode-to-anode load of 14,500 ohms. The price is 10s. 6d.

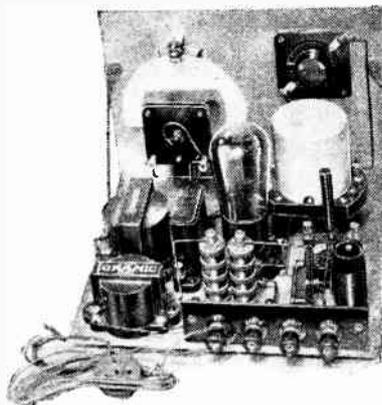
High Vacuum Valve Co., Ltd., 113, Farrington Road, E.C.1.

IGRANIC.

While several of last season's models are retained, so many new components have been introduced that, on the whole, the Igranic range may be regarded as almost entirely new. A series of iron-cored coils occupy a prominent position. A closed magnetic circuit consisting of "E" and "I" laminations is employed, and the windings are carried on a sectionalised former. Five different styles are available covering the requirements of straight as well as of superheterodyne receivers, while, in addition, there is one dual range short-wave coil in the Igranic range. Wave-band switching is included. Single coils cost 12s. 6d. each, while a three-coil assembly comprising band-pass aerial and H.F. coils is priced at 36s.

A complete tuning unit, described as the Igranipak and consisting of a stout steel chassis carrying a three-gang condenser, three air-cored screened dual-wave coils, three five-pin valve holders and all the essential components for the H.F.-det. portion of a two-H.F. receiver, was shown, and the price is 57s. 6d.

Tubular condensers, paper-dielectric smoothing condensers in metal cases, toggle switches, Class "B" driver transformers, differential and reaction condensers constitute a few of the new items now available at prices which are very competitive.



Igranic short-wave adaptor chassis.

A new smoothing choke has been introduced to replace the model CH12. Rated at 40 henrys and to carry 40 mA., it costs 9s. 6d. A buttonhole transverse current microphone measuring 2½ in. in diameter, ¾ in. deep and weighing 3oz., will be found extremely useful for public address as well as for many other purposes, for, despite its small size, it will carry up to 25 mA.

Igranic Electric Co., Ltd., 147, Queen Victoria Street, E.C.4.

ITONIA.

In addition to the products of the manufacturers for which this firm are factors the Itonia Playing Table and Playing Bureau, by means of which a transportable receiver may be converted to a radio-gramophone, were demonstrated.

Itonia, Ltd., 58, City Road, E.C.1.

J.B.

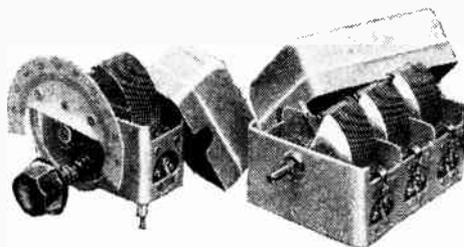
The Superhet gang condensers are the latest addition to the J.B. range. Based on

last season's Nugang type, their only difference is that one section, which can be either the front or the back according to requirements, is fitted with tracking vanes in the stator. A three-gang model costs 21s. with dust cover.

This year a feature was made of a new range of dials, one model incorporating a hair-line cursor moving close to the scale. The dial light travels with it, so giving the maximum illumination where it is most useful. Known as the type S.L.1, the price is 6s. 6d. Fitted with a switch for economy in battery sets it becomes the model S.L.2 at 7s. 6d.

Another new J.B. product takes the form of a complete tuning unit described as the "Linacore." It consists of a three-gang condenser, three iron-cored coils, and costs 69s. 6d.

Jackson Bros. (London), Ltd., 72, St. Thomas Street, S.E.1.



A pair of J.B. Nugang condensers.

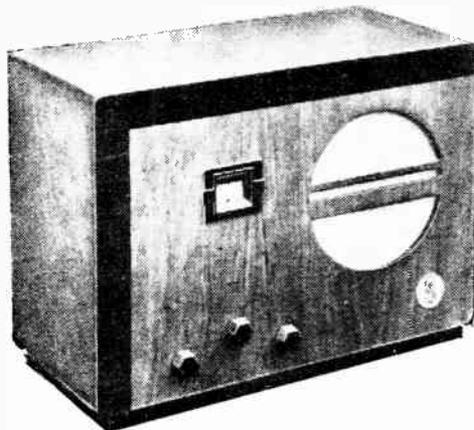
KENSINGTON.

A series of cabinets for radio receivers, and particularly for radio-gramophones, comprised the exhibit of this firm. These included cabinet stands for portable sets, and also a record-playing cabinet comprising an electric motor turntable on a hinged base and record storage space.

Kensington, Ltd., 196, Upton Lane, Forest Gate, E.7.

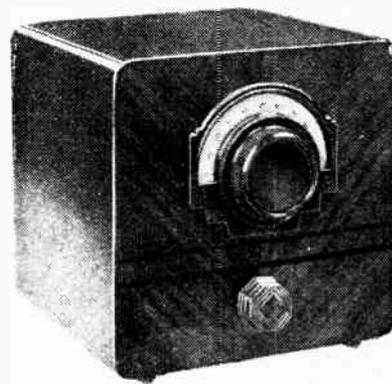
KOLSTER-BRANDES.

The model 444 shown by this firm is interesting as exhibiting the reductions which can be made in superheterodyne design. Apart from the rectifier, only three valves are used, as detector-oscillator, second detector, and output. Fixed reaction is provided from the second detector to the I.F. coupling, and the set is priced at 11 guineas. The model 666 has a signal frequency H.F. stage preceding the detector-oscillator, and there is an I.F. valve, so that its sensitivity is considerably higher; this set is priced at 15 guineas. The model 888 is essentially similar to the 666, and also includes A.V.C.,



Kolster-Brandes model 444 three-valve superheterodyne.

but this is fitted with a "quiet" control, and there is a push-pull output stage. It is listed at £26 5s. A number of battery and

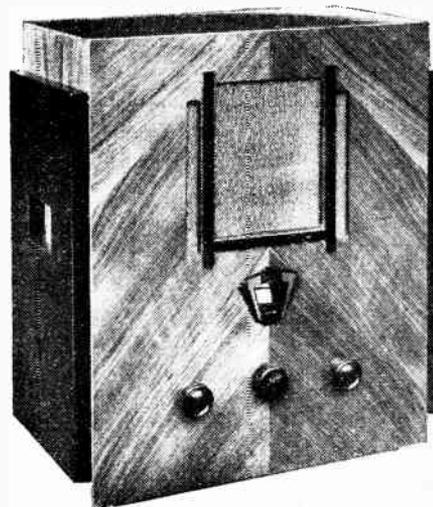


Kolster-Brandes short-wave converter.

mains operated straight sets was also on view. A short-wave converter intended chiefly for use with Kolster-Brandes mains sets, and taking its power from them, was shown at 3 guineas.

The Rejectostatic units were being specially featured. These consist of aperiodic transformers for use in conjunction with a screened aerial down-lead for the elimination of local interference. A pair of units is employed, one being mounted on the aerial itself to match the aerial to the screened lead-in, and the other by the receiver to match the lead-in to the set; they are priced at £1. Special shielded cable for use with them is available at 4½d. per yard. All Kolster-Brandes receivers are specially equipped for this system.

Kolster-Brandes, Ltd., Cray Works, Sidcup, Kent.



The Phantom S.G.4 receiver, by Lampex.

LAMPEX.

On this stand the principal exhibit was the 1934 Phantom "S.G.4" with Class "B" output. Other sets shown were a cheaper model of the Phantom S.G.4 without Class "B" stage, and the "Phantom Minx" three-valve battery set, priced at £3 10s., or, with moving-coil speaker, five guineas.

Lampex Radio and Electric Co., 62, Brewery Road, Islington, N.7.

LAMPLUGH.

In the Lamplugh programme for this season new products have been added to their usual lines. One of these is an "Anti-stat" aerial unit for reducing local elec-

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trical interference, and consists of a shielded down-lead, where the shield can be tuned to the frequency of the interference. Special advantages are claimed for this arrangement.

A new baffle, the "Silver Ghost Timpani Tone," is another innovation. Moving-coil speakers still remain the principal products, electro-magnet and permanent-magnet types with diaphragms of 12in., 10in., and 8in. diameters being available. The Farrand inductor speaker is also retained.

Lamplugh Radio, Ltd., 177, Foleshill Road, Coventry.



Silver Ghost Senior P.M. speaker.

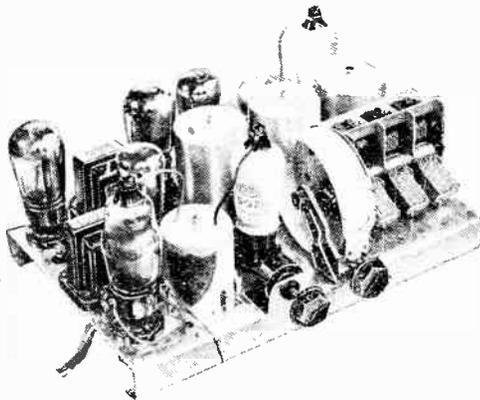
LION.

The outstanding feature of this exhibit was the particularly wide range of H.T. and grid-bias batteries, but an eliminator having four positive tapings and giving 150 volts at 25 mA. maximum was shown also.

Vince's Dry Batteries, Ltd., Lion Works, Garford Street, E.14.

LISSEN.

This year's kit set programme is particularly attractive and ambitious. The All-wave Skyscraper Four, on a steel chassis, embodies an H.F. stage, a screen-grid detector, and two pentodes in the Q.P.P. output circuit. The most unusual feature of the set is that it covers four wave ranges (from 12 to 2,000 metres) with the help of shielded tuning coils, and a special switching system. Another feature is a combined volume control and reaction device, in which both functions are effected by a single knob. Complete with Lissen valves, the kit costs £5 12s. 6d.

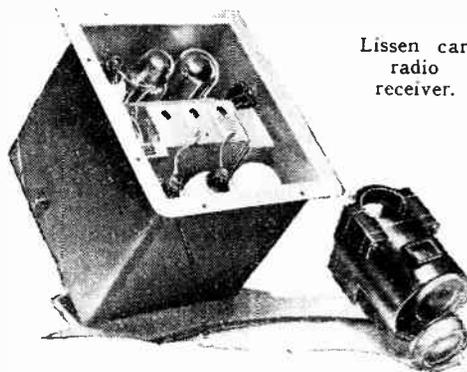


Lissen superheterodyne kit set.

Another interesting kit is the Safety A.C. Skyscraper, in which the difficulties in preparing a set of parts for the construction of a mains set by the totally unskilled have been ingeniously overcome; the mains equipment is contained in a separately screened unit. The set embodies an H.F.-

det.-L.F. circuit with ganged tuning system.

The most ambitious of all the kits is a superheterodyne for battery operation, in



Lissen car radio receiver.

which seven valves, including Class "B" output, are employed.

Lissen has also produced a motor car set of workmanlike design, enclosed in a robust weatherproof metal case, and arranged for remote control from the steering column. Tuning is cable-operated, and both wave-ranges are covered.

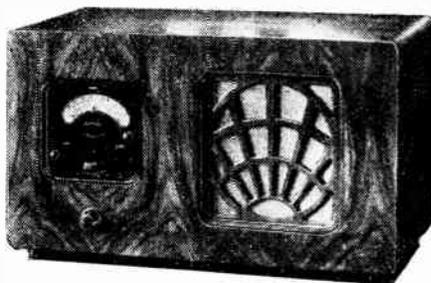
Among the complete sets produced for this season is a five-valve transportable with a frame aerial, which is stated to possess high selectivity even when an external aerial is added. The latest three-valve A.C. or D.C. model is mounted in a modern type of horizontal cabinet, and is fitted with a pentode output valve.

Lissen, Ltd., Worple Road, Isleworth, Middlesex.

M.P.R.

A series of mains units for both A.C. and D.C. supply, with outputs up to 30 milliamps, represents the main activities of this firm. All include the unusual feature of a safety fuse, and the A.C. models are available with a built-in ½-amp. trickle charger.

Mains Power Radio, Ltd., Broadway Works, Eastern Road, Romford, Essex.



McMichael Lodex Class "B" receiver.

McMICHAEL.

Modern tendencies in "straight" set design are well exemplified in this year's McMichael programme. In many respects the most ambitious model is the Twin Supravox, in which dual matched loud speakers are mounted in a horizontal type cabinet. The receiver chassis itself embodies two H.F. stages, followed by a triode detector and a pentode output valve of the Catkin type. Tone control is fitted, but there is no reaction. Mechanically the design is ingenious, and in spite of the fact that two loud speakers are fitted the set is by no means bulky.

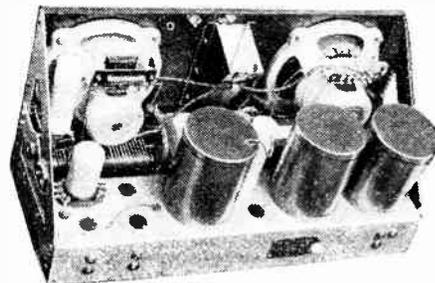
The improved Duplex Mains Four will appeal especially to those who find it impossible to erect an aerial. This set has a self-contained frame and embodies a two-H.F. circuit with one aperiodic stage, a de-

tor and pentode output; it is for A.C. mains operation, and is one of the very few sets of this type to be fitted with a frame.

The Lodex Five is an exceptionally ambitious battery set of modern design with two H.F. stages, detector, a driver, and a Class "B" output stage.

Other McMichael sets include the Duplex Super Five, in a vertical cabinet, the Duplex Four cabinet portable; and last, but not least, the well-known Suitcase Portable model, which now includes a moving-coil loud speaker.

McMichael Radio, Ltd., Wexham Road, Slough, Bucks.



Chassis of McMichael Twin Supravox.

MACOVOK.

Apart from manufacturers' products which forms the wholesale section of this firm's activities, a special feature was made this year of a range of Macovox receivers, the Universal Five being of particular interest in that it is suitable for operation on A.C. or D.C. mains. A superheterodyne circuit is employed, and the price is 12 guineas. The range includes several battery models.

Manufacturers' Accessories Co., 85, Great Eastern Street, E.C.2.

MAGNACORE.

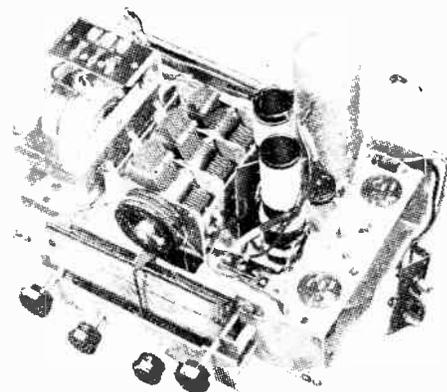
On this stand was shown a range of L.F. and Class "B" type transformers at prices ranging from 4s. to 7s. 6d.

Magnacore, Ltd., 85, Alsen Road, Holloway, N.7.

MARCONIPHONE.

This year's Marconiphone programme is extraordinarily complete, and it is indeed difficult to avoid making invidious comparisons by picking out any particular set for special mention. Probably, however, the two superheterodynes are best representative of modern tendencies.

The smaller Model 272, costing 15 guineas, includes peaked band-pass tuning, followed by an S.G. detector-oscillator, an L.F. amplifier, a power grid second detector, and



Marconiphone Model 272 superheterodyne chassis.

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pentode output. Although quality is stated to have been specially aimed at in the design, sensitivity has not been neglected, and adjacent channel selectivity is claimed.

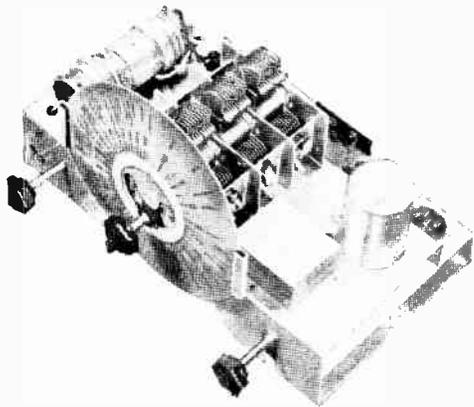
Model 276 superheterodyne with six valves and a rectifier has, as compared with the preceding set, an additional signal frequency H.F. stage and a separate oscillator. Delayed A.V.C. is fitted, and there is a noise suppressor which can be put to use at will for reducing sensitivity to a pre-determined level.

Then there is the battery set Model 260, a lineal descendant of the three-valve set so favourably reviewed last year in *The Wireless World*. The one weakness of the earlier set—a limited output and "battery-set" quality of reproduction—has been overcome by fitting a system of Q.P.P. amplification and a moving-coil loud speaker.

Other Marconiphone receivers include "straight" sets and radio-gramophones for A.C. and D.C., and radio-gramophones with and without automatic record changing.

All the latest developments are represented in this season's Marconi valves. It is difficult to pick out the high lights, but mention should be made of the battery H.F. pentode; this valve should be useful in battery-fed sets of the more ambitious type.

The Class "B" valve, Type B 21, has exceptionally good characteristics, and for the H.F. stage of the modern set the short-base variable-mu battery valve type VS 24 will prove a good choice. Where battery economy is vital the S 23, of which the anode consumption averages less than a milliamp, has particular attractions.



Marconiphone Q.P.P. battery receiver, type 260.

Turning to mains valves, the new MPT 41, with a conductance of 5.5, has extraordinarily high sensitivity; it should be mentioned that the conductance figure given applies to the valve when operated at the rated working conditions.

The recently introduced unbreakable Catkin valves must not be forgotten, and, lastly, there are indirectly heated rectifiers of the B and C class which confer important advantages in avoiding voltage rises during the warming-up period.

Marconiphone Co., Ltd., 210, Tottenham Court Road, W.1.

METAL AGENCIES CO.

This stand was devoted to a display of "Drymac" H.T. batteries and "Starmac" mass-type accumulators. The 120-volt standard capacity H.T. unit, at 8s. 6d., and the 45 A.H. glass accumulator at 3s. 6d., are indicative of good value.

Metal Agencies Co., Ltd., Queen Square, Bristol.

MILNES RADIO CO.

This firm are manufacturers of a range of H.T. accumulators incorporating nickel-cadmium plates immersed in an alkaline solution. Standard and double-capacity types are now made; the former range includes five models from 90 volts at 13 3s. to 180 volts at 16 10s. There are four double-capacity units, these range from 120 volts costing 16 3s. to 200 volts, the price of which is 110 3s.

Each model embodies a switch which places banks of cells either in series or in parallel, and in the latter position the unit can be charged from a 6-volt accumulator.

Milnes Radio Co., Victoria Works, Church Street, Bingley, Yorks.



(Left) The Mullard T.D.D.4 duo-diode-triode and (right) the new Pen.4VA, showing the electrode assembly.

MULLARD.

Class "B" valves formed a prominent feature of this exhibit, and the PM.2B is rated for working with a 14,000 ohms load impedance. The P.M.2DX is recommended as a driver, and an input of 3 volts R.M.S. to this valve is sufficient for full output. In the A.C. range, screened H.F. pentodes have been introduced, and the S.P.4 is of the non-variable-mu type, and is intended for use as a detector-oscillator, an H.F.



amplifier, or a detector. The V.P.4 is of the variable-mu type, and is rated for 100 volts screen potential, with which it has a grid base of about 40 volts; by reducing the screen potential it may be used as a short-base type valve.

A duo-diode-triode, the T.D.D.4, is intended chiefly for automatic volume control purposes, and there is a single-diode-tetrode, the S.D.4, for which numerous applications can be found, particularly in obtaining Q.A.V.C. A new indirectly heated output pentode, the Pen.4VA, is rated for an output of over 3 watts, with an anode current of only 32 mA., while the ACo44 has been modified for use with 250 volts anode supply, and will now give an output of 2½ watts.

A range of D.C. mains valves has been introduced; H.F. pentodes of the ordinary and variable-mu types, a triode detector, and a pentode output valve all have heaters rated for 20 volts at 0.18 ampere, while the duo-diode-triode is rated for 25 volts at the same current.

A wide range of H.T. rectifier valves was also shown.

Mullard Wireless Service Co., Ltd., Mullard House, Charing Cross Road, W.C.2.

MULTITONE.

The latest Multitone production is a wireless receiver which is at the same time a valuable aid to the deaf or even to those who are hard of hearing. The set itself is of the battery-operated transportable type with a frame aerial, and includes five valves with two tuned H.F. stages and Class "B" output; there is no reaction, and it is hardly necessary to say that complete tone control is provided.

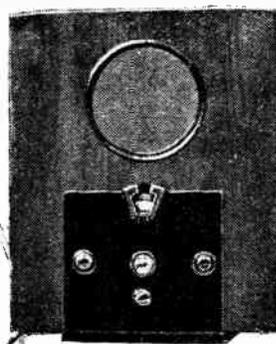
In addition to performing its normal functions as a wireless receiver, the set has a special "parallel" output to permit of simultaneous headphone reception by a deaf person. For this purpose there is an independent volume control which has no effect upon reproduction through the loud speaker. Special headphone receivers for different types of deafness are provided.

But this does not exhaust the possibilities of the set. When wireless reception is not required it may be converted, by turning a switch, into a deaf-aid amplifier; the loud speaker then acts as a sensitive microphone.

Interesting as is this new development, we must not lose sight of the Multitone transformers, which afford a really practical and

convenient method of tone control in any type of receiver. Still more types are now available, including special designs for interposing between a microphone and an amplifier. There are also special Multitone transformers for the latest systems of economical battery-set operation, and also a tapped output choke which "matches anything to everything."

Multitone Electric Co., Ltd., 95, White Lion Street, Islington, N.1.



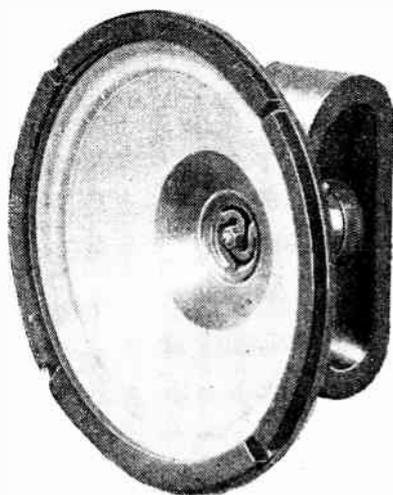
Multitone "Wireless for the Deaf" receiver-amplifier.

NUVOLION.

New additions to the range of Nuvolion moving-coil speakers were shown here, and a point of special interest was the display

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of response curves of speakers on the stand. A feature of these speakers is a seamless cone, made by a process in which



The Nuvolion speaker, type P.M. I, with specially designed cone.

the speech coil and the apex of the cone are treated to form a rigid whole.

Nuvolion Electrics, Ltd., Meredith Yard, Park Crescent, Clapham Park Road, S.W.4.

OLDHAM.

Oldham batteries are retained in much the same form as last season, but a few changes have been made in the nomenclature. The type CLG with interleaved plates for heavy discharge is now known as the "Plus" series, the sizes being Plus 75, Plus 100, Plus 125, and Plus 150. In the slow discharge range the 075 model is now dropped, the 050 and 025 being retained, but the price of the last mentioned is now reduced to 5s.

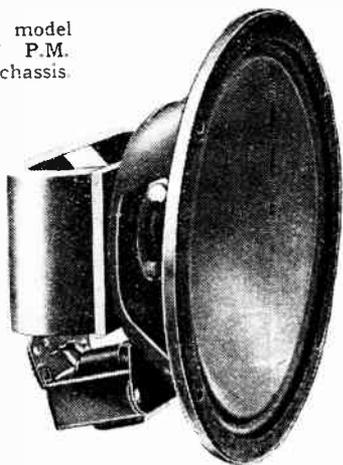
"Lively O" dry batteries were well represented, the range of replacement models for the more popular receivers now being very extensive indeed.

Oldham and Son, Ltd., Denton, Manchester.

ORMOND.

A range of moving-coil loud speakers of the now popular miniature type, also larger models and a varied selection of components that will serve many requirements of the set

Ormond model R/475CT P.M. speaker chassis



builder, constituted the principal exhibits on this stand. There is a new disc drive at 2s 6d.; a range of volume controls from 5,000 ohms to 50,000 ohms at 3s. 6d. each; Q.P.P. input transformers at 7s. 6d., and

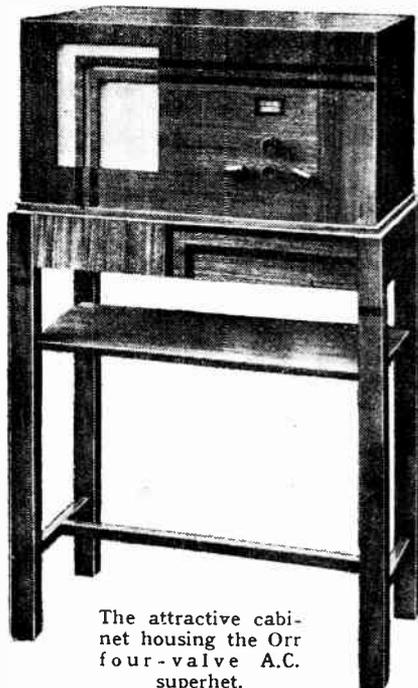
a new short-wave condenser of 0.00013 mfd. incorporating a 50 to 1 reduction drive at 7s. 6d.

P.M. moving-coil loud speakers were shown from 26s. upwards in chassis form; in a cabinet, and described as the model R.495, the price is 40s. A well-made medium-priced P.M. unit is the R.475, costing 38s. 6d. All standard models are fitted with three-ratio input transformers, but they are available also with transformers to suit push-pull output valves.

Ormond Engineering Co., Ltd., Ormond House, Rosebery Avenue, E.C.1.

ORR RADIO.

The most interesting feature of this stand was a four-valve (and valve rectifier) superhet. for D.C. working, and a Class "B"



The attractive cabinet housing the Orr four-valve A.C. superhet.

battery set. Several other less ambitious sets at low prices were also shown.

Orr Radio, Ltd., 63, Lincoln's Inn Fields, W.C.2.

OSBORN.

This was a cabinet display and some very striking and attractive designs were to be seen. One of these, No. 253, is in the new horizontal style with the speaker location alongside the controls. All the cabinets seemed remarkably low priced for the quality shown.

Chas. A. Osborn, Regent Works, Arlington Street, N.1.

OSDUR MANUFACTURING CO.

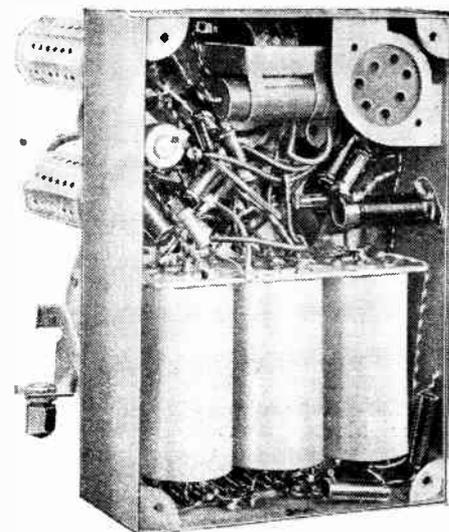
The "Billo" static cut-out, which is claimed to eliminate interference and atmospheric, was shown on this stand at the price of 12s. 6d.

Osdur Manufacturing Co., 26, Adam Street, W.1.

PAGE CAR RADIO.

Of the three motor-car sets produced by this firm, the most interesting is undoubtedly a highly specialised five-valve superheterodyne, entirely designed for its special purpose. It is extraordinarily compact and serviceable, being assembled on a baseplate measuring only 5½in. by 8in., and is completely enclosed in a special water-

tight steel container for fitting in an inverted position below the floorboards.



Under-side of Page Car Radio superheterodyne.

Low-tension current for the five Catkin valves, of which the heaters are connected in series-parallel, is obtained from the car battery. The circuit arrangement comprises an H.F. stage, an S.G. frequency changer, one I.F. stage, a triode detector, and pentode output. A.V.C. is provided by a Westector, and remote manual control is effected through a unit mounted on the steering column. A rotary H.T. generator and a miniature moving-coil loud speaker, energised by the car battery, completes the equipment.

A second set, with direct control, is intended for mounting on the instrument board, and includes an H.F.-det.-L.F. three-valve circuit. The cheapest model is for headphone reception only, and employs two four-electrode valves operating as detector and L.F. amplifier.

Page Car Radio, Ltd., 55, Windsor House, Victoria Street, S.W.1.



Pertrix 120-volt battery for Class "B" sets.

PERTRIX.

Manufacturers of Pertrix batteries, this firm has a full range of H.T., grid bias, and L.T. batteries. There are some six different H.T. types, ranging in size from standard to super heavy duty models, the former being rated for less than 10 mA. discharge, while from the last mentioned up to 45 mA. can be taken. Intermediate capacities to meet all requirements and at prices to suit all are available. They are 8s. for a 60-volt standard model, 15s. 6d. for a 120-volt Ultra model (suitable for Class "B"), and 24s. for the Super-Capacity 120-volt battery.

L.T. accumulators are made in a wide range of styles; gravity floats are incorporated in many models, while both heavy duty

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and slow discharge types are included in the range.

Britannia Batteries, Ltd., 233, Shaftesbury Avenue, W.C.2.

PHILIPS.

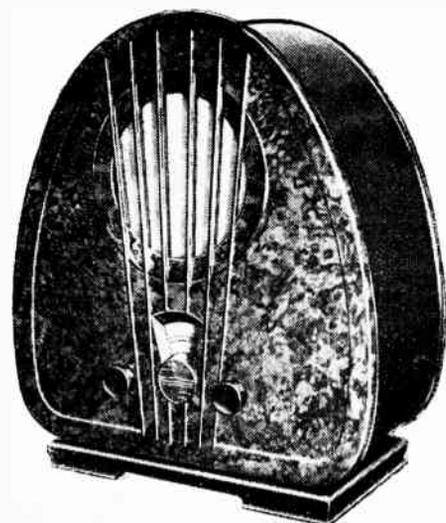
The "star" exhibit was the new Model 636A—a "straight" receiver comparable in specification and technical design with the most advanced of modern superheterodynes. It has no less than seven stages, as follow: Two tuned H.F. stages with band-pass input, screen grid detector, single diode S.G. for A.V.C., triode for silent tuning, triode L.F. amplifier, and seven-watt output pentode. In addition to the combined tuning



Philips "straight" receiver, the Model 636A, with interesting features, including A.V.C.

and wave-range, and manual volume control, there is a sensitivity control giving three distinct ranges of overall magnification. The maximum possible performance with absence of background noise can thus be obtained under any conditions of local interference. This set is designed for A.C. mains only, and costs 23 guineas.

The Model 634 is identical with the above receiver as regards the H.F. stages. It has, however, a simplified form of A.V.C. and the diode-S.G. detector is followed directly by the output stage, making four stages in all. This model is made for D.C. as well as A.C. mains, the prices being 17 guineas and 16 guineas respectively.



Philips Model 834, a new receiver with two H.F. stages.

In the Model 834 there are again two screen grid H.F. stages, but the second is semi-aperiodic, and is followed by a high magnification triode detector and an output stage. For A.C. mains the price is 11 guineas, and for D.C. 12 guineas.

In all Philips sets designed for D.C. mains two pentodes in parallel are used in the output stage. By this arrangement adequate volume is obtained on supply voltages as low as 110.

Battery-operated sets were represented on this stand by the Model 832B, in which a separate valve is used to regulate the H.T. supply to the power valve. This is essentially the Model 830B of last year, but a moving-coil loud speaker has been fitted and the cabinet has been redesigned. The price complete is 10 guineas.

Philips Lamps, Ltd., 145, Charing Cross Road, W.C.2.

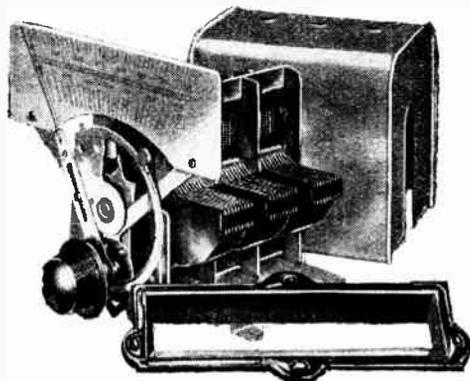
PIX.

In addition to a wider range of Pix valves, now including two- and four-volt types, A.C. mains and mains rectifiers, this firm were featuring the Pix aerial selectivity device, costing 2s., and the recently introduced invisible aerial for indoor use, a 30-foot reel of which costs 2s.

British Pix Co., Ltd., 118, Southwark Street, S.E.1.

POLAR.

Of the several new additions to the Polar range of condensers the most interesting is the new Star Minor series. Compactness, rigidity of construction, and close matching between sections constitute their principal features.



Polar Star Minor condenser with new horizontal scale.

Two-, three-, and four-gang types are made, also a range of superhet. condensers fitted with a tracking section designed for 110 kc/s. I.F. amplifiers. All sections are matched to within 1/2 per cent. or one mmfd., and a three-gang model costs 18s. 9d. in either style.

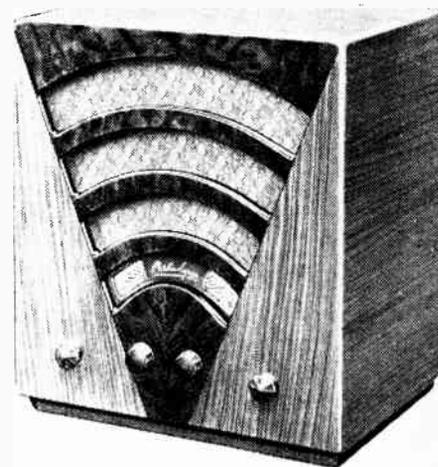
New slow-motion condenser drives are now available; these take the form of full vision disc and drum patterns. The range includes six different styles, three are full-vision drives, two are disc models, and one is a drum pattern. The majority are fitted with a wavelength calibrated scale, all have dial lamps, while certain models can be obtained fitted with a small air-dielectric trimmer condenser operated by a knob concentric with the main tuning control. The full-vision pattern cost 5s. 9d. each, or with trimmer 7s. 9d.

Short-wave condensers and a range of pre-set models designated Capacitors are new this season.

Wingrove and Rogers, Ltd., Mill Lane, Old Swan, Liverpool.

PORTADYNE.

An interesting and up-to-date self-contained transportable receiver—the P.B. model—was exhibited by Portadyne. This set includes one H.F. stage and Class "B" amplification feeding into a moving-coil loud speaker. An undistorted out-



Portadyne superheterodyne receiver.

put of 1,300 milliwatts is claimed, and the average H.T. consumption is stated not to exceed some 10 milliamps. Gramophone pick-up sockets, which are a really useful addition with Class "B" amplification, are fitted.

Open-aerial sets are now being produced, as well as portables. There are two new superheterodynes, one for battery and the other for A.C. mains operation; both employ a somewhat similar circuit arrangement. The A.C. set has a combined detector-oscillator, variable-mu I.F. stage, a double-diode triode as second detector, which provides automatic volume control, and a pentode output valve, with valve rectification. The battery set employs Class "B" output and a compensator for fading effects.

Portadyne Radio, Portadyne Works, Gorst Road, N.W.10.

POWERTONE PRODUCTS.

On this stand three types of suitcase portable sets were displayed. Prices



One of the Powertone range of suitcase portables.

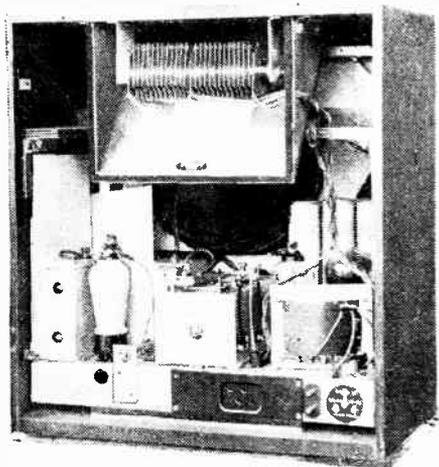
of these sets were particularly low, and they should therefore make a popular appeal.

Powertone Products, 88a, Cromer Street, W.C.1.

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PYE.

The P/AC portable receiver, which was shown on this stand, is an A.C. superheterodyne with a built-in frame aerial. H.F. and I.F. stages are used with a detector-oscillator, and a duo-diode-triode second



Pye P/AC superheterodyne transportable for A.C. mains.

detector provides A.V.C.; the output pentode is rated to deliver $1\frac{1}{4}$ watts to the speaker, and a metal rectifier is used for the H.T. supply. The P/B portable is of the battery type, and in this A.V.C. is arranged with the aid of Westectors; there is a Class "B" output stage. The A.C. set is priced at 15 guineas, and the battery model at 14 guineas.

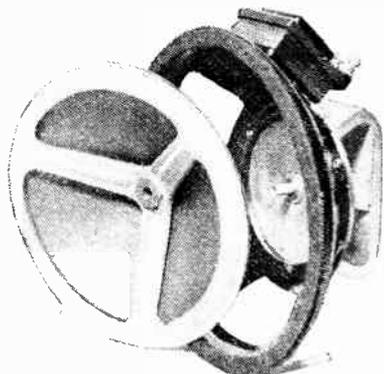
Similar type superheterodynes, at the same prices, are available for use with an outdoor aerial, and these are listed as models E/AC and E/B. The "S" model superheterodyne is being retained at 22 guineas.

A number of small straight sets was also shown, and the "G" series is available for A.C., D.C., or battery operation at 12 guineas. The battery set is fitted with a Q.P.P. output stage. A two-valve set with a band-pass tuning circuit is available at 8 guineas in an A.C. type.

Pye Radio, Ltd., Africa House, Kingsway, W.C.2.

R. & A.

The new "Alpha" permanent magnet moving-coil unit attracted very favourable comment, not only on account of the well-thought-out diaphragm mounting, but also for the generous design of the magnet system and output transformer. The diaphragm is



The new Alpha speaker with special cone centring, designed by R. & A.

independent of the outside frame of the unit and is attached to a pressed steel member with three radial arms fitting inside the

angle of the cone. This member is accurately located by a shoulder on the centre pole of the magnet, and is held by a single bolt. There can be no doubt that this design marks a distinct advance in the reliability of moving-coil units, for considerable damage would have to be sustained by the outer shell before the diaphragm was damaged. Further, it is possible to remove and replace the diaphragm for inspection without fear of upsetting the alignment. The list price of this unit is 52s. 6d.

The well-known "Bantam," "Challenger," and "Victor" permanent magnet units are now supplied with alternative output transformers covering all types of output stage in current use, and an improved differential armature moving iron loud speaker unit (Type 60), with larger magnets and a 12in. diaphragm, has been introduced at 21s.

Reproducers and Amplifiers, Ltd., Frederick Street, Wolverhampton.

R.C. & WILSON ELECTRIC.

Aerial equipment, both outdoor and indoor, provided the main display at this stand.

Self-feeding soldering iron, hand microphone and transformer, by R. C. & Wilson.

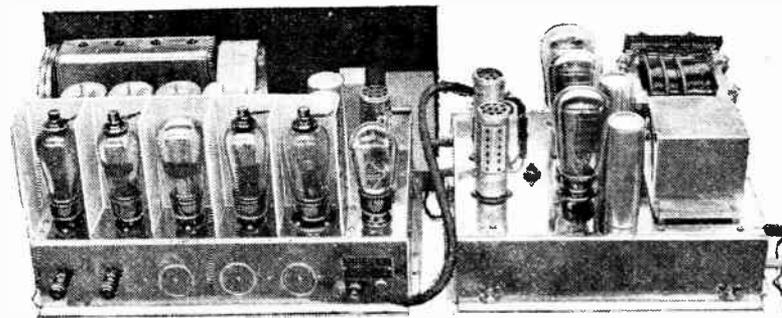


A hand-type microphone at 7s. 6d., and various other accessories, including a self-feeding electric soldering iron, attracted attention.

R.C. and Wilson Electric, Ltd., 51, Whitcombe Street, W.C.2.

R.G.D.

A reputation second to none for high-quality radio-gramophones in which nothing has been sacrificed to considerations of cost



Noise-suppressor relay of the R.G.D. Model 1201.

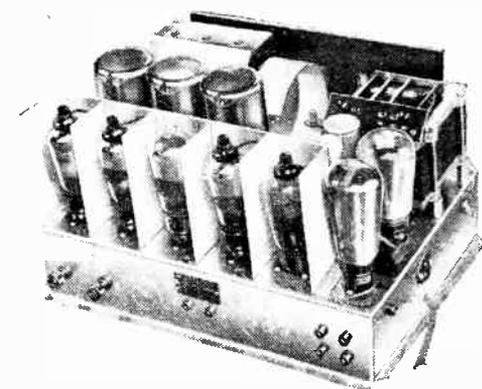
Chassis and power unit of the R.G.D. Model 1201 radio-gramophone.

has now been firmly established by the R.G.D. concern. Their productions are not cheap, but one feels that they include every known refinement and development in technique that is likely to contribute anything towards the ultimate goal of perfect reception.

This year's leading model, Type 1201, includes eleven valves and a rectifier, and is fitted with delayed amplified A.V.C., a noise suppressor, and a tuning indicator. Dual loud speakers, specially made by B.T.-H., are installed.

Space does not permit of a complete description of the circuit, but it may be

stated that it comprises a signal-frequency H.F. stage, with three signal-frequency tuned circuits. A two-valve frequency-changer is employed, followed by one I.F.



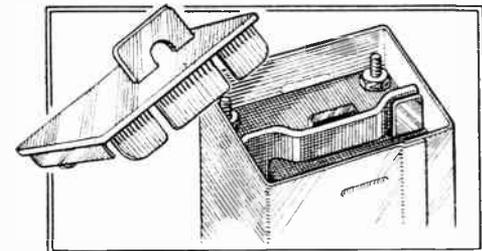
R.G.D. Model 702 radio-gramophone chassis.

amplifier and a double-diode-triode second detector. The "triode" part of this valve does not handle the signal, but serves purely as a D.C. amplifier for the A.V.C. system.

Next comes what is probably the most interesting part of the set—the "paraphase" resistance-coupled L.F. amplifier, which may fairly be expected to provide the most perfect amplification possible. The phasing arrangement is unusual, the necessary feed-back voltage being picked off a tapped grid leak. The push-pull output valves are triodes, giving 6 watts.

Noise suppression is effected mechanically through a relay, operated by an extra valve, and comes into operation when the noise level reaches a certain value. In its simplest form, without automatic record changing, the price is 86 guineas.

A rather less ambitious, but still very in-



teresting, set is the Model 702, another superheterodyne with H.F. stage, delayed A.V.C., and a resistance-coupled 3-watt output stage fed direct from the anode of a double-diode-triode valve. The same dual B.T.-H. speakers are fitted, as well as a tuning indicator.

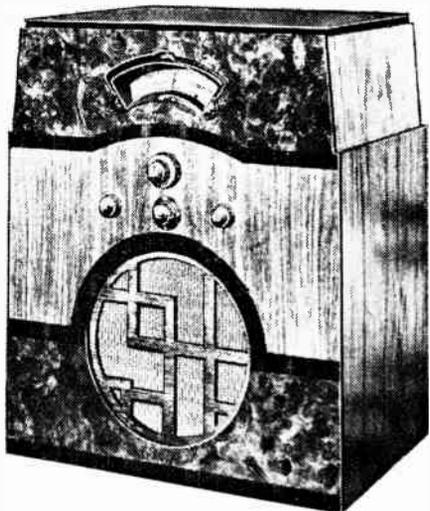
Radio Gramophone Development Co., Ltd., 18-20, Frederick Street, Birmingham.

R.I.

The Madrigal Superhet Radio Gramophone is the premier set of the new season's models. It is a six-valve receiver with one

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valve acting as mains rectifier, the remaining five being arranged as first detector, oscillator, I.F. amplifier, second detector, and output. Band-pass tuning is employed for the aerial circuit and also for the I.F. coupling. A feature of the circuit is the inclusion of amplified A.V.C. working on the I.F. stage, this valve, incidentally, being a variable-mu pentode. There is a control located on the motor board, which serves as an adjustment for background level, being, in effect, a gain control of the I.F. amplifier.



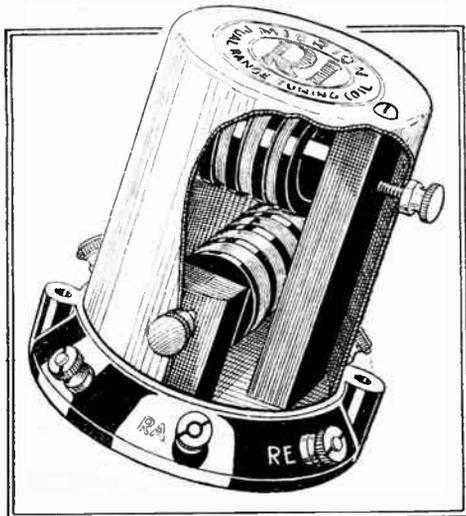
R.I. Madrigal Class "B" four-valve receiver.

The volume control is incorporated in the I.F. stage, and is effective on both radio and gramophone. A B.T.-H. Junior R.K. moving-coil loud speaker is housed in the lower part of the cabinet, and the price is £38.

The specification of the Madrigal Class "B" four-valve receiver is particularly attractive, for it incorporates the new Micrion iron-cored coils. One H.F. stage is employed, also a moving-coil loud speaker, and the price is 15 guineas.

The third new model is a three-valve H.F.-det.-pentode A.C. mains receiver at 15 guineas. Here, again, Micrion coils are employed. The design of the electrical equipment is not the only attractive feature of the new R.I. sets, for the cabinet work is particularly pleasing both from the point of view of finish and design.

New components were well in evidence this year; they include mains transformers for the Westinghouse rectifiers, some new



Details of R.I. Micrion coil.

L.F. chokes, Class "B" driver transformers and output chokes, and an Auto-Parafed L.F. transformer for auto-transformer connection only. It has a primary inductance of 84 henrys, gives a voltage step-up of one-to-four, and costs 6s. 9d.

The Micrion coil was shown; its particular feature, other than the inclusion of the new style of core, is that provision is made for permeability adjustment of inductance on both wavebands. The coil costs 12s. 6d.

Radio Instruments, Ltd., Purley Way, Croydon, Surrey.

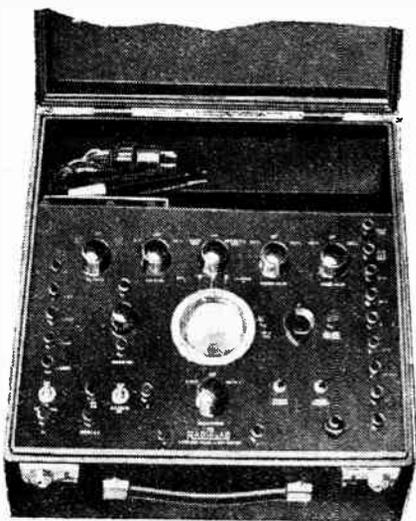
RADIALADDIN.

This firm were showing a three-valve A.C. receiver with band-pass tuning, pentode output, and moving-coil loud speaker in a console cabinet. They offer "new sets for old," accepting used sets as part payment for new. Particulars of the Radialaddin Club were available.

Radialaddin, Ltd., 46, Brewer Street, W.1.

RADIOLAB MFG. CO.

The Radiolab Complete Valve and Set Tester formed the sole exhibit on this stand. It is a self-contained portable instrument for testing and overhauling a wireless



Radiolab complete valve and set tester.

receiver with provision for measuring all the voltages and currents taken by the valves under working conditions. A most comprehensive test set costing but £12 12s.

Radiolab Mfg. Co., Sandridge Works, St. Albans.

RAWLPLUG.

The stand of this firm was devoted to accessories which have various applications in the construction and installation of wireless receivers. Durofix is a particularly useful adhesive material, and Rawlplug Plastic Wood is used in cabinet-making and for repair work. There was an ingenious little staple fixer, especially useful when installing loud-speaker extensions.

Rawlplug Co., Ltd., Rawlplug House, Cromwell Road, S.W.7.

REDFERN.

"Two-side" radio panels, with a mahogany surface in front, and black on the reverse side, have recently been introduced. Ribbed coil formers in a number of different sections from 1in. up to 4in. in diameter were shown, together with ebonite tube and rod and various ebonite mouldings, as well

as lead-in tubes and ribbed and perforated separators for accumulators.

Redfern's Rubber Works, Ltd., Hyde, Cheshire.

REGENTONE.

On this stand the Quadradyne Band-Pass Four occupied a prominent position. This is a three-valve set with a variable-mu H.F. pentode in the H.F. stage, a triode detector, and a pentode output valve; a metal rectifier is used for the H.T. supply. It is priced at 10 guineas. The Quadradyne Five is a similar receiver at £12 17s. 6d., but includes two H.F. stages. A battery set is available with a Class "B" output stage at 11 guineas.

The Regentone Superhet includes a detector-oscillator, a variable-mu I.F. stage, triode second detector, and pentode output valve; it is listed at 14 guineas. A full vision calibrated tuning scale is fitted, and there is a tone control.

In addition to receivers, a range of H.T. eliminators completed the exhibit.

Regentone, Ltd., 21, Bartlett's Buildings, Holborn Circus, E.C.4.

RIST.

This exhibit consisted of a most comprehensive range of instrument wires, battery cables, aerial and connecting wires of all descriptions, together with a wide selection of bakelite parts, these being of interest mainly to the trade.

A. Rist (1927), Ltd., Wavency Works, Freemantle Road, Lowestoft.

ROLA.

British Rola maintain this year their high standard and offer a wide choice of speakers, both energised and permanent magnet types. The cone diameters of their standard models are 6in., 7½in., and 9in., with choice of field resistances. All models are available with universal transformers suitable for pentode or power valves. When ordering for Class "B" output stages, the type number of the valve to be used should be given.

Dual balanced pairs of speakers are available in both energised and permanent magnet types.



The New Rola FR6 permanent magnet speaker.

A new product is a Class "B" speaker amplifier unit which comprises a P.M. speaker in association with a properly matched "B" amplifier stage. Adequate literature is available, giving full instructions for connections of all types of speaker.

British Rola Co., Ltd., Minerva Road, Park Royal, N.W.10.

RONNIE ENGINEERING.

The Ronnie earth tube is solidly constructed of heavy-gauge copper and gun-

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metal; its principal feature is that it is packed with a mineral compound—actually an acid-free preparation of copper sulphate—which is highly deliquescent and hygroscopic, and is intended to improve the conductivity of the earth connection. The compound is available separately.

