

Homemade Three Circuit One-Tube Set—This Issue

Everybody's 5¢

RADIO

WEEKLY

IVERSON C. WELLS, Editor and Proprietor

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This Week

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Tuner that Brings In the
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Sharply (Page 5)

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HEART-TO-HEART TALKS BY THE EDITOR

The Safest Thing to Do



WHEN in doubt the safest thing to do is to "Roll Your Own." It isn't a good gamble to take a chance on the gyp ready-made receiver sets this season—if you're not a good judge.

As was predicted in these pages early last Spring and in subsequent issues, the Fall season is opening up with a horde of five-tube sets. Every man, woman and child in the country seems to be "manufacturing" five-tubers. One expects his butcher to show him "A late model" he has in production. As to the soap-maker and the candle maker, they're all at it.

And, also as was predicted these five-tubers are offered with the most extravagant claims and at a price ranging from \$28.89 to \$99, all the extras included. In some cases the maker almost tells you he will throw in a furnished four-room flat and a garage. Each set is "Revolutionary." It also is a "Coast-to-Coaster." It also "Has the volume of a super," and its tone would make Steinway pianos blush with shame. And, as to SELECTIVITY! Well, "She cuts through Chicago like a knife!"

It's all bunk—just plain bunk. Most of the outfits offered are the merest junk. And the junk is thrown together without any idea of giving SERVICE and won't work in ninety times out of a hundred. Most of the sets offered would be a liability on the owner's hands, even if they are a gift. They will not even cut through Chicago when they are operated in Chicago, but seventy-five per cent of them won't work with sufficient selectivity to operate within a radius of a hundred miles of a powerful radiocast station.

Of course there are GOOD manufactured five-tuber sets on the market. Don't misunderstand us on that score. But you'll KNOW them by their names or their manufacturer's name. They'll be advertised sets with the maker's reputation BACK of them. We're speaking about the nameless wonders of the radio world. They are made by the small manufacturer who seeks his customer-dealer among the gyp stores, the furniture houses and the department stores that want "A set to sell at a low price." Sometimes they do have names. But the same set may have a hundred names—one for each dealer. They're sort of aliases—the sort that crooks resort to when they want to victimize someone.

It requires real engineering skill to manufacture an efficient five-tube tuned radio frequency receiving set, do it in production quantity and retain its efficiency. Few manufacturers have the designing engineer to make this possible and few can secure,

hold and afford to pay for the class of expert workmen necessary for assembling after the design is decided upon.

It is folly to expect that a legitimate manufacturer can produce, under quantity production methods, a five-tube tuned radio frequency set that has quality of material and performance, and sell it at retail at a price anywhere near \$50. It can't be done. That's all there is to it. It can't be done.

Take, for instance the series of model sets of "Everybody's Five-Tube Low-Loss" receivers now running in this publication. They are of the home-built type. They are made up of standard assembled parts. The cheapest of these sets, for parts alone, will run around the neighborhood of \$60. And that does not include a cabinet, least of all any of the usual accessories, not to say anything about the LABOR and SKILL involved.

Now, these set manufacturers buy their parts from parts manufacturers as our readers do. If they used the same quality as our readers put into their sets, for instance, say at list price, \$60 worth, the parts alone, with the usual manufacturer's trade discount deducted, would run from \$27 to \$30. Then add, say \$5 for assembling and wiring (too low a price) and you have around \$35 just for labor and material alone. And the cabinet is not yet bought. Stick on another \$3 for a cabinet (they can't be had at that price even in quantities) and there's \$38.

To this must be added "over head," sales expense and maker's profit. At the most generous estimate this would amount to \$10, but none of this type of manufacturers would be satisfied with that small margin. However, let her go in at that price. That totals \$48. Now tack on the jobber's fifteen per cent and the dealer's ten or fifteen per cent and see what you have.

Based on these figures a real honest-to-goodness five tuber set, made under manufacturing conditions, will have to sell for at least \$95 to \$100, and however efficient the manufacturer is in his buying, producing and selling methods, not many can hope to get a quality set out anywhere near that price unless he does like Henry Ford does and that is, get out many thousand per day and reduce production costs.

An honest-to-God five-tube set cannot be sold at less than \$95 by anyone. When the price goes below that mark, go slow in buying. If you don't know how to judge a piece of radio apparatus get someone in whom you can place confidence to advise you. Otherwise "Roll your own." It's the safest thing to do.

NEXT WEEK: The one-tube set described this week will be enlarged upon in the coming issue to make a three-tube set by adding two stages of audio, also there will be a description of another three-tube set composed of two units, one with audio and detector combined and one a three circuit tuner unit. Any person not skilled can wire this set for it takes only 3 or 4 wires without solder.

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NEW YORK OFFICE:
Chester E. Roberts, Mgr.
100 East 42d Street
Phone: Ashland 6881

Everybody's 5¢ RADIO

IVERSON C. WELLS, Editor

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JAMES GRAYAR WELLS
Technical Advisor

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Homemade One-Tuber First of New Crop

Secondary Coil on Test Shows Only 4 Ohms Resistance

By IVERSON C. WELLS

LAST week I promised you a new series of the 1926 model of "Everybody's 100% Low-Loss" Three-Circuit receiver. Here is the first one of the new crop. It is in the shape of a one-tuber with a stem-winder home-built tuner. Next week the same set will be shown here with two stages of audio added.

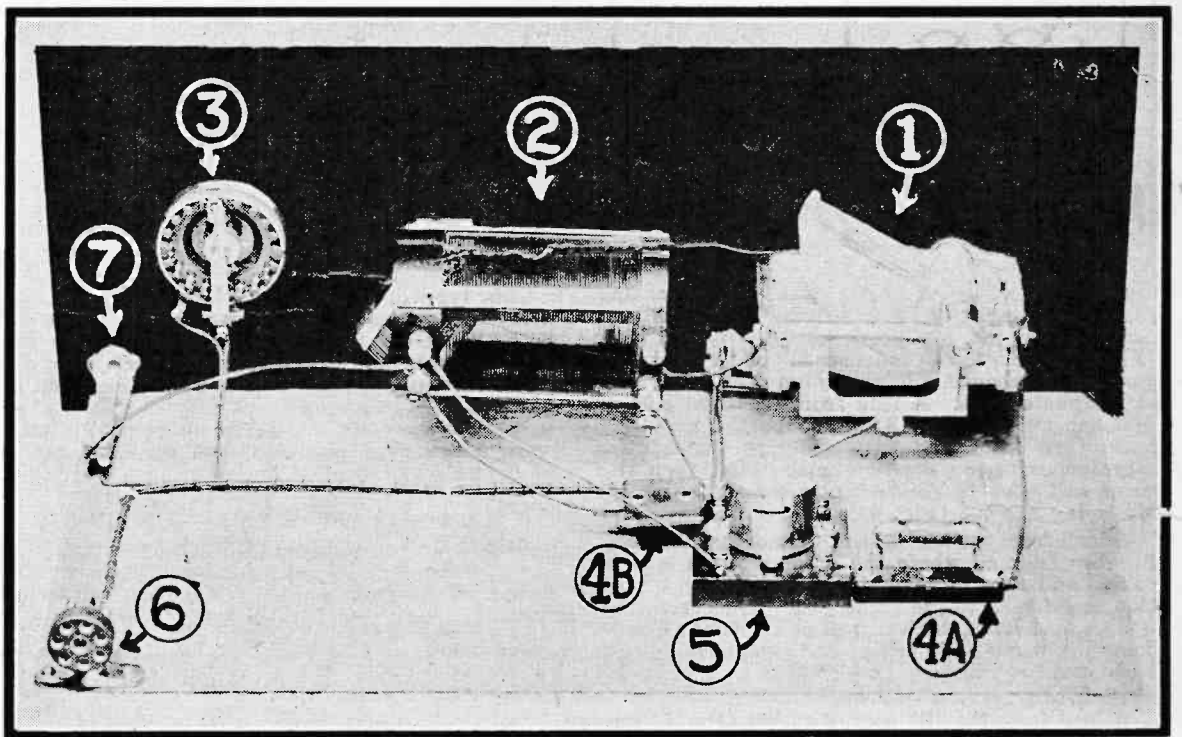
I've said a whole lot about these little one-tubers with manufactured and advertised three-circuit tuners in them. I've had a faint suspicion that some of my readers rather thought we were trying to boost the advertiser's business for him. Well, we were of course, since he is a part of the general scheme, between reader and publisher, and neither one of us can get along without him. But, as a fact, whatever has been said about these various devices was said with the TRUTH behind the statement, and the advertising columns had little influence in the matter, since many non-advertised products also have been boosted.

This week, even the most unreasonable of critics cannot say much against us. This tuner is a home-built one. It is the offering of one of our regular readers who submitted it in our weekly Home-builder's contest. And, now that any bars, real or imaginary, that may exist, are let down, I am going to throw off the lid completely and tell you that I think this little tuner is one of the very BEST I ever tuned a three-circuit set with, and I have tuned about everything that has been made. Some of our advertisers are going to call me for that, but it is the TRUTH, as I believe it, so why dodge it?

In an actual laboratory test we found the resistance in the secondary coil to be but FOUR ohms. The average coil resistance is more than three times that. Our laboratory requirements will not permit one with more than eight ohms resistance to pass. Most of the coils we have tested and specified in these pages run in the neighborhood of six ohms.

Now, this low resistance means a lot in a tuning device. It not only insures a high inductance, which means increased volume, but greatly assists in gaining selectivity for the circuit. In our tests with the tuner we roamed the country on one tube, cutting right through the busy Chicago stations easily, using the headphones, of course. With two stages of audio the set brought in California on the loud-speaker with almost as much volume as the average five-tuber produces. Using just one tube, as you see it in the illustration, all the locals came in strong enough to be heard through the speaker in an ordinary room.

The tuner is the work of Joseph Getchman, 1532 Northwestern avenue, Chicago, a recent arrival from one of the European countries, who scarcely can make himself understood in Americanized English. Getchman brought the tuner and some radio frequency coils as an evidence of the work that could be done on a small but simple device for winding coils which he wanted to enter into our weekly Homebuilders' Contest. We thought so much of the output of the coil former that we hooked up the tuner as you see it. Next week we will show just how the coils are made in detail. The cost of the tuner, as shown here, was about sixty cents. The parts were all bought at the bargain counter of one of the chain stores and most of them can be found in the junk box of the average



Rear view of the 100% Low Loss clearly showing the home-made three-circuit tuner and method of cabling. The large space shown on the baseboard is for parts to add two stages of amplification

experimenter. Enamelled wire, air-spaced, and in a small coil circumference is one of the reasons for the coil's efficiency.

If you do not care to make one of these tuners any of the popular three-circuit tuners will make a good substitute. The Buell, Gen-Ral and the Ambassador are O. K. There are others, of course, which we have specified from time to time.

