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RADIO WORLD

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ILLUSTRATED

EVERY WEEK

How to Make a
Honeycomb
RF Transformer

What Makes a Coil
Low-Loss?

Answers to Questions
on Radio World's
1925 Model Superdyne

A Sensitive Loop Set

Official Radio Report
on Eclipse Effects

Complete List of Coming
Radio Events

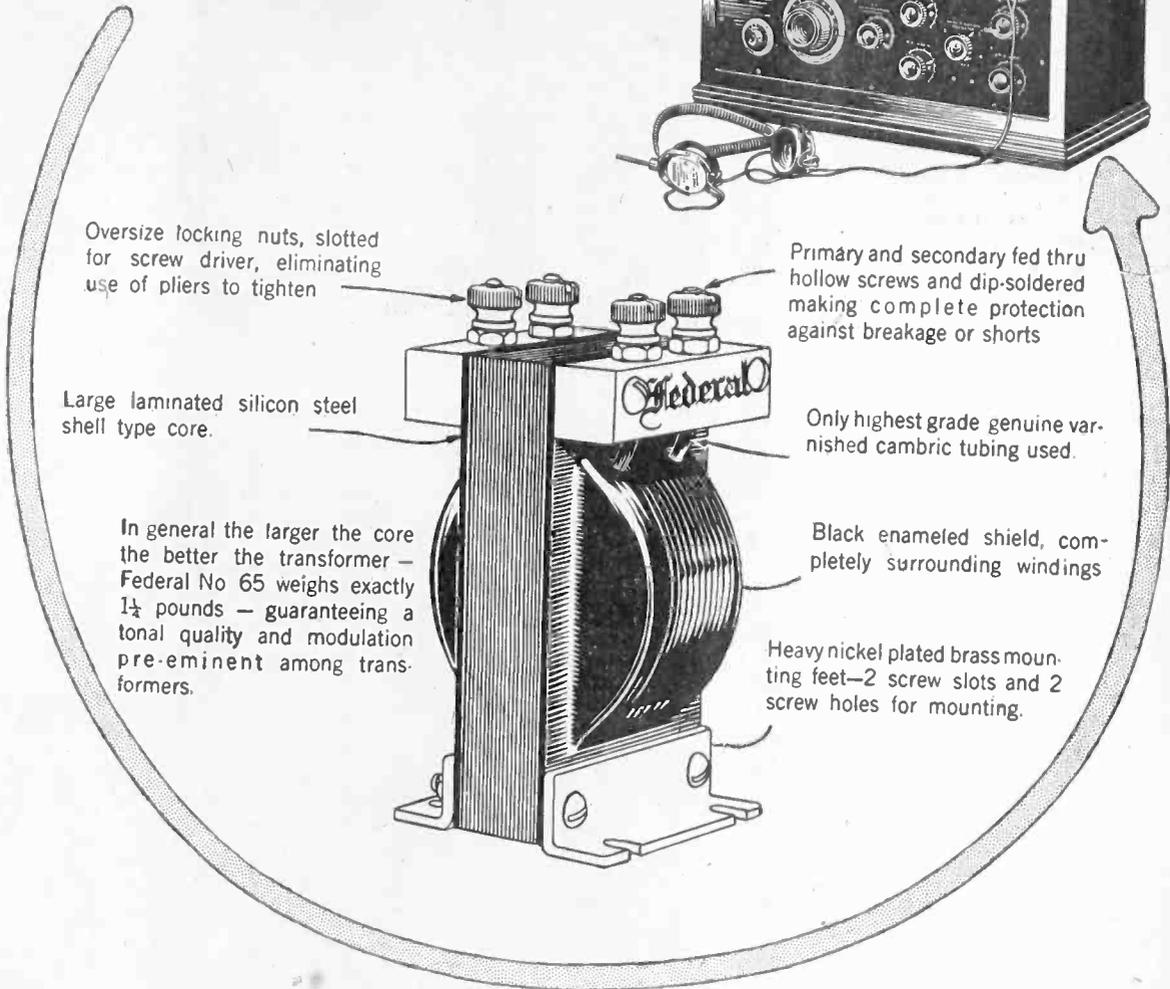
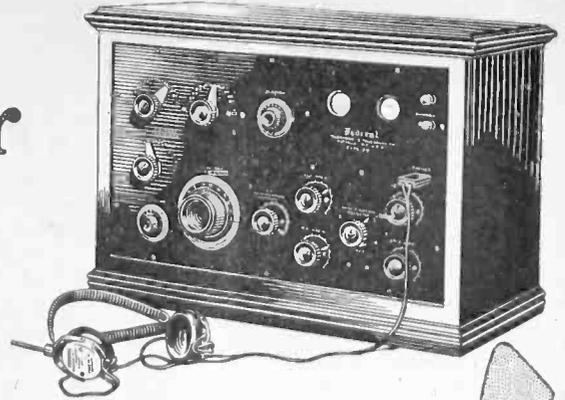
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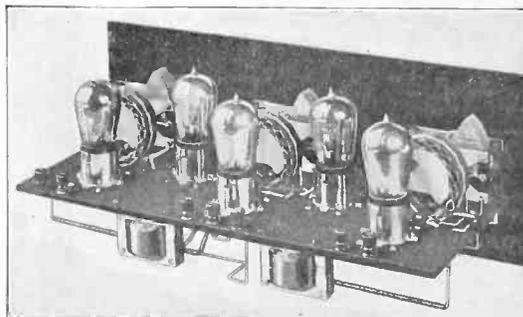
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RADIO WORLD

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Tim Turkey's 3-Tube Reflex

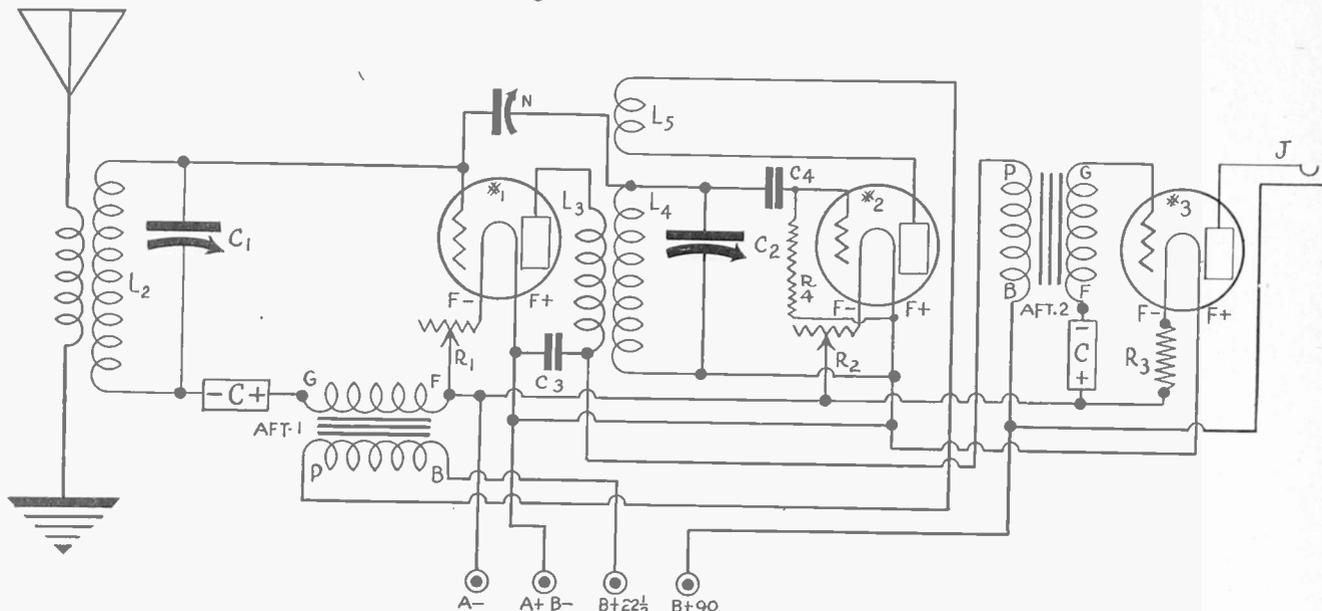


FIG. 1—The schematic diagram of the Tim Turkey 3-tube Reflex. Wiring will not be found difficult. The RF tube is neutralized so that while whistles may be heard they will not get into the antenna and annoy neighbors.

By Tim Turkey

THE preservation of the virtues of the 3-circuit tuner, with the elimination of the radiating nuisance, is accomplished in the 3-tube reflex (Fig. 1) that comprises one stage of radio-frequency amplification, regenerative detector, one reflexed audio stage and one free audio stage. Neutralization is accomplished by the employment of a small variable condenser of the Chelton or Midget type. This is connected from the filament of the grid condenser to the grid of the RF tube. The rotor plates go to the grid condenser lead.



TIM TURKEY

The set is selective and powerful. It has fine DX possibilities. To get it working right may take a little experimenting as reflexes are notoriously troublesome in that respect. But the set is very efficient and the solution of all problems that arise is possible and often not at all difficult. In fact, the novice may build this set without being stumped, for the picture diagram of the wiring (Fig. 2) will show him the way.

The Coils For the Set

L1 L2 is a radio-frequency unit made from a 75-turn honeycomb or duolateral coil. About 12 turns are removed and

List of Parts

- One 75-turn honeycomb coil.
- One 3-circuit tuning coil.
- Two low-loss .0005 mfd. variable condensers.
- Three UV201A or C301A tubes.
- Three standard sockets.
- Two audio-frequency transformers.
- One single-circuit jack.
- Three 4" dials, one with vernier.
- One variable gridleak.
- One terminal block.
- One fixed grid condenser (.00025 mfd.).
- One .001 mfd. fixed condenser.
- One neutralizing condenser.
- Two 6-ohm rheostats.
- One Amperite No. 1-A.
- One 7x21" panel.
- One 6 1/2 x 20" baseboard.
- Two C batteries.
- One storage battery.
- Two 45-volt B batteries.
- One cabinet.
- One loudspeaker.
- 100 feet aerial wire, 50 feet No. 14 insulated leadin wire, lightning arrester, solder, lugs, hardware, internal connecting wire (No. 18 DCC or round twined busbar).

are rewound to fit inside the honeycomb coil, to constitute the aperiodic primary L1. The remaining 63 turns on the honeycomb (L2) are tuned by a .0005 mfd. variable condenser. Sometimes this inductance is too great on the secondary, 20 turns are removed, one at a time, until the low-wave stations are reached. The

entire broadcast band will be covered and probably 20 meters in excess.

L3 L4 L5 is a 3-circuit tuning unit. Obviously with little trouble and only the expense of L1 L2, an extra socket and an extra tube, any existing 3-circuit tuner with two transformer-coupled audio stages may be converted into this non-radiating reflex. The C batteries may be two 4 1/2-volt batteries. The 3-circuit tuning coil may be a commercial product. Mechanically it is difficult to make one of these at home, due to the requirements of the rotor or tickler, L5, which must turn smoothly yet be secure. This coil may be a Wallace, Globe, Eastern pickle-bottle, ARC, Bruno, Uncle Sam, Ambassador or other commercial type, in which case C2 is .0005 mfd., normally 23 plates. If the Bremer-Tully coil is used C2 should be .00035, normally 17 plates, but L1 L2 and C1 remain as previously described.

Where Vernier Helps

Vernier is not vital, but it is preferable in one instance—on the dial actuating C2. Then tuning in the low waves and the distant stations is made easier.

Note the resistances. R1 and R2 are rheostats to watch the tubes. For 201A use 6 ohms. R3 is an Amperite to match the second audio tube.

R4 is a gridleak, preferably variable, such as the Durham, Twinit or Bradley-leak. It is connected from the grid post of the detector socket to the F+ post.

The neutralizing condenser may be mounted on the baseboard or preferably on the panel. If it is on the panel it can be varied, if necessary. On the very low and sometimes the very high waves a slight readjustment is helpful. Neutrodynes, with two Neutrodons because of the two RF stages, are usually neutralized

Picture Diagram of Wiring Tim Turkey's Reflex

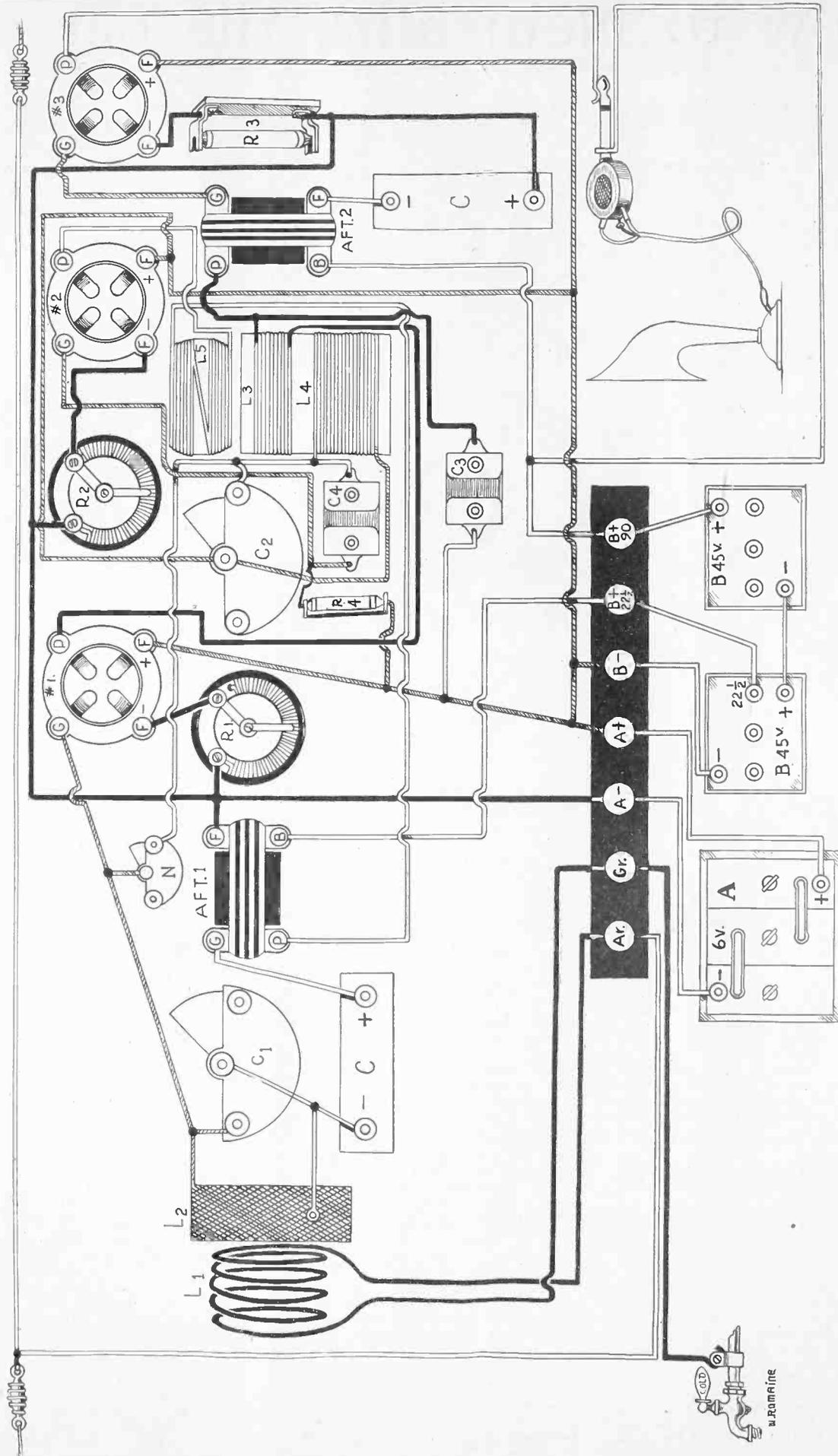


FIG. 2, the asymmetrical or picture diagram of the wiring. The parts are designated to correspond to the identification on the schematic diagram (Fig. 1). Any 3-circuit tuner, with two audio stages, may be converted into this reflex. The actual construction is simple, but it may require a little ex-

perimenting to obtain best results, which is true of almost every reflex. The neutralizing condenser N should be connected preferably with the stator to the grid of the first tube, the rotor to the grid condenser, although the opposite is shown above.

W. RAMAINE

How to Neutralize the Circuit

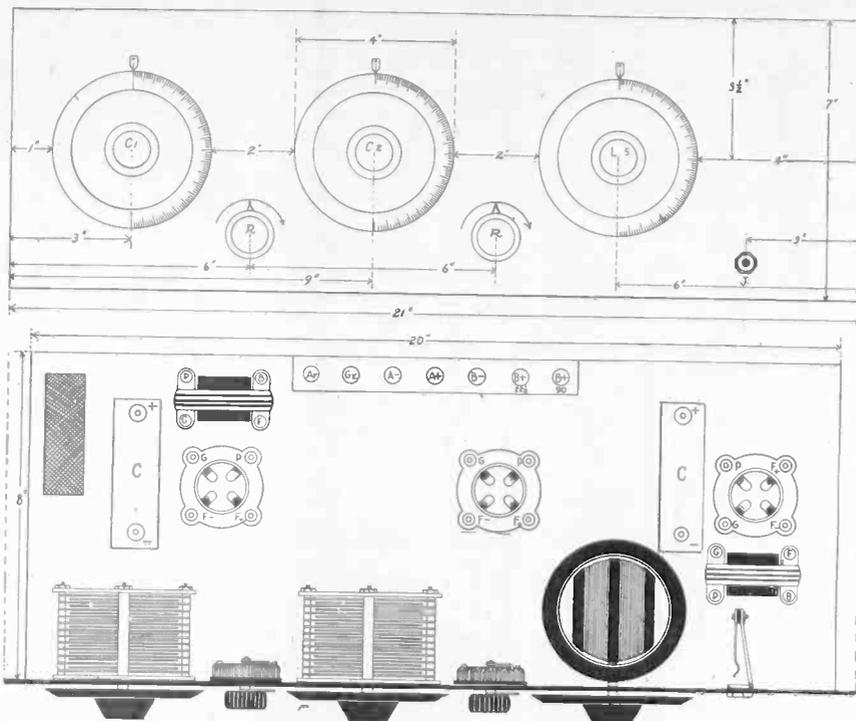


FIG. 3—The panel and baseboard layouts. Reflexing has the advantage of being able to place the AF transformers at a distance apart. The set will be found very easily controlled and distance will be brought in very easily.

for a given wavelength, usually a low one, and efficiency perhaps impaired on other waves. In the present set there is only one RF stage, hence one neutralizer, and it is not a bad idea to have that one accessible. Place it where most convenient.

To neutralize, tune in a local station on a low-wave. Put a piece of paper on one of the filament springs of the RF socket. Insert the tube. It will not light. Turn N until the signal is faintest or even disappears entirely. It may not completely disappear, but if it does, so much the better.

Tuning

To tune the set place the tickler at about half-way, then rotate C1 and C2 dials simultaneously in the same direction, approximately in step. If no station is heard rotate these together a few degrees apart, first with C1 reading higher, then, if no station is heard, with C1 reading lower than C2. If still no signal is picked up, turn the tickler to another position and repeat the processes with C1 and C2 dials. Once the dial settings of C1 and C2 are obtained for a given station they will always bring in the same station if it is on the air. If the dials do not read in step, the one having lower readings may be brought up to the other by re-

moving turns from the coil whose condenser has the lower readings. For slight disparity simply readjust one of the dials to a reading corresponding with the other.

Wiring Directions

Wire the set like this: The aerial goes to the beginning of L1, the ground to the other end. The beginning of L2 goes to (a) to the stator plates of C1, (b) the grid of the first tube (No. 1) and (c) to the stator plates of the neutralizing condenser N. The end of L2 goes (a) to the rotor plates of C1 and (b) to the minus post of one of the C batteries.

The positive of this C battery goes directly to the G or S1 post of the first AF transformer (AFT 1). F of the first AFT goes (a) to the negative A battery, and (b) to one side of the rheostat. The other side of the rheostat goes to the F—post of the first tube socket. P or P1 on the first AFT goes to the beginning of L3, the rotor of the 3-circuit coupler, the end of L3 goes to the plate of the second tube. B or P2 on the first AFT goes to the plus 22½-volt B battery.

The other filament post of the first socket goes (a) one side of C3, a .001 fixed condenser, (b) to the F post of the second and third vacuum tube sockets and (c) to the plus A battery. The plus A

goes to the minus B battery. The plate of the first tube goes to the beginning of L3, the aperiodic primary of the vario-coupler. The end of L3 goes to (a) the other side of C3 and (b) to the P or P1 post on the second AFT. The other side of the neutralizing condenser N goes (a) to the beginning of L4, (b) to the stator plates of the variable condenser C2 and (c) to the grid condenser C4, which is of a .00025 mfd. capacity. The other side of C4 goes to the grid of the second tube and to one side of the gridleak R4. The other side of the gridleak goes to the F+ post of the second tube socket. The end of L4 goes (a) to the rotor plates of C2, and (b) to the positive A battery. The other filament terminal on the second tube socket goes to one side of the second rheostat R2, the other side of that rheostat to the A battery minus. B on the second AFT goes to the plus 90-volt B battery. G on the second AFT goes to the grid of the third tube, F on the second AFT to the negative of the second C battery, the positive of that battery to the minus A battery. The remaining filament terminal on the third tube socket goes to one side of the Amperite, the other side of the Amperite to the A battery minus. The plate of the last tube to one prong of the jack, the other prong of the jack to the plus 90-B battery.

Radiator Ground Lead Usually is Poor

If your ground wire is connected to the radiator connect it instead to the cold water pipe. The heating system introduces a high resistance into the circuit and will have considerable effect on the receiving set. If you happen to be located so that you have access to the water meter the best ground is the one which is fastened to the water pipe where it first comes into the house. In other words, before it goes through the meter. Sometimes water meters themselves form a high resistance path and it is advisable to short circuit them with a length of number 14 copper wire.

ANSWER TO LAST WEEK'S RADIO CROSS-WORD PUZZLE

K	S	D		D	I	N		O	H	M
A	N	T	I		T		L	O	O	P
A	A		C	L	O	S	E		P	S
	P	R	O	A		E	A	R	S	
A		A	N	T	E	N	N	A		A
F	A	N		E	D		I	N	F	
T		G	A	R	D	E	N	S		T
	V	E	R	A		R	E	E	L	
T	O		E	L	I	S	A		E	A
E	L	B	A		O		R	E	A	L
A	T	T		A	N	T		S	K	I

Shenandoah Holds Nightly Cross-Continent Talk

WASHINGTON.

DURING the recent flight of the Shenandoah to the Pacific Coast, radio communication with the Bellevue, D. C., laboratory was maintained every night on prearranged schedules, according to a report to the Navy Department. Communication was also held with 250 amateur stations, working on wave lengths below 100 meters, located in 39 different states. An average of 7,500 words per day were handled, half of which were press written by a newspaper correspondent who made the entire trip. Dur-

ing the flight made from San Francisco to Camp Lewis, Wash., the ship encountered strong winds and heavy fogs. A great number of radio compass bearings 25 to 50 per station, were obtained from practically every station on the west coast, which were found to be very accurate even in the uncalibrated sectors.