Ronnie Engineering, Crewdson Road, S.W.9.



A Sinclair double speaker of unusual construction.

SEABROOK BATTERIES.

A battery display by this firm included high tension and grid bias types.

Seabrook Batteries, Ltd., 205, Bedford Avenue, Trading Estate, Slough, Bucks.

SHALLESS & EVANS.

The range of Shalless receivers included some ten different models, the majority being battery operated. Of special interest was the Shalless Coliseum model utilising a four-valve circuit with one H.F. stage and including Class "B" output. Entirely self-contained and embodying a P.M. moving-coil loud speaker it costs but 9 guineas. A two-valve A.C. mains receiver is available at the same price.

Shalless and Evans, Tranquil House, Tranquil Vale, Blackheath, S.E.3.

SHAWNDEL TOOL CO.

Mainly of interest to manufacturers. The device shown is an ingeniously devised holder for bobbins of wire which provides a free feed, but avoids the risk of breakage through overrun, and ensures that the wire is kept taut, but without undue strain, while winding operations are being carried out.

Shawndel Tool Co., 99, Regent Street, W.1.

SIEMENS.

The principal exhibit was the well-known "Full o' Power" series of H.T. batteries which are made in four types, the "Cadet," "Standard," "Power," and "Super Radio." Useful hints are given in a new booklet dealing with battery design in relation to Class "B" amplification, and a new "double capacity" 120-volt unit (No. 1168), has been introduced for that purpose.

Siemens Electric Lamps and Supplies, Ltd., 39, Upper Thames Street, E.C.4.

SIMPSON'S ELECTRICAL.

The Simpson's Electrical turntable was to be found on this stand, and also a converter unit for working the synchronous motor from D.C. mains supplies.

Simpson's Electricals, Ltd., Grange Road, Leyton, E.10.

SINCLAIR.

The outstanding exhibit here was a dual moving-coil speaker of unusual construction.

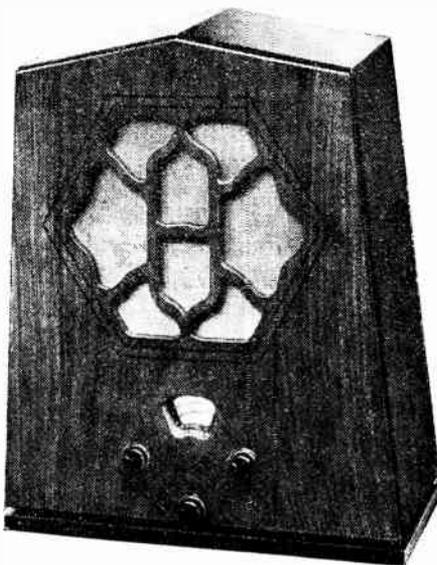
One speaker has a 9in. cone and is suitable for reproduction of low notes, and the other a 7in. cone giving good high note response. The 7in. speaker is accommodated within the larger cone, a specially shaped magnet being used for the purpose.

In addition, a range of speakers of more usual design was also shown.

Sinclair Speakers, 49-50, Twyford Street, N.1.

SIX-SIXTY.

Two receivers were shown by the Six-Sixty Radio Company this year. One, the Super-Five, is an A.C. mains four-stage receiver embodying two H.F. stages and a super power pentode. There are three controls only, the mains switch and volume adjustment being ganged, the others being wave change and tuning. The scale is wavelength calibrated and the price is 11 guineas. A moving-coil loud speaker is included. The other model is last season's three-valve battery set, which at 10 guineas now includes the batteries.



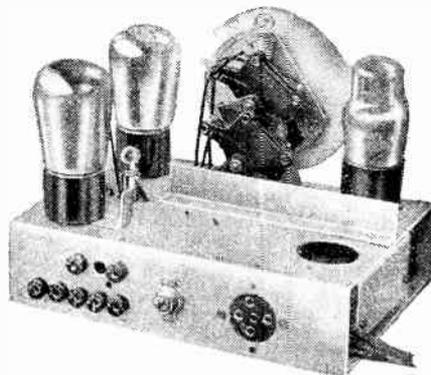
Six-Sixty new Super-Five receiver.

Of the new Six-Sixty valves shown, one was a Class "B," the 220B at 14s. and rated at 1½ watts output; another a I.H. rectifier, I.H.60/250, at 12s. 6d.; and there was also a new indirectly heated H.F. pentode at 17s. 6d.

Six-Sixty Radio Co., Ltd., 17-18, Rathbone Place, W.1.

SLEKTUN.

The chief interest on this stand centred around two new "R. & R." receivers; one was an A.C. mains set with detector and



Chassis of the Slektun Class "B" Three.

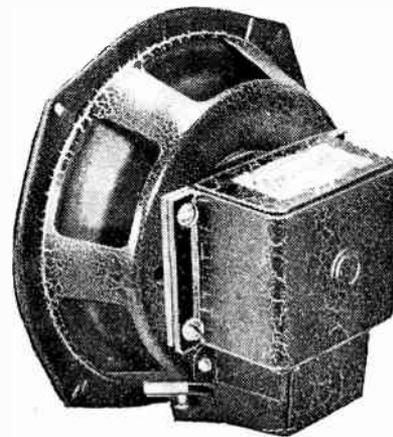
pentode stages for local reception, selling at 9 guineas, and the other, a Class "B" battery set of similar type, at 8 guineas.

Amongst other exhibits, two recent products were a new design in hand-pass tuning coils and Class "B" transformers.

Slektun Products, Winder House, Douglas Street, S.W.1.

SONOCHORDE.

Amongst a large variety of speakers here, the outstanding attraction seemed to be those of very small dimensions. One was a



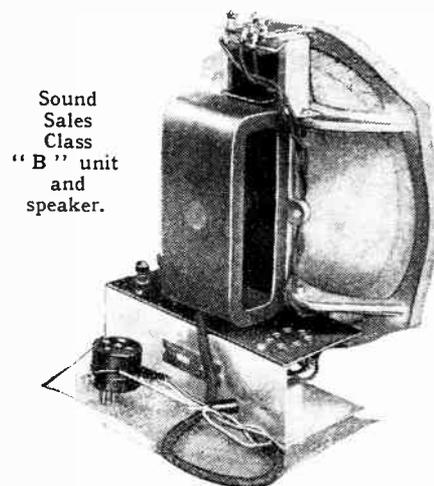
The Sonochorde de Luxe moving-coil speaker.

Midget P.M. speaker with a 5-inch diameter cone, and the other, an energised type of the same dimensions, having a 2,500 ohms field resistance. These speakers have been specially designed to meet any demand for midget, portable, and car sets. From the point of view of quality of reproduction, the de Luxe models of larger dimensions are naturally to be preferred, and here there is a wide range of outstandingly good Sonochorde speakers to choose from, both in energised and permanent magnet types.

Sonochorde Reproducers, Ltd., 1, Willesden Lane, N.W.6.

SOUND SALES.

A permanent-magnet moving-coil speaker with a vellum cone was to be found on this



Sound Sales Class "B" unit and speaker.

stand at the price of 40s., with a universal transformer, and the same speaker is obtainable built into a Class "B" unit at the price of £3 7s. 6d. complete with tone and volume controls. A very wide range of mains and Class "B" transformers and smoothing chokes was also on view. A completely shrouded and specially ventilated mains transformer for *The Wireless World* New Monodial Super is available at £3, and a

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30H. 1,250 ohms speaker field replacement choke for this set was also shown at 25s.

Sound Sales, Ltd., Tremlett Grove, Junction Road, N.19.

SMITH'S.

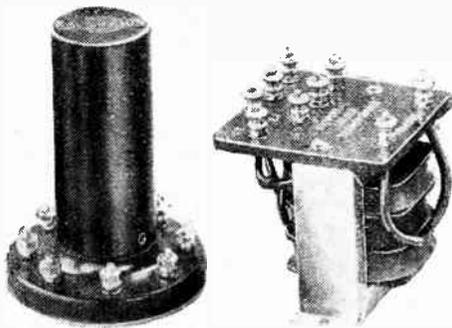
Anodex H.T. batteries of which a specimen recently survived a "Wireless World" laboratory test with flying colours, were prominently exhibited. Batteries of all usual voltages, in standard, double, and triple capacity are produced, together with special assemblies for Q.P.P. and Class "B" sets.

Low-tension cells, both of the mass type and multiple-plate type, were shown in all capacities, together with jelly-acid cells for portables and H.T. accumulator batteries.

S. Smith and Sons (Motor Accessories), Ltd., Cricklewood Works, N.W.2.

SOVEREIGN.

The most interesting component on this stand was the new permeability tuner. It is an extremely compact unit and yet covers the tuning range of medium (200-550 metres) and long waves (1,000-2,000 metres) without the usual condenser.



The Sovereign iron-cored coil unit and driver transformer.

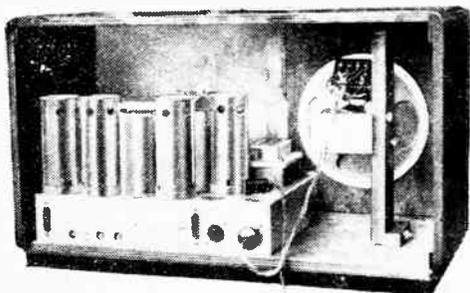
Other items of interest were a good range of D.C. and A.C. eliminators at very low prices; a new volume control in values from 10,000 ohms to 2 megohms at the price of 2s. 9d., and Class "B" driver transformers and output chokes.

Sovereign Products, Ltd., 52, Rosebery Avenue, E.C.1.

STANDARD TELEPHONES & CABLES.

The Standard 40 superheterodyne shown on this stand has only three receiving valves, but is rated to give an output of 2½ watts; it is priced at £11 17s. 6d. The Standard 60 is a larger model at £15 17s. 6d., with a detector-oscillator, an I.F. stage, a diode-triode second detector providing A.V.C., and a pentode output valve.

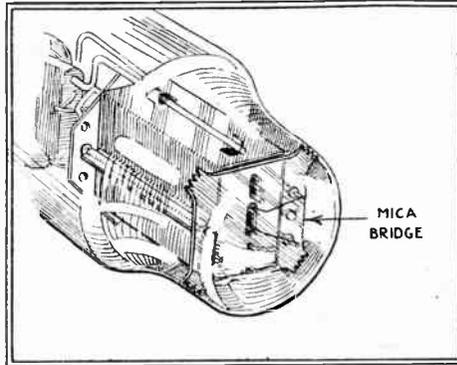
In addition to the superheterodynes, a number of small straight sets was shown. The Standard 30B is of the battery type



Standard Telephones "Standard 60" superheterodyne.

with an H.F. stage and an output pentode, and it is priced at £5 12s. 6d., including valves and batteries. Two-valve receivers are available for batteries, A.C. or D.C.

The range of Micromesh valves has been greatly extended, and now includes a large number of battery types. In the A.C. models the H.L.A.1 triode has a resistance of 10,000 ohms, with an amplification factor of 80, while there is a power triode, rated for an output of 1½ watts at 200 volts, which possesses a mutual conductance of 12 mA/V.



Standard Telephones Micromesh battery pentode, type B.1.

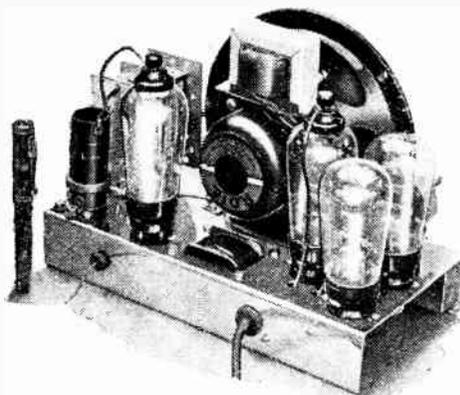
Screened H.F. pentodes are made in the ordinary and variable- μ types, the latter having a grid base of about 40 volts, and rated for 250 volts anode and 100 volts screen potentials. The 11.A2 valve is a diode-triode, the triode portion having a resistance of 18,000 ohms with an amplification factor of 50. Pentodes of both the directly and the indirectly heated types are to be found with outputs in the neighbourhood of 3 watts. H.T. rectifiers complete the range of valves proper, but there is also a tuning indicator for A.V.C. sets which works on the cathode ray principle.

The radio service set tester and associated equipment, recently described in this journal, was also exhibited.

Standard Telephones and Cables, Ltd., Connaught House, Aldwych, W.C.2.

SUNBEAM.

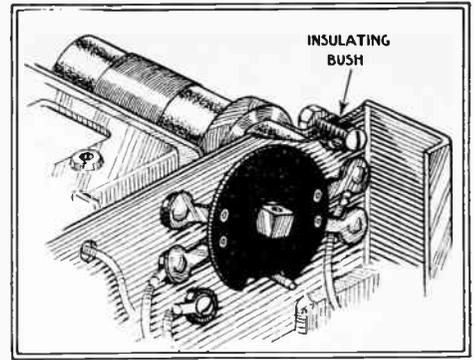
Universal sets, designed for use interchangeably on A.C. or D.C. mains without



Chassis of a Sunbeam Midget, compared with a fountain pen.

any alteration, comprised the main exhibits of this firm. The "universal" principle is employed in the Midget set type M30, which includes an H.F.-det.-L.F. arrangement with valve rectification, and two tuned circuits.

Although this set is extraordinarily compact, it is slightly larger than the American midgets and includes a bigger loud speaker (of the moving-coil type with a 5½-inch



The Sunbeam Midget: space is saved by using holding-down screws as electrical connections.

cone) than those found in American sets. Accordingly, it may fairly be expected that quality will be considerably better.

In the model M34 the midget chassis is employed but, due to the somewhat larger size of the cabinet, a full-size Magnavox loud speaker can be fitted. Both these sets, and indeed all the "universal" Sunbeam models, employ a special type of power rectifier which is stated to withstand continuously a pressure of 300 volts between cathode and heater.

In the larger Universal sets, which are in every way comparable with ordinary A.C. or D.C. receivers, grid detection is employed. The loud speakers are of the energised type and connected in parallel with the output from the rectifier.

Sunbeam Electric, Ltd., Sunbeam Road, North Acton, N.W.10.

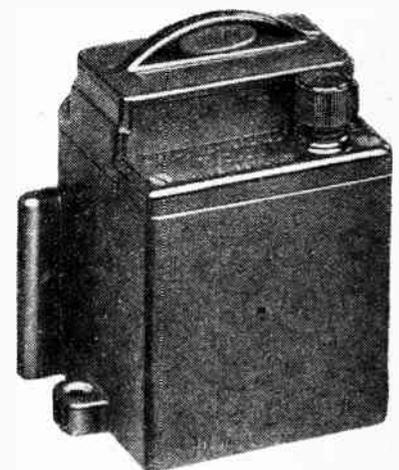
SWIFT LEVICK.

This firm, specialising in permanent magnets, is meeting every demand of the manufacturer for all types and sizes of magnet, even down to the midgets, and some very attractive and efficient models were on view.

Swift Levick and Sons, Ltd., Clarence Steel Works, Sheffield.

T.C.C.

An entirely new product of this firm is the Condenser Anti-Interference Unit. It consists of two 1,500 volt test condensers rated for continuous working at 450 volt D.C. or 250 volts A.C. and is housed in a neat bakelite case fitted with a twin fuse holder and an earth terminal. The unit costs 9s. 6d. and is for use in suppressing interference brought in by the supply mains or, if the trouble is caused by small motors, a device of this nature will often effect a cure.



T.C.C. Condenser Anti-Interference Unit.

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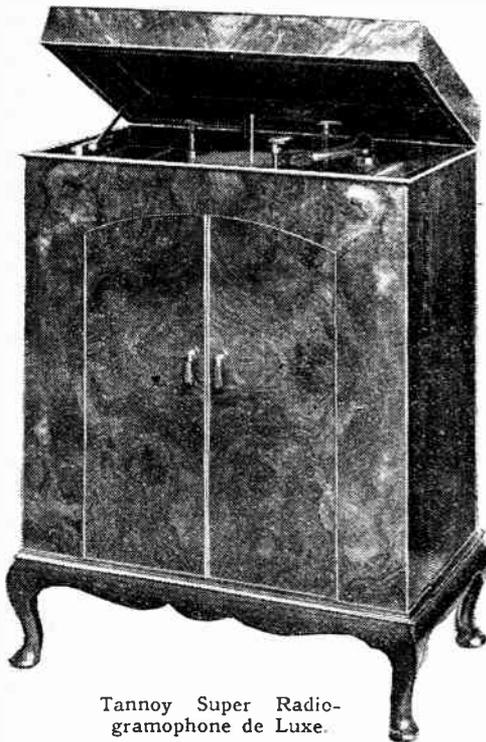
The range of T.C.C. condensers so adequately meets the requirements of set builders that there have been few changes this year and their programme for the coming season remains substantially the same as hitherto. A few miscellaneous models have been added, however, the principal new items comprising a limited range of small tubular dry electrolytics with wire ends for suspending in the wiring. A size that is useful for grid circuit decoupling is the 25 volts 25 mfd. model.

Telegraph Condenser Co., Ltd., Wales Farm Road, N. Acton, W.3.

TANNOY.

Public address equipment formed the principal exhibits of this firm, and many large amplifiers and horn-type projection speakers were shown. A heavy duty moving-coil speaker rated to handle 30 watts is also listed, with various types of microphone.

The Superheterodyne Radiogramophone de Luxe was shown, and this is built in two chassis. One contains the seven-valve superheterodyne with its own mains equipment, and the output of this is arranged to have an impedance of 600 ohms for matching to any standard large power amplifier. Any of the amplifier types exhibited may be used with it, since these all have their own mains



Tannoy Super Radiogramophone de Luxe.

equipment and are arranged to work with an input impedance of 600 ohms. An unusual feature of the superheterodyne is that an H.F. pentode is used for the oscillator valve, and it is claimed that this leads to increased frequency stability.

Tannoy Products, Canterbury Grove, W. Norwood, S.E.27.

TELEGRAPH CONSTRUCTION AND MAINTENANCE CO.

This firm displayed nickel iron alloys in various forms for cores where high permeability is needed. "Calomic" resistance wire was also shown and various forms of jointing material.

Telegraph Construction and Maintenance Co., Ltd., Enderley's Wharf, Greenwich, S.E.10.

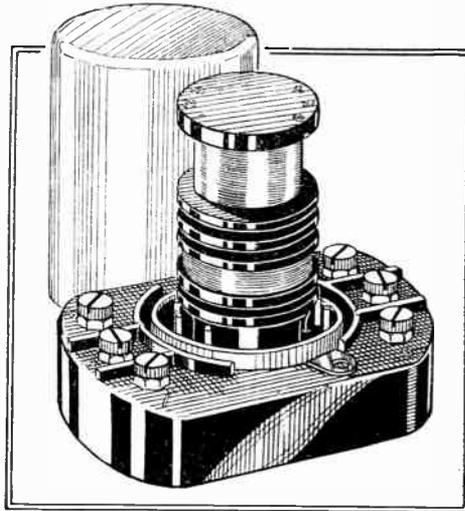
TELEPHONE MFG. CO.

British made Hydra condensers varying in size from 0.1 mfd. to 10 mfd. and for working voltages of from 250 to 750 volts D.C. formed the chief exhibit of this firm. Prices range from 1s. 6d. to 26s.

Telephone Mfg. Co., Ltd., Hollingsworth Works, W. Dulwich, S.E.21.

TELSEN.

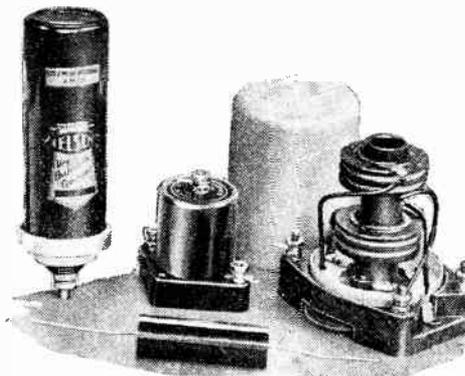
Among the many innovations for the present season is a new iron-cored tuning-coil assembly of unusual compactness, with an open-ended core. With an inductance



Telsen iron-cored tuning coil.

of 156 microhenrys, this coil is stated to have an efficiency at least 50 per cent. greater than that of normal air-cored types, and all are matched to a common standard. This is a general-purpose coil, comprising primary, secondary, and reaction windings, and is sold at 8s. 6d. Telsen band-pass I.F. transformers, with variable coupling and individual tuning, as used in the New Monodial, now cost only 7s. 6d. each.

A particularly workmanlike mains transformer for "A" class rectifiers, with a 4-volt L.T. winding and a protective bakelite cover over the terminals, costs 32s. 6d. The new low-voltage dry electrolytic condensers, of 25 and 50 mfd. capacity, are made in particularly compact tubular form for suspending in the wiring, and will be useful for by-pass purposes in grid bias circuits. High-voltage electrolytic condensers have also been introduced.



Telsen dry electrolytic condensers, new screened H.F. choke and I.F. transformer.

The series of Telsen L.F. transformers have now been brought up to date by the addition of special Class "B" components, and screened H.F. chokes are produced.

Iron-cored tuning coils are included in the latest H.F.-det.-L.F. Telsen A.C. set, and also in the Class "B" 4-valve kit, which is sold for £3 17s. 6d. complete except for cabinet and speaker. The "Air Marshal" det.-2 L.F. set is sold in completed form, with valves, batteries, and moving-coil loud speaker, for 5 guineas.

Telsen Electric Co., Ltd., Aston, Birmingham.

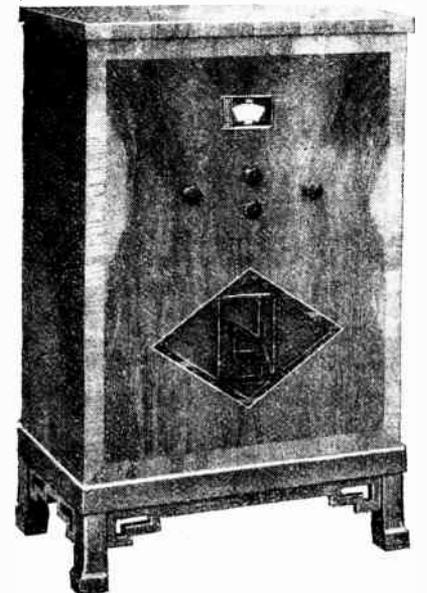
362 VALVES.

A new range of battery and A.C. valves were displayed here, but probably the principal interest was in the "Toledo" type of metal case valve, of which an illustration was included in our issue of last week. A special display was made of Class "B" valves and Class "B" components.

The 362 Radio Valve Co., Ltd., 415, Mare Street, Hackney, E.8.

ULTRA.

The Tiger superheterodyne was prominently displayed on this stand; it is available for A.C. or D.C. operation, and is priced at 14 guineas as a table model and 17 guineas as a consolette. The valves are arranged as a detector-oscillator, variable- μ I.F. stage, screen grid second detector, and a 2½ watts pentode output stage. The battery model is similar, but is fitted with a Class "B" output stage.



The Ultra Electric "Tiger" superheterodyne, consolette model.

The Panther superheterodyne is a larger receiver with a two-valve frequency changer and two I.F. stages; there is a duo-diode second detector, and the set is listed at 19 guineas as a table model. It is for A.C. operation.

The Lynx models are for A.C. or D.C., and have a variable- μ H.F. stage with a screen grid detector, and a pentode output valve. The price is 10 guineas. This receiver is also available in radio-gramophone form at 18 guineas.

Ultra Electric, Ltd., Erskine Road, N.W.3.

UNIVOLT.

The well-known Univolt Radiogram unit with A.C. motor, pick-up, and volume control, has been reduced in price from 5½

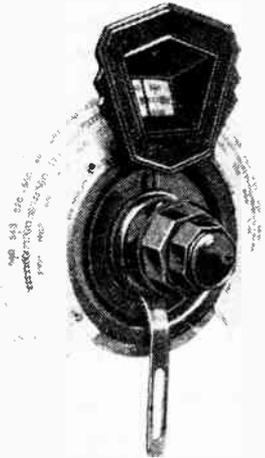
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guineas to 85s. An indoor aerial, known as the "Het," was also on show at this stand.

Univolt Electric, Ltd., 119, Finsbury Pavement, E.C.2.

UTILITY.

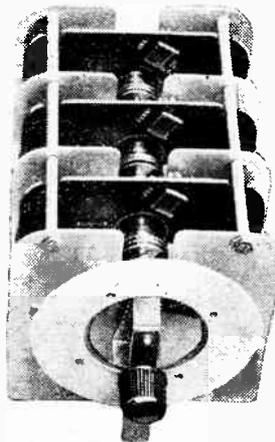
A new die cast gang condenser was a feature at this stand. This component has the advantage of being extremely compact and is, therefore, ideal for use in small or even midget types of sets. The rigid construction is claimed to ensure constancy of matching. Screened trimmers of adequate capacity value are fitted and can be adjusted from above. The condenser has a low minimum capacity.



A new Utility tuning dial of slow motion type, known as the "Micro Disc."



Varley Nicore I.F. transformer with external coupling adjustment.



Varley Permeability Tuner.

Utility also have a useful selection of tuning dials, including a new slow motion type, the "micro disc." There is also a neat horizontal scale dial. All dials can be illuminated.

Switches and a large range of bakelite knobs were other features of this exhibit.

Wilkins and Wright, Ltd., Holyhead Road, Birmingham.

VULCO DRY BATTERIES.

The exhibit of this firm was confined exclusively to dry batteries, including those sold under the Vulco and Stag trade names. Batteries of the "standard" and "power" capacities are produced.

Vulco Dry Batteries Co., Ltd., Vulco Works, N.19.

VARLEY.

Nicore tuning coils of various types occupied a prominent position on the Varley stand; in addition to a complete range of signal frequency and oscillator coils, Nicore I.F. transformers with external adjustments for trimming and coil coupling were shown. A wide range of push-pull, ordinary, and Class "B" transformers was on view, and the L.F. couplings have been extended by the addition of a resistance-capacity compensating unit giving a rising characteristic to correct for sideband cutting. This component is priced at 11s. 6d. An automatic volume control unit employing a Westector was shown at 15s. 6d. A new departure in tuning was to be found in the Permeability Tuner, a three-gang unit in which tuning is carried out by varying the iron cores of the coils.

Several superheterodynes were shown, including a four-valve model without an I.F. amplifier, and a five-valve set with A.V.C. This latter set is priced at 18 guineas as a

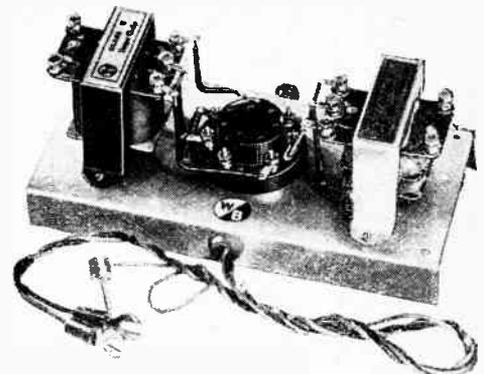
table model, and at 40 guineas as a radio-gramophone. A straight three-valve receiver at 12 guineas was on view. An unusual feature to be found in these sets was the arrangement for wave changing, for the switching is operated by sliding the dial escutcheon vertically.

Among the many and varied components displayed, including chokes, gramophone pick-ups, and volume controls, there was a new range of "Electronic" resistances in various power ratings, the 1-watt type being priced at 9d. The well-known "Bi-Duplex" and power wire-wound resistances are being continued.

Varley (Oliver Pell Control, Ltd.), 103, Kingsway, W.C.2.

Among components, valve holders of the latest types and Class "B" amplifiers for heavy duty were given prominence.

Whiteley Electrical Radio Co., Ltd., Victoria Street, Mansfield, Notts.



W.B. standard Class "B" unit.

WEARITE.

Nucleon iron-core tuning coils provided the principal exhibit on this stand. They are available in a wide variety of types, and in "Senior" and "Junior" models with built-in waveband switching. An iron-core type I.F. transformer was also being shown, and this component is provided with external adjustments for the trimming and the coil coupling.

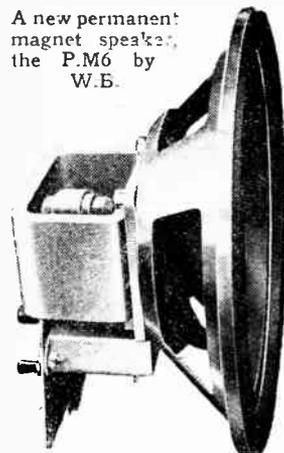
Air-core coils and I.F. transformers are also listed, and the exhibit included Class "B" transformers, mains transformers, smoothing chokes, switches, and volume controls. H.F. chokes were to be found in both air- and iron-core types in addition to low-resistance high-current carrying capacity H.F. chokes for use in the mains circuits.

Heterodyne whistle filters of various types were exhibited, including a special model for *The Wireless World New Monodial Super* with a very sharp cut-off, listed at 15s., and there was an A.V.C. unit incorporating a Westector at 10s. 6d.

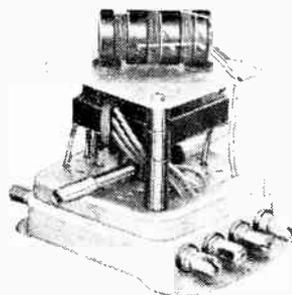
Wright and Weaire, Ltd., 740, High Road, Tottenham, N.17.

WESTINGHOUSE.

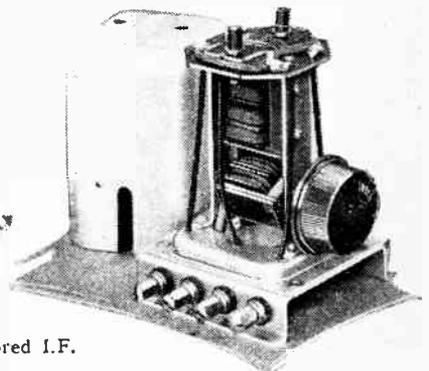
Two new models have been added to the Westinghouse range of H.T. metal rectifiers. One, the H.T.12, replaces the styles H.T.6 and H.T.7, its output being 200 volts at 30 mA. The other, styled the H.T.13, has particularly good regulation, having been developed especially for use with Q.P.P. and Class "B" amplifiers. The price is 17s. 6d. in each case.



A new permanent magnet speaker, the PM6 by W.B.



Wearite Nucleon iron-cored coil, Senior type, and iron-cored I.F. transformer.



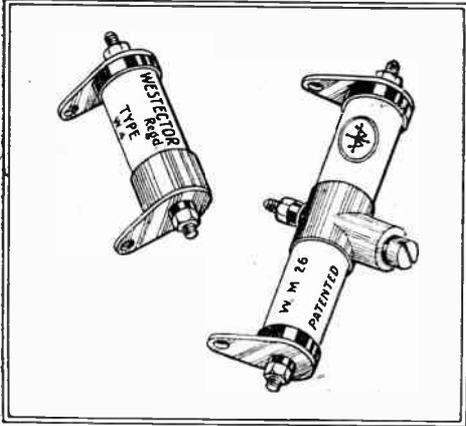
New cabinets of attractive modern design have been developed, the PM1A, PM2A, PM4A, and PM6 units.

Of special interest, however, was the range of Westectors, the new metal oxide diode detectors which are available as half-

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wave or full-wave types, the latter being comparable with a duo-diode detector.

A complete range of single- and multi-circuit battery chargers was also shown, the last-mentioned type being of interest mainly to the service engineer. Prices of many of the models have been reduced.



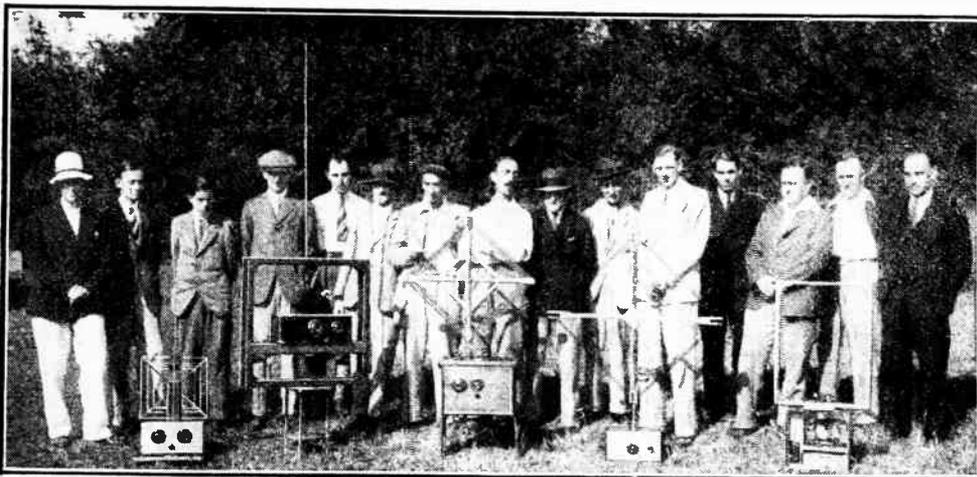
Half-wave and full-wave Westectors.

A special feature was made of battery and A.C. mains superheterodyne receivers designed by the company's engineers and for which constructional details are available. They embody the new Westector and exemplify modern practice, for the latest developments, such as A.V.C. and battery economising arrangements using Westectors, are incorporated.

Westinghouse Brake and Saxby Signal Co., Ltd., 82, York Road, King's Cross, N.1.

A New Book

One Thousand Questions and Answers on Company Law (Revised and Enlarged Edition), by H. A. Ashton. The questions and answers, which cover almost all legal points likely to occur in the formation and working of public or private companies, have been compiled from the works of a considerable number of recognised authorities, statutes and judgments. In addition to these questions and answers and their classified index, the book gives a useful glossary of the legal words and phrases used in company law and a list of duties and fees payable on registration of private limited companies. Pp. 291 + six. Published by The Company Law Press, Ltd., London. Price 5s.



DIRECTION FINDERS "ON PARADE." Some of the winning groups at the conclusion of the recent transmitter hunt organised by the Golders Green & Hendon Radio Society. The first prize was won by Mr. Child's group with a receiver, second from left, using a special compensating aerial.

DISTANT RECEPTION NOTES

New High-powered Transmitters

THE outstanding feature of long-distance reception at the moment is the number of medium-wave stations that are receivable in broad daylight. Unless conditions are particularly unfavourable the two Brussels stations, Langenberg, Rome, Leipzig, the Poste Parisien, Hilversum, and Fécamp are nearly always to be heard when they are working, and other stations that can frequently be picked up are Beromunster, Strasbourg, Breslau and Trieste.

Comparatively few of the new high-powered transmitters that were due to come into operation in the course of the present summer are yet at work, but many should be heard within the next few weeks. Listeners may have noticed that the two Brussels stations are coming in more strongly than they were, and I understand that there has been an increase in the power of the present transmitters, though the new 75-kilowatt plants are not yet ready.

Work on the Witzleben high-powered transmitter is being pressed forward at top speed and this station should make its bow in the early days of the autumn. Tests already appear to be taking place, for I have received the Berlin programmes at far more than normal volume on 419.5 metres.

Wavelength Variations

Kaunas has altered its wavelength a little and is no longer seriously interfering with Huizen. For some days prior to the writing of these notes Monte Ceneri has also been working on a slightly different wavelength, with the happy result that Kalundborg is coming through with great volume and excellent quality. This is the first time that one has had a real chance of seeing what Kalundborg's 60-kilowatt transmitter can do. It is not, by the way, working at full power, for the authorities have decided to use no more than is required to provide an adequate programme service in their own country.

Toulouse Midi seems quite happy with its mere 8 kilowatts, and I hear that the service area of the station is considerably greater than that of the old transmitter. In this country the volume is certainly greater now

than it was when the old transmitter was at work with the same output rating.

Budapest is another station that is now heard at greatly increased volume. For a good many weeks just after midsummer it was almost impossible to receive, but now it can be heard well night after night. I

FOREIGN BROADCAST GUIDE

OSLO

(Norway).

Geographical position: 49° 52' N.; 10° 49' E.

Approximate air line from London: 712 miles.

Wavelength: 1,083 m. Frequency: 277 kc/s. Power: 60 kW.

Standard time: Central European (coincides with B.S.T.).

Standard Daily Transmissions.

10.30. B.S.T., foreign news; 10.50, carillon, sacred service (Sun.); 11.15 (weekdays); 12.55, time signal (Nauen), gramophone records, weather, etc.; 17.00, concert, talks; 19.30, main evening entertainment; 22.00, weather, news; topical talks; 22.30, dance music or light concert.

Announcer: Man.

Call: *Hallo, Oslo!*

Opening and closing signals as under:—



Interval signal: Abbreviated theme from Grieg's opera, *Sigurd Jorsalfar* (six notes)



Closes down with the words: *Hallo, Oslo! Hermed er programmet slut for idag* (with this our to-day's programme ends) *god natt, god natt.*

Relays: Kristiansand, 235.5 m. (1,274 kc/s.), 0.5 kW.; Stavanger, 240.6 m. (1,247 kc/s.), 0.5 kW.; Bergen (occasionally) 264.1 m. (824 kc/s.), 1.0 kw.; Fredriksstad, 367 m. (817.4 kc/s.), 0.7 kW.; Rjukan (0.15 kW.), Aalesund (0.35 kW.) and Notodden (0.08 kW.), 447.1 m. (671 kc/s.); Porsgrund (0.7 kW.), Tromsø (0.1 kW.), Bodo (0.5 kW.), 453.2 m. (662 kc/s.), Trondheim, 495.8 m. (605 kc/s.), 1.2 kW.; Hamar, 572.2 m. (524.3 kc/s.), 0.7 kW.

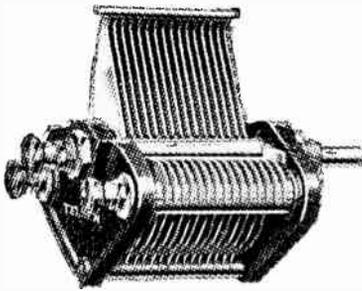
have not heard that the new station is at work, though it seems likely that the transmissions that one now picks up are tests of the new plant, for the station is not usually to be heard before about 10 p.m., though after this hour it comes in very strongly. This can hardly be due to any daylight-darkness effect, since it is dark in this country now shortly after 9 p.m., and Hungarian time is an hour ahead of ours.

The pick of the long-wave stations are Kalundborg, Radio-Paris, Huizen, Zeesen and Motala. The last mentioned has improved immensely in the last week or two.

On the medium band Rome, Langenberg, Prague, Hilversum, Heilsberg, Florence, Milan, Strasbourg and Leipzig are amongst the best of the large number of excellent transmissions now available.

D. EXER.

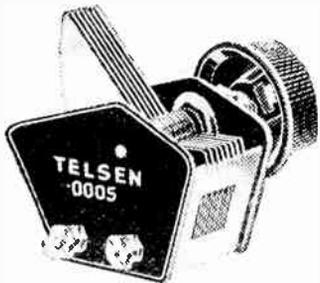
TELSEN TUNING CONDENSERS cover every requirement



TELSEN AIR-DIELECTRIC TUNING CONDENSERS

The precision and sturdy construction of this component ensure years of faithful service. Its frame is braced by three solid pillars, and the vanes clamped at three points, making distortion impossible. The rotor is also built into a rigid unit, generous bearings preventing backlash or end-play.

Capacity	Price
.00025 mfd.	2/6
.00035	3/6
.0005	3/6

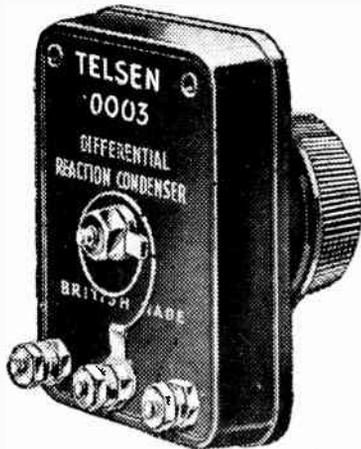


TELSEN BAKELITE DIELECTRIC TUNING CONDENSERS

Represent really remarkable value at the new reduced prices.

Very rigid construction, with high grade dielectric, ensuring permanently accurate spacing with minimum losses. Exceptionally compact. Complete with knob.

Capacity	Price
.0003 mfd.	2/-
.0005	2/-



TELSEN DIFFERENTIAL CONDENSERS

Similar in design and construction to the reaction condensers. Supplied complete with knob.

Capacity	Price
.0003 mfd. W.351	2/-
.00015 .. W.352	2/-
.0001 .. W.353	2/-

TELSEN GANGED CONDENSERS

The finest ganged condensers ever produced, and, at their new reduced prices, the finest value ever offered in their class.

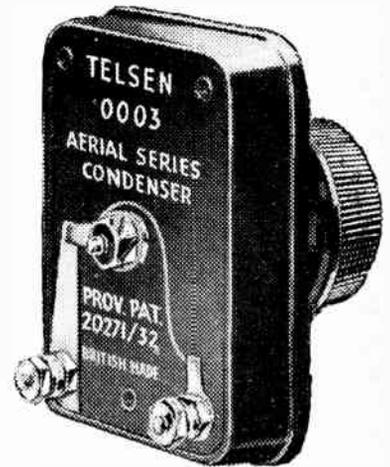
For use where accurate and simultaneous tuning of two or three circuits is obtained by the rotation of one dial. A pressed steel frame of great rigidity eliminates distortion, the rotor and stator vanes being let into one-piece high pressure die castings to ensure accurate spacing. All sections are very carefully matched by means of split end vanes, and trimmers are provided. Complete with knob, pilot light escutcheon and two alternative tuning scales.

Configuration	Price
Single Unit	7/6
Twin Ganged	12/6
With dust cover 2/- extra	
Triple Ganged	17/6
With dust cover 2/6 extra	

TELSEN REACTION CONDENSERS

Entirely re-designed. Now incorporate several valuable improvements with no increase in prices, the whole unit being also now enclosed in a strong dust-proof bakelite case. Supplied complete with knob.

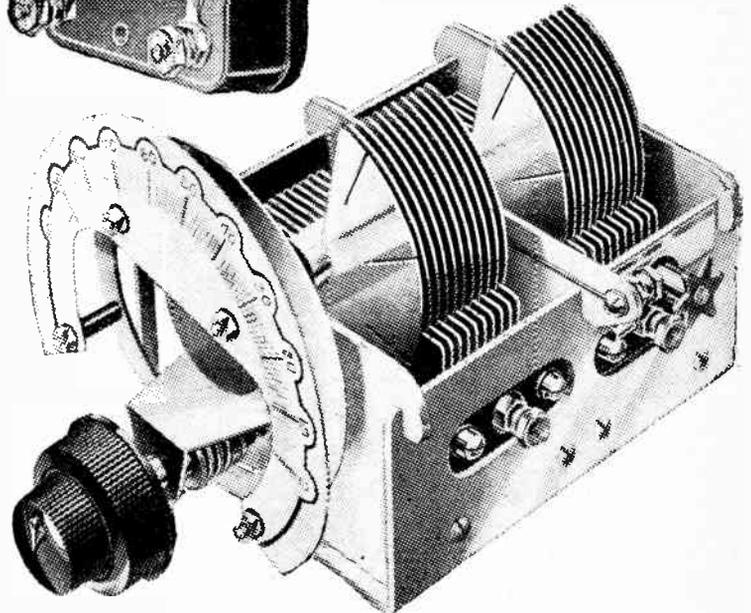
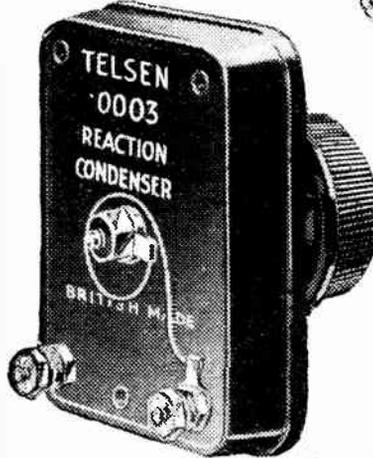
Capacity	Price
.0003 mfd. W.354 ..	1/9
.00015 .. W.355 ..	1/9
.0001 .. W.356 ..	1/9
.00075 .. W.357 ..	2/-
.0005 .. W.358 ..	2/-



TELSEN AERIAL SERIES CONDENSER With Switch

Built on similar lines to the new reaction condensers, providing an ideal selectivity and volume control. Supplied complete with knob.

Max. Cap.	Price
.0003 mfd. No. W.350	2/-



TELSEN FOR EVERYTHING IN RADIO

ANNOUNCEMENT OF THE TELSEN ELECTRIC CO., LTD., ASTON, BIRMINGHAM

Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.

TELSEN

cover every **COIL** requirement

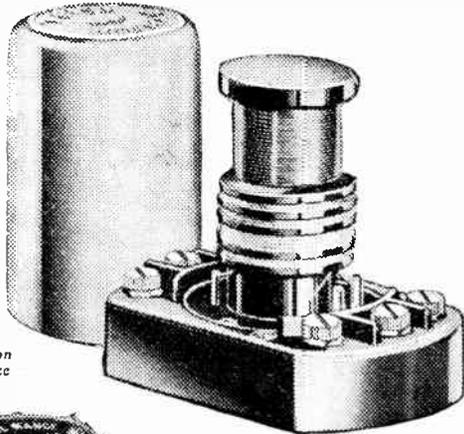


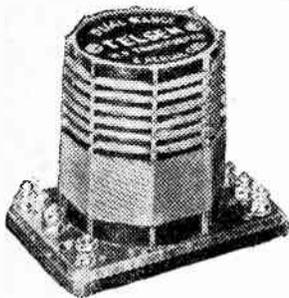
Illustration actual size

At the new reduced prices, the wonderful Telsen range of components represents more than ever radio's finest value. Whatever your coil requirements, be sure and insist on Telsen for lasting efficiency at the lowest cost consistent with quality.

TELSEN IRON-CORED SCREENED COILS

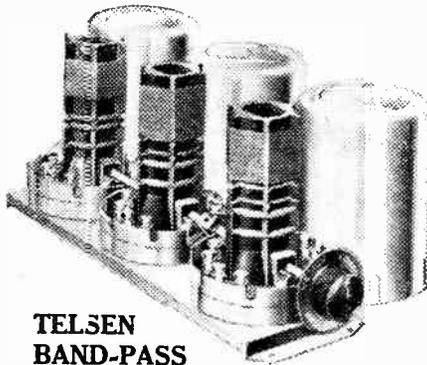
The result of extensive research, these Coils employ an iron-dust core, achieving greatly reduced size, with considerably higher efficiency than that of the majority of air-cored coils. Magnification and selectivity are correspondingly improved, the metal screening also preventing inter-action. For use either as aerial tuning coils or H.F. transformers, a reaction winding being included.

No. W.349 Single Coil	Price	8/6
No. W.422 Twin Matched Coils		17/-
No. W.423 Triple Matched Coils		25/6



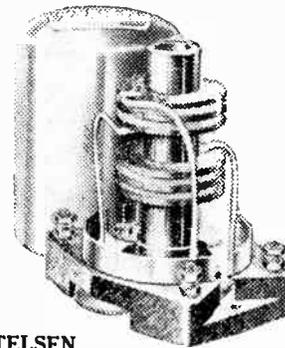
TELSEN DUAL-RANGE AERIAL COIL

Incorporates a variable selectivity device, making the coil suitable for widely varying reception conditions. This adjustment also acts as an excellent volume control, and is equally effective on long and short waves. The wave-band change is effected by means of a three-point switch and a reaction winding is included. Price 5/6



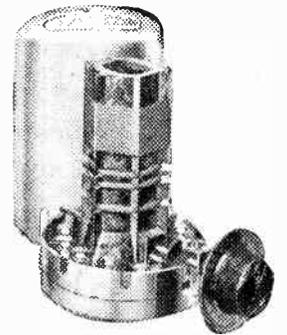
TELSEN BAND-PASS AND OSCILLATOR COIL UNIT

Comprises the Band-Pass Coils and Oscillator Coil combined into a single compact unit. All wave change switches are ganged, with single knob control. Ideal for any Superheterodyne circuit. Price 21/6



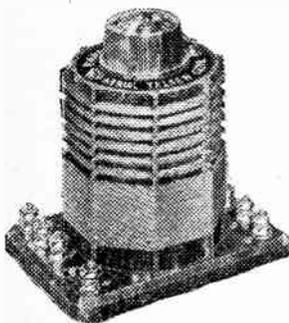
TELSEN INTERMEDIATE FREQUENCY TRANSFORMER COIL

Consists of two tuned circuits comprising a Band-Pass Intermediate frequency filter tuned to 110 kc. by two pre-set balancing condensers. Adjustable for different values of stray capacities, with variable filter coupling. Price 7/6



TELSEN OSCILLATOR COIL

Particularly suited to Superheterodyne circuits in conjunction with the Telsen Band-Pass Coils. Operates at a frequency separation of 110 kc. from the Band-Pass tuning range, maintaining a constant frequency separation over both wave ranges .. Price 7/6



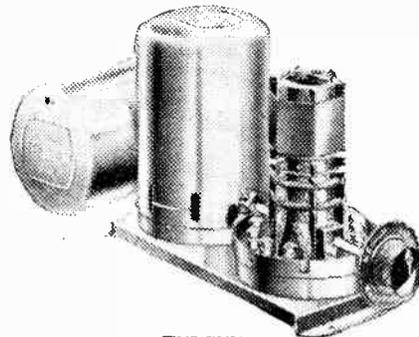
TELSEN H.F. TRANSFORMER COIL

May be used for H.F. amplification with Screened Grid Valve, either as an H.F. Transformer, or, alternatively as a tuned grid or tuned anode coil. It also makes a highly efficient Aerial Coil where the adjustable selectivity feature is not required. Price 4/6



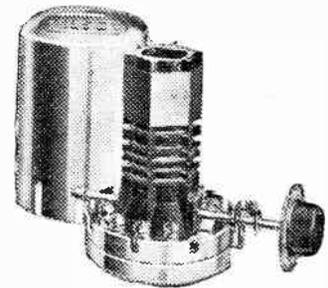
TELSEN SUPER-HET. COILS (TYPE No. S 330)

For Superhets which do not employ band-pass tuning in their pre-detector H.F. stages. Mechanical construction and wave-change switch assembly almost identical with standard Telsen Screened Coils Price 21/6



TELSEN BAND-PASS COIL UNIT

Comprises two accurately matched Screened Band-Pass Coils, on a single rigid plinth base. The coils are independent of each other and can be wired for any of the three types of Band-Pass Filter to give exceptional quality with selectivity. Price 14/6



TELSEN SCREENED TUNING COILS

With separate coupling coils for medium and long waves. Highly suitable for use as aerial coils or as anode coils following a screened grid valve, giving selectivity equal to that of a well-designed band-pass filter .. Price 7/-
Twin Matched 14/6
Triple Matched 21/6

TELSEN FOR EVERYTHING IN RADIO
ANNOUNCEMENT OF THE TELSEN ELECTRIC CO., LTD., ASTON, BIRMINGHAM

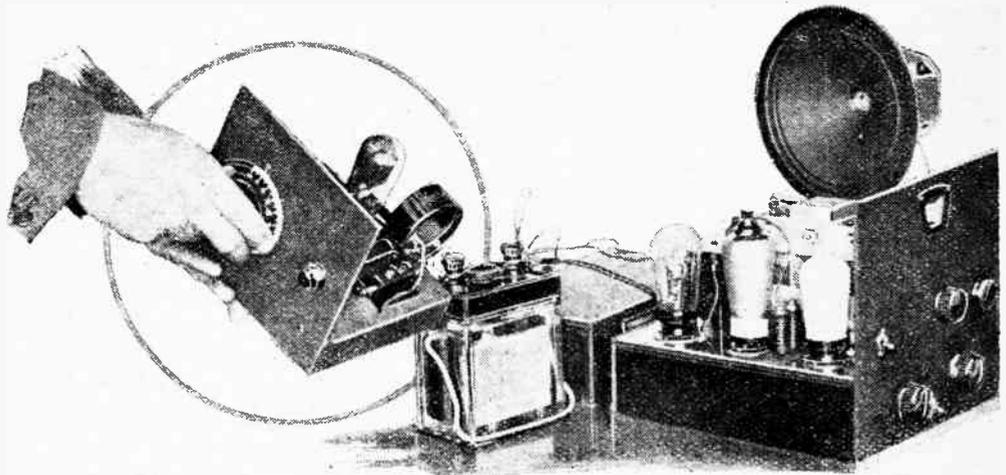
Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

Modulated Pentode Oscillator

For Testing, Ganging or Wavelength Measurements

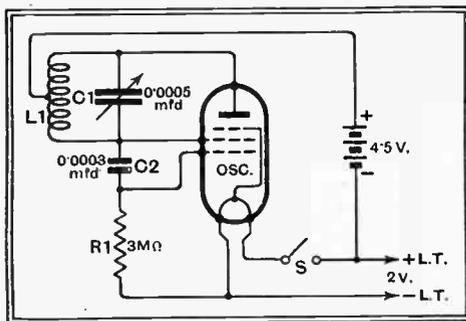
A PART from the purposes for which they were primarily designed, modern multi-electrode valves have a number of subsidiary applications, many of which have not yet been fully explored. For instance, diode-pentode valves may well be responsible for a revival of interest in reflex circuits.