The variable condenser used is worthy of special mention, as it not only is a new one to our readers, but a new one to everyone. It is a Chicago-made product of exceptional merit. It is the "Perlesz" and is just about the best constructed condenser made. This is saying a lot when we recall that the Buell, which long has held claims to superior sturdiness, has passed through our hands for laboratory test and use.

The "Perlesz" is not large in size, but it is massive in construction. The plates, both rotor and stator, are exceptionally thick. Then, too, they are die-cast and you can not warp or bend them. The frame also is die-cast and the assembled condenser shows at first glance that it is built to last forever.

Of course, the "Perlesz" is a straight-line frequency type and has all the advantages of that style of condensers. The low resistance of this condenser and its easy tuning characteristics, perhaps, has helped the Getchman tuner to tune sharply, no doubt, but then, without a good inductance, the condenser would have been of no avail. Here is the complete list of parts:

Figure 1—Perlesz .0005 variable condenser.....	\$6.75
Figure 2—Home-made three-circuit tuner.....	.60
Figure 3—Yaxley "air cooled" rheostat, 25 ohms, with knob.....	1.35
Figure 4A—Daven "Leakandenser" with clips, Type "D".....	1.00
Figure 4B—Muter .0005 fixed condenser.....	.35
Figure 5—Howard socket.....	1.25
Figure 6—Jones "Multiplug" complete.....	4.50
Figure 7—Yaxley open circuit jack, code No. 1.....	.50
Figure 8—Yaxley "Midget" battery switch.....	.50
Celeron 18"x7" panel.....	2.95
Baseboard, wire, hardware, etc.....	.50

*The Perlesz .00025 variable condenser is priced at \$5.50 in case you use three-circuit tuner requiring this capacity.

In wiring up this set don't forget the importance of cabling. Now for the wiring details: The panel for this one-tube receiver measures 18" x 7". This is the size of the standard three-tube panel, but as the three circuit tuner is extremely longer than most of the others we have used in the past the panel must be longer than the standard one-tube panel.

Looking at the front, three inches from the left edge is the center of the hole for mounting variable condenser (Fig. 1). Eight inches to the right of the center of this hole is the center of the hole for mounting the three-circuit tuner (Fig. 2). Three and one-half inches from the center of this hole is the center of the hole for mounting rheostat (Fig. 3). The center of these three holes are all three and one-half inches from the top edge of the panel.

The center of the hole for mounting the filament switch (Fig. 8) is six inches from the left edge of

the panel and one inch up from the bottom edge. The center of the hole for mounting the open circuit jack (Fig. 7) is one inch from the right edge of the panel and one inch up from the bottom edge. There are two holes for mounting the panel to the baseboard. These are each three inches from either edge and one-quarter inch from the bottom edge.

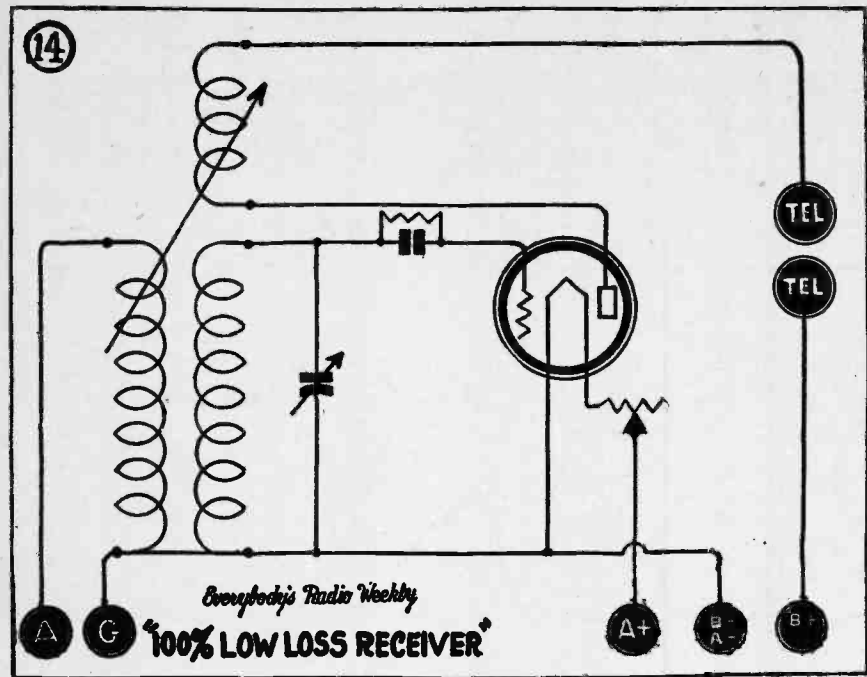
The baseboard measures 17" x 9". This is also a wide baseboard and one smaller in width will do as well. The object in having it so large is that in case you decide to build the "Three-tube Low Loss" it is a simple matter to add two audio frequency transformers and two more sockets.

The socket (Fig. 5) is placed with one edge two and one-quarter inches from the edge of the baseboard opposite the panel and one edge is four and one-quarter inches from the right edge of the baseboard. The Jones Multiplug bracket is mounted in the lower left-hand corner of the baseboard. The "Leakandenser" (Fig. 4A), is a combination of a 2 meg. grid leak and grid condenser. It is equipped with a mount and is placed on the baseboard with one end next to the socket near the "G" post.

As the parts are all placed we can now begin the wiring details starting with the variable condenser (Fig. 1) at the right side of the panel. This condenser has a stator binding post on either side and a rotor post on the center. A lead goes from the rotor post of variable condenser (Fig. 1) to the "F" minus post of the socket (Fig. 5), and continues from here in a straight line for about nine inches where the lead makes a sharp turn and runs direct to the "A" minus, "B" minus, ground connection on the Multiplug bracket (Fig. 7). This three-circuit tuner has four binding posts at the right side; the two outer ones are the primary posts and the two inner ones are the secondary posts. At the other end of the tuner are two posts. These two posts are the tickler connections. This is a home-made three-circuit tuner and next week's issue we will give complete construction details for making it. However any of the standard three-circuit tuners we have specified in the magazine can be used with variable condensers of the proper capacities.

A lead from the stator post of variable condenser (Fig. 1) goes to start of the secondary winding of three-circuit tuner (Fig. 2). Another lead from the stator post of variable condenser (Fig. 1) goes to one side of the "Leakandenser" (Fig. 4A). The other side of the "Leakandenser" is attached to the "G" post of socket (Fig. 5) by a short connection. The antenna lead-in is connected direct to the start of the primary winding binding post of the three-circuit tuner (Fig. 2). A lead goes from the end of the primary winding binding post of the tuner (Fig. 2) to the end of the secondary winding binding post of the tuner. A lead also goes from the end of the secondary winding binding post to the "F" minus post of socket (Fig. 5). One end of a .0005 fixed condenser (Fig. 4B) is attached to the "F" minus binding post of socket (Fig. 5). A lead from the other side of fixed con-

"It Isn't Everybody That Can Advertise in EVERYBODY'S."



denser (Fig. 4B) goes to one of the tickler binding posts of three-circuit tuner (Fig. 5) and from here continues to the top prong of open circuit jack (Fig. 7). This fixed condenser is not shown in the pictorial or schematic diagrams but is clearly shown in the photograph. A lead from the right post of filament switch (Fig. 8) goes about four inches back, then turns and runs along to the left for nine inches beside the "F" minus lead, then this turns and goes to the "A" plus connection of the Multiplug bracket (Fig. 6).

A lead from the left post of filament switch (Fig. 8) goes back to where the other wires are to be cabled and runs parallel with them until in a position to go back to the right post of rheostat (Fig. 3). A lead from the left post of rheostat (Fig. 3) joins the wires to be cabled and runs parallel with them until it reaches the "F" plus post of socket (Fig. 5).

A lead from the "P" post of socket (Fig. 5) goes to the other tickler binding post of three-circuit tuner (Fig. 2). A lead from the bottom prong or frame of open circuit jack goes straight back with the other wires to be cabled, until it reaches the "B" plus 90 connection of the Multiplug bracket (Fig. 6). This lead is cabled with the other two going to the bracket. This makes the lead from the "F" minus post of the socket going to the "A" minus, "B" minus, ground connection, the lead from the filament switch going to the "A" plus connection of the Multiplug and the lead from the jack going to the "B" plus 90 connection of the Multiplug bracket in a cable. The posts on the Multiplug bracket for the ground, the post for the "A" minus and the post for the "B" minus are connected together with a small wire as usual. The two leads from the rheostat are cabled together until they reach the main cable.

DON'T CHEAT YOURSELF

Single circuit receivers or "bloopers" have a chronic habit of radiating, or kicking back. For blocks around—sometimes as far as a mile or even more, depending on the power of your set, every receiver, whether crystal, radio frequency, non-regenerative or regenerative, registers your "broadcast."

When you allow your detector tube in your single circuit set to oscillate, letting it send forth howls and screeches, whistles and wheezes, your receiver virtually becomes a miniature transmitting set—and at the same time a neighborhood nuisance.

When your "blooper" is in the oscillating state it not only interferes with all nearby receivers, but it is CHEATING YOU out of good reception. Therefore, if for no other reason than the fact that you are spoiling your own enjoyment of a radio program, you should learn how to tune your set so that it will operate more efficiently. Of course it is not always easy to do this with a single circuit receiver, because it is often erratic, and too apt to become balky and unmanageable.

The common sense solution of the question would be to convert your single circuit receiver into a three circuit one. By doing this you would be taking a progressive forward step on the road to genuine enjoyment of radio.

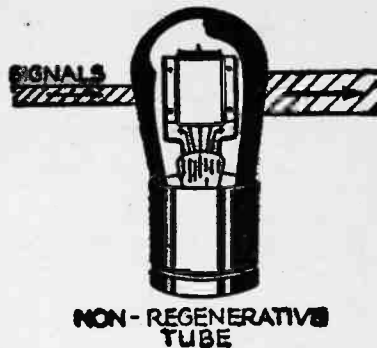
The three circuit hookup if correctly wired and properly operated is sure to give you satisfaction under right atmospheric conditions. Everybody's Radio laboratory in testing this set, has tuned in signals from stations 2,000 miles away.

For all around radio efficiency the three circuit set is still king of the air. This is the verdict of our technical experts, and it is backed up by this publication to the limit. Over a year ago we came out emphatically as a pro-three circuit advocate, and since then our finding and predictions have been proven absolutely correct. Uptodate there has yet to be discovered the equal or superior of the three circuit "100% Low-loss Receiver," particularly as regards good, all around reception in these days of crowded air lanes when range and selectivity are so important.