It is understood that nearly 800 letters have already been received at Lakehurst from broadcast listeners throughout the country who heard the radio telephone talks sent out by the Shenandoah during the flight.

Recent Back Numbers of Radio World

may be obtained by sending 15 cents in stamps or coin for each issue desired. Address Circulation Manager, Radio World, 1493 Broadway, New York City.

A Honeycomb RFT for DX

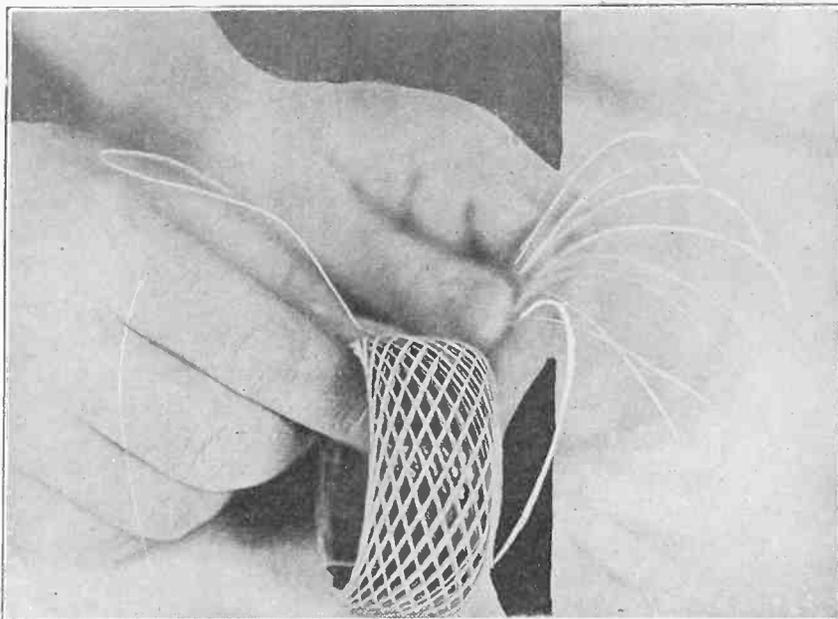


FIG. 1, showing the removal of twelve turns from a 75-turn honeycomb or lateral wound coil, so that the remaining number of turns, when constituted the secondary of a low-loss radio-frequency transformer, will tune throughout the entire broadcast band, in conjunction with a .0005 mfd. variable condenser. Note how the right hand firmly holds the remaining winding, so that it does not spring loose, while the turns are removed with the left hand.

By *Herbert E. Hayden*

Illustrations by the Author

A HONEYCOMB or duolateral coil lends itself admirably to the making of a low-loss radio-frequency transformer. Some of the old-timers are particularly devoted to the excellences of the honeycomb coil or its more scientific progeny known as the duolateral or lateral wound coil. The difference between the two is that the honeycomb coil windings are directly atop one another, that is, each succeeding turn is just above and in



HERBERT E. HAYDEN

line with its corresponding predecessor, while in the lateral wound type the succeeding winding (not the succeeding turn) is a little to one side, being about centered on two turns of the preceding winding. The lateral method reduces the distributed capacity of the finished product as compared with the honeycomb coil, due to the lessened electro-static coupling. As the turns are, in respect to one another, just like the plates of a condenser, the lateral method theoretically places the plates as far out of mesh as possible, reducing the condenser effect.

The Field is Restricted

An important virtue of the honeycomb or lateral coil is the restriction of its electro-magnetic field. Often one may construct a tuned radio-frequency set using these coils and low-loss condensers, and, with the rest of the losses properly safeguarded, get along well, even on the low waves, with neutralizing condensers omitted. The drawbacks attendant upon stray magnetic coupling are rather fearsome, therefore fans may well make one of these honeycomb or lateral radio-frequency transformers and compare results. The commercial coils of

other varieties, such as basket-weave, share this restricted field virtue with the lateral coil.

Takes Up Little Room

Especially in reflex circuits is economy of space an important factor. No coil takes up less room than the honeycomb. The coils, as used for radio-frequency work, may be baseboard-mounted, suitable brackets being easily obtainable. If possible use insulated brackets, such as hard rubber, bakelite, glass, etc. This is a fine point, perhaps, but it has to do with the minimization of losses due to metal in the magnetic field of the coil. These are known as eddy current losses, because the metal sets up a true transformer action in the field. The magnetic field is the flux or flow of radio-frequency currents set up by the coil on the introduction of a wave and often is very decided for six or eight inches around. In fact, with enough induced current the field may be very noticeable for a few feet. Thus in any set where this is a fact the interplay of currents is obvious, and the effect of such mischief is oscillation frequently blamed exclusively on the tube itself. While the tube does its share in producing oscillations the coils have too long escaped deserved censure. Therefore let us make a radio-frequency transformer that will minimize the possibilities of disastrous effects from stray coupling.

Coil Suits Only a .0005

Let us assume that .0005 mfd. variable condensers are to be used to tune the secondaries of the coils we are about to make. It is not safe to use .00025 mfd. variable condensers, even with a properly matched coil, because of the danger of not covering the broadcast belt of wavelengths. In fact, I do not believe any coil, untapped, can cover the band in conjunction with the .00025 mfd. condenser, normally 15 plates. With the .00035 variable condenser, however, if the low-loss type is used, a coil, if properly designed, will cover from 200 to about 555 meters, which is all-sufficient, since no broadcast station is on a wavelength of less than 200 meters, and the highest wave in the broadcast belt is 549.1 meters.



FIG. 2 (top) shows how sealing wax is used to bind the new end of the coil. The middle photograph (Fig. 3) shows how two pieces of thread wound the length of a small vaseline bottle and secured on top with adhesive tape. The roll of tape is at left. At right is the spool of thread. Fig. 4 (bottom) reveals the method of winding the excess wire, taken from the honeycomb coil, right on the vaseline bottle.

However, I suppose a variety of variable condensers will be used by experimenters, so I have chosen the .0005 mfd. type, normally 23 plates, which will safely tune in the whole band but (let us trust) not at the same dial setting! The coil is designed only for the .0005 type.

How to Make the RFT

Fig. 1 shows the honeycomb coil clamped tightly in the right hand while turns are removed with the left. A 75-turn coil is purchased. Sometimes it will be found that the end of the coil is bound with sealing wax, hence this is simply picked off and twelve turns are removed. As shown in Fig. 2, the wire is then cut and the new terminal is bound with sealing wax. A lighted match is held about 1" from the top of the coil and the sealing wax stick introduced between the flame and the coil exterior.

Bottle Just the Right Size

A small vaseline bottle must be around the house somewhere. Get hold of it, clean the exterior carefully, rubbing it hard with a rag. Then get a spool of thread and some adhesive tape. These things are in your medicine chest or you are missing a bet. Cut two pieces of

The Most Compact Inductance



FIG. 5—The two terminal of one of the cut pieces of thread are removed and the thread knotted around the new winding, which will constitute the primary. This operation is repeated three times.

thread and wind each once around the bottle from top to bottom, that is, under the base and over the cap. These windings are equi-distant, so that the turns on base and cap make four right angles. Now the excess wire (the turns removed originally from the honeycomb) are wound around the vaseline bottle and of course over the thread. Wind in either direction. (Fig. 4). Now cut the thread, leaving two pieces where there had been one, and each of these two pieces on opposite sides of the bottle. Tie a knot around the coil with one of the pieces of thread (Fig. 5) and to make this more secure tie another knot at the same point. Repeat this operation with the remaining severed piece of thread. Also repeat the entire operation for the remaining piece of thread which is still whole on the bottle. The result is shown in Fig. 6, where the coil which is to be the primary is shown tied in four places. This primary is inserted in the core of the honeycomb (Fig. 7), where it is supported by the inside of the form on which the honeycomb coil is wound, if any, or by the inside of the honeycomb coil itself, if there is no form.

Which Terminal is Which

The terminals of the finished product are lettered in Fig. 8. P1 P2 represent the primary beginning and end, respectively, while S1 S2 are the corresponding terminals of the secondary. S1 S2 are connected to the two sides of the variable condenser. Usually S1 goes to the grid of a tube and to the stator plates of the variable condenser, while S2 goes to the filament or other grid return and to the rotor plates of the variable condenser.

Which way the primary was wound was not important, as the terminals depend on how the coil is inserted. In any event, knowing which is the beginning of the secondary (S1) and which the end (S2) the primary connections correspond. P1 or the primary beginning is always that terminal pointing in the same direction as does the beginning of the secondary. S2 in Fig. 7 points to the right. A glimpse at the actual winding may be necessary to determine such a point. P2 points to the right also. S1 would seem to point to the right in Fig. 7, but actually points (as it must) in the direction opposite to S2. The S1 lead is simply tilted deceptively in Fig. 7.

The radio-frequency transformer may be used as the aerial circuit tuner, with P1 connected to an aerial and P2 to ground and the secondary connected as previously explained. If the RFT is used in to couple stages, then P1 would go to the plate of the preceding tube and P2 to the high voltage B battery. If a re-

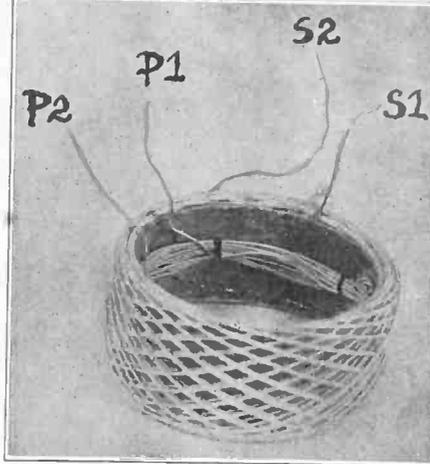
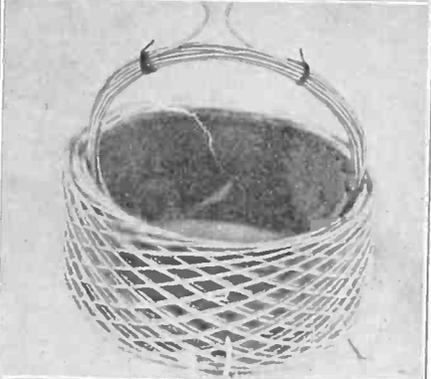


FIG. 6 (top) depicts the primary, on its completion, and just as it is being removed from the bottle. The primary is then inserted in the core of the honeycomb (Fig. 7, middle photo), where it fits snugly and is supported by the inside of the form on which the honeycomb coil itself is wound. The bottom photo (Fig. 8) shows the completed radio-frequency transformer, with the connections marked. P1 and P2 are respectively the beginning and end of the primary. S1 and S2 are the beginning and end of the secondary. As the beginning of a honeycomb coil always emerges from under the winding it will be seen that S1 corroborates this fact. The end of the honeycomb winding is on the outside of the coil (S2). What may be regarded as the beginning and what the end of the primary depends on how the primary is inserted. By comparison of the directions in which the two primary terminals point the beginning and end are easily determined. Like direction denotes like terminals.

versal of leads is called for, P2 would go to the plate and P1 to the B plus high voltage (amplifier). Sometimes in reflex circuits the lead to B plus, connected in either reverse or converse fashion, goes to the primary of an audio transformer and through this winding to B plus. However, eventually it strikes the B plus.

The step-up voltage of these inductances will be found...

too great the number of turns on the primaries may be reduced.

How to Mount the Coils

If multiple coils are used it is advisable to mount them at right angles to their neighboring coils. It may not be necessary to adhere to the Neutrodyne angle even in Neutrodyne or other tuned radio-frequency circuits. Keep the coils at least 2" away from the nearest part of any variable or other condenser or any other metallic part. By following directions one may obtain great DX with these coils in a proper set.

Dealer Seized as Seller of Bootleg Tubes in Box Like R. C. A's.

ON complaint of John S. Harley, chief special agent of the Radio Corporation of America, Julius Modell, proprietor of a radio store at Church and Vesey streets, New York City, was arrested charged by Harley with offering for sale others' radio tubes in wrappers similar to those used by the R. C. A.

Harley told the police that the R. C. A. has been trying to suppress imitators who have been selling "bootleg" tubes for \$2.39 retail. His company's retail price was \$4 up to February 2, when the price was made \$3. It allows the retailer a 40 per cent. discount, he added.

According to Harley a concern in Newark has been turning out the imitation tubes at the rate of 1,000 a day. Harley said he bought twenty-four tubes from Modell's store and tested them in the Radio Corporation's laboratories and only two of them passed the signal test.

Modell, who lives at 1038 Ocean avenue, Brooklyn, N. Y., refused to tell where he bought the tubes, the police said. He insisted he thought they were good.

Harley said Modell was the sixth man arrested in New York and New Jersey as the result of the activities of the R. C. A. staff. He said the situation constitutes a menace to legitimate radio dealers.

It's the brother of the defendant who operates chain stores in New York.

Spring Is Coming!



Plant Your Bulbs
F A R I Y!

A Super-Sensitive Receiver

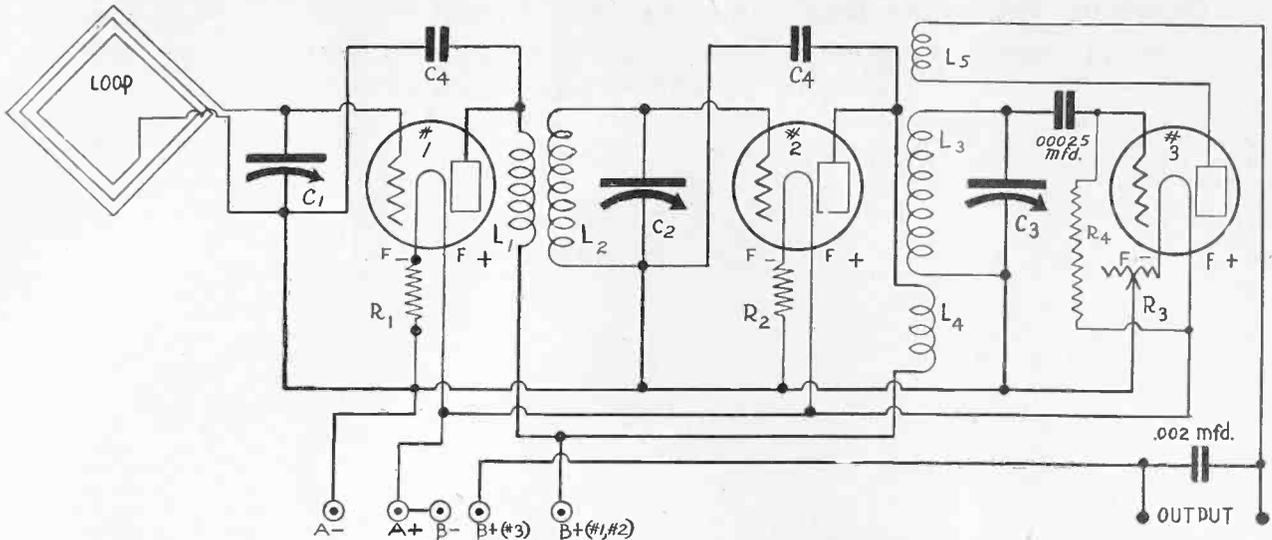


FIG. 1, the Super-Sensitive Loop Set. If a Sodian detector tube is used the leak may be omitted and an Amperite replace the rheostat.

By Charles H. M. White
Consulting Engineer

UNTIL the advent of the Neutrodyne radio-frequency amplification of the tuned type received little public attention and regeneration in the triple circuit form was generally looked upon as the ultimate in selectivity and sensitivity. So immense was the public radio reception accorded the Neutrodyne and receivers of that type that regeneration was given a rather serious setback. But 1924 has culminated in the successful combination of the two. The first attempt was the use of one stage of radio-frequency amplification and a regenerative detector. The next step was the same style with one stage of reflexed audio-frequency. The latest development (Fig. 1) enables the use of a loop with a two-stage RF regenerator. In such a circuit it is of the utmost importance to use good low-loss parts, especially condensers.

The loop can be any small size standard broadcast wavelength loop. If greater distance is desired a wire can be run around the edge of the loop and connected to ground, which loosely couples the loop with an aerial collecting system. The condensers C1, C2 and C3 are .0005 mfd. variable condensers of the low-loss type (normally 23 plates). The two neutralizing condensers C4 are multiple-plate midget condensers (Marco or Chelton). The automatic filament control units R1 and R2 are amperite automatic rheostats. R3 is a rheostat.

L1 L2 may be any low-loss coupling coil or a Neutroformer. L3 L4 L5 is a 3-circuit tuner coil, L4 being the smaller stator coil, L3 the larger stator coil, and, L5 the tickler or rotor coil. The position of L5 will determine the sensitivity of the detector tube No. 3 just the same as in any regenerative detector circuit. It is the last tuning adjustment to be made. The tubes No. 1 and No. 2 are UV201A, while the detector No. 3 is a Sodian type D21. If the Sodian is used the gridleak R4 may be omitted and R3 may be an amperite instead of a rheostat. The Sodian is capable of closer regenerative control than the UV201A, and is not as sensitive on filament adjustment as the UV200. Both the Sodian and the UV200 take a negative grid return. The UV200 requires a gridleak, usually.

It will be found advantageous to mount the controls to the neutralizing condensers C4 on the panel. Be sure that the rotor plates of these condensers are

connected to the filament sides of their respective circuits, to prevent serious body capacity. It will be found that in some cases C4 will have to be varied to obtain maximum sensitivity on both the extremely high and low ends of the broadcasting wavelength belt. Sometimes it is advantageous to ground the negative filament side of the circuit, although no external aerial is used. Like most super-

sensitive circuits this set requires a little experience in tuning before the best results can be had. Of course the main tuning is accomplished by the direction of the loop, C1, C2 and C3, while the tickler position controls the volume and sensitivity of the detector. The diagram shows no audio-frequency amplification, but any type of good audio amplifier may be added.

Fans Ask Senators to Remove Local Interference

WASHINGTON.

SENATORS and Representatives have learned the advent of radio means a big increase in their work. Rare is the day now when the national legislators do not get requests from their constituents for their influence in removing radio interference from the local community.

There is pending a recommendation by the Budget Bureau for a substantial increase in the appropriation of the radio bureau. This recommendation, if enacted, will enable the radio bureau to double its field force. Such action, it is believed, will enable inspectors to give more time to the elimination of interference caused by power lines, street railways, etc.

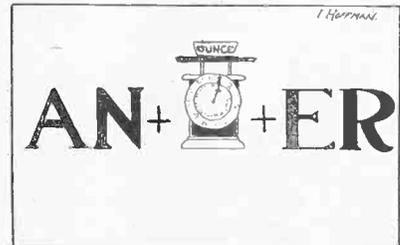
R. C. A. OBJECTS TO USE OF NAME "RADIO AGE"

THE Radio Corporation of America has objected in court to registration of the title "Radio Age," the title of a magazine has been in print since the spring of 1922. The Radio Corporation alleges that the title "Radio Age" is an infringement on the title "Wireless Age," a publication which the Radio Corporation controls.

The Weekly Rebus

WHAT does this rebus represent? Send answer to Rebus Editor, RADIO WORLD, 1493 Broadway, New York City.

The names of those sending the solution will be published.



SOLVERS OF PREVIOUS REBUSES

- Morton Kammerman, 835 S. 59th St., Philadelphia, Pa.
- John F. Hess, Jr., 173 14th Ave., Columbus, O.
- Max H. Hopf, Harper, Tex.
- Billie Purkins, 745 E. North Ave., Atlanta, Ga.
- Graham Jones, 222 S. Penna. Ave., Webb City, Mo.
- Rodney Wirtz, Box 1862, Bisbee, Ariz.
- Max H. Hopf, Harper, Tex.
- Chas. Ivey, Havre, Mont.
- Milton Tapert, 2975 Springale Ave., Detroit, Mich.
- Wm. J. Davidson, 1819 8th St., Alameda, Cal.
- John F. Hess, Jr., 173 14th Ave., Columbus, O.
- Marie E. Reynolds, New York City
- Conley Webster, 1011-1013 Robson-Prichard Bldg., Huntington, W. Va.
- Graham Jones, 222 S. Penna. Ave., Webb City, Mo.

Price of Tubes Cut to \$3 by R. C. A.

THE list price of tubes was reduced \$1 by the Radio Corporation of America and Cunningham, effective February 2. This makes the price \$3. The tubes are

WD11, 12, 199, 200 and 201A of the R. C. A. and C11, 12, 299, 300 and 301A of the Cunningham product. The reduction was rumored for several weeks previous.

The Superdyne University

Questions Regarding Radio World's 1925 Model 4-Tube DX Superdyne Answered Personally by Herman Bernard, the Designer and Creator of This Wonder Circuit

PLEASE answer the following regarding the 1925 Model Superdyne. (1) As I must use headphones and dry-cell tubes, which would be preferable, 199 or 11 tubes or a combination? (2) Would the two tubes give as much volume on stations 600 to 1,000 miles away as the Haynes 1-tube set with one stage of audio? (3) Could the grid returns in the 1925 Superdyne be changed from minus to plus?—Olin G. LeRoy, Palmyra, N. Y.

(1) The 1925 Model Superdyne will give excellent earphone service on the two tubes ahead of the audio stages. Put the jack at the B plus and detector plate output. The WD11 or the C11 may be used in both sockets, if you have these tubes now, without change of wiring, and so may the 199 tubes. The efficiency drops about 12 per cent. Both the 11 and 199 types work well as RF amplifiers and detectors. The 11 tube is often a better detector than the 199 but the 199 is better for amplifier stages. The 199 is not inherently an inferior detector, but sometimes you will run across one that doesn't detect so well, while the 11 and 12 types run more consistently as good detectors. Be sure to include a rheostat for the RF tube as well as the one for the detector tube. This advice holds good in every case for less than the four prescribed tubes, which included as the detector a 200 or 300. (2) Not quite as much volume, but the Superdyne will get DX better and clearer and locals will be heard with better quality. Ample volume for earphone service will be obtained. If you are interested in DX it is preferable to use RF, as in the Superdyne, rather than AF, since any station heard on the Superdyne should come in with sufficient audibility. (3) The RF tube would not function efficiently if the grid return were made to the positive filament, as both grids have the same return in the original 1925 Model circuit, due to the connection to the common rotor of the variable condenser. One possible way of overcoming this might be in biasing the grid of the detector tube, using about 12 volts for the WD 11 or 12 type tubes, 14 volts for the 199. In that case no gridleak or grid condenser would be needed. The C battery would be connected with its minus post to the end of L5 (which now goes to A—) and the positive connected to A minus. One difficulty to be overcome, however, may be in readjusting the inductances, for the grid-biasing method of detection seems to change the tuning. This may be due to resistance in the newly incorporated battery. I have not had much luck with grid biased detection and merely mention the option for those interested experimentally. Another possibility is to use a positive grid return, negatively biasing the grid of the RF tube only. I do not recommend this, either. It would be interesting, however, to receive reports of results readers may have with using the biasing method to overcome having two grid returns necessarily identical, while the tube characteristics call for opposite grid returns. My advice to dry-cell fans is to use a Sodian 5-volt tube. As the Sodian draws only .25 ampere four 1½-volt dry-cells, series-connected, would not occasion much upkeep cost. Three such series-connected batteries should be used for one 199 tube, or, as an alternative, a 4½-volt C battery, although the C battery used as a. A battery does not usually prove economical. It's multiple 199 tubes are

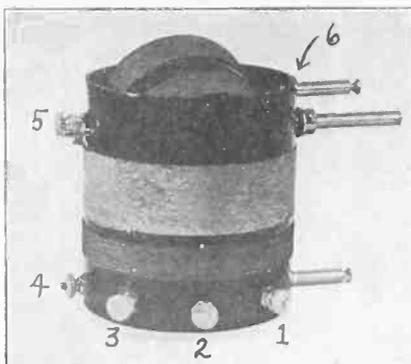


FIG. 1, showing posts No. 1, aerial; No. 2, ground; No. 3, aerial; No. 4, filament; No. 5, amplifier B plus; No. 6, plate lead of the RF tube. It so happens this coil has a 180-degree rotor variation, hence the reverse feedback may be obtained no matter in which of the two ways the tickler is connected?

used the C batteries are preferable because, of compactness.