The multi-electrode valve is particularly useful as an oscillator. The present note deals with the use of a pentode for this purpose in a particularly simple and inexpensive manner. The output is modulated



Almost any ordinary battery pentode will oscillate with three or four volts on the anode and priming grid, and so a flash-lamp battery will generally serve as "H.T." There is, however, no harm in using a slightly higher voltage if it is found desirable to do so. Similarly, the values

of grid leak and grid condenser suggested may be changed experimentally, although it is found that the capacity-resistance combination given will produce a very distinctive modulation note, which is easily recognised above an incoming signal when the instrument is used as a wavemeter.

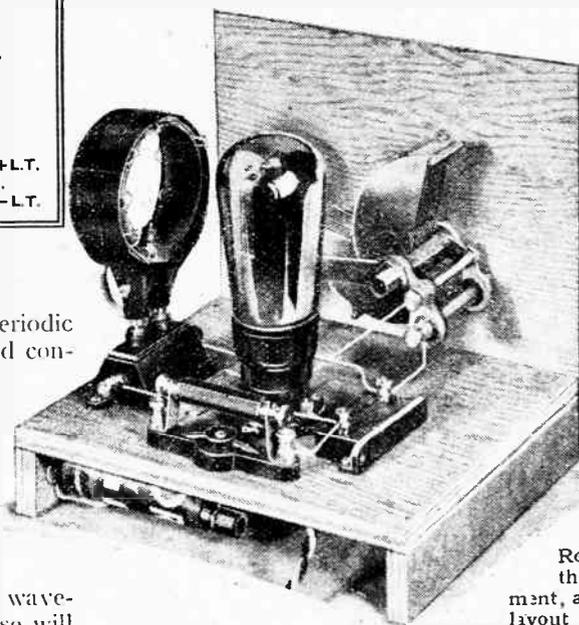


The simplest self-modulating oscillator circuit.

at a suitable audio-frequency by periodic charging and discharging of the grid condenser, and in this respect it is comparable with the original "squegger" oscillator, but is infinitely more stable and certain in operation.

An oscillator of this type can be used for all purposes where a "home-made" signal is required. In view of the impending wavelength changes, its most obvious use will be as a wavemeter; calibration may easily be carried out by noting the dial settings corresponding to a few well-known stations and then plotting these "points" against dial readings on a sheet of squared paper. Whether calibrated or not, the instrument will supply a steady signal for circuit alignment if it is placed near the aerial or earth lead. The oscillator radiation may also be induced into a tuned circuit of the receiver.

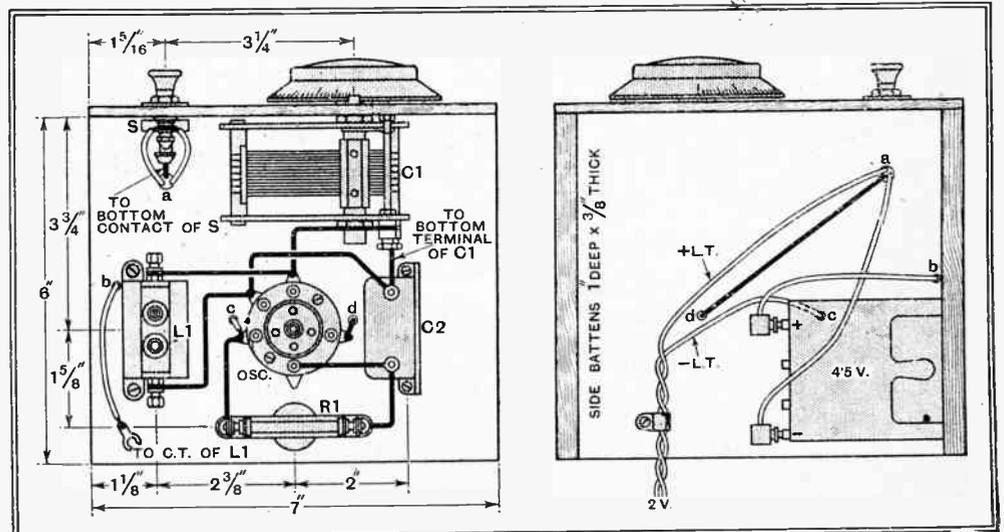
In building the oscillator it will be found that layout is unimportant, and that various modifications may be introduced if desired without impairing results. For instance, it might be considered preferable to replace the centre-tapped plug-in coils by an arrangement permitting of a switch wave-change. Unfortunately, however, it seems that no suitable ready-made coil assembly is obtainable.



Rear view of the instrument, and (below) layout of components and wiring plan.

The use of an accumulator may be avoided by using dry cells. A 4½-volt battery of fair-sized cells will, as a rule, supply both H.T. and L.T. potentials if the necessary rheostat be joined in the positive lead, the tapping of the coil being connected directly to the positive battery terminal. A battery of exceptionally high capacity will hardly be necessary, as a test oscillator of this type is seldom required to function for long periods.

The following components were used in the construction of the oscillator unit as illustrated: Variable condenser, 0.0005 mfd. (Graham-Farish "Zelos"), on-off switch (W.B.), coil holder (Igranic), dry battery, 4½ volts (Grosvenor), battery clip (Bulgin), grid leak, 3 megohm (Graham-Farish "Ohmite"), condenser, 0.0005 mfd. (Graham-Farish), two coils, centre-tapped, Nos. 60 and 250 (Sovereign), valve-holder, 5-pin (Graham-Farish) and two wander plugs.



News of the Week

Current Events in Brief Review

No Dabblers

ONLY those who have passed a special examination are in future to obtain concessions for retailing wireless goods in Switzerland. At present there are 2,046 registered traders.

Making America Think

ACCORDING to our Washington correspondent, America is watching with keen interest the B.B.C.'s experiment in introducing a woman announcer. This is something which the American networks have never undertaken.

Fecamp on 700 Watts

RADIO NORMANDIE is shortly to reduce its power to 700 watts by order of the State authorities. Since 1928, when the station began to achieve fame, there have been successive power increases, and the present official output is 10 kW.

More Licences

AT the end of July 5,626,000 wireless licences were in force in Great Britain, this being a net increase of 27,700 in a month.

During the same month 255 "pirate" prosecutions were successfully undertaken by the Post Office, and the total fines imposed amounted to £257 14s.

Five-metre Field Day

ULTRA-SHORT-WAVE enthusiasts in the London area will be glad to know that a 50 m.c. field day is to take place at the Orange Tree, Totteridge, nr. High Barnet, from 10 a.m. on Sunday, September 3rd. The arrangements are under the auspices of the 12th District of the Radio Society of Great Britain.

From Long to Short

SWITZERLAND'S latest long-wave regional station, at Monte Ceneri, which serves Italian-speaking Switzerland, is to be closed down until the middle of September to permit of the necessary changes for altering the wavelength in accordance with the Plan de Lucerne. From January 15th onwards Moate Ceneri will broadcast on 250 metres.

A Dire Threat

SO far as we are aware no listener in Great Britain has ever received a Post Office threat such as that which reached a *Wireless World* reader in Perak, Federated Malay States. The final reminder from the postmaster was in these terms: "Sir, I have to remind you again that your subscription for 1933 in respect of a wireless receiving licence has not been renewed. All services not renewed before the 16th Jan., 1933, will be discontinued."

Rather than disappoint his fellow-listeners our correspondent paid up!

Majorca Calling

AT Palma, in the Island of Majorca, a broadcasting station is nearing completion which will serve the Balearic Isles. The transmitter is testing with the call sign EAJ13.

Wireless on Wheels

HAVING exhausted all the possibilities of radio transmitter hunts, the Sarthe (France) Radio Club has "found a new formula" in a rally of radio cyclists. Each rider will carry a receiver in this interesting field day, which is booked for October next.

"Radio House" Tragedy

BEFORE it was finished, the Danish "Radio House," built three years ago, was found to be too small for its purpose. The plans were criticised by the broadcasting authorities but,

Radio Fever in Denmark

TO-DAY (Friday) sees the opening of Denmark's Wireless Show in the "Forum," Copenhagen's great Exhibition Hall. The inaugural ceremony is to be broadcast by the new 60kW. transmitter at Kalundborg.

Listen to Bulgaria

SOFIA is to have a new broadcasting station. The existing transmitter, in a disused Post Office in the middle of Sofia, is not equipped with modern apparatus (says the *Manchester Guardian*), but it gives a big daily programme, and few houses in the city are without receiving sets.

Something to Listen to

DR. GOEBBELS, the German "Minister for the Enlightenment of the People and for Propaganda," has presented Signor Mussolini with 203 gramophone

Beacon to Beacon

ARRANGEMENTS have been made for 5-metre tests next Sunday, August 27, in which a chain of stations will be used extending from the Midlands (possibly Worcester Beacon) to Pirle Beacon, near Eastbourne, a distance of some 200 miles.

The object of the test is to provide practice in accurate transmission on the "ultra shorts." The transmitters taking part will include G6UL, G2NU, and G5BY.

German Licence Decline

THE decrease in the number of German listeners continues. The total number registered on August 1st was 4,483,278 as compared with 4,521,106 the month previously. Of these no fewer than 531,230 are issued free to unemployed persons, so that the total number of paying listeners in Germany is below 4,000,000.

"Radio Nacional"

THE German Telefunken Company has secured the order for the erection of a 37.5 kW short-wave broadcasting station at Buenos Aires. "Radio Nacional," as the new station will be called, should make itself heard in Europe.

Loud Speakers and Copyright

WHETHER hotels, restaurants, stores, public houses, and other institutions infringe copyright when reproducing broadcast concerts for the entertainment of their customers will be the subject of an important appeal down for hearing for the next Law Term.

At the original hearing Mr. Justice Maughan made a declaration to the effect that the defendants, Hammond's Bradford Brewery Co., had infringed the copyright of the plaintiffs, The Performing Rights Society, Ltd., in regard to certain musical pieces performed by them in public houses under the company's control without the plaintiffs' consent.

A Question of Royalties

FOLLOWING the lead of the Australian Government, the New Zealand Government has given notice to Amalgamated Wireless of Australasia, Ltd., terminating an agreement under which royalty is paid on every wireless licence in the Dominion. New Zealand listeners pay 30s. a year licence, of which 3s. has gone to A.W.A. as royalty in respect of patents and 2s. to the Post Office as collection fee. Over £14,000 was paid by New Zealand in royalties last year, and at the end of March there were 95,580 licences in force. The royalty agreement has been in operation for six years—from the institution of the old Broadcasting Company taken over by the State Broadcasting Board last year—and it is understood that a new arrangement may be negotiated.



ON SNOWDON'S SUMMIT. Mr. E. H. Smith, with his 5-metre transmitter, G6UH, on Snowdon on Saturday, August 12th. Reports were received from considerable distances.

according to our Danish correspondent, the scheme received parliamentary sanction.

Now a new Radio House is projected, and will probably be built on the outskirts of the city.

Photo Cells on the Road

VERY soon every heavy lorry on the French roads may be equipped with a selenium cell device to enable drivers of overtaking motor cars to communicate with the lorry driver. According to the new French Road Code, every vehicle must carry some means of communication between the back and the front, and (says our Paris correspondent) it is quite possible that the selenium device may be made compulsory. An overtaking driver would switch on his headlights, which would immediately affect the selenium cell and operate a warning bell in front. The new accessory is to be installed on all police lorries.

records of interesting political events broadcast during recent weeks. Fifteen of the records comprised the full text of Herr Hitler's celebrated speech in the Reichstag on May 17th.

A New Verb ?

"THE English tongue suffers much from the infiltration of technical jargon," says a writer in *The Daily Telegraph*. "Radio is responsible for some of it. I suppose it is inevitable. None the less I recoil when I read of a device by means of which listeners 'can remote control' a receiver."

Wireless a Necessity

"WIRELESS has become such a normal necessity that it is to be regarded as just as essential as electric light," was the considered opinion of the court at Kosice, Czechoslovakia, when a shop-keeper was recently ordered to remove an electric sign which was causing interference to radio.

Ultra Short-Wave Record

Snowdon Transmission Heard at 200 Miles



Messrs. H. L. O'Heffernan and H. L. Harris operating G5BY on the summit of Snowdon.

FROM the large circular pile of rocks which marks the highest point on Snowdon (3,570 feet) G5BY, accompanied by G6UH, transmitted on 5 metres for about eight hours continuously on Saturday, August 12th. The summit was reached shortly after 8.30 a.m., and the work of erecting both stations began immediately.

The first transmissions began from both stations at 9.40 a.m. and continued at irregular intervals until 12.20 p.m., when the published schedules were commenced. Throughout the day the experimenters were unaware whether their signals were being heard, for although two receivers were used throughout

OPERATING a "Wireless World" Ultra Short Wave Two" receiver at Hoddesdon, Herts, on Saturday, August 12th, Mr. T. E. Myatt picked up the 5-metre transmissions of Mr. Hilton O'Heffernan (G5BY) from the summit of Mount Snowdon, approximately 200 miles away. The two experimenters have thus broken the world's record for communication on "optical" wavelengths.

each listening period, no answering signal was picked up. This was naturally disappointing but not entirely unexpected, as it was known that very few transmitters were working. In many cases this was due to the fact that many experimenters were unable to participate until the afternoon, it being a Saturday. The test, however, had to be carried out on a Saturday, there being no Sunday trains up the mountain.

It was not until late in the day, when a telegram was received from G2WQ in Manchester notifying reception at 84 miles, that it seemed possible that startling reports might be expected. Obviously, however, the majority of reports would come late and could not be received before Monday or Tuesday. Every post brought fresh evidence of success, culminating on Tuesday by the arrival of a report from Mr. T. E. Myatt, of Hoddesdon, Herts, which checked perfectly with G5BY's log and those of other listeners, thus proving that reception of speech had been achieved over approximately 200 miles from the mountain summit.

G5BY's transmitter employed an eight-foot vertical aerial with the transmitter at the centre. The H.T. of 300 volts was obtained from an Electro Dynamic motor generator driven from a 12-volt car starter battery. G6UH, the companion transmitter, employed a similar layout.

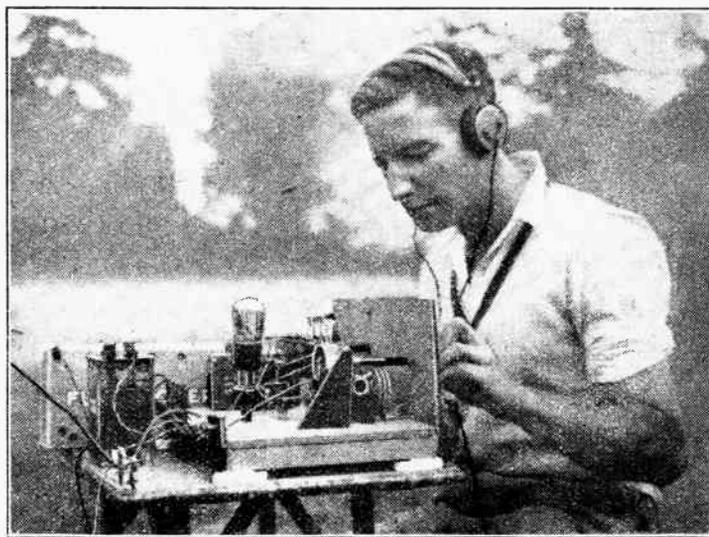
It is impossible to reproduce here the complete log, but the extracts in the accompanying table show how the reports cross-check each other.

How I Logged Snowdon

By T. E. MYATT

MY set, a slightly modified *Wireless World* "Ultra Short Wave Two," was set up on porcelain insulators (to avoid stray H.F.) on a table in a near-by cricket field. The antenna consisted of a 10ft. length of seven-strand wire suspended by, and insulated from, a piece of string attached to the top corner of a wooden batting screen. An earth connection was made by driving a long screwdriver into the soil and connecting this by a 4ft. length of wire to the set. The ground was extremely dry and had to be damped.

When trying out the set previously I had found that by coupling the aerial by an 0.00005 μ f. trimmer an infinitely higher degree of sensitivity could be obtained.



Mr. T. E. Myatt of Hoddesdon, Herts, with "The Wireless World" Ultra Short Wave Two" on which he heard G5BY's signals at a distance of 200 miles.

A watch was kept from 12.15 (B.S.T.) to 17.30 (B.S.T.). Soon after switching on at 12.25, I picked up the carrier wave of G5BY on 60 m.c. at a strength of R1-2. I held it for about two or three minutes, when a loud burst of "X's" blotted it out. Thereafter no other signals were received until 16.21, when, in the last stages of disappointment and exasperation, I was lucky enough to tune in at R3-4: "This is G5BY testing on a wavelength of 5 metres and 60 m.c." A sudden burst of "sausage frying" indicated the proximity of a plane, which, after circling round the field and blotting out all signals with its ignition, suddenly switched off, and I was able to hear a reference to Mount Snowdon from G5BY. No further sounds from Snowdon were heard; I suppose the interruption was due to the change in the weather, for a bank of heavy clouds rolled up. The watch continued from 16.20 until 17.30.

A number of unidentified Morse stations were logged during the day, though the Brookmans Park transmitters provided an annoying background all over the dial. No doubt I was receiving the sixth harmonic.

A curious feature of the transmission tests was that no trace could be discovered of the other transmitter, G6UH on 56 m.c.

Time B.S.T.	Name.	Location.	Approx. Distance from Snowdon	Reception Strength.	Remarks.
1120	R. A. Bell and J. V. Sugden.	Barras Station, Liverpool	130 m.	R.2	C.W.
1420	F. H. Jackson, G2KZ.	Liverpool	55 m.	QSA4R5	C.W. code word "ZZQAK."
1520	R. E. Wilkinson, BRS. 107.	Kinder Plateau, Wallasey	100 m.	QSA5R8	Mod. C.W.
1523	J. Davies, G20A	Wallasey	50 m.	QSA5R7	1 C.W. code "YYQOD."
1520	G2KZ ...	Liverpool	55 m.	QSA4R5	C.W. code "YYQOD."
1620	T. E. Myatt ...	Hoddesdon, Herts.	200 m.	R3-4	PHONE: "G5BY testing on a wavelength of 5 m. and 60 megacycles," etc.
1620	BRS. 107 ...	Kinder Plateau, Liverpool	100 m.	QSA5R9	Good speech, very clear indeed.
1620	G2KZ ...	Liverpool	55 m.	QSA4R5	PHONE calling "Test."
1620	G20A ...	Wallasey	50 m.	QSA5R9	PHONE Now very F.B. indeed "WX fine, sunny and warm."
1620	G2WQ ...	Manchester	84 m.	R.6	PHONE "WX. fine, sunny and clear."
1715	G20A ...	Wallasey	50 m.	QSA5R9	PHONE "Kilox," "close down to get last train from summit at 6.30."
1748	BRS. 107 ...	Kinder Plateau, Liverpool	100 m.	QSA5R9	PHONE "Final transmission, close down."
1746	G2WQ ...	Manchester	84 m.	QSA5R5	PHONE "Kilox final transmission as last train down the summit leaves at 6.30."

BROADCAST BREVITIES

By Our Special Correspondent

Mr. Maschwitz Discloses His Ideas

NOT many young men on the Riviera do as much thinking as Eric Maschwitz did. In between writing revue, etc., the new Director of Variety must have spent his holiday deep in thought. Now he has emerged with a galaxy of ideas of which at least fifty per cent. are real winners and the others runners-up.

The Third Has Not Been Told

When you read this the world may already have become aware of some of these ideas, but I can tell you in confidence that not a third of them have been breathed to more than a very select coterie of friends and admirers.

C. B. Cochran

One superb inspiration was to enlist the services of that super showman, Mr. C. B. Cochran, in the staging of song and dance shows.

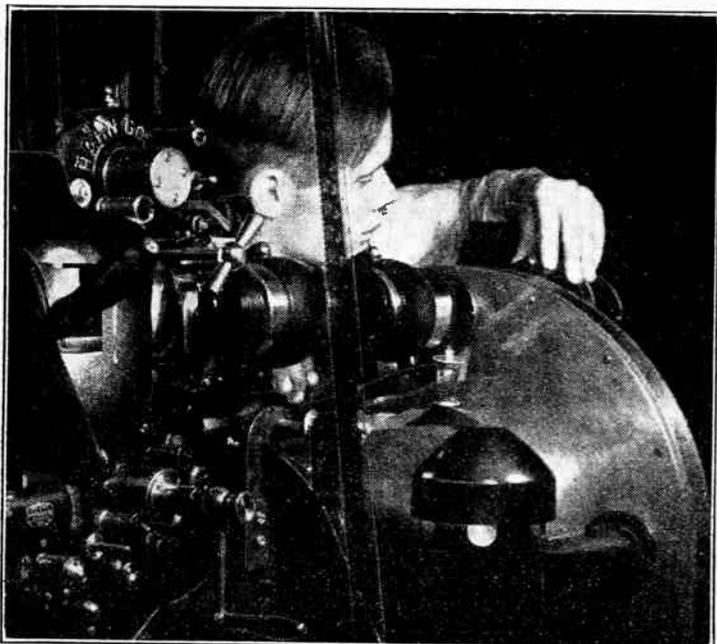
You may have heard, too, of the formation of a regular vaudeville chorus—eight pretty dancing girls in uniform—and of the forthcoming "crazy" shows, each of which will pack the old-fashioned "Crazy Month," beloved of the music halls, into one evening.

Saturday Afternoon Vaudeville

Another inspiration is the Saturday afternoon vaudeville hour, to take the form of one surprise item after another in which hitherto unheard-of artistes will make or mar their microphone futures.

"Music Hall"

Amid such a whirl of new things it is strange that the old wharf studio—No. 10—should be selected to play an important part in Mr. Maschwitz's winter plans. Here will be staged two "Music Halls" per month.



IS IT TELEVISION? An interesting exhibit at the Berlin Radio Show which opened on Friday last, is the Fernseh A.G. television system which employs a continuous band of film. The picture is photographed, developed, transmitted and the film cleaned within twenty seconds. The transmitter seen above gives a 180-line picture at the rate of twenty-five frames a second.

The general feeling in the Variety Department is that no studio at Broadcasting House can equal the old wharf in the amount of "vitality" communicated to the microphone. The audience is not too close to the "mike," and the place has enough echo to conjure up visions of a real theatre.

Drury Lane Success

One of the first-fruits of the Maschwitz regime will be the Charlot Revue, to be broadcast on September 11th. André Charlot needs no introduction to listeners as producer and *compère* of innumerable microphone successes. Then there will be the broadcasting of that famous Drury Lane success "The Desert Song" on September 28th (National) and 29th (Regional).

Belfast Expands

WHILE the B.B.C. engineers are caught up in a legal dispute concerning mineral rights with the owners of the projected site for the Northern Ireland high-power station, the Belfast station authorities are calmly forging ahead with plans for vastly improved studios.

National Programmes

A block of buildings adjoining those now occupied has been acquired, and the new accommodation will enable three more studios to be added.

Belfast has been badly hampered in the past by lack of space, but with the improved facilities for band and choir performances it is likely that the station may soon be able to contribute not a little to the National programmes of the B.B.C.

More About the B.B.C. Organ

THE only "mystery" connected with the new B.B.C. organ is that very few organists care to give broadcast recitals on the instrument unless they have had several hours of practice.

At present there are not more than half a dozen executants who are really familiar with the extremely complicated mechanism. One of these is Mr. Taylor of the Compton Organ Company, who on Sunday, September 10th, will broadcast improvisations designed to give listeners an idea of the real possibilities of the organ.

There will be a commentary by Mr. Filson Young.

Radiolympia

THAT'S Radiolympia—that was. The B.B.C. made the most of the stupendous publicity which the R.M.A. was pleased to vouch-

safe them, and many of the broadcasting artistes also enhanced their reputation, if such a thing were possible.

Henry Hall, it is generally conceded, scored a personal triumph.

Hall à l'Américaine

On September 30th, four days after his return from his holiday trip to the United States, Henry Hall will broadcast a feature programme with the B.B.C. Dance Orchestra, entitled "My American Tour." Following a brief description of the places he has visited and the people whom he has met, he will present a series of new American numbers which he is bringing back to this country, and will play them according to the interpretations of well-known dance band conductors by whom they have been presented on the other side.

A Broadcasting Film

IN spite of the coming dissolution of the Empire Marketing Board, the broadcasting film which was being sponsored by the Department will be produced in the near future. I hear that John Grierson will remain in charge and that he is now preparing the scenario and dialogue.

Moments of Mystery

The dialogue will probably be as interesting as anything else in the film. The processes of broadcasting are not so secret nowadays, but the conversations which go on behind the battlements in Portland Place are still wrapped in mystery. I, for one, should like a glimpse of one of those "high officials" gripping the telephone and saying, without the twitch of a muscle, "The B.B.C. has no statement to make."

A Broadcaster's Plight

HOW are the mighty fallen! Philip Ridgeway, who never felt at ease in the broadcast studio unless the toy footlights were on "to give the theatre atmosphere," now confesses to uneasiness on the public platform unless a microphone is handy.

To get over the difficulty on their present seaside tour he and his company take with them a public-address system. Microphones adorn the stage, and loud speakers give an amplified version of the "Parade" in the auditorium.

Shakespeare on Sundays

WHEN the new schedule of Sunday evening broadcasts starts in the autumn, plays by Shakespeare will be included in the programmes on the second Sunday in each month, starting in October. The plays so far arranged are "Othello," "The Tempest," "Julius Caesar," and "Two Gentlemen of Verona."

They are Saying in Timaru . . .

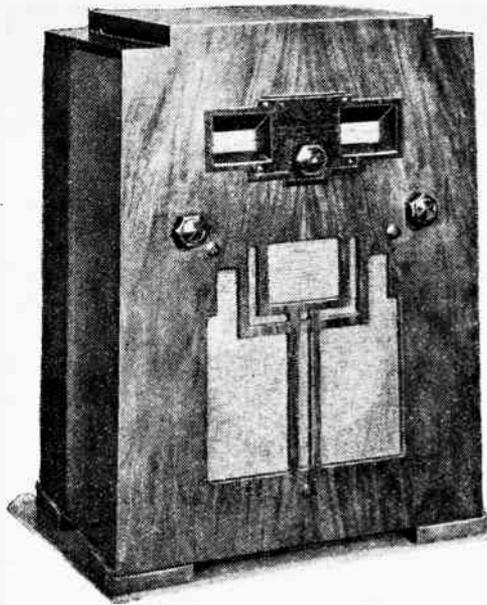
IT might be unwise to expect too much of the B.B.C. records that the New Zealand Broadcasting Board has arranged to purchase. The programmes provided for the Empire service are not particularly attractive, and John Bull's broadcasting ideas are like his Rugby rules—a bit stereotyped.

—Timaru Herald, New Zealand.

Marconiphone

MODEL 260

A Battery Receiver with Mains Quality and Volume



TO anyone who has not had experience of the new battery output stages the performance of this receiver will come as a revelation. In the matter of volume and quality it is quite the equal of the majority of mains receivers which we have tested, and it is at first difficult to believe that such results can be obtained for an average H.T. consumption which is well within the capacity of the normal size of H.T. battery.

The loud speaker unit is of the permanent magnet moving-coil type, and, while there is ample bass response, the quality cannot be described as woolly, as it is balanced by a bright and crisp upper register. It is fascinating in a battery receiver to be able to increase the volume to a level much higher than is normally required in the average living-room without being able to hear the slightest trace of overload distortion.

Actually, the undistorted output is rated at 1.3 watts, and measurements of the total H.T. current show that it fluctuates from 6 mA. in the quiescent state to 18 or 20 mA. for sustained loud passages. For the purpose of estimating the probable life of the H.T. battery the average current at normal volume may be taken as 9 mA., which is about the same as that of earlier types of battery receiver giving an output of only 300 or 400 milliwatts.

A modified form of quiescent push-pull, known as the "Parallel Conductance Principle," has been adopted in the output stage. The pentode valves used in this stage are classified in the valve factory and marked with distinguishing letters. Tappings correspondingly lettered in the H.T. battery enable the slopes of the valves to be adjusted to a predetermined standard value by inserting the auxiliary grid leads of each valve in the socket corresponding to the letter marked on the valve. The auxiliary grid leads are taken directly from the valve-holders, so that there can be no possibility of error in the event of the purchaser being called upon to make a replacement for himself at some future date.

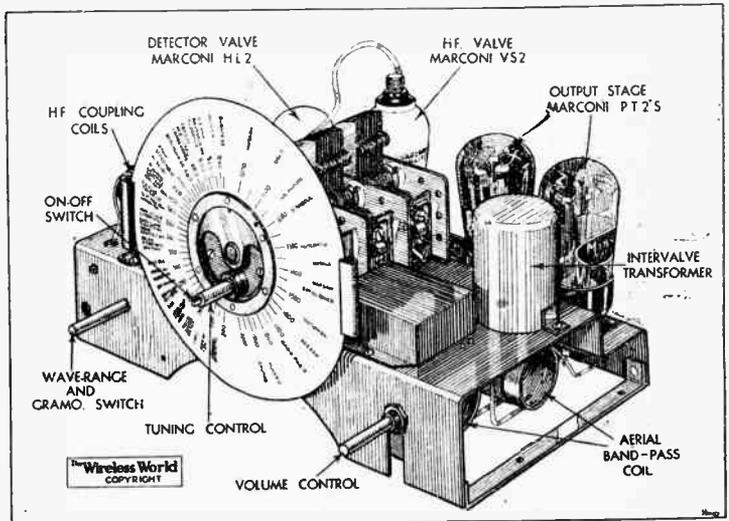
The design of the earlier stages of the receiver is in keeping with the technical merit of the output stage. A band-pass input filter in the aerial circuit, in conjunction with a tuned H.F. transformer between the screen-grid valve and the detector, combine to give a range and degree of selectivity of a high order for a receiver employing only one H.F. stage.

The sensitivity on medium waves is particularly good, and in daylight excellent results were obtained from Fécamp, Hilversum, Poste Parisien, Langenberg, and the two Brussels stations. On the least selective of the aerial tappings (A1) London Regional, at a distance of fifteen miles, extended from 340 to 380 metres and the National from 245 to 275 metres. No difficulty was experienced in receiving the Brussels No. 2 programme without the slightest trace of interference from London Regional. On long waves the range is equally good, and sufficient selectivity is provided to give easy separation of

FEATURES.

Type.—Open aerial four-valve table model battery receiver with modified Q.P.P. output stage and moving coil loud speaker. Provision for gramophone pick-up and external loud speaker.
Circuit.—Screen grid H.F. stage with band-pass input and tuned transformer coupling—grid detector with reaction—Q.P.P. output stage.
Controls.—(1) Tuning, with illuminated dial calibrated in stations and wavelengths. (2) Combined volume control. (3) Wave-range switch. (4) On-off switch. **Price.**—£11 17s. 6d. (complete with valves and batteries). **Makers.**—The Marconiphone Co., Ltd., 210/212, Tottenham Court Road, London, W.1.

Daventry and Radio Paris, but not quite sufficient to free Königswusterhausen from

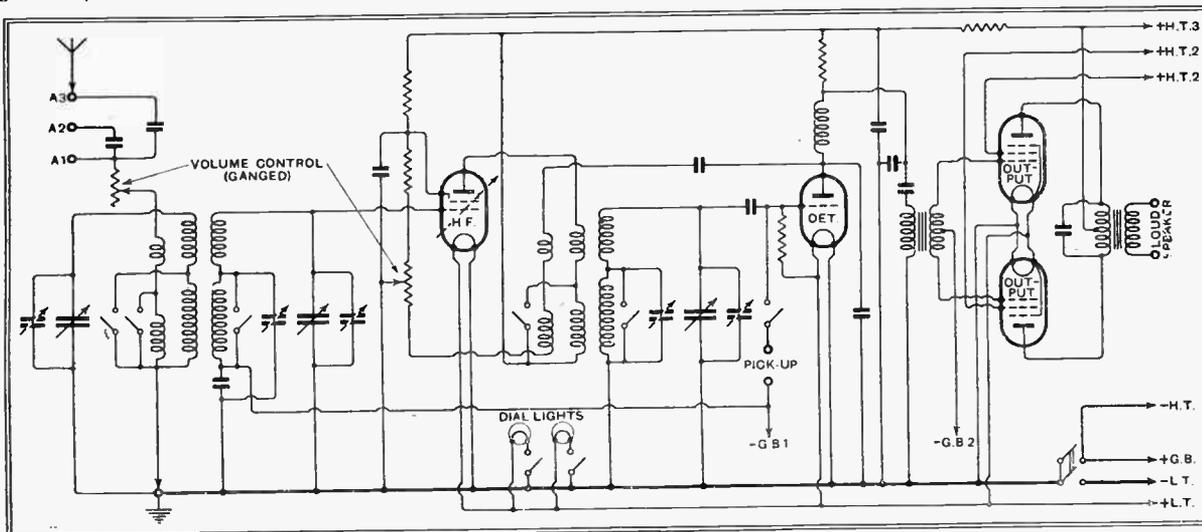


The Marconiphone Model 260 chassis. Careful disposition of the tuning coils has eliminated stray couplings without having to resort to screening boxes.

a background from the long-wave B.B.C. station.

Volume control is effected simultaneously at three points in the circuit—by reducing the aerial input, by lowering the screen-grid potential, and by reducing the current in the reaction coils coupled to the tuned H.F. transformer. It is interesting to note that a single potentiometer is used to govern the screened potential and the reaction current. The aerial volume control consists of a variable series resistance ganged to the screen grid and reaction potentiometer.

There are many points of interest in the chassis layout. The tuning coils, for instance, are not enclosed in screening cans, which would increase their H.F. resistance, but are carefully disposed in relation to one another to avoid stray couplings. The aerial band-pass coils are ar-



Complete circuit diagram. The volume is controlled by reducing simultaneously the aerial input, the screen grid potential and the current in the reaction coil by means of ganged resistances.

Marconiphone Model 260—

ranged below, and the H.F. transformer above, the base-plate. The three-gang tuning condenser is operated by a large-diameter translucent dial calibrated both in stations and wavelengths. It is steadied at the edge to prevent buckling by two felt-lined guides and is viewed through two adjacent windows in the escutcheon plate, which is illuminated by dial lights controlled from the wave-range switch. The on-off switch

interrupts both the H.T. and L.T. circuits, and is operated by a subsidiary control concentric with the main tuning knob.

The cabinet is of good quality, and the design is arranged so as to give ready accessibility to valves and batteries. A point which is typical of the thought which has been put into the whole design is the provision of a paxolin-lined metal container to isolate the L.T. accumulator from the H.T. battery.

mock-technical Press has become almost nauseating.

Like you, I can find plenty about which to criticise the B.B.C. They seem, too, to have a genius for perpetrating at odd moments something which is quite inane. But on the whole there is no question that the programmes are at a very high level indeed, amazingly good considering how much time there is to fill. And that is probably at the root of the whole matter. Too much time.

Brighton.

A. H. BRIDGES.

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, London, S.E.1, and must be accompanied by the writer's name and address

Why Kill the Goose . . . ?

MAY I commend very heartily your editorial comment "Why kill the goose . . . ?" in the last issue of *The Wireless World*.

It is, as you say, an absolute fact that the service given by the B.B.C. is quite the best to be found anywhere in the world. It seems to me that it is unreasonable to expect to be amused or interested at all moments of the day, and, after all, the grumbler has only to switch off or switch over.

At any rate, let us be thankful that our programmes are not continually interrupted by eulogies of Messrs. So-and-So's "Cure-all Pills," or whatever it may be.

By all means let us suggest to the B.B.C. improvements in this or that detail, but at the same time let credit be given to them for a very fine general service.

Good luck to *The Wireless World*, not forgetting "Free Grid" (long may he continue to criticise!).

A. I. BRAY.

London, N.3.

Programmes

MAY I, as a constant reader of *The Wireless World* since its first issue, take exception to the article entitled "Programmes" in your "Editorial Comment" published in the current issue.

I have always admired your outspoken and unbiased comments, and you may justly claim to have done more to help and encourage the wireless industry than any other periodical.

However, you cannot always correctly express the views of the majority, and I am afraid that, in the case of this particular article, you have shot rather wide of the mark.

You ask, "Why kill the goose?" Suppose that the goose is seriously ill and likely to die in any case unless it receives expert attention? Surely, despite a multitude of "quacks," we would pay attention to the advice of the specialists.

To anyone in possession of such a receiver as your "New Monodial Super," your statement that "no country in the world can expect better entertainment transmission than we get here" must appear incorrect. And, if one has the fortune to possess a S.W. adapter to use in conjunction with that receiver, your statement is open to ridicule.

I do not wish to occupy your valuable space in making comparison between the B.B.C. and foreign programmes, but will suggest that you invite the views of "long-

distance listeners." You will surely receive an eye-opener.

Naturally, those who have never owned a long-range receiver or only possess one of poor performance or quality, are totally unqualified to make any programme comparison whatsoever.

As a designer of receivers, I have, without exception, always been requested to design receivers which are capable of good long-distance reception, and, in several cases, to the total exclusion of the programmes transmitted by the omnipotent B.B.C.

There will be much sleep lost by designers after January, 1934, when the Plan de Lucerne comes into full operation. We shall be certainly hard put endeavouring to explain to a non-technical public the reason why, for instance, "Jerusalem the Golden" persists in his whistling accompaniment to programmes emanating from the North Regional. One has only to glance at the new wavelength plan to note that Great Britain has again been left "to hold the babe." Yet this plan was agreed to by representatives of the Post Office and the B.B.C.

Were it not for continued criticism, I shudder to think of the type of so-called programmes of entertainment and the quality thereof which would be polluting the air.

Regarding the subject of quality. I need only refer you to letters and articles, written by experts, published in *The Wireless World* from time to time, and you can but admit that many of the B.B.C. transmitters are very much "down." Further, I need not refer to the adverse criticism from the Colonies regarding the programmes and quality transmitted by our famous S.W. stations.

Yes, sir, a "cure" is needed, and it is only when our goose is placed on show with the rest of the flock that notice will be taken of its ills, and then, with co-operation, we may save its life.

In conclusion, I consider the mere fact that a Broadcast Listeners' Protection League is already in the course of formation in the North of England is ample proof of the views of the public in general.

Liverpool.

"ALTRUIST."

I CANNOT tell you how your editorial on the subject of B.B.C. programmes has delighted me. As usual, *The Wireless World* stands for sense and reality, and refuses to pander to cheap popularity. The drivel, which is called criticism, that has been appearing lately in the lay and

Television

MY letter on television seems to have aroused some little interest, unfortunately only in the South, which is somewhat adequately catered for, and allows some scope for your correspondents to acknowledge their indebtedness to the B.B.C. for their television transmission.

My query as to "What is this television?" still remains very unsatisfactorily answered, except to the extent that some people who pay 10s. a year are catered for, and others who also pay are not catered for, which is quite typical of the usual treatment of the North by the B.B.C. (Have you ever heard the Northern Studio Orchestra? If you have, my point will be emphasised!)

I have been to most of the Wireless Exhibitions in the South, and all those in the North, and my nearest approach to seeing television was standing in a queue at the Ideal Home Exhibition, when I decided that life was too short even to wait in that.

I thank the Edison Swan Co. for their literature. It is interesting, but the Penines are high and full of iron, so for the present my experiments must wait!

Your other correspondent's acridly personal letter can be treated with the contempt it merits. There are many obvious replies, so obvious that I will refrain from using them. LOUIS J. WOOD.

Hon. Sec., Halifax Wireless Club
(since 1919).

Deaf Aids in Cinemas

WITH reference to "Free Grid's" claim that cinema installations for the deaf were fitted in accordance with his suggestion in your issue of March 24th, we would like to point out we have installed cinema sets for the Gaumont British Picture Corporation and other circuits for over eighteen months now.

More are being installed daily, as the system is proving of great benefit to the cinemas and their deaf patrons.

London, W.1.

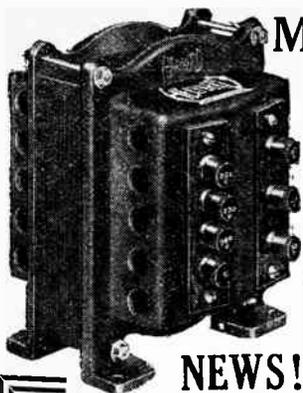
"ARDENTE."

Continuity of Electric Supply

AT a time when many electricity supply companies are being converted to the standard frequency and voltage of the national "grid," I think many consumers would be interested if any of your readers could throw light on the obligations, if any, incumbent on the suppliers in respect of continuity of supply.

This village has been on the standard frequency for five years, and there are interruptions at the rate of two or three a fortnight. Of short duration, these breaks do not usually come at a time when light or radio reception is affected, but it is a source of "inconvenience" in respect of clocks and cookers, irons, etc.

Protest to the company does not elicit any satisfactory reply. GERALD LUSH.
Somerset.



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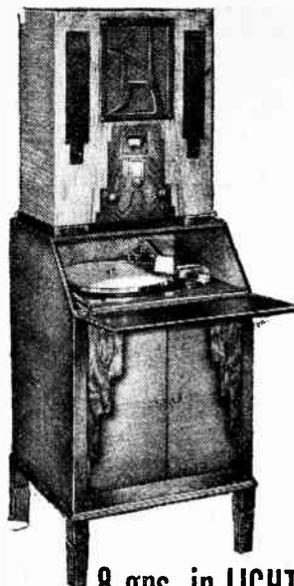
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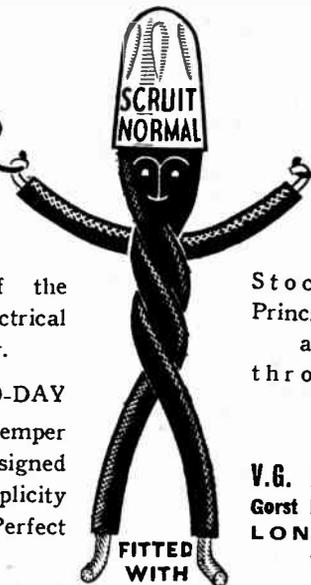
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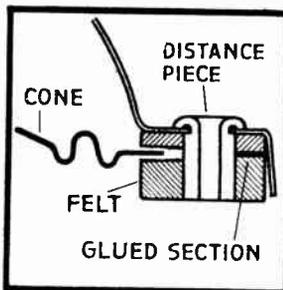
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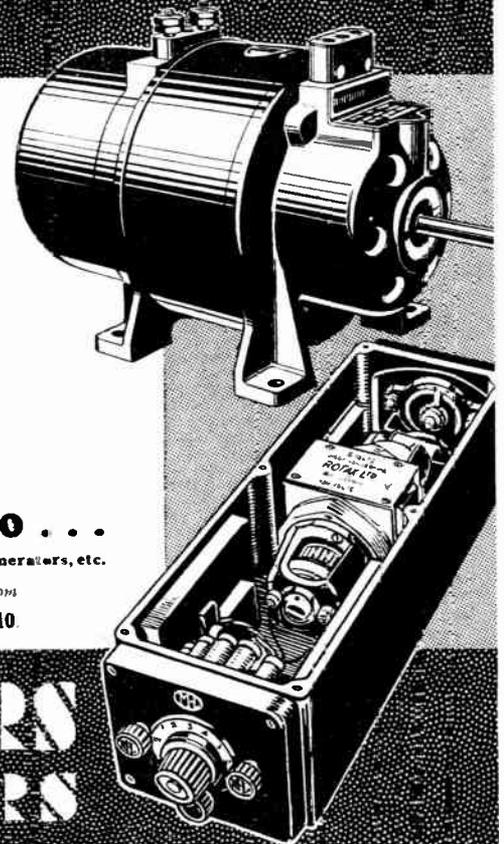
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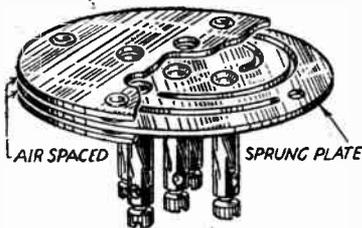
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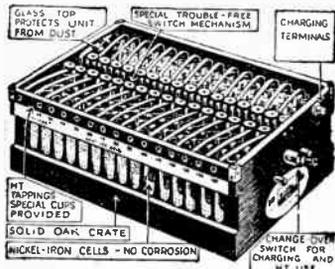
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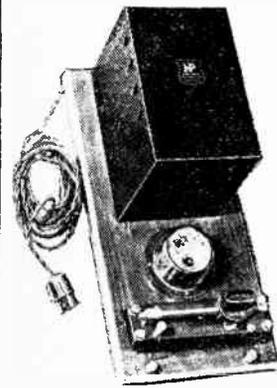
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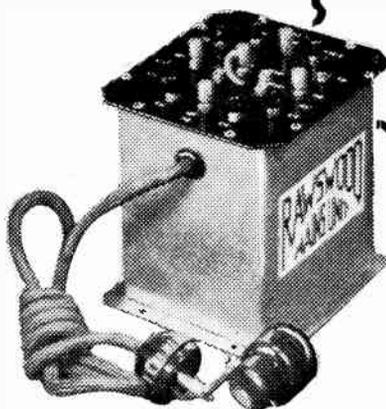
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500v.	120 M/a.	4v. 2.3a.,	6v. 2.4a.,	4v. 2.5a. or 4v. 4.5a.	47/6
400v.	120 M/a.	4v. 2.3a.,	4v. 4.5a.,	4v. 2a.	43/6
350v.	120 M/a.	4v. 2.3a.,	4v. 4.5a.,	4v. 2a.	37/6
300v.	80 M/a.	4v. 2.3a.	4v. 3a.,	4v. 1a.	32/6

Smoothing & Output Filter Chokes

15 Hys.	100 Mmps.	250 ohms res. (approx.)	15/-
30 Hys.	30 Mmps.	750 ohms res. (approx.)	11/-
30 Hys.	75 Mmps.	400 ohms res. (approx.)	12/6

Send for Illustrated Folders—

RAWSWOOD ELECTRICAL CO., Preston New Road, **BLACKPOOL.**

Phone: Marton 188.

Grams: Rawswood, Blackpool.

THE

WIRELESS ENGINEER

AND

EXPERIMENTAL WIRELESS

The Journal for Professional Engineers
and Advanced Wireless Experimenters

Monthly
2/6 net

Annual Subscription
32/- post free

ILLIFFE & SONS LTD., Dorset House, Stamford Street, London, S.E.1 W.W.2

● A NEW OSBORN RADIO CABINET



Model No. 259. An Ultra-Modern Radiogram. Cabinet in beautifully figured walnut. Mouldings and base lacquered black to give contrast to figured Walnut. 3' 2" high, 1' 9" wide 1' 5" deep. Height between motor-board and baseboard 12". Height for pick-up 4 1/2". Opening at back. Top panel above fret will be cut to your specification—a paper pattern must be forwarded. Baffle included. Hand polished. Takes any type of gramophone motor—electric or spring models. Accommodates baseboard 18" x 14" or smaller. Hole in baffle cut to your specification. **PRICES:** Machined Ready to Assemble, Kit of Parts: Oak £1-15-0. Walnut or Mahogany £2. Assembled Ready to Polish: Oak £2-10-0. Walnut or Mahogany £2-15-0. Assembled and Polished: Oak £3-5-0. Walnut or Mahogany £3-10-0. **ALL MODELS CARRIAGE PAID.**

CHAS. A. OSBORN,

Dept. W.W., Regent Works,
Arlington Street, New North Road,
London, N.1. Tel.: Clerkenwell
5095. Showrooms: 11, Essex Road,
Islington, N.1. Tel.: Clerkenwell
6531.