Schematic diagram of the one-tube 100% Low-Loss is shown at the left. The large diagram at the bottom of the page is the standard pictorial of the set. An 18-inch panel was for this set, while the diagram shows the standard 14-inch panel. Fixed condenser 14B is not shown in either of these diagrams

HOW VACUUM TUBES REGENERATE

The current going into a tube can be called the "input" and the current leaving the tube, after the signals are amplified by the tube, can be called the "output." The illustration is that of a non-regenerative tube and it shows the strength of the signal by the shaded lines and naturally, this line is narrower at the input than at the output.



An idea was conceived by Major E. H. Armstrong that the output and input circuits of a vacuum tube could be coupled together in some way so as mutually to react on each other and the amplification could be many times increased. He called this system "Regeneration." It is perhaps easier to understand this if we look upon the coupling as a means of actually transferring energy from the output circuit to the input circuit.

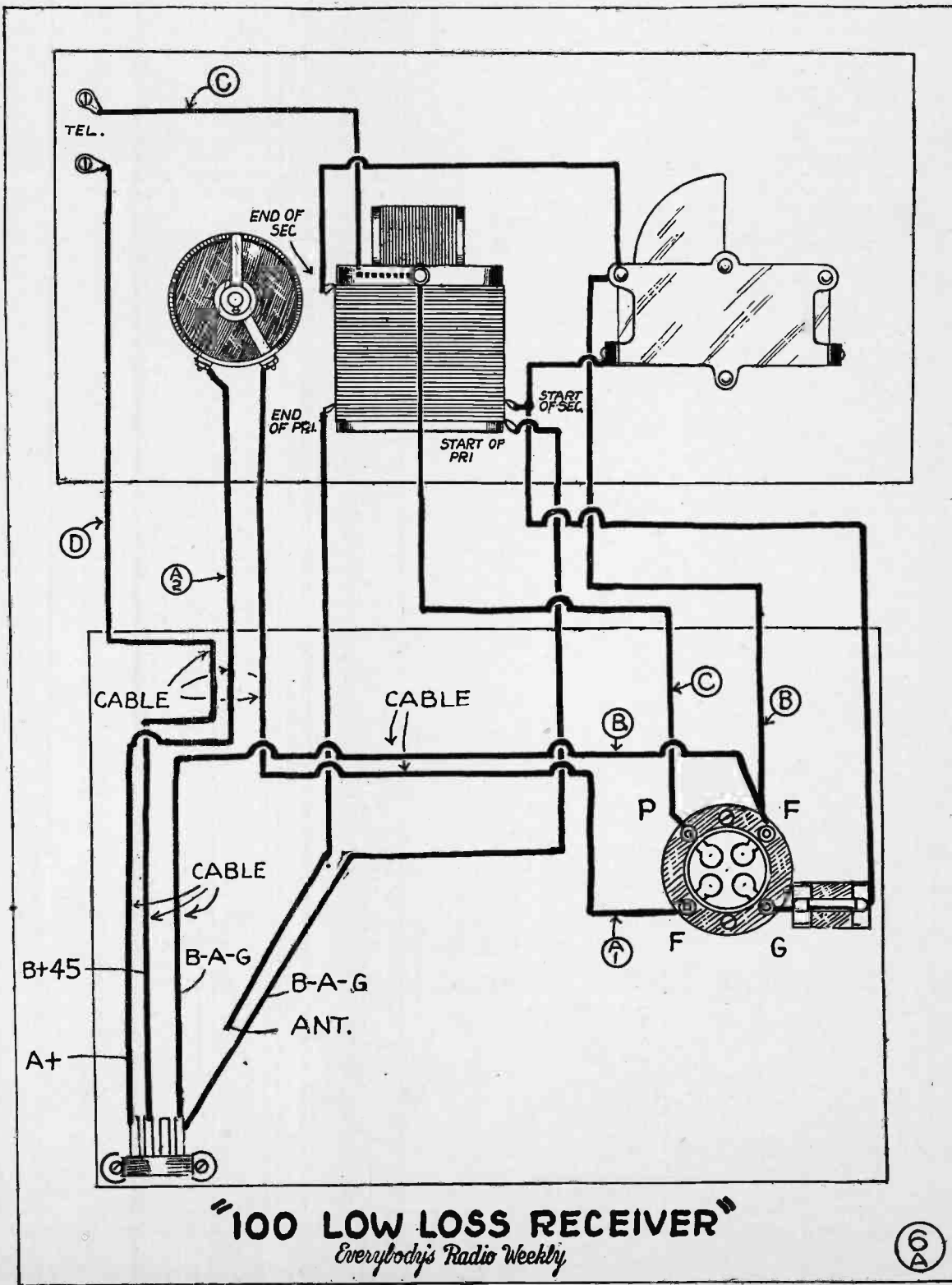
As radio signals pass through the tube and are amplified we may assume that by means of some sort of coupling between the output and the input circuits these amplified signals are sent back through the input circuit and sent through the tube again to be further amplified. This action takes place in so short a time it is almost instantaneous.

WHEN BATTERIES GO "DEAD"

Never use an ordinary twenty-two-and-one-half-volt "B" battery after its voltage has dropped to sixteen volts or less. Never use the ordinary forty-five-volt "B" battery after its voltage has dropped to thirty-two volts or less. Below the points indicated the resistance in the batteries interferes greatly with audio-frequency amplification and distortion will follow. You're welcome.

BURNING VACUUM TUBE TOO BRIGHT

"Light up" the filament slowly by rotating the rheostat handle. Do not let it burn brightly. This is not necessary to get good results. You're welcome.



Lossless with Toroidal Coils

Radio Frequency Coils and a New Condenser Used in This Set

WE'VE said so many good things about the various models of "Everybody's Five-Tube Loss-Less" receivers as they were published, we're just about run out of superlatives. This is especially true of the 1926 offerings wherein cabling and by-passing have been presented as about the last word in radio frequency receivers.

We have another model of the same receiver this week, using a new radio frequency coil and a new condenser. These two new items do not give any great efficiency than previous models, because those were just about as good as "good" can be. However, there are some unusual features about both the coils and the condenser that are going to make a mighty strong appeal to the home-builder.

The writer really itches to first tell you about the performance of this set, but realizes that since the mention has been made of the coils and condensers he is under obligations to describe them first and this he is going to do if only briefly for the present.

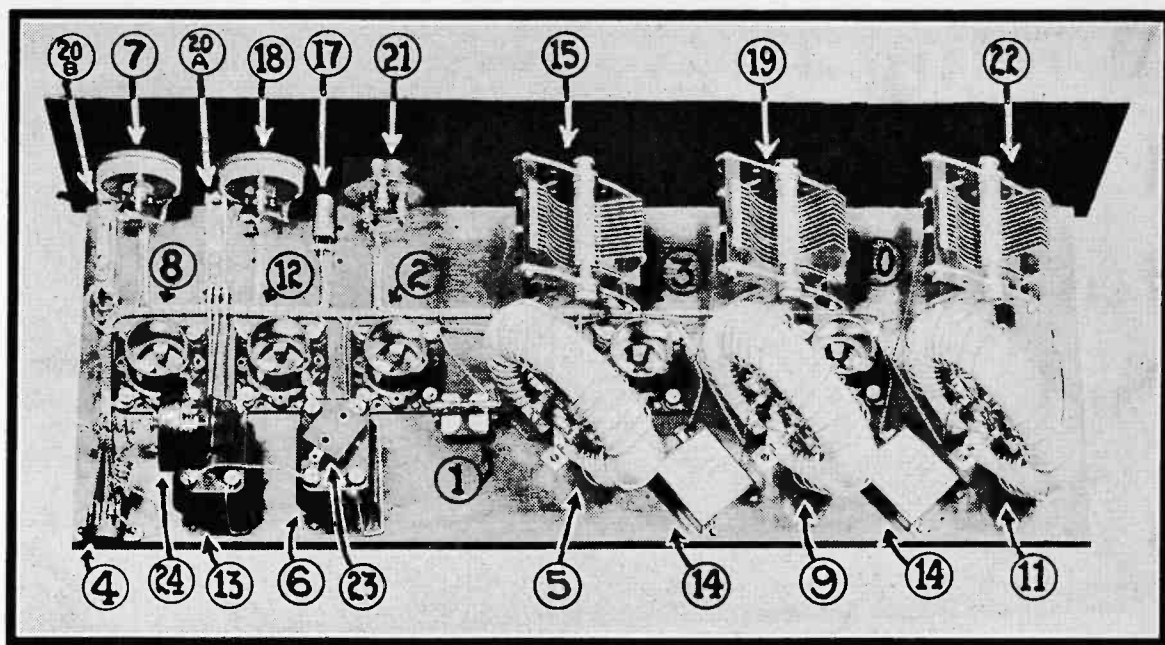
The coils are of the toroidal, or balloon type. Most of the toroidal manufacturers found out, after much expense and grief, that this type of coil, as offered, was only a good coil on paper but when it came to actual performance did not live up to its reputation.

The trouble with the toroidal coils is that while it does everything it is said to do, when it comes to interstage coupling, to pickup qualities and to high inductance, so much resistance is set up in the windings that all the good accomplished is nullified by the great loss in selectivity.

The coils we have this week are the Naxson and while they resemble in general constructional characteristics other toroidal coils, there is a real difference in the electrical action. Because of this difference it looks as if the makers are going to give us the first real toroidal coil that is going to live up to the theoretical reputation of this type of coil.

The "Naxson" coils get their distinction in the primary winding largely. It is placed on the PUT-SIDE of the secondary instead of on the inside. Then, again, there is a wide spacing between the ordinary wires and there are separate groups of these wires. Without attempting to explain the wheres and whyfores it is sufficient to say that the arrangement places the "Naxson" coil in a different class with most of the other toroidal coils we have tested.

There is a peculiar action about the "Naxson," however, on which "Everybody's Laboratory" has



In the new Naxson coils you will see the primary in a coil around or over the secondary, allowing an air space insulation. Resistance Figure 24 is not needed as explained in the text

not reported. It is that the coils seem to be sharper in tuning characteristics when we omit the by-pass condensers which we recommend across the "B" battery plus and "B" battery negative connections of two of the coils in our usual hookups. In all other coils tested this by-passing gives a distinctly increased sharpness in tuning. In the "Naxson" this is just the reverse. The coils broaden out in their tuning qualities. We show the condensers hooked up in the circuit as we do in all our hookups of the "Loss-Less" but we advise the builder to experiment a little on his own hook. We will have something to report on this action at an early date.

The "Naxson" coils have no pickup characteristics and neither will you have any interstage coupling effect, although it is best to mount them in the usual way, for looks sake, if nothing else.

In the laboratory tests we made of these coils the secondary, when tested alone, as is the usual custom, showed a rather high resistance and it was our first conclusion because of this showing that the coils were to be classed with all other toroidal coils as too broad in tuning for congested districts like Chicago. However, with this peculiar type primary and the coils placed in actual operation in the hookup the resistance seemed to be nullified and the coils tuned as sharply as any we have had in previous models.