WHICH Superdyne hookup do you regard superior in respect to selectivity, distance, sensitivity and volume—the Anderson Superdyne, the 1925 Model or the hookup used by Mr. Flower? (2) Could 13-plate condensers be used in place of the Bruno condenser in the 1925 Model? (3) What changes would be necessary in the Anderson and 1925 Models to adopt them to 199 tubes? (4) How many volts are best on the detector plate of a 199? (5) How much DX may I expect on the Superdyne, using 199 tubes?—J. E.

(1) The 1925 Model and the Anderson Superdyne have the same operating characteristics, hence the same selectivity, sensitivity, distance possibilities and volume, but the 1925 Model uses only two controls, while the Anderson Superdyne uses three. (2) No. They could be used in the Anderson Superdyne, however, the two secondaries (coupler and RFT) being wound with more wire. But you would not cover the wavelength belt of the broadcasting stations, as a .00025 variable condenser, so far as my experience shows, can not do this with any untapped coil. At least .00035 mfd. (normally 17 plates) is necessary. Mr. Flower's set is fundamentally the same as the others, but the Anderson and 1925 Models incorporate advanced features and do not capacitatively couple the plate of the RF tube to the detector tube. Inductive coupling is better. (3) No changes in the circuit would be necessary in the case of the Anderson set, but the rheostats would have to be of higher values than if 201A tubes were used. If the 1925 Model is to be constructed for dry-cell operation, use the Sodian tube as detector and the 199 tubes in the three amplifier sockets. (4) This will vary with individual tubes of the same type, but usually a voltage of 45 will function better on the detector plate of a 199 tube than the conventional 22½. (5) DX reception depends on too many local factors to permit of any honest assurance in a given instance. Using 199 tubes as amplifiers and Sodian as detector, all dry-cell operated, Miami, Fla., and Chicago and St. Louis stations were brought in consistently at New York City, through locals. If 199 tubes are used in the three amplifier circuits it is preferable

for space reasons to use three 4½-volt C batteries, parallel-connected, to heat the filaments, one 15-ohm rheostat controlling all three amplifiers and placed in the negative leg. The Sodian may be operated with a 6-ohm rheostat, wire-wound type, or an Amperite may be inserted. This is the only tube I know of that permits the use of an Amperite in the detector. In fact, even the gridleak may be dispensed with, in many cases, where the Sodian is used.

COULD I use UV199 tubes in building RADIO WORLD'S 1925 Model 4-Tube DX Superdyne, as described by Herman Bernard in the issues of January 10, 17, 24 and 31? What changes would be necessary?—Wm. E. Barron, Zelenople, Pa.

Yes, this type of tube may be used throughout. Different resistances would have to be used for rheostat purposes. The rheostat controlling the detector tube should be 30 ohms and it would be advisable to include a rheostat, about 10 ohms, to control all three amplifier tubes. This rheostat, like the other, should be in the negative leg. The set will not work as well, however, as if a type of tube were used as detector that operates more efficiently with a negative grid return than with a positive grid return. The 199 and 299 tubes work fairly well with a negative grid return, but if you are going to the expense of building such a fine set probably you would not care to sacrifice even 12 per cent. in overall efficiency. Therefore, I advise that in your case the UV199 tubes be used as amplifier tubes (one radio and two audio) and that a 5-volt Sodian tube be used as detector, this to be operated from four series-connected 1½-volt No. 6 dry cells. This tube does not require a grid leak. Also it is not critical of filament voltage and instead of a detector rheostat an Amperite may be used. This Sodian tube may be substituted in all cases for the prescribed UV200 or C300.

I AM planning the construction of your 1925 Superdyne, using four UV tubes with a 4" diameter coupler having five turns on the primary, 31 turns on the secondary and 36 turns on the rotor, with No. 20 DCC, the RFT being wound the same as the coupler, except that the last two turns of the secondary are tapped. (1) Do you advise your circuit with grid return as shown for the above tubes; if not, what changes do you advise?

(2) Would it be better to use two separate .0005 condensers with the above instead of a split condenser? If so, what would be the location of coils, condensers, RF tube and detector tube?

(3) I am planning on the use of a rheostat for each tube and a jack after each stage of audio amplification.

(4) I have not been able to locate a Bruno No. 19 condenser, but can purchase a Cardwell, having a split stator of .0005 each section. Will it do equally well with coils as I have them wound?

(5) I prefer to use four UV199 tubes, but could use a Sodian or WD11 as a detector.—Frank Sponenburg, 2348 Penobscot Bldg., Detroit, Mich.

(1) You do not state in this paragraph what kind of UV tubes you will use. If you mean that all will be UV201A, the wiring need not be changed, but the set will not operate as efficiently as if a UV200 or C300 tube were used in the detector. If your objection is against the use of the 300 or 200 tube on account of

(Continued on page 22)

The Factors That Put a Coil in the Low-loss Aristocracy

By Abner J. Gelula

INDUCTANCES are too often far underestimated as to their relative importance in the receiving set. Inductance handles the original energy. The original energy must be conserved if DX and volume are to be obtained. Therefore, if we keep our losses consistently at a minimum, efficiency will obviously be maximum.

Losses in coils often can be traced to bad insulation, too much distributed capacity, too high resistance, or construction that makes inductive value too low.

Excessive resistance in a coil is usually caused by improper size of wire. Small wire has a high resistance in radio work because of the skin effect. High-frequency currents travel around the wire, not through its center. It is therefore advisable that No. 20 or 22 be used for coils in the plate circuit, however, small wire may be used.

Of all insulating materials, for coil-wire, double cotton-covered is probably the best. Not only does the cotton provide a larger space between windings, but the distributed capacity is much lower.

If a cylindrical form is used, be sure that the form is of a good insulating material. Cardboard, when dry, is as good as any, but it must be kept out of dampness, for the cardboard readily will absorb moisture, thus undermining the insulation of the coils. Phenolic substances create a greater loss than the dry cardboard. It also is not advisable to treat the cardboard with varnish, shellac or collodion, for each of these substances is bound to withhold the moisture within itself.

The radioists of several years ago may recall the old-fashioned type of loose-coupler. Upon examination I found that the resistance of one of the best of the day (1918) was 24 ohms. A modern-day coil, of the low-loss type, gives a resistance of but 4 ohms. In the loose-coupler, the brass shafts extended throughout the diameter of the coil. The secondary was equipped with taps, also a point of leakage. The wire was small and only fairly well insulated, which increased resistance. The forms were usually cardboard, sometimes bakelite. The cardboard tubings were always well varnished, and the entire coil then shellaced! It's really the good workmanship, not the electrical qualities, that kept the resistance as low as 24-ohms!

Referring to Fig. 1 an ideal way is shown for mounting honeycomb coils. Of course this system would be rather crude for the parlor set, yet we must all agree that the losses through mounting are certainly reduced to a minimum. The dry cord, preferably linen, is strung through the core of the coils. Although the photograph shows honeycomb coils, the same system will work with almost any coil. The inductive relationship may be varied by merely moving the coils closer or further apart along the string. The leads are connected to the parts of the set. Non-inductive relationship may be accomplished by right-angle mounting.

Fig. 2, directly beneath Fig. 1, shows a system of mounting two fixed coils so that the induction between the coils will be at minimum. It is far better to use hard rubber bakelite or fiber supporting brackets (right angles and U-angles).

Fig. 3, the lower photograph indicates how an air-wound coil may be firmly mounted inductively to another coil. The bakelite peg that is supported by the brass angle is run through one of the apertures

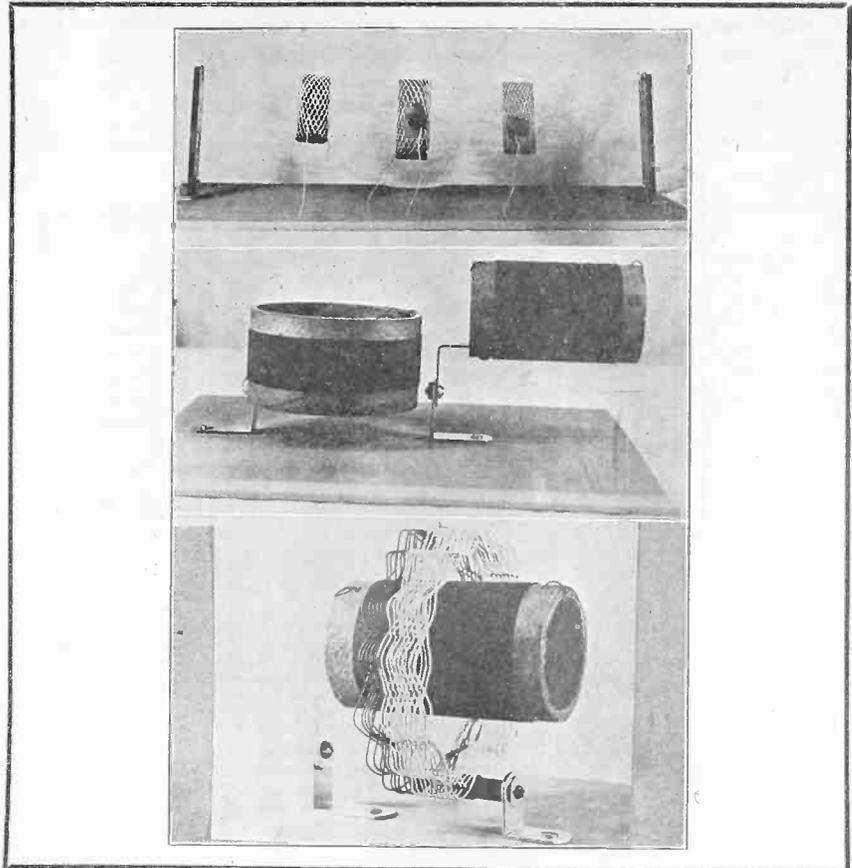


FIG. 1 (top) an idea for mounting coils to keep losses low. Of course this can only be practical in the laboratory for it may be a bit unsightly for the parlor. The coils may be varied by sliding on silk cord upon which they are mounted. Fig 2 (center), how to mount two coils, one out of the inductive field of the other. Fig. 3 (lower) an air-wound coil mounted in a desired position by merely placing a peg through one of the apertures of the stagger-winding.

of the air-wound coil. This will hold it fairly secure.

Fig. 4 shows a low-loss coil. Yes, its low-loss because resistance and leakage is at a minimum, and inductance at a maximum. Between each turn is a turn of light cord so that the capacity between turns is at a minimum. The tubing is dry cardboard. It's always far better to keep losses at a minimum and attain the desired results than to worry about the looks of the coil and find that, after the

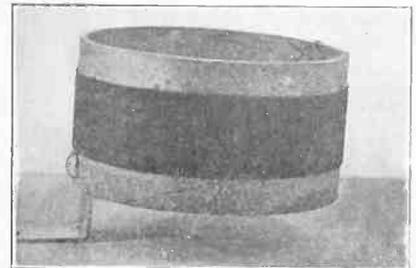


FIG. 4—A well-made low-loss coil. Between each turn is a thin piece of cord. The entire winding is on a dry cardboard form. The wire is No. 22 DCC. No binding posts are used, but the ends of the windings go directly to the instrument to which they are to be connected.

coil is beautifully mounted with all kinds of brass angles, and well varnished and shellaced, results aren't anywhere near the desired.



A SET using coils placed at right angles, out of each other's fields. However, the aperiodic primary is in the secondary's field.

New Station Causes Boom in Crystal Set Sales

EDITOR, RADIO WORLD:

YOU are putting out the best radio magazine I have found. I would like to see more about the development of crystal hookups. It seems to me more could be accomplished at the present time, with so many broadcasting stations. Sta-

tion WREO has caused a great interest in Lansing. One dealer has sold 1,000 crystal sets, and many of these purchasers buy tube sets later.

CLYDE M. BENNETT.
122 Bross Court, Lansing, Mich.

The Radio University



A QUESTION and Answer Department conducted by RADIO WORLD for its Readers by its Staff of Experts. Address Letters to The Radio University, RADIO WORLD, 1493 Broadway, New York City.

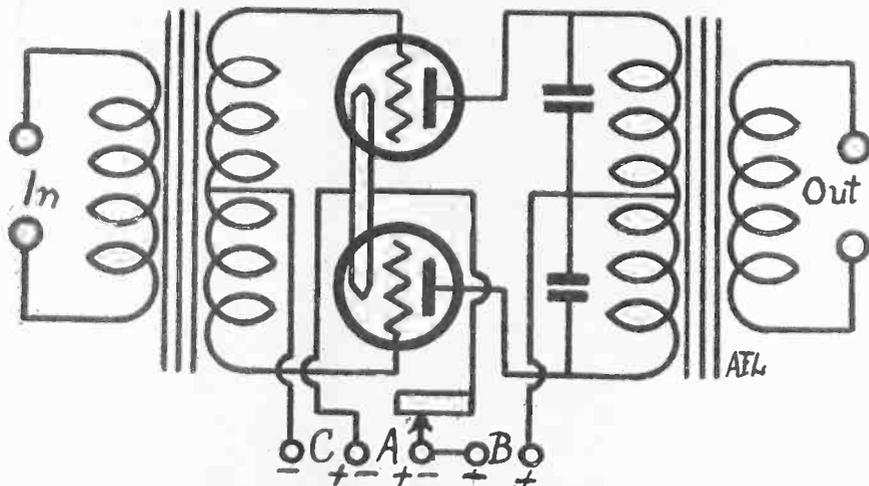


FIG. 85—The circuit for a stage of push-pull amplification. The condensers are both of a .001 mfd. capacity, the pair of push-pull transformers will have to be bought. The plate of the last audio tube of an existing AF amplifier connects to the one IN post, the plus B amplifier battery to the other IN post. The speaker connects to the OUT posts. Two 201A tubes should be used.

PLEASE print a circuit showing how to hook-up one stage of push-pull amplification to be added to a straight transformer audio amplifier. —Mrs. Mary Copland, 75th St., at Columbus New York City.
Fig. 85 is the circuit you request.

I BUILT the Gelula 1-tube DX set as described in the issue of Jan. 17. After listening in to stations, with good volume, I noticed that the rotor of the split variometer was not functioning. After cutting it out and connecting the plate with the jack the reception was the same. Can you possibly tell me of anything that will make the set regenerate?—J. W. Dutton, 15 Euston St., Brookline, Mass.
The rotor of the variometer hasn't enough turns on it. Wind approximately 15 more turns so that it will regenerate at any point of the broadcast waveband.

I HAVE a 3-tube Westinghouse RC, but can't get it to operate on a loudspeaker. With phones I can get almost any station in the U. S. Can you tell me what I can do to make this set operate a loudspeaker?—Marvin William, Box 195, Union, S. C.
Indications point to a burnt out AF transformer. Test the transformer by placing a battery in series with a voltmeter, the whole across the primary, then the secondary of each transformer. The trouble may lie in the jack or even the plug on the loudspeaker. Test the tubes in the AF stages in another set.

HOW many turns are necessary for the primary and secondary coils to cover the waveband with a 15-plate condenser? (2) How is the detector jack connected?—Eugene H. Schonher, 70 Morningside Dr., New York City.

Primary 8-turns, secondary 60-turns No. 22 DCC wire on a 3" diameter, will come as near as may be expected of a .00025. (2) Open end of tickler coil to one outside prong of the jack, plus B 22½ to the other outside prong. The primary of the first AF transformer connects to the two inside prongs. Be sure that the primary post marked P goes to the correct prong, i.e., to the prong making connection with the plate side of the jack.

MY Neutrodyne will not "neut." I neutralize it one evening and next evening it is no longer neutralized. (2) What can I add to my Neutrodyne to make it tune more selectively between 200 and 400 meters? (3) Is it possible to Super-Het my Neutrodyne without disturbing the cabinet in which it is placed?—M. H. G., 1016 Madison Ave., Scranton, Pa.

Test the tubes and batteries. Neutralize the set at the lowest wavelength possible. If it doesn't oscillate at low waves it probably will not oscillate at higher waves in the broadcast belt. (2)

A wavetrap will help a bit. Take off one or two turns from each of the aperiodic primaries. (3) Build a separate heterodyne cabinet, plug in the detector stage to the input of the Heterodyne. But why do that? The noise level may be above the signal level.

WHAT speed is necessary to obtain a transmitting license?—S. Thos. Fillman.
Twelve words per minute, approximately five letters to the word.

IN changing the 4-tube reflex to a 5-tube reflex may I use the same ratio AF transformers as I am now using? (2) The same 23-plate variable condensers?—Ernest C. Berrio, 24 Park Place, Waterbury, Conn.
(1) Yes. (2) Yes.

WOULD you advise winding the Superdyne with Litz wire?—Harry Heal, 4902 Woodland Ave., Philadelphia.
Yes, if you prefer that type.

I WOULD like to build the simplest 1-tube regenerative set possible. Can you give me a circuit?—A. J. Iig, 1532 Atlantic Ave., Atlantic City, N. J.
Fig. 86 is the circuit.

HOW can I cut down on the wavelength of the

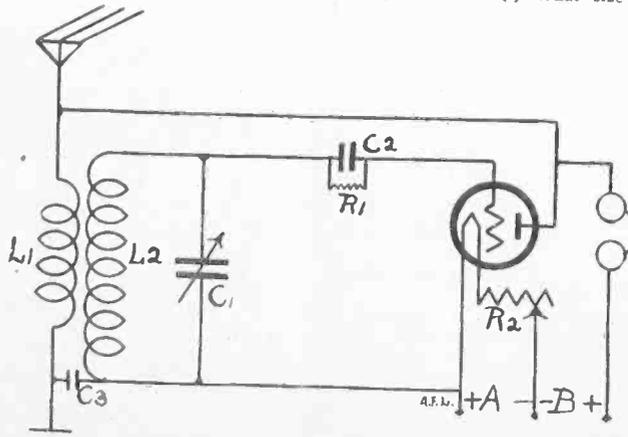


FIG. 86—A simple 1-tube set. L1 is a 15-turn coil on a 3½" diameter tubing; L2, in inductive relationship with L1, has 42 turns. Use No. 22DCC wire. C1 is a .005 mfd. variable condenser (normally 23 plates). C3 is .001 mfd. C2 is a .00025 mfd. grid condenser; R1 a Turlin grid leak. This circuit gives

1-tube Superdyne as described in the issue of Nov. 15?—Edwin Robson, Locust Valley, L. I., N. Y.

Take turns off the secondary coil.

CAN the Superdyne be reflexed? (2) What do you think of the Sodion tube as detector?—Silvan Campana, 1905 Hamilton Ave., Lorain, O.
Yes. See issue of December 6. (2) Very well.

I BUILT a 3-circuit set. I get all kinds of whistles but can't get rid of the carrier waves so as to bring in the desired distant station. Philadelphia comes in very loud, although I am only 27 miles away. Can you help me in any way?—Rex.

Take off about 5 to 8 turns from the plate coil. Make the coil fixed, and tune it with a variable condenser. Place a .002 fixed condenser across the phones. Be sure you have a good ground connection.

THE SUPERDYNE circuit, according to an advertisement in a recent issue of RADIO WORLD, suggested the use of two 43-plate condensers, a 32-turn coil for the plate. How many turns more would you suggest if I use a 23-plate condenser?—Walter Probert, 4117 W. Carter St., St. Louis, Mo.

Forty-two turns for the secondaries and 40 for the plate coil.

I HAVE a 4-tube Superdyne. I get plenty of volume but the set is not clear and DX is poor. Could you suggest anything that I might consider in bettering reception?—George N. Jaegers, 85 Franklin Terrace, Irvington, N. J.
Placement of parts and kind of parts used have a lot to do with this. See panel and assembly plan, January 10 issue.

I BUILT the set described by Herman Bernard in the issue of Nov. 8. I receive fair distance but I can never get a station without it fading out within three minutes after I receive it. (2) On the sockets that I use there is no F plus or F minus. Does it make any difference? (3) I use the same ratio AF transformers. Is this O. K.?—C. W. Salisbury, Box 151, El Dorado, Ark.

(1) It may be your location, aerial or the A battery. It is not the set. See that the battery is fully charged, or, if you are using dry-cells, that the amperage be always above 15. (2) On standard sockets F— is in line with G. (3) Yes.

I HAVE two 17-plate condensers. Please inform me as to how I can use them in place of the 23-plate in the Superdyne circuit as described in the issue of Dec. 27?—Thos. MacDonald, 12 Stone St., Plainfield, N. J.

Forty turns for the plate coil, 60 turns on the secondary coil.

CAN you tell me what issue of RADIO WORLD contains an article on adding radio-frequency to a 3-circuit honeycomb tuner?—J. M. Corey, Saratoga Springs, N. Y.
January 10.

WHICH do you think is better, regeneration in the detector or in the RF stage?—N. F. Beaver, 1447 E. Fulton St., Columbus, O.

There seems to be little, if any, difference. Radiation may be blocked by placing regeneration in the detector, some say, but experience does not confirm that fully. The tone is sometimes better when the RF is regenerated and the detector left free.

WHY is it, if oscillation is necessary for a tube to function, that the rheostat, potentiometer or tickler coil must be adjusted to prevent oscillation? (2) In the craze for low-loss equipment, the bakelite end-plates are removed from variable condensers and replaced by metal ones, when both are non-magnetic and the condensers attached to a bakelite panel with a surface of from one to three square feet, with a possibility of a much greater loss. Isn't this low-loss stuff merely "bunk"? (3) What size duolateral coil,

Official Report on the Eclipse as It Affected Radio

By DR. ALFRED N. GOLDSMITH

Chief Broadcast Engineer of the Radio Corporation of America

The following is a report of the effect of the eclipse on radio reception and transmission:

1. Experimental Arrangements—Signals were sent on wavelengths of 380 meters and 75 meters respectively from the General Electric Company's station at Schenectady, N. Y. These signals are called respectively the long and short wave signals. They were received at the technical building of the Radio Corporation of America at Van Cortlandt Park, New York City, on Super-Heterodyne receivers connected to automatic recorders to make sure that even slight changes or irregularities in strength would be noted reliably.