**Osborn Super Acoustic
Baffle Board.**

Prevents "m" speaker worry.
Any size hole cut free, 18" x 18"
9" x 24" x 2 1/2" - 30" x 30" 8"
45" x 36" 11 3/4". Carriage paid
U.K. Send for free sample.

WRITE FOR
CATALOGUE.

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

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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; 280, Deansgate, Manchester, 3; 290, 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.

- C**ROSSOR Four S.G. Mains and Speaker; best offer. BCM, Workisales, London, W.C.1. [3395]
- M**ONODIAL 6-watts Superior Model; cost £34, offers; exchange.—"Garlinge," Merryhill Rd., Bushey. [3324]
- A.C.** Monodial to Specification, Magnavox speaker, perfect; £16.—Kendrick, Barr Common, Walsall. [3303]
- C**ROSSOR S.G.3, 1933 model. £3; Farrand inductor speaker. 12/6. Skan, 70, Chudleigh Rd., S.E.4. [3318]
- M**ARCONI 15-guinea 5-valve Superhet, A.C. best offers; Monodial chassis, A.C. £6; both unused.—G. Grove St., Wellingborough. [3336]
- A.C.** Monodial Radiogram, output 6 watts, Sonoborde Senior dual speakers, oak cabinet; bargain. £27.—Box 7873, c/o The Wireless World. [3326]
- P**HILIPS 1933 A.C. Super Inductance, 5/1, microphoner tuning, as new; bargain, £12, cost £24 3. J. Noel, 3, Grenville St., Brunswick Sq., W.C.1. [3280]
- C**LIMAX 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.
- O**STER-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]
- M**ICHAEL 5v. Suitcase Portable, excellent condition. £4; battery 3v. gramophone amplifier, W.W. circuit, 35/-; D.C. eliminator, 2 variable and 1 fixed taps, fitted universal meter, best components, 30/-.—Kyles, 100, Park Rd., Hove. [3334]
- "WIRELESS WORLD"** New Monodial, built and supplied as kits; your old Monodial converted, including components and valves, £11; Trade supplied.—London Radio Development Services, Ltd., 56, Hazel Rd., Kensal Rise, N.W.10. "Phone: Willesden 0385. [2987]
- A**RMSTRONG 1934 4-valve Chassis, screen grid, pentode output, incorporating gramophone amplifier, scientifically designed for latest universal valves, working on direct or alternating current, remarkable station puller, magnificent tone; price 75/-; 2 years' guarantee; 14 days' approval, Armstrong Manufacturing Co., 100, King's Rd., N.W.1. [3321]

ACCUMULATORS—BATTERIES.

FEEDE Your Wireless with Fuller High Tension Accumulators, capacity 6,500 milliamps, 120 volt; delivered free on first payment of 7/6; lists free.—Leslie, Radio, Catford, S.E.6. [3319]

MAINS EQUIPMENT

- V**ORTEXION, Wimbledon, for 99.9% reliable transformers.
- I**F You Haven't Tried Them Yet Ask Someone who has, or call and inspect complimentary letters.
- A**LL Standard Models Delivery by Return; all secondaries centre tapped.
- G**UARANTEED 12 Months, and within 5% normal and 2½% super models, neat shrouding, with detachable feet, as used by Government Departments, etc., etc.
- V**ORTEXION.—New monodial transformer, 200-250, 50 cycles, 425-0-425, 120 m.a., 4v. C.T. 3a., 4v. C.T. 1a., 4v. C.T. 1a., 4v. C.T. 6a., screened primary, open type, 20/-; shrouded, 22/-; super shrouded, 26/-; 10 henry choke, 5/6; 20 henry choke, 8/6.

(This advertisement continued in third column.)

NEW NOTES IN RADIO

THE SHOW IS OVER AND NOW YOU WILL BEGIN TO THINK ABOUT YOUR WINTER'S ENTERTAINMENT

YOU will never tire of your Radio if it sounds realistic, and nobody has ever been able to get **REALISM** except from a

HARTLEY TURNER LOUD SPEAKER

D.C. Model **£7.7.0**
A.C. Model **£8.8.0**

DEMONSTRATIONS DAILY AT OUR OWN ROOMS, AND AT

LONDON RADIO SUPPLY CO.,
11 OAT LANE, NOBLE STREET, E.C.2.

Come and hear the Promenade Concerts any Evening.

If you cannot call write for our 32-page technical booklet "NEW NOTES IN RADIO" sent for a 1d stamp.

HARTLEY TURNER RADIO LTD.,
THORNBURY ROAD,
ISLEWORTH, MIDDLESEX.

Tel: Hounslow 1854.

EMPIRE STATION RECEPTION

SCOTT SESSIONS "EQUATOR - SUPER"

(Battery Operated Model)

WORLD - WIDE orders or enquiries are arriving by every post. Send for full details or refer to the "Wireless World" Test Report — July 14th issue.

SCOTT SESSIONS & CO. Radio Engineers

MUSWELL HILL, LONDON, N.10

Cables: "Tropiset, London."

Contractors to H.M. Government Depts., &c.

BOOKS on WIRELESS

Write for complete list to

ILIFFE & SONS LTD.

Dorset House, Stamford St., London, S.E.1. w.w.1

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 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.

Mains Equipment.—Contd.

(This advertisement continued from first column.)

- V**ORTEXION.—Ferrocatt 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.
- V**ORTEXION.—200-0-250, 4v. 1 to 2a., 4v. 2 to 4a.; open type 10/6, shrouded 12/6; post 9d.
- V**ORTEXION.—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/-.
- V**ORTEXION.—2½-watt Monodial A.V.O. model; open type 14/6, shrouded 16/6; post 1/-.
- V**ORTEXION.—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/-.
- V**ORTEXION.—250-0-350, 120 m.a., 4v. 2 to 5a., 4v. 2 to 4a., 4v. 2.5a.; open type 14/6, shrouded 16/6.
- V**ORTEXION.—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/-.
- V**ORTEXION.—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, 2% regulation; 35/-, shrouded, with terminals, less terminals, 30/-, open type 26/-; post 1/3.
- V**ORTEXION Auto Transformers to B.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.
- V**ORTEXION 600-watt Transformers; £4/10, carriage free.
- V**ORTEXION 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.
- V**ORTEXION 200v. 30 m.a. Eliminators, 110 or 220 input with 4v. 4a. winding; 37/6.
- V**ORTEXION.—Transformers made to your specification. All standards in stock. "Phone all hours.
- V**ORTEXION (S. A. Brown), 182, The Broadway, Wimbeldon. Tel.: Liberty 2814. [3117]
- S**ERADEX Radio Products.—Specified for "Wireless World" Monodial Superhet and Modern Battery Four.
- S**ERADEX Filter Condensers, type B, 400v. working, 1.0 mfd., 1/6; 2.0 mfd., 2/3; 4.0 mfd., 4/5; 4x4 mfd., 7/3; 8x8 mfd., 14/6.
- S**ERADEX Block Condensers, non-inductive 800v. D.C. test, 6 mfd. and over subdivided to customers' needs, 1/0 per mfd. approx.
- S**ERADEX V.R.328a Battery Charger, charges up to 200 D.T.G. cells per week; complete, £3 5; illustrated catalogue of many types for stamp.
- S**ERADEX D.C.1000 Charger for D.C. Mains, charges up to 120 cells at up to 1 amp.; £2 5.
- S**ERADEX Battery Eliminators are Housed in Steel Cases, and fully comply with the regulations of the supply authorities, suitable for standard A.C. mains; absolutely hum-free; Westinghouse rectified.
- M**40 Eliminator, has power tapping 200v. 40-50 ma., 1 continuously variable from zero, 1 fixed 60-80, 1 fixed 150v., also L.T. for valve heaters, 4 volts 4 amps.; £4/12/6.
- S**ERADEX Mains Transformers.—Super type with engraved terminal strips, screened primaries, suitable for 200 to 250-volt A.C. mains; heavy aluminium clamps fitted to all models.

(This advertisement continued on next page.)

WATMEL

POTENTIOMETERS

GIVE THE BEST CONTROL

It is obvious that if a firm concentrates on one type of component it is going to turn out a better job than a firm that dabbles in many. This year we are concentrating on potentiometers, and you may rest assured that when you purchase a Watmel potentiometer you are obtaining the very best from a firm that specialises in this type of component.

Here is illustrated the Watmel Type 1 Potentiometer.

Any resistance up to 50,000 ohms (Standard Wiring).

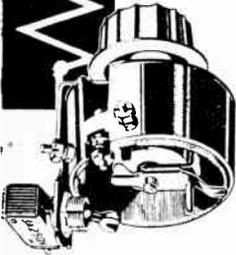
Price 5/6

With quick break Switch

Price 7/6

Please write for free fully illustrated catalogue that will give you interesting information on Volume Control.

Special models made for manufacturers and for the Export Market. Please write for further particulars.



Watmel

POTENTIOMETERS

GIVE THE BEST CONTROL

WATMEL WIRELESS CO. LTD.,
Imperial Works, High Street, Edgware.

Telephone: Edgware 9323. (M.C.91)



We're Fluxite and Solder—the reliable pair; Famous for Soldering—known everywhere!

At fixing WIRELESS we're expert—nothing more—nothing less! THAT is the reason—FOR this S...O...S!

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

All Ironmongers sell Fluxite in tins: 4d., 8d., 1s. 4d., and 2s. 9d. Ask to see the FLUXITE 3 POCKET SOLDERING SET—complete with full instructions—7s. 6d. Ask also for our leaflet on 1. ARDENING STEEL with Fluxite

FLUXITE LTD.,
(Dept. W.W.) ROTHERHITHE, S.E.13

FOR ALL REPAIRS!



Mains Equipment.—Contd.

(This advertisement continued from previous page.)

W.H.3. for H.T.8 or H.T.9 240v. 200 ma., tapped 200v., with 4v.3-5a. and 4v.2-1a. C.T.1; 21/-; stripped type. 17/6.

V.T.7. specified for Monodial Superhet. 425.0-425v. 120 ma., 4v.3a., 4v.1a., 4v.1a., 4v.6a., fitted primary terminals, and colour coded leads; £1/17/6.

1934 Catalogues Available Shortly; get on our mailing list—Trevor Pepper, Wakegreen Rd., Birmingham. [3338]

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

A.C. Charging Plant (valve) unused; List £18/18; offered £6/18/6.—Jersey, Cunmor Hill Estate, Oxford. [3202]

BATTERY Charger, input A.C. mains, output 80 volts 6 amp., £4/19; motor armatures, rewound, 12/6.—A.C.R. Co., 230, High St., Camden Town. [3311]

180 Accumulator Chargers, 1/2 amp., 2-6v., in ventilated metal case, with mains flex (Westinghouse rectifiers), 10/8; 1 1/4 amp., 21/-; 7 days' trial.—Ardlen Agency, Wollaston, Wellingborough. [3201]

POWERITE Mains Transformers, a real engineer's job with 3 years' guarantee; competitive prices; lists free; trade enquiries invited.—Nasco Wireless Products, Pitville works, Tower Rd., Aston, Birmingham. [3306]

A.C. or D.C. Chargers for 2 to 200 Cells at Low Prices; state requirements; dynamos and rotaries in stock, all sizes; Brown's Generator, battery superchargers for H.P. 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]

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 New Monodial Super Model, 425.0-425v. 120 m.a., 4v. 3a., 4v. 1a., 4v. 1a., 4v. 6a., 17/6, post 1/3; super model, 24/-, post 1/3; chokes for same, 10b., 20b., 16/6 the pair, post 1/3.

HOYNE'S.—250.0-250v. 60 m.a., 4v. 1-2a., 4v. 2-4a.; 10/-, post 9d.

HOYNE'S.—250.0-250v. 60 m.a., 4v. 1-2a., 4v. 2-4a.; 4v. 1a.; 12/6, post 1/3.

HOYNE'S.—350.0-350v. 60-70 m.a., 4v. 2-3a., 4v. 3-4a., 12/6, post 1/3, Ferrocart III model.

HOYNE'S.—350.0-350v. 70-80 m.a., 4v. 2-3a., 4v. 3-4a., 4v. 1-2a.; 15/6, post 1/3.

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 1/3.

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. [3107]

CABINETS.

RADIOGRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon. [1686]

CHEAP Cabinets for Radio Sets, loud-speakers, and radiograms, hundreds to select from; no catalogues.—H. L. Smith and Co., Ltd., 289, Edgware Rd., London, W.2. [2958]

DYNAMOS, ETC.

CHARGING Plant, motor generator, 70 volts 10 amps. —Particulars, Crowther, 106, Mole-worth St., Rochdale. [3330]

ROTARY Converters, E.D.C. Co.'s manufacture, as new, D.C. to A.C., with output of 220 watts.—Apply Electricity Works, Newquay, Cornwall. [3335]

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. [3225]

B.T.H. Repulsion Start Induction Motor, 100-125 or 200-250v. 50 cycles, 1 phase, 1-h.p., 1.425 r.p.m., unused condition, except £4; another 25 cycles, £4/10; B.T.H. motor generator set, 100-250v. A.C. to 200-250 D.C., approx. 200 watts, £6; several rotary converters, cheap.—Johnson Engineering Co., 26, Great Portland St., W.1. [3312]

GRAMOPHONES, PICK-UPS, ETC.

£4 19/6.—B.T.H. electric gramophone, 100-125, 200-250v., 40-50 cycles, senior P.U. rest, needle cups, volume control, auto. stop, cabinet, 20 records.—73, Biggin Hill, Upper Norwood, S.E.19. [3307]

LOUD-SPEAKERS.

FERRANTI D3, 200-250 volts, 25/-.—Jasper, 3, Eaton Rise, Ealing, W.5. [3331]

B.T.H. RK Moving Coil Speakers, guaranteed new, unused, manufacturers' surplus, original price.

6 Guineas, highly sensitive and wonderful tone response, will handle up to 12 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.—O. H. Seekamp, First Avenue House, High Holborn, London, W.C.1. 4th floor; office No. 582a. Phone No.: Holborn 6609. [1425]

UNPRECEDENTED OFFER!

YOUR SET OF PARTS ON HIRE-PURCHASE

FREE

OF INTEREST.

I am making this amazing offer to all my customers for this month.

"THE WIRELESS WORLD"

MODERN BATTERY FOUR.

Parts specified by designer.

SET 1. Complete set of parts (Except Valves, Speaker, Batteries and Cabinet).

Cash with Order, C.O.D., £8 - 6 - 9 or H.P. H.P. Terms 23/9 Deposit; 11 Monthly Payments of 13/-.

SET 2. Complete set of parts with Valves & Speaker (No Batteries or Cabinet).

Cash with Order, C.O.D., £12 - 12 - 3 or H.P. H.P. Terms 32/3 Deposit; 11 Monthly Payments of 20/-.

Any of "The Wireless World" Sets can be supplied on the same terms, I can supply all your requirements in Radio or other Electrical Equipment.

WRITE AT ONCE TO

R. H. WRIGHT,

Electrical Engineer,

BROADWEY, WEYMOUTH

NOW READY

The completely revised 1934 EDITION OF RICH & BUNDY 24 - PAGE CATALOGUE.

OVER 100 Models of Mains Transformers and Power Chokes fully described.

Valuable information and numerous illustrations.

FREE Ask for 1934 Catalogue "W." Free by return of post.

RICH & BUNDY LTD., Transformer Manufacturers, New Road, Ponders End, Middx.

Phone: Enfield 9777

Sole Distributors I.F.S.: KELLY & SHEEL Ltd., 47, Fleet St., Dublin, C.1.

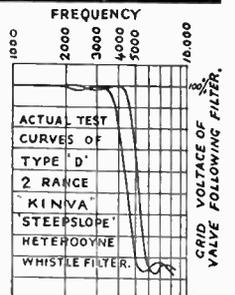
THE NEW "STEEPSLOPE" 2-RANGE WHISTLE & SIDEBAND SPLASH FILTERS.

CHOICE OF TWO "CUT-OFFS" ON EACH FILTER, AND SUITABLE FOR DET. or L.F. ANODES with INSTRUCTIONS 7/6 & post.

Lists of 11 useful products on request.



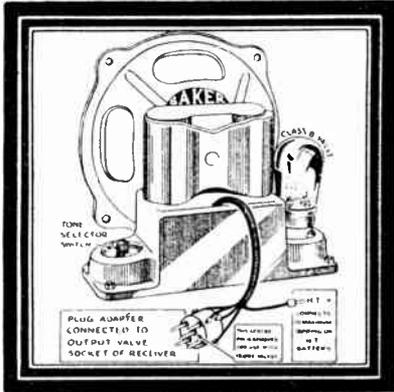
POSTLETHWAITE Bros. KINVER, STOURBRIDGE



Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

CLASS B CONVERTERS

Now—MAINS QUALITY and VOLUME from your ★ battery set!



★ with hardly any increase in H.T. consumption . . . !

The many undoubted advantages of Class 'B' Amplification are already too well known to the readers of the "Wireless World" to need enlarging upon here, and in presenting to you these two NEW "BAKER" productions we do so with the utmost confidence that here is Class 'B' conversion at its best. No makeshift 'anything-to-get-the-price-down' jobs; but like the rest of the "PERMAG" family, made of the best materials by men who take a pride in their work, and backed by EIGHT YEARS' EXPERIENCE in the building of fine reproducers.

The Class 'B' Speaker-Amplifier Comprises special "PERMAG" 75/- reproducer and unit. TWO less valve connections only.

The Class 'B' Conversion Unit Can be used with ANY 37/6 speaker and only THREE less valve connections to make.

Ask your dealer to demonstrate these NEW "BAKER" productions to you, or if you prefer, fill in and post the coupon below.

BAKER

BAKER'S "SELHURST" RADIO, 75-77, Sussex Road, S. Croydon, Surrey.

Without obligation send me full details of:

The Class 'B' Speaker Amplifier
The Class 'B' Conversion Unit
Complete range of "PERMAG" Reproducers
Pat. in against item which interests you most.

Name
Address

My DEALER'S name and address is:

COUPON

Loud-Speakers.—Contd.

PAIR Magnavox Dual Compensated Speakers: 34 : approval. 53, Toston Drive, Wollaton Park, Nottingham. [3316]

"BAFFAMP"—New amplifying box baffle unit, latest invention for your speaker, greatly improves tone and power, without resonance; 12in., 12/6; 15in., 17/6; 18in., 21/6; 24in., 25/6; direct from factory, carriage paid.—2, Chatham St., Ramsgate. [3216]

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

27/6 !!!—6-volt D.C. speakers, as above; £2/7 6 speaker as above for 100-250 volts A.C., complete with field rectifier.

B.T.H. Cinema Type Pick-ups, brand new, 17/6, carriage paid, cash with order, or e.o.d. Send for list, Ward, 12, Tredgar Rd., Bow, E.3. Tel.: Advance 3668. [3328]

P.M. Moving Coil Speakers, in beautifully finished 24in. mahogany cabinets, with attractive flare, S.G. Brown's "Cubis" high resistance 15 guinea model, with output transformer, will handle up to 12 watts, but are equally suitable for small receivers, tone response wonderfully superior to cheap speakers now on the market; these speakers were made by the world famed loud-speaker manufacturers, S. G. Brown, and are an unprecedented bargain; all new and in original wrapping, our price 50/- carriage paid.

PERMAG'S Blue Spot 100! Inductor Speaker, list price 39/6, reduced to 32/6; all guaranteed and in original cartons, absolutely the best value in loud-speakers today; our price 12/6 carriage paid.

TRADE Enquiries Invited.—Radio and Gramophones, 245, Tottenham Court Rd., W.1. Phone: Museum 0915. [3313]

CHAL ELECTRIC offer Brand new boxed set manufacturers' surplus Rola Speakers, all fitted hum buckers, state if Power or Pentode Transformer F6 110-175V, D.C. (2,000 ohms); 90-130V, D.C. (2,500 ohms); 150-200V, D.C. (4,700 ohms); 200-250 D.C. (6,500 ohms) listed at 35/6, at 18/6; F7 voltages as above list, 47/6, at 25/6 each; permanent magnets F6P.M. listed at 49/6, at 28/6; F7P.M. listed £3 at 33/6; Ultra 95P.M., a real hefty job with Power-Pentode transformer listed £4/15, at 47/6; Rola Dual Compensated (2) F6 list £3/10, at £2; (1) F6 and (1) F7 list £4/5, at 47/6.—All goods Carriage Paid, Cash with Order, or C.O.D.—Chal Electric, 6, Conduit St., London, W.1. [3221]

PICTURE RECEIVER APPARATUS.

TELEVISION Components, constructor 10d., motor armatures, rewound, 12/6.—A.C.R. Co., 230, High St., Camden Town. [3310]

VALVES.

GUARANTEED Brand 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.H.F.s, 41M.H.F.s, P.M.2As, L.P.2s, 220Ps, 215Ps, D.H.s, 41M.H.L.s, M.H.L.s, A.C. H.L.s, A.C. 211.L.s, 354V, D.C. 3H.L.s, 1821s, M.L.4s, A.C. Ps., 164Vs, 104Vs, P.M. 2As, 442B.L.s, 1807s, 84V.B.s, 84Vs, M.S.4Bs, M.S.G. H.A.s, A.C. S.G.s, A.C. 82, 41M.S.G.s, D.S.B.s, 215 S.G.s, P.M.12s, P.M.12As, Pen.4Vs, V.M.8.4s, M.M.4Vs, P.T.41s, P.T.41Bs, D.P.P.s, A.C. Pens., 620Ts, 680P.

All the Above Valves at Full List Prices; prompt delivery; sent for list.

NEWMAN, 303, Roman Rd., E.3. [2892]

All Types of Brand New American Valves in Stock, first class makes: 247s, 235s, 224s, 236s, 237s, 238s, 245s, 214s, 12 : 227s, 226s, 280s, 245s, 9 6 : 242s, 232s, 11 : F.X.210s, 15 :

U.X.250s, 7 watts output, 16 : 281s, 14 6; delivery send telegraph money order.

SEND for List, post paid, cash with order or e.o.d.—Ward, 12, Tredgar Rd., Bow, E.3. Tel.: Advance 3668. [3320]

COMPONENTS, ETC., FOR SALE.

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 customers; goods tested for callers and guaranteed.

THE New Monodial Super, Ryalis 1-watt resistances, all terminals, 6 6; T.C.C. type 50 2 m.f., 2 : 1 m.f. ditto, 1 6; radio-phon 5,000 ohm volume control, with switch, 2 6; A.P.5 Ferranti, as new, 21/6; Ryalis' 20H. choke, 6 9; 10H. 8 9; to specification; Ryalis' 8 m.f. wet electrolytic 450v. working, 3 6; T.C.C. 8 m.f. dry, 3 6.

RYALIS Mains Transformers, 250v, 60 m.a. 4v, 1 amp., 4v, 3 amp., 10 6; 350v, 12 9, H.T.7 10 6, H.T.8 12 9, 4v, 3.5a, A.C. 8 9; chokes, 20H, 120 m.a. 8 9, 25H, at 60 m.a. 6 9; resistance 260 ohms, 40H at 100 m.a. 600 ohms 10 6; other models available.

TELSEN Multi Ratio Output Transformer, 6 : Telsen 3H, chokes, 3/6; Telsen 5.1, 3.1 Radiograms, 4 6; Westinghouse H.T.4 and A4 rectifiers with Varley transformer, £2; Cylton twin 0.0005 extender, double thumb, 15 6; ditto discs, S.M., 17/6; single extender, 7 6.

PAIR Varley P.P. Transformers, heavy duty, separate G.B. type, 25 : pair Polar twin S.M. thumb drive, 0.0005, complete, 12 6; pair B.L. Q.P.P. transformer and choke, 19 : second-hand; T.C.C. 2 m.f. 350v. working, new, 1 6; T.C.C. type 84, 1 m.f., 1 3; T.C.C. 4 x 4 m.f., 250v. working, 5 6; R.I. adjustable chokes, 200 m.a., 7 40H., 17 6; second-hand; Lewros and Wearite superhet. coils, 5 : R.I. 20H, 250 m.a. chokes, 15 : second-hand.

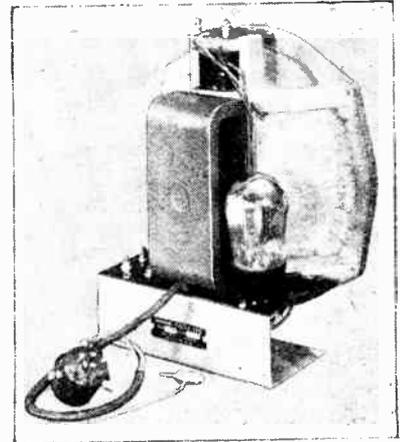
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SOUND

In Design, Performance and Price.

THE NEW SOUND SPEAKER

Patent pending.



PERMANENT MAGNET MODEL

PRICE 40/-

With Universal Pentode, Class B or Triode Transformer, Bass without Boom, Speech without mush.

THE SPEAKER ABLE BY REASON OF ITS SPECIAL CONSTRUCTION TO REPRODUCE WITHOUT UNWANTED RESONANCE.

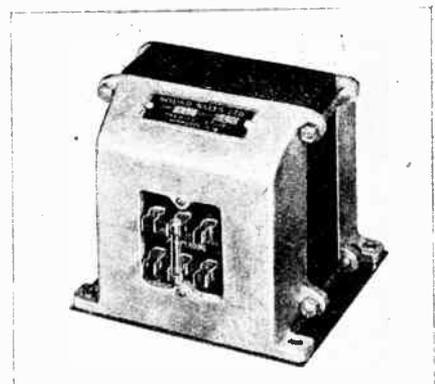
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CLASS B CONVERTER UNIT

incorporating the Sound M.C. Speaker with provision for extra Speaker.

£3 With tone and volume control £3-7-6

THE NEW POWER TRANSFORMERS



Recommended in the ALL METAL WAY, a model for every purpose, including the Monodial.

START THE SEASON WELL INFORMED WITH SOUND SALES NEW LIST OF 100% ALL BRITISH COMPONENTS, MAINS, CLASS B UNITS, SPEAKERS, ETC.

Descriptive Literature "W" on request.

Specified by the Experts.



SOUND SALES LTD., Tremlett Grove Works, Junction Road, Highgate, N.19

THE CHOICE OF THE CONNOISSEURS.

BOTH EXPERTS and CRITICAL LISTENERS ALIKE ARE LOUD in THEIR PRAISE OF THE NEW BURRELL A.C.3 RECEIVER.

LOOK AT THESE FEATURES—
H.F. PENTODE—
POWER GRID DETECTOR—
POWER PENTODE GIVING 4 WATTS OF UNDISTORTED OUTPUT.

Of this Receiver "The Wireless World" says
 "The Burrell A.C. Set is outstandingly good . . . it is in every way a sound and workmanlike job. The set owes its efficiency to careful choice of valves and attention to detail in design."



That "The Wireless World" should speak so highly of our Receiver is very gratifying to us.

It is also a guarantee to you of the excellent quality of our productions.

PRICE 12 GNS.

or
 Deposit £1-3-6 and 11 monthly payments of £1-3-0.

Trade Enquiries Invited.

BURRELL

RADIO, LTD.,

45, High Road, Willesden Green, London, N.W.10
 Phone: Willesden 4203.



GOOD RECEPTION MEANS

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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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 offer, on request.

BURNE-JONES & CO. LTD.
 296, Borough High St., London, S.E.1



SEND FOR LITERATURE OF
Silver Ghost
 LAMPLUGH RADIO LTD. COVENTRY.
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SPEED IN DESPATCH FOR THE TRADER
PERSEUS SUPPLIES ALL MAKES KITS OR PART KITS,
 or any components, valves or Speakers, at best discounts.
LATEST WIRELESS WORLD & OTHER JOURNAL KITS
 First in delivery. Latest information 120 pp. illustrated catalogue. 6d. Stamps.
Personal attention of the proprietor.
PERSEUS RADIO, W.W., Burton-on-Trent

Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)

TRANSFORMERS.—Ferranti A.F.4 8-, A.F.3 12/6, A.F.5 18 G, A.F.5c, A.F.5e, A.F.5f, A.F.5g 21/6, O.P.M.1c 16/6, O.P.M.2 13/-, O.P.M.4c 16/6; B1 choke, new, 13/-; Igranite 7-1 G transformer 7/6, A.F.6, 18/6, A.F.7c 22/6. We hold a large stock of first class radio apparatus, meters, resistances, condensers, heavy chokes, in addition to the goods advertised.

POLAR Star 3-gang Condensers, 16/-; with drive, 18/-; Radiophone 3-gang condensers, fully screened, with trimmers, Radiopack type, 9/-; Polar Uniknob 2 gangs, with drive, 7/6; Radiophone 4 gangs, 12/6; with cover and drive, 17/6; Radiophone 4-gang superhet. type, screened, with trimmers, Radiopack type, 9/-, post 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., Saturday 6 p.m., Thursday closed all day.

R. [3315]

PREMIER Summer Sale.

10% Discount on All Orders of £1 or Over.

MANY Prices Reduced Apart from Discount.

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/-.

EBONITE Sheets for Charging Boards, 24in. x 24in. x 3/8in., 5/- each.

T.C.C. Condensers, 2 mf., 750v. working, 3/6; 4 mf., 6/-; 4 mf., 400v. D.C. working (300v. A.C.), 4/-.

1 MF., 500v. working, 1/6; 4 mf., 200v. working, 2/6; 0.5 mf., 1,500v. working, 1/6; 4 mf. Electrolytic (aqueous type), 440v. working, 3/-, 8 mf., 3/6.

DUBILIER Condensers, 0.01 mica, 6d.; 0.01 mica, 1,000v. working, 1/-, mica.

POLAR 3-gang 0.0005 Condensers, split end vanes, totally screened, disc drive; 6/11.

AMSCO Triple-gang 0.0005 Condensers, with trimmers, 4/11.

ORMOND 0.0005 Condensers, 1/3; 2-gang semi shielded, 2/6.

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.

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; 200-0-200v., 4v. 1a., 4v. 3a., 4/6.

ALL Premier Guaranteed Mains Transformers have engraved terminal strips with terminal connections, input 20-250 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 Transformer, 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.

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.

FILAMENT Transformers, polished and engraved terminal boards, N.P. terminals 4v. 3-4a., 5/-; 10v. 3a., 6/6; 12v. 1a., 5/-; 4v. 4-6a., 6/6; 14v. 4a., 6/6; 22v. 1a., 7/-; 6v. 2a., 5/-; 9v. 1a., 5/-.

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, 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., 8/6, and 120v. taps, 42/6; with 4v. 4a. c.t. L.T., 7/6 extra.

HEAVY Duty Variable Resistances, wound on slate, 2,000 ohms 1/4 amp., 500 ohms 1/2 amp., 250 ohms 1 amp., 50 ohms 2 amp., 20 ohms 4 amp., any value; 3/6, a real bargain.

(This advertisement continued on next page.)

TRIX

QUALITY AMPLIFIERS

Here is the latest addition to our extensive range.



T.242
 Chassis Model

20 WATT UNDISTORTED OUTPUT.

Including valves - **£18.0.0**

Without valves - **£11.10.0**

Let us send you full details. Any model can be hired.

We also make the

"EXPLORA" SHORT-WAVE ALL-MAINS SUPERHET

Complete chassis and speaker **£24.10.0**

Battery Model also in production.

Eric J. Lever (TRIX) Ltd., 8-9, Clerkenwell Green, London, E.C.1.

Phone: Clerkenwell 3011 5. Grams: Trizodia, Smith, London, Contractors to H.M. Government.

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 Gns., and the Universal Avometer giving both D.C. and A.C. readings (40 cycles) 12 Gns. Delivered Terms indicated.

Fully descriptive pamphlets free on application.



The AVOMETER

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BRITISH MADE

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

**BUY
BLUE
SPOT**

**If you want
the best**

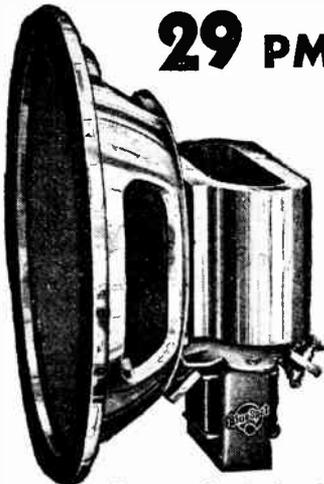
If you want quality, if you want reliability, if you want perfect performance, you MUST choose Blue Spot Loudspeakers—there are none to equal them.

**Extra Speakers give
Radio throughout
the House**

Don't be chained to one room because your set is there. Use your present set to better advantage. Install extra Blue Spot Speakers and have music everywhere.

BLUE SPOT MOVING COIL

29 PM



The most outstanding example of value for money. Transformer fitted with terminals for easy valve matching. Suitable for all usual output stages (Class B on request) Q.P.P. Pentode 2/6 extra. Powerful magnet. Moisture proof cone. New process speech coil. No warping or fouling in the gap. Even and balanced response. Pure clear tone. Standard model with transformer 2/6. Extension model less transformer 2/7. Cabinet models in oak standard 4/5. Extension less transformer 1/4. OTHER MODELS: 45P.M. 4/5; 99P.M. 5/6. BLUE SPOT Energised MOVING COILS (released mid-August). 27/DC 120 ohms, 27 DC 2,500 ohms, 27 DC 7,500 ohms. Price (all types) 2/6. Blue Spot Pick up Model 33, 35. Blue Spot Moving Iron Speakers: 66K 12/6. 66KC 17. Cabinet 31K oak 25/6. 66R 27/6. 66RB (Class B output) 30/- Cabinet Models oak 44R 39 6, 44RB 42/-.

BRITISH MADE

THE BRITISH BLUE SPOT COMPANY LTD.
94/96 Rossmar Street
Rosebery Av., London EC1
Telephone: Clerkenwell 3570
Distributors for Northern
England, Scotland and
Wales: H. C. RAWSON
(Sheffield and London), Ltd.
100 London Road, Sheffield
and at Manchester, New-
castle and Glasgow.

Catalogue W.W. 79 S. free on request.



Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)

BRITISH RADIPHONE Wire Wound Potentiometers, with mains switch incorporated, 5,000 ohms, 10,000 ohms, 50,000 ohms, 100,000 ohms, 250,000 ohms, any value; 5/6.

SPECIAL Offer T.C.C. Condensers, type 121, 2 mfd., 1,500v. working; 5/6.

PREMIER Eliminators, output 150v. at 30 m.a., S.G., and 100v. taps, with 4v. 3-4a. ct. 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.

ACCUMULATOR Chargers, 200-250 v/dts A.C., all incorporating Westinghouse metal rectifiers; 2, 4, and 6v. at 1/2 amp., 12/6; 2, 4, and 6v. at 1 amp., 17/6; 12v. 1a., 27/6; 6v. 2a., 35/6; 12v. 2a., 35/6; 12v. 1.5a., 30/6; 6v. 3a., 29/6; 12v. 3a., 42/6.

AMPLION High Inductance Chokes, resistance 2,500 ohms, 8 hys 60 m.a.; 5/6.

WESTINGHOUSE Metal Rectifiers: 120v. at 20 m.a., 6/6; 180v. at 30 m.a., 8/6; 8v. at 1/2 amp., 6/6; 6v. at 1 amp., 9/6.

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 FC 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 1/6; 500v. working, 1 mfd., 1/6; 400v. working, 3 separate 4 mfd. condensers, 8/6.

T.C.C. Condensers, 250v. working, 4x4x1 mfd., 3/6; 300v. working, 4x4x2x2 mfd., 6/6; 300v. working, 4x4x2x1 mfd., 6/6; 6x4x2x2x2 mfd., 375v. working, 6/11.

SPECIAL Offer of Wire Wound Resistances—4 watts, any value up to 10,000 ohms, 1/6; 8 watts, any value up to 15,000 ohms, 1/6; 15 watts, any value up to 50,000 ohms, 2/6; 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, 2/6; wire wound Clarostat Potentiometer, 50,000 ohms, 2/6; Colverstats, logarithmically wound Potentiometers, 6,000 ohms, 1/9.

FOR Callers only.—The following valves, guaranteed new:

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, 2/6.

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.

HARLEY Pick-ups with arm and volume control; 12/6.

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. [3289]

PEPPER'S Removal Sale.

CLEARANCE of all Surplus Stocks at Greatly Reduced Prices; offers considered; all goods sold under money back guarantee, on 3 days' approval; carriage paid over £2.

BAKERS Permag, 19/11; ditto cabinet model, 23/9; ditto Super P.M. model, 1951 type, £2 12/6; few P.M. speakers, similar to Wharfedales, with 3 ratio transformers, boxed, 17/6.

L.F. Transformers by Stal, Lissen, Ferranti, Croix, Pye, Premier, etc.; 1/5 each, 10/6 per dozen.

FERRANTI A.C. 3-range Portable Motors, 0-100, 200, 400v., 27/6; Weston 301, 1,000 ohms per volt, 250v. meter, cost £4, 37/6; Sifam 0.1,000 m.a., moving coil, listed 35/-, 9/11; Bulgin type 0-1 m.a., 13/6; ditto, 0-100 m.a., 10/6.

G.E.C. £9 10 Battery Eliminator, output 150v., 40 m.a., with 2 variables, complete; 26/6.

REGENTONE Wia S.G. Unit (Westinghouse rectified), 150v., 40 m.a., etc., with 4-volt 6 amp. L.T.; £1 15/.

FEW Only Westinghouse Rectified Eliminators, outputs as follows: Power 250v. (or 200v.) at 60 m.a., 2 variables, 1 fixed, 60-80, etc., with L.T. 4v. 6 amps; listed £7 19/6, new, £5 18/6.

COLVERN K21, 22, 23, boxed, 16/6; Lissen L.N.5181 superhet. coils, per set, boxed, 15/9; Binowaves type C, 3/11.

MANY Other Bargains, send your needs to

TREVOR PEPPER Wakegreen Rd., Birmingham. [5337]

GILBERT INDUSTRIES' Parcels.

"A" "B" "D," and Condenser Parcels, as advertised in issues August 4th and August 11th, still available by return of post.

GILBERT INDUSTRIES, Ltd., 519, London Rd., West-cliffon-Sea. [3263]

**PILOT
AUTHOR
KITS**
Exact to Specification

AS FOUNDERS OF CONSTRUCTORS' SETS IN 1919, we have established a world-wide reputation for the supply of Complete Kits and Part Kits for all "Wireless World" Set designs. An essential feature of this Expert Service to the Home Constructor is IMMEDIATE DELIVERY FROM STOCK—CASH or C.O.D.—of any exclusively specified or difficult to obtain components. Rely on PETO-SCOTT, he always gives fullest satisfaction to every customer.

NEW MONODIAL

FINISHED INSTRUMENTS.—Peto-Scott supply all "Wireless World" Sets as finished receivers, Aerial tested. Cash, C.O.D. or H.P. Send for quotation, no obligation.

RECEIVER KIT

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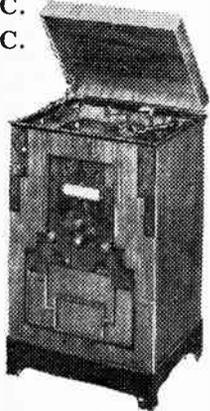
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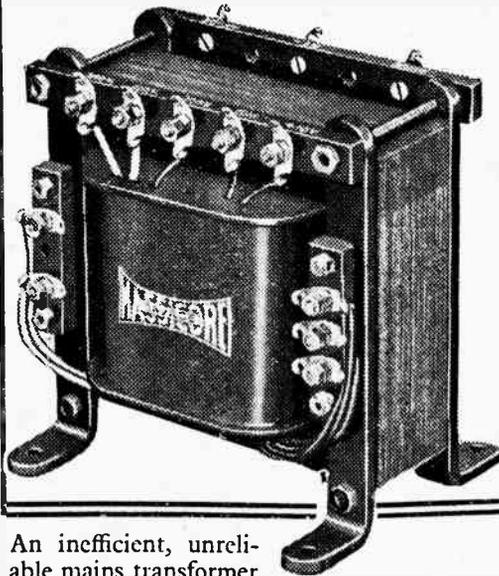
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G.R.C. Output Meter, type 486, perfect condition; cost 34 dollars, what offers?—13, Edgware Grove, Leeds. [3332]

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3,000 Siemens Halske Condensers, 0.1 to 10 mfd., from 500 to 3,500v. test; prices on application.

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DISPOSAL of Edison-Bell Radio Works.—Amateurs should write for complete list of speech amplifiers, eliminators, valves, and all new radio components, for sale at knock-out prices to clear quickly; 100 Plesky 3-gang condensers, 10/- each.—Write, Engineer, Edison-Bell Works, Glengall Rd., S.E.15, for list, or, better still—call and inspect. [3259]

CHAL-ELECTRIC Offers Brand New Set Manufacturers' Surplus, all carriage paid; cash with order or c.o.d.; Variable condensers, J.B. 3x3-gang 3-gang, complete with covers, trimmers, cut-short, light, disc drive, 17/6; 2-gang, complete, 10/-; Utility 2-gang, complete as above, £8 6; Polar 1933 Star 3-gang, complete as above, list 30 6, at 18/-; British Radiophone (10 only), superhet type, fitted as above, with full vision drive (424A), at 33/-.

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SOUND SALES, Ltd., for Class "B" Components. List "B.B." on request.—Tremlett Grove, Highgate, N.19. [0401]

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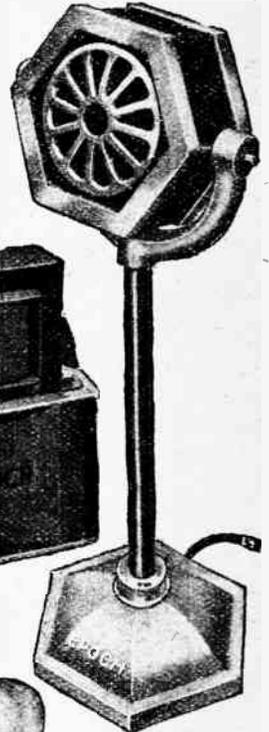
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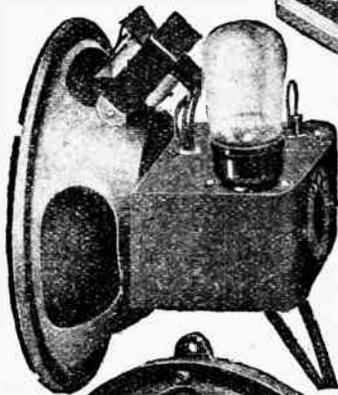
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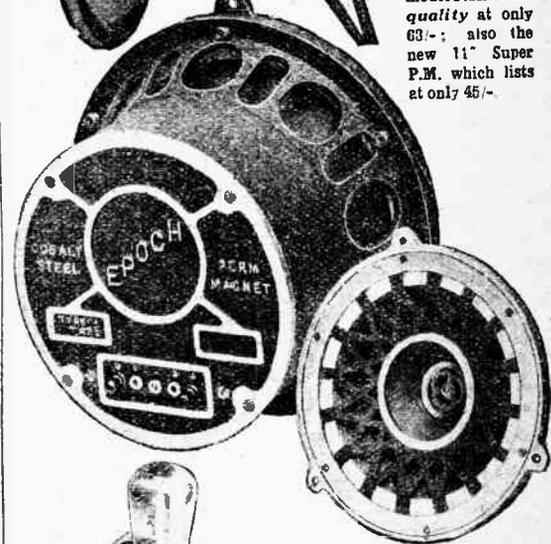


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PATENT AGENTS.

PATENTS and Trade Marks. British and foreign.—Gee and Co. (H. T. P. Gee, Member R.S.G.B. and A.M.I.E.E.), 51-52, Chancery Lane, London, W.C.2. Phone: Holborn 1525. [0601]

PATENTS.

THE Proprietor of British Patent No. 289422, dated April 27, 1927, relating to Improvements in Vacuum Tubes, is desirous of entering into arrangements by way of a licence or otherwise on reasonable terms for the purpose of exploiting the above patent and ensuring its practical working in Great Britain.—Inquiries to Mr. H. Singer, Chrysler Building, New York City, N.Y., U.S.A. [3228]

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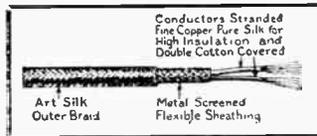
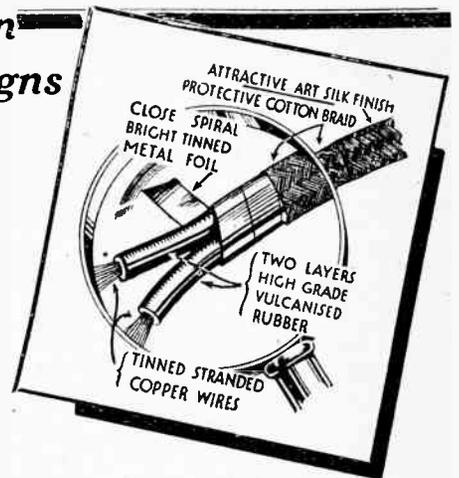
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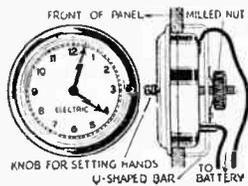
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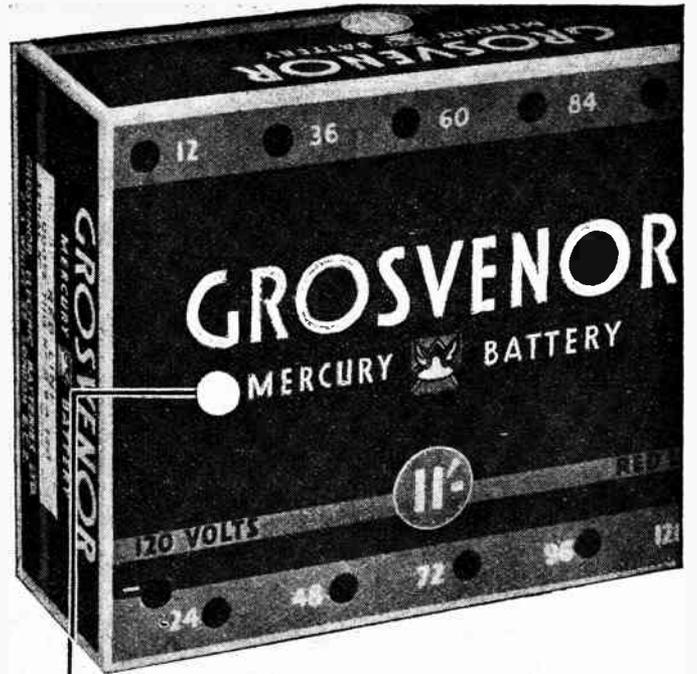
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AUGUST THE THIRTIETH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL "Going South," programme of plantation songs, by Derek McCulloch.
Promenade concert from Queen's Hall.

LONDON REGIONAL Organ recital from Coventry Cathedral.

MIDLAND REGIONAL Orchestral concert, from Bridlington.

NORTH REGIONAL "The Poacher," a play, by J. O. Francis.

WEST REGIONAL Viola recital.

SCOTTISH REGIONAL Variety programme.

BELFAST

ABROAD

BARCELONA BRNO 7.0 p.m. The Radio Trio.
7.30 p.m. Opera: "The Magic Flute," by Mozart, from the National Theatre.
9.0 p.m. Concert from the Casino, Knocke.

BRUSSELS (No. 1) 8.0 p.m. The Philharmonic Orchestra, conducted by Ernst Dohnanyi, from Szegedin.

BUDAPEST 8.1 p.m. Concert of Italian opera and ballet music, by the Station Orchestra.
8.30 p.m. "Italy in Music" concert, by the Radio Symphony Orchestra, conducted by Flament.
7.57 p.m. Concert by the V.A.R.A. Orchestra.
7.30 p.m. Opera: "Madame Butterfly," by Puccini, relayed from the National Theatre.

COPENHAGEN 10.30 p.m. Orchestral concert from the Grand Kléber Tavern.

EIFFEL TOWER

HUIZEN

PRAGUE

STRASBOURG

tural Report. 8.15, News. 8.30, Symphony Concert.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—5.55 p.m., Hungarian Transmission: Talk, Recitations and Orchestral Concert. 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.—2.5 p.m., Holiday Memories—Gramophone Concert. 3.0, Market Prices. 3.5, Talk: The Library of a City Youth Hostel. 3.30, Educational Talk. 4.0, Programme for Children. 4.20, Song Recital by Elsa Paetzold (Soprano), Four Songs (Schubert): (a) Im Grünen, (b) schneit der Liebe, (c) Bei dir allein, (d) seligkeit. Four songs (R. Strauss): 4.50, Talk: Bolshevism in Russia. 5.15, Cello Recital. Cantabile (Cui); Scherzo (Goens); Album Leaf (Davidov); Mazurka (Szerada); Adagio (Schubert); Caprice (Gollermann). 5.40, Talk on Politics. 6.0 (from Gleiwitz), Bandonion Recital. March, Sommerat (Blankenburg); Waltz from The Gipsy Baron (Joh. Strauss); Ein Vögelin sang im Lindenbaum (Eberle); Idyll. Die Mühle im Schwarzwald (Eilenberg); March, Der Adler von Lille (Blankenburg). 6.30, Talk. 6.50, Weather, News and Market Prices. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Song Recital, Two Songs (Horn): (a) Sprich, (b) Der schwere Abend; Two Songs (Pisano): (a) Schmeück dein schönes Haar, (b) Blatt und Blüten fallen; Two Songs (Horn): (a) Mein, (b) Sonntagstag; Three Songs (Oberleitner): (a) Im Reifen, (b) Der stille Fröher, (c) Blau nur; Three Songs (Hüttel): (a) Nachtgedanken, (b) Auf dem Friedhofe, (c) Der Schmeick. 8.30, Peter Rosegger—a Radio Sequence (Helmut Soltner). 9.20, News. 9.30, Request Concert by the Station Orchestra, conducted by Franz Marszalek. 10.30, Time and News. 10.50, Dance Music from the Café Vaterland. 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—7.25 p.m., Introductory Talk to the following Transmission. 7.30, The Magic Flute—Opera (Mozart), relayed from the National Theatre. 10.0, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

N.I.R.; 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by Leemans: Suite, Roma (Bizet); Ballet russe (Luigini); Idylle passionnelle (Razigade); Selection from The Gipsy Princess (Kálmán); Napolitainella (d'Ambrosio); Waltz, A Broken Rosary

(Dillon and Klein); One-Step, Don't be late in the Morning (Leclercq and Mendoza). 1.10 p.m., Le Journal Parlé. 1.10, Concert by the Station Orchestra, conducted by Charles Walpot, and a Vocal Quartet. Soloist: Mlle Martini (Songs). Marche des poilus (Ackerman); Waltz, Toujours on jamaïs (Waldteufel); Selection from Die Fledermaus (Joh. Strauss); Songs: (a) Si les fleurs avaient des yeux (Massenet), (b) Love Song (Hollman), (c) Plaisir d'amour (Martini); Suite orientale (Poppy); Music by the Vocal Quartet: The Student Passes by (Danez). 5.0, Dance Music from the Kursaal, Ostend. 6.0, Talk: The National Congress of Belgian Free-thinkers. 6.15, Extracts from the Fourth Symphony (Beethoven), on Gramophone Records. 6.30, Song Recital by Léopold Braeyn; Aria from Don Giovanni (Mozart); Ochi di fata (Denza); Indian Song (Bemberg); Danse macabre (Saint-Saëns). 6.45, The Distribution of Prizes—Sketch (Lauville). 7.0, Gramophone Music. 7.15, Talk: A Child's Imagination from the Educational Point of View. 7.30, Talk on Hygiene. 8.0, Gramophone Music. 8.20, Le retour de l'île d'Elbe (The Return from Elba)—Play (Arnaut). 9.0, Concert, conducted by Candaël, relayed from the Casino, Knocke. Soloist: Marguerite Watte (Songs). Torch March (Meyerbeer); Symphonic Sketch, Impression de Ninègue (de Roye); Aria from Lakmé (Delibes); Cello Solo, Boreuse de Jocelyn (Godard); Violin Solo, Romance (Svendsen); Aria from The Magic Flute (Mozart); Overture, Semirami (Rossini). After the Concert, Le Journal Parlé, and Dance Music from the Casino, Knocke.