The variable condensers we are using are the "Crest." Outside of the fact that they are straight line frequency, following the fad of the day, and that they have exceptional low minimum capacity and a low resistance, therefore small losses, and that they are exceptionally strongly and rigidly built, there is a special and an exclusive feature in the "Crest" that makes them an attractive offering. This feature is their ability to be converted from one capacity to another, at the will of the owner and operator. The "Crest" is so built that its plates may be removed or added to as desired.

The home-builder will see the advantage this feature gives him at once. It means buying just one set of condensers. One may change coils at will and not worry about capacity. If the new coils desired require a .00025 mfd. capacity it is a simple

matter to remove enough plates to give the condenser that capacity. Later, if a .000325 or any other capacity is required add enough plates to give the desired value. One may even convert his condenser into a two- or three-plate for low wave work, or for balancing condensers.

This convertible feature, of course, is a mighty good one, but we here at the laboratory also were impressed with the CONSTRUCTION—mechanically and electrically. For instance in tests the minimum capacity was as low as .000006 mfd. With the low resistance this means a wide band of waves is going to be had. The wide clearance between the stator and rotor plates help keep the minimum capacity down. There is a clearance of at least one-quarter of an inch.

The heavy rotor and stator plates—two or three times thicker than the usual condenser plates, insures protection against warping and sagging plates and erratic changes in capacity, of course. The rotor bearing have the same sturdy construction and are very easily adjusted.

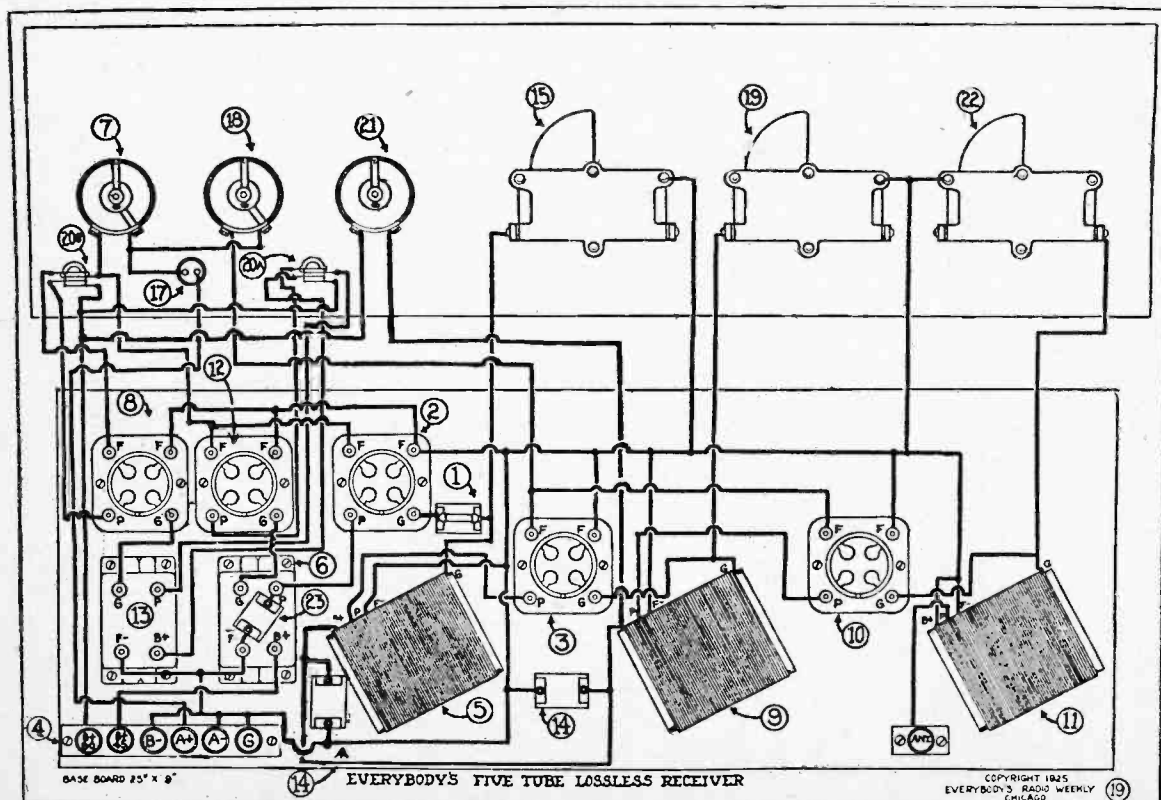
The transformers—the audio end, are the Samson Helical Type. These have been our friends for the past year. What we said about them one year ago still holds. They have a KICK in them that pleases the distance hounds and they have the TONE quality the sensitive-eared bug demands. In our illustration we show the last stage audio with a "Centralab" high resistance (200,000 ohms) but do not get excited. When we built up this model set we wanted to use the Samson transformers, but had only two of the high ratio (6 to 1) and stuck in the resistance to keep down the distortion that was very apt to develop. Strange to say, the resistance is not needed only on local stations, as a rule, as the volume is so terrific and we have an idea that the distortion was due more to the inability of the loudspeaker to handle the volume than to the transformer. The 6 ratio, however, is too high in any second stage, even for the Samson. We advise the 3 ratio, which Samson makes. You'll get the volume you desire as the Samson is noted for this feature.

The "Centralab" resistance isn't a bad thing to have hanging around however, as it can be used in lieu of the usual small fixed condenser that is used across the secondary terminals of the last stage transformer. If you do not need it you do not use it. If you do need it the resistance is there to bring into play.

The rest of the parts used may be picked out from the list given below. Most of them are familiar to our regular readers. Here is the bill of specifications:

- Fig. 1—Muter .00025 fixed condenser with clips, 35c, and Muter meg. resistance 30c.....\$0.65
 - Fig. 2—Benjamin socket 1.00
 - Fig. 3—Benjamin socket 1.00
 - Fig. 4—Jones Multiplug, complete..... 4.50
 - Fig. 5—Naxson Toroidal radio frequency coil..... 4.00
 - Fig. 6—Samson 6 to 1 ratio audio frequency transformer..... 5.00
 - Fig. 7—Howard six-ohm rheostat, with dial..... 1.10
 - Fig. 8—Benjamin socket 1.00
 - Fig. 9—Naxson Toroidal radio frequency coil..... 4.00
 - Fig. 10—Benjamin socket 1.00
 - Fig. 11—Naxson Toroidal radio frequency coil..... 4.00
 - Fig. 12—Benjamin socket..... 1.00
 - Fig. 13—Samson 3 to 1 ratio audio frequency transformer..... 5.00
 - Fig. 14A—Dubilier 0.25 mfd. by-pass condenser..... .75
 - Fig. 14B—Dubilier 0.25 mfd. by-pass condenser..... .75
 - Fig. 15—Crest convertible variable condenser..... 5.00
 - Fig. 17—Walbert lock filament switch..... .50
 - Fig. 18—Howard six-ohm rheostat, with dial..... 1.10
 - Fig. 19—Crest convertible variable condenser..... 5.00
 - Fig. 20A—B. M. S. double circuit jack..... .40
 - Fig. 20B—B. M. S. single circuit filament control jack..... .36
 - Fig. 21—Centralab 200,000 ohm resistance..... 2.00
 - Fig. 22—Crest convertible variable condenser..... 5.00
 - Fig. 23—Muter .002 fixed condenser..... .40
 - Starrett drilled and engraved panel, 26"x7", Model No. 19..... 4.85
 - Baseboard, wire, hardware, etc..... .75
- (Fig. 24 is a 200,000 ohm resistance not needed with this list of parts. Why it was used is explained elsewhere in the story.)

We are giving the pictorial diagram for the "Lossless" in this page and the average phan will not require any further instructions about building. For those that have trouble, however, next week's issue will carry the full data on wiring.



This is a pictorial diagram of Everybody's Five-Tube Loss-Less Receiver, 1926 model. It is the circuit in which the Toroidal or Balloon coils were used

Wiring the Five-Tube Canned Coil Set

LAST week's model of "Everybody's Five-Tube Loss-Less" receiver, using the "canned coils," has made quite a hit if we are to judge by the number of visitors in and around Chicago who have been present at the evening demonstrations in our laboratory the past week and by the letters about the set that have flooded our daily mail.

The model deserved everything said of it and therefore deserved all the interest it created. It not only does all that was said of it, but, as many of our friends said, who heard the set demonstrated, "It does more than you claim for it."

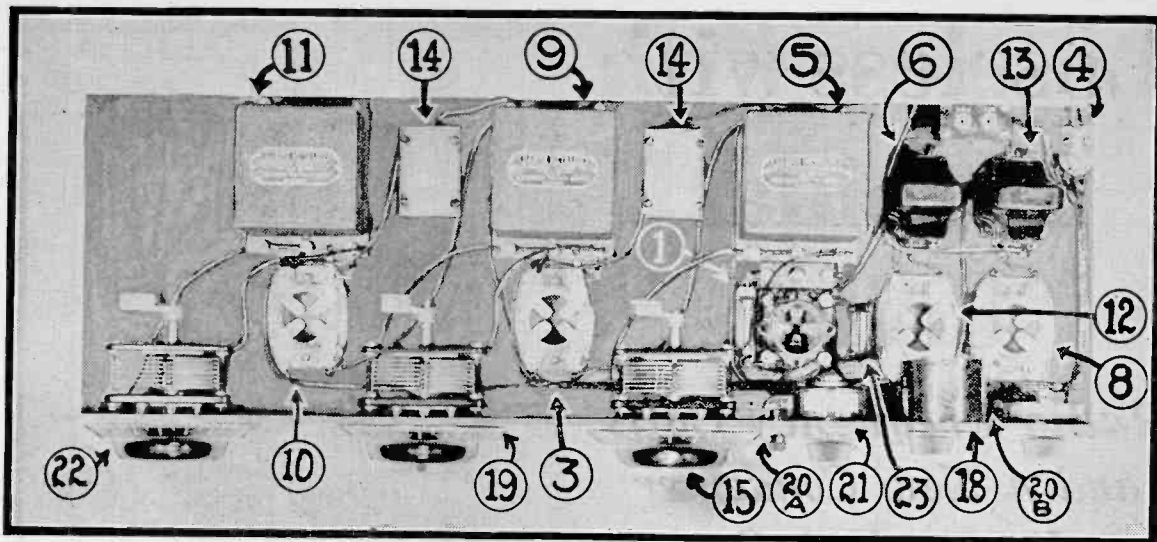
We promised last week to give you complete constructional data this week. Here goes:

The panel for this model of the "Five-tube Loss-less" is slightly different from our standard panel. As there is no filament switch only two holes are needed for the jack switches (Fig. 20A and 20B). The resistance is mounted in the hole that was used by a rheostat in the past hookups. Only one rheostat is used and the voltmeter is in the space used by the second rheostat of our standard hookup. Looking at the panel the center of a hole for variable condenser (Fig. 22) is three inches from the left edge. Five inches to the right of the center of this hole is the center of the hole for variable condenser (Fig. 19). Five inches from the center of this hole to the right is the center of the hole for mounting variable condenser (Fig. 15). These three holes are on a line three and one-half inches from the top of the panel. Five inches to the right from the center of hole for variable condenser (Fig. 15) and four inches from the top is the center of the hole for mounting resistance (Fig. 21). Six inches to the right from the center of this hole and four inches from the top of the panel is the center of the hole for rheostat (Fig. 7). Three inches to the left of the center of this last hole and four and one-half inches from the bottom of the panel is the center of the large hole for the voltmeter (Fig. 18).