The observations were carried on from approximately 7 o'clock in the morning every day from January 22 through January 26, that is, for two days before and two days after the eclipse. In this way the average daily reception conditions during this time of the year were obtainable.

This work was carried on under the direction of Dr. Alfred N. Goldsmith, chief broadcast engineer of the Radio Corporation of America, assisted by Messrs. A. F. Van Dyck, division engineer; Dr. W. V. B. Roberts, research engineer, and F. H. Engel and C. L. Beach, assistant engineers. The results of the work will be handed over to G. W. Pickard, of Boston, who is the general organizer of the radio eclipse observations.

2 Explanation of Terms Used—It is well known in radio that at night particularly and over certain distances of the order of 100 miles or more the received signals are not steady. They will be loud for one moment and then gradually diminish in strength, returning after a while to their original strength. This is called "swinging" or "fading" of the signal and, of course, produces unpleasant reception effects. The usual wavelengths used in broadcasting, from 220 to 550 meters, do not show much daylight fading effect, although in the early morning hours there



THE new commander of the 2nd Corps Area, U. S. A., succeeding General Robert Lee Bullard, is Major General Charles P. Summerall, shown making his first public address after taking over his new command, through station WJZ, New York City.

is some fading even on these wavelengths. The shorter waves (below 100 meters) do show considerable fading effect over certain distances of transmission by daylight.

It is also well known to radio listeners that there is a marked difference between day-time and night-time strength of signals. The average signal strength at night on the normal broadcasting waves is much greater than the day signals over any considerable distance. On some of the shorter wavelengths the reverse is the case.

3 Results of the Eclipse Tests—The following results are preliminary and tentative. They are all subject to later modification through careful checking of the transmitter and receiving equipment to make sure that the operation of these devices was constant and correct throughout the tests. Since the effects on the long waves (that is, the normal broadcasting waves) were quite different from those on

the short waves, each will be given separately.

(a) Effect on 380-Meter Normal Broadcasting Wave—It was found during the five days of the observations that the 380-meter wave is swinging rather badly at sunrise and that the swinging gradually diminishes, the signal becoming steady as the sun rises higher. As a general rule the signal has become practically steady between one-half hour and two and one-half hours after sunrise.

The more severe the fading at sunrise the longer the fading lasts into the daylight hours. Furthermore, the more severe the fading at sunrise the more rapid the swinging of the signal from loud signals to weak signals and back again.

The eclipse had the following effects on the 380-meter signal:

During totality the eclipse appeared to cause a reduction of swinging of the signals. However, the reduction of swinging apparently caused by the eclipse was not nearly as great a reduction as occurs between night-time conditions and full day-time conditions. That is, the eclipse did not change swinging nearly as much as does full sunlight.

While the above effects were noted, the eclipse did not affect the average signal strength at all. The average signal strength during the eclipse was about the same as it would be in full daylight.

(b) Effect of Eclipse on 75-Meter Short Wave—Observations on the 75-meter wave during the five days of the observations showed that over the distance of 160 miles between Schenectady and New York this wave had very marked swinging every day and became weaker toward the middle of the day, although it never disappeared for more than a second or two except during the eclipse period. During the entire period of partial and total eclipse this wave disappeared altogether.

In other words, this short wave is very sensitive to the sunlight conditions on the path over which it travels, and even the partial darkness of the eclipse was apparently sufficient to prevent it from traveling over the 160-mile stretch between the transmitting and receiving stations. It was heard loudly before and after the eclipse periods.

4 Conclusions—So far as any general conclusions can be given at this time before all the records have been carefully studied, it may be said that for 160-mile transmission:

1. The normal broadcasting waves are not affected in their average strength by the eclipse, but the swinging is somewhat reduced by the eclipse, thus "steadying" the wave.

2. The short wave of 75 meters is greatly reduced in intensity during the eclipse.

3. Static, particularly on the short waves, is reduced during the eclipse period and changed in character to occasional sharp clicks.

4. The short waves are much more sensitive to changes in illumination of their path than are the longer normal broadcasting waves.

5. The choice of wavelengths between 220 and 550 meters for broadcasting appears to be a fortunate one, and these waves seem, on the whole, to be the most acceptable for broadcasting purposes. Broadcast listeners need not, therefore, be concerned about any more desirable range of wavelengths being found for broadcasting than those which their receivers now can tune for, at least so far as the eclipse experiments indicate.

Man-Made Static Keeps Town at Radio Standstill, Reader Complains

READERS of RADIO WORLD, not only fans but also dealers, jobbers and manufacturers are sending in their views on "What's the Matter With Radio?" (32d on the list of industries, yet the world's greatest invention). Every reader of RADIO WORLD, should send in his views. Letters published will be paid for at usual rates.

Static Called Radio's Greatest Drawback

SURVEY EDITOR:

I BELIEVE that the one big thing that is holding back the Radio Industry is static. I mean not only natural electrical disturbances in the atmosphere, but man-made static as well.

I have in mind a city of 50,000 population in which it is almost impossible to hear a program at night on account of the

noise caused by the lighting system. Sales of radio sets have been at a standstill in this city since the noise began.

Natural static may be here to stay, but a lot of this artificially-produced static can and should be gotten rid of. It is something that cannot be eliminated by the receiver no matter how good it may be except through the use of a loop aerial and this reduces the volume to such an extent that it is not very popular with the average fan.

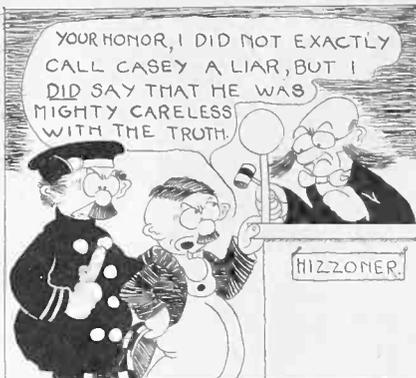
I see only one solution for the problem; the use of super-power broadcasting stations, enabling the fan to shorten his antenna or cut down the power of his receiver and still hear the program with plenty of volume. This is at present being tried out by several stations and what the result will be is yet to be seen.

PAUL M. RUSSELL,
123 Franklin St.,
New Holland, Pa.

MR. DX HOUND

A Character Created
By RADIO WORLD Artist

By HAL SINCLAIR



The Radio Trade

Litigants Split \$165,000 Royalties in Suit Lost by Freed-Eisemann Corp.

THE long litigation involving the Hazeltine Research Corporation and the Independent Radio Manufacturers, Inc., on one side and the Freed-Eisemann Corporation on the other, was settled when counsel for the contending companies agreed that Hazeltine and Independent concerns should divide \$165,000 in royalties on radio parts due them from the Freed-Eisemann Corporation.

The money represented royalties under a contract and was deposited with the Federal Court in Brooklyn when the litigation started. The Hazeltine and the Independent concerns contended they should be paid a royalty on special parts of radio sets, but the Freed-Eisemann Corporation held that the royalties were payable only on the complete sets.

Federal Judge Inch approved the agreement and signed an order directing that the money be paid.

Second Radio Fair Opens September 14

THE definite dates for the Second Radio World's Fair, which is to take place in New York City next fall, were announced by Directors James F. Kerr and U. J. Herrmann. The exposition will open on Monday noon, September 14, and continue until Saturday night, September 19. It will be held in the 258th Field Artillery Armory, Kingsbridge Road and Jerome Avenue.

The fair will occupy 180,000 square feet of floor space. There will be elaborate displays by 325 radio manufacturers, including 60 of the best known wireless concerns of Europe, South America and the Orient, a total of 100 more than those who participated in the 1924 fair. Fourteen foreign countries will have exhibits of an official variety.

Business Opportunities Radio and Electrical

Rates: 50c a line; Minimum, \$1.00

RADIO DEPARTMENT

Thoroughly experienced radio man wanted to establish department in best store in Elizabeth, N. J.; rental or commission basis; wonderful opportunity. Levy Bros., 76-84 Broad St., Elizabeth, N. J.

MANUFACTURER'S AGENT CALLING ON radio-electrical jobbers; Chicago and vicinity, has opening for three additional lines carrying volume business; as we cater to large jobbers. Edelstein, 1,804 McCormick Building, Chicago.

RADIO MANUFACTURING MAN OF VISION with \$25,000 to join exploitation, the newest development, most practical radio receiving apparatus (patent pending), fully equipped for production; highest references given and required. Box 1, Radio World.

ELECTRICAL ENGINEER, EXPERIENCED contractor, would invest \$5,000 with services in going electrical concern; can obtain and manage contracts. Box 3, Radio World.

GRINNELL CHAIN FRANCHISED TO SELL SLEEPER SET

GRINNELL BROTHERS, of Detroit, have entered the radio field. Heretofore the policy of this house has been opposed to the sale of radio equipment because of the reluctance of the radio manufacturer to shape his methods of selling to fit those employed by the music merchant. Grinnell Brothers have an exclusive contract to distribute the Sleeper Monotrol throughout Michigan. The original offering of Sleeper products will be made in the stores owned and operated by the Grinnell chain. Later the sale may be extended to include other music dealers in the state. This constitutes the third important franchise granted by the Sleeper Radio Corporation, of Long Island City, New York, to music merchants since January 1. The Cheney Phonograph Sales Company, of Cleveland, were appointed exclusive Sleeper distributors for Ohio. The Silas Pearsall Company, former jobbers of Victor products, received an exclusive franchise to sell the Sleeper receiver in Greater New York to the music trades.

KELLOGG REPRODUCER DESIGNED BY EXPERT STAFF

THE Kellogg Switchboard & Supply Co., Adams and Aberdeen streets, Chicago, have concentrated on the elimination of metallic sound or "tinniness" in manufacturing the Kellogg Reproducer. The unit, as the telephone part of a speaker is known, has a magnetically modulated diaphragm. The horn is carefully proportioned to deliver the tones without distortion. The company has 28 years' experience in the manufacture of telephone equipment and is the second largest builder of telephones and switchboards in the world. Effort has been concentrated on making the Kellogg Reproducer an artistic and acoustic success and this has been accomplished. The Reproducer is made in Senior and Junior models, in both of which the tone quality is the same. The Reproducer was designed by one of the foremost radio engineers, assisted by an expert engineering personnel.

Coming Events

FEB. 18 TO 21—Syracuse Radio Show, State Armory, Syracuse, N. Y.

MARCH 2 TO 7—Fifth Annual Radio Show and Convention, Hotel Pennsylvania, New York City. Executive Radio Council, Second District.

MARCH 2 TO 7—Kansas City Radio Show, Convention Hall, Kansas City, Mo.

MARCH 4—Broadcasting of President Coolidge's inaugural speech.

MARCH 9 TO 14—Cincinnati Radio Show. Public Auditorium.

APRIL 19 TO 25—International Radio Exposition, Steel Pier, Atlantic City, N. J.

SEPT.—(Early in month; date not settled.) Fourth Annual National Radio Exposition, by American Radio Exposition Co., 522 Fifth Ave., N. Y. C. Exposition will be held in Grand Central Palace.

SEPT. 14 TO 19—Second Radio World's Fair, 258th Field Artillery Armory, Kingsbridge Rd. and Jerome Ave., New York City.

SEPT 14 TO 19—Pittsburgh Radio Show, Motor Square Garden. (Postponed from Jan. 19.)

SEPT. 15 TO 19—Washington (D. C.) Radio Show.

NOV. 9 TO 15—Milwaukee Radio Exposition. Civic Auditorium.

DEC. 1 TO 6—Boston Radio Show, Mechanic's Hall.

Date not set yet for Chicago Radio Fair, under direction of Kerr & Herrmann.

Date not set yet for exposition, also to be held in Chicago, direction of Harold Bolster.

Literature Wanted

THE names of readers of RADIO WORLD who desire literature from radio jobbers and dealers, are published in RADIO WORLD, on request of the reader. The blank below may be used, or a post card or letter will do instead.

Service Editor,
Radio World,
1493 Broadway, New York City
I desire to receive radio literature

Name

City or town

State

Are you a dealer?

If not, who is your dealer?

His Name

His Address

- Drummond Repair Co., Parkersburg, W. Va.
- S. Graham McKeall, care New York Life Ins. Co., Birmingham, Ala.
- J. I. Hall, Boise City, Okla.
- Leo Heiser, 843 Cerritos Ave., Long Beach, Cal.
- Wm. A. Fisher, 43 W. 23rd St., New York City
- John A. Lang, 129 N. St. Louis, South Bend, Ind.
- Wallis Hardesty, 69 4th St., N. W., Washington, D. C.
- Geo. W. Vaughan, Ford, Va.
- E. P. Forrester, Covington, Ky.
- B. M. Werner, Shillington, Pa.
- J. Walten Strong, Elkhorn, Wis.
- Battery & Radio Shop, 1948 N. 24th St., Terre Haute, Ind.
- Ed. Rowser, 105 Quad, Iowa City, Ia.
- C. M. Seymour, 346 Park Rd., W. Hartford, Conn.
- T. H. Daniel, Box 221, Port Gamble, Wash.
- G. E. Long, 732 W. Washington St., Napoleon, Ohio.
- Frank Ross, Minneapolis, Minn.
- H. C. Gregg, Osawatimie, Kan.
- Charles Bailey, 1325 Haven St., Jonesboro, Ark.
- Jayeff Elec. Co., 4421 New Utrecht Ave., Brooklyn, N. Y.
- A. S. Darroch, 400 Centre St., Garwood, N. J.
- A. H. Peters, 4908 Devonshire Ave., St. Louis, Mo.
- R. H. Newton, RFD 3, Belton, S. C.
- W. Arnold, Winnipeg, Manitoba, Can.
- B. S. Williams, Woodston, Kan.
- Arnold Frisk, 4023 Peak St., W., Toledo, O.
- Irvin Fanaroff, 3147 Stanton Rd., S. E., Washington, D. C.

New Corporations

- Transatlantic Radio Stores, \$5,000. E. Rosenbaum, L. & A. Rose. (Attys., Burger & Burger, 233 Broadway, New York City.)
- Airiola Co., radio outfits, \$5,000. W. P. Adler, A. Schwartz, M. M. Lewis. (Atty. D. Greenbaum, 299 Broadway, New York City.)
- Rix Radio Supply House, \$5,000. J. W. Bering, J. J. McLaughlin, J. J. Conway, Jr. (Attys., Smith, Reiner & Griffin, 44 Court St., New York City.)

BANKRUPTCY PROCEEDINGS

Elless Radio Exchange, Inc., 49 Vesey St., New York City, by J. F. Rothschild, on a claim of \$5,000.

CAPITAL REDUCTIONS

Burney Radio Corp., New York City, \$25,000 to \$5,000.

ROME BUYS MORE U. S. GOODS

WASHINGTON.
A STEADILY expanding demand for copper and a rapidly growing market for American radio apparatus is reported in Rome by Commercial Attache Henry C. MacLean.

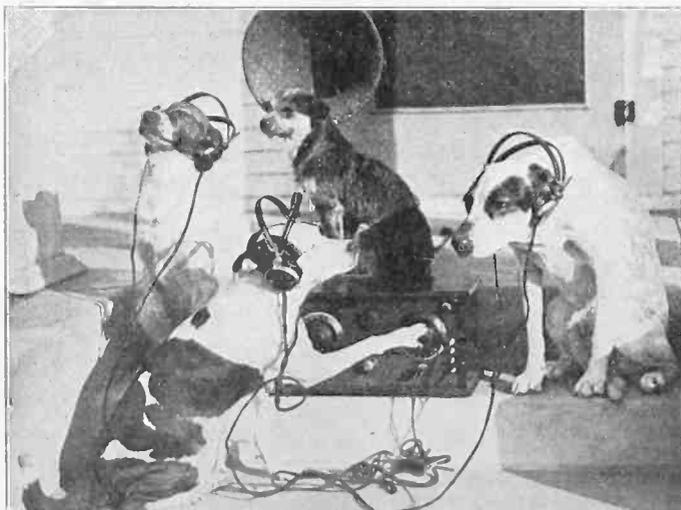
Wedding Broadcast



HUNDREDS OF CHURCHES would have been crowded had all the people who heard this wedding attended. WHN broadcast the complete wedding services which joined William J. Stuart and Miss Saura Portway. Those who personally attended were Rev. William Darlington; A. J. Brooks, best man; Alphas Greer, who gave the bride away and the Microphone, who "kept" the "secret" very nicely. (Underwood & Underwood).



FATHER FINN and part of the famous Paulist Choir, from the church of St. Paul the Apostle, in New York City, rehearse before the microphone for the sacred concerts they will broadcast from WPL, the new Catholic broadcasting station now being erected. (Underwood & Underwood).



"I WONDER What Became of F-I-I-do." However, regardless of what became of Fido, "Cameo," the almost human dog, now performing in the movies, keeps his set below the point of oscillation for fear of disturbing neighboring dog houses by radiation. His three pals each seems to have a different conception of good music. (International Newsreel).

Scientists Wr Secrets from

WASHINGTON.

SIGNALS from Europe were less intense in 1924 than in 1923. Waves from long-wave stations shift at sunset. These are two of the findings in committee reports made to the International Union of Scientific Radio Telepathy, which met here recently. The reports included the following:

By DR. L. W. AUSTIN

Chairman, Committee on Radio Wave Transmission Phenomena

Measurements show that the average intensity of signals from European and California stations have been found somewhat less during 1924 than in 1923. The variations of the intensity of received signals from the high-power station at Bordeaux, France, have been found to be the same in France and the United States, whereas no such correspondence in the received signals is found for measurements in the two countries on the transmitted wave from the high-power station at Rocky Point, L. I. In measurements on the strength of signals from European stations there is found a drop in signal strength just after the time of sunset in Europe. Observations of signals from high-power stations over greater distances that have been hitherto attempted, as for example, from Java to California, showed that the low-frequency stations transmitted to greater distances than calculations hitherto made had indicated. Measurements at frequencies above 3,000 kilocycles indicate that the fading of such signals is greater, and the reliability of transmission less, at distances under 500 miles than at greater distances. Furthermore, in the winter frequencies above 5,000 kilocycles

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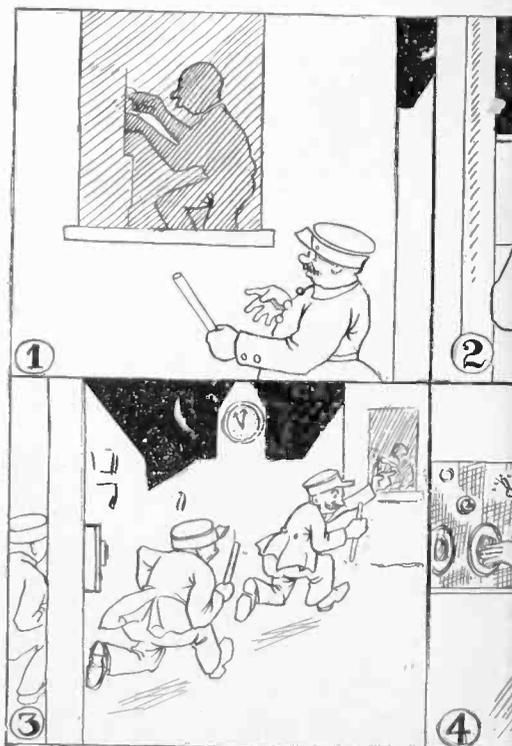
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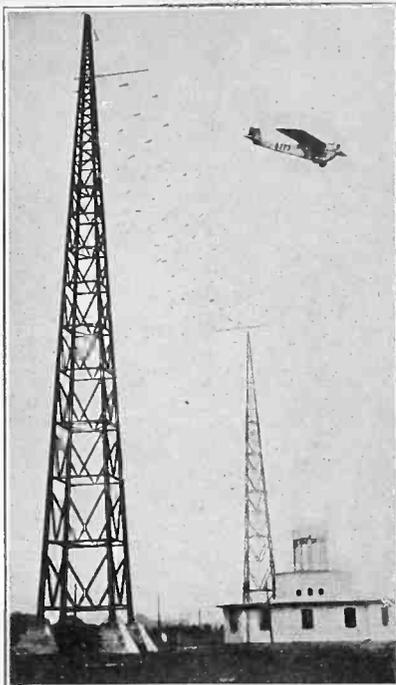
DR. J. H. TAYLOR

Variations of Radio Wave Direction
...een found that a shift of the
...rection of the waves from long-
...ions occurs at sunset. The di-
...fts toward the east before
...urns to normal at sunset, and
...y shifts toward the west. The
...e of this has not yet been fully
... but further experimental
...icate that there is a combina-
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...vements of atmospheric disturb-
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...re than 3,000 kilocycles atm-
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Sciences Join



KILLING TWO BIRDS with one stone. Here is a combined aero field and radio station which has just been completed near Berlin, and will be known as Tempelhofer Field. A powerful beacon atop the radio house guides the planes to the field. (Gilliams).

Novel Test



BENJAMIN KING, a Washington radio engineer, made special tests to ascertain how much, if any, reception decreased underground. He is shown above in an underground cavern, a half mile from the entrance and 180-feet underground. (International Newsreel).

"DX Trail"



"NO TROUBLE at all," say these Hawaiian Siamese twins, "to tune in stations and enjoy DX." They have absolutely no difficulty with interference for they get along famously with their 4-control set. (Henry Miller).



GRAND DUKE Boris of Russia tells the world, from WOR, Newark, N. J., what he thinks of the United States. Boris is a cousin of the late Czar. (World).



AIN'T WE GOT FUN? The San Francisco end of the American Newspaper Publishers' Association Banquet in New York enjoyed music with their meals a la radio. From left to right are: Thos. F. Dawson, Secretary of the U. S. Senate; Louis Honig, Pacific Coast advertising agencies; W. Russell Cole, Director, Press Club of San Francisco; Marshall Hale, San Francisco merchant; Thos. Boyle, San Francisco City auditor; James Rolph, Jr., Mayor of San Francisco; Waldemar de Bille, Chairman of San Francisco Press Club; Chas. K. Field, editor Sunset Magazine; H. H. Sherwood, San Francisco Convention League; Clyde C. Westover, Secretary San Francisco Press Club. (Underwood & Underwood).

BROADCAST PROGRAMS

Thursday, February 12

KGW, Portland, Ore., 492 (P. S. T.)—11:30 A. M., weather. 12:30 P. M., concert by Civic Music Club. 5 children's program. 7:15, market, weather and news.