BRUSSELS (No. 2)

N.I.R.; 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Radio Orchestra, conducted by Walpot, and a Vocal Quartet. Soloist: Mlle Martini (Songs). Marche, Entry of the Gladiators (Fenck); Overture, Czar and Carpenter (Lortzing); Waltz (Durand); Three Songs; Selection from Rose Marie (Friml); Songs by the Vocal Quartet: Perpetuum Mobile (Strauss); Russian Song (Bullerian). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Leemans: Coronation March from The Prophet (Meyerbeer); Intermezzo and Air from The Czar's Bride (Rimsky-Korsakov); Serenade (Tareighi); Selection from Martha (Flotow); Londonderry Air (arr. Kreisler); Norwegian Dances (Grieg). 5.0, Dance Music by Mickey's Club, relayed from the Casino, Knocke. 6.15, Talk: Religion and Ethics. 6.30, Concert by Small Station Orchestra, conducted by Leemans: Overture, Piccolino (Guiraud); Autumn Shadows (Clarke); Danza illirica (Escobar); Two Lyric Pieces for Pianoforte (Grieg); Jewish Rhapsody (Manfred); Andante and Scherzo for Violin, Flute, and Pianoforte (Rabaud); Tarantella (Caludi). 7.15, Recitations. 7.30, Le Journal Parlé.

8.0, Ballet Music from Marouf (Rabaud), on Gramophone Records. 8.15, A Radio Sketch (Grassin). 8.45, Gramophone Music. 9.0, Concert, relayed from the Kursaal, Ostend. After the Relay, Le Journal Parlé, followed by Dance Music by Robert de Kers and his Cabaret Kings, and an Argentine Tango Orchestra, relayed from the Casino, Knocke.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: March (Dostal); Waltz from The Arabian Nights (Strauss); Overture, Alessandro Stradella (Flotow); Selection from I Pagliacci (Leoncavallo); Weber Potpourri; Potpourri of Modern Music (Dostal); Melody (Catalani); Romance (Tcherepnin); Wedding March (Mendelssohn). In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Romanian Music. 7.40, Educational Talk. 8.0, Cello Recital: Spanish Serenade (Gibzanov); Scherzo (Van Gliens); Après un rêve (Fauré); Vito (Popper). 8.30, Talk. 8.45, Pianoforte Recital: Variations (Mendelssohn); Etude No. 7, Op. 25 (Chopin); Valse caprice (Fauré). 9.15, Violin Solos. 9.45, Radio Journal. 10.0, Concert, relayed from the Piccadilly Restaurant.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—Also relayed on 840 metres from 7.10 p.m. till Close Down.—5.0 p.m., Talk. 5.30, Orchestral Concert, relayed from the Luna Park. 6.40, Talk. 7.10, A Sound Film. 8.0, Concert by the Budapest Philharmonic Orchestra, conducted by Ernst Dohnanyi, relayed from Szegedin. 10.0, News. 10.15 (approx.), Concert by the Racz Gíány Band, relayed from the Café Enke. 11.20, Pianoforte Recital by Edith Laszlo. Sonata in F (Mozart); Three Etudes in F Minor and C (Chopin); Three Caprices (Liszt): (a) Il lamento, (b) La leggerezza, (c) Il sospiro; Six Hungarian Peasant Songs (Weiner).

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 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, Interval. 2.30, Talk for Women. 3.0, Concert by the Teddy Petersen Orchestra, relayed from the Wivex Restaurant. 5.0, Gramophone Music. 5.30, Exchange and Fish Market Prices. 5.45, Talk. 6.15, French Lesson. 6.45, Weather. 6.54, Wireless Announcements. 7.0, News. 7.15, Time Signal. 7.30, Political Talk. 8.0, Time Signal from the Town Hall. 8.1, Concert of Italian Opera and Ballet Music by the Station Orchestra, conducted by Launy Gröndahl: Overture, William Tell (Rossini); Selection from La boutique fantasque (Rossini-Rospigli); Ballet Music from Aida (Verdi); Overture, Sicilian Vespers (Verdi); Selection from The Jewels of the Madonna (Wolf-Ferrari); Dance of the Hours, from La Gioconda (Ponchielli). After the Concert, Weather. 9.0, Religious Address. 9.30, Saxophone and Pianoforte Recital by Henry Casse and Viktor Fischer. 9.55, Contemporary Danish Songs: Aksel Agerby Recital, by Aage Thyksen, with the Composer at the Pianoforte. Vor Tid; Vor mor Steen Blicher; Humlebi; Første Vand; Majste. 10.15, News. 10.30, Halvorsen Concert by the Station Orchestra, conducted by Launy Gröndahl: Suite ancienne; March. 11.0 (approx.), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 15 kW.—6.35 p.m., Light Music on Gramophone Records. 7.20, Miscellaneous Items and News. 7.35, Programme Announcements. 7.40, See Warsaw. In the intervals at 9.0 and 10.25, News and Sports Notes. 11.0 (approx.), Close Down.

GANZIC.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m. to 12 Noon, Programme in English by the I.B.C. 11.0 a.m., The Phico Happy Hour; Part I, Orchestral Music: Signature Tune; Waltz, The Blue Danube (Joh. Strauss); Searf Dance (Chaminade); Polonaise in A (Chopin); Violin Solo, Spanish Dance (Fallá); Humoresque (Dvorak); Ich liebe dich (Grieg); Invitation to the Waltz (Weber); Hungarian Dance No. 1 (Brahms); Part II, Dance Music: My Woman; Bugle Call Rag; Sadie the Skater; Somebody stole my Gal; My Heart was made for Love; My Oh My; New kind Blues; I cover the Waterfront; Signature Tune. 4.30, Programme for Children. 5.0, Concert for Portsmouth and Southsea Listeners: Signature Tune, The Night by the Sea; Swanee (Gershwin); Love is King Today; Oh could I but express in Song; My Darling; One Little Word led to another; I shall remember you; Xylophone Solo, The Clock and the Dresden Figures (Ketchey); Selection, Part II from He Wanted Adventure (Waller); Coal Black Mammy. 5.30, Quartet Concert for Isle of Wight Listeners: Dream of the Ocean (Gungl); Beautiful (Shay); Pan and the Wood Goblins (Rathke); Friends once more united (Spoliansky); In Tulip

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.30 p.m., Time, Weather, Stock Report, and Gramophone Concert. 6.0, Programme for Children. 6.45, News. 7.0, Gaelic Talk. 7.15, Talk. 7.30, Time Signal. 7.32, The Station Orchestra. 8.0, Ballads by A. J. O'Farrell (Baritone). 8.10, Ballads by May Doyle (Soprano). 8.25, Baritone Solos by A. J. O'Farrell. 8.35, The Station Orchestra. 8.45, A Sketch by Elizabeth Young and Company. 9.15, Violin Solos by W. E. Brady. 9.30, Talk: The Irish Lifeboat Service. 9.45, Sponsored Programme. 10.45, News and Close Down.

BARCELONA

E.A.J.I., 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Radio Trio. Selection from The Magic Flute (Mozart); The Poet's Life (Elgar); Träumerei (Schumann); Suite, Silhouettes (Ewing); Chants russes (Lalo); Spanish Serenade (Chaminade); Valse lente in A Minor (Chopin). 8.0, Request Gramophone Records. 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes, Weather and Exchange. 10.5, Concert by the Radio Orchestra. 11.0, Vicente Diez de Tejada reads from his own Works. 11.15, Quartet in D Minor, Op. 42 (Haydn). 11.40, Dance Music from the Casa Llibre. 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 Report, Tourist Talk, and Donalavoro Announcements. 8.20, News in Albanian. 8.25, Giornale Radio. 8.30, Time and Announcements. 8.35, Weather. 8.45, Chamber Music Concert. Soloists: Nilde Pignatelli (Violin), De Santis Bruno (Soprano), and Donato Marrone (Pianoforte). Selection from La fanciulla delle Asturie (Secchi); Violin Solo, Hebrew Melody (Aehron); Soprano Solo, Chi vuol la zingarella (Paisiello); Pianoforte Solos (di Cugno): (a) Improvisazione romantica, (b) Gavotte, (c) Scherzo; Violin Solo, La caccia (Chiabroni-Corti); Soprano Solo, Vatinio (Tirindelli); Violin Solo, Cradle Song (Novikov); Soprano Solo, Mami tu ancora? (Delle Ces); Two Pianoforte Pieces (Van Westerhout); Violin Solo, Introduction and Rondo capriccioso (Saint-Saëns); Soprano Solo, La sera (Casavola); Pianoforte Solo, Polonaise in E (Liszt). In the interval, Literary 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.—6.0 p.m., Song Recital. 6.30, Talk. 7.0, Concert by the Station Orchestra. 8.0, Talk. 8.30, Pianoforte Recital by Loris Margaritis. Grand Sonata in B minor (Liszt); Carnival (Margaritis); Slav Dances in E minor and D (Dvorák); Melody (Miloyevich); Greek Pastoral (Margaritis); Macedonian Dances (Margaritis). 9.40, Time Signal, News and Relay of Foreign Stations.

BERLIN

DEUTSCHLANDSENDER (Reichssender), 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Gramophone Concert. 3.0, Programme for Children. 3.30, Weather and Exchange. 3.45, Talk: Saxon Legends. 4.0, See Hamburg. 5.0, Topical Talk. 5.20, Violin and Pianoforte Recital by Dolores Mass and Charlotte Weiland; Pianoforte Sonata in D (Mozart); Sonata in A Minor, Op. 105, for Violin and Pianoforte (Schumann). 6.0, A Poem. 6.5, Religious Address and Organ Solos. 6.55, Technical Wireless Talk. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Today's Motto. 8.5, The Two Hundred and Eighteen Days—Radio Play (Kulmer). 9.30, Gramophone Music. 10.15, News. 10.45, Weather. 11.0, See Leipzig. 12.30 a.m. (Thursday), Close Down.

BERLIN

FUNKSTUNDE, 715 kc/s, 419.5 metres; 1.5 kW.—6.5 p.m., See Berlin (Deutschlandsender). 6.40, The Fundstunde inform its Listeners. . . . 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Lottery Announcements. 8.5, Guests from East Prussia—A Sketch. 8.40, Dialogue: Compulsory Service. 8.55, Concerto in A Minor, Op. 25, for Violin and Orchestra (Max von Schillings). Milly Berber and the Berlin Wireless Orchestra, conducted by Eugen Jochum. 9.50, Talk: The Successful Woman. 10.0, News. 10.15 (approx.), Dance Music from the Sprengarten, Treptow. In the interval from 11.0 to 11.15, Topical Talk. 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.—6.30 p.m., Radio Journal. 7.30, News. 7.40, Tourist Talk. 7.55, Lottery Results. 8.0, Agricul-

AUGUST 30th WEDNESDAY continued

Time beside the Water Mill (Ailbont); When the Convent Bell is Ringing (Trevor); Song, Wine, Women and Song (Strauss); Stephanie Gavotte (Czibulka); Signature Tune. 6.0 to 10.0, Programme in French. 10.0, Dance Music by the Ibcollians: Signature Tune, Bells of Normandy; Hyde Park Corner; Masquerade; Graun's Photo Album; Drifting down the Shalimar; We've got the Moon and Sixpence; Cabin in the Cotton; Peter, Peter; Just an Echo in the Valley; I've got the World on a String; Wanderer Stay out of my Dreams; I got Rhythm; Any time, any day, anywhere; In old Vienna; We're a couple of Soldiers; The Song is You; Signature Tune. 11.0, Music and Up-to-date Reviews of the Films; Adorable; I'll stay with you, from There Goes the Bride (Woods); Pianoforte Solo, Everyone says I love you, from Horse Feathers (Kálmán); I want to cling to Ivy, from Jack's the Boy; Dance Pretty Lady, from Waltz Time (Strauss); The Rogue Song; Just because I lost my Heart (Gilbert); Selection, Part II from The Kid from Spain. 11.30, Concert by I.B.C. (Ireland), Ltd.: Signature Tune; Come back to Erin; Serenade (Pierne); Mon rève (Waldteufel); The Londonderry Air; The Song of the Nightingale (Ailbont); Pianoforte Solo, When Day is done (Katscher); Bitter Sweet Waltz (Coward); Song, Patiently smiling (Lehar); Selection from The New Moon (Romberg); Signature Tune. 12.5 a.m. (Thursday), News Bulletin in English. 12.10 (approx.), Club Concert for Bourton-on-the-Water Listeners: Hits from Forty-Second Street (Warren); Maria my Own; All over Italy; Castles in the Sand; Something came and got me in the spring; Maybe I love you too much; Don't be late in the Morning; It's within your Power; When my little Poncranian; Only broken-hearted Me; Just for a sigh, just for a Kiss; A Letter to my Mother; Selection from Music in the Air; Signature Tune. 1.0, Dance Music by the Ibcollians: Love is the Sweetest Thing; How do you do, Mr. Brown; Sweet Muchacha; Leave a Little for me; How deep is the Ocean? Mariette; What would happen to me? Little Lady; It's Winter again; A Million Dreams; Look who's here; Someday we'll meet again; Strange Interlude; The Knave of Diamonds; Always in my Heart; The Juggler; Signature Tune. 1.57, I.B.C. Goodnight Melody. 2.0, 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., Programme from Leipzig. 6.45, Economic Notes. 6.0, Talk. 6.25, Topical Talk. 6.45, To-day's News. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Life—a Radio Sequence. 8.45, Concerto for Cello and Orchestra (Dvorak) by Karl Maria Schwamberger and the Radio Orchestra, conducted by Dr. Reinhold Merten. 9.35, Klaus Uhl reads from his own Lyrics. 10.0, Topical Talk. 10.15, Time and News. 11.0, See Munich.

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 the Hamburg Philharmonic Orchestra, conducted by José Eibenschütz: Festival March (Kipp); Swedish Rhapsody, Midsonmarvaka (Alfvén); Selection from Cavalleria rusticana (Mascagni); Selection from Das süsse Mädel (Reinhardt); Waltz, Wiener Blut (Joh. Strauss). 5.0, Talk: A Walk in the Forest. 5.15, Readings in German Dialect. 5.30, Hamburg, Bremen and Lübeck—Report on Events in the Senates and Houses of Burgesses of the Hanseatic Free Cities. 6.0, Variety Programme. 6.45, Frankfurt Exchange and Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Munich. 8.0 (from Kiel), Recital of German Folk Melodies: The Kiel Orchestra of Unemployed Musicians and Soloists; Hilde Kehel (Soprano) and Käthe Freitag (Mezzo-Soprano). 9.0, German Symphony, Op. 8 (Lürman), by the Hamburg Philharmonic Orchestra, conducted by José Eibenschütz. 10.0, Time and News. 10.20, Topical Talk. 10.30, Serenade from Munich. 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 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, Talk: Practical

Hints for the Housewife. 3.35, Programme for Children. 4.0 (from Danzig), Talk for Parents. 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, King Stephen (Beethoven); Ave Maria (Bach-Gounod); Rhapsody No. 2 in G minor (Brahms); Verdi Potpourri (Rhode); Norwegian Dances Nos. 1, 2 and 4 (Grieg); Aquatellen-Walzer (Jos. Strauss); Selection from The Arabian Nights (Joh. Strauss). 5.50, Review of Books on Heredity. 6.15, Agricultural Prices. 6.25, Talk: The Battle of Gross-Jägersdorf. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Munich. 8.10, Concert of Modern Patriotic German Songs from the Lobeta Song Book by a Male Voice Choir conducted by Otto Groke. 8.40, Eichendorff Songs to the Lute by Anne and Walther Pudelko. 9.10, Dance Music by the Small Station Orchestra, conducted by Eugen Wilcken, and an Unemployed Orchestra conducted by Erich Börschel. In an interval at 10.10 (approx.), Weather and News. 11.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Le premier jour de bonheur (Auber); Suite from Sylvia (Delibes); Hungarian Rhapsody No. 2 (Liszt); Chinesisches Ständchen (Seibold); Waltz, Intermezzo, Sommerachtsball (Mello); Leyer und Schwert (Seibold). 12 Midnight (approx.), 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.).—11.40 a.m., Police Notes. 11.55, Gramophone Music. 12.10 p.m., Concert by the Louise Lanerth Quartet: Introduction to the Peasant Cantata (Bach); Hymn (Gluck); Psalms 12 and 10; Sarabande (Handel); Andante (Tartini); Sacred Songs: Gramophone Record; Overture, Ascanio in Alba (Mozart); Selection from Norma (Belini); Offenbach Potpourri (Conradi). 11.40, Interval. 12.10, Organ Recital: Prelude and Fugue in B Flat (Bach); Choral Prelude (Bach); Three Songs without Words (Mendelssohn); Chorus from Judas Maccabeus (Handel); Madrigal (Simonetti); Prayer and Chorus (Grey); Sacred Songs: March in D (Mendelssohn). 3.10, Trio Concert. 4.40, Programme for Children. 5.40, Gramophone Music. 6.10, Talk. 6.40, Police Notes. 6.55, Religious Report. 7.10, Gramophone Music. 7.25, Talk. 7.40, Orchestral Concert. In the interval at 8.40, Talk, and at 9.40, News. 10.25, Gramophone Music. 11.40 (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, Concert by De Notenkrakers, conducted by Wims. 1.40 p.m., Concert by De Fiedrefluiters, conducted by Ray Forest. 2.40, Programme for Children. 5.10, Concert, with the Collaboration of Betty Bienfait (Songs) and Cohen with his Musical Box. 6.10, Talk. 6.40, Talk for Workers. 6.55, Concert by De Fiedrefluiters, conducted by Ray Forest. 7.40, News. 7.55, S.O.S. Messages. 7.57, Concert by the V.A.R.A. Orchestra, conducted by Hugo de Groot: Selection from The Mastersingers (Wagner); Selection from The Bartered Bride (Smetana); Overture, Le roi d'Ys (Lalo). 8.40, Concert by the Arti Male Voice Double Quartet, conducted by Wolthers. 9.0, Orchestral Concert (cont'd.): Overture, Gipsy Love (Lehar); Selection from A Waltz Dream (O. Straus); Selection from Der Probueck (Müllcker); Waltz from Die Puppenfee (Bayer); Romanian March (Ganne). 9.40, Songs to the Lute by Henry Otar-Sprat. 9.55, Concert by De Notenkrakers, conducted by Wims: Yalse triste (Berger); Napoli (Messacapo); Zika (Michiels); Innamorata (Marchetti). 10.10, Recitations. 10.25, Concert (cont'd.): Viennese Waltzes (Benatzki); Only a Smile (Zamenick); Ideale (Tosti); Melody (Lucchesi); Wenn man sein Herz verliert (Strauss); Russian Rhapsody (Michiels); March Potpourri (Ciere). 10.55, Organ Recital by Johan Jong. 11.25, Gramophone Music. INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 1.15, Radio Concert. 8.0, Amusement Guide, Exchange and News. 8.10, Oceanographic Report. 8.20, Talk on Touring. 8.45, News and Weather. 9.0, Concert, conducted by Guillon, relayed from Nice.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.10 p.m., Talk for Housewives. 7.25, Announcements and Gramophone Music. 7.40, See Warsaw. 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. Relayed by Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m.,

Programme for Children. 6.50, Programme for Girls. 7.0, Quartet Concert. 7.20, Talk. 7.45, Dance Music by the Station Orchestra. In an interval at 8.5, Humorous Programme. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Orchestral Concert, conducted by Paul Greven, relayed from the Reichshof, Wuppertal-Eberfeld, March Graf Zeppelin (Teike); Overture, Der Wildschütz (Lortzing); Waltz from Der Rosenkavalier (R. Straus); Selection from Aida (Verdi); Kaiserwalzer (Strauss); In the Shadows (Finck); Prelude (Jännefeldt); Ballet égyptien (Luigini); Military March (Schubert); Intermezzo, Harfe und Spieluhr (Braum); March, Deutschlands Ruhm (Schroder). In the interval at 2.0, News. 3.0, Talk on Handicrafts. 3.30, Exchange and Time. 3.50, Radio Sequence for Young People. 4.30, A Radio Report from the Rautenstrauch-Joest Ethnological Museum in Cologne. 5.0, Gramophone Records of Light Music. 5.30, Talk for Women: Healthy Children. 5.50, Post Office Propaganda. 5.55, Three Poems by the Westphalian Poetess Maria Kahle. 6.0, Chamber Music, Georg Mantels (Oboc), Erich Rummel (Pianoforte), Paul Müller (Violin) and August Schreiber (Cello); Chamber Trio in E Flat (Handel); Sonata in G Minor, Op. 137, No. 3 (Schubert); Trio in F (Braum). 7.0, Transmission for all German Stations, relayed from Munich. 8.0, First General News. 8.5, Work as German Destiny—Radio Sequence (Houst Siesina). 9.10, Programme from Frankfurt. 10.20, Late News. 10.45, Talk on Chess. 11.0, See Munich.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon, Weather and Time. 12.5 p.m., Concert by the Leipzig Symphony Orchestra, conducted by Theodor Wünschmann: Overture, The Black Domino (Auber); Der Kampf der menschlichen Leidenschaft (V. Aittersdorf); Overture, Russian and Ludmilla (Glinka); Suite in D, Op. 39 (Dvorak); Overture, Coriolanus (Beethoven); Selection from Don Giovanni (Mozart); Overture, Preciosa (Weber); Italian Serenade (Hugo Wolf); Waltz, Wine, Woman and Song (Joh. Strauss). In the interval at 1.0, News. 2.0, News. 2.10, Talk: Women Drivers. 2.45, Gramophone Music. 3.15, Interval. 3.35, Market Prices. 4.0, Das Spiel vom glücklichen Hans—A Musical Fairy Play (Hans Teipel). 4.45, Reading of a Fairy Story (Theuernermeister). 5.0 (from Dresden), Concert. 5.50, Market Prices, Weather, and Time. 6.0, Book Reviews. 6.25, Talk: Shooting Stars and Meteors. 6.50, To-day's News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Agricultural Notes. 8.45, See Frankfurt. 8.55 (from Dresden), Military Band Concert. 10.20, News. 11.0 (approx.), Johann Strauss' Waltzes: The Station Orchestra, conducted by Theodor Blumer: Seid unschlungen Millionen; Wo die Zitronen blühen; Schatzwälder; Künstlerleben; Kaiserwalzer; Du und Du; Wiener Blut; Tales from the Vienna Woods; Kiss Waltz; Lagunenwalzer. 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—7.0 p.m., Programme for Children. 7.30, Gramophone Music. 8.0, Talk. 9.15, Song Recital. 9.30, Weather and News. 10.9, Orchestral Concert. 10.30, Programme in English by the I.B.C. International Broadcasting Club Concert. For you, Rio Rita; Sweet Ananda; Play Fiddle, Play; I'll never have to dream again; Silver Hair and Heart of Gold; The Oi Song; Someone to care for; This is no Dream. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 20 kW. Luxembourg Programme.—7.30 p.m., Concert by the Station Orchestra, conducted by Henri Pensis: Overture, Egmont (Beethoven); Petite Suite (Debussy); Polonaise (Liszt). 8.10, Song Recital. 8.35, Recital of Luxembourg Poetry. 8.50, News in French. 9.0, Military Band Concert, conducted by Fernand Mertens, relayed from La Place d'Armes. 10.0, News in German. 10.10, Orchestral Music. 10.30, Dance Music.

LWOW

788 kc/s, 381 metres; 16 kW.—7.20 p.m., Miscellaneous Announcements. 7.40, See Warsaw. 9.0, News. 9.10, See Warsaw. 10.40, Gramophone Music. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—6.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Music Hall Programme, followed by News.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Talk for Women, Poetry Reading, Gramophone Music and

Dance Music. 9.15, Topical Review. 9.30, Interval. 11.0, Chimes, Time and Topical Review. 11.15 (approx.), Introductory Talk to the following Transmission. 11.30 (approx.), El velogonzoso en palacio—Comedy (Tirso de Molina). 1.15 a.m. (Thursday), Topical Review and News. 1.30 (approx.), Chimes and Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.45 p.m. (approx.) till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., Concert of Folk Music. 7.0, See Prague. 7.25, See Brno. 10.0, See Prague. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—1.45 p.m., Weather. 2.15, Literary and Art Notes. 2.45, Weather. 3.0, Gramophone Concert. 4.0, Talk: Collective Farms. 4.30, Literary Programme. 5.30, Programme for Young People. 6.30, Concert, relayed from the Central Park: Overture, Euryanthe (Weber); Symphonic Poem, Don Juan (R. Strauss); Overture, Rienzi (Wagner). 9.0, News. 9.30, Programme Announcements. 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 Nurnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Orchestral Concert: Kaiser-Marsch (Wagner); Overture, William Tell (Rossini); Volksliedchen und Märchen (Komzak); Waltz, Weana Gmüat (Schrammel); Selection from Mignon (Thomas); Under the Lime Tree (Felix); Hungarian Rhapsody (Reindl); March, Hab acht (Wach). 5.45, Talk: German Law and Roman Law. 6.5, Soprano Song Recital by Margret Abler: Der Kusz (Beethoven); Liebhaber in allen Gestalten (Schubert); Der Jäger (Brahms); Song (Cornelius); Morgenwind (Cornelius); Die Johannisnacht (Grieg). 6.25, Talk. 6.45, Time, Weather and Agricultural Report. 7.0, Transmission for all German Stations; Song and Wine in the Sunny Palatinate—Play (Roland Betsch and Ruster); with Incidental Music. 8.0, Programme to be announced. 10.20, Time and News. 11.0, Dance Music by the Small Station Dance Band. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTTODEN.—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 the Banjos Orchestra. Soloist: Magnus Samuelsen (Songs). March, San Lorenzo (Silva); In the Harbour of Port Said (Armandola); Vienna, City of my Dreams (Sieczynski); Songs; Tango, El Gaucho (Tito Schipa); Waltz (Hauger); Melody (Grundland). 6.30, Programme for Boys. 7.0, Announcements. Weather and News. 7.30, Talk. 8.0, Time Signal. 8.1, Concert by the Station Orchestra, conducted by Kramm: A Summer Night in the Fiords (Schelderup); Suite from The Miracle (Humperdinck); Intermezzo from Mona Lisa (Schillings); Miniature Suite for String Orchestra (Niemann); Suite (Gjerström); Bolero (Ravel). 9.0, Recitation. 9.30, Agricultural Report. 10.0, Topical Talk. 10.15, Weekly Review and Songs. 10.45, Dance Music on Gramophone Records. 11.30 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavor Notes, Tourist Report, Agricultural Notes, and Giornale Radio. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Variety Concert. In the interval, Talk: The Death of Julius Caesar. 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, Italy in Music—Concert by the Radio Symphony Orchestra, conducted by Flument; The Italian Symphony (Mendelssohn); Scenes napolitaines (Massenet); Suite, Impressions d'Italie (Charpentier); Scherzo from Roma (Bizet); Italian Caprice (Tchaikovsky). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN; 914 kc/s, 328.2 metres; 50 kW.—7.0 p.m., Gramophone Music. 7.15, Le Journal Parlé. 7.30, Les fiancailles—One-Act Comedy (Mialaret). 8.5, Assurance Societies' Report. 8.10, Talk on Radio Interference. 8.30, Richard Strauss Concert. 10.30, News.

AUGUST 30th WEDNESDAY continued

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,275 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. 12.15 p.m., Concert of Verdi Opera Music: Extracts from Rigoletto, Il Trovatore, La Traviata, The Force of Destiny, Ernani, Don Carlos, Aida, Othello, and Falstaff. In the interval at 1.0, Exchange News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 7.0, Agricultural Notes. 7.10, Chopin Concert on Gramophone Records: Ballade in G Minor; Barcarolle; Etude in A Minor, No. 4; Waltz in C; Mazurka; Nocturne in F Sharp; Prelude in A; Scherzo in B Flat Minor; Polonaise in E Flat Minor. 7.50, Commercial Prices and News. 8.0, Symphony Music of the Eighteenth Century: Symphony in G Minor, No. 40 (Mozart); Aria from Armide (Gluck); Arietta from Zémire et Azor (Grétry); Plaisir d'amour (Martini). 8.30, News, Weather, and Sports Notes. 8.40, Fashion Review. 8.45, The Tragedy of Louis XVI—From Throne to Scaffold—Six Scenes from Historical Documents (arr. Collin). 9.15, Press Review and News. 9.30, Eighteenth and Nineteenth Century Symphony Music on Gramophone Records: Le Tambourin (Rameau); Les Plaisirs champêtres (Cascades); Aria from The Secret Marriage (Cimarosa); Overture, Le Jeun Henri (Méhul); Symphony, Eroica (Beethoven).

PITTSBURGH

KDKA; 980 kc/s, 306 metres; 50 kW. Relayed by W2XK, on 48.86 metres and 25.27 metres.—7.30 p.m., Pontiac and Home Forum. 8.0 to 9.30, New York Relay. 8.0, Betty and Bob. 8.15, Words and Music. 8.30, Happy Days in Dixie. 9.0, Southern Symphonies. 9.30, Frances Ingram. 9.45, News and Markets. 10.0, Uncle Tom and Betty. 10.15, Tarzan of the Apes. 10.30, Larry Larson, from New York. 10.45, Orphan Annie. 11.0, News, and Talk by C. C. McGovern. 11.15, Sports Notes and a Song. 11.30, Pittsburgh Spotlights. 11.45, Lowell Thomas, from New York. 12.15 a.m. (Thursday), Programme to be announced. 12.30 to 3.30, New York Relay. 12.30, Popular Concert. 1.0, The Nomads. 1.30, Potash and Perlmutter. 1.45, Phil Cook. 2.0, American Legion. 2.30, Tenor Solos by Ortiz Tirado. 3.30, Cracker Barrel.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—12.25 p.m., See Warsaw. 12.35, Interval. 12.59, Time Signal and Chimes from the Town Hall. 1.3, Concert of Gramophone Music. 2.0, Financial Notes and Market Prices. 2.10, News. 2.15, Interval. 6.15, See Warsaw. 7.20, Miscellaneous Items and News. 7.35, Theatre Notes and Programme Announcements. 7.40, See Warsaw. 10.0, Time Signal, Sports and Police Notes. 10.15, Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., Concert of Light Music. 3.55, Exchange. 4.0, Interval. 5.45, Gramophone Music. 5.55, Medical Talk. 6.5, Agricultural Report. 6.10, Gramophone Music. 6.25, News in German. 6.30, German Transmission: Reading and Talk for Workers. 7.0, Chimes and News. 7.10, Talk on Economics. 7.25, Talk on the following Transmission. 7.30, Madame Butterfly—Opera in Four Acts (Puccini), relayed from the National Theatre. 10.0, Time and News. 10.15, News in French. 10.20 (approx.), Close Down.

RABAT

721.1 kc/s, 416 metres; 6 kW.—1.30 to 3.30 p.m., Concert: March (Schrammel); Waltz from Les Cent Vierges (Lecocq); Overture, Morning, Noon and Night (Suppé-Atzer); Song (Maye); Melody (Staub); Fantasia on Old French Airs, Parisiana (Léopold); Song (Bus); Violin Solo, Sonate ancienne (Grandjean); Ballet Music from Bacchus (Massenet-Monton); Song, Mexican Serenade (Ponce); Si vous l'aviez compris (Deiza-Tavan); Musical Divertissement (Schrammel). 5.0 to 6.0, Gramophone Music. 8.30, Gramophone Music. 8.45, Le Journal Parlé, Weather and Announcements. 9.0, Concert: Overture, Egmont (Beethoven-Weiniger); Waltz, The Blue Danube (Joh. Strauss); Aria from Samson and Delilah (Saint-Saëns); Summer Night on the Terrace (Turina-Chapelier); Selection from Lucretia Borgia (Donizetti-Tavan); Grand March from Tannhäuser (Wagner); Chorus (Eberle); Pianoforte Solo, Nocturne (Faure); Aria from Lohengrin (Wagner); Suite from Album d'enfants (Tchaikovsky-Salabert); Aria from Thaïs (Massenet). 10.30, String Quartet (Beethoven). 11.0, Gramophone Music.

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. (from Lausanne), Gymnastics Lesson. 12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News and Weather. 12.40 (from Lausanne), Gramophone Concert. 1.0 (from Lausanne), Financial News. 1.10 (from Lausanne), Gramophone Concert. 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 Moser. 5.0 (from Lausanne), Dance Music on Gramophone Records. 5.30 to 7.0, Interval. 7.0 (from Lausanne), Talk on Hungary. 7.30, Weather and News. 7.35, Talk on Films. 8.0, Concert by the Radio Suisse Romande Orchestra, conducted by Robert Echenard: Overture, The Thieving Magpie (Rossini); Lyric Suite (Grieg); Evening Music (Godard); Two Arabesques (Debussy); Romanian Rhapsody No. 1 (Erneco). 8.50 (from Lausanne), Cabaret Programme. 9.50, News and Weather. 10.0, Report on the Cycle Tour of Switzerland. 10.30 (from Lausanne), Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme. 9.30, Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News. 10.30, Reading. 11.0, The Kreutzer Sonata (Beethoven) on Gramophone Records.

RIGA

572 kc/s, 525 metres; 15 kW.—7.5 p.m., Lohar Concert. 8.0, News. 8.15, Latvian Songs. 8.35, Ballet Music from Hamlet (Thomas). 9.0, News. 9.15, Concert of Russian Music.

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, from 5.15 p.m.—12.30 p.m., Gramophone Music. 1.0, Concert of Light Music. 2.0, Time and Announcements. 4.30, Giornale Radio. Exchange, and Report of the Royal Geographical Society. 4.45, Children's Radio Review. 5.10, Weather. 5.15 to 6.0, Orchestral Concert of Light Music. 6.40 (Naples), Shipping and Sports Notes. 6.45, Dopplavoro and Tourist Report. 6.57, Report of the International Institute of Agriculture (in Italian and English). 7.10, Tourist Report. 7.20, News in Foreign Languages. 7.40, Giornale Radio. 8.0, Time, Announcements and Gramophone Music. 8.30, Giornale Radio and Sports Notes. 8.45, Variety Concert.

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., Pop Concert, from New York. 9.30, Mountain Ballads by Bradley Kincaid. 9.45 to 10.0 (approx.), Lady Next Door, from New York. 12.45 a.m. (Thursday), Stock Reports and Baseball Scores. 1.0, Variety Programme, from New York. 1.30, Popular Programme. 1.45, New York State Fair. 2.0, Ferde Grofé's Orchestra, from New York. 2.15, Popular Programme. 2.30, Variety Programme. 3.0, Popular 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.—5.30 p.m. (from Berne), Gramophone Concert: Part I—Swiss Song Recital; Part II—Marches. 6.30 (from Zürich), Talk: The Place of our Planetary System in the Universe. 7.0 (from Zürich), Time, Weather and Commercial Notes. 7.10 (from Zürich), Concert by the Station Orchestra, conducted by Hofmann. 7.30 (from Zürich), Elementary English Lesson. 8.0 (from Zürich), Bunter Abend. In the interval at 9.0, Weather and News. 10.15 (approx.), Close Down.

SEVILLE

815 kc/s, 368.1 metres; 1.5 kW.—9.30 to 10.0 a.m., News Bulletin. 3.0 to 4.0 p.m., Variety Programme. 10.0, Concert: March, El Capitán (Sousa); Ideale (Tosti); An den Frühling (Grieg); Interlude, La leyenda del beso (Soutullo and Vert); Song from La Villana (Vives); Selection from Marina (Vives); Foxtrot (Hammerstein and Kern); Interlude from Pepita Jimenez (Albeniz); Orfanlusa (Ortega and Morales); Waltz in A Flat (Chopin); Extracts from Seheerze (Rimsky-Korsakov); Aria from Cavalleria rusticana (Mascagni); Overture, Fra Diavolo (Aubert); Flamenco Songs. In the interval, News, Exchange, Market Prices and Weather. 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.—5.5 p.m., Programme for Children. 5.45, Gramophone Music. 6.45, A Report. 7.15, Weather

and News. 7.30 (from Göteborg), Pianoforte and Violin Recital by Margit Ahlenius-Theorell and Hugo Theorell: Two Etudes Op. 25 for Pianoforte (Chopin); Spanish Suite for Violin and Pianoforte (Fall); Pianoforte Solos: (a) Extracts from the Suite, Children's Corner (Debussy); (b) The Juggler (Tsch.) 8.0, Talk on Italy. 8.30, Military Band Concert, conducted by Leijdh: March, Kaiser-Parole (Teike); Selection from Rigoletto (Verdi); By the Blue Hawaiian Waters (Ketelbey); Melody (Curt-Lars); Potpourri of Popular Drinking Songs (Sylvain). 9.15, Talk: The Vikings. 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., Schubert Concert on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Light Music on Gramophone Records. 2.0 to 3.30, Interval. 3.30, Orchestral Concert, conducted by Brouillat, relayed from the Casino, Vichy: Overture, Fingal's Cave (Mendelssohn); Andante from the First Symphony (Borodin); Orchestral Suite, Scènes de ballet (Gladstov); Soloist Item, Concert Waltz No. 2 (Godard); Selection from Werther (Massenet); Marche troyenne (Berlioz). 5.0, Talk on Electricity. 5.15, Orchestral Concert, conducted by Roskam: March (Rosey); Waltz (Scasola); Overture, Gri-Gri (Lincke); Selection from Le petit duc (Lecocq); Ballet Suite (Popy). 6.0, Trio Concert, relayed from Lille, 1,130 kc/s, 265.4 metres. 7.0, Talk on Alcoholism. 7.15, Gramophone Music. 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in German, Lottery Results, and Announcements. 8.30, Military Band Concert, relayed from Metz: Louis XVI (Millet); Overture, The Italian Girl in Algiers (Rossini); Scènes Alsaciennes (Sarasate); Hungarian March from The Damnation of Faust (Berlioz); Sans peur (Wattelle); Entr'acte and Ballet Music from The Cid (Massenet); Le vieilles de chez nous (Lévy); Amorettenläuze (Gungl); Marche Lorraine (Ganne). In the interval, Press Review. 10.30, Orchestral Concert, conducted by Jennie, relayed from the Grand Kléber Tavern: American March (Sousa); Waltz from A Dream Waltz (O. Straus); Overture, La belle Hélène (Offenbach); The Parade of the Tin Soldiers (Jessen); Selection from The Gipsy Princess (Kálmán); Potpourri of Mistinguette's Songs (Salabert); Vihraphone Solo; Marche Florentine (Fueik). 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, Symphony Music on Gramophone Records. 1.15 p.m., Time and News. 1.30, Organ Recital by Fritz Ries, relayed from the Ufa-Palast: Melody (Gabriel-Marie); Nächtlicher Spuk (Jokl); Capriccietta (Barley); Souvenir (Karganov); Intermezzo (Karganov); Intermezzo grotesque (Siedle). 2.0 to 2.15, Musical Programme arranged by the Post Office. 2.30, News Service for the Saar District. 2.40, Interval. 3.30 (from Karlsruhe), Programme for Children. 4.30, See Munich. 5.45, Sports Talk. 6.10 (from Karlsruhe), Recitations. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Orchestral Concert, conducted by Otto Seyfert, relayed from the Kursaal, Bad Cannstatt. Soloist: Julius Patzak (Tenor). Triumphant March from Aida (Verdi); Overture, The Force of Destiny (Verdi); Aria from The Force of Destiny (Verdi); Suite from Der Rosenkavalier (R. Strauss); Walther's Prize Song from The Mastersingers (Wagner); Entry March of the Guests into the Wartburg (Wagner); Overture, Der Bettelstudent (Müllöcker); Arias from Eine Nacht in Venedig (Joh. Strauss): (a) Gondellied, (b) Treu sein das kann ich nicht; Selection from Schön ist die Welt (Lehár). In the interval at 9.10, Anecdotes of the War. 10.30, Time and News. 11.0, See Munich. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.15 p.m., Accordion Solos. 6.30, Orchestral Music: Ballet Music from Lakmé (Delibes); Selection from The Barber of Seville (Rossini). 6.45, Chansonnettes. 6.50, Talk. 7.15, News. 7.30, Operetta Airs: Selection from (a) La Mascotte (Audran), (b) Comte Obligado (Moretti), and (c) The Gipsy Princess (Kálmán). 7.45, Overture, Le Roi d'Ys (Lalo). 8.0, Violin Solos: Valse bluette (Drigo); La fille aux cheveux de lin (Debussy); Poème hongrois (Hubay). 8.15, Opera Airs: Selection from (a) Aida (Verdi), (b) Samson and Delilah (Saint-Saëns), and (c) Don Giovanni (Mozart). 8.30, Programme by a Viennese Orchestra. 9.0, Choral Concert. 10.15, News. 10.30, Concert for Listeners in Morocco. 11.15, Orchestral Music: Pavane pour une Infante défunte (Ravel); Selection from The Secret Marriage (Cimarosa); Old Spanish

Song (Aubert). 11.30, Concert. 12 Midnight, News. 12.5 a.m. (Thursday), Chansonnettes. 12.15, Pianoforte Solos. 12.30, Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m., Concert. Wera Lauthard (Pianoforte) and Dalia Fortuni (Mezzo-Soprano); Partita in C Minor (Bach). Mezzo-Soprano Solos: (a) Der Wanderer (Schubert), (b) The Driary Step (Gretchaninov), (c) Rivivere (Tirindelli); Sonata in B Minor (Chopin); Mezzo-Soprano Solos: (a) Aria from Orpheus (Gluck), (b) Aria from La Gioconda (Ponchielli). 6.0 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.—5.10 p.m., Song Recital. 6.0 to 6.5, Weather. 6.40, Giornale Radio, Dopplavoro Notes and Gramophone Music. 7.0, Time, Tourist Report and Gramophone Music. 7.10, Agricultural Notes. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News, Weather and Gramophone Music. 8.30, A 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. 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, Orchestral Concert. In an interval at 1.0, p.m., Time and News. 2.0 to 3.0, Interval. 3.0, Time and Announcements. 3.20, Talk on Poultry Rearing. 3.30, Tourist Talk. 3.55, Gramophone Concert of Variety Music. 4.35, Talk for Young People: Primitive Man and Fire. 5.0, Talk: Oriental and South European Towns—Stamboul, Cairo and Naples. 5.25, Violin and Pianoforte Recital: Erich Graf (Violin), Julie Firsst (Pianoforte), and Otto Schulhof (Pianoforte); Sonata in E minor, Op. 29, for Violin and Pianoforte (Pfitzner); Improvisation (MacDowell); Paradiesvogel am Wasserfall (Niemann); Spieldose (Sauer). 6.5, Talk: Lessons of the Prince Eugen Exhibition. 6.30, Technical Talk. 7.0, Military Band Concert, conducted by Anton Mader: Military March (Beethoven); Overture, Stiffelio (Verdi); Soronade and Spanish Waltz (Metra); Selection from The Geisha (Jones); March, The Star Spangled Banner (Sousa); Fantasia, The Negro's Dream (Myddleton); Fantasia on Russian Folk Songs; Waltz, Alt Wienerisch (Schrammel); March (Mader). In an interval at 7.35, Time and Announcements. 8.15, Radio Survey. 8.50, Toluwalohu in Aether—Radio Jest (Wilhelm Lichtenberg). 9.10, News. 9.25, Topical Talk. 10.0, Light Music on Gramophone Records.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from Torun Cathedral. 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. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.45, News. 4.0, Popular Concert by the Poznan Opera House Orchestra, conducted by Tyllja, relayed from Cichocinek, Leonora Overture (Beethoven); Waltz from Die Puppenfee (Bayer); Selection from Cavalleria rusticana (Mascagni); Mazurka from La Gioconda (Ponchielli); Mazurka from Halka (Moniuszko). 5.0, Topical Talk. 5.15, Pianoforte Recital by Marie Bar. Pastorale (Mozart); Minuet (Biaffat); La plus que lente (Debussy); Ondine (Ravel); Three Pieces (Medtner); Scherzo in A Minor (Prokofiev). In the intervals, Violin Solos, relayed from Cracow, 959 kc/s, 312.8 metres. 6.15, Topical Talk. 6.35, Light Music on Gramophone Records. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Reading. 8.0, Light Music. 8.50, Radio Journal. 9.0, Answers to Agricultural Correspondence. 9.10, Violin Recital by Eugenie Chinska: Grave (Friedemann-Bach-Kreisler); Sielienne and Rigodon (Francoeur-Kreisler); Minuet (Dorpara-Kreisler); Rosamund (Schubert-Kreisler); Minuet (Debussy); Balaban (Ravel); Minstrels (Debussy); Salyr and Dryads (Zaolt); Waltz from Der Rosenkavalier (R. Strauss-Prihoda). 10.0, Dance Music. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music (cont'd).

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—8.10 p.m., Announcements. 8.30, Concert by the Station Orchestra: Soloist: Wladimir Rajacic (Pianoforte). 10.0, Light Music. 10.30, News, Weather and Programme Announcements. 10.40, Light Music by the Russian Orchestra. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

AGEN

662.1 kc/s, 453 metres; 0.5 kW.—12.30 p.m., Light Music: Selection from Bitter Sweet (Coward); Dance No. 5 (Granados); Jota (Lenglas); Les Goûlands (Boyer); Berceaux (Fauré); Vogel aus Prophet (Schumann); Le roi des commis-voyageurs (Bach-Laverne). 1.0, News Bulletin. 1.15, Concert (contd.): Selection from Frederica (Lehár); Selection from Mam'zelle Nitouche (Hervé-Tavan); Selection from Les Cloches de Corneville (Planquette); Melody (Fucik); Melody (Henders); Air from Precioso (Weber). 8.0, Concert: March, The Star-spangled Banner (Souza); March, Colonel Bogey (Alford); Piece (Marlot); Piece (Jourman). 8.30, News Bulletin. 8.45, Overture, Le Carnaval romain (Berlioz); Waltz from Coppélia (Delibes); Waltz (Alberty); Melody (Marc); Eperdument (Gallopin). 9.15, Talk.

ATHLONE

725 kc/s, 413 metres; 60 kW. Relayed by Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.30, Time, Weather, Stock Report and Gramophone Concert. 6.0, Gramophone Music. 6.40, News. 7.0, French Lesson. 7.15, Talk: The Poetry of Thomas Davis. 7.30, Time Signal. 7.32 to 8.35, Mendelssohn Programme. 7.32, Mendelssohn Music by the Station Orchestra. 8.0, Mendelssohn Music by Eleanor Reddy (Violin). 8.20, Mendelssohn Songs by A. M. Reid (Soprano). 8.35, Lecture Recital: The Pickwick Papers. 9.0, Irish Music by the Station Orchestra. 9.15, Anglo-Irish Songs by Laurence Egar (Tenor). 9.25, Pipe and Fiddle Duets by Leo and John Rowson. 9.45, Sponsored Programme. 10.45, News and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Radio Trio. 8.0, Request Gramophone Music. 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes, Weather and Exchange. 10.5, Music by the Radio Orchestra. 10.30, El Santo de la Isidra—Play in One Act (Carlos Arniches, Music by Torregrosa), followed by El Cabo Primero—Musical Play in One Act (Caballero). In the interval at 12 Midnight, News. 1.0 a.m. (Friday), Close Down.

BARI

1,112 kc/s, 259.8 metres; 20 kW.—8.0 p.m., Agricultural Report, Tourist Talk and Dopulavoro Announcements. 8.20, News in Albanian. 8.25, Giornale Radio. 8.30, Time and Announcements. 8.35, Weather. 8.45, Military Band Concert, conducted by Salvatore Rubino. Inno (Mercadente); Selection from La sciava saracena (Mercadente); Selection from Dejanice (Catalani); Nocturne in C Minor (Chopin); Polka in A Flat (Chopin); Selection from William Tell (Rossini). 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.—6.0 p.m., Gymnastics. 6.30, Gramophone Music. 7.0, Talk. 7.30, Concert by the Station Orchestra. 8.30, Programme from Ljubljana. 10.30, Time Signal and News, followed by Cigany Music from the Potrosadka Zadruga Restaurant.

BERLIN

DEUTSCHLANDSENDER (Reichssender), 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Gramophone Concert. 3.0, Report from a Trade School (on Gramophone Records). 3.30, Weather and Exchange. 3.45, Talk: Legends of the Rhineland. 4.0, See Heilsberg. 5.0, Talk for Women. 5.20, Home Again—Musical Radio Sequence. 6.0, A Poem. 6.5, Eberhard Wolfgang Möller reads from his own Works. 6.30, A Radio Report: Horse-breeding in Germany. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, To-day's Motto. 8.5, A Radio Sequence (Kurd Kischauer). 8.40, Topical Talk. 8.55, Orchestral Concert, conducted by Werner Richter-Reichhelm. Soloist: Max Strub (Violin). Summer Idyll (Reuss); Totentanz—Suite for Violin and Orchestra (Thiessen); Suite in C (Kuhn). 10.0, News. 10.45, Weather. 11.0, Programme from Langenberg. 12 Midnight, Close Down.