Five inches from the right edge of the panel and one inch from the bottom is the center of the hole for mounting the two-make two-break switch (Fig. 20B). Four and one-half inches from the center of this hole and one inch from the bottom of the panel is the center of the hole for voltmeter switch (Fig. 20A). Three inches from each side are the centers of the one-eighth inch holes for mounting the panel to the baseboard. Six and eleven sixteenths inches from the center of each of these holes is the center of a one-inch hole. This completes the panel, and the instruments are mounted on the baseboard in the standard way with the exception of the radio-frequency transformers, as no special degree is needed as is the case with most others.

The photographs show how they are placed.

We will start the wiring of this receiver by looking at it from the rear and first describe all of the "F" minus leads from the sockets. A lead from the "F" minus post of first R.F. socket (Fig. 10) goes to the "A" minus, "B" minus, "B" minus, connection on the Cabelug (Fig. 4). A lead from the "F" minus post of second R. F. socket (Fig. 3) goes



to the "A" minus, "B" minus, connection of the Cabelug (Fig. 4). A lead from the "F" minus post of detector socket (Fig. 2) goes to the "A" minus, "B" minus, connection of the Cabelug (Fig. 4). A lead from the "F" minus post of first audio socket (Fig. 12) goes to the "A" minus, "B" minus, connection of the Cabelug (Fig. 4). A lead from the "F" minus post of last audio socket (Fig. 8) goes to the "A" minus, "B" minus, connection of the Cabelug (Fig. 4).

The Harper Metaloid radio frequency transformers have six binding posts, three on each side. They are numbered 1, 2, 3 on the side facing the panel and 4, 5, 6 on the other side. Number 1 post is the start of the secondary winding. Number two is used for grounding the metal case. Number 3 is the end of the secondary winding. Number 4 is a primary tap and in this set is used on transformer (Fig. 11) only. Number 5 is the start of the primary winding. Number 6 is the end of the secondary winding.

A lead from the rotor of variable condenser (Fig. 22) goes to post number 1 of radio frequency transformer (Fig. 11). Another lead from post number 1 of radio frequency transformer (Fig. 11) goes to post number 2 of this same transformer and from here continues to the "F" minus lead of first R. F. socket (Fig. 10). Another lead from post number 1 goes to post number 4. The ground is connected to post number 4. A lead from the stator post of variable condenser (Fig. 22) goes to post number 3 of radio frequency transformer (Fig. 11) and from here continues to the "G" post of first R. F. socket (Fig. 10).

A lead from the rotor post of variable condenser (Fig. 19) goes to the post number 1 of radio frequency transformer (Fig. 9) and from here continues to post number 2 of this transformer and from here to the "F" minus post of second R. F. socket (Fig. 3). A lead from the stator of variable condenser (Fig. 19) goes to post number 3 of radio frequency transformer (Fig. 9) and from here to the "G" post of second R. F. socket (Fig. 3). A lead from the rotor of variable condenser (Fig. 15) goes to post number 1 of radio frequency transformer (Fig. 5) and from here continues to post number 2 of this transformer. Another lead from the rotor post of variable condenser (Fig. 15) goes to the "F" minus post of detector socket (Fig. 2).

A lead from the stator of variable condenser (Fig. 15) goes to post number 3 of radio frequency transformer (Fig. 5) and from here to one side of the X-L grid condenser (Fig. 1).

Another lead from this side of vario denser (Fig. 1) is connected to the grid leak (Fig. 1). The other side of vario denser (Fig. 1) is connected to the other side of grid leak and from here to the "G" post of detector socket (Fig. 2).

A lead from the right post of the 200,000 ohm resistance goes to post number 6 of radio frequency transformer (Fig. 5) and continues from here to

On this page are two of the main illustrations used last week in describing "Everybody's Five-Tube Low-Loss," using the Harper "Metaloid" or "canned" coils. They will come in handy in referring to the wiring details which are given on this page. The index figures in each illustration are the same used in the text

one prong of by-pass condenser (Fig. 14B). A lead from the other prong of by-pass condenser (Fig. 14B) goes to the "F" minus post of second R. F. socket (Fig. 3). Another lead from the right post of resistance (Fig. 21) goes to post number 6 of second radio frequency transformer (Fig. 9) and from here continues to one prong of by-pass condenser (Fig. 14A). A lead from the other prong of by-pass condenser (Fig. 14A) goes to the "F" minus post of first R. F. socket (Fig. 10). A lead from the left post of resistance (Fig. 21) goes to the "B" plus 90 connection of the Cabelug (Fig. 4).

A lead from the center post or minus post of voltmeter (Fig. 18) goes to the "A" minus, "B" minus lead connection of the Cabelug. A lead from the other post of rheostat (Fig. 7) goes to the "A" plus connection of the Cabelug (Fig. 4).

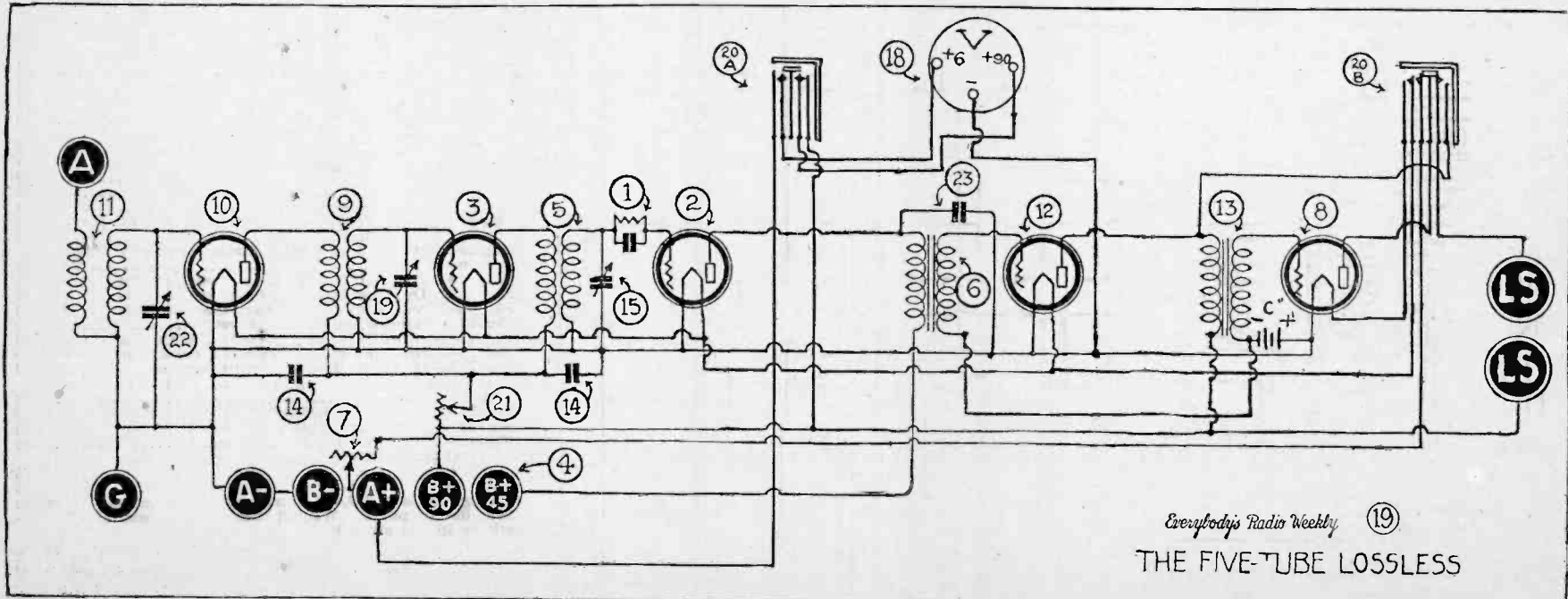
A lead from the "P" post of detector socket (Fig. 2) goes to the "P" post of first audio frequency transformer (Fig. 6). A lead from the "G" post of audio frequency transformer (Fig. 6) goes to the "G" post of first audio socket (Fig. 12). A lead from the "B" plus post of first audio frequency transformer (Fig. 6) goes to the "B" plus 45 connection of the Cabelug (Fig. 4). A lead from the "F" minus post of first audio frequency transformer (Fig. 6) is connected to the "F" minus post of last audio frequency transformer (Fig. 13) and from here the lead continues to the plus post of the 4½ volt "C" battery. A lead from the negative post of the "C" battery goes to the "A" minus, "B" minus connection of the Cabelug (Fig. 4).

A lead from the "P" post of first audio socket (Fig. 12) goes to the "P" post of last audio frequency transformer (Fig. 13). A lead from the "G" post of last audio frequency transformer (Fig. 13) goes to the "G" post of last audio socket (Fig. 8). A lead from the "B" plus post of last audio frequency transformer (Fig. 13) goes to the "B" plus 90 connection of the Cabelug (Fig. 4).

A lead from the "B" plus 90 connection of the Cabelug (Fig. 4) goes to the other side of loud speaker binding post. Fixed condenser (Fig. 23) is placed across the "P" post of audio frequency transformer (Fig. 6) and the "F" minus post of socket (Fig. 12).

DUTY OF TUNER IS SELECTIVE

In its line of duty, the radio tuner is simply a device or unit used to select the signals from a desired sending or transmitting station and to eliminate all others. The duty or function of the tuner is to select from this mixture of currents that particular station desired and to prevent all others from reaching the detector. You're welcome.



A Thousand Ideas for Builders

Contest Weekly Develops a Wealth of Practical Helps for Home Experimenters

EVERYBODY'S RADIO Weekly will give away one radio set each month for the best and most useful suggestion made by a reader—an "Everybody's 100% Low-Loss" One Tube receiver built in our laboratory. Who wants it? Subjects may range from how to wind a coil to a new super-het hookup. Judges to be Everybody's experimental laboratory. No manuscripts entered in this contest can be returned. Drawings or pictures to illustrate your ideas are desirable but not essential. Judgment will be on practicability of idea, not literary merit. All manuscripts entered to become the property of this publication. In case of tie prize will be duplicated. Address Home-builder Contest Editor, **EVERYBODY'S RADIO Weekly**, 2721 S. Michigan Ave., Chicago. Rules—All letters **MUST** be in ink or typewritten, on **ONE SIDE OF PAPER**, and addressed as above to help us serve you.