WWJ, Detroit, 352 (E. S. T.)—8 A. M., setting-up exercises. 9:30, "To-night's Dinner." 9:45, Public Health Service bulletins. 10:25, weather. 11:55, time. 12:05 P. M., Jules Klein's Orch. 3:50, weather. 3:55, market. 6, dinner concert. 8:30, Louis C. Rabaut, tenor. 10, Jean Goldkette's Orch.

WEEL, Boston, 303 (E. S. T.)—1 P. M., assembly luncheon. 6:30, Big Brother Club; address by "Comrade" and "Brother" Wm. T. Landers. 7:15, address. Mrs. Geo. R. Blinn, 7:30, Dok Eisenbourg and Sinfonians. 7:55, Pathe News Flashes. 8, programme from New York Studio. 9, Victor concert artists. 10, Goodrich Silver-town Orchard Orch.

KGO, Oakland, Cal., 300 (E. S. T.)—10:40 A. M., classroom instruction by Oakland Public Schools. 11:30, luncheon concert. 1:30 P. M., N. Y. and S. F. stock reports, weather; Concert Orch., Vinton La Ferrera conducting. 6:45, final reading, stock reports, weather, S. F. produce news and news. 8, "Seven Keys to Balhpatie," a melodramatic farce. 10, Henry Halstead's Orch. and soloists.

WKAQ, Porto Rico, 360 (E. S. T.)—4:30 P. M., concert from "La Caletera."

WOAI, San Antonio, Tex., 394 (C. S. T.)—9:30 P. M., Jimmie Joy's Orch.

WLW, Cincinnati, O., 423 (C. S. T.)—8 A. M., setting-up exercises. 10:45, weather forecast and business. 11:55, time. 12:15 P. M., noonday concert. 1:30, business reports. 3, market reports. 4, French lesson by Madame Teimpadis; piano solos by Adelaide Apfel. 6, Selinsky instrumental quintet. 10, message from U. S. Civil Service Dept. 10:03, concert program under the auspices of the Cooper Corporation; The Cooper orch. and male quartet; Bohemian entertainer, Rudolph Zak; Dorothy Melody Boys; "A Little Close Harmony," by Lucille and Mary Craig.

KFOA, Seattle, Wash., 455 (P. S. T.)—1 P. M., The Times, Wm. F. Hoffman's Olympic Hotel Concert orch.

WJZ, New York City, 455 (E. S. T.)—9:25 P. M., Lincoln dinner. 10:30, Mrs. Herietes Cohn, violinist; Josephine Coka, soprano; Charles Leitner, pianist; Joseph Klein, bass; Anton Hock, tenor; and Bohemian Octette.

WGY, San Antonio, Tex., 380 (E. S. T.)—2 P. M., music; some Lincoln stories. 2:30, organ recital by Stephen E. Boisclair. 6:30, Hotel Ten Eyck trio. 7:30, book chat, L. L. Hopkins.

WEAF, New York City, 492 (E. S. T.)—11 A. M., "Current Events" by Ida Wright Bowman. 4 P. M., Lincoln's Birthday program; Arthur Billings Hunt, baritone. 6, dinner music; mid-week services; talk on art; John Ingram string quartet; Giuseppe Di Benedetto, tenor and Maria Musgavero, coloratura soprano; Columbia University course; Nora Helms, coloratura soprano, with flute obligato; Touring, George Elliott Cooley; Victor presentation; Silvertown orch.; Vincent Lopez and his orch.

WOS, Jefferson City, Mo., 441 (C. S. T.)—11 A. M., special Boy Scout Lincoln Day program. 8 P. M., address, Mr. Hesse; Boy Scout band.

WCCO, St. Paul, Minn., 417 (C. S. T.)—10:45 A. M., home service, Betty Crocker. 2 P. M., woman's hour, "Popular Numbers of Music Memory Contest." 4, magazine hour, "The Lost Speech." 5:30, children's hour. 6:30, Biley's concert orch. 7:30, "Abraham Lincoln and Minnesota," Dr. Solon J. Buck. 7:45, health talk. 8, musical program. 10, Casey review.

WRC, Washington, D. C., 469 (E. S. T.)—1 P. M., Lincoln's Birthday Dinner.

WNYC, New York City, 526 (E. S. T.)—7:30 P. M., police alarms. 7:35, Irving Bloom and his orch. 8:30, piano recital. 8:45, Della Riordan, lady baritone. 9, dinner to United States Secretary of Labor. 10:30, police alarms and weather.

WEAR, Cleveland, O., 390 (E. S. T.)—7 P. M., Austin J. Wylie and orch.; vocal solos and duets by Marjorie Stevens, soprano, and Mary Morgan, contralto and pianist. 8:15, Carl Rupp and his Hillendell Hotel orch.; Albert Downing, tenor, and Ruth Baird, soprano.

WOR, Newark, N. J., 405 (E. S. T.)—7 A. M., morning gym class. 2:30 P. M., to be announced. 2:45, Emanuel Hertz, "Abraham Lincoln, the Sec." 3, to be announced. 3:15, Lion Frolic orch.; reading, Omar Le Gant; songs, Mary Madeline Ross; one-act play, "The Laughing Mask"; songs, Mary Madeline Ross; folk songs, Sybil Deutscher. 6:15, "Police Alarms." 6:20, Al Majkon and his Villa Francaise orch.

WHN, New York City, 360 (E. S. T.)—12:30 P. M., Chas. Strickland's Palais D'Or orch. 6:30, violin, by Olecott Vail, accompanied by Stephen Balogh. 7, Harry Rose and Silver Slipper Entertainers; Dornberger's Victor orch. 7:30, health talk by Dr. Landis. 8:30, Everglades Revue with Sissle and Blake. 9:30, "Spring Styles." 9:35, O'Meara Gardens Ballroom orch. 11, Leroy Smith's orch. 11:30, Lou Holtz and his entertainers. 12, El Fey Club Revue.

WLIT, Philadelphia, 395 (E. S. T.)—11:45 A. M., daily almanac. 12:02 P. M., organ recital; features from the studio; Arcadia Concert orch.; Feri Sarkozi, director. 2, Arcadia Concert orch.; playlet. 4:30, dance program. 7:30, Dream Daddy. 8, "Turning the Pages," a book review. 8:10, Sam Wingfield, "Humor." 10, meeting of the Morning Glory Club; Arcadia Dance orch. 1, features from the studio.

WIP, Philadelphia, 509 (E. S. T.)—1 P. M., Gimbel Tea Room orch. 1:30, weather. 3, "A Diet for Anaemics," by Mrs. Ann B. Scott. 3:15, Elwood M. Wagner, baritone, and Matilde E. Eyes, soprano; Harry A. Goldstein, violinist; Charles E. Hill, mellophone. 4, "The White Beaver." 6, weather. 6:05, popular numbers by Mark Fisher and Joe Burke. 6:15, Harvey Marburger and Vaudeville orch. 6:45, livestock and produce market. 7, Uncle Wip's bedtime story. 8, morning exer-

director. 2, Arcadia Concert orch.; Josephine Logan; Kenney contralto, Marcella North, pianist and accompanist. 4:30 artist recital by Helen Danta Wilson, contralto; Helen Darlow, soprano; Marcella North, pianist and accompanist; Mrs. Anna D. Scott, talk on the "Market Basket." 5, question period. 7:30, Dream Daddy. **WIP, Phila., Pa., 509 (E. S. T.)—1 P. M.,** luncheon music by the Gimbel Tea Room orch. 1:30, weather. 3, Lincoln's birthday address by Fenwick Holmes. 3:15, Philadelphia Musical Academy. 6, weather. 6:05, Irving Oppenheim Concert orch. 6:45, livestock and produce reports. 7, Uncle Wip's bedtime story. 8, P. O. S. of A. Band. 9:15, Byron J. Pickering, naturalist. 11, Harvey Marburger and Vaudeville orch. **KDKA, E. Pittsburgh, Pa., 326 (E. S. T.)—9:45 A. M.,** stockman reports. 11:55, time; weather. 12, weather; stockman reports. 12:30 P. M., Institute from Trinity Church. 3:30, hay, grain and feed. 6:15, Brundy's orch. 7:15, stockman reports. 7:30, Uncle Ed. 8, program by the National Stockman. 8:30, concert. 9:15, time; weather. 11, Pittsburgh Post program. **KYW, Chicago, 536 (C. S. T.)—6:30 A. M.,** morning exercises. 9:30, late news and comment. 10:30 farm and home service. 11:35, table talk by Mrs. Anna J. Peterson. 4 P. M., "Afternoon Frolic." 6:02, news, financial and final markets. 6:35, children's bedtime story. 7, Joska DeBabary's orch. 7:40, Coon-Sanders Original Nighthawks. 7:50, Joska DeBabary's orch. 8, "Twenty Minutes Good Reading," by Rev. C. J. Permin. S. J. 8:20, Caroline Encell, soprano; E. F. Miller; Thomas B. Stephenson, tenor. 9:15, "Good Roads" report. 10, "Evening at Home" program. **KFDY, Brookings, S. D., 273 (C. S. T.)—8 P. M.,** State College Military Band. 8:30, results of the State Oratorical Contest. 8:25, oration by the winner. 8:40, "Lincoln—The East and The West," by Wm. H. Powers. 8:50, State College Military Band.

Friday, February 13

WGBS, New York City, 316 (E. S. T.)—6:30 P. M., Herman Bernard, managing editor of RADIO WORLD, "Radio Hooks, Questions and Answers."

KGW, Portland, Ore., 492 (P. S. T.)—11:30 A. M., weather. 12:30 P. M., concert. 5, children's program. 7:15, market, weather, and news bulletins. 8, lecture by University of Oregon. 10:30, Hood Owls.

WWJ, Detroit, 352 (E. S. T.)—8 A. M., setting-up exercises. 9:30, "To-night's Dinner" and a special talk. 9:45, Public Health Service bulletin and talks. 10:25, weather. 11:55, time. 12:05 P. M., Jules Klein's Hotel Statler Orch. 3, News Orch. 3:55, market reports. 6, dinner concert. 8:30, News Orch.; Anne Campbell, poet; Harry E. Parker, tenor.

WEEL, Boston, 303 (E. S. T.)—3 P. M., Happy Hawkins and orch. 6:30, Big Brother Club. 7:15, James A. Watts, tenor. 7:30, A. E. Richardson interviewed by Otto Grow. 8, program courtesy Neapolitan Co. 8:30, U. S. Army Band.

KGO, Oakland, Cal., 300 (E. S. T.)—11:30 A. M., luncheon concert. 1:30 P. M., N. Y. and S. F. stock reports, weather. 3, musical program; speaker. 4, Concert Orch. 5:30, The Girl's Hall Hour. 6:45, stock reports, weather, S. F. produce news and news items.

WLW, Cincinnati, O., 423 (C. S. T.)—8 A. M., setting-up exercises. 10:45, weather and business. 11:55, time. 12:15 P. M., Ahaus Brunswick orch. 1:30, business reports. 3, talk by Mrs. E. P. Bradstreet. 4, French lesson by Madame Teimpadis; piano solos.

WHN, New York City, 360 (E. S. T.)—2:15 P. M., Richard Hitter's orch. 2:45, Ruth Mero. 2:55, advice to screen lovers. 3, Blanche Vincent and Jack Fagan, singers. 3:45, story by Wm. J. Stuart. 3:55, Samuel Shankman, pianist. 4:05, John E. Hennings, comic songs. 4:45, Rubey Cowan, songwriter. 4:30, Kathryn Behnke, contralto. 4:40, Sam Silver and entertainers. 4:50, Uncle Robert's chat. 5, Phil Cole and his orch. 6:30, violin solos by Olecott Vail. 7, Harry Richmond and entertainers; Eddie Elkins and his orch. 7:25, Cross-word period. 7:30, health talk by Dr. Landis. 7:35, Juvenile Violin Quartet, direction Prof. Minceo. 8, Edgar Dowell and Dixie Daudles. 8:30, Irma Mayer, soprano, and Walter Schuster, tenor. 9, Dorothy Portingall, saphophone solos and songs. 9:15, Charles Tobias, songwriter and composer. 9:30, Dan Gregory and Crystal Palace orch. 10, fashion chats by Mme. Belle. 10:15, Fain and Cross, harmony singers. 10:25, "Storage Batteries," by E. B. Shontz. 10:30, Roseland Dance orch. 11, Everglades Revue with Sissle and Blake's show. 11:30, Club Alabama orch. 12, Ted Lewis Parody Club Revue.

WLIT, Phila., Pa., 395 (E. S. T.)—11:45 A. M., daily almanac. 12:02 P. M., organ recital; features; Arcadia Concert orch.; Feri Sarkozi, director. 2, Arcadia Concert orch.; playlet. 4:30, dance program. 7:30, Dream Daddy. 8, "Turning the Pages," a book review. 8:10, Sam Wingfield, "Humor." 10, meeting of the Morning Glory Club; Arcadia Dance orch. 1, features from the studio.

WIP, Philadelphia, 509 (E. S. T.)—1 P. M., Gimbel Tea Room orch. 1:30, weather. 3, "A Diet for Anaemics," by Mrs. Ann B. Scott. 3:15, Elwood M. Wagner, baritone, and Matilde E. Eyes, soprano; Harry A. Goldstein, violinist; Charles E. Hill, mellophone. 4, "The White Beaver." 6, weather. 6:05, popular numbers by Mark Fisher and Joe Burke. 6:15, Harvey Marburger and Vaudeville orch. 6:45, livestock and produce market. 7, Uncle Wip's bedtime story. 8, morning exer-

cises. 9:45, stockman reports. 11:55, time. 12, weather; stockman reports. 12:30 P. M., Sunday School lesson. 3:30, hay, grain and feed. 6:15, Charlie Gaylord's orch. 7:15, stockman reports. 7:30, Daddy Winkum. 8:15, "Report of the Pennsylvania State Tax Commission," by Dr. M. K. McKay. 8:30, concert. 9:55, time; weather.

WGY, Schenectady, N. Y., 380 (E. S. T.)—2 P. M., music and health hints. 6:30, international Sunday school lesson. 7, dinner music by Strang Theatre orch. 7:30, health talk. 7:45, address, "What Psychology Tests Do Not Tell," by Dr. Leonard C. Jones. 8, musical program. 9:15, speeches of Union League Club dinner. 10:30, WGY orch.; Matilda Bigelow Russ, soprano.

WEAF, New York City, 492 (E. S. T.)—11 A. M., music and talks; market and weather. 4 P. M., Alice B. Bamber, children's songs; French lessons by Professor William Doub-Kerr; children's stories. 6, dinner music; 15th anniversary of the Boy Scouts; Sol Deutsch, violinist; Blanche Ellrabeth Wade, story teller; Gertrude Otto, contralto; The Happiness Candy Boys; Hohner harmony hour; B. Fischer orch. Prof. V. Karapagoff, cellist; Charles Gilbert Sross, composer-pianist, and artists; Meyer Davis orch.

WOS, Jefferson City, Mo., 441 (C. S. T.)—8 P. M., addresses.

WCCO, St. Paul, Minn., 417 (C. S. T.)—10:45 A. M., home service, Betty Crocker. 2 P. M., blind people's program, Edith Marsh, leader. 4, magazine hour. 5:30, children's hour. 6, sport talk. 6:30, dinner concert, The Trogande Trio. 7:30, lecture, Taxpayers' Association. 7:45, Norse American Centennial, Oscar Arneson. 8, Real Estate Board program. 9, "The F. & R. Family."

WRC, Washington, D. C., 469 (E. S. T.)—6:45 P. M., children's hour. 7, Irving Boernstein's orch. 8, Bible talk. 8:15, concert by the United States Marine band. 9:15, Union League dinner; addresses by Secretary of State Charles Evans Hughes, Elihu Root and Harlan Fiske Stone. 10:30, Beaux Arts orch. 11:15, organ recital by Otto Beck.

KFOA, Seattle, Wash., 455 (P. S. T.)—12:30 P. M., Seattle Chamber of Commerce program. 4, The Times, Wm. F. Hoffman's orch. 6:45, program announced; weather. 8:30, The Times program. Women's Century Club Chorus. 10, Eddie Harkness and his orch.

WJZ, New York City, 455 (E. S. T.)—9:15 P. M., Union League Club dinner.

WNYC, New York City, 526 (E. S. T.)—7:30 P. M., police alarms. 7:35, sports by Thornton Fisher. 7:45, Agnes Dodson, soprano. 8:15, meeting of the meeting of Board of Estimate. 8:30, minstrel show. 10, Joseph M. White, tenor. 10:30, police alarms.

WAAM, Newark, N. J., 263 (E. S. T.)—11 A. M., request program by Radio Evangelists. 7 P. M., Jolly Bill Steinke. 7:40, Henrietta Dougherty, soprano. 8, home and heart problems. 8:15, Dick Finch and Ben Friedman. 8:30, The Two Black Diamonds. 9, memories. 9:15, Egyptian Six orch. 10, Eddie Bauer and Jack Press. 10:20, Surprise orch.

WEAR, Cleveland, O., 390 (E. S. T.)—7 P. M., organ recital by Edwin Arthur Kraft.

WOR, Newark, N. J., 405 (E. S. T.)—7 A. M., morning gym class. 2:30 P. M., Mme. Annie Barnou, "Say It With Your Voice." 2:45, Doris LeVine, pianist. 3, Mme. Annie Barnou. 3:15, recital by Theodore Van York; Bernice Mandley, piano. 3:30, Doris LeVine, pianist. 3:45, Theodore Van York. 6:15, "Police Alarms." 6:20, Bluebird orch. 6:30, "Man in the Moon" stories. 7, Bluebird orch.

Saturday, February 14

WWJ, Detroit, 352 (E. S. T.)—8 A. M., setting-up exercises. 9:30, "To-night's Dinner." 9:45, Public Health Service bulletin. 10:25, weather. 11:55, time. 12:05 P. M., Jules Klein's Hotel Statler Orch. 3, News Orch. 3:50, weather. 3:55, markets. 6, dinner concert.

KGW, Portland, Ore., 492 (P. S. T.)—11:30 A. M., weather. 10 P. M., Colburn's Melody Men.

KGO, Oakland, Cal., 300 (E. S. T.)—11:30 A. M., luncheon concert. 12:30 P. M., stock reports and weather. 4, Concert Orch. 5, California String Quartet; Harvey Shubert, tenor; trumpet solos by S. Duke Smith; Mrs. S. G. Walsh, contralto; address, "Contentment," by Dr. Frederick W. Clampett; Walter Kliegel, baritone; Winston Petty, cellist; "Stamp Collecting," by George W. Ludlow. 10, Henry Halstead's Orch. and soloists.

WLW, Cincinnati, O., 423 (C. S. T.)—8 A. M., setting-up exercises. 10:45, weather and business. 11:55, time. 1:30 P. M., markets, stock. 3, Marco Melody Boys. 6, Selinsky instrumental quintet; Lafalone by E. D. Leonard. 8, 2nd annual Crosley Dolly Varden radio beauty contest; special musical program.

WLIT, Phila., Pa., 395 (E. S. T.)—11:45 A. M., daily almanac. 12:02 P. M., organ recital; features from the studio; Arcadia Concert orch. 2, Arcadia Concert orch.; Margaret L. Steirnuck, contralto; Norman Greig, baritone; Elizabeth Gear, pianist and accompanist. 4:30, Cotton Pickers, direction of Wilbur De Paris. 7:30, Arcadia Concert orch.

WHN, New York City, 360 (E. S. T.)—3:15 P. M., Carrie Cohen, pianist. 2:25, Nat Fleischman, tenor. 2:45, Andy and his Androns. 3:45, Ellen Montague Cross Concert. 4:05, Frances Kirsch, soprano. 4:15, Leonard Russack's Harlarmonica Quartet. 4:25, Cooper and Bourne, popular songs. 4:35, Frances Kirsch, soprano; Howard Kirsch, violinist. 4:50, Milton Yorkman, tenor. 5, Broadway Melody Boys. 6:30, violin solos by Olecott Vail, accompanied by Stephen Balogh. 7:30, health talk by Dr. Landis. 7:35, Carlton Terrace orch. 8, Blanche Vincent and Jack Fagan, harmony singers. 8:15, Sidney Hawkins,

tenor. 8:30, Strand orch. 9, Alfred Dulin, pianist. 9:10, Charlie Johnson's orch.; Bob Rickett, leader. 9:45, Jimmy Flynn, dramatic tenor. 10, Estelle Crossman, pianist. 10:15, Mary Houston, dramatic soprano. 10:30, Arthur Stone, pianist. 0:45, Clarence Williams and his Radio Trio. 11:15, Jimmy Clarke and entertainers. 11:30, Roseland Dance orch.

WIP, Phila., 509 (E. S. T.)—1 P. M., organ recital by Karl Bonawitz. 1:30, weather. 3, dance music by Bayard's orch. 6, weather. 6:05, Hotel St. James orch. 6:45, livestock and produce market. 7, Uncle Wip's bedtime story. 8, "Training our Future Citizens," by George I. Bodine, Jr. 8:15, Myra Reed Skibinsky, pianist; Alex M. Skibinsky, violinist; Elizabeth Earle, soprano; Thelma Melrose Davies, contralto; Frank Oglesby, tenor; Ralph Thomlinson, baritone; Helen Pulaski Innes, director. 10:05, dance music by the Howard Lamin orch. 11:05, organ recital by Karl Bonawitz.

KDKA, E. Pittsburgh, Pa., 326 (E. S. T.)—9:45 A. M., stockman reports. 11, time. 12, weather, stockman reports. 1:30 P. M., concert by Laugherty's orch. 6, Westinghouse band, T. J. Mastine, conductor. 7:30, a Valentine "Surprise." 9:45, list-minute helps. 8:30, concert by the Westinghouse band. 9:55, time; weather.

KYW, Chicago, 536 (C. S. T.)—6:30 A. M., morning exercises. 9:30, financial and commercial markets. 10:30, farm and home service. 1:35, Mrs. Anna J. Peterson, table talk. 6:02 P. M., news, financial and final markets. 6:35, children's bedtime story. 7, Joska DeBabary's orch. 7:10, Coon-Sanders Nighthawks. 7:20, Joska DeBabary's orch. 8, Fannie Schlesinger, soprano; Johnnie Hayes, baritone; Ned Santry, tenor. 9:05, talk of the National Live Stock & Meat Board. 9:15, health talk from "Hygenia," by Dr. John N. Dodson. 9:35, "Congress Classic." 2, "Congress Carnival."

KFOA, Seattle, Wash., 455 (P. S. T.)—4 P. M., the Times, Wm. F. Hoffman's orch. 6:45, Rhodes program; Betty Wunningham, juvenile prodigy. 8:30, The Times program. 10, Eddie Darkness and his orch.

WJZ, New York City, 455 (E. S. T.)—10:15 P. M., Constance Mering, concert pianist.

WGY, San Antonio, Tex., 380 (E. S. T.)—9:30 P. M., dance music by Phil Romano's orch.