BERLIN

(FUNKSTUNDE), 715 kc/s, 419.5 metres; 1.5 kW.—1.0 p.m., Gramophone Concert. Part I, Operatic Music: Aria from Fichello (Beethoven); Selection from Martha (Flotow); Selection from Der Evangelinam (Kienzl); Duet from Undine (Lortzing); Finale from Carmen (Bizet); Duet from Madame Butterfly (Puccini); Aria from Madame Butterfly (Puccini); Finale from the First Act of Tosca (Puccini); Selection and Duet from Rigoletto (Verdi); Drinking Song from La Traviata (Verdi); Miserere from Il Trovatore (Verdi); Finale from the Second Act of The Force of Destiny (Verdi); Second Finale from Aida (Verdi). Part II, Zither Music: Schönfeldt March; Polka. Das liegt bei uns im Blut; Waltz, Natur-sänger; March from Die Landstreicher; Waltz from Der Schatzmeister; Kinderlieder-Marsch. In the interval at 1.40 p.m.,

THURSDAY
AUGUST THE THIRTY-FIRST

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL "A Wonderful Week-end," sentimental comedy, by C. Denis Freeman.
LONDON REGIONAL Recital of Gaelic songs.
MIDLAND REGIONAL Choral programme.
NORTH REGIONAL Sonata recital.
WEST REGIONAL Orchestral concert.
SCOTTISH REGIONAL Recital of Gaelic songs.
BELFAST Ballad concert.

ABROAD

ATHLONE 7.32 p.m. Mendelssohn programme.
BRUSSELS (No. 2) 9.0 p.m. Orchestral concert from the Casino, Knoeke.
BUCHAREST 8.0 p.m. Symphony concert, by the Station Orchestra.
OSLO 10.15 p.m. The Station Orchestra, conducted by Kramm.
PALERMO 8.45 p.m. Concert of operetta music.
PRAGUE 9.0 p.m. Orchestral concert in honour of the Dutch National Festival.
ROME 8.30 p.m. Operatic programme.
STRASBOURG 6.30 p.m. Orchestral concert of Russian music.
TOULOUSE 9.0 p.m. Concert version of opera "La vie Parisienne," by Offenbach.
WARSAW 8.0 p.m. The Station Symphony Orchestra, conducted by Oziminski.

Weather and News. 3.0, Exchange and Market Prices. 3.20, Programme for Young People. 3.50, Recital by Bert Eiken (Tenor) and Willy Janicke (Bandonion). 4.15, Talk: Why does hair become grey? 4.30, Chamber Music. 5.25, Reading in Memory of the Battle of Tannenberg. 5.45, Recital of Songs by Alfred Schattmann, by Clara Maria Elshorst, accompanied by the Composer. 6.10, Reading. 6.30, A Call from Magdeburg. . . . 6.40, The Funkstunde informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Lottery Announcements. 8.5, Folk Songs. 8.40, Reading from the Diary of an Orator. 9.0, Dance Music by the Station Orchestra, conducted by Siegfried Schulz and the Adalbert Lutte Dance Band. In the interval at 10.0, News. 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.—6.30 p.m., Radio Journal relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres. 7.40, Talk arranged by the International Labour Bureau. 7.55, Lottery Results and Results of the Charade Competition. 8.0, News. 8.15, Gramophone Music. 8.30, Le Pen de Jolie—Comedy in Three Acts (André de Lorde and Claude Roland).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—2.50 p.m., Concert by the Bratislava Sokol Band, conducted by Votyčka. 3.55 to 4.0, See Prague. 5.25, See Brno. 5.45, Gramophone Music. 5.55, Talk: Blind Children. 6.10, Concert. 6.55, Talk for Housewives. 7.0, See Prague. 7.10, Talk relayed from Kosice, 1,022 kc/s, 293 metres. 7.25, See Prague. 8.0, A One-Act Play. 8.45, 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.—2.5 p.m., Gramophone Concert of Drinking Songs. 3.0, Market Prices. 3.10, Talk: Silberberg. 3.20, Review of Books. 3.35, Programme for Children. 4.0, See Heilsberg. 5.0, Recital of Songs by Aga Goretzki-Svoboda (Soprano). 5.25, Market Prices and Topical Talk. 5.50, Zither Recital. 6.20, Talks by Workers and their Leaders. 6.50 Weather and News. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, The Land War—Radio Scenes (Heinrich Bauer). 9.0, News.

9.10, Summer Songs to the Lute. 9.40, Reading (Hans Grimm). 10.0, Time and News. 10.20, Austria. 10.40, Dance Music from Berlin (Funkstunde). 1.0 a.m. (Friday), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—5.25 p.m., Programme for Children. 5.45, Gramophone Music. 5.55, Bread—Radio Report. 6.25, German Transmission: News and Talks: (a) Fishing, (b) Film Laboratories. 7.0, See Prague. 7.10, Talk from Kosice, 1,022 kc/s, 293 metres. 7.25, See Prague. 8.0, See Moravská-Ostrava. 8.20, Concert by a Village Band, conducted by Jos. Indra. 8.45, 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 Station Orchestra, conducted by P. Leemans. Overture. The Italian Girl in Algiers (Rossini); Spanish Dance, Villanaca (Granados); Air de Ballet, Pierrette (Chaminade); Selection from Faust (Gounod); Scyllenne and Rigandon for Violin (Francoeur-Kreisler); The Musical Box and the Pianola (Antiga); Chanson d'Arlette (De Teyce); Selection from Il est charmant (Moretti). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Music. 5.0, Spanish Concert by the Station Orchestra, conducted by Jean Kumps. Spanish Suite (Albeniz); Dances (Granados); En espagne (Turina); Two Spanish Dances (Falla). 5.30, Gramophone Records for Children. 6.0, Cookery Talk. 6.15, Gramophone Concert. 7.15, Talk for Workers. 7.30, Sports Talk. 8.0, Concert by the Station Orchestra, conducted by Walpot. March, Avee entrain (Weyts); Waltz, Aimer toujours (Paradis); Overture, Die Frau Meisterin (Suppe); Three Light Pieces (Fletcher); Selection from The Merry Widow (Lehár). 8.45, Talk. 9.0, Concert, relayed from the Kursaal, Ostend, followed by Le Journal Parlé and German Music on Gramophone Records.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish.—12 Noon, Gramophone Records. Homage March (Wagner); Kamarinskaya (Glinka); Scherzo (Lalo). 12.20 p.m., Mendelssohn Recital by Mlle. Cammaert (Pianoforte). Jägerlied; Two Songs without Words; Die Spinnerin. 12.30, Gramophone Music. L'apprenti sorcier (Dukas); Rakoczy March (Berlioz). 12.45, Pianoforte Recital (contd.). Polichinelle (Rachmaninov); Etude (Heuselt); Seguidilla (Albeniz). 1.0, Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Leemans. Overture, Sicilian Vespers (Verdi); Four Pieces for Orchestra (d'Ambrosio); Oriental Dances (Glinka); Spanish Dances (Albeniz); German Dances (Schubert). 5.0, Sym-

phony No. 9 (Beethoven), on Gramophone Records. 6.45, Programme for Children. 6.30, Programme to be Announced. 7.12, Catholic Report. 7.15, Religious Address. 7.30, Programme for Women. 8.0, Concert by the Symphony Orchestra, conducted by Jean Kumps. K.V.R.O. Strijdlid (Meulmans); Festival March (Gillon); Hungarian Rhapsody No. 14 (Liszt); Choral Music on Gramophone Records; A Night on the Bare Mountain (Mussorgsky). 8.45, Talk by an Unemployed man. 9.0, Orchestral Concert, conducted by Karel Caudael, relayed from the Casino, Knoeke. Soloist: Tindel (Bartone); Cortege de trône from Cantique des Cantiques (Caudael); Der Opernal (Helmberger); Aria from Thais (Massenet); Symphonic Poem, Les Preludes (Liszt); Aria from (a) Tannhäuser (Wagner), and (b) Hamlet (Thomas); Overture, Charlotte Corday (Benoit). After the Concert, Evening Prayer and Le Journal Parlé, followed by Gramophone Music.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Jordacheo Orchestra. In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Light Music on Gramophone Records. 7.40, Educational Talk. 8.0, Song Recital by Aida Helta. Lorelei (Liszt); Liebestraum (Liszt); Aria from Figaro (Mozart); Aria from La Bohème (Puccini); Romanian Song (Popesco). 8.20, Symphony Concert by the Station Orchestra, conducted by Ghiga. Soloist: Kozanov (Violin). Overture, Leonora, No. 3 (Beethoven); Violin Concerto in A Minor (Bach); Symphonic Poem, Le Rouet d'Omphale (Saint-Saëns); Second Symphony in D (Brahms). 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 7.30 p.m. till Close Down. 6.0 p.m., Talk. 6.30, Harp Recital by Gyula Revere. 7.0, Talk. 7.30, One-Act Opera, relayed from the Studio. 9.30, News. 10.0, Concert by the Alexander Bura Cigany Band, relayed from the Ritz Hotel. 11.0, Trio Concert, relayed from the Café Simphon.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.3 metres.—12 Noon, Time, Chimes from the Town Hall and Weather. 12.5 p.m., Concert by the Max Skalka String Ensemble, relayed from the Hotel d'Angleterre. 2.0, Interval. 2.45, Concert by the Copenhagen Wind Instrument Orchestra, conducted by Dyring. Soloist: Richard Larsen (Songs). Picador March (Souza); Overture, Les Dragons de Villars (Maillart); Potpourri of Danish Folk Songs (Pockel); Czardas from Die Fledermaus (Strauss); Waltz, Dolores (Waldteufel); March, Le Père la Victoire (Ganne); Songs: (a) Aria from L'elisir d'amore (Donizetti); (b) Aria from The Girl from the Golden West (Puccini); (c) Mattinata (Leoncavallo); (d) Cavatina from Faust (Gounod); Eufel March (Fahrbach); Overture, Le Roi d'Yvetot (Adam); Waltz, Ivara (Andersen); Duet from Act I of Carmen (Bizet); Selection from Masaniello (Auber); Cavalry Galop (Lundbye). 4.45, Programme for Boys. 5.30, Exchange and Fish Market Prices. 5.45, Talk with illustrations: Finnish Songs. 6.15, Elementary English Lesson. 6.45, Weather Forecast. 7.0, News. 7.15, Time. 7.16, Political Talk. 7.45, Danish Lesson, followed by Weather Report. 8.10, Concert by the Radio Symphony Orchestra, relayed from the Broadcasting House. Conductor: Nicolai Malko. Soloists: Folmer Jensen (Pianoforte), and Niels Hansen (Songs). Symphony, No. 4, in A—The Italian (Mendelssohn); Ballet Suite (Rameau-Mottel); Piano-forte Concert in A (Mozart); Two Arias from Tosca (Puccini); Overture, The Thieving Magpie (Rossini). 10.15, News. 10.30, Dance Music, relayed 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.—7.5 p.m., The Letter Box. 7.20, Miscellaneous Items and News. 7.35, Programme Announcements. 7.40, See Warsaw. In the intervals, News and Sports Notes. 11.0 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m. till 12 Noon, Programme in English by the I.B.C. 11.0, The Philco Happy Hour. Part I: Orchestral Concert: Signature Tune; Loin du bal (Gillet); Violin Solo, An Old Viennese Dance (Vogelin); Sans-Souci (von Blon); The Picaninny's Picnic (Squire); 'Cello Solo, The Broken Melody (Van Biehe); The Butterfly (Bendix); Romance (Rubin-stein); Valse bluette (Drigo); Part II: Dance

AUGUST 31st **THURSDAY** continued

Music: Adorable; I've told every little Star; My first love to last; The Song is you; In old Vienna; The Grandfather's Clock; I wanna count Sheep; I wake up smiling; Signature Tune. 12 Noon to 4.30 p.m., Programme in French. 4.30 to 6.0, Programme in English by the I.B.C. 4.30, The Nursery Corner; Music, Story and Birthday Greetings. 5.0, Concert for Worthing and Littlehampton Listeners; Signature Tune. The Night by the Sea; Selection from Merrie England (German); Dear old Cronies (Lauder); Extracts from Kinderszenen (Schumann); Goodbye (Tosti); The Hills of Home (Fox); Dance of the Nymphs (Bireh); Blossoms from Mozart's Garden. 5.30, Concert of Military Band Music for Brighton and Hove Listeners: Florentine March (Fucik); Selection from Rigoletto (Verdi); Radezky March (Strauss); Song, The Drum-Major (Newton); Song, The Blackbird in the Apple Tree (Lubbeck); Song, Route Marching (McCall); Valse des aubonettes (Drigo); The Bullfighter's March (Kottau); Signature Tune. 6.0 to 10.0, Programme in French. 10.0, Dance Music by the Beolians; Signature Tune, Bells of Normandy; I've told every little Star; Love, here is my heart; Two Buck Tim from Timbuctoo; Somebody stole my Gal; When work is through; One Tiny Tear; Hot Feet; You are too beautiful; Don't tell a Soul; I wake up smiling; In the Valley of the Moon; Nightfall; I cover the Waterfront; Love me to-night; A Ghost of a Chance; Waltzing in a Dream; Signature Tune. 11.0, Music and up-to-date Reviews of the Films; Selection from Splinters; How do you do, Mr. Brown? Sergeant Flagg and Sergeant Quirt; Pardon Madame; What more can I ask? The Whip; Follow a Star; Selection from Love me to-night. 11.30, Club Concert for Tewkesbury Listeners; Part I: Light Music; Signature Tune, The Chum Song; Johann Strauss Fantasia; Peter, Peter; My Dream (Waldteufel); Bandonian Solo, Father Rhine March; Woodland Peace; Sundown in a Little Green Hollow; Valse septembre; Once on the Rhine. 12.5 a.m. (Friday), News Bulletin in English. 12.10 (approx.), Club Concert (contd.); Part II: Rhythm Band; Rhythm Spasin; White Lightning; Old Yazo; Wild Waves; Hot Feet. 12.30, Dance Music by the Blue Mountaineers; There's a Cabin in the Pines; Jog along; Love you funny thing; In the Valley of the Moon; Hold me; I got Rhythm; All over Italy; When my little Pomeranian; Bahama Mama; When it's lamp-lighting time in the Valley; The Language of Love; If you were only mine. 1.0, Dance Music by the Beolians; Signature Tune, Bells of Normandy; Sharing; We just couldn't say Goodbye; With summer coming on; I'll never be the same; Cotton Club Stomp; Hagan Moon; Walk Street Walk; Stardust; Havin' I done? Now that you're gone; Try getting a good Night's Sleep; Can't we talk it over? You can make my Life a Bed of Roses; Actions speak Louder than Words; Say; Who's your little who zis? Signature Tune. 1.57, I.B.C. Goodnight Melody. 2.0, 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.—3.30 p.m., Programme for Children. 4.25, Economic Notes. 4.30, Concert. 5.45, Economic Notes. 6.0, Talk: The Motor-Car Industry. 6.25, 6.45, Talk: The New Era in German Art. 6.45, Today's News. 6.50, Time and News. 7.0, Transmission for all German Stations; German Marches. 8.0, Reading (Valentine Pfeifer). 8.20, Talk: How to Travel. 8.45, Variety Item. 9.0, Dance Music from Berlin (Funkstunde). In the interval at 10.15, Time and News. 1.0 a.m. (Friday), 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, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—5.45 p.m., Variety Programme. 6.25, Book Review. 6.45, Frankfurt Exchange. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Das Bahnhellus—Play in Three Acts (Westerich). 9.0, Dance Music, relayed from Berlin (Funkstunde). 10.0, Time and News. 10.20, Topical Talk. 10.30, Dance Music (contd.).

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 intervals at 1.20 and 2.0, News. 3.0, Market Prices. 3.30, Programme for Young People.

4.0, Concert by the Königsberg Opera House Orchestra, conducted by Wolfgang Brückner, relayed from the Tiergarten. Overture, Die Fledermaus (O. Strauss); Rhapsody (Liszt); Overture, The Barber of Bagdad (Cornelius); Musikanten-Suite (Geisler); Waltz, Roses from the South (Joh. Strauss); Radezky March (Strauss). 5.30, Review of Periodicals. 5.55, Talk: Sail Planning. 6.15, Market Prices. 6.25, Agricultural Talk. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Weather. 8.10, Gerhard Eschenhagen reads from his own Works. 8.30, Organ Recital by Walter Hauff, relayed from the Church of St. Peter and St. Paul, Danzig. Toccata and Fugue in F (Buxtehude); Choral Paritata; Nun lasst uns Gott, dem Herrn (Lübeck); Passacaglia in C Minor (Bach). 9.0, Concert by the Brunner Quartet. String Quartet in E Minor (Verdi); String Quartet in F Minor (Cassado). 9.45, Elementary English Lesson. 10.15, Weather and 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.); Concert by the K.R.O. Orchestra, conducted by van 't Woud and the K.R.O. Choir, conducted by Vermeulen. 1.40 till Close Down, Programme of the Christian Radio Society (N.C.R.V.). 1.40, Organ Recital by Jo Vincent. 2.40, Organ Recital by Blaauw. 3.40, Bible Reading with Songs and Organ Solos. 4.40, Concert by the Meyerbeer Orchestra, conducted by Bielen. 6.40, Police Notes. 6.55, Dress-making Lesson. 7.10, Press Review of the Week. 7.40, Concert by the Small Orchestra, conducted by Piet van der Hurk; Soloist, Maartje Offers (Contralto); Overture, Iphigenia in Aulis (Gluck); Che faro senza Euridice, from Orpheus and Eurydice (Gluck); Dank sei dir Herr (Händel); Sinfonia (Bach); Meine Seele ist stille zu Gott, Op. 25 (Bach); Divertissement No. 10 in F, Op. 247 (Mozart). 8.40, Gramophone Music. 9.0, News. 9.10, Concert (contd.). In the interval 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.). Programme in Honour of the Birthday of Her Majesty Queen Wilhelmina. 7.40 a.m., Time Signal. 7.41, Chimes, relayed from St. John's Cathedral, 's Hertogenbosch. 8.10, Programme, relayed from Rotterdam. Address by the Lord Mayor of Rotterdam. Oranje Nassau—Cantata (Catharina Van Rooyen), by a Choir of Three Thousand and Orchestra, conducted by Mrs. Grimberg-Huyser. Two Verses of the Dutch National Anthem. 8.40, Gramophone Music. 9.40, Divine Service Relay. 9.55, Gramophone Music. 10.40, Talk: Three Queens. 11.10, Gramophone Music. 11.40, Concert of Light Music by the Station Orchestra, conducted by Treep. In the intervals, Barrel-Organ Music. 1.55 to 2.10 p.m., Gramophone Music 3.40, Programme for Hospitals. 4.10, Gramophone Music. 4.40, Just William—Play for Children (Crompton). 5.20, Popular Music by Paul Godwin and his Orchestra. In an interval at 6.10, Sports Talk. 7.10, Talk: The Dutch Flag. 7.40, Time, Weather and News. 7.45, Concert by the Station Orchestra, conducted by Gerharz. Soloists: Willem Ravelli (Bass); Max Rodriguez (Cello). In the interval, Reading. 10.10, Radio Report of the Firework Display at Scheveningen. 10.40, News. 10.50, Gramophone Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 1.15, Variety Items. 8.0, Amusement Guide, Exchange and News. 8.10, Scientific Review. 8.20, Radio Concert. 8.50, News and Weather. 9.0, Radio Concert.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW. Relayed by Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Talk. 6.45, Song Recital. 7.0, Pianoforte Recital. 7.25, Talk. 7.50, Orchestral Concert. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music. 10.0 (approx.), Close Down.

LANGENBERG

1,635 kc/s, 473 metres; 60 kW.—12.50 p.m., News. 1.0, Concert, conducted by Eysoldt. Overture, Blue-Beard (Taubert); Waltz, Der Geliebte (Schütt); Finnish Sketches (Bruselmanns); Blumengelüster (Blon); Zug der Gnommen (Blon); Petite Suite (Bizet); Minuet

(Boccherini); Stephanie-Gavotte (Czibulka); Selection from Der Bettelstudent (Müllacker); March, Hoch Hauburg (Kral). In the interval at 2.0, News. 2.30, Interval. 3.0, A Radio Play for Children. 3.30, Economic Notes and Time. 3.50, Talk. 4.10, From the Gulf of Finland to the White Sea—Radio Sequence with Music (Pantenburg). 4.35, Legal Talk. 5.0, Gramophone Music. 5.30, Political Address. 5.45, Talk: The Technique of Speech. 6.0, Concert. 6.45, Announcements. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, News. 8.5, A Flying Visit. 8.20, Concert by the Station Chamber Orchestra, conducted by Wilhelm Keiper. Soloist: Lucie Bromby (Soprano). Peer Gynt Suite (Grieg); Gipsy Songs (Dvorak); Selection from The Pearl Fishers (Bizet). 9.0, Lewin Schücking—Radio Sequence (Friedrich Castelle). 10.0, News. 10.30, Serenade, conducted by Eysoldt. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.—Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon, Hans Sitt Concert of Chamber Music. Trio for Violin and Cello, Op. 63, No. 3; Serenade, Waltz and Bolero from Op. 73, for Violin and Pianoforte; Sonata, Op. 109, No. 3, for Pianoforte and Violin; Trio, Op. 63, No. 2, for Pianoforte, Violin and Cello. 1.0 p.m., News. 1.15, Old and Modern Dance Music on Gramophone Records. 2.0, News. 2.10, Art and Film Notes. 2.30, Talk. 3.0, Programme for Young People. 3.35, Market Prices. 4.0, Concert. 5.50, Economic Notes, Weather and Time. 6.0, Talk: Old and New Economic Reform. 6.20, Radio Report from the Weimar Jena Summer College. 6.50, Taxation Talk. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, See Breslau. 9.0, Dance Music from Berlin (Funkstunde). In an interval at 10.15, News. 1.0 a.m. (Friday), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—7.0 p.m., Orchestral Concert. 8.0, Talk on Bee-Keeping. 8.30, Concert by a Vocal Quintet. 9.15, Song Recital. 10.0, Orchestral Concert. 10.30, Weather and News. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. German Programme. 7.30 p.m., Concerto in A Minor for Pianoforte and Orlchestra (Schumann) on Gramophone Records. 8.15, Sonata in D for Pianoforte (Schubert). 8.50, News in French. 9.0, Schumann Song Recital. In an interval at 9.20, Talk in German. 9.50, News in German. 10.0, Variety Concert on Gramophone Records. 10.30, Dance Music on Gramophone Records.

LWOW

788 kc/s, 381 metres; 16 kW.—7.20 p.m., Miscellaneous Announcements. 7.40, See Warsaw. 10.40, Gramophone Music. 11.0 (approx.), Close Down.

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. 8.30, Relay from Paris (Ecole Supérieure), followed by News.

MADRID

EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, and Programme for Children. 9.15, Topical Review. 9.30, Interval. 11.0, Chimes, Time, Topical Review. 11.15 (approx.), Song Recital. 11.30, Municipal Band Concert from Rosales. 1.15 a.m. (Friday), Topical Review. 1.30 (approx.), Chimes and Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.30 p.m. (approx.) till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.15 p.m., See Prague. 7.10, Talk, relayed from Kosice, 1,022 kc/s (293 metres). 8.0, Microphone Report from a Post Office. 8.20, See Prague. 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—1.45 p.m., Weather. 2.45, Weather. 3.0, Popular Concert. 4.0, Agricultural Talk. 4.30, Literary Programme. 5.30, Programme Announcements. 5.45, Topical Talk. 9.0, News. 9.30, Programme Announcements. 9.55, Chimes. 10.5, Press Review in English. 10.30, Newspaper 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., Orchestral Concert. Parade-marsch der Königsjäger (R. Strauss); Prelude to Die Lorelei (Bruch); Waltz, Blüten-selene (Trutler); Romance (Kahnt); Oriental Intermezzo (Newes); Selection from The Gipsy Baron (Joh. Strauss); The Rosary (Sevin); Hirtenleben in den Alpen (Kling); March, Hoch Heidecksburg (Herzer). 5.45, Agricultural Talk. 6.5, Guitar Duets by Margarete and Else Gropp. 6.25, Talk: Wagner and the German Revolution. 6.45, Time, Weather and Agricultural Report. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Concert by the Station Orchestra, conducted by Hans Winter. Grave (Rameau); Siegfried Idyll (Wagner); Capriccio for Pianoforte and Orchestra (Stravinsky); Gavotte (R. Strauss). 10.0, Austria. 10.20, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 515 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.—6.0 p.m., Concert, relayed from the Grand Hotel. 6.0, Recitation. 6.30, Divine Service and Sacred Song Recital. 7.0, Announcements, Weather and News. 7.30, Old and Modern Dance Music on Two Pianofortes. 8.0, Time Signal. 8.1, Agricultural Programme. 8.30, Arias and Duets from Opera by Astrid and Josef Szerenyi; Duets from Rigoletto (Verdi); Amarilli (Caccini); Aria from Don Sebastian (Donizetti); Nedda's Aria from I Pagliacci (Leoncavallo); Agatha's Aria from Der Freischütz (Weber); Duets from La Traviata (Verdi). 9.15, Talk. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Concert by the Station Orchestra, conducted by Kramm: Overture No. 3, Leonora (Beethoven); Two Contredanses (Beethoven); Symphony in B minor (Schubert).

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolaro Notes, Agricultural Talk and Giornale Radio. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Concert of Operetta Music: Selection from A Waltz Dream (O. Strauss); Selection from Fascino azzurro (Bellini); Interlude: Menzogna di bordo—One-Act Comedy (de Stefani); Selection from: (a) The Count of Luxembourg (Lehar); (b) The Bayadere (Kálmán). 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 G-dot Signals).—6.45 p.m., Talk on the Theatre. 7.0, Le Journal Parlé. 8.30, Gramophone Concert. Part I—Extracts from Mignon—Opera (Thomas). Part II—Variety Music. 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, Concert. 8.5, Talk. 8.20, Selection from Le bal de Béatrice d'Este—Ballet (Hahn). 9.0, Variety Concert relayed from the Restaurant de la Forêt, Le Touquet. 11.0, 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, Protestant Address. 12.30 p.m., Symphony Concert on Gramophone Records. Overture, Si j'étais Roi (Adam); Ave Maria (Gounod); Napoli from Impressions d'Italie (Charpentier); Triana (Albeniz); March and Cortège from The Queen of Sheba (Gounod); Chansons de Miarka (Alexandre Georges); Norwegian Rhapsody (Lalo); Ballet Music from Isoline (Messager); Second Hungarian Rhapsody (Liszt); Mai (Hahn); Scottish March (Debussy); Chanson des Sirènes (Honegger); Bretonne; Valse romantique (de Séverac); Suite, Mother Goose (Ravel). In the interval at 1.0, Exchange, News and Weather, and at 1.30, Exchange. 3.45, Exchange and Market Prices. 7.0, Agricultural Notes. 7.10, Gramophone Music: Berceuse from the Suite brève (Auber); Oriental Prelude (Kounguil); Le bel oiseau (Delerose); Musette (Bach-Polain); Asturias (Albeniz); Ronde d'amour (Chaminade); Nuit calme (Böhm); L'Hiron-delle (Daquin); Vergiliches Ständchen (Brahms); Ballad (Debussy); Humoresque (Dvorak). 7.50, Commercial Prices and News. 8.0, Gramophone Concert. Overture, William Tell (Rossini); Song of the Flea (Musorgsky); Norwegian Rhapsody (Lalo). 8.30, News, Weather and Sports Notes. 8.45, Concert (contd.). Danse macabre (Saint-Saëns); Ständchen (Schubert); Nights in the Gardens of Spain (Falla); The Moldau

(Smetana); Selection from Resurrection (Alfano); Scheherazade (Rimsky-Korsakov). In the interval at 9.15, Press Review and News.

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayed by W2XK, on 48.85 metres, and 25.27 metres.—7.30 p.m., Pioneers. 7.45, KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Words and Music, from New York. 8.45, Federation of Pennsylvania Women. 9.0 to 10.0, New York Relay. 9.0, Thursday Special. 9.30, News and Markets. 9.45, Thursday Special. 10.0, Programme to be Announced. 10.15, Tarzan of the Apes. 10.30, Larry Larsen, from New York. 10.45, Orphan Annie, from New York. 11.0, News and Piano Classique. 11.15, Sports Notes and a Song. 11.30, Pittsburgh Spotlights. 11.45 to 12.45 a.m. (Friday), New York Relay. 11.45, Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, Concert Footlights. 12.45, Pathé News of the Air. 1.0, to 3.30, New York Relay. 1.0, Captain Diamond. 1.30, John Fogarty. 1.45, Floyd Gibbons. 2.0, Death Valley Days. 2.30, Wayne King's Orchestra. 3.0, Goldman Band.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—12.25 p.m., See Warsaw. 12.35, Interval. 12.59, Time Signal and Chimes from the Town Hall. 1.3, Gramophone Concert. 2.0, Financial Notes and Market Prices. 2.10, News. 2.15, Interval. 6.5, Military Notes. 6.15, See Warsaw. 7.20, Miscellaneous Items and News. 7.35, Theatre Notes and Programme Announcements. 7.40, See Warsaw. 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.—2.50 p.m., See Bratislava. 3.55, Exchange. 4.0, Interval. 5.25, See Brno. 5.45, Gramophone Music. 5.55, Talk. 6.5, Agricultural Report. 6.15, Talk for Workers. 6.25, News in German. 7.0, German Transmission: Agricultural Report. 7.0, Chimes and News. 7.10, Talk from Kosice, 1,022 kc/s (293 metres). 7.25, The Development of the Pianoforte Sonata—Mozart Recital by Jan Herman: Sonata, No. 14; Sonata No. 11. 8.0, See Moravská-Ostrava. 8.20, Concert of Light Music. 8.45, Talk on the following Transmission. 9.0, Orchestral Concert in Honour of the Dutch National Festival: Overture, Cyrano de Bergerac, Op. 23 (Johan Wagenaar); Symphony No. 3 from Mijn Vaderland (Zweers); Overture, Byron (Holbrooke). 10.0, Time and News. 10.15, Concert of Light Music. 11.0 (approx.), Close Down.

RABAT

721.1 kc/s, 416 metres; 6 kW.—1.30 p.m., Popular Concert: Overture, The Italian Girl in Algiers (Rossini-Weininger); The Mill in the Black Forest (Ellenberg); Valse des blondes (Ganne); Mexican Song, Estrellita (Ponce); Bal d'oiseaux (Lacôme-Charmettes); Selection from Mignon (Thomas-Tavau); Song: O sole mio (di Capua); Cello Solo: Serenade (Samazeuilh); Basque Rhapsody (Pierne-Rudd); Neapolitan Song: O Vucchella (Tosti); Serenade (Luciano); Rigaudon (Chaminade). 3.0 to 5.0, Interval. 5.0 to 6.0, Gramophone Music. 8.0, Arabian Programme with Gramophone Music. 8.45, Le Journal Parlé and Weather. 9.0, Concert: Waltz, Leicht wie Schaum (Fétras); Still wie die nacht (Böhml); Overture, La fête du village voisin (Roieldien-Damaré); Song from Le Jongleur de Notre Dame (Massenet); Les roses d'Espagne; Selection from The Bartered Bride (Smetana-Haenschel); Song from The Gipsy Baron (Joh. Strauss); Pianoforte Solo: Andante from the Sonata in F (Mozart); Song from La Bohème (Puccini); Spanish Caprice (Rimsky-Korsakov); Song: Le pas d'armes du Roi Jean (Saint-Saëns); En Bretagne (Bathou). In the interval: Le pain du ménage—Comedy in One Act (Renard). 11.0, Gramophone Music.

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 Lesson. 6.30, Interval. 12.29 p.m., Time Signal from Neuchâtel Observatory. 12.30, News. 12.40 (from Lausanne), Gramophone Concert. In an interval at 1.0 (from Lausanne), Financial Notes. 2.0, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Geneva), Dance Music. In an interval at 4.15 (from Geneva), Humorous Programme. 5.30, Interval. 7.0 (from Geneva), Programme for Mountain-Lovers. 7.25 (from Geneva), News. 7.50 (from Geneva), Tourist Talk in Esperanto. 8.0 (from Geneva), Pianoforte Recital by Norman Fraser. 8.30 (from Geneva), Reading of Modern Poems. 8.45, Concert of Modern Music by the Radio Suisse Romande Orchestra, conducted by Kurth Pahlen. 9.50, News. 10.0, Report on the Cycling Tour of Switzerland. 10.30 (approx.), Close Down.

AUGUST 31st

THURSDAY

continued

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme. 9.30, Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News. 10.30, Reading. 11.0, Concert by the Radio Trio, followed by Icelandic Songs on Gramophone Records.

RIGA

572 kc/s, 525 metres; 15 kW.—7.5 p.m., Concert of Opera Music by Massenet and Thomas. 8.0, News. 8.20, Song Recital. 8.40, Popular Concert. In the interval at 9.0, News. 9.30, Dance Music. 10.0 (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, from 5.0 p.m. (approx.). 1.5 to 2.15 p.m., Orchestral Concert. In the interval at 1.30, Giornale Radio and Exchange, and at 2.0, Time and Announcements. 4.30, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.0, Reading. 5.10, Weather. 5.15 to 6.30, Song and Cello and Soprano Recital by Cesare Colzmarino and Maria Laratta, and Giuseppina Marciano; Cello Solos: (a) Pavane pour une infante défunte (Ravel). (b) Madrigale (Simonetti); Soprano Solos: (a) Aria from Lakmé (Delibes). (b) C'era una volta (Belli). (c) Non girare (Sinigaglia); Cello Solos: (a) Chanson sans paroles (Tchaikovsky). (b) Polka (Goltermann); Three Italian Songs for Soprano: (a) Ninna nanna romagnuola (Practella). (b) Nacchete, 'nzina 'nzina (Montanaro). (c) Canto di nozze valdostano (Confalonieri). 6.40 (Naples), Shipping and Sports Notes. 6.45, Dopolavoro Notes and Tourist Report. 7.10, Agricultural Notes. 7.20, News in Foreign Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Gramophone Music. 8.30, Operatic Programme: (a) Selection from La grotta di Trofonio—Opera in Two Acts (Antonio Salieri). (b) Selection from L'occasione fa il ladro—Opera in One Act (Rossini). (c) Il Socrate immaginario—Opera (Paisiello). In the intervals, Talk and Theatre Notes. 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. (Friday), Stock Reports and Baseball Scores. 1.0 to 3.0, New York Relay. 1.0, Variety Programme. 2.0, Captain Henry's Show Boat. 3.0, Paul Whiteman's Orchestra, 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.—5.0 p.m. (from Zürich), Concert by the Small Station Orchestra, conducted by Max Scheerbaum. 6.0 (from Berne), Extracts from German Opera, on Gramophone Records. 6.30 (from Basle), Readings. 7.0 (from Basle), Time, Weather, and Traffic Report. 7.10 (from Basle), Light Music on Gramophone Records. 7.45, Italian Lesson. 8.30 (from Basle), Concert by the Basle Orchestral Society. 9.0, Weather and News. 9.10 (from Basle), Concert (contd.). 10.15 (approx.), Close Down.

SEVILLE

815 kc/s, 368.1 metres; 1.5 kW.—9.30 to 10.0 a.m., News Bulletin. 3.0 to 4.0 p.m., Variety Programme. 10.0, Variety Concert, followed by News, Exchange, Market Prices, and Weather. 11.30 (approx.), Programme from Madrid, EAJ7. 1.30 a.m. (Friday), 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., Divine Service, relayed from Malmö, 1,301 kc/s, 231 metres. 5.30, Weather Chronicle. 5.45, Concert by a Balalaika Orchestra. 6.15, Gramophone Music. 7.0, Report on the European Motor Cycle Grand Prix, relayed from Saxtorp. 7.15, Weather and News. 7.30, Talk, relayed from Norrköping, 1,292 kc/s, 232.2 metres. 8.0, Saxophone and Pianoforte Recital by Sigurd Rascher and Witkowski; Suite, Aus den Bergen (Kaun); Sonata (Jacobi); Caprice (Grieg). 8.30,

Reading. 9.0, Song Recital by Folke Andersson. 9.30, Talk on Gymnastics. 9.45, Weather and News. 10.0, Orchestral Concert. Soloists: Charles Barkel and Ernst Törnqvist (Violin). Concerto No. 3 in D minor for Two Violins and Orchestra (Bach); Overture and Scherzo, Op. 52 (Schumann); Nocturne (Trapp); Overture, Donna Diana (Reznicek). 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 Exchange. 1.50, Orchestral Concert, conducted by Maurice de Villers. 2.0, Programme for Children. 3.0, Interval. 3.30, Orchestral Concert, conducted by Brouillette, relayed from the Casino, Vichy. Overture, Coriolanus (Beethoven); Norwegian Carnival (Svendsen); Ballet Music from Le Tribut de Zamora (Gounod); Soloist Item, Breton Rhapsody (Farigou); Selection from Manon (Massenet); Waltz, Je t'aime (Waltenfel). 5.0, French Elocution Lesson. 5.15, Orchestral Concert, conducted by Roskam. Suite variée (Messager); Selection from Rigoletto (Verdi); Waltz, Was Blumen träumen (Translatour); Salut d'amour (Elgar); Selection from La-haut (Yvain). 6.0, Talk in German: French Literature and the July Revolution. 6.15, Talk for Women. 6.30, Orchestral Concert of Russian Music, conducted by de Villers. Soloist: Denise Sternberg (Pianoforte). Spanish Caprice (Rimsky-Korsakov); Pianoforte Concerto (Glazunov); Fantasia for Violin and Orchestra (Rimsky-Korsakov); Three Pieces for Orchestra (Mussorgsky): (a) Scherzo. (b) Intermezzo. (c) Turkish March. 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in German. Lottery Results and Announcements. 8.30, Military Band Concert, relayed from Toul. In the interval, Talk: Toul and its Surroundings. After the Concert, 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 Noon, Concert by a Nazi Band: March, Der alte Fritz (v. Blon); Overture, Amazonenritt (Wiggert); Waltz, Im Walzerrausch (Lincke); Hochzeitstag in Liliput (Translatour); Potpourri, Operetten-Revue (Fétras); Ich sende diese Blume dir (F. Wagner); Jungdeutschland (Weninger); March, Vorwärts—Aufwärts (Koeh); March, Siegreicher Adler (Köby). 1.15 p.m., Time and News. 1.30, Gramophone Music. 2.0, Concert arranged by the Post Office. 2.30, Spanish Lesson. 3.0, English Lesson for Beginners. 3.30, See Frankfurt. 4.30, Orchestral Concert, relayed from Badenweiler: Homage March (Wagner); Overture, Quo vadis (Scassola); Waltz, Künstlerleben (Joh. Strauss); Selection from The Maid of the Black Forest (Jessel); Siamesische Wachtparade (Lincke); Piedmontese Dance (Sinigaglia); In Antonmatsalon (Vollstädt); March, Deutschlands Ruhm (Schröder). 5.45, Talk: Summer in Franconia. 6.10, Talk: The Egerland. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, See Breslau. 9.0, See Berlin (Funkstunde). 10.0, Time and News. 10.30, Philipp Mohler Song Recital by Gertrud Weber (Soprano): Cycle of Three Songs: Du meine heilige Einsamkeit; Three Love Songs. 10.50, Talk on Austria. 11.5, Dance Music, relayed from Berlin (Funkstunde). 1.0 a.m. (Friday), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.30 p.m., Orchestral Music. 7.0, Opera Music. Selection from: (a) Rigoletto (Verdi). (b) Louise (Chappettier), and (c) Cavalleria rusticana (Mascagni). 7.15, News. 7.30, Selection from Hansel and Gretel (Humperdinck). 7.45, Operetta Music. 8.0, Accordion Solos. 8.15, Hawaiian Guitar Solos. 8.30, Chansonnettes. 8.45, Dance Music. 9.0, Concert Version of La Vie Parisienne—Opera (Offenbach). 9.30, Light Music. 10.0, Music by a Symphony Orchestra. 10.15, News. 10.30, Concert for Listeners in Morocco. 11.15, Chansonnettes. 11.30, Concert. Selection from Cypariss et le chèvre-pied (Pierne); Air from The Merry Widow (Lehar); Strauss Potpourri; Air from Il Trovatore (Verdi); Overture, Poet and Peasant (Suppé). 12 Midnight, News. 12.5 a.m. (Friday), Orchestral Music. Selection from Alessandro Stradella (Flotow); Andante from the Italian Symphony (Mendelssohn). 12.15, Tangos. 12.30, 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, 95 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 p.m., Orchestral Concert. 6.0 to 6.5, Weather. 6.40, Giornale Radio Dopolavoro Notes, and Gramophone Music. 7.0, Time, Tourist Report, and Gramophone Music. 7.10, Agricultural Notes. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News and Weather. 8.30, See Rome. Giornale Radio after the Programme.

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, 1,058 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 Noon, Concert by the Wiener Symphoniker conducted by Friedrich Klapper: Prelude and Dream Pantomime from Hansel and Gretel (Humperdinck); Selection from L'Africaine (Meyerbeer); Waltz (Kratzl) Jota aragonesa (Glinka); Selection from Madame Pompadour (Fall); Selection from Das Fürstentum (Lehar); Romanian Folk Songs (Zirra); Indian Dance (Wacek) Waltz, Die Werber (Lanner). In an interval at 1.0 p.m., Time and Announcements. 2.0 to 3.0, Interval. 3.0, Time and Announcements. 3.20, Talk: Over the Houses of Vienna. 3.35, Programme for Children. 4.0, Opera Music on Gramophone Records: Prologue to Boris Godunov (Mussorgsky); Aria from The Twilight of the Gods (Wagner); Scene from Der Evangelistmann (Kienzl); Song Quartet from Rigoletto (Verdi); Song Quintet from A Masked Ball (Verdi); Aria from Lucia di Lammermoor (Donizetti). 4.40, Talk: The Bat. 4.55, Programme for Women. 5.20, Song and Piano forte Recital by Ruzena Herlinger (Soprano) and Jella Pessl: Vittoria (Carissimi); Nécor non più mi sento (Paisiello); Romance from Romeo and Juliet (Delalande); Aria from Armide (Gluck); Soprano Solos (Mozart): (a) Ridente la calma. (b) Tu Chioce; Sonata in A minor for Pianoforte (Mozart). 6.0, Talk: Mountain Roads. 6.25, Talk: Old Persian Culture in the Light of Recent Excavations. 6.55, Time, Weather and News. 7.5, Der Narrenhof—Operetta in Three Acts (Heller). 9.20, Reading. 9.45, Weather and Announcements. 10.30, 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., Popular Concert, conducted by Szule, relayed from the Café Bagatelle; March (Szule); Overture, The Merry Ways of Windsor (Nicola); Waltz from Das Puppenmädchen (Fall). 12.25, Polish Press Review. 12.33, Weather Report. 12.35, Concert (contd.): Hungarian Rhapsody No. 2 (Liszt); Boston Waltz, Françoise (Szule); Mazurka (Szule). 12.55, Radio Journal. 1.0 to 2.55, Interval. 2.55, Gramophone Music. 3.5, News. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.45, Boy Scouts' Report. 3.50, Gramophone Music. 4.0, Dramatic Programme, relayed from Lwów, 788 kc/s, 381 metres. 4.30, Chamber Music on Gramophone Records. 5.0, Review of Women's Journals. 5.15, Orchestral Concert, relayed from Lwów. 6.15, Talk. 6.35, Arias and Songs by Doliska-Sieradzka; Aria from The Force of Destiny (Verdi); Tamara's Aria from The Demon (Rubinstein); Aria from Gianni Schicchi (Puccini); Berceuse (Tchaikovsky); Stille Tränen (Sehmann); Tristesse (Noszkowski); The Dreary Steppe (Gretchaninov); Song (Roguski). 7.5, Gramophone Music. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Talk: The Market Places of Poland. 8.0 Concert by the Station Symphony Orchestra, conducted by Oziminski. Soloist: Czapielki (Baritone). March (Ziluhka); Serenade and Cortège (Moszkowski); Waltz, Wo die Zitronen blühen (Strauss); Selection from Le Tribut de Zamora (Gounod); Aria from The Barber of Seville (Rossini); Credo from Otello (Verdi); Waltz from The Sleeping Beauty (Tchaikovsky); Selection from The Queen of Spades (Tchaikovsky); Songs: (a) Night (Tchaikovsky), (b) Don Juan's Serenade (Tchaikovsky), (c) Christ is Risen (Rachmaninov), (d) The Prisoner (Gretchaninov); Second suite from Carmen (Bizet). In the interval at 8.50, Radio Journal and News. 10.0, Dance Music, relayed from the Café Europe, Czechochoc. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music Relay (contd.).

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—8.10 p.m., Announcements. 8.30, Concert, relayed from Ljubljana. 10.30, News, Weather, and Programme Announcements. 10.40, Dance Music, relayed from the Hotel Esplanade. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

25 kc/s, 413 metres; 60 kW. Relayed by ... 1,337 kc/s, 224.4 metres.—1.30 to 2.30, Time, Weather, Stock Report, and Gramophone Concert. 6.0, Programme for Children. 7.45, News. 7.0, Two Talks. 7.30, Time Signal. 7.32, The Station Orchestra. 7.50, Piano-orte Solos by Mary Braid. 8.5, Banjo solos by Jack MacGarvey. 8.25, The Station Orchestra. 8.40, Gaelic Talk. 8.55, Fiddle Solos by E. Delaney. 9.10, Gaelic songs. 9.25, Pipe and Fiddle Duets by S. MacAonghusa and E. O'Higgins. 9.45, Sponsored Programme. 10.45, News and Close town.

BARCELONA

560 kc/s, 348.8 metres; 8 kW.—7.0 a.m., Concert by the Radio Trio: Selection from The Barber of Seville (Rossini); Berceuse (Debuss); Minuet (Bolzoni); Selection from Ariane (Massenet); Barcarola veneziana (Leoncavallo); Melody (Rubinstein); Military March No. 2 (Schubert). 8.0, Request Gramophone Music. 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes, Weather, Messages for Seamen, and Exchange. 10.10, Concert by the Radio Orchestra: March (Raymond); Selection from Le Petit Duc (Lecocq); Waltz Jota e Cotó; Cradle Song (Corti); La Lettre de Manon (Gillet); Selection from The Mastersingers (Wagner); Ständchen (Schubert); Jardin sevillano (Milián); Sagra l Villaggio (Corri). 11.30, An Opera (on Gramophone Records). In the interval at 2 Midnight, News. 1.0 a.m. (Saturday), Close Down.

BARI

112 kc/s, 269.8 metres; 20 kW. 8.0 p.m., Agricultural Report, Tourist Talk, and Popolavoro Announcements. 8.20, News in Italian. 8.25, Giornale Radio. 8.30, Time and Announcements. 8.35, Weather. 8.45, Concert of Opera Music: Solists, de Santis Bruno (Soprano) and Signorile (Tenor); Selection from Nebelundezzer (Verdi); Soprano Solo, Aria from The Daughter of the Regiment (Donizetti); Tenor Solo, Aria from Faust (Boito); Selection from La Donna Oretta (Riccioli); Soprano Solo, Aria from Mefistofele (Boito); Tenor Solo, Aria from Mignon (Thomas); Selection from Ranzau (Mascagni); Selection from Sicilian Vespers (Verdi); Soprano Solo, Aria from I Puritani (Bellini); Tenor Solo, Aria from Manon Lescaut (Puccini); Intermezzo from Marion Delorme (Ponchielli); Soprano Solo, Aria from A Masked Ball (Verdi); Tenor Solo, Aria from Cavalleria rusticana (Mascagni); Selection from La bisbetta domata (Persico). In the interval, Miscellaneous Notes. 10.30, Dance Music from the "Café del Levante". 10.55, News. 11.30 p.m.—See Schweizerischer Landessender.

BELGRADE

97 kc/s, 430.4 metres; 2.8 kW.—6.55 p.m., Time Signal and Programme Announcements. 7.0, National Songs. 7.30, Gramophone Music. 7.50, Flute Recital: Sonata No. 5 (Handel); Concerto No. 3 in G (Mozart); Waltz from La Traviata (Verdi). 9.0, Arias from Opera. 9.40, Concert by the Station Orchestra. 10.30, Time Signal and News, followed by Dance Music from the Ratnicki Dom Restaurant.

BERLIN

DEUTSCHLANDSENDER (REICHSENDER), 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Gramophone Concert of Light Music. 3.0, Programme for Girls. 3.10, Weather and Exchange. 3.45, Talk: Silesian Legends. 4.0, See Leipzig. 5.0, Talk: The Education of the Elementary School Teacher and National Socialism. 5.25, Sixteenth and Nineteenth Century Folk Song Recital by the Station Chamber Choir and Paul Seebach (Bass). 6.0, A Poem. 6.5 (approx.), Talk. 6.20, Variety Programme. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Today's Motto. 9.0, Orchestral Concert of Old and Modern German Music, conducted by Eugen Sonntag; Gavotte Musette (Gluck); Manchurian Sketches (Glan); Ländler (Mozart); Serenade for Violin and Orchestra (Kreutzer); Serenade (Haydn); Concert Waltz (Brahms); Hungarian Dances Nos. 5 and 6 (Winkler); Intermezzo, Erwachen der Frühlingsschönen (Hans Löhner); Ballgast (Meyer-Helmand); Klosterlocken (Dörken); Glühwürmchen Idyll (Lincke); March (Franz). 10.0, Weather and News. 10.20, Talk on the Italian Atlantic Flight. 10.45, Weather. 11.0, Concert from Frankfurt. 12 Midnight (approx.), Close Down.