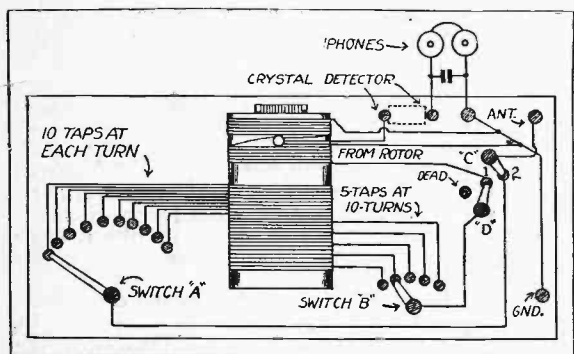
HOME-MADE CRYSTAL SET

Contest Entry

By E. F. JOHNSON,
5032 Park Ave., Chicago

Here is a description of my home-made crystal set which, I think, contains a feature not to be found in any other set in Chicago.

Referring to the rear of the set in the diagram you will notice the loose coupler. The rotor has thirty-four turns, seventeen on each side. The stator is a paste-board carton three and one-half inches in diameter and four inches long. There are



two separate windings on the stator. Beginning at the top wind on thirteen turns, drop down three-eighths of an inch, but continue the wire across without cutting and wind on thirteen more turns making twenty-six turns in all, leaving six inches of loose wire at each end for connections. The three-eighths inch space permits the hollow rotor shaft to extend through.

Drop down one-quarter inch and start the second coil, taking off a tap at each turn for ten turns, all on one side of the tube. From this point wind on fifty more turns, taking off a tap at each ten turns on the opposite side of the tube from the first series of taps, using the ends of coil for the end taps. This makes sixty turns on the second winding.

To wire the set: The antenna through the panel connects to shaft "C" of switch "C." The arm of the switch rests on switch-point No. 1, which is wired in the rear to lower end of twenty-six turn winding on top of coil. The upper end of this winding connects to ground wire. Switch "A" has ten points wired to the ten one-turn taps. Switch "B" has five points wired to the five ten-turn taps.

Switch "C" may rest on points No. 1 or No. 2. When on No. 2 switch "D" is turned over to point No. 1. The dead point is merely a resting place for "D" when not in use. Point No. 2 is connected

to the shaft of switch "A." The shaft of switch "B" is connected to the shaft of switch "D."

One wire from the rotor connects to the crystal arm. The other rotor wire connects to the ground wire. Phones connect from crystal to ground.

When aerial switch "C" rests on point No. 1 we are using the short circuit of twenty-six turns only. When "C" switch rests on point No. 2 and switch "D" rests on point No. 1, the current passes to switch "A" through the one-turn points into the sixty-turn coil out through ten-turn points to switch "B," then to switch "D" through point No. 1 into the short circuit of twenty-six turns.

Results with the short circuit alone I get WLS, WGN, and all stations of nearby wave-lengths, but not KYW or WMAQ.

I am located about three miles from WLS, and when this is on the air it comes in strong and I can only get WGN and others when WLS is silent.

By using the long circuit I can cut out WLS completely and bring KYW and WMAQ, and can separate these two stations by the change of only one switch-point and get either of them strongly.

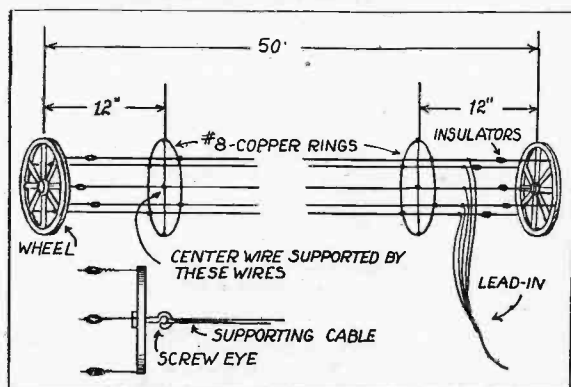
I think there are very few crystal sets that can tune down as well as this one can.

AN EFFICIENT AERIAL

Contest Entry

By F. H. JARROWSKI,
2310 N. Keeler Ave., Chicago

This antenna consists of five strands of wire between two buggy wheels. The wheels measure one foot in diameter. Four leads for insulators are spaced evenly around each wheel and one is attached to the hub. Each antenna wire is seven strand Beldenamel and is fifty feet long.



Twelve inches from each wheel is a one foot ring made of number 8 solid copper. The four wires are soldered to this ring and the center wire running from hub to hub is supported by a piece of wire across the diameter of the ring to which it is soldered. The lead-in is taken off each antenna wire and joined making one lead to the set. The lead-in wire is number 14 and should be thirty-five feet long. A screw eye is inserted in the hub of each wheel and a cable attached to it to support the whole antenna.

CONNECTIONS FOR DRY BATTERIES

Contest Entry

By ALBERT E. FISHER,
114 West 32nd Street, Minneapolis, Minn.

Your paper is a dandy. I am trying out some of your tips. Here is one for connecting dry batteries. Use those battery connections they sell at automobile stores for 1 cent each. They are flexible—you can screw them down firmly without skinning your fingers and they do not snap off or break if they get tumbled around accidentally, all of which the solid wire does on slight provocation. I am passing this on to other phans as a worthwhile trick.

AERIAL FOR A CRYSTAL SET

Contest Entry

By LEO ADASIEWICZ

Leo Adasiewicz notified us regarding his contest entry in the September 26 issue of **EVERYBODY'S RADIO** on the contest entry page. His "forty-one foot aerial crystal set" was shown with a certain type aerial and the text mentioned that this type of aerial should be used, however, Mr. Adasiewicz tells us that this particular type he uses for long distances but that any outside aerial will give results.

Coliseum Show Issues

November 14 Issue
November 21 Issue

Special features have been prepared for the two Coliseum Radio Show issues of "Everybody's Radio Weekly." The November 14 issue will be published the week preceding the show. The November 21 issue will be on sale the day the show opens, Tuesday, November 17, and will be on all newsstands in Chicago and at the Coliseum all through the show.

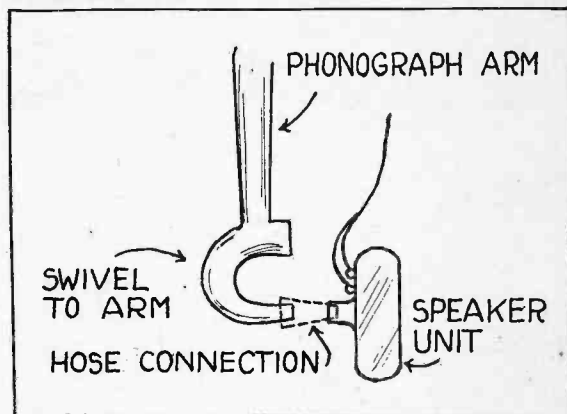
Reservation for advertising space in either of these issues must be made at ONCE.

A PHONOGRAPH ATTACHMENT

Contest Entry

By JACK J. TAYLOR,
514 Clarke St., Milwaukee, Wis.

Many loud speakers or most of them have detachable horns. Take off the horn which slides or screws into sleeve of the speaker unit. Get a piece of garden hose 5/8-inch or 3/4-inch diameter and



about six inches long. Whittle one end of hose for taper fit into mouth of speaker unit. This is a snug fit. Take off the phonograph adapter and insert the swivel arm of the phonograph into the other end of the hose. This fits without any cutting. Place the speaker unit on the side so that the rubber tube is in a straight line between the arm and the unit. This allows the cover to close. Attach the wires to the speaker terminals and you are all set. The music is wonderful through your phonograph. A horn can't reproduce music like this. The change back to the original way of your phonograph takes only half a minute. Nothing to it once the hose is cut to size.

DOUBLE PURPOSE TESTER

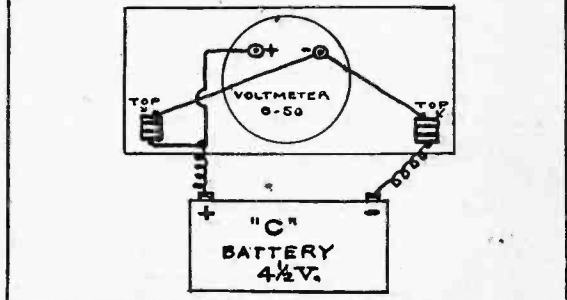
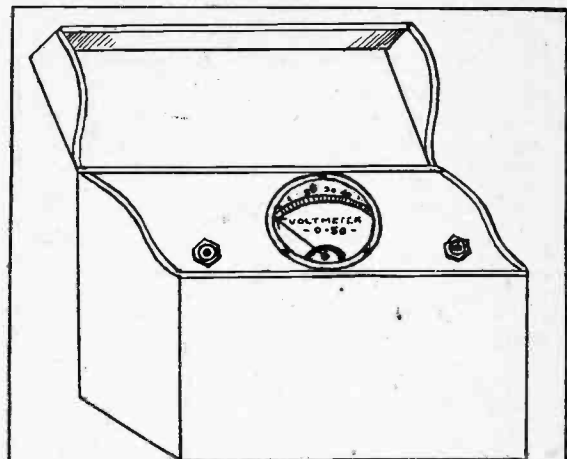
Contest Entry

By R. A. VAN DEVEER,
401 N. 4th St., La Fayette, Ind.

Having been a reader of your magazine since its infancy I am submitting an idea which I think will be of interest to all phans and set builders. Incidentally, I also wish to become an owner of one of your prize "Three-Tube 100% Low-Loss" sets.

This instrument serves as a double purpose. To test a circuit, plug in the left hand jack, which has a 4 1/2-volt "C" battery in series with the voltmeter. To test any kind of a battery, plug in the right hand jack which is wired only through the meter.

The list of parts are as follows: 1—Card index cabinet 3 1/2"x6 1/2"x4" deep. 1—Panel to fit inside of same. 2—Double circuit jacks. 1—0-50 voltmeter. 1—4 1/2-volt "C" battery. 1—Piece busbar wire, 12 inches. 1—Piece of lamp cord, 3 inches.



1—Piece flexible wire, 6-inches. 1—Phone plug. Mount voltmeter in the exact center and the jacks in the lower corners, proper size holes having been drilled first.

Wire as per diagram and solder two small pieces of busbar to the inside prongs of each jack for supports cutting these off until the panel sets flush with the top of the cabinet. When finished drop "C" battery with flexible leads into the box and then put on the panel and you are finished with the test meter. I use a piece of lamp cord with a battery clip attached to each wire on one end and the phone plug on the other end. When not in use this can be rolled up, laid on the panel and the lid closed to keep out the dust. This is a real tester for circuits and all batteries up to 50 volts and can be made from old parts in your scrap box.