WEAF, New York City, 492 (E. S. T.)—4 P. M., Eugene M. Ingraham's orch.; Helen V. Ryan, violinist. 6, dinner music; Boy Scouts talk; Gertrude Dan Deirse, soprano; adventure stories; Adolph Latchko, cantor; Jimmy Hindson, readings and monologue; Joseph Gingold, violinist; Cora Griffin, contralto; Waldorf-Astoria orch.; WEAF light opera quartet; Bern Brenner, oboe soloist, and Linnie Weil, pianist; Vincent Lopez and orch.

WCCO, St. Paul, Minn., 417 (C. S. T.)—10:45 P. M., home service, Betty Crocker. 2:30 P. M., matinee musical. 8, "Pireside Philosophies," Rev. L. Smith, pastor. 8:15, "Out Back in Audience." 8:30, the Satorius mandolin orch. 10, concert program, Mpls. Athletic Club orch.

WNYC, New York City, 526 (E. S. T.)—7:30 P. M., police alarms. 7:35, The Chateau Five. 8, Wm. Wirt Mills, Commissioner of Plant and Structures. 8:30, Anna Pinto, harpist. 9, testimonial dinner to John G. Price, Grand Exalted ruler. 10:30, police alarms and weather.

WOR, Newark, N. J., 405 (E. S. T.)—7 A. M., morning gym class. 2:30 P. M., Charles A. Meride, baritone. 2:45, George Watson Little, "When a New Dog Comes Into the Family." 3, tritone. 3:15, Phil Cole. 6:15, police alarms. 20, Ray Nichol's Manor Farm orch. 8, Crescendo andolin club. 8:30, Vaughn De Leath. 8:45, recital by Adelaide DeLoce, contralto. 9, Vaughn De Leath. 9:15, Adelaide DeLoce, contralto. 9:30, Garrett P. Serviss on "The Next Eclipse." 9:45, organ recital; recital by Mattfield trio; recital by Jane Miller Flynn, soprano. 10:45, Jascha Brewich, saxophone.

Sunday, February 15

KTHS, Hot Springs, Ark., 375 (C. S. T.)—11 P. M., services, Rev. Chauncey Hickok. 8:30 P. M., special Spanish-American concert. 10, Bill Baxter and singing orch.

KOA, Denver, Colo., 323 (M. S. T.)—11 A. M., service. 7:45 P. M., service, Dr. James E. Davis, pastor.

WGN, Chicago, 370 (C. S. T.)—11 A. M., Uncle Walt reads the funnies. 11:45, concert. 2 P. M., master artists' recital. 9, concert.

WOAI, San Antonio, Tex., 11 A. M., services. 8:30 P. M., services. 9:30, Carmen, by Bizet.

WHAS, Louisville, Ky., 400 (C. S. T.)—9:57 P. M., organ music. 10, church service; Mrs. Harry W. Long, organist. 4 P. M., vesper song service; soprano soloist, Mrs. Velda Grant Kehler; baritone soloist and accompanist; Reginald L. Billin.

KGO, Oakland, Cal., 300 (P. S. T.)—11 A. M., service of the Trinity Episcopal Church. 3:30 P. M., KGO Little Symphony orch. 7:30, service.

WOS, Jefferson City, Mo., 441 (C. S. T.)—7:30 P. M., religious service, Rev. R. M. Talbert, pastor.

WIP, Phila., 509 (E. S. T.)—4 P. M., services under the auspices of the Germantown Y. M. C. "Give the Boy a Chance," by H. Leo Taylor. "Chicago." 7:15, evening service, Rev. Floyd W. Jenkins, D. D., rector. 9:30, WIP Symphony ch., with Karl Bonawitz at the organ.

KYW, Chicago, 536 (C. S. T.)—6:30 A. M., morning exercises. 9:30, financial and commercial markets. 11:35, table talk by Mrs. Anna J. Peterson. 6, news, financial and final markets; Dan's and Bradstreet's review. 6:35, children's bedtime story. 7, Joska DeBabary's orch. 7:10, Coon-Sanders Nighthawks. 7:20, DeBabary's orch. 8, speeches. 9, midnight revue.



DORIS KENYON, who with other motion picture actors and actresses, appeared before the microphone of WIP, Gimbel Brothers, Philadelphia. WIP operated on increased power to reach the West Coast homes of some of the performers. Besides Miss Kenyon, Milton Sills, Ben Lyon, Dorothy Mackall, Hobart Bosworth, Bessie Love, Viola Dana, Gladys Brockwell, Myrtle Steadman, John Bowers, Marguerite De LaMotte, Paul Nicholson, Lambert Hillyer, Earl Hudson and Mrs. Florence Strauss were present. Telegrams and letters by the hundreds poured into the WIP studio in response to an invitation to send in movie questions.

Monday, February 16

KTHS, Hot Springs, Ark., 375 (C. S. T.)—8:30 P. M., Natalie Brigham, violinist; Artur Platz, tenor. 10, dance selections by Charles L. Fisher.

KOA, Denver, Colo., 323 (M. S. T.)—1 P. M., N. Y. stock; livestock, fruit and vegetable report; weather. 6, stock, livestock, vegetables and news. 8, Everett E. Foster, Mabel Tarvin Baber, Ada Marie Castor, Frank Fowler and Ralph Freese, concert numbers; Ruth Gilbert Gillis, in a reading.

WEEL, Boston, 303 (E. S. T.)—2 P. M., Frank Toomey's orch. 2:45, Fenway Radiowis. 3:30, Georgie Ritchie and Collegians. 6:30, Big Brother club. 7:15, Dok-Eisenbourg and his Sinfonians. 7:30, Charlestown State Prison. 8:45, musicale. 8:55, Pathe News flashes. 9, A. & P. Gypsies.

WWJ, Detroit, 353 (E. S. T.)—8 A. M., setting-up exercises. 9:30, "Tonight's Dinner" and a special talk. 9:45, Public Health Service bulletins. 10:25, weather. 11:55, time. 12:05 P. M., Jules Klein's orch. 3, News orch. 3:50, weather. 3:55, market reports. 6, dinner concert. 7, News orch.

WHAS, Louisville, Ky., 400 (C. S. T.)—4 P. M., Louisville Conservatory of Music; weather; three-minute talk; "Just Among Home Folks"; readings; news. 4:55, livestock, produce and grain market. 5, time.

KGO, Oakland, Cal., 300 (P. S. T.)—9 A. M., music and lectures. 10:40, classroom instruction. 11:30, luncheon concert. 1:30 P. M., N. Y. and S. F. stock reports; weather. 3, musical and speaker. 4, Henry Halstead's dance orch. 5:30, Aunt Betty stories. 6:45, final reading, stock reports, weather, S. F. produce news, and news. 8, address "Limitations of Co-operative Marketing," Professor Erdman. "A Lesson in English," Wilda Wilson Church; "The Challenge of the Professional Life," Dr. Aurelia Henry Reinhardt; "Chats About New Books," Joseph Henry Jackson. 10, Henry Halstead's orch.

WOS, Jefferson City, Mo., 441 (C. S. T.)—8 P. M., addresses, Mrs. W. W. Graves, "Arrow Rock Tavern"; W. W. Gibbany, statistician, "What Figures Show About Missouri Public Schools"; musical, Mrs. Homer Talbert.

WMAQ, Chicago, 448 (C. S. T.)—4 P. M., mothers in council. 4:30, teachers' council. 6, organ recital. 6:30, Hotel LaSalle orch.

WGR, Buffalo, N. Y., 319 (E. S. T.)—10:45 A. M., talk by Betty Crocker. 4:30 P. M., "Spanish War Veterans," by Leonard S. Spire. 8:15, National Vaudeville. 8:45, "Rural Sanitation," by J. Warren Fortenbaugh. 9, Elm Vocational School recital. 10, Entertainers.

KOB, State College, N. M., 349 (C. S. T.)—7:30 P. M., "Germs," by Dr. McBride; American Association of Engineers program; "Irrigation and Water Development," by General F. H. Robinson.

WFAA, Dallas, Tex., 476 (C. S. T.)—12:30 P. M., address, Hugo Swan. 6:30, Tommy's Texas orch. 8:30, musical recital.

WGN, Chicago, 370 (C. S. T.)—9:31 A. M., time. 9:35, stock and farm quotations. 10, wheat. 10:30, wheat and cable reports. 11, wheat, weather, dairy reports. 11:30, wheat, grain and livestock receipts. 11:56, time. 12, wheat, board of trade. 12:10 P. M., board of trade quotations; hog sales. 12:35, Tea Room orch. 1, wheat. 1:05, Tea Room

orch. 1:35, readings. 1:40, Drake concert ensemble and Blackstone string quintet. 2:30, musical recital. 3, miscellaneous entertainment. 5, stock exchange and market. 5:30, Skeezix time for children. 5:57, time.

Tuesday, February 17

KTHS, Hot Springs, Ark., 375 (C. S. T.)—8:30 P. M., "Versatility Concert," by Charles L. Fisher.

KOA, Denver, Colo., 323 (M. S. T.)—1 P. M., N. Y. stock reports; livestock, fruit and vegetable; weather. 3, half hour matinee. 6, dinner music. 6:30, final reading, stock reports, livestock, vegetables and news.

WEEL, Boston, 303 (E. S. T.)—2 P. M., Paul Davier and orch. 6:30, Big Brother Club. 7:15, Lopez male quartet, Joseph T. Lopez, director. 8, New York program. 8:30, Gold Dust Twins. 9, "Eveready Hour," 10, Goodrich orch.

WOAI, San Antonio, Tex., 385 (C. S. T.)—8:30 P. M., The WOAI Entertainers. 9:30, Jimmy Joy's orch.

WWJ, Detroit, 353 (E. S. T.)—8 A. M., setting-up exercises. 9:30, "Tonight's Dinner" and a special talk. 10:25, weather. 11:55, time. 12:05, Hotel Statler orch. 3:50, weather. 3:55, market. 6, dinner concert. 7, soloists.

WHAS, Louisville, Ky., 400 (C. S. T.)—4 P. M., Louisville Conservatory of Music; police bulletins; weather; Alamo organ; readings; news. 4:55, livestock, produce and grain reports. 5, time. 7:30, concert by Carl Zoeller's Melodists, Carl Zoeller, director; "Billy and Jane"; news; time.

KGO, Oakland, Cal., 300 (P. S. T.)—11:30 A. M., luncheon concert. 1:30 P. M., N. Y. and S. F. stock reports and weather. 4, concert orch. 6:45, stock reports, weather, S. F. produce news, and news. 8, Antonio de Grassi, violinist, assisted by Maxine Cox, pianist; Ye Olde Time Songs. 10, dance music program by Henry Halstead's orch.

WMAQ, Chicago, 448 (C. S. T.)—12 Noon, regular weekly program. 4 P. M., talk by Dr. H. W. Gentles. 4:30, pupils of Maurice Rosenfeld. 5, "The Lullaby Lady," Mrs. Gene Davenport. 6, theatre organ. 6:25, Hotel LaSalle orch. 6:50, "Daddy," 8, Bush Conservatory orch.

WGR, Buffalo, N. Y., 319 (E. S. T.)—11 A. M., Mrs. Katherine N. Britt. 6, Hallpryd string quartet. 8:30, The Gold Dust Twins. 9, The Eveready Hour.

WFAA, Dallas, Tex., 476 (C. S. T.)—12:30 P. M., health talk by Charles E. Osborne. 6:30, Blue Bonnet Serenaders. 8:30, Schubert Choral Club. 11, Dwight Brown in organ recital.

WGN, Chicago, 370 (C. S. T.)—9:31 A. M., time. 9:35, stock and farm quotations. 10, wheat. 10:30, wheat and cable reports. 11, wheat, weather, dairy reports. 11:30, wheat, grain and livestock receipts. 11:56, time. 12, wheat, board of trade. 12:10 P. M., board of trade quotations; hog sales. 12:35, Tea Room orch. 1, wheat. 1:05, Tea Room orch. 1:35, readings. 1:40, Drake concert ensemble and Blackstone string quintet. 2:30, musical recital. 3, miscellaneous entertainment. 5, stock exchange and market. 5:30, Skeezix time for children. 5:57, time.

Wednesday, February 18

WEEL, Boston, 303 (E. S. T.)—2 P. M., dance orch. 6:30, Big Brother club. 7:15, program by churches. 7:45, Harry Einstein. 8, Traveler Shoe orch. 8:30, M. B. Cohan's half-hour musical. 9, Gillette Opera Company. 10, Mary Dyer and William Hughes. 10:30, Jack Griffith and Eddie McGinley. 11, Fenway Theatre organ recital.

WWJ, Detroit, Mich., 353 (E. S. T.)—8 A. M., setting-up exercises. 9:30, "Tonight's Dinner" and a special talk. 9:45, Public Health Service bulletins. 10:25, weather. 11:55, time. 12:05 P. M., Jules Klein's orch. 3, News orch. 3:50, weather. 3:55, market reports. 6, dinner concert. 7, News orch.

WHAS, Louisville, Ky., 400 (C. S. T.)—4 P. M., concert; weather; Alamo organ; "Just Among Home Folks"; readings; news. 4:55, livestock, produce and grain market. 5, time. 7:30, Keith Kannard and his Kentucky Ramblers; "Billy and Jane"; news; time.

KGO, Oakland, Cal., 300 (P. S. T.)—11:30 A. M., luncheon concert. 1:30 P. M., N. Y. and S. F. stock reports and weather. 3, musical program, and speaker from Cora L. Williams Institute. 4, concert orch. 6:45, final reading, stock reports, weather, S. F. produce news, and news.

WOS, Jefferson City, Mo., 441 (C. S. T.)—8 P. M., addresses.

KOA, Denver, Colo., 323 (M. S. T.)—1 P. M., N. Y. stock reports, livestock, fruit and vegetable; weather. 6, stock reports, livestock, vegetables and news. 8, "Madame Butterfly," and a one-act play, "A Trick of the Trade," by the KOA players; KOA orch; solos by Mme. Elsa Weffing-Welker; piano, Florence MacKay, and readings by Ella Blanchette; "Avoiding Risks in Investments," by Claude K. Boetcher.

KTHS, Hot Springs, Ark., 375 (C. S. T.)—5:30 P. M., violin solo by Professor Jack Renard. 9, concert by the Meyer Davis Ensemble. 10, dance frolic by Charles L. Fisher orch.

WMAQ, Chicago, 448 (C. S. T.)—1 P. M., speeches from weekly luncheon. 4, stories from Child Life. 4:30, musical program. 6, organ recital. 6:30, stories for the children. 8, weekly lecture. 8:30, piano concerto, by Mme. Sturkowskyder. 9, WMAQ players.

WGR, Buffalo, N. Y., 319 (E. S. T.)—10:45 A. M., talk by Betty Crocker. 8:15 P. M., Philharmonic concert.

WGN, Chicago, 370 (C. S. T.)—9:31 A. M., time. 9:35, stock and farm quotations. 10, wheat. 10:30, wheat and cable reports. 11, wheat, weather, dairy reports. 11:30, wheat, grain and livestock receipts. 11:56, time. 12, wheat, board of trade. 12:10 P. M., board of trade quotations; hog sales. (Concluded on page 26)

A THOUGHT FOR THE WEEK

THERE are civic, religious, educational business and technical centres in various large American cities. Why not a Radio Centre that shall stand for all the glorious things that have been done in radio and all the still greater achievements that are still to come?

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FEBRUARY 14, 1925

She Wants Cabinet Just the Right Size



"Here's a nice set in a Louis XIV cabinet."

"That's too big. Show me a Louis X."

WEAF Takes Roxy to Task for His "Undignified" Small Talk

AFTER warning S. L. Rothafel (Roxy) that "be a little more dignified" at his Sunday night sessions before the microphone, WEAF, feeling that he wasn't complying, gave him to understand he would have to eliminate the "small talk" if he was to use their station any longer. Roxy announced he had no intention of giving up broadcasting but would make every effort to comply with WEAF's request.

The station is owned and operated by the American Telephone & Telegraph Co., at 195 Broadway, New York City. Roxy and his "gang" broadcast the Capitol Theatre music program for an hour every Sunday night, for which he pays WEAF. The program also is sent out by WEEL, Boston, interconnected.

The program is "indirect advertising," hence WEAF's action took on the aspect of censorship, lest advertising be so done over the air as to bore the audience and kill this source of income.

Roxy's weekly program is one of the most popular radio features in America. WEAF objected, however, to the little intimacies that Roxy indulged himself in

acknowledging receipt of telegrams, flowers, etc.

J. A. Holman, manager of broadcasting at WEAF, said:

"We've asked Roxy time after time to be a little more dignified.

"We're in touch with thousands of fans and we feel that many of them are not a bit interested when Roxy reads telegrams or announces that he is glad to hear how the folks are out in Joplin. And we don't think those who haven't any aunts are particularly interested when Roxy asks 'How's Aunt Matilda?' He has a splendid air personality which we feel could be even greater if he were more dignified."

Roxy said:

"I never did want to read those telegrams, anyway. I'm glad they're out. I think I know what WEAF wants, but it will be hard for me at first. I have every intention to co-operate with the station's officials and I'll try my best to satisfy them."

The subsequent austerity of Roxy's announcing was noticed.

LATEST PATENTS

WASHINGTON.

TWENTY patents on radio inventions were granted by the Patent Office during a week. Six of these patents went to Edward E. Clement of Washington, D. C.; one to Edward E. Clement and Harry F. Lowenstein, of Washington, D. C., and one to Edward E. Clement and James B. Hoge, of Cleveland, Ohio, who assigned them to Edward F. Colladay, of Washington, D. C., on a system for the distribution of broadcast programs on a metering, subscription basis. A brief description of other patents follows:

TABLE for Radio Apparatus (1,522,020) invented by Albert Maurer, of New York, N. Y. A table or cabinet for an antenna of the loop type that may conveniently be rotated to various positions in selecting a station.

AMPLIFIER Circuits (1,521,852) invented by Harold D. Arnold, of Maplewood, N. J., and assigned to Western Electric Co. Relates to electron discharge devices, such as are employed for repeating or amplifying electrical impulses. It relates to the reduction of distortion of the waves transmitted by such a repeater.

RADIOCABINET (1,521,650) invented by Isador Rudolph, of Philadelphia, Pa. Provides a compact cabinet which will house a radio receiving unit, a loud speaking recorder, the batteries for the receiving unit and the loud speaker, and the aerial and which will have the lid of the cabinet so arranged that it may be used to regulate the volume of sound from the loud speaking unit.

MOUNTING FILAMENTS (1,522,286) invented by Henry P. Clausen, of Mamaroneck, N. Y., assigned to Western Electric Co. Improves the manner of mounting the filaments used in these tubes, particularly when the space between electrodes is small.

CONTROLLING ALTERNATING CURRENTS (1,522,221) invented by Ernst F. W. Alexander, of Schenectady, N. Y., and assigned to General Electric Co. Provides an organization whereby the amplitude of alternating current flowing in a circuit or the output of an alternating current generator of comparatively large capacity may be varied between wide limits by variations in a controlling current of comparatively small magnitude.

RADIOSPEAKER (1,522,255) invented by Emil R. Meyer, of Brooklyn, N. Y. This invention relates to instruments for amplifying radio-telephony, and its object is to make intelligible to the human ear the sound waves without the discomfort often experienced from the pressure of the receivers on the ears.

RADIO SYSTEM (No. 1,521,777) invented by David G. McCaa, of Lancaster, Pa., and assigned to Electric Apparatus Co. This invention relates to the reception of high or radio frequency with-

out interference or disturbance due to natural electricity, static, atmospheric, etc.

ELECTRICAL Signaling (1,522,807) invented by Louis Cohen, of Washington, D. C. Eliminates interference and electro-static disturbances in the reception of radio signals, and thus improve the clearness and reliability of radio communication.

METHOD of and System for Selective Energy Transmission (1,522,882) invented by John Hays Hammond, Jr., of Gloucester, Mass. Improvements in utilizing the phenomena of interference of either the wave frequencies or group frequencies of electric waves to produce beats or increased intensity at intervals determined by the relation that the several frequencies bear to each other.

CONTINUOUS Wave-Transmission System (1,523,011) invented by Wm. E. Garity of New York, N. Y., and assigned to De Forest Radio Telephone and Telegraph Co. Provides a continuous wave system wherein the oscillating current is generated by means of one or more oscillations and wherein parasitic oscillations are suppressed, and particularly such oscillations which are harmonics of the main or fundamental frequency.

RECEIVING Circuit (1,523,102) invented by Walter L. Betts, of Brooklyn, N. Y., and assigned to Western Electric Co. Relates to receiving circuits, and has for an object the reduction of noise in a receiving circuit, particularly one in which amplifying means are employed.

SIGNALING System (1,523,111) invented by Harold J. Fisher, of Jersey City, N. J., and assigned to Western Electric Co. Relates to a signaling system, and more particularly to an arrangement in which telegraph signals transmitted as a plurality of modulations of a single carrier wave may be received at a distant station, substantially free from interference due to random disturbances such as static discharges.

HIGH-FREQUENCY Signaling (1,523,139) invented by Eugene Peterson, of New York, N. Y., and assigned to Western Electric Company. Produces efficient and improved modulation of a high-frequency or carrier wave in accordance with a signal or other control wave.

RADIOTELEGRAPH System (1,523,377) invented by John B. Brady of Somerset, Md., and assigned to Morkrum Company of Chicago, Ill. Provides an automatic radio telegraphic communication system wherein a central radio station is arranged to distribute messages to any number of outlying stations and simultaneously, placing the received signals directly in print at each of the several stations with automatic means for controlling the apparatus without the attention of a skilled operator.

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Superdyne Questions

(Continued from page 10)

its drain of one ampere per hour, you may substitute the 5-volt Sodian tube, which draws .25 ampere per hour, the same as the UV201A and C301A. The design of the circuit is such that the grid return of both the radio-frequency and the detector tube must be the same (connected to the common rotor of a split variable condenser). Hence, if a tube functions better as detector with a positive grid return it will not work as well in the detector in this or any other circuit where one is foreclosed from using a positive grid return. If the return were positive for the detector it would have to be so for the RF amplifier tube and no tube that I know of works better with a positive grid return in amplifier circuits.

(2) No. Of course, three controls may be used, by employing two .0005 mfd.

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variable condensers, instead of a dual condenser. One of the objects of designing the 1925 Model Superdyne was to eliminate one control and it is advisable to retain this virtue. If three controls are to be used the circuit would be made and arranged as described in the November 22 and 29 and December 6 issues of RADIO WORLD. The November numbers contained the constructional data for J. E. Anderson's Superdyne, while trouble shooting was discussed in the December 6 issue.

(3) It is all right to use a rheostat for each tube and a jack for each audio stage. For any tubes you do not need a rheostat for each AF tube, as the filament heating is not critical. One rheostat may be used to control all three amplifier tubes, or an Amerite employed. You probably know that in regeneration the filament heating affects the feedback, too, and hence, tickler and voltage operate concomitantly.