BERLIN

(FUNKSTUNDE), 715 kc/s, 419.5 metres; 5 kW.—6.5 p.m., A Victory in Breitenburg—A Relay from the Grosse-Bereen Battlefield (on Gramophone Records). 6.40, The Funkstunde Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Lottery Announcements. 8.5, Auf und unterm Stadtbahnhöfen—The Progress of Berlin in the Literature and Songs of Yesterday and Today. 9.0, Topical Talk. 9.10, See Hamburg. 10.0, News. 10.15 (approx.), Dance Music from the Europa Pavillon. In the interval from

FRIDAY SEPTEMBER THE FIRST

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL LONDON Promenade concert from Queen's Hall. "A Wonderful Week-end," sentimental comedy, by C. Denis Freeman. REGIONAL MIDLAND ORCHESTRAL concert: the music of Montague Phillips. REGIONAL NORTH Relay from the Hippodrome, Manchester. REGIONAL WEST Variety programme, from the New Theatre, Cardiff. REGIONAL SCOTTISH Excerpt from "Sunny Days," relayed from Largs. REGIONAL BELFAST Orchestral concert. A Shakespearean programme.

ABROAD

BARCELONA 10.10 p.m. The Radio Orchestra. BARI 8.45 p.m. Concert of opera music. BERLIN 9.0 p.m. Orchestral concert of old and modern German music. (Deutschlandsender) BUCHAREST 7.40 p.m. Opera: "Aida," by Verdi. COPENHAGEN 10.15 p.m. French music, by the Station Orchestra. LEIPZIG 5.10 p.m. Mozart concert, by the Symphony Orchestra. 9.40 p.m., Schumann's Quintet in E flat (Op. 44), by the Gewandhaus Quartet and Otto Weinreich. OSLO 8.1 p.m. Chamber music. 10.15 p.m., Cello recital. POSTE 8.30 p.m. Two operettas by Offenbach: "Lisichen et Fritzechen" and "Le Violoncelle." STRASBOURG 8.30 p.m. Gala concert from the Casino, Vichy. VIENNA 6.35 p.m. The Wiener Symphoniker, conducted by Edwin Stein.

11.0 to 11.5, Talk: What they are saying in Berlin. 12 Midnight (approx.), Close Down. BASLE.—See Schweizerischer Landessender. BEROMUNSTER.—See Schweizerischer Landessender. BODEN.—See Stockholm. BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 201 metres; 13 kW.—6.30 p.m., Radio Journal. 7.30, News. 7.40, Film Review. 7.55, Lottery Results. 8.0, News. 8.15, Gramophone Music. 8.30, Symphony Concert.

BRATISLAVA

1,076 kc/s, 279 metres; 11 kW.—6.55 p.m., Talk for Housewives. 7.0, See Prague. 7.25, See Moravská-Ostrava. 7.45, See Prague. 10.30 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1184 kc/s, 253 metres.—1.0 p.m., Request Concert on Gramophone Records. 1.45, Time and News. 2.5, Gramophone Records of Symphonie Poems. 3.0, Market Prices. 3.30, Programme for Young People. 4.0, Orchestral Concert, conducted by Max Gieroth, relayed from Bad Landeck. Baden-Völk-Marsch (Fürst); Overture, Undine (Lortzing); Rosentraum in Sanssouci (Bernhards); Ballet Music from Rosamunde (Schubert); Selection from La Bohème (Puccini); Hungarian Rhapsody (Reinold); Overture, Die Fledermaus (Joh. Strauss); Selection from Die Puppentheater (Baier); Waltz, Estudiantina (Waldteufel); March, Thüringer Regiment (Joh.). 5.30, Market Prices. 5.32 (approx.), Gerhard Menzel reads from his own works. 6.0, Topical Talk. 6.25, Talk: The German National Theatre. 6.50, Weather, News and Market Prices. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Rienzi—Opera in Five Acts (Wagner), relayed from the Municipal Theatre. Time and News in the intervals. 11.0, Talk: Why do we say The Third Empire? 11.20, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by B. Bakala: Slav March (Tschajkovsky); Reverie (Scriabin); Orientale (Cui); Polovtsian Dances from Prince Igor (Borodin); Suite, Op. 3 (Janacek); Two Idylls (Kapral); Dance (Simek). 3.55 to 4.0, See Prague. 5.45, Gramophone Music. 5.55, Talk for Women. 6.5, Gramophone Music. 6.15, Talk for Workers. 6.25, German Transmission:

Sonata No. 6, Op. 5, for Violin and Harpsichord (Corelli); Prelude to Lohengrin (Wagner). 6.15, Reading. 6.30, Concert by the Small Station Orchestra, conducted by Leumann: Hoeheitszug in Lilliput (Translatour); Petite Suite miniature (Dubois); Andantino for Cello (Martini); Hungarian Serenade (Jonecieres); Selection from Ciboulette (Hahn); Chanson d'antrefois (Delisle); Patrouille galante (Lachaux). 7.15, Talk. 7.30, Wireless Notes. 8.0, Extracts from Acts I and II of The Valkyrie (Wagner), on Gramophone Records. 9.0, Bal en dangesprekken—Radio Sketch (zur Mühlen), with Music by Donizet. 10.0, Le Journal Parlé. 10.10, Dance Music by Mickey's Club, relayed from the Casino, Knoeke.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: March (Brandies); Waltz, Dynamiden (Strauss); Overture, The Secret Marriage (Cimarosa); Selection from Lohengrin (Wagner); Symphonie andante (Clemens); Selection from Der Lustige Krieg (Strauss); Scandinavian Suite (Fredericksen); March (de Michel). In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Educational Talk. 7.40, Aida—Opera in Four Acts (Verdi). In the intervals, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.30 p.m. till Close Down.—6.0 p.m., Talk: Travel Experiences. 6.30, Concert. 7.10, Review of Foreign Politics. 7.30, Song Recital by Elisabeth Toth. 8.10, Parodies by Ilia Szász. 9.0, Gramophone Music. 10.10, News. 10.30, Concert by the Budapest Concert Orchestra, conducted by Antoine Deutsch: Overture, Egmont (Beethoven); Brandenburg Concerto No. 3 (Bach); Symphony No. 4 in D (Mozart); Suite in F sharp minor (Dohnányi).

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time Signal, Chimes from the Town Hall, and Weather. 12.5 p.m., Concert by the Bendix String Ensemble, relayed from the Wives' Restaurant. 2.0, Interval. 3.0, Concert by the Station Orchestra, conducted by Lanny Grundhal; Soloist, Carl Arne Volttrup (Pianoforte); Florentine March (Fueick); Suite in A minor, Op. 1, for String Orchestra (Nielsen); Selection from Tiedland (d'Albert); March (den Store); Pianoforte Solos: (a) Havet (Palmgren); (b) Legend (Melartin); (c) Caprice (Sibelius); (d) Tarantella (Palmgren); Potpourri of Hebrew Melodies (arr. Grainger); Waltz, Münchner Kindl (Komzak); Classic Minuet for String Orchestra (Riis-Magnussen); First Movement from the Military Symphony (Haydn); Scherzo No. 2 (Schubert-Nielsen); Persian March (Strauss). 5.0, Reading of Danish Poetry. 5.30, Exchange and Fish Market Prices. 5.45, Talk on Danish Literature. 6.15, Elementary German Lesson. 6.45, Weather Forecast. 6.54, Announcements. 7.0, News. 7.15, Time. 7.30, Talk on Wireless. 8.0, Time. 8.1, Programme by Per Knutson. 8.10, Concert of Danish Music by the Nillytrioson Vocal Quartet. After the Concert, Weather. 8.30, Tragedien paa Alhelgens Stiftelse—Play in Five Episodes (Axel Valentiner—First Prize-winner of the Radio Play Competition). 10.0, News. 10.15, Concert of French Music by the Station Orchestra, conducted by Emil Reesen; Petite Suite (Debussy); Suite from Izeyl (Pierne); Pavane pour une Infante defunte (Ravel); Rhapsody on French Folk Themes (Gaubert). 11.0, Dance Music, relayed from the Nimb 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.—7.5 p.m., Talk. 7.20, Miscellaneous Items and News. 7.35, Programme Announcements. 7.40, See Warsaw. In the intervals, News and Sports Notes. 11.0 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m. to 12 Noon, Programme in English by the I.B.C. Programme, arranged by the International Broadcasting Company of London. 11.0, The Philco Happy Hour—Orchestral Concert: Signature Tune; Dance Bagatelle (Bourdon); Crazy Pirouette (Frisk); Mandoline Solo, Mandoline (Thomé); Ginger Snaps (Bourdon); Hawaiian Memories (Armandola); Xylophone Solo, Snappy Sticks; The Dance of the Raindrops (Reeves); Amoureuse (Berger). 11.30, Part II—Dance Music: Shuffle off to Buffalo; I cover the Waterfront; Forty-Second Street; In a Second-Hand Store; Maybe I love you too much; When my little Pomeranian; It's within your power; Don't be late in the Morning; Signature Tune. 12 Noon, French Programme. 4.30 to 6.0, Programme in English by the I.B.C. 4.30, The Nursery Corner: Music, Story and Birthday Greetings. 5.0, Balalaika Concert for Southampton and Winchester Listeners: Signature

News, Sports Notes, and Topical Talk. 7.0, See Prague. 7.25, Programme of Slovak Folk Songs and Dances. 7.45, 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 Leumann: Prelude and Cortege from Déjanire (Saint-Saëns); Potpourri, from Haydn to Brahms (Morena); Salut d'amour (Elgar); Selection from Mirella (Gomod); Serenade (Pierne); Cello Solo, Vito (Popper); Selection from Le petit Faust (Hervé); Tango (Novvuo); March of the Tin Soldiers (Turina). 1.0 p.m., Le Journal Parlé. 1.10, The Fruit of the Earth—Gramophone Concert. 5.0, Saint-Saëns Concert by the Symphony Orchestra, conducted by Meulemans; Overture, La princesse jaune; Le rouet d'Orphale; Symphonie Poem, Phäon; Prelude to Le Déluge; Feuillet d'album for Wind Instrument Octet; Danse macabre; Suite algérienne. 6.0, Talk: Joseph Lebeau, a great Liberal. 6.15, Request Gramophone Records. 7.15, Talk: Liberalism in the Walloon District. 7.30, Legal Talk and Literary Review. 8.0, Concert by the Symphony Orchestra, conducted by Meulemans, and the Vocal Quintet of the Musée Royal de l'Armée; Soloist, Mme. Urban (Songs); Overture, Gwendoline (Chabrier); Ballet Music from Les Troyens à Carthage (Berlioz); Four Songs (Schumann); Suite, Jeux d'enfants (Bizet). 8.45, Talk: Political Moral and Financial Irresponsibility. 9.0, Concert from the Kursaal, Ostend, followed by Le Journal Parlé, and Dance Music 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 Radio Orchestra, conducted by Franz André; Soloist, Mme. Lambert (Songs); March (Fueick); Waltz, Donaungen (Ziehrer); Selection from Good News (de Sylva and Brown); African Dances (Ring); Songs; Pastoral Suite (Vreuls); Waltz, In the Valley of the Moon (Tobias); Two Step, Amanda (Grundland). 1.0 p.m., Le Journal Parlé. 1.10, Concert (contd.): Overture, Poet and Peasant (Suppé); Sylvian Scenes (Flecher); Waltz, Varietee (Rajter); Violin Solos: (a) Concert Study (Marchot), (b) Die Biene (Schubert); Songs; Peer Gynt Suite No. 2 (Grieg); Hungarian Dances (Dvorak). 5.0, Concert by the Radio Orchestra, conducted by Franz André; Overture, P'tites Michu (Messager); Phantom Brigade (Myddleton); Waltz, Il Bacio (Arditi); Offenbachiana (Conradi); Suite, Roma (Bizet); Christine (Potpourri); Flute Solo, Mazurka (Doppler); Suite Summer Days (Coates); Violin Solo, Anbade (Caludi); Arlequinade (Cazeneuve); Cello Solo, Kol Nidrei (Bruch); Neapolitan March (Baldi). 6.0, Gramophone Records: Grave from the

SEPT. 1st

FRIDAY

continued

Tune, Night by the Sea; Troika and a Lady; Caucasian Gipsy Songs; Faun; The Red Sarafan; Chorus, The Twelve Robbers; Russian Folk Song and Dance; Chorus, The Cossack Prisoners; Song of the Volga Boatmen. 5.30, Gramophone Concert for Bournemouth and Weymouth Listeners; Witches' Ride (Puccini); The Crystal Spring; My Lady Dainty; A Woman should stick to her Man; That Futuristic Rag; Selection from The Geisha (Jones); I'd love to be a Sailor; Selection from The Flower of Hawaii (Abraham); Signature Tune. 6.0, French Programme. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Deolians; Signature Tune, The Bells of Normandy; Sittin' in the Dark; How deep is the Ocean? When the wild, wild Roses bloom; The Woman in the Shoe; Fit as a Fiddle; Can't we talk it over; Look what I've got; Balloons; Roll along Kentucky Moon; Farewell to Arms; Put a little Springtime; Jungle Blues; Now that I have you; The Language of Love; When it's lamp-lighting time in the valley; Peter, Peter; My pretty Girl; Won't you stay to Tea; There's a tiny little hair upon your Shoulder; Signature Tune. 11.0, Talkie Time—Music and up-to-date Review of the Films; Selection from Monte Carlo; Song, Tell me To-night; My Love Parade; There's something about a Soldier; from Soldier's of the King; Selection from Congress Dances; Please, from The Big Broadcast; Selection from Whoopee; Selection from Cavalcade. 11.30, Club Concert for Stroud Listeners; Part I—Members' Request Half Hour; Signature Tune, The Chum Song; March from Tannhäuser (Wagner); The Lost Chord (Sullivan); Rhapsody in Blue (Gershwin); Poème (Fibich); Love's old sweet Song (Molloy); The Rosary (Nevin); O Sole Mio (di Capua); Overture, William Tell (Rossini). 12.5 a.m. (Saturday), News Bulletin in English. 12.10 (approx.) Club Concert. Part II—Somebody stole my gal; I cover the Waterfront; That's what Life is made of; I raised my Hat; This lovely Rose; Signature Tune. 12.30, Dance Music by Jack Hylton and his Orchestra (Electrical Transcriptions); Hold me; Little Miss Muffet; You're mine, you; Out in the Open; Dancing Butterflies; What a Lady Josephine must have been; I can't remember; Hyde Park Corner. 1.0, Dance Music by the Deolians; Signature Tune, Bells of Normandy; Something came and got me in the Spring; Toymaker's Dream; Spanish Eyes; My Darling; One little Word led to another; Under my Umbrella; I wake up smiling; No more Love; I gotta right to sing the Blues; I shall still keep smiling along; They all start whistling Mary; Try a little Tenderness; I've got the World on a String; Good-night but not good-bye; In the Valley of the Moon; Castles in the Sand; Shuffle off to Buffalo; Signature Tune. 1.57, I.B.C. Good-night Melody. 2.0 (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.—6.25, Talk on Astronomy: The Heavens in September. 6.45, To-day's News. 6.50, Time and Announcements. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.5, See Langenberg. 10.0, Topical Talk. 10.15, Time and News. 10.45, Dances of the Nations. The Station Orchestra, conducted by Hans Rosland. Symphonic Dances, Op. 64 (Grieg); Dance of the Will-o-the-Wisps (Berlioz); Dance of the Sylphs (Berlioz); Romantic Dance (Kring); Tarantella (Nicoled); Hungarian Dances (Keler-Bela). (a) Grass an mein Vaterland. (b) Erinnerung an Hermanstadt; Slav Dances (Dvorak); (c) Allegretto grazioso, Op. 72, No. 2. (b) Allegro, Op. 72, No. 3; Oriental Dance (Glazunov); Two Pieces from Eight Russian Folk Songs (Liadov); Gopak from The Fair at Sorochinsk (Musorgsky); Waltz, Op. 25 (Fuchs). 12 Midnight, The Station Intendant before the Microphone. 12.15 a.m. (Saturday), 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, 269.9 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 and Hamburg Egg Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, See Munich. 9.0, Political Announcements. 9.10, Concert by the Station Male Voice Quartet and Choir. Soloists: Erna Kroll-Lange (Soprano) and Bernhard Jakschakt (Bass-Baritone). 10.0, Time and News. 10.20, Topical Talk. 10.30 (from Kiel). Organ and

Violin Recital relayed from St. Nicholas' Church. Part I: Sixteenth and Seventeenth Century Music: Toccata quinta (Frescobaldi); Grave and Allegro from the Violin Sonata in D (Corelli); Toccata in C. Part II: Contemporary Music: Slow Movement for Violin and Organ (Fleischer); Canzone for Organ (Dreischner). 11.0 (from Hanover), Orchestral Concert, conducted by Richard Grille. Soloist: W. Paselk. Overture, Waldmeister (Joh. Strauss); Selection from Don César (Bellinger); Oriental Suite (Popy); Trumpet Solo: Wie berührt mich wunderbar (Bendel); Hochzeitsreigen (Lüncke); Idyll. In the Bird Shop (Orth); March, Schlachtbefehl (Lehnhardt).

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. Hohenfriedberger Marsch (Frederick the Great); Selections from A Masked Ball (Verdi); Songs: (a) Das treue deutsche Herz (Otto), (b) Mein Himmel auf der Erde (Pfeil); Waltz, Künstlerleben (Strauss); Hunsarenritt (Chlumski); Zillertalher Ländler (Kellner); Russian Folk Song, Troika; Overture, Raymond (Thomas); Tone Picture, Waldzauber (Charlie); Little Curly Head (Porrell); Naidmanns Heil. Das Wandern ist des Müllers Lust. 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, Programme for Children. 4.0, Programme for Women. 4.30, Concert by the Königsberg Opera House Orchestra, conducted by Georg Wöllner. Florentine March (Fucik); Selection from Zigeunerprimas (Kálmán); Chromatic Waltz (Kockert); Potpourri, From A to Z (Geiger); Waltz from Faust (Gounod); March, Erinnerungen an Wildbad (Frantz). In the interval at 5.0 (approx.), Talk for Hikers. 5.30, See Berlin (Deutschlandsender). 6.0, Poetry Recital. 6.15, Agricultural Prices. 6.25, Economic Review of the Month. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Political Address and Weather. 8.10, Programme in Memory of Ulrich von Hutten. 8.40, Walter Niemann in a Pianoforte Recital of his own Music. Short Introductory Talk. Wasserspiele: (a) Singende Fontaine Op. 30, (b) Die sibirische Cascade Op. 92 No. 6, (c) Gartenmusik Op. 117 No. 3, (d) der Wasserfall Op. 116 No. 10; Little Sonata in A Op. 88. 9.30, Radio Report of the Autumn Manœuvres, relayed from Tapiau—Cavalry Exercises. 10.0, Weather and 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.). 12.10 p.m., Vocal and Instrumental Concert. Gramophone Music in the intervals. 1.40 to 2.10, Interval. 2.10, Reading. 2.40, Gramophone Music. 3.10, Concert by the van der Horst Ensemble: Overture, La flûta semplice (Mozart); Theme with Variations (Beethoven); Morning (Grieg); Anita's Dance (Grieg). Gramophone Music: Slav Dance (Dvorak); Humoresque (Dvorak); Selection from The Flying Dutchman (Wagner). 4.10, Talk. 4.40 Concert (contd.): Overture, Tancred (Rossini); Etincelles (Waldteufel); Selection from Hamlet (Thomas). Gramophone Music: Valse triste (Sibelius); Ein Melodienkranz (Mannfred). 5.40, Gramophone Music. 6.10, Horticultural Talk. 6.40, Police Notes. 6.55, Religious Notes. 7.10, Literary Talk. 7.40, Marches of the Nations. Military Band Concert: Holland: (a) Homage March (Boer). (b) Military March (Lewuwin). France: (a) Le défilé de la Garde Républicaine (Wettege). (b) Le régiment de Sambre et Meuse (Planquette). England: (a) Slow March, Royal Grenadier Guards, (b) Quick March, Royal Grenadier Guards. (c) Marching thro' Georgia (Miller). Czechoslovakia: (a) March of the Czechoslovak Army (Oberthor). (b) Salute aux Aviateurs (Oberthor). Austria: (a) Prinz Eugen, (b) Mein Oesterreich. (c) Radetzky Marsch (Strauss). America: (a) Officer for the Day (Hall). (b) Stars and Stripes (Souza). Italy: (a) Reggimento San Marco, (b) La Ritirata (Mario-Aghemo). Germany: (a) Der alte Kolnurger Marsch, (b) Alte Kamaraden (Teike). Denmark: Riberhus Marsch, 1813. Sweden: Swedish Retreat. Norway: Holmenkollmarsch (Johanson). Finland: March Romania; National March, Rasboceni. Holland: Grenadier March. In the interval at 8.40, Religious Address. 9.55, News. 10.10, Gramophone Concert. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 160 kc/s, 1,875 metres; 8.5 kW.—11.40 a.m. to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Gramophone Music. 12.10 p.m., Concert of Light Music. 1.55, Gramophone Music. 2.20, Talk on Fashion. 2.40, Gramophone Music. 3.40, In-

terval. 3.55 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 3.55, Violin and Pianoforte Recital. 4.30, Programme for Children. 5.10, Concert by De Notenkrakers; Soljanka (Wilke); Chanson triste (Tchaikovsky); Russian Dance (Bortkiewicz); Slav Dance (Dvorak); Stenka Rasin (Kublat); Gramophone Music; Idyll (Ferraris); Sonja (Partos); Russian Dance (Tchaikovsky); Waltz (Berger); Babillage (Gillet); Siempre (Bianco); Besuch bei Lehar (Hrnyb). 6.10, Concert of Negro Spirituals and recitations, with Gramophone Music. 7.40, Talk arranged by the Liberal Protestant Radio Society (V.P.R.O.). 8.10 to 9.40, Programme of the A.V.R.O. (Details to be announced). In the interval at 8.40, Talk arranged by the V.P.R.O. 9.40 to 10.40, Programme of the V.P.R.O. 9.40, News and Religious Notes. 9.55, Recitations. 10.25, Gramophone Music. 10.40 till Close Down, Programme of the V.A.R.A. Gramophone Concert.

INNSBRUCK.—See Vienna.

JUAN LES PINS

1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 1.15, Radio Concert. 8.0, Amusement Guide, Exchange, and News. 8.10, Esperanto Lesson. 8.30, Radio Concert. 8.45, News and Weather. 9.0, Concert, conducted by Felice, relayed from the Pinede.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.5 p.m., Talk: Sir Robert Baden-Powell. 7.20, Announcements and Gramophone Music. 7.35, Sports Notes. 7.40, See Warsaw. 11.0, The Letter Box in French.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 49 kW. Relayed by Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m. (from Helsinki), Violin Recital: Sonata in E (Handel); None but the Weary Heart (Tchaikovsky - Elman); Sicilienne and Rigaudon (François-Kreisler). 6.35, Talk in Swedish. 7.5 (from Helsinki), Orchestral Concert; Soloist, Matt Juvonen (Cello); Danse macabre (Saint-Saëns); Minuet (Lully); Symphonic Variations for Cello (Bochman); Sous les tilleuls (Massenet); Melodies from The Pearl Fishers (Bizet); Rakoczy March (Berlioz). 8.0, Reading in Swedish. 8.25 (from Helsinki), Gramophone Music. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert by the Station Orchestra, conducted by Wolf; Spanish Comedy Overture (Kéfer-Beela); Waltz, Donaubieder (Strauss); Potpourri of Grieg Music (Orbach); Andalusian Romance (Saraste); Rondino (Sibelius); Selection from The Barber of Seville (Rossini); Serenade from Les millions d'Arlequin (Drigo); Potpourri, Fair alle (Dostal). In the interval at 2.0 (approx.), Announcements. 3.0, Health Talk: The Care of the Teeth. 3.15, Book Review. 3.30, Economic Notes. 3.50, Programme for Young People. 4.30, Talk: Nature in September. 5.0, Gramophone Records. 5.30, Talk: The Dangers of Toadstool Poisoning. 5.45, An Old Westphalian Legend. 5.55, Topical Talk. 6.0, Concert by the Station Orchestra, conducted by Eysoldt: Selection from The Geisha (Jones); Overture, Isabella (Suppé); Negro Lullaby (L'utsam); Paraphrase on the Song Rose Marie (Blume-Weninger); Mosaik-Potpourri (Zimmer). 6.45, Announcements. 7.0, Transmission for all German Stations: Beethoven in his Youth—Radio Picture (Adolf Raskin), relayed from Beethoven's Birthplace at Bonn. Music by the Station Chamber Music Society. 8.0, Announcements. 8.5, Variety Programme. 10.0, Announcements. 10.20, West German News. 10.45, Light Music and Dance Music, conducted by Eysoldt. 11.30 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—12 Noon, Weather and Time. 12.5 p.m. (Dresden), Vocal and Instrumental Concert. 1.0, News. 1.15, German Opera Music on Gramophone Records. 2.0, News. 2.10, Art Report. 2.20, Extracts from the German Cantata (Brockmeier). 2.45, Gramophone Music. 3.15, Talk for the Country Woman. 3.35, Market Prices. 4.0, Concert by the Station Orchestra, conducted by Theodor Blumer: Overture, Ein Opernball (Heuberger); Suite from Coppélia (Delibes); March in A (Schubert); Three Pieces from the Suite, Pictures from the South (Nicoled); Two Pieces from the Lyric Suite (Grieg). 5.0, Talk. 5.10, Mozart Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer: Soloist, Lea Welcke-Pilti (Soprano); Allegro maestoso from Serenade No. 11 in E Flat for Two

Oboes, Two Clarinets, Two Horns, and Two Bassoons; Soprano Solos: (a) Vorrei spirarmi o Dio, (b) Ma che vi fece, o stello Symphony No. 21 in A. 5.50, Market Prices, Weather, and Time. 6.0, Book Review. 6.2 Talk. 6.50, To-day's News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Political Cabaret. 8.45, Concert. 9.30, Agricultural Talk. 9.40, Quinto in E Flat, Op. 44 (Schumann) by tl Gewandhaus Quartet and Otto Weinreic (Pianoforte). 10.25, News. 10.30 (approx. Caruso—Radio Sequence (Erich Fortner with Gramophone Music. 11.45 (approx. Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—7.0 p.m. Orchestral Concert. 8.0, Talk. 8.30, Concert from Belgrade, followed by Weather and News. 10.30, Gramophone Music. 11.0 (approx.), Close Down.

LUXEMBOURG

252 kc/s, 1,191 metres; 200 kW. Dutch Programme.—7.30 p.m., Tenor and Baritone Duets: Six Duets (Mendelssohn); Duet from The Force of Destiny (Verdi). 8.10, Pianoforte Recital by Arend Koole. 8.50, News in French. 9.0, Orchestral Concert, relayed from Mondorf-les-Bains. Soloist: Venau Pauk (Baritone). 10.0, News in German. 10.10, Orchestral Music: Caprice for Flute and Orchestra (Kcmpter); Overture, L' belle Hélène (Offenbach). 10.25, Dance Music.

LWOW

788 kc/s, 381 metres; 16 kW.—7.20 p.m. Miscellaneous Items. 7.40, See Warsaw. 10.0, Music Recital by David Tendler (Baritone). Aria from Ernani (Verdi); Plaisir d'amour (Martini); Aria from Tannhäuser (Wagner); Stary kaprel (Moniuszko); Song (Schubert) Song (Engel). 10.25, See Warsaw. 10.40, Gramophone Music. 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. 8.35, Concert, conducted by Jean Witkowski. Trio, No. 2 in G (Beethoven); Songs; Pianoforte and Violin Solos Quintet (Schubert); After the Concert, News.

MADRID

EADJ, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, News of the Day and Request Gramophone Records. 9.15, Topical Review. 9.30, Interval. 11.0 Chimes, Time and Topical Review. 11.15 (approx.), Symphony Concert on Gramophone Records. Overture, Rosamund (Schubert) Invitation to the Waltz (Weber); Le fontane di Roma (Respighi); Symphony in C—The Jupiter (Mozart); Pianoforte Concert in A Minor (Grieg). 1.15 a.m. (Saturday) Topical Review and Programme Announcements. 1.30 (approx.), Chimes and Close Down.

MALMO.—See Stockholm.

MILAN

VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.15 p.m. (approx.) till Close Down, See Rome.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.25 p.m. Accordion Recital. 7.45, 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 Kaiserlautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert by the Otto Reiter Orchestra: Overture, Titus (Mozart); Selection from The Pearl Fishers (Bizet); Weltenkultüte (Künimann); Wandersuite (Künimann); Waltz, Was wir lieben (Ganglberger); Viribus unitis (Reiche); Waltz, Erinnerung an Schweden (Heineke); Flirtation (Rau); March, Frischer Mut, leichtes Blut (Blom). 6.5, Violin and Pianoforte Sonata in A—The Kreuzer (Beethoven). 6.45, Time, Weather and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Concert by the Station Orchestra, conducted by Karl List: Overture, Eva (Lehár); Waltz, Morgenblätter (Strauss); Das tapfere Schneiderlein (Zimmer); Potpourri, The German Rhine (Hannemann); By the blue Hawaiian Waters (Ketebeby); Selection from Frederica (Lehár); Waldesflüster (Czibulka); March. 9.0, Das Gansjung—Tragi-Comedy (Josef Maria Lutz). 10.0, Topical Talk. 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.—6.0 p.m., Variety Concert. 7.0, Announcements. 7.15, Weather and News. 7.30,

SEPT. 1st

FRIDAY

continued

Falk. 8.0, Time Signal. 8.1, Chamber Music by the Budapest String Quartet, quartet, No. 2 in A Minor, Op. 51 (Brahms); quartet in E Flat, Op. 51 (Dvorak). 9.0, Recitations. 9.30, Foreign Market Report. 10.40, Weather and News. 10.0, Topical Talk. 0.15, Cello Recital. Sonata in C Minor Vivaldi-Salmon; Prelude and Courante in 1/4 Minor (Bach); Scherzo (Dittersdorf); Minuet (Mozart); Gavotte (Gossec). 10.45 approx.). Close Down.

STERSUND.—See Stockholm.

PALERMO

58 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Notes, Tourist Report, Agricultural Talk, Report of the Royal Geographical Society and Giornale Radio. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, Concert of Opera Music, conducted by La Rosa Parodi. Selection from (a) Tioffand (d'Albert), (b) Baroni (Rabaud), (c) La monacella alla ontana (Milk). In the intervals, Talk for Women and Announcements. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 1,650 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. 1.30, Concert by the Radio Symphony Orchestra, conducted by Flamant. Overture, La dame danche (Boieldieu); Zampa (Laparra); Romance (Sibelius); Vieille Chanson Espagnole (Anbert); La Chère Maison (Dalerose); Notre Amour (Boëllmann); Chanson pour Roger (Rousseau); La Maison grise (Messager); Cello Solo, Minnet (Bocherini); Entr'acte from La Colombe (Gounod); Selection from Fleur de Thé (Lecoeq); Flute Solo, Ballatina (Flamant); Melody (Gungl). 10.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 10 kW.—7.0 p.m., Gramophone Music. 7.15, Le Journal Parle. 7.30, Concert. 8.0, Agricultural Talk. 8.5, Gramophone Music. 8.30, Two One-Act Operettas (Offenbach): (a) Lischen et Fritzen, (b) Le Violone. 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—7.30 a.m., Weather and Physical Culture. 8.0, Weather and Press Review. 12.30 p.m., Gramophone Concert. Overture, Poet and Peasant (Suppé); La Vague (Motra); Aria from Lucia di Lammermoor (Donizetti); Airs (Beylets); Hunting Music; Sons Bois (Staub); Joyeuse Marche (Chabrier); Selection from Mirella (Gounod). In the interval at 1.0, Exchange, News and Weather and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange. 7.0, Agricultural Prices. 7.10, Assurance Societies' Report. 7.20, Gramophone Concert. Inimogeni in A flat (Schubert); Mazurka Zarsycki; Canzonetta (Tchaikovsky); The Two Grenadiers (Schumann); By the Blue Hawaiian Waters (Kettelbey); Mexican Serenade (Ponce); J'ai rêvé de vous (Burlé); March, Liberty Bell (Souza). 7.50, Commercial Prices and News. 8.0, Gramophone Music. 8.15, News. 8.30, Round the World in Eighty Days—(Julius Verne) played from the Théâtre du Chatelet. In the interval at 9.25 and 10.25, News.

PITTSBURGH

WKDKA, 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Pontiac and Home Forum. 8.0 to 9.30, New York Relay. 8.0, Betty and Bob. 8.15, Words and Music. 8.45, Pay Kennedy. 9.0, Gene Quaw Orchestra. 9.30, News and Markets. 9.45, Arcadians, from New York. 10.0, Uncle Tom and Betty. 10.15, Tarzan of the Apes. 10.30, Larry Larsen, from New York. 10.45, Orphan Annie, from New York. 11.0, News-Reeler. 11.15, Sports Notes and a Song. 11.30, Pittsburgh Spotlights. 11.45 to 1.0 a.m. (Saturday), New York Relay. 11.45, Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, Rondeliers. 12.30, Orchestral Concert. 1.0, Jack Pettis' Orchestra. 1.15, Silver Toppers. 1.30 to 3.30, New York Relay. 1.30, Potash and Perlmutter. 1.45, Slow River. 2.0, Let's Listen to Harris. 2.30, Variety Programme. 3.0, First Nighter.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—12.25 p.m., See Warsaw. 12.35, Interval. 12.59, Time Signal and Chimes from the Town Hall. 1.3, Gramophone Concert. 2.0, Financial Notes and Market Prices. 2.10, News. 2.15, Interval. 6.15, See Warsaw. 7.20, Miscellaneous Items and News. 7.35, Theatre Notes and Programme Announcements. 7.40, See Warsaw. 10.0, Time Signal, Sports and Police Notes. 10.15, Dance Music on Gramophone Records. 11.0 (approx.). Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Brno. 3.55, Exchange. 4.0, Interval. 6.45, Gramophone Music. 5.55, Talk: Missionaries. 6.5, Agricultural Market Prices. 6.15, Gramophone Music. 6.25, News in German. 6.30, German Transmission: Songs to the Lute and Talk on the Prague Sample

Fair, 1933. 7.0, Chimes and News. 7.10, Topical Talk. 7.25, See Moravská-Ostrava. 7.45, Talk: Petr Bezruc—a Moravian Poet. 8.0, Concert by the Station Orchestra, conducted by Otakar Jeremias. Norwegian Suite (Schielderup); March and Scherzo (Smetana); Two Dances from Debora (Foerster); Scherzo capriccioso, Op. 66 (Dvorak). 9.0, The Wanderer—One-Act Play (Vladrac). 10.0, Time and News. 10.15, News in Russian. 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 a.m. (from Lausanne), Gymnastics Lesson. 6.30, Interval. 12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, News. 12.40 (from Lausanne), Concert by the Radio Lausanne Orchestra, conducted by Moser. In an interval at 1.0 (from Lausanne), Financial Notes. 2.0, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Geneva), Gramophone Concert. 4.30 (from Geneva), Programme for Women. 5.30, Interval. 7.0 (from Lausanne), Talk: The Swiss Counting-House. 7.15 (from Lausanne), Tourist Talk. 7.25 (from Lausanne), News. 7.30 (from Lausanne), Talk. 8.0 (from Geneva), Guitar and Song Recital. 8.20 (from Geneva), Dramatic Programme. 8.30 (from Geneva), Variety Concert by the Broadcasting Serenaders. 9.50, News. 10.0, Report on the Cycling Tour of Switzerland. 10.30 (approx.). Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme. 9.30, Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News. 10.30, Reading. 11.0, The Jupiter Symphony (Mozart), on Gramophone Records.

RIGA

572 kc/s, 525 metres; 15 kW.—7.5 p.m., Debilés Concert. 8.0, News. 8.20, Recital of Songs and Arias. 8.40, Concert of Light Music. 9.0, Weather and News. 9.30, Act III of The Valkyrie—Opera (Wagner).

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; from 5.15 p.m.—12.30 p.m., Gramophone Music. 1.0, Orchestral Concert of Variety Music. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 2.0, Time and Announcements. 4.30, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Weather. 5.15 to 6.0, Quartet Concert. Soloist: Bianca Bianchi (Mezzo-Soprano), Nell' Oriente misterioso (Beautti); Una festa a Roma (Maccioni); Mezzo-Soprano Solos: (a) Serenata (Pierini), (b) Negro Cradle Song (Clutsum), (c) Misticia (Tirindelli); Scherzo (Milius); Seguidilla (Ru-pantini); Spanish and Brazilian Songs; Tarantella, Campanola romana (Maccioni). 6.40 (Naples), Shipping and Sports Notes. 6.45, Dopplavoro Notes and Tourist Report. 6.57, Report of the International Institute of Agriculture in Spanish, German and French. 7.10, Agricultural Notes. 7.20, News in Foreign Languages. 7.40, Giornale Radio. 8.0, Time and Sports Notes. 8.15, Sponsored Concert. 9.15, La giandola—Comedy in One Act (Raffaele Calzini). 9.45, Song Recital by Emilio Livi (Tenor): Hindu Song from Sadko (Rimsky-Korsakov); Aria from Adriana Lecouvreur (Cilea); Aria from Mephistopheles (Boito); Aria from Lucia di Lammermoor (Donizetti). 10.0, 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., Duets by Haber and Curtis. 9.15, Musical Programme, from New York. 9.30, Talk: The Mind Age. 9.35, Mountain Ballads by Bradley Kincaid. 9.45 to 10.0 (approx.), South Sea Islanders, from New York. 12.45 a.m. (Saturday), Stock Reports and Baseball Scores. 1.0, Cities Service Concert, from New York. 1.30, WGY Farm Forum. 2.0, Variety Programme, from New York. 2.30, Popular Programme, from New York. 3.0, Sketch by the WGY Players. 3.30, Popular Programme, from New York. 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.—5.30 p.m., (from Zürich), Concert by the Small Station Orchestra, conducted by Max Scherbaum. 6.30 (from Berne), Talk: The History of Swiss Fisheries. 7.0 (from Berne), Time, Weather, Exchange Notes, Tourist Report and Sports Results. 7.20 (from Berne), Concert of Landlers. 7.40 (from Berne), A Dialect Play in Three Acts (Trabold). 9.0 (approx.), Weather and News. 9.20

(approx.). Concert by the Station Orchestra, conducted by Neppach. 9.55 (from Berne), A Microphone Visit. 10.15 (approx.). Close Down.

SEVILLE

815 kc/s, 368.1 metres; 1.5 kW.—9.30 to 10.0 a.m., News Bulletin. 3.0 to 4.0 p.m., Variety Programme. 10.0, Concert. Two-Act, Moras, moritas, moras (del Campo); Song from La picara molinera (Luna); Serenata, No. 2 (Toselli); Foxtrot, Happy Feet (Vellen and Ager); Solveig's Song (Grieg); Dance from Le Bourgeois gentilhomme (H. Strauss); Song from Marion Lescaut (Puccini); Selection from La Revoltosa (Chapi); Minuet (Sor); En donde estás? (Mojica and Triy San); Overture, Mignon (Thomas); Dance Music. In the interval, News, Exchange, Market Prices, 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.—5.5 p.m., Acordion Music. 5.30, Talk: Education and Unemployment among Young People, relayed from Sigluna. 7.15, Weather and News. 7.30, Gramophone Music. 8.30 (from Göteborg), A Radio Comedy (Oscar Rydqvist). 9.45, Weather and News. 10.0, Concert by the Mario Gallis Orchestra, relayed from a Park, Malmö; Overture, The Bohemian Girl (Balfe); Waltz, Wiener-Bürger (Zielner); Melody (Moszkowski); Valse mignonne (Moszkowski); Selection from Viktoria and her Hussar (Abraham); Torador of Andalous (Rubinstein); Serenata d'Amalfi (Beece); Two Step, Alma de Dios (Serrano); March, Auf Wiedersehen (Rivelli). 11.0 (approx.). Close Down.

STRASBURG

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, Gramophone Music. 2.0 to 3.30, Interval. 3.30, Orchestral Concert, conducted by Brouillac, relayed from the Casino, Vichy; Overture, Die Fledermaus (Joh. Strauss); Symphonie Poem, La nuit et l'amour (Holmès); Orchestral Suite, Poème pastoral (Gaubert); Melody; Entr'acte from Act II of Gwendoline (Chabrier); Selection from Samson and Delilah (Saint-Saëns); The Emperor Waltz (Joh. Strauss). 5.0, Talk on Literature. 5.15, Orchestral Concert, conducted by Roskam; Overture, Les cent vierges (Lecoeq); Waltz (Fetras); Violin Solo, Novalta (Caludi); Selection from Miss Decima (Andran); Ballet égyptien (Luigini); March, Stars and Stripes (Souza). 6.0, Trio Concert, relayed from Lille, 1,130 kc/s, 265.4 metres. 7.0, Topical Talk in German. 7.15, Talk in German: Handicraft in Art and Literature. 7.30, Time and News. 7.45, Gramophone Music. 8.0, Press Review in German, Lottery Results, and Announcements. 8.30, Gala Concert, conducted by Paul Paray, relayed from the Casino, Vichy; Soloist, Umberto Bendotti (Cello); Prelude to Hansel and Gretel (Humperdinck); Air from Tannhäuser (Wagner); Arioso (Bach); Intermezzo (Lalo); Impressions d'Italie (Charpentier). 10.0, Press Review in French.

STUTTGART

MUHLACKER, 532 kc/s, 360.5 metres; 60 kW. Relayed by Freiberg, 527 kc/s, 570 metres.—4.15 p.m., Time and News. 1.30, Concert from Langenberg. 2.0, Concert arranged by the Post Office. 2.30, Advanced English Lesson. 3.45, Suggestions for Sunday Excursions. 4.20, Radio Report on the Baden-Baden Grand Prix from the Hitzheim Racecourse. 4.45, Concert by a Nazi Band conducted by Ullmann; March, Der alte Fritz (Blon); Prelude to Poet and Peasant (Suppé); Waltz from Die Puppenknecht (Bayer); Song for Trombone, Am Meer (Bösel); Die Mühle im Tal (Rhode); March, Deutschlands Ruhm (Schröder). 5.45 (from Freiberg), Talk on German Pronunciation. 6.10, Medical Talk. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Gott grüss die Zunft!—Radio Sequence (Paul Entering). 9.10, See Hamburg. 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.—6.15 p.m., Acordion Solos. 6.30, Chansonnettes. 6.45, Orchestral Music. 7.0, Military Music. 7.15, News. 7.30, Overture, Fingal's Cave (Mendelssohn). 7.45, Opera Music. Selection from (a) Thérèse (Massenet), (b) Si j'étais Roi (Adam), and (c) The Pearl Fishers (Bizet). 8.0, Programme by a Viennese Orchestra. 8.30, Opera Music. Serenade from Faust (Gounod); Air from Le Roi d'Ys (Lalo); Air from La Favorita (Donizetti). 8.45, Violin Solos. 9.0, Sound Film Music. 9.30, Concert. Triumphant March from

Tannhäuser (Wagner); Selection from Rigoletto (Verdi); Overture, The Huguenots (Meyerbeer); Entr'acte to Act III of Carmen (Bizet); Prelude to Cavalleria rusticana (Mascagni); Overture, Lakmé (Delibes). 10.0, Chansonnettes. 10.15, News. 10.30, Concert for Listeners in Morocco. 11.0, Sound Film Music. 11.15, Dance Music. 12 Midnight, News. 12.5 a.m. (Saturday), Instrumental Solos. 12.15, Programme by an Argentine Band. 12.30, Close Down.

TRIESTE

1,215 kc/s, 247.7 metres; 10 kW.—4.45 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.—4.45 p.m., 1. Balilla—Youth Movement Progress. 5.15, Chamber Music. Ugo Castellino (Tenor), Renzo Delcide (Violin), and Giovanni Graglia (Bassoon). Violin Solos: (a) En bateau (Debussy), (b) Capriccio all'antica (Sinigaglia); Santarello (Sinigaglia); Tenor Solos: (a) Ruzjadose, odoroso (Searlatti), (b) Dalla mia pace (Mozart), (c) Rastlose Liebe (Schubert); Elegie and Scherzo for Bassoon (Oreficci); Tenor Solos: (a) Danza, danza fanciulla (Durante), (b) Paus angelicus (Franck); Ronance and Scherzo tarantella for Violin (Wieniawski). 6.0 to 6.5, Weather. 6.40, Giornale Radio, Dopplavoro Notes and Gramophone Music. 7.0, Time, Report of the Royal Geographical Society, and Gramophone Music. 7.10, Agricultural Notes. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News and Weather. 8.15, Sponsored Music. 8.30, 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 German. 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.—12 Noon, Concert by the Wiener Symphoniker, conducted by Josef Holzer. In the interval at 1.0 p.m., Time, Weather, and News. 3.0, Time, Weather, and Exchange. 3.20, Talk on Amateur Films. 3.35, Programme for Women. 4.0, Gramophone Concert of Music from Sound Films. 4.50, Talk. 5.15, Recital by Stella Eisner (Soprano), Erna Gal, and Alexander Klarer (Pianoforte); Serbian Folk Dances (Gal); Extracts from the Forty Melodies (Meyerbeer). 5.55, Tourist Report. 6.10, Talk: The International Riding and Jumping Tournament in Vienna. 6.25, Sports Report. 6.35, Concert by the Wiener Symphoniker, conducted by Erwin Stein; Prelude to Tristan and Isolde (Wagner); Siegfried Idyll (Wagner); Symphony No. 1 in D (Mahler). In the interval at 7.0, Time, Weather, and Programme Announcements. 8.0, Talk. 8.20, In Lilac Time—Musical Radio Sequence (Bauer and Kempf). 9.35, News, Weather, and Exchange. 9.50, Gramophone Music.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from Tom Cathedral. 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. 3.15, Gramophone Music. 3.25, Economic Notes. 3.35, Gramophone Music. 3.45, Aviation Notes and Anti-Gas Drill. 3.50, Gramophone Music. 3.55, Naval and Colonial Report. 4.0, Popular Concert by the Poznan Symphony Orchestra, conducted by Tyjla, relayed from Ciecchocinek. Overture, Zampa (Herold); Waltz, Comète (Waldteufel); Suite, Ballet égyptien (Luigini); Selection from Lohengrin (Wagner); Intermezzo, Love's Dream after the Ball (Czibulka). 5.0, Book Review. 5.15, Light Music from the Gastronomica Café. 6.15, Talk: Poland to-day. 6.35, Song Recital by Goldkowsky; Aria from Carmen (Bizet); Lohengrin's Farewell from Lohengrin (Wagner); Aria from Trurandot (Puccini); Les larmes (Paderewski); The Sowers (St. Lipski); Song (Wallek-Walwski); Song (Gorski); Lolita (Buzzi-Fecchia). 7.5, Gramophone Music. 7.20, Miscellaneous Items. 7.35, Programme Announcements. 7.40, Topical Talk. 8.0, Symphony Concert by the Station Symphony Orchestra, conducted by Sternińska-Valeroziata. In the intervals at 8.50, Radio Journal and Hints for the Week-End. 10.0, Dance Music. 10.25, Sports Notes. 10.35, Aviation Weather Report and Police Notes. 10.40, Dance Music (contd.).

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—7.55 p.m., Sports Notes. 8.10, Announcements. 8.30, Concert, relayed from Belgrade. 10.30, News, Weather and Programme Announcements. 10.40, Dance Music by the Telleman Pacoia Band. 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 2.30 p.m., Time, Weather and Gramophone Concert. 6.0, Gramophone Music. 6.45, News. 7.0, Val Vouden (Entertainer). 7.15, Gaelic Talk. 7.30, Time Signal. 7.32, Dr. Annie Patterson conducts the Station Orchestra in a Programme of her own Compositions. 8.0, Soprano Solos by Josephine Tyrrell. 8.15, A Comedy by Aoife Taaffe and Company. 8.45, Irish Music by the Station Orchestra. 9.5, Gaelic Songs. 9.15, Pipe Solos by Philip Martin. 9.30, Report of the Ulster Tourist Trophy Car Race. 9.45, Sponsored Programme. 10.45, News. 11.0, Relay of the All-Ireland Hurling Reception and Ceilidhe from the Mansion House, Dublin. 11.30, Close Down.

BARCELONA

EAJ1; 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Radio Trio: Selection from Tristan and Isolde (Wagner); Les Papillons (Couperin); Florentine Serenade (Moret); Ich liebe dich (Grieg); Gavotte (Königsberger); Canzonetta, Op. 35 (Tchaikovsky); Selection from Mignon (Thomas). 8.0, Request Gramophone Records. 8.30, Exchange. 9.0, Gramophone Music. 9.15, Anti-War Talk, followed by Gramophone Music and News. 10.0, Chimes from the Cathedral, Weather, and Exchange. 10.5, Concert by the Radio Orchestra. 11.15, Recital of Poems. 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 Report, Tourist Talk and Dopulavoro Announcements. 8.20, News in Albanian and Sports Notes. 8.25, Weather. 8.30, Time and Announcements. 8.45 (approx.), La Traviata—Opera (Verdi), on Gramophone Records. In the intervals, Literary Notes and Talk. 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, Cigany Music from the Kolarac Restaurant. 7.30, Talk. 8.0, Concert by the Station Orchestra. 9.0, Two Sketches. 9.30, Time Signal and News, followed by National Songs. 10.45, Gramophone Music.

BERLIN

DEUTSCHLANDSENDER (Reichssender), 183.5 kc/s, 1,635 metres; 60 kW.—1.45 p.m., News. 2.0, Instrumental Music on Gramophone Records. 3.0, Programme for Children. 3.30, Weather and Exchange. 3.45, Legends and Stories about Swabia. 4.0, See Hamburg. 5.0, Sports Review. 5.20, Zither Concert. March, Per aspera ad astra (Urbach); Potpourri of Alpine Songs (Siegmund); Concert Mazurka, O Lenz in Blüt und Düften (Reigersberg); Overture, Im Reiche des Indra (Lincke); Intermezzo, Apfelblüte (Siede); Waltz, Weamer Madln (Zichrer); Two Alsatian Peasant Dances (Merkling); Kinder der Puszt (Kollmanek); Intermezzo, Neckereien (Mersiowski); Der kleine Tambour (Medra); Paraphrase on the Folk Song, Spinn, spinn (Wormsbacher); March, In Treue Fest (Teike); Military March No. 7. 6.0, A Poem. 6.5, Topical Talk. 6.20, Programme for Young People. 6.50, Weather and News. 7.0, Transmission for all German Stations, Wilhelm Busch Programme. 8.0, Today's Motto. 8.5, An Italian Night—Dance Programme in the Open Air by the Robert Gaden Band. 10.15, Weather and News. 10.45, Weather for Shipping. 11.0, Dance Music by the Ferdj Kauffmann Band and the Döbert Dance Band. 12.30 a.m. (Sunday), Close Down.