\$30

Music Mirror

\$30*"All That Its Name Implies"*

Beauty and Tone

One of the sweetest, clearest and most beautiful speakers made. It's constructed entirely of genuine solid mahogany and with heavy plate glass mirror.



Illustration Is About Half Size

GUARANTEE

Every genuine MUSIC MIRROR bears this tag: "If in five days use you are not convinced that it is the most pleasing speaker you can get, your dealer will refund your money without argument."

If your dealer cannot supply you, send us \$30. We will ship the MUSIC MIRROR, securely packed and prepaid. Mail orders only filled as accommodation until your dealer stocks up.

IRVIN I. AARON

Sales Office
36 South State Street
CHICAGO

SHOOT TROUBLE YOURSELF

In trouble shooting, it is wise to remember that nine times out of ten, it is possible for you to locate and fix your own radio ills. Be your own radio doctor. Knock the "im" out of impossible. Exercise your powers of reasoning and observation. Examine carefully the parts or units where the disturbing factors might be. First rotate your rheostat, turning juice to the tubes. Connect the 'phones while the tubes are bright. If a sharp click greets you when 'phones are connected you'll understand your detector-amplifier circuits are O. K. In case no click is heard, you touch the 'phone tips to the terminals of a dry cell to ascertain if the 'phones are working. If you get no response, then you know you have defective 'phones. If you discover the 'phones are in good shape, and there is no sound when connected to the set, the difficulty, probably, is in the detector-amplifier circuits, and you proceed to examine your set to hunt for the broken connections. If the detector circuits are in sound condition, you disconnect the aerial hookup. You put

your ear to the 'phones, touching the aerial wire to the aerial terminal post. If you get a click your set is probably in efficient shape, since the static charge on the aerial has recorded itself through the 'phones. When your static does this, then reception should naturally come through. If you find no response when the aerial wire is hooked to the set, then look after the tuning side of your set as there may be broken connections. However, after you have ascertained that the set is operating efficiently, you consider the possibility of defects in the outside aerial. It may be touching a tree, metal drain pipe, steel girder, and so on, which might switch the current to the earth before reaching the set. You examine the lead-in to the house, to see if it is insulated correctly, and that all connections are positive and rightly soldered. Radio ills, of course, are numerous and of all sorts, but the point we wish to emphasize is that it is usually possible for you to be your own radio doctor if you will just make up your mind to think, stop, look and listen. You're welcome.

USE GOOD TRANSFORMERS

You will observe that in a well-built audio transformer the coils are impregnated with an insulating compound, which is heated to just the right temperature to cause it to flow through all the parts of the coil, and then is subjected to a vacuum process to remove any air bubbles which may have formed in the compound. It can, therefore, be seen that the transformer must necessarily be an expensive item, for nothing that is cheap can possibly compare with a well-built, carefully designed instrument. You're welcome.

BEST AERIAL WIRE

Use only best quality 7-strand No. 22 bare or enameled wire for the antenna and No. 14 rubber covered copper wire for the "lead-in." Use high grade insulators, porcelain entrance bushing and some approved type of lightning arrestor or switch. If the enamel wire is used, be sure to remove all the enamel before you attempt to make a solder connection. You're welcome.

Why Condensers Leak

A fixed variable condenser is as good as its dielectric material. This is the key to the difference in efficiency of the many condensers now on the market and is the heart of the low loss principle.

A simple experiment will show that the charge accumulated in a condenser, for a given voltage and distance apart of the plates, depends upon the kind of dielectric material.

For instance, a pair of plates with dry air between them is charged by a certain emf. (electro motive force), and the quantity of amount of charge is measured by some suitable means.

Insert a slice of paraffin between the plates. It will be found that for the same voltage the charge is increased. The difference obviously represents the difference in capacity between paraffin and air, for we have changed the capacity of the condenser by simply changing the dielectric material, and without changing the geometric arrangement of the plates in any way.

Because air is the best known "dielectric" it is commonly used as the standard of comparison.

The dielectric constant, also called "specific inductive capacity," of any substance may be defined as the ratio of the capacity of a condenser, using this substance as the dielectric, to the capacity of the same condenser with air as a dielectric.

Thus it is seen that this ratio is the factor by which the capacity of an air condenser must be multiplied in order to find capacity of the same condenser when the new substance is used in place of air between the plates.

A condenser will permit a very small current to flow through it when voltage is applied and will discharge itself slowly if allowed to stand with its terminals disconnected.

This loss of charge is called the "leakage" of the condenser, and materials differ greatly in this respect. For instance, a pair of plates with dry air as dielectric will retain the charge almost indefinitely after the voltage is cut off, while in some paper condensers the charge disappears by leakage in a few minutes. This fact explains some of the peculiar characteristics of a receiving set, especially in dry and damp weather.

When a current gives a condenser a certain charge when it is applied for a short time and a greater charge when applied for a longer time, the dielectric is said to possess "absorption." Tests by the Bureau of Standards showed that in condensers made with oil or well selected mica for the dielectric the absorption is small. It is larger with glass and becomes very troublesome with bakelite and similar synthetic materials.

ABOLISHING BINDING POSTS

It is a fact that loose friction connections of the ordinary binding post are anything but perfect. It is from this source that many noises originate. One may operate a set for weeks bothered by noises sounding like a loose connection without ever giving the binding post a thought. Looseness takes place not only in the connection of the wire to the post, but also in the post to the instruments. Because of the above objections, and the resistance presented, it is advisable to bring all battery connections from the instruments directly to the batteries by means of flexible wires on the end of which may be soldered lugs or clips. This facilitates hooking up and disconnecting the outfit, and is much easier to install, and is more efficient than binding posts. There is a special multi-connection plug and cord on the market that is efficient. It is based on the flexible lead principle.

MOUNTING LOGGING DIAL

Remember when you are removing a dial on a set that logs, make sure that you have the condenser plates turned full in before removing the dial. The dial then should be at maximum. Leave the condenser plates just as they are. When replacing the dial attach it so that the same maximum reading is obtained before turning up the set screw. Should the condenser plates be disturbed, see that they are completely meshed before replacing the dial. You're welcome.

"It Isn't Everybody That Can Advertise in EVERYBODY'S."

Navy Chief Lauds Pole Work

Praise for his efforts in developing a new field of radio communication for the use of the navy is given to Lieutenant F. H. Schnell, traffic manager of the American Radio Relay League, in a letter from Admiral R. E. Coontz, commander-in-chief of the United States fleet, just made public here.

Lieutenant Schnell, who was granted a leave of absence by the American Radio Relay League, has served as chief operator of experimental radio station NRRL, on board the flagship Seattle throughout the Pacific cruise of the fleet, making history with his valuable contributions to the knowledge of radio short wave phenomena. This phase of radio work had been touched but slightly by the navy, and the reliability which Lieutenant Schnell proved was one of the outstanding features of this type of communication, gave rise to the letter of commendation from the commander-in-chief of the fleet.

Station NRRL, working in daylight and at night, succeeded without a break, in communicating with American amateurs and the navy short wave station at Bellevue, D. C., during the entire time of the cruise. The importance of the work is well shown by the fact that the fleet visited Hawaii, the various South Seas islands, Australia and New Zealand.

In his letter to Lieutenant Schnell, Admiral Coontz said:

"Upon departure from San Francisco the fleet had no experience in superhigh frequency radio. Upon completion of the cruise six months later the successful application of these frequencies for the fleet long distance work had been thoroughly tested and proved.

"You have labored tirelessly for the success of the venture. The commander-in-chief takes pleasure in acknowledging the effectiveness of your work, and in thanking you for your efforts.

"The work you are doing in endeavoring to make the amateur organization ready in event of national need, is an exceedingly important one. Through you may I express my wishes for its happiness and success."

Lieutenant Schnell, when relieved from active duty, will once more take up his work as traffic manager at the headquarters of the American Radio Relay League in Hartford, Conn. It is expected that in this post he will have a large share in the amateur phase of the projected army-radio amateur radio net plan.

This plan, which contemplates the development of a system of amateur radio stations for the use of national guard and organized reserve units, is expected to make the army independent of ordinary communication systems in times of national stress that put other means out of commission. The traffic department of the American Radio Relay League is expected to have a large share in the development of this plan.

WEE BIT DOTS, DASHES

Amateurs generally are invited to send in notes for this department. We would like to have a good representation from every district. ARRL reporters are urged to use this or other departments freely. Address all communications to Ham Editor, EVERYBODY'S RADIO WEEKLY, 2721 South Michigan avenue, Chicago.

First District

1NV reports having difficulty on forty meters. He finds thirty-five and lower okay. 1BVO is using a five on forty meters. 1ARH connected with British East Africa as his first job after getting his pure D C note.

Third District

3APT has come down to eighty meters. His goal is much lower. 3WA reports good success with forty and eighty. 3RF has had contact with WNP. 3PH has quit 160 for the lower bands.

Fifth District

5MI has been working Brazil, New Zealand, India and NRRL. 5ZAS is working consistently. 5AC worked England, Philippines, Australia, New Zealand, NRRL and WAP, he reports, this summer. 5ADA is on 40 and 80 meters.

Sixth District

6BKX has installed a two-fifty for forty meters. 6CMQ seeks traffic for five meters. 6BUR worked J1AA daylight during the twenty-meter tests.

Ninth District

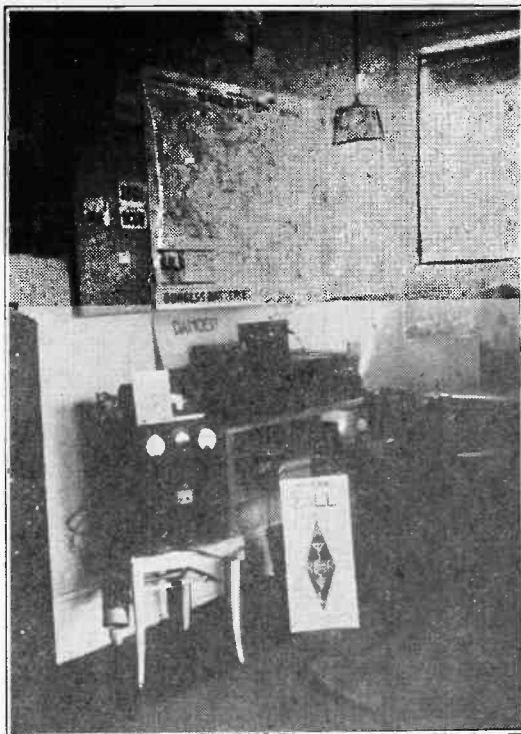
9COW worked Australian 3UY on forty meters, using 3,000 volts on the plate of a fifty-wattier immersed in oil. 9AOL worked Australian 3YI on forty with a fifty-wattier.