(4) I did not try the Cardwell condenser in this circuit, but I assume it would work. I shall get one, however, and try it out for you, so write again and I will report results. I do know, however, that the national condenser will work well in this circuit, with the coils as originally prescribed. The Metric will work, too; if the windings on the coupler and RFT secondaries are increased, to function over the entire belt of broadcast wavelengths in conjunction with a .00035 mfd. variable condenser. That is the capacity of the Metric. But the Bruno condenser was the one used in the laboratory model and should be used, if possible; for then the element of induction differences is eliminated. If directions are followed as published in the January 10, 17, 24 and 31 issues, there will be no misgivings. The circuit is a wonder.

(5) If your preference for 199 tubes is to be construed as referring back to item No. 1, the answer is that you may use 199 tubes in the amplifier stages, but should use the Sodian as detector. See the answer to Wm. E. Barron.

IN the 1925 Model Superdyne I used a .001 Cardwell condenser in place of the one recommended, by taking a hacksaw and splitting the stator in two equal parts of ten plates each. Why wouldn't this work as well?—C. L. Browning, Mgr., Texas Power & Light Co., Cleburne, Tex.

Yes, it would work as well if you made a condenser as well as the one recommended. This, however, is doubtful. The manufacture of a split condenser requires considerable technical skill. If there is more than the merest semblance of variations in capacities as between respective stators and the common rotor then a given dial setting will represent two different wavelengths. In other words, a station would be audible at a given setting of the condenser dial and audible again at another setting rather close to the previous one. Indeed, an audible range of ten to fifteen degrees of the dial for one station, if it is a powerful local, would not

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be uncommon. Surely that is broad tuning with a vengeance. These days rather sharp tuning, with accompanying selectivity, is imperative, with some stations only nine kilocycles apart. You will discover whether you made a success of your hacksaw effort and if you did it was simply wonderful! If you find the two components of your condenser do not tune in step, and you alter the inductance on one or the other secondary in an attempt to make up for this, you may find yourself confronted by the same difficulty on other wavelengths that you cured on a given wavelength.

* * *

I HAVE an Amertran 5-to-1 and an Acme 4½-to-1 audio-frequency transformer. Can I use either one or both of these in the 1925 Model Superdyne? (2) Will UV199 or DV3 tubes work as well in this circuit?—W. Osman, Dora Apt. 15, May, at Banwell Ave., Windsor, Ontario, Can.

Yes, you may use both of these transformers, but for results as guaranteed you should use the transformers recommended. The audio transformers in any circuit are not any part of radio (strictly speaking). As it was impossible to test out all transformers even in this circuit, the ones used in the laboratory model were certified. Put the Amertran in the first stage

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The Superdyne Cycle

"RADIO WORLD'S 1925 MODEL DX SUPERDYNE," by Herman Bernard. Only two controls; 4 tubes. One RF detector, 2AF. Wonderful tone quality, great simplicity, fine DX powers and excellent volume. Issues of January 10, 17 and 24, Trouble-shooting described in January 31 issue. Get all four copies. Play safe.

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"THE 1-TUBE DX SUPERDYNE," by Herman Bernard. One of the best 1-tube DX sets ever published. Fine signal quality. Issue of December 20.

"THE 3-TUBE DX SUPERDYNE," by Herman Bernard, explaining how to add two audio stages, transformer-coupled, to the 1-Tube DX Superdyne. Issue of December 27. Get December 20 issue, too, for full particulars on the detector circuit.

"THE ANDERSON 4-TUBE DX SUPERDYNE," by J. E. Anderson, consulting engineer. One of the most popular and best DX and quality sets using three controls. Issues of November 22 and 29, "Trouble Shooting" in December 6 issue.

Any of the above copies at 15 cents each, or start your subscription with any number. RADIO WORLD, 1493 Broadway, New York City.

Superdyne Parts

- One certified Superdyne coupler (L1L2L3).
- One certified matched radio-frequency transformer (L4L5).
- One Bruno Ultra Vario Condenser, No. 19 (C1).
- Two Federal (Nos. 65 and 65A) or two No. 3-A Stromberg-Carlson audio-frequency transformers.
- Three UV201A tubes.
- One UV200 tube.
- Four Federal sockets.
- One .00025 mfd. Dubilier grid condenser (C2).
- One variable Bradleyleak (R2).
- One Bradleystat (R1).
- One Bradley push-pull battery switch (S).
- One Tri-Jack or single-circuit jack (J).
- One 120-ampere-hour Exide storage battery.
- Two 45-volt Eveready B batteries (No. 1 and No. 2 in Fig. 1).
- One 4½-volt Eveready C battery.
- One 7x24" black Radion panel.
- One mahogany cabinet, size to match.
- Two silver Eureka dial pointers.
- Two ½" diameter hard rubber bushings.
- Ten feet of vari-colored Columbia battery cable.
- One Eby terminal block.

SUPERDYNE PROBLEMS

(Continued from preceding page)

of audio and the Acme in the second. (2) Yes, the UV199 tubes may be used or the DV3. But for the detector it is advisable to use the Sodian in combination with dry-cell operation of the amplifier tubes. Although the Sodian needs five volts at the filament (fed by 6 volts, one of which is lost in the rheostat or Amperite), four series-connected No. 6 dry cells of 1½ volts each will last quite a while, the drain being only .25 ampere. The use of dry cells to operate a Sodian is recommended only as an alternative, where the constructor has no storage battery.

* * *

PLEASE show photographically how the connections are made to a variocoupler to obtain reverse feedback as discussed by Herman Bernard in his articles on the 1925 Model Superdyne.—Al Oberender, 367 Seventy-fifth Street, Brooklyn, N. Y.

If a 180-degree coupler is used, that is, one whose rotor turns completely around the 360 degrees, hence has not end-stop, it makes no difference which if the two ways the connections are made. The 180-degree coupler, so-called because it permits only 180 degrees of electrical variation, though it travels through a 360 degree angle, permits the use of regeneration either by the "aiding" (positive) fashion or the "opposing" (negative) feedback. In Fig 1, binding post No. 1 is connected to aerial, No. 2 to ground, No. 3 to the grid of the RF tube and No. 4 to negative A battery. No. 5 is the post connecting to the beginning of the tickler. If the plate is connected here the starting point for reversely feedback back current would be when the rotor is turned so that the windings of the stator and those of the rotor are in opposite directions. Post No. 6 would be connected to B plus amplifier. If a 90-degree coupler is used, therefore, no reversal of the direction of the windings is possible by turning the rotor, hence the plate of the RF tube would go to Post No. 6, the END of the winding tickler winding, while the BEGINNING of the tickler goes to the B plus high voltage. In most couplers constructed for slanting panel mounting and provided with binding posts, the beginning of the

tickler coil is connected to that post which is higher up from the baseboard when the coil is properly mounted.

* * *

SUPERDYNE EDITOR:

I HAVE built the 1925 Model 4-tube DX Superdyne and find it the best set I ever had, which is saying something, as I have built close to 200 sets.

WM. MITZEL,
1310 E. Price St.,
Philadelphia, Pa.

* * *

SUPERDYNE EDITOR:

PLEASE send me 25 name plates as I want to give them to 25 boys that are building your 1925 Model Superdyne. Also send me one and one copy of RADIO WORLD, January 10, as I want to get the rest of the article. I am going to copy it in a loose-leaf notebook.

EDWARD E. SMITH,
1 Marchant Street,
Green, S. C.

* * *

SUPERDYNE EDITOR:

YOUR carefully designed Superdyne certainly looks rotten. Is anything mounted straight? The baseboard is warped. What's the matter with the battery strip? Where did you get that (Concluded on next page)

THE NOLTE TRAP FOR INTERFERENCE



The remarkable efficiency obtained with this unit is due to the patented filter coil. Four panel connections permit all possible wave trap connections. This is absolutely essential for different types of sets. The best connection for any set to entirely eliminate interference may be found in a few minutes by the most inexperienced novice.

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One Superdyne Coupler.....	} \$7.50	One Bradleystat	\$1.65
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COMPLETE 1924 INDEX OF RADIO WORLD, appeared in RADIO WORLD dated Oct. 18, 1924, and Jan. 10, 1925. 15c per copy. RADIO WORLD, 1493 B'way, N. Y.

THE SUPERDYNE

(Concluded from preceding page)

outfit? Surely you should be ashamed! This is 1925. Don't spoil your paper with bunk.

FRED C. KRAFT,
So. Euclid, O.

Superdyne Editor:

I AM a constant reader of RADIO WORLD and have constructed several Superdynes—and now the 1925 model. This set is the best I ever built. I have built

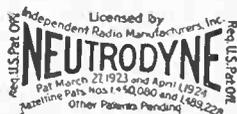


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RESULTS EDITOR:

I HAVE constructed Bernard's 3-tube Superdyne, described in RADIO WORLD, Dec. 27. I used a Remler .0005 condenser and a cheap one of 43 plates which I cut down to 23 plates. I rewound a Simplex DX tuner, putting the primary (7T) on top of secondary (50J) and cutting tickler down to 36T. I used three 301A tubes. I constructed the set hurriedly from a 3-tube regenerative and the wiring looks

RESULTS

WHAT Results Did You Obtain from Constructing Sets or Parts Following Data Published in RADIO WORLD? Write to Results Editor, RADIO WORLD, 1493 Broadway, New York City.

company, as my dials are not in step and the panel looks like a navy target after a good score, but to tell you the truth, I don't see how I can spare it long enough to "fix" her up.
I certainly thank you and Mr. Bernard for bringing this circuit to my attention.

CHESTER B. KNOX,
Santa Paula, Cal.

P. S.—Have listened to all the locals and have scouted around in the woods between here and Chicago with this "bunch of junk" and have yet to hear any distortion.



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32 Cells Lasts Indefinitely—Pays for Itself

Economy and performance unheard of before. Recharged at a negligible cost. Approved and listed as Standard by leading Radio Authorities, including Pop. Radio Laboratories, Pop. Sci. Inst. Sta. Wards, Radio News Lab., Leaf, Inc. and other important institutions. Equipped with Solid Rubber Case, an insurance against acid and leakage. Extra heavy glass jars. Heavy rugged plates. Order yours today!

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7x18x7	3.82	6.75
7x24x7	5.25	9.00
7x26x7	6.05	10.00
7x28x8	7.25	11.50
7x27x9	7.25	12.50
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like a Minnesota telephone system after a blizzard. You have lauded the tonal quality of the Superdyne but have never said one-half enough. Its tone is exquisite. There are too many persons playing with radio who know or care nothing for quality, nor who can appreciate the rare tone quality of this circuit. There is something about the Superdyne which prevents the volume breaking through on the frequencies around middle C, with the result that the frequencies are spread evenly over the scale, and I am bringing in bass notes with all their heavy vibrations and overtones until I wonder how so small an apparatus can produce such deep tones.

There is nothing in its output like a phonograph or horn quality.

I am 50 miles from KFI (on 1,500 watts) and she snaps by like a box on the ear, so you see it is selective. Would certainly recommend this circuit to music lovers. It will be a rare reward, musically speaking, for those sufferers who have finer musical sensibilities but never were able to endure the quality heretofore obtained.

Now I have to "dress" this set up for

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Programs

(Concluded from page 19)

12:35, Tea Room orch. 1, wheat. 1:05, Tea Room orch. 1:35, readings. 1:40, Drake concert ensemble and Blackstone string quintet. 2:30, musical recital. 3, miscellaneous entertainment. 5, stock exchange and market. 5:30, Skeezix time for children. 5:57, time.

Thursday, February 19

KTHS, Hot Springs, Ark., 375 (C. S. T.)—8:30 P. M., special concert and frolic by the Royal Peacock orch. of Indianapolis, from the Rainbow Gardens.

KOA, Denver, Colo., 323 (M. S. T.)—1 P. M., N. Y. stock reports, livestock, fruit and vegetable; weather. 3, half hour matinee. 6, final reading, stock, livestock, vegetables and news.

WMAQ, Chicago, 448 (C. S. T.)—4 P. M., household hour. 4:30, women's clubs. 6, organ recital. 6:25, Hotel LaSalle orch. 6:50, "Daddy." 8, to be announced. 8:15, Boy Scout hour. 8:35, to be announced. 8:50, University of Chicago lecture. 9:15, Mrs. Louise H. Crum, soprano.

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WEEI, Boston, 303 (E. S. T.)—1 P. M., assembly luncheon. 2, Eleanor Cass, "Personnel and Management of Summer Camps." 2:15, dance orch. 6:30, Big Brother club. 7:15, Alpha ladies trio. 7:55, Pathe News. 8, New York program. 9:30, Jimmie Joy's orch.

WWJ, Detroit, 353 (E. S. T.)—8 A. M., setting-up exercises. 9:30, "Tonight's Dinner" and a special talk. 9:45, Public Health Service bulletins and talks. 10:25, weather. 11:55, time. 12:05 P. M., Jules Klein's orch. 3, News orch. 3:50, weather. 3:55, market reports. 6, dinner concert. 7, The Detroit News orch. 10, dance music by Jean Goldkette's orch. 11:30, News orch.

WHAS, Louisville, Ky., 400 (C. S. T.)—4 to 5 P. M., Louisville Conservatory of Music; police bulletins; weather; Alamo organ; readings; news. 4:55, livestock, produce and grain. 5, time. 7:30, concert by the Happy Hoosier Harmonists; four-minute digest; four-minute welfare talk; news; time.

KGO, Oakland, Cal., 300 (P. S. T.)—10:40 A. M., classroom instruction. 11:30, luncheon concert. 1:30 P. M., N. Y. and S. F. stock reports and weather. 4, concert orch. 6:45, final reading, stock reports, weather, S. F. produce news, and news. 8, address, Paul Shoup; Chas. F. Bulotti, tenor; Austin Sperry, baritone; Uda Waldrop, pianist. 10, Henry Halstead's orch. FEB 18

WGN, Chicago, 370 (C. S. T.)—9:31 A. M., time. 9:35, stock and farm quotations. 10, wheat. 10:30, wheat and cable reports. 11, wheat, weather, dairy reports. 11:30, wheat, grain and livestock receipts. 11:56, time. 12, wheat, board of trade. 12:10 P. M., board of trade quotations; hog sales. 12:35, Tea Room orch. 1, wheat. 1:05, Tea Room orch. 1:35, readings. 1:40, Drake concert ensemble and Blackstone string quintet. 2:30, musical recital. 3, miscellaneous entertainment. 5, stock exchange and market. 5:30, Skeezix time for children. 5:57, time.

Friday, February 20

WGBS, New York City, 316 (E. S. T.)—6:30 P. M., Herman Bernard, managing editor of RADIO WORLD, "Radio Hookups, Questions and Answers."

KOA, Denver, Colo., 323 (M. S. T.)—1 P. M., N. Y. stock reports, livestock, fruit and vegetable; weather. 3 half hour matinee. 6, stock reports, livestock, vegetables and late news. 6:40, Book of Knowledge program. 8, the oratorio "St. Paul," by the quartet, choir and orchestra of Methodist Episcopal church.

WEEI, Boston, 303 (E. S. T.)—2 P. M., dance orch. 6:30, Big Brother club. 7:30, Charles W. Williams, tenor. 8, Neapolitan Ice Cream Co. program. 8:30, Gilchrist quartet. 9, All Saints choir, Geo. C. Phelps, organist and director.

WWJ, Detroit, 353 (E. S. T.)—8 A. M., setting-up exercises. 9:30, "Tonight's Dinner" and a special talk. 9:45, Public Health Service bulletin. 10:25, weather. 11:55, time. 12:05 P. M., Jules Klein's orch. 3, News orch. 3:50, weather. 3:55, market reports. 6, dinner concert. 7, News orch.; Anne Campbell, poet.

WHAS, Louisville, Ky., 400 (C. S. T.)—4 P. M., Louisville Conservatory of Music; police bulletins; weather; Alamo organ; "Just Among Home Folks"; readings; late important news bulletins. 4:55, local livestock, produce and grain market reports. 5, official Central Standard time announced. 7:30, Shawnee Melody Makers; contraalto solos, Mrs. Emont Nold Henderson; news; time.

KGO, Oakland, Cal., 300 (P. S. T.)—11:30 A. M., luncheon concert. 1:30 P. M., N. Y. and S. F. stock reports and weather. 3, studio musical program and speaker. 4, concert orch. 6:45, stock reports, weather, S. F. produce news, and news. **WOS, Jefferson City, Mo., 441 (C. S. T.)**—8 P. M., address, John Ashton. FEB 19

KOB, State College, N. M., 349 (C. S. T.)—7:30 P. M., readings by Mrs. Hugh M. Milton; popular science course.

WFAA, Dallas, Tex., 476 (C. S. T.)—12:30 P. M., Witt McMurray; humor, pathos and wisdom. 6:30, Jack A. Davis and his orch. 8:30, A. & M.

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College of Texas. 11, Frank Davenport and his orch.

WMAQ, Chicago, 448 (C. S. T.)—12:25 P. M., Y. M. C. A. forum. 4:30, pupils of conservatory. 5, "The Lullaby Lady." 6, organ recital. 6:30, Hotel LaSalle orch. 8, Weekly Wide-Awake club. 8:30, musical geography. 9:15, Hyde Park Treble Glee club.

WGR, Buffalo, N. Y., 319 (E. S. T.)—10:45 A. M., talk by Betty Crocker. 8:30 P. M., recital by John F. Gunderman, Jr. 9, J. L. Knell's dance orch. 10, Larkin Company's string orch.

WGN, Chicago, 370 (C. S. T.)—9:31 A. M., time. 9:35, stock and farm quotations. 10, wheat. 10:30, wheat and cable reports. 11, wheat, weather, dairy reports. 11:30, wheat, grain and livestock receipts. 11:56, time. 12, wheat, board of trade. 12:10 P. M., board of trade quotations; hog sales. 12:35, Tea Room orch. 1, wheat. 1:05, Tea Room orch. 1:35, readings. 1:40, Drake concert ensemble and Blackstone string quintet. 2:30, musical recital. 3, miscellaneous entertainment. 5, stock exchange and market. 5:30, Skeezix time for children. 5:57, time.

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Meters	Kilocycles	Call	Location
280.2	1070	WNAC	Boston
282.8	1060	WOAN	Lawrenceburg, Tenn.
285.5	1050	WREO	Lansing, Mich.
285.5	1050	WEMC	Berrien Springs, Mich.
285.5	1050	WKAR	East Lansing, Mich.
288.3	1040	KFKX	Hastings, Nebr.
291.1	1030	Reserved	
293.9	1020	WEOA	Columbus, O.
293.9	1020	WBAV	Columbus, O.
296.9	1010	KFRU	Bristow, Okla.
299.8	1000	WPG	Atlantic City, N. J.
302.8	990	WTAS	Elgin, Ill.
302.8	990	WJJD	Mooseheart, Ill.
305.9	980	WJAR	Providence, R. I.
309.1	970	KDKA	East Pittsburgh, Pa.
312.3	960	Reserved	
315.6	950	WAHG	New York City.
315.6	950	WGBS	New York City.
315.6	950	KFDM	Beaumont, Texas
319.0	940	WGR	Buffalo, N. Y.
322.4	930	KOA	Denver, Colo.
325.9	920	WMH	Cincinnati, O.
325.9	920	WSAI	Cincinnati, O.
329.5	910	Reserved	
333.1	900	WBZ	Springfield, Mass.
336.9	890	WSAC	Clemson College, S.C.
336.9	890	KFMX	Northfield, Minn.
336.9	890	WCAL	Northfield, Minn.
340.7	880	WKAQ	San Juan, P. R.
340.7	880	KSAC	Manhattan, Kans.
344.6	870	WLS	Chicago, Ill.
344.6	870	WCBD	Zion, Ill.
348.6	860	KOB	State College, N. Mex.
348.6	860	WTIC	Hartford, Conn.
352.7	850	WWJ	Detroit, Mich.
352.7	850	WJAD	Waco, Tex.
356.9	840	Reserved	
361.2	830	WHN	New York City
365.6	820	WHB	Kansas City, Mo.
365.6	820	WDAF	Kansas City, Mo.
370.2	810	WEBH	Chicago, Ill.
370.2	810	WGN	Chicago, Ill.
374.8	800	KTHS	Hot Springs, Ark.

posing as an agent of the Bureau of Pensions of the Interior Department, and defrauding old soldiers. The Commissioner of Pensions requested the WHK broadcasting station at Cleveland, Ohio, and WLW station, at Cincinnati, to broadcast a message giving his identity and warning veterans against being victimized. His detection and arrest is also requested in the message.

The imposter is selling spectacles on which he places a value of \$40 a pair, but which he offers for sale to pensioners at \$22 a pair, on the understanding that he will recommend and secure an increase

in pension for the pensioner. He has succeeded in defrauding many old soldiers, practically all of them veterans of the Civil War, and the Bureau has so far been unable to secure his arrest. He has previously operated in Indiana, and he was last reported in the vicinity of Mechanicsburg, Champaign County, Ohio, apparently traveling eastward.

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100 Cards, Mahogany Finish or Oak Cabinet, and Index Dividers. A Useful Accessory to Any Set. Give Name of Set and Sketch of Dial Arrangement. Postpaid on Receipt of Cash or Money Order. Dealers Write for Terms.

S. T. ASTON & SON
114 WORTH STREET NEW YORK CITY

EFFECT OF ECLIPSE ON RADIO described in issues of Feb. 7 and 14. Send 3c, get both. RADIO WORLD, 1493 Broadway, New York City.

THE Summit TOROIDAL

USED in exactly the same manner as the open radio frequency coils—they are self balanced and self neutralized. They have no stray fields nor leakages, nor can they feed back, thus assuring the radio set builder of correct operation without howling or squealing.

One builder using these Transformers in the SUMMIT circuit received 54 stations in two nights, traveling West to Denver and South to Mexico City. This circuit with instructions for building enclosed with each set of Transformers.

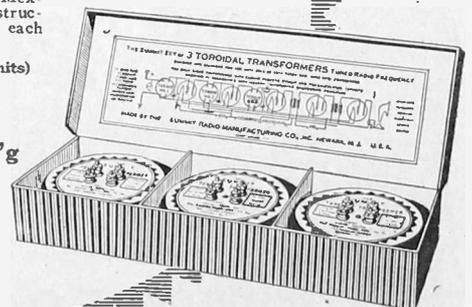
List Price (Set of 3 mated units)
\$10.00

Distributors and Jobbers
Wanted

**Summit Radio M'f'g
Co., Inc.**

Dept. 27
481 Broad Street
Newark, N. J.

RADIO FREQUENCY TRANSFORMER



Pat. Applied For

Complete Index for January

Contents of Radio World, Issues of Jan. 3, 10, 17, 24 and 31, 1925

JANUARY 3

Making Your Set Efficient, by Neal Fitzalan. How to Care for Batteries. What grid bias voltage to use for all tubes shown in table form, for inclusion of C batteries, with given plate voltages.

Sidelights on the Superdyne, by Brewster Lee. Circuit diagram of a 2-tube Superdyne (no audio) and photos of efficient panel layout and assembly plan.

Curves for the Anderson Superdyne, by J. E. Anderson, Consulting Engineer. Wavelength plotted against dial settings.