BERLIN

(FUNKSTUNDE), 715 kc/s, 419.5 metres; 1.5 kW.—6.55 p.m., Hugo Wolf Lieder Recital by Prof. Georg Walter (Tenor); Songs from the Spanisches Liederbuch; Nun wandre Maria; Die ihr schwebet; Füh mich hin nach Bethlehem; Ach, des Knaben Augen; Mühevoll komm' ich und beladen; Wunden trägst du. 6.20, Travelling—Turning over the Leaves of Great-Grandfather's Baedeker. 6.40, The Funkstunde Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Lottery Announcements. 8.5, Variety Programme. In the interval at 10.0, News. 1.0 a.m. (Sunday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMÜNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODÖ.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.30 p.m., Radio Journal. 7.40, Sports Talk. 7.45, News and Racing Results. 7.55, News. 8.0, Gramophone Concert. 8.30, Miss Decima, Operetta (Andran), relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres.

SATURDAY

SEPTEMBER THE SECOND

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Light orchestral concert.
- LONDON REGIONAL** Variety programme.
- MIDLAND REGIONAL** Orchestral programme.
- NORTH REGIONAL** Variety programme.
- WEST REGIONAL** Programme by winners at the National Eisteddfod.
- SCOTTISH REGIONAL** "When Nights Were Bold," a sentimental programme of music and song
- BELFAST** Running commentary on the R.A.C. International T.T. Motor Race.
- ABROAD**
- BRUSSELS (No. 1)** 6.15 p.m. Bach's Violin Sonata, No. 1, in G minor.
- HUIZEN** 7.57 p.m. The Station Orchestra, conducted by de Groot, relayed from Rotterdam.
- PALERMO** 8.45 p.m. Operetta: "La fornarina," by Lombardo.
- ROME** 8.30 p.m. Opera: "Le Jongleur de Notre Dame," by Massenet.
- STRASBOURG** 8.30 p.m. The Station Orchestra, conducted by M. de Villers.
- TOULOUSE** 9.0 p.m. Lecoq concert.
- VIENNA** 5.10 p.m. The Wiener Symphoniker. 7.0 p.m., Schubert's Pianoforte Sonata in B flat.
- WARSAW** 9.30 p.m. Chopin pianoforte recital, by Turszynski.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—2.50 p.m., Concert by the Station Orchestra, conducted by Odcházal: March, Atalla (Provaznik); Waltz, Vive la Danse (Waldteufel); French Operetta Overture (Odcházal); Suite, The Doll's House (Engelmann); Elegy No. 2 for String Orchestra (Chlup); Descriptive Piece (Sebek); Gavotte (Mülbacher); Serenade (Fucik); Wo die zitronen blüh'n (Joh. Strauss); Intergzzo (Leopold); March, Washington Post (Sausa). 5.45, See Prague. 6.5, Sonata in G, Op. 83, No. 1, for Flute and Pianoforte (Friedrich Kuhlau). 6.30, Talk: Sunday in Dettva. 6.45, Gramophone Music. 6.55, Talk for Housewives. 7.0, See Prague. 7.10, See Brno. 7.45, 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.—1.5 p.m., Gramophone Concert. 1.45, Time and News. 2.5, Gramophone Concert. 3.0, Agricultural Prices. 3.15, Book Review. 3.35, Review of Books for Young People. 4.0, Film Review. 4.15, Concert by the Cottbus Orchestra, relayed from Bad Kudowa. Conductor: Karl Krämling. March, Der alte Fritz (Blon); Overture, Masaniello (Auber); Lyric Suite (Grieg); Selection from A Masked Ball (Verdi); Harp Serenade (Oelschlägel); Overture, Waldmeister (Joh. Strauss); Rhapsody No. 3 on German Folk Songs (Kämpfert); Waltz (Waldteufel); Ländler for Two Violins. Traum der Sennerin (Lubitsky); Selection from Boreaccio (Suppé). 6.0, Programme Announcements. 6.30, Programme to be announced. 6.30, Czechoslovak Songs and Recitations. Margarete Jentsch (Recitations). Käthe Thiennun (Contralto), and Friedrich Wirth (Lute). 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Austria. 8.20, See Munich. 10.0, Time and News. 10.30, Dance Music and Light Music by the Conny Franz Band, relayed from the Jahrhunderthalle. 12 Midnight (approx.). Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: News and Song Recital by Olga Maspar (Soprano): Mai Nacht (Brahms); Wie Melodien zieht es mir (Brahms); Solveigs Wiegenlied (Grieg); Margaretes Vuggesang (Grieg); Verborgenheit (Wolf); Über Nacht (Wolf); Beim Schneewetter (Reger); Waldesamkeit (Reger); Wenn die Linde blüht (Reger). 7.0, See Prague. 7.10, Recital of Slovak Love Songs by J. Fadrusova and A. Vondracek. 7.45, See Prague. 10.15, See Moravská-Ostrava. 11.20 (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: Tolkowsky (Baritone). Overture, Rip van Winkle (Plauquette); Suite, Roma (Bizet); Wien bleibt Wien (Vollstedt); Romance and Finale from the Violin Concerto in D (Wieniawsky); Baritone Songs from Operettas; Ballet Music from Cydalise et le Chèvrepied (Piercé); Vladivostok (Bee and Packay); Melody (Benets); Arab Dances (Ring); Spanish Dance (Falla). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Lecmans: Siamische Wachtparade (Lincke); Indian Song (Rinsky-Korsakov); Song (Rinsky-Korsakov); Hungarian Rhapsody No. 2 (Liszt); 'Cello Solo, Berceuse (Lecmans); Mazurka No. 4 (Pfeiffer); Boston, C'est la saison d'aimer (Lauweryns); Selection from Le Comte Oligod (Moretti). 4.45, Talk: The Belgian Tourist Industry. 5.0, Concert by the Station Orchestra, conducted by Jean Kumps: The Italian Symphony (Mendelssohn); Eine kleine Nachtmusik (Mozart); Hungarian Dances (Brahms). 6.0, Talk: Strolls through Belgium—The Old Castles of Namur. 6.15, Violin Sonata No. 1 in G Minor (Bach). 6.30, Czechoslovak Folk Song Recital by Nikolaus Goldselmidt. 7.15, Talk. 7.30, Le Journal Parlé. 8.0, Concert by the Station Orchestra, conducted by Franz André. Soloists: Durand (Tenor) and Steurs (Accordion). Overture, Pique Dame (Suppé); Three Dances from Tom Jones (German); Two Spanish Dances (Falla); Gipsy Songs and Dances (Ferras); Japanese Melodies for Tenor and Accordion; Waltz, Estudiantina (Waldteufel). 8.45, Reading from the Works of de Regnier, Michael, Collin, Adolphe Hardy, Spaak, Melloy and Bernier. 9.0, Concert (contd.): Slav Dances (Dvorak); Violin Solos: (a) Meditation from Thaïs (Massenet). (b) Le canari (Poliakini); Suite, La Feria (Lacôme); Tangos for Tenor and Accordion; Allegro for 'Cello (Saint-Saens); Norwegian Rhapsody (Lalo); Polka, Lenka (Ridky); Won't you stay to tea (Revel); It's gonna be you (Young). 10.0, Le Journal Parlé. 10.10, Dance Music from the Casino, Knocke.

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 Lecmans: Overture, Morning, Noon and Night (Suppé); Heart to Heart (O. Straus); Irish Song (Alyon); Selection from Carmen (Bizet); Violin Solo: Zigeunerweisen (Sarasate); Melody (Wood); Potpourri of Well-known Airs (Salabert). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Radio Orchestra, conducted by Franz André: Overture, Boreaccio (Suppé); Ballet

Music from The Bartered Bride (Smetana) Waltz, Gold and Silver (Lehár); Popula Flemish Songs; Chants d'Espagne (Albeniz) Foxtrot, Hot Ice (Chwat). 4.45, Reading 5.0, Concert by the Small Station Orchestra, conducted by Lecmans: Two-step Puerta de la Carne (Lacchesi); Ballet Suite (Glydmark); Scène enfantine (Brusselmans) Selection from Rienzi (Wagner); Serenade Napoli (d'Ambrosio); Capriccio (Maeker) Gigue (Wormser). 6.0, Jazz Music with Commentary. 7.0, Gramophone Records Quartet, Op. 121 (Fauré); Prelude to Act III of The Mastersingers (Wagner). 7.30 Film Review. 8.0, Concert by the Station Symphony Orchestra, conducted by Kumps. Languedoc Rhapsody (Delacroix); Petiti Suite (Dupuis); Fanlasia on Two Flemish Airs (De Boeck); Serenade for Strings (Piercé); Canzonetta for Clarinet and Orchestra (Piercé); Claironerie (Ducasse) 8.45, Poetry Recital (Alice Nahon). 9.0 Concert, relayed from the Kursaal Ostend After the Concert, Le Journal Parlé followed by Dance Music by Robert de Kers and his Cabaret Kings and an Argentine Tango Orchestra, relayed from the Kursaal Ostend.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Sibiceano Orchestra. In an interval at 6.0, Radio Journal. 7.0, Reading. 7.20, Gramophone Music. 7.40, Educational Talk. 8.0 Choral Concert. 8.45, Talk. 9.0, Concert of Romanian Music by the Station Orchestra. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 8.5 p.m. (approx.) till Close Down.—7.30 p.m., Answers to Correspondents. 8.0, Military Band Concert relayed from Szegedin. 9.0, Recital of Hungarian Folk Songs by Sigmund Pilinszky with Cigany Music Accompaniment. 10.10, News. 10.30, Gramophone Music.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153.8 metres.—12 Noon, Time and Chimes from the Town Hall and Weather. 12.5 p.m., Concert by the Harald Andersen String Ensemble, relayed from the Bellevue Strandhotel. 2.0, Interval. 3.0, Concert by the Mogens Hansens Instrumental Ensemble; Soloist, Asta Elva Moller (Songs): Overture, Casanova (Lincke); Waltz, Je t'aime (Waldteufel); Tango (Albeniz); Selection from Peer Gynt (Grieg); Two Icelandic Melodies (arr. Svendsen); Selection from The Tales of Hoffmann (Offenbach); Songs (Franz): (a) Aus meinem grossen Schmerzen, (b) Auf dem Meer, (c) Jagdlid, (d) Er ist gekommen, (e) Marie, (f) Liebchen ist da; Songs (Wolf): (a) Verborgenheit, (b) Auf ein altes Bild, (c) Blumengruss; Selection from Martha (Flotow); Waltz, Gold and Silver (Lehár); Elegy from the Serenade for Strings (Tchaikovsky); Orientale (Cui); Overture, A Waltz Dream (O. Straus). 5.0, Gramophone Music. 5.30, Exchange and Fish Market Prices. 5.45, Reading (Hetsch). 6.15, French Lesson. 6.45, Weather and News. 6.54, Announcements. 7.0, News. 7.15, Time Signal. 7.30, Talk. 8.0, Chimes from the Town Hall. 8.5, Reading, followed by Weather. 8.25 to 10.40, Viennese Programme. 8.25, Concert by the Station Orchestra, conducted by Fritz Mahler: Overture, Figaro (Mozart); Serenata notturna (Mozart); Military March No. 1 in D (Schubert); Selection from Rosamund; Overture, Der Teufelsmalch Hydraulicus (Kreuck). 9.10, Viennese Song Recital by Villie Hagbo Petersen; Song (Stolz); Air from The Last Waltz (O. Straus); A Strauss Waltz (Benatzky). 9.25, Johann Strauss Concert by the Station Orchestra, conducted by Fritz Mahler and Villie Hagbo Petersen (Songs): Overture, Prince Methusalem; Waltz, Morgenblätter; Polka, Pizzicato; Air from Die Fledermaus; Overture, Cagliostro in Wien; Waltz, Tales from the Vienna Woods; Polka, Tritsch-Tratsch; Waltz Song, Frühlingsstimmen; Entry March from The Gipsy Baron. 10.25, News. 10.40, Pianoforte Recital by Ole Willumsen. 11.0, Dance Music, relayed from the Wivex Restaurant. In the interval at 12 Midnight, Time 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.—7.20 p.m., Miscellaneous Items and News. 7.35, Program Announcements. 7.40, See Warsaw. In the intervals, News and Sports Notes. 12 Midnight (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m., The Phico Happy Hour. Part I, Orchestral Concert: Signature Time; Overture, Semiramide (Rossini); Wienermädeln (Zichrer); Selection from Il Trovatore (Verdi); Ballet Egyptian (Luigini); Violin Solo, Fandango (Goldowsky); Torch Dance (German); The Gingerbread Waltz (Humperdinck). Part II, Dance Music: I shall still keep smiling along;

SEPT. 2nd SATURDAY continued

ock-a-bye; All over Italy; Wear a big...
nile; My darling; In Egeron on the Tegern...
A ghost of a Chance; We belong together; Signature Tune. 4.30 p.m., Programme for Children. 5.0, Concert for Tun-

Orchestra. In the interval at 12 Noon, Weather. 1.1 p.m., Time and Weather. 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 and Exchange. 3.30 (from Danzig). Programme for Children. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wileken. Overture, Die Landstreicher (Ziehrer); Ein Liebesbrief (Königsberger); Madrid (de Micheli); Selection from Der lustige Krieg (Strauss); Waltz, Maritza (Kálmán); Der Spottvogel (Manfred); Slav Rhapsody No. 2 (Friedemann); Balgölüster (Meyer-Helmund); Fascination (Marchetti); Selection from The Merry Widow (Lehar). In the interval, A.D.A.C. Road Report. 5.30, Reading (Alfred Hein). 5.45, Leader Recital by Elisabeth Butschkas (Soprano), Two Lieder (Schubert): (a) Frühlingssehnsucht, (b) Im Abendrot; Two Lieder (Chopin): (a) Mädchenwunsch, (b) Litanisches Lied; Two Lieder (Schumann): (a) Weit, weit, (b) Waldgespräch; Four Lieder (Franz): (a) Der Schmetterling, (b) Er ist gekommen, (c) Es hat die Rose sich beklagt, (d) Abends. 6.5, Programme Announcements. 6.15, Agricultural Prices. 6.25, Political Review of the Month. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Weather and News. 8.10, See Hamburg. 9.30, Concert of German Folk Songs and Dances played by a Wind Quartet. 10.0, Weather and News. 10.15 (approx.). Dance Music from Berlin (Funkstunde). 1.30 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.). - Programme of the Catholic Radio Society (K.R.O.). 11.40 a.m., Police Announcements. 11.55, Sextet Concert. In the interval at 12.40 p.m., Gramophone Music and Announcements. 1.25, Interval. 1.40, Programme for Children. 3.40, H.I.R.O. Programme. 4.40, Gramophone Music. 4.55, Sports Talk. 5.10, Orchestral Concert, conducted by Gerritsen: Overture, Le Roi d'Ys (Lalo); Selection from Tiefland (d'Albort); Valse capricie (Rubinstein); March (Meyerbeer); Ballet Music from La Gioconda (Ponchielli); Military March (Korngold). 6.0, Press Review. 6.25, Concert (contd.); Potpourri, From Gluck to Wagner (Schwimer); Walzerlied (Strauss); Dreams on the Ocean (Gungl); March, Wien-Berlin (Schramm). In the intervals at 6.40, Police Announcements, at 6.55, Sports Talk, and at 7.15, Gramophone Music. 8.10, News. 8.15, Variety Programme with the KRO Boys. 10.40, Gramophone Music. 11.40 (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, Concert by De Notenkrakers. 12.40 p.m., Concert by the Small Station Orchestra, conducted by de Groot. 1.40, Gramophone Music. 2.10, Talk. 2.30, Song Recital by Yvonne Fabrè (Soprano) and Laumen (Bass). Duets from: (a) Figaro (Mozart), (b) Don Giovanni (Mozart), (c) Thaïs (Massenet). 2.45, Talk, with Gramophone Illustrations: Russian Music. 3.25, Interval. 3.40, Concert by Eddy Wallis and his Ensemble. 4.10, Song Recital (contd.): Duets from (a) Crucifix (Fauré), (b) Charité (Fauré). 4.25, Orchestral Concert (contd.): Slav Dance No. 10 (Dvorak); Waltz (Brahms); Czardas (Monti); Selection from Paganiini (Lehar); Serenade (Pergament); Melody (Frescobaldi); Maria, Mari (di Capua); Russian Melody (Wallis). 5.10, Programme for Children. 5.40, Concert. 6.10, Concert by a Children's Choir. 6.40, R.V.U. Programme. 7.40, News. 7.55, S.O.S. Messages. 7.57, Concert by the Station Orchestra, conducted by de Groot, relayed from Rotterdam. Soloist: de Booy (Songs). Overture, Phedre (Massenet); Ballet Music from Faust (Gounod); Arioso from Benvenuto (de la Pena); Song, Serenade (Schubert); Tales from the Vienna Woods (Strauss); Songs: (a) Lolita (Ruzzi Peccia), (b) Fir dieh allein (Geel); Slav Rhapsody No. 2 (Friedemann). 8.55, Radio Theatre. 9.10, Gramophone Music. 9.55, Concert by De Pliercruiters, relayed from Rotterdam. 10.55, Organ Recital by Steyn. 11.25, Gramophone Music. 11.40, Close Down.

INNSBRUCK.—See Vienna. JUAN LES PINS 1,205 kc/s, 249 metres; 0.8 kW.—12.30 p.m., Amusement Guide and Variety Items. 1.0, News. 1.15, Radio Concert. 8.0, Amusement Guide, Exchange, and News, followed by Radio Concert. 9.0, News and Weather. 9.15, Radio Concert. KALUNDBORG.—See Copenhagen. KIEL.—See Hamburg. KLAGENFURT.—See Vienna. KOSICE.—See Prague.

LAHTI 167 kc/s, 1,796 metres; 40 kW. Relayd by Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Sports Talk. 6.40, Oboe Solos. 7.5, Talk. 7.30, Songs. 7.50, Dance Music by the Dallapé Orchestra. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Light Music. 10.0 (approx.), Close Down. LANGENBERG 635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert by the Station Orchestra, conducted by Wolf: March, Deutsch der Rhein (Pesch); Overture, Le lac des fées (Auber); Waltz, O schöner Mai (Strauss); Intermezzo from Si (Mascagni); Selection from Der Obersteiger (Zeller); Herzwunden (Grieg); Letzter Frühling (Grieg); Tchaikovsky Potpourri (Tribach); Slav Dances Nos. 1 and 6 (Dvorak); Czardas (Gabriel-Marie). In an interval at 2.0 (approx.), Announcements. 2.30, Gramophone Concert. In an interval, Dialect Reading. 3.30, Economic Notes and Time. 3.50, Excursions in the Rhineland and Westphalia.—Radio Sequence. 4.15, Reading (Jakob Kneip). 4.35, Talk: The Class Opinion of the Young Employed. 4.50, Talk: Röhmi the Soldier. 5.0, Pianoforte Dance Music. 5.30, Reading (Wilhelm Schmidthorn). 5.50, Political Address. 6.0, Variety Programme. 6.45, Announcements. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, News. 8.10, See Hamburg. 9.30, Military Band Concert in Memory of the Battle of Sedan: Lower Rhine Fusiliers' March (Kohn); Sedan March (Lange); Friedensfanfare (Wankow); Selection from The Flying Dutchman (Wagner); Margaretensmarsch (Neuhäuser); Waltz, Lenz und Liebe (Blon); March, Gute Fahrt (Jungblaus); Niederhessisches Blut (Kohn). 10.15, Announcements. 10.45, Dance Music from Berlin (Funkstunde). 12 Midnight (approx.), Close Down. LAUSANNE.—See Radio-Suisse Romande. LEIPZIG 769.9 kc/s, 389.6 metres; 120 kW. Relayd by Dresden, 941 kc/s, 319 metres.—12 Noon, National Dances on Gramophone Records. 1.15 p.m., News and Programme Announcements. 1.30, Concert. 2.30, News. 2.45, Programme for Children. 3.25, Legal Talk. 3.45, Economic Notes and News. 4.0, Programme for Young People. 4.30, Concert by a Nazi Band: March (Bollmacher); Overture, Poet and Peasant (Suppé); Grubenlichter-Walzer (Zeller); Selection from Martha (Flotow); March, Grenzmarkklänge (Schmidt); Paraphrase on the Song, Ein Vögelin sang im Lindenbaum (Eberle); Ballerinen-Walzer (Lehar); Overture, Marinarella (Fueik); Die Mühle im Klosteral (Offeney); Wir marschieren (Wolfschlael); March, Märkische Heide (Lincke). 6.0, German for Germans. 6.20, Riflemen's Songs. 6.50, A Modern Dictionary. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer. Soloists: Elsa Koehlbam (Soprano) and Eugen Hietel (Tenor). Overture, The Queen's Kecherier (Joh. Strauss); Operetta Duet, First Irish Rhapsody, Op. 78 (Stanford); Songs with Pianoforte Accompaniment; Galop, Ein Treffer (Kraß); Songs; Waltz, Badner Madln (Komzák); Duet, Hungarian Dances, Nos. 5 and 6 (Brahms); Song; Pianoforte Piece (Schütt); March, Frisch drauf los (Blon); Song. In an interval at 9.0, Agricultural Notes. 10.15, News. 11.0, See Munich. 12 Midnight (approx.), Close Down. LINZ.—See Vienna. LJUBLJANA 522 kc/s, 574.7 metres; 7 kW.—7.0 p.m., Relay of Light Music. 8.0, Review of Foreign Affairs. 8.30, Quartet Concert of National Songs. 9.15, Gramophone Music. 9.30, Weather and News. 9.45, Concert by the Station Orchestra. 11.0 (approx.), Close Down. LUXEMBURG 252 kc/s, 1,191 metres; 200 kW.—French Programme. 7.30 p.m., Symphony Concert on Gramophone Records. 8.10, Concert by the Station Orchestra, conducted by Henri Pénis: Selection from Le Roi d'Ys (Lalo); Arabesques Nos. 1 and 2 (Debussy); La jeunesse d'Hercule (Saint Saëns). 8.50 News in French. 9.0, Song Recital. In an interval at 9.20, Talk in French. 9.45, News in German. 9.55, Concert by the Station Orchestra, conducted by Henri Pénis: March, Pierrot (Bose); Suppé Potpourri (Mihalov); Overture, Nakiis Boelzeit (Lincke). 10.25, Dance Music on Gramophone Records. LWOW 788 kc/s, 381 metres; 16 kW.—7.20 p.m., Miscellaneous Announcements. 7.40, See Warsaw. 9.15, Talk: The Battle of Vienna. 9.30, See Warsaw. 11.5, Concert by the Serenade Maudoline Orchestra. 12 Midnight (approx.), Close Down. LYONS LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Music. 7.15, Musi-

cal Programme. 7.30, 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 Programme, News.

MADRID EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, News of the Day and Request Gramophone Records. 9.15, Topical Review. 9.30, Interval. 11.0, Chimes, Time, Topical Review. 11.15 (approx.), Song Recital and Sextet Concert, followed by Literary Programme. 1.15 a.m. (Sunday), Topical Review. 1.30 (approx.), Chimes and Close Down.

MILAN VIGENTINO, 662 kc/s, 453.2 metres; 4 kW.—8.30 p.m. (approx.) till Close Down, See Rome. MORAVSKA-OSTRAVA 1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., Relay of a Concert by a Sokol Mandoline Orchestra: March, San Lorenzo (Silva); Song (Voldan); Potpourri of Russian National Songs (Kovarik); Waltz (Drdla); Polka and Gavotte (Kovarik); March (Vaekar). 7.0 See Prague. 7.10, See Brno. 7.45, See Prague. 10.15, Concert of Light Music by the Station Orchestra, conducted by Phelita. 11.30 (approx.), Close Down.

MOTALA.—See Stockholm. 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., See Frankfurt. 5.45, Programme for Young People. 6.20, Music of the Eighteenth Century—Recital by Hedda Amann (Soprano), Eduard von Reden (Tenor), Anna Speucker (Harpischord), Paul Nieneyer (Flute) and Albert Spenger (Recitations). 6.45, Wireless Hints. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Austria. 8.20, Concert of Viennese Music by the Station Orchestra, conducted by Karl List, the Station Choir and Karl König (Tenor). Wien bleibt Wien (Hruby); Dynamiden-Walzer (Joh. Strauss); Potpourri, Kleine Wiener Volksmusik (Komzak); Stephanie Gavotte (Czibulka); Waltz, Weaner Madln (Ziehrer); Polka from Frauentherz (Jos. Strauss); Potpourri, Boccaccios Galanterien (Suppé); Waltz, Dorfseelwaben aus Oesterreich (Jos. Strauss); March, Beltes Wiener Blut (Komzak); Viennese Waltz (Benatzky); Deutschmeister - Regiments-Marsch (Jurek). 9.30, The Algan Provincial Programme. 10.20, Time and News. 11.0, Serenade by the Quirin Huber Orchestra. 12 Midnight (approx.), Close Down.

NAPLES.—See Rome. NOTTODEN.—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 Music. 5.15, Programme for Children. 6.15, Norwegian Music by Dagny Sandvik (Song) and Marius Nytröen (Hardanger Fiddle). 6.45, Talk on Economics. 7.0, Announcements. Weather and News. 7.30, Concert by the Station Orchestra, conducted by Kraumm: Academic Festival Overture (Brahms); Two Symphonic Dances (Grieg); Melody (Olson); Two Swedish Melodies (Svensen); Potpourri of Students' Songs (Oelschlägel); Bergensiana (Halvorsen); Dance (Niils Ursin); March (Lasson). 8.55, Topical Talk. 9.15, Concert by the Norwegian Students' Choral Society. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Students' Cabaret Programme. 11.0, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

OSTERSUND.—See Stockholm. PALERMO 558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopshavoro Notes, Tourist Talk, Agricultural Notes, Giornale Radio and Sports Notes. 8.20, Gramophone Music. In an interval at 8.30, Time and Announcements. 8.45, La rornarina—Operetta in Three Acts (Lombardo). In the intervals, Talk, Book Review and News. 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 (approx.). Dramatic Programme: (a) L'Anglais tel qu'on le parle (Tristan Bernard), (b) Scénettes (Georges Courteline). 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, Sponsored Gramophone Concert. 8.0, Talk: The Event of the Week. 8.10, Gramophone Music. 8.25, Guy

FRANKFURT 157 kc/s, 259.3 metres; 17 kW. Relayd by asel, 1,220 kc/s, 245.5 metres; and Trier, 157 kc/s, 259.3 metres.—3.30 p.m., Programme for Children. 4.25, Economic Notes. 5.30, Concert. 5.45, Economic Notes. 6.0, Talk: The Prussian Board of Trade. 6.25, Time and Announcements. 6.30, Review of the Week. 6.50, Today's News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Waltz Music by the Station Orchestra, conducted by Hans Osband. 9.15, Dance Music from Berlin (Deutschlandsender). 10.15, Time and News. 1.45, Frankfurt and Berlin (Funkstunde), Exchange Programme: Dance Music.

REDRIKSSTAD.—See Oslo. REIBURG.—See Stuttgart. ENEVA.—See Radio-Suisse Romande. ENOA.—See Turin. LEIWITZ.—See Breslau. OTEBERG.—See Stockholm. RAZ.—See Vienna. AMAR.—See Oslo.

HAMBURG all 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; and Kiel, 530 kc/s, 566 metres; and Kiel, 292 kc/s, 232.2 metres.—4.0 p.m., Concert by the Hamburg Philharmonic Orchestra, conducted by José Eibenschütz. Entry March of the Boyards (Halvorsen); Overture, Lampa (Herold); Hungarian Rhapsody, No. 1 (Liszt); Concert Waltz (Glazunov); Suite, Bilder aus dem Süden (Niedodé); Waltz, Morgenblätter (Joh. Strauss). 5.0 (from Bremen), Talk: Australia and the South Seas—Melanesia. 5.30, Variety Programme (30 from Kiel), Religious Address. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Political Announcements. 10.0, A Musical Kaleidoscope. Concert by the Hamburg Philharmonic Orchestra, the Small Station Orchestra, the Station Choir, and Male Voice Quartet and the Buncke Saxophone Quartet. Conductor: Gerhard Laasz. Soloists: Isa Roland and Bernhard Kischlat (Songs). 9.30, Dance Music from Berlin (Deutschlandsender). In the interval at 10.0, Time and News, and at 10.20, Topical Talk.

ANOVER.—See Hamburg. HEILSBURG 085 kc/s, 276.5 metres; 60 kW. Relayd by Danzig, 662 kc/s, 453.2 metres.—11.30 a.m., Concert by the Königsberg Opera House

Ropartz Concert of Chamber Music. 9.10, Dance Music by the Sonora Radio Band, conducted by Fred Hoffmann. 11.0, News.

SEPT. 2nd

SATURDAY

continued

Dance Music. 12 Midnight, News. 12.5 (Sunday), Chansonnettes. 12.15, Orchestral Music. 12.30 Close Down.

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. Saudades de Brazil (Milhaud); Tarkanova (Roubaud Bernard); Gal Bahillage (Avignon); Mi Madre (Mario Cazes); Japanese Lanterns (Yoshitomo); Jonjou (Fisher); C'est toi, chéri, mon seul amour (Hermite); Le bal de la reine (Paradis); Scènes alsaciennes (Massenet); Potpourri of Old French Songs. An American in Paris (Gershwin); Le Bonheur est chose légère (Saint-Saëns); Overture, La Princesse Jaune (Saint-Saëns). 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. 7.0, Agricultural Notes. 7.10, Gramophone Concert. Aïmons nous dans le mystère (Persiani Boumier); Vision de Salomé (Joyce); El Relicario (Padilla); Polka des As (Marceau); Jack Baby (Loyaux); Emma Oivry (Pirouille); Le Temps des Cérises (Renard); Tesorio mio (Bocucci); Glow Worm Idyll (Lincke); Marche grecque (Ganne). 7.50, Commercial Prices and News. 8.0, Concert (cont'd.). Ginette (Paradis); Chante non Plutium (Maupas); My Friend Elizabeth, from Wonder Bar (Katscher); Song (Heymann); Enlevez-moi (Gaboroche); Comme autrefois (Carre); Au Moulin (Gillet); Mado (Vacher). 8.30, News, Weather and Sports Notes. 8.45, Concert (cont'd.). The Spanish Mantilla (Guerrero); Pagan Love Song (Nacio); Anatole, tu l'as connu (Bousquet); Cantilène (Ganne); Pour un mot d'amour (Scott); Lake Michigan (Hermann); Selection from The Three Musketeers (Priml); Tango mystérieux (Charly); Oh Frühling, wie bist du so schön (Lincke); Tiger Rag (Dixieland). 9.15, Press Review and News. 9.30, Concert (cont'd.). Ballet égyptien (Luigin); Selection from Le Grand Mogol (Audran); Simple aven (Thomé); La Corrida (Valverde); Song (Priml); Partur (Yatove).

PITTSBURGH

KDKA, 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 to 11.0 p.m., New York Relay. 7.50, Concert Echoes. 8.0, Words and Music. 8.30, Wealth of Harmony. 9.0, Dance Masters. 9.30 Concert Favourites. 10, Casino Orchestra. 10.30, Neil Sisters. 10.45, Orphan Annie. 11.0, News and Piano Classique. 11.15, Sports Notes and a Song. 11.30, A Recreo by Bill and Alex. 11.45 to 12.30 a.m. (Sunday), New York Relay. 11.45, Century Progress Science. 12 Midnight, Baritone Solos by Ross Pearson. 12.15, Annie, Judy and Zeke. 12.30, Jack Pettis' Orchestra. 1.0, Jack Denny's Orchestra, from New York. 1.30, Programme to be announced. 2.0, Tales of the Titans, from New York. 2.30, Programme to be announced. 3.30, Jack Pettis' Orchestra.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 355 metres; 1.9 kW.—12.25 p.m., See Warsaw. 12.35, Interval. 12.59, Time Signal and Chimes from the Town Hall. 1.3, Gramophone Concert. 2.0, Financial Notes. 2.10, News. 2.15, Interval. 6.0, Divine Service relayed from the Ostro Branna, Wilno, 533 kc/s, 563 metres. 7.0, Talk. 7.20, Miscellaneous Items and News. 7.35, Theatre Notes and Programme Announcements. 7.40, Programme from Warsaw. 10.0, Time Signal, Sports and Police Notes. 10.15, Dance Music from the Esplanade Café. 11.0 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—2.50 p.m., See Bratislava. 4.0, Interval. 5.45, Gramophone Music. 5.55, Talk: Weather. 6.5, Agricultural Report. 6.10, Gramophone Music. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Talk: Wilhelm Ostwald's Eightieth Birthday. 7.0, Chimes and News. 7.10, See Brno. 7.45, Educational Talk. 8.0, Variety Programme. 10.0, Time and News. 10.15, See Moravská-Ostrava. 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 Lesson. 6.30, Interval. 12.28 p.m., Time Signal from Nenehätel Observatory. 12.30, News. 12.40, Report of the Walking-Tour of the Rhone, relayed from Martigny, Valais. 1.0 (from Lausanne), Financial Notes. 1.10 (from Lausanne), Gramophone Concert. 2.0, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Lausanne), Concert by the Radio-Lausanne Orchestra, conducted by Moser. 4.30 (from Zurich), Report of the Finish of

the Cycle Tour of Switzerland. 5.30, Interval. 7.0 (from Lausanne), Talk. 7.30 (from Lausanne), News. 7.31 (from Lausanne), Nature Talk. 8.0 (from Geneva), Prose Lyriques (Debussy) by Marroussia Orloff and Hughes Cénod. 8.25 (from Geneva), Reading. 8.40, Light Music by the Radio-Suisse Romande Orchestra, conducted by Echebard. 9.50, News. 10.0 (from Geneva), Dance Music by the Broadcasting Serenaders. 11.30 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme. 9.30, Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News. 10.30, Reading. 11.0, Concert by the Radio Trio, with Choral Music on Gramophone Records. After the Concert, Dance Music. 2.0 a.m. (Sunday), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—7.15 p.m., Recital of Songs and Arias. 7.35, Humorous Programme. 8.0, News. 8.15, Waldtenfel Waitzes. 9.0, News. 9.15 (approx.), Light Music. 9.30, 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, 25.4 metres, from 5.15 p.m. (approx.).—12.30 to 2.0 p.m., Gramophone Music. 1.0, Orchestral Concert of Light Music. In the intervals from 1.15 to 1.20, Talk on Photography, and from 1.30 to 1.45, Giornale Radio and Exchange. 4.30, Giornale Radio and Report of the Royal Geographical Society. 4.45, Children's Radio Review. 5.10, Weather. 5.15 to 6.0, Orchestral Concert of Light Music. 6.40 (Naples), Shipping and Sports Notes. 6.45, Wireless Signals and Dopolavoro Notes. 7.0, Tourist Report. 7.10, Agricultural Notes. 7.20, News in Foreign Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Gramophone Music. 8.25, Giornale Radio and Sports Notes. 8.30, Le Jongleur de Notre Dame—Opera in Three Acts (Massenet); 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 and Baseball Scores. 1.0 to 4.0, New York Relay. 1.0, Rainbow Reflections. 1.30, Antobal's Cubans. 2.0, Musical Programme. 2.30, K-7, Secret Service Spy Story. 3.0, B. A. Rolfe and his Orchestra. 4.0, 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.—5.30 p.m. (from Basle), Light Music and Dance Music on Gramophone Records. 6.0 (from Basle), Talk on Hygiene. 6.30 (from Basle), Programme for Women. 7.0, Chimes from Zürich Churches. 7.15 (from Basle), Time, Weather and Market Prices. 7.20 (from Basle), Opera and Operetta Music on Gramophone Records. 8.0 (from Basle), Talk: Early Training in Politeness. 8.30 (from Basle), Contralto Song Recital of Old Songs by Grete Nies. 9.0, Weather and News. 9.10 (from Basle), Unknown Works for the Violin. 9.40 (from Basle), Die Sportsfreunde—Comedy (Richard Rheinberger). 10.15 (from Basle), Gramophone Music. 11.0 (approx.), Close Down.

SEVILLE

815 kc/s, 368.1 metres; 1.5 kW.—9.30 a.m., Radio Journal. 10.0, Interval. 3.0 p.m., Variety Programme. 4.0, Interval. 10.0, Concert of Light Music. Part I, Extracts from Spanish Musical Comedies; Selections from Una vieja (Gaztambide); El milagro de la virgen (Chapi); La Bruja (Chapi); Emigrantes (Barrera y Calleja); El Dictador (Millan); Las Hileras (Serrano); Al dorarse las espigas (Balagner); and Los Blasones (Telleria). Part II, Selection from The Merry Widow (Lehar). Part III, Flamenco Songs and Dances. In the interval, News, Exchange and Weather. 12 Midnight, 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, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.0 p.m., Technical Talk. 4.20, Concert by the Elite Orchestra. 5.0, Weather. 5.20, Programme for Children. 5.45, Provincial Programme. 6.15, Gramophone Music. 7.15, Weather and News. 7.30, Sports Notes. 8.0, Cabaret Programme. 8.50, Talk: The Air as the Highway of the Future. 9.10, Old Dance Music. 9.45, Weather and News. 10.0, Modern Dance Music. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—10.0 a.m., Opening Ceremony of the Exhibition Fair, relayed from Le Wachen. 11.0, Gramophone Concert of Light Music. 12.45 p.m., News. 1.0, Time. 1.1, Popular Music on Gramophone Records. 2.0, Legal Talk in German. 2.15, Light Music on Gramophone Records. 2.45, Talk: The Opera and the Opera Comique in the Time of the Revolution. 3.0, Interval. 3.30, Orchestral Concert, relayed from the Casino, Vichy. Conductor: Bronillac. Overture, Ruy Blas (Mendelssohn); Kermesse (Godard); Ballet Music from The Queen of Sheba (Gounod); Soloist Item; Airs (Gauberg). (a) Madrigal, (b) Berceuse, (c) Sicilienne; Selection from Aida (Verdi); Concert Mazurka (Pfeiffer). 5.0, Gramophone Music. 5.15, Orchestral Concert, conducted by Roskam: March (Oberfeld); Waltz, Künstlerleben (Joh. Strauss); Selection from Pas sur la bouche (Yvain); Tango, Trho-Tcho-San (Bayer); Tell me Tonight (Spoliansky); Minuet for String Quartet (Seassola); Slow Waltz for Saxophone and Pianoforte (Gantz); Foxtrot, Just a Night for Meditation (Young and Pollack); Tango, Moonlight in Abbazia (Siede); In (Lesso-Valerio); Melody (Joh. Strauss-Korngold); Boston Pagan Moon (Bryan, Dubin and Burke); March (Heymann). 6.15, French Elocution Lesson. 6.30, Gramophone Music. 7.0, Talk: Traffic Problems in a Large Town. 7.15, Gardening Talk in German. 7.20, Time and News. 7.45, Gramophone Music. 8.0, Press Review in German, Lottery Results and Announcements. 8.30, Concert by the Station Orchestra, conducted by Maurice de Villers. Soloists: Jean Wild (Soprano), Inés Maujean (Soprano), Max Pogoda (Pianoforte) and Leon Moreau (Songs). Overture and Two Soprano Duets from Così fan tutte (Mozart); Pianoforte Concerto in G minor (Mendelssohn); Suite grecque (Bazelaire); Two Sketches for Soprano and Orchestra (Voreau); Soprano Duet, Rêverie (Moreau); Valse noires et sentimentales (Ravel); Popular Corsican Melodies for Soprano (Tomasi); Musiques foraines (Fl. Schmidt). In an interval at 9.30 (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; 65 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—1.30 p.m., Concert from Langenberg. 2.30, Time and News. 2.50, Recital of Transylvanian Songs in Dialect by Gina Connert. 3.10, Concert of Schrammel Music. Karl Keller (Violin), Eugen Söhl (Accordion) and Leo Hantz (Guitar). Casbaldo March (Leopold); Waltz, Samt und Seide (Ziehler); Tyrol in Song and Dance (Fetras); Styrian Ländler (Kozzak); Viennese Song, Wien wird bei Nacht erst schön (Stolz); March, Die Jugend marschert (Lindemann). 3.20 to 5.45, See Frankfurt. 5.45, Technical Talk. 6.10, Talk on Sports. 6.35, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, See Frankfurt. 9.15, Dance Music from Berlin (Deutschlandsender). 10.0, Time and News. 10.45, Variety Programme from Berlin (Funkstunde). 12 Midnight (approx.), Close Down. SUNDSVALL.—See Stockholm.

TOULOUSE

799 kc/s, 385 metres; 8 kW.—6.30 p.m. Cello Solos. 6.45, Chansonnettes. 7.0, Accordion Solos. 7.15, News. 7.30, Programme by a Viennese Orchestra. 7.45, Prelude and Death of Isolda, from Tristan and Isolda (Wagner), by a Symphony Orchestra. 8.0, Opera Music. 8.15, Operetta Music. 8.30, Sound Film Music. 8.45, Hunting Horn Solos. 9.0, Lerocq Concert. Selection from (a) La Fille de Madame Angot, (b) Le Petit Duc, (c) Le Coeur et la Main, (d) Le Jour et la Nuit. 9.30, Opera Music. Selection from Il Trovatore (Verdi); March from Oberon (Weber); Dance of the Sylphs, from The Damnation of Faust (Berlioz). 9.45, Instrumental Solos. 10.0, Orchestral Music. 10.15, News. 10.30, Concert for Listeners in Morocco. 11.0, Sponsored Programme. 11.15,

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. Relay by Milan, 905 kc/s, 331.5 metres; Genova, 959 kc/s, 312.8 metres; and Florence, 1,005 kc/s, 500.8 metres.—5.40 p.m., Gramophone Music. 6.0 to 6.5, Weather. 6.35, Giornale Radio, Gramophone Music and Dopolavoro Notes. 7.0, Time, Tourist Report a Gramophone Music. 7.10, Agricultural Notes. 7.20, News in Foreign Languages. 7.40, Gramophone Music. 8.0, News, Weather and Gramophone Music. 8.30, Talk: Even and Problems. 8.45, Programme to be announced. 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 Announcements in Various 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.—Noon, Concert by the Wiener Symphoniker, conducted by Josef Holzer. Rakocsy Overture (Keler Bela); Madrigal (Drellio); Suite in a Fairy Realm (Ketebey); Herens-pazie (Ziehler); Song, Das Leben ist ein Schicksal (Eysler); Tarantella (Meyer-Hornmünd); March Song, Katarina (Steffan Selection from Frühlingsluft (Strauss Reiterer); March, Servus Franz (Wiesmann Overture, Blumenfest (Fetras); Idyll, 1 Tyroler Dörflchen (Schmeling); Waltz Liebeszauber (O. Strauss); French Polka (Fährbach); Melody (Squire); Waltz Song, Die Luft von Wien (Moser); Strauss, Potpourri (Schögl). In the interval at 1 p.m., Time and News. 2.0, Interval. 2.5 Time, Weather, and Exchange. 3.5, Talk: The Life and Work of Turgeniev. 3.3, Choral Concert. 4.0, French Les-on. 4.2, Radio Report from the New Aerodrome at Gastein. In the interval at 4.35, Talk: The Fight for Everest. 5.10, Concert by the Wiener Symphoniker, conducted by Josef Holzer. Overture, Cagliostro in Wien (Strauss); Largo (Handel); Marien-Walzer (Lammer); Lehar Potpourri (Hruby); Melod (Engel-Berger); Im Puppenhaus (Engelman Waltz, Nachtschwärmer (Ziehler); Overture Light Cavalry (Suppé); Serenade (Perez); Dance of the Merry Maseots (Ketebey); Viennese Folk Music (Kozzak). In the intervals, Radio Report from the New Aerodrome at Gastein. 6.30, Topical Talk. 7. Pianoforte Sonata in B Flat (Schubert played by Franz Schmidt. 7.40, Today Motto. 7.45, Time, Weather, and News. 7.55, Topical Talk. 8.10, At the Tea Table. Comedy in Three Acts (Sloboda). 9.35, News and Exchange. 9.50, Dance Music by the Broadway Boys, relayed from the Palmhof Café.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m. Time Signal and Fanfare from the Town of St. Mary's Church, Cracow. 12.5 p.m. Gramophone Concert. 12.25, Polish Press Review. 12.33, Weather. 12.35, Gramophone Music. 12.55, Radio Journal. 1. Interval. 2.55, Gramophone Records. 3. News. 3.10, Announcements. 3.15, Gramophone Music. 3.25, Economic Notes. 3.3, Gramophone Music. 3.50, Announcement. 4.0, Gramophone Music. 5.0, Topical Talk. 5.15, Recital by Meech (Soprano) and Chelowy (Bass). Bass Solos: (a) Baccarol (Gounod), (b) Song (R. Strauss), (c) Flic (Sobolewska), (d) Twilight (Korling), (e) Song (Niewiadomski). Soprano Solos: (a) Aria from The Merry Wives of Windsor (Nicolai), (b) Song (Niewiadomski), (c) A du Rossignol (Massé), (d) Waltz (Venzano). 5.45, Programme for Invalids, relayed from Lwów, 788 kc/s, 381 metres. 6.0, Divine Service, relayed from the Ostro Branna, Wilno. 7.0, Talk on Polish History, relayed from Poznan, 896 kc/s, 335 metres. 7.2 Miscellaneous Items. 7.35, Programme Announcements. 7.40, Reading. 8.0, Concert of Turkish Music by the Station Orchestra, conducted by Oziminski, with Introductory Talk. Soloist: Czekotowski (Baritone). 9.5, Radio Journal. 9.15, Agricultural Notes. 9.30, Chopin Pianoforte Recital by Turczynski: Scherzo in E, Op. 54; Waltz in A flat Op. 42; Three Mazurkas Op. 56 (a) in A minor, (b) in A flat minor, and (c) in F sharp minor; Nocturne in B minor Op. 9, No. 1. 10.15, Light Music by the Station Orchestra, conducted by Rybiak. Soloist: Terne (Songs). 11.5, Dance Music. ZURICH.—See Schweizerischer Landeseender.



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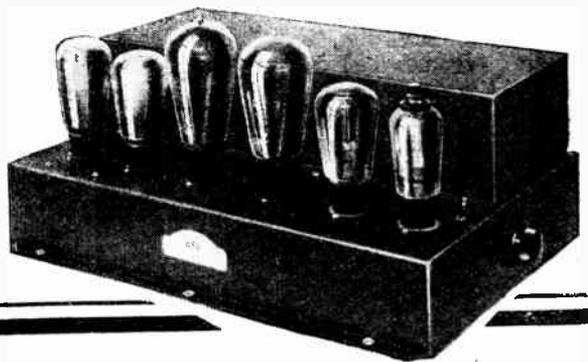
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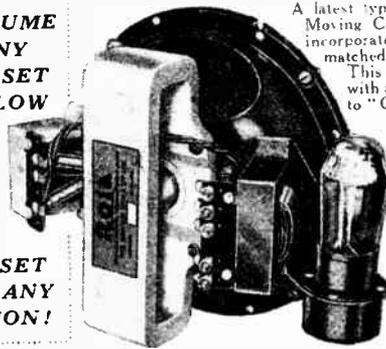


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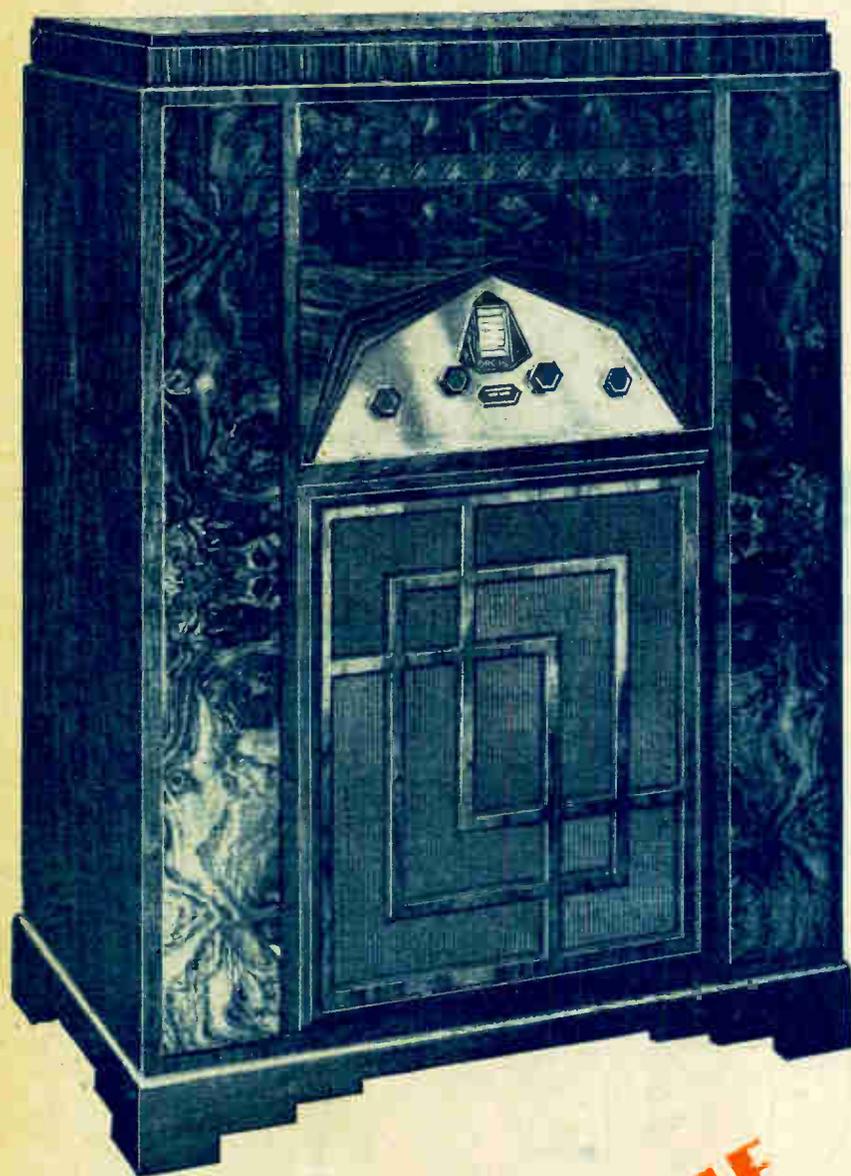
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