How to Add a Stage of Tuned RF to a Regenerative Set, by Chas. H. M. White, Consulting Engineer. Circuit diagram.

What I Think of Radio, by the Rev. Dr. S. Parkes Cadman.

Bad Publicity Given as Reason for Radio's Retardation, in letter to Survey Editor, as part of RADIO WORLD'S Survey to determine why radio, the world's greatest invention, ranks only 32d as an industry.

New list of names and addresses of readers desiring radio literature from manufacturers and dealers; new members of the American Broadcast Club listed; other names and addresses of radio fans and home constructors in Radio University Dept.

JANUARY 10

RADIO WORLD'S 1925 Model 4-Tube DX

"Morsing Bus-Bar Union"

Assemble Round or Square Bus Bar and Solder Three Wires at a Time.



Quick Assembling. Repairs Can Be Made Without Taking Set Apart.

Enough for one set, 25c
No. 1 for 14; No. 2 for 12 wire.
Ten dozen for \$1.00.

Newark Watch Case Material Co.
15 Ward Street Newark, N. J.

DISTRIBUTORS WANTED

ONLY THREE TUBES

and it is the equal of any five-tube set ever built. It has selectivity and volume equal to any Super-heterodyne or Neutrodyne.

It has the purity and quality of tone of the crystal set.

It has the simplicity of control of the single-circuit set.

It has brought in Honolulu, Paris, London and other foreign stations on a loud speaker.

It gets distant stations while a 500-watt station only three blocks away is broadcasting.

It has only two controls and can be logged.

It is not a reflex; it is the result of years of careful scientific research and experiment.

Any novice can build one successfully from our diagrams with complete instructions and special coil.

PRICES

Diagram, instructions and coil, \$5.00

Three-tube instrument ready to use, . . . 50.00

One-tube instrument ready to use, 18.50

Build or buy one of these wonderfully sensitive instruments and you will want no other.

All goods shipped prepaid.

S. A. TWITCHELL CO.

1930 WESTERN AVE. MINNEAPOLIS, MINN.

Superdyne, by Herman Bernard. Circuit diagram and panel and assembly layout. (Part I of 3-part constructional article).

A Low-Loss DX Inductance, by Herbert E. Hayden. How to make a basket-weave coil fully described. Templet for drilling; also nine photographs by the author.

Phones, Aerials and Diagram reading discussed for the Novice, by Abner J. Gelula. (The Radio Primer).

Hookups Worth Loss of Sleep. (1) The 3-Circuit Tuner You Can Log, 3 tubes, including 2 audio, the circuit described by Herman Bernard in the Nov. 8 issue; (2) The 1-Tube Reflexed Superdyne, crystal detector, the circuit described by Herman Bernard in the Dec. 6 issue; (3) Wiring diagram of two stages of AF, with C battery connections plainly shown; (4) A 2-Tube Reflex, two radio, two audio, crystal detector, as described in the Nov. 15 issue; (5) The 3-Circuit Tuner, with Ticker Feedback, 1 tube.

Radio Gives More Per Dollar Than Any Other Product; editorial apropos of RADIO WORLD'S Survey.

New list of names and addresses of readers desiring radio literature from manufacturers and dealers.

Index to RADIO WORLD, issues of Oct. 4 to Dec. 27, inclusive.

JANUARY 17

A \$25 1-Tube DX Set, by Abner J. Gelula. The Coils for RADIO WORLD'S 1925 Model 4-tube DX Superdyne, by Herman Bernard. Graph showing wavelength plotted against dial settings of the only variable condenser used in the set; shows tuning from 180 meters to 555 meters, or 26 meters in excess of the wavelength band. Picture diagram of the circuit wiring; also picture diagrams of filament, C battery and grid leak wiring. (Part II of 3-part article).

Why the Rheostat Should Go in the Negative Lead, by Lieut. Peter V. O'Rourke. Correct placement of audio transformers, use of bus bar, etc., discussed for the novice (The Radio Primer).

A Low-loss Cutout Coil of Great Mechanical Strength, by Herbert E. Hayden. Illustrated with ten photographs by the author. Carboard is used as tubing and 80 per cent of the form cut away.

Dealers and Squealers Blamed for Radio Retardation. Letters from readers discussing "What's the Matter With Radio?" as part of RADIO WORLD'S survey.

JANUARY 24

New list of names and addresses of readers desiring radio literature from manufacturers and dealers; other names and addresses in Radio University Department.

A 3-Circuit Tuner You Can Log, by Lieut. Peter V. O'Rourke. A \$30 set that gets DX clearly. Specially written for the novice who wants a 1-tube DX set. Schematic wiring diagram, also picture diagram of wiring, baseboard and panel layout.

A Selective \$15 Crystal Set, by Brewster Lee. Variometer and variocoupler used. No variable condenser.

The Completion of RADIO WORLD'S 1925 Model 4-Tube DX Superdyne, by Herman Bernard. Superdyne theory discussed, illustrated. Index to illustrations published with the two previous instalments. (Conclusion of 3-part article).

A Variometer-Tuned Reflex, by Abner J. Gelula. Three tubes. One RF, tube detector, two AF, one reflexed.

New list of names and addresses of those desiring radio literature from manufacturers and dealers; other names and addresses in Radio University Department, in list of solvers of the Rebus and new members of A. B. C.

JANUARY 31

A Regenerative Neutrodyne, by Abner J. Gelula. Tuned detector plate. Only three controls, as one condenser tunes both RF stages. Five tubes. Two RF, detector and two AF. Wiring

For Maximum Amplification Without Distortion and Tube Noises

use the well known

Como Duplex Transformers

Push-Pull

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448 Tremont Street

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Best R. F. 5 Tube Hookup

Uses same panel, same layout, same (but fewer) parts than Neutrodyne. Gives selectivity and pleasing volume from Coast to Coast. Hundreds have changed their Neuts to this. Only extra part, 22 feet real gold sheathed bus wire, lithographed circuit and complete data, prepaid, for \$5.00. Nothing else to buy. Satisfaction guaranteed. Data about circuit—10c. 48 page parts catalog for stamp. We accept stamps same as cash.

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These high grade tubes are made in two popular sizes only, and are guaranteed Brand New, quiet in operation and highly sensitive.

No. P. V. 301A Detector and Amplifier Tube with standard base, Only \$2.95

No. P. V. 299 Detector and Amplifier Tube will fit all 199 sockets, Only \$2.95.

Just order quantity wanted by number and pay postman our low price plus postage upon arrival. Or if you prefer send \$2.95 for each tube and we ship prepaid. Prompt service and satisfaction guaranteed.

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SIMPLY TO INTRODUCE THEM



Type M12, 199A

Type M199

Type M200, Type M201A

LIST, \$4.00

NET, 2.00

All Tubes Guaranteed.

Agents and Dealers Wanted.

RADIOTUBE COMPANY

903 BROAD STREET

NEWARK, N. J.



INDEX

(Concluded from preceding page)

shown in schematic diagram, also in picture diagram.

Three Non-Radiating Circuits. (1) one RF, crystal detector and two AF; (2) one RF ahead of tube detector, with two AF, four tubes; (3) a crystal set, two variable condensers and a variocoupler.

A Transcontinental 2-Tube Reflex. One RF, tube detector and one reflexed AF stage. For earphone use only. Special coils, home-made, with astatic windings.

Superdyne Trouble-Shooting, by Herman Bernard. Valuable pointers regarding the 1925 Model Superdyne.

New list of names and addresses of readers desiring radio literature from manufacturers and dealers; names and addresses of new A. B. C. members; readers desiring Superdyne nameplate.

An Experimental Reflex, by Lieut. Peter V. O'Rourke. Two RF, tube detector and two reflexed AF stages, with discussion of problems to solve in this difficult circuit.

COILS

A Low-Loss DX Inductance, by Herbert E. Hayden. How to make a basket-weave coil fully described. Templet for drilling; also nine photographs by the author. Jan. 10.

A Low-Loss Cutout Coil of Great Mechanical Strength, by Herbert E. Hayden. Illustrated with ten photographs by the author. Cardboard is used as tubing and 80 per cent of the form cut away. Jan. 17.

INDEX

Index to RADIO WORLD, issues of Oct. 4 to Dec. 27, inclusive, appeared on page 30 of the Jan. 10 issue.

LISTS

New lists of names and addresses of readers desiring radio literature from manufacturers and

Make BIG MONEY! IN RADIO

We Need Men—Can You Qualify?

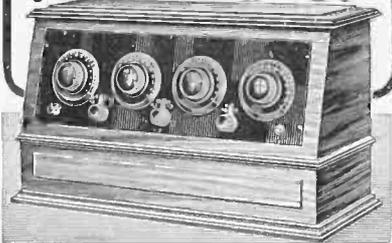
Ozarka representatives make real money because they give real values and deliver a real service. For instance, there is a 4-tube Ozarka Instrument for loud speaker operation, giving wide range of reception at \$39.50. Our men demonstrate Ozarka Instruments and Install. The Instrument makes the sale easy by its performance. We train you to know radio and our methods, make you worthy to wear the Ozarka button as our accredited representative. Previous experience is not necessary. In fact we prefer to do our own educating. If you have a clean record, are industrious, and have saved up a little cash, here's a real opportunity, if you can qualify for an exclusive territory. We already have 2247 representatives. Territory going fast.

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99% Guaranteed by refund of 5¢ each
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SUPERDYNE THEORY AND TUNING discussed by Herman Bernard in the Feb. 7 issue of RADIO WORLD. Send 15c for a copy or start subscription with that number. RADIO WORLD, 1493 Broadway, New York City.

Pleasant Insurance



BURGLAR—Gosh, business is all goin' t' the dawgs since this radio stuff got popular. It's 3 a. m. and there ain't nobody in bed yet.

dealers; new members of the American Broadcast Club listed; other names and addresses of radio fans and home constructors in Radio University Dept. and elsewhere. Jan. 3, 10, 17, 24 and 31.

NEUTRODYNE

A Regenerative Neutrodyne, by Abner J. Gelula. Tuned detector plate. Only three controls, as one condenser tunes both RF stages. Five tubes. Two RF, detector and two AF. Wiring shown in schematic diagram, also in picture diagram. Jan. 31.

SUPERDYNE

RADIO WORLD'S 1925 Model 4-Tube DX Superdyne, by Herman Bernard. Circuit diagram and panel and assembly layout. Part I, Jan. 10.

The Coils for Radio World's 1925 Model 4-Tube DX Superdyne, by Herman Bernard. Graph showing wavelength plotted against dial settings of the only variable condenser used in the set; shows tuning from 180 meters to 555 meters, or 26 meters in excess of the wavelength band. Picture diagram of the circuit wiring; also picture diagrams of filament, C battery and grid leak wiring. Part II, Jan. 17.

The Completion of RADIO WORLD'S 1925 Model 4-Tube DX Superdyne, by Herman Bernard. Superdyne theory discussed, illustrated. Index to illustrations published with the two previous instalments. Part III, conclusion, Jan. 24.

Superdyne Trouble-Shooting, by Herman Bernard. Valuable pointers regarding the 1925 Model Superdynes, Jan. 31.

Sidelight on the Superdyne, by Brewster Lee. Circuit diagram of a 2-tube Superdyne (no audio) and photos of efficient panel layout and assembly plan. Jan. 3.



Bracket mounting type, complete, \$4.50.

One Pull on the Jones MULTI-PLUG instantly disconnects antenna, ground, A and B batteries from your set. One push reconnects. And it can't be plugged in wrong! Eight foot cable permits placing batteries out of way—in basement, closet or elsewhere. Makes your set portable. All leads plainly coded.

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MAHOGANITE and BLACK RADION PANELS

DIALS, KNOBS, TUBING, SOCKETS, RADION LOUD SPEAKER HORNS, ETC.

"THAT SPECIAL SIZE" FOR YOUR PHONOGRAPH, PORTABLE OR SUPER

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CONNOR "B" BATTERY

The thriftiest outfit yet

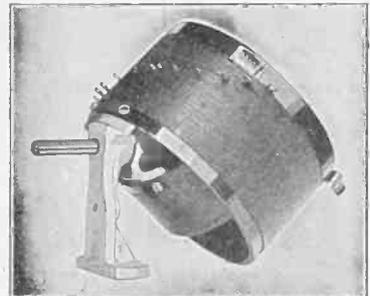
100 volt unit, 2200 M. A. hours, lead plates, beautiful mahogany cabinet, 14x7x7", shipped dry anywhere in U. S. prepaid, \$21.00; high polished cabinet, \$23.00; direct or alternating current chargers for B batteries, \$3.75 without attachments, and \$5.25 with attachments. Full set of instruments with battery and charger. Half cash with order, balance C. O. D. 5% discount for cash with order. Get this outfit and stop annoyance of having to buy dry cells every few months and the lugging of battery to service station with its cost.

Connor Battery Company

Van Wyck Boulevard, Richmond Hill, N. Y.

TRI-DOT

180' UNDERCUT STATOR



THE TUNER THAT MADE THE
DX SPECIAL SET
FAMOUS ALMOST OVERNIGHT

THIS SPECIAL TUNER ENABLED THE manufacturers of the DX Special Set to guarantee two thousand miles on their sets.

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A Tap **COIL** Soldering

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RADIO WORLD
1493 BROADWAY NEW YORK CITY

Class B Assignments Made; Problem Still Unsolved

WASHINGTON.

THE Department of Commerce has finally decided on a scheme for the allocation of wavelengths to class B broadcasting stations which, it is hoped, will provide the maximum of channels with minimum interference. Under the new allocation no general rule has been followed. The allocation of wavelength to each station is based almost entirely

on tests which tend to show that satisfactory service will result. Under the plan the wavelengths of many of the class B stations are changed. The new plan does not provide new channels. There are 47 channels under the new plan. With each station dividing time two ways, 94 stations can be accommodated. More than 105 stations are in sight.

"The class B band extends from 280 to 545," said Chief Radio Supervisor Terrell. "We cannot go above 545 because of interference from code. We can place only so many stations between 280 and 545. Therefore we must go down."

The difficulty about going down is that many receivers will not tune in wavelengths below 250 meters. About 400 class A stations must be crowded in between 200 and 280 degrees. If the class B stations could be placed as low as 235 and the class A below that, the solution of the problem would be easy.

"We have no idea what we are going to do," says Mr. Terrell. "The only

course now is to do the best we can with what channels we have and hope for less stations or more channels in the future."

[See page 27 for list of Class B stations, with new wavelengths, where changes have been made.]

REPLACES AERIAL OR LOOP

THE Antennaphone has registered a hit in the favor of fans who are using it. Many say it is a boon in wintery weather, saving them the risk of trying to clear outside aerials of snow and ice. Others report improved reception and greater selectivity with freedom from static and interference from squealing sets. The Antennaphone is placed under the telephone and not in any way attached to it. It gives a pure, full tone and volume may be increased or reduced by moving the telephone slightly off or on.

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"STANDARD" is the fastest growing Radio Chain Store Organization and one of the oldest and most reliable.
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Our catalog in your home is as good as a standard link in your town. Reference: Dun or Bradstreets.

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SAVE \$2.25

ON COST OF NEW TUBES BY HAVING YOUR OLD TUBES REBUILT AT \$1.75 EACH.

Guaranteed equal to new. Send us your tubes by parcel post. We return them parcel post, C.O.D., and try to maintain 24-hour service.

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TUBES at \$1.75 Each

A REAL AUDIO AMPLIFIER!

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Will positively increase the range and volume of any tube or crystal set three or four times. Inaudible signals built up to speaker volume. Complete as Illustrated, including tube. Best parts and workmanship. Satisfaction absolutely guaranteed.

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\$2.50

CANADA 35c EXTRA
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TRI-TUNER

Pre-paid **\$3.00**

This very efficient tuner has been tested and approved by the Radio World. It is very selective, therefore an excellent coil for those who seek distant stations.

The TRI-TUNER has many improvements over other coils of distinct advantage to the Home Set Builder. These include the Fanstock solderless clips, pig-tail connections, genuine Litz wire wound on natural Bakelite. Satisfaction with this tuner is guaranteed.

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Guaranteed Radio Products

HOW to build a simple current supply unit, by Brainard Foote. You can light your amplifier tubes at a cost of only a few cents a year. Complete construction article and diagrams, with photo of completed unit, in Radio World, issue of Aug. 16. Send 15 cents for a copy or start your subscription with that number. RADIO WORLD.

RADIO WORLD'S QUICK-ACTION CLASSIFIED ADS.

10 CENTS A WORD. 10 WORDS MINIMUM

HAVE YOU TRIED that Variometer tuned reflex described in Jan. 24 issue of RADIO WORLD? To introduce the Superior Mahogany low-loss adjustable bearing variometer, we are offering them for a limited period to the public at distributor's prices, namely, \$1.90 each postpaid, or three for \$5.25. Money back guarantee. Order NOW. Shipley & Co., 25 S. 19th Street, Philadelphia, Pa.

EPILEPTICS—At last a treatment which stops seizures from first day. No Bromides, Narcotics. Guaranteed. Information free. Hunter Laboratories, 207-KB Main, Little Rock, Ark.

AUDIO AMPLIFIERS—1-stage, \$8. 2-stage, \$11. Cabinets, \$3 and \$4, respectively. Nangles, 501 Washington Blvd., Oak Park, Illinois.

AGENTS—Write for free samples. Sell Madison "Better-Made" Shirts for large Manufacturer direct to wearer. No capital or experience required. Many earn \$100 weekly and bonus. MADISON MILLS, 564 Broadway, New York.

DINING & SLEEPING CAR CONDUCTORS (white), Exp. unnecessary. We train you. Send for book of Rules and application. Supt. Railway Exchange, Sta. C, Los Angeles.

LOW-LOSS INDUCTANCE FORMS—Linen Impregnated Bakelite. 50c each. The Kehler Radio Laboratories, Abilene, Kansas.

158 GENUINE FOREIGN STAMPS, Mexico War issues. Venezuela, Salvador and India Service. Guatemala, China, etc., only 5c. Finest approval sheets 50 to 60%. Agents wanted. Big 72-p. Lists Free. We Buy Stamps. Established 20 years. Hussman Stamp Co., Dept. 155, St. Louis, Mo.

PATENTS—Write for free Guide Books and Record of Invention Blank before disclosing inventions. Send model or sketch of your invention for our prompt Examination and Instruction. No charge for the above information. Radio, Electrical, Chemical, Mechanical and Trademark experts. Victor J. Evans & Co., 294 Ninth, Washington, D. C.

IF YOU WANT \$96 A WEEK, a big permanent business, an honest company and an Essex coach without a cent of expense, write now. I need 100 men and women quick to take orders for Jennings hosiery. Don't delay. Send post card now for details. Jennings Mfg. Co., Dept., N-31, Dayton, Ohio.

LOUDSPEAKER ON TWO TUBES accomplished by the Bluebird Reflex, described by Lieut. Peter V. O'Rourke in the Feb. 7 issue of RADIO WORLD. Picture diagram, also schematic diagram, panel and assembly plans. An inexpensive set to make and operate. One stage of tuned RF, crystal detector, one reflexed audio stage and one free audio stage. Selective and good for DX. Send 15c for a copy or start your subscription with the February 7 issue. RADIO WORLD, 1493 Broadway, New York City.

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Four and Five Tube Sets
No set of an equal number of tubes will do more, yet the price is very moderate.
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970 Radio Dealers in Mexico	Per List	10.00
1808 Radio Mfrs.	Per List	15.00
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1125 Radio Jobbers, rated \$5,000 and up	Per List	15.00
714 Radio Jobbers, rated \$50,000 and up	Per List	10.00
597 Radio Mfrs. making complete sets		5.00
128 Radio Battery Mfrs.		2.50
126 Radio Cabinet Mfrs.		2.50
60 Crystal Mounters for Wireless apparatus		2.50
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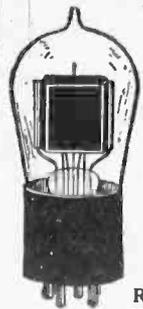
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5 FOR NINE DOLLARS

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A B C of Vacuum Tubes—Lewis	1.00
Operation of Wireless Telegraph Apparatus	.35
Lessons in Wireless Telegraphy	.35
Radio Hookups—M. B. Sleeper	.75
Construction of New Type Trans-Atlantic Receiving Sets—M. B. Sleeper	.75
1922 Consolidated Call Book	.50
How to Make a Standard C W Set	.35

Any book sent on receipt of price, postpaid. 20% discount on any two books of same title. The whole list of 11 books sent for

\$6.45

THE COLUMBIA PRINT

1493 Broadway New York City

RADIO WORLD'S 1925 MODEL 4-TUBE DX SUPERDYNE. Great for DX, volume and tonal quality. Only two controls. Constructional data described in by Herman Bernard in issues of January 10, 17 and 24. Trouble shooting in Jan. 31 issue. Tuning and theory of circuit described in Feb. 7 issue. 15c a copy. Send 75 cents, get all five copies, or start your subscription with the January 10 issue and follow Mr. Bernard's weekly articles on this great circuit. RADIO WORLD, 1493 Broadway, New York City.

For Crystal Set Owners

Illustrated articles on the making and use of crystal sets appeared in Radio World dated Dec. 6, 20 and 27, 1924, and Jan. 24, 1925. 15c per copy, or the 4 copies for 60c.
RADIO WORLD, 1493 Broadway, New York

Radio Doll Makes Debut; Even Broadcasts

THE Radio Doll has finally arrived. Brainchild of Miss Beulah Louise Henry, of New York City (the "Lady Edison"), this toy is indeed 99 per cent. a utilitarian product. According to Ohm's law, this means a total resistance of 1

billionth of a micro-ohm to the destructiveness so dear to childhood. The doll has a loud-speaking unit in her head, like many a human being; a bell horn in her chest and a real set in back. A program picked up by the Radio Doll from another station was rebroadcast by WGBS, Gimbel Bros. Department Store, New York City. This was considered the perfect link-up.



TWO DIALS keep this Baby Doll in tune with the universe. The doll contains a 3-tube set, loudspeaker unit and horn.



BEFORE THE MICROPHONE the Radio Doll makes her debut, picking up another station and repeating a snatch of the program as it is omitted from WGBS. How to announce a doll is a problem for any announcer. (Underwood & Underwood.)

ROVA'S SALES INCREASE

FIGURES furnished by the Rova Radio Corporation for the last quarter of 1924 show net gross sales for that period of \$618,165.95 from an average of sixteen stores in operation. This is an average of \$12,855 per store per month as compared with an average of approximately \$5,000 per store during the month of July from the nine stores then in operation, or a gain of about 157 per cent.

The corporation now has twenty-one stores in operation. A comparison of capitalization per store and of sales per store shows a decrease in capitalization per operated store during the past six months of approximately 50 per cent., as contrasted with an increase in sales per store of about 70 per cent.

RADIO WORLD WELL LIKED BY NOTED INVENTOR

EDITOR, RADIO WORLD:
I TAKE great pleasure in handing you herewith check for renewal of subscription to your very instructive and interesting magazine—RADIO WORLD.
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