9APY tried out forty meters without any result. Better tuning and more time to experiment will solve the difficulty.

9CCK is now on forty meters and desires US and especially Chicago traffic. Go after him, fellows.

The only way to handle traffic better is to get schedules and KEEP them. Get busy, fellows, and get some schedules, join the traffic committee of the Chicago Radio Traffic Association and get in on the ground floor of what is going to be a great traffic movement here.

9US, 9FI, 9FP, 9COW and 9CRP are rebuilding. Traffic reports are getting better. Let's make them better yet. All get busy. All western Chicago suburbs



THIS is station 2ALL, owned and operated by H. B. Kroger at W. 231st St., Spuyten-Duyvil, New York City, N. Y. Mr. Kroger started in the radio game in 1920 with a little crystal receiving set on which he copied ship stations on 600 meters. The set at 2ALL is comprised of a five-watt tube using 750 volts on the plate in a loose-coupled Hartley circuit. The wave at 2ALL is 175 meters. Chemical rectification is used to rectify the plate current and give it a smooth flow, which in turn will give a "DC" note. The location of 2ALL is rather unfavorable in that there are a great number of trees on the grounds which make the erection of an aerial a problem. The aerial consists of a single wire thirty feet long and thirty feet high. A two-wire counterpoise is used thirty feet long and fifteen feet high. DX at 2ALL is scant but signals have been copied there from France, England, Denmark, Bermuda, all U. S. and Canadian districts. We are indebted to F. J. Hinds (9APY), Berwyn, Ill., for the accompanying picture and data. Mr. Hinds recently returned from a trip in Canada and East and is to favor this page with other pictures from time to time.

Ham Messages Beat Wire

During the Industrial Exposition, held at Rochester, N. Y., recently, the Rochester Radio Club received much commendation for the remarkably efficient message service which it maintained free for the benefit of patrons of the exposition from other parts of the world. England, Australia, Italy and New Zealand messages as well as many for various points in the United States were handled during the time of the show.

As an illustration of the dispatch with which the messages were handled, one radiogram, relayed by the amateurs, arrived at its Washington, D. C., destination forty minutes before a telegram between the same two points. The best record of all, however, was that made by messages to Australia. These were delivered in Australia the next morning, by means of relay stations of the American Radio Relay League, the usual length of time required in ordinary cable usage is from four to five days between the East Coast of the United States and interior points in Australia.

MEASURING ONE-METER WAVES

Elliott White, 1YB-1XAV, Hanover, N. H., suggests this method of measuring one-meter waves from a Hertzian oscillator: A wooden frame is strung with copper wire and suspended on a wall of the Lab. Standing waves were set up in the air (not on the wires) between the frame (from which they were reflected) and the oscillator. The presence of nodes and antinodes in the electric and magnetic field could be located by a device which consisted of a single turn of wire fastened to a handle with a helium tube (or Spark-C tube) connected between the open ends of the turn of wire. A plumb line dropped to the floor, where a chalk mark was made, permitted measurement with a yard stick between the located points.

WORN-OUT DRY CELLS

It is customary to throw away the worn-out No. 6 dry cells. They may be salvaged for the house or door bell as they usually carry sufficient power for this purpose long after they have served their purpose in radio.

report to 9APY by the fifteenth of each month. All Chicago stations to 9BE by the same time. Come on, fellows, wake up.

The Ham Page editor pulled a boner in October 17 issue. The new officers elected recently by Chicago Radio Traffic Association are: W. W. Bingham, president; F. J. Hinds, vice president; R. T. Prazak, secretary, and R. C. Schweitzer, treasurer.

9EMD seeks a Minneapolis schedule at 6 to 7 a. m. to handle traffic from Chicago. 9EAR says forty is too much for him. 9CIU has joined the short wave bunch. 9BIB is working five and twenty meters. 9AGT has adopted forty.

How to Use CQ to Make Friends

The Ham crowd has its DX hound as well as the radiocast listener. Only he is a nuisance, both to his kind and to all the others that use the air. He is called the DX-Card hound. He is the fellow that has brought the CQ call into disrepute.

F. H. Schnell, Traffic Manager of the A. R. R. L., says this call was designed for a different purpose than to gather in DX-Cards. He believes it can be restored to its proper position, if all amateurs will standardize on its use. He suggests this plan:

Imagine your hook clear of all traffic, he says, but that you are ready to relay messages from other stations and you want other stations to know that you are on the air. For the purpose of illustration we shall use the call 9ZT—it's a good call and at 9ZT CQ is used properly. THE VERY FIRST THING TO DO IS TO LISTEN AT LEAST FIVE MINUTES and make note of the stations you hear working and keep in mind your tuning adjustments for each station—know their wave-lengths, in other words.

If there is some particular station you want to work, call that station, but if you hear stations relaying messages and you want them to know you are ready for traffic, then call CQ in this manner: CQ CQ CQ u 9ZT 9ZT 9ZT CQ CQ CQ u 9ZT 9ZT 9ZT CQ CQ CQ u 9ZT 9ZT 9ZT—then stop and listen. If you are a United States amateur and are calling Canadian amateurs, use the interval cu; if calling amateurs in England, gu. For any European station, make it "CQ EUROPE," and use the interval u if you are U. S. A., c if you are Canadian. (See December QST, page 19, for proper intervals.) The idea is not to keep this up all night and abuse CQ—call NOT MORE THAN ONCE OR TWICE EVERY FIFTEEN (15) MINUTES if you fail to get in touch with stations on the first call.

No station should ever use the bad form of calling CQ more than three times without signing the same number of times. We have heard station after station call CQ anywhere from ten to a hundred times (at a speed beyond the ability of the operator—no one could read it) and wind up by signing once, poorly. Stations are not interested in listening to two or three minutes of "CQ-ing"—they want to know who is doing the calling.

Suppose you have traffic on your hook and you wish to clear it. Sort your traffic into four files: that going north, east, south, and west. Then try to get in communication with certain definite stations which you have made note of while listening for five minutes, being sure your direction is right. After you have failed to reach a particular station, and assuming you are trying to clear your north-bound traffic, then call CQ in this manner: CQ NORTH CQ NORTH CQ NORTH u 9ZT 9ZT 9ZT CQ NORTH CQ NORTH CQ NORTH u 9ZT 9ZT 9ZT CQ NORTH CQ NORTH CQ NORTH u 9ZT 9ZT 9ZT—then listen for replies.

Stations hearing this will know you have made a definite request—you have indicated that you have traffic for stations to the north of you. Properly carried out, only stations to the north of you will answer.

Sometimes it is desirable to relay messages directly into a city where you know stations are operating. Instead of calling "CQ NORTH" or any other direction, merely call "CQ" and insert the name of the city. Washington, for example, would be called like this: "CQ WASHINGTON"—in above form.

Remember—three calls, three signs, repeated three times, is Standard A. R. R. L. Practice.

If you have traffic for stations in more than one direction, try to clear one direction before you start on another. By all means DO NOT CQ for all directions because you can work only one at a time anyway, and this sort of practice will defeat the purpose of the genuine use of CQ. Try one at a time.

Standard A. R. R. L. Practice does not mean that additional signals may be hitched on to the above such as QSR? QRV? QRK? etc. This is superfluous—let's stamp it out entirely and when you hear a station abusing CQ, call his attention to it by card or by letter.

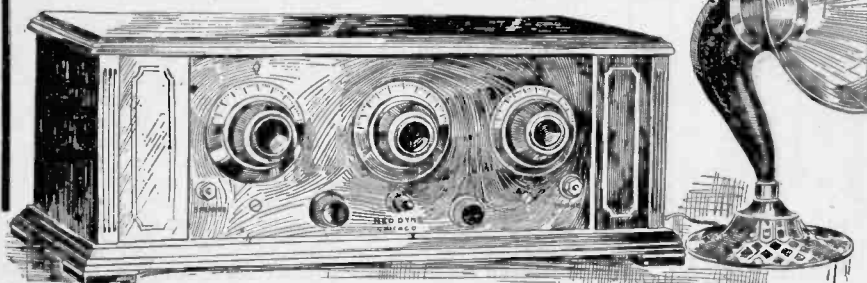
CALLS WE'VE HEARD

ABP, 42 Glenwood Ave., Eden Park, Rhode Island; 6AWT, 6AGK, 6BJJ, 6BUR, 6BWJ, 6CGW, 6CIG, 6CTO, 6TS, 6VC, 7DD, 7LU, 7SF. British: (2CC), (2DX), (2GO), (2FU), (2KF), (2KW), (2KZ), (2IZ), (2NB), (2NM), (2OD), (2RB), (2SH), (2SZ), (2TF), (2WJ), (5EF), (5MO), (5NN), (5PU), (5PZ), (5SI), (6FG), (6KK), (6NF), (6TD), (6TM). French: (8BA), (8CT), (8GO), (8PL), (8WAG), (8SSM), (8WJ), (8QQ). Holland: (ONL), (OLL), (PCL). Denmark: (7EC). Spain: (EAR2), (EAR6), (EAR9). Italy: (1AF), (1ER), (1GN), (1MT). Brazil: (1AB). Cuban: (2IC), (2MK). Bermuda: (BER). Mexican: (1B), (1AA), (1AF), (1BX). New Zealand: (2AC). Miscellaneous: (WNP), (WAP), (NKF), (NERKL). QRK 1ABP on 40 meters. Will Q.S.L. all cards.

THE WORLD'S LOWEST PRICED, FINE QUALITY RADIO SET

The Improved 5-Tube Neo-Dyne

Built and Distributed by the
Steinway Radio Corp., Chicago
A Few Live Districts Open. Write for Information



Sold at Retail—COMPLETE

On Easy
Credit Terms
One Year
Service Free

\$**98**

Selectivity
Volume
Distance
Clarity

Ready to Tune In—Nothing Else to Buy

Here's What NEO-DYNE Fans Say

Picked up about 60 stations in U. S. and Canada. I find it even more selective than you claimed.—W. L. Buchanan, 6829 Wabash Ave., Chicago.

On stormy night when static was strong, easily tuned in stations from coast to coast.—Fred Hatch, 130 E. 55th St., Chicago.

On Oct. 12, friends and I picked up distant stations at will on loud speaker. Set highly selective.—G. Strodie, 632 N. Clark St., Chicago.

The Neo-Dyne—
Five Cunningham or
Radiotron Tubes.
100-hour Paramount
Storage Battery in
Rubber Case
Two Standard large
size 45-Volt B Bat-
teries.

Beautiful Loud
Speaker.
Aerial Equipment.
Ground Equipment.
Complete installation
and instruction in
your home.
And a Year's Service
Absolutely Free.

If you judge a radio by quality and workmanship, you'll find that the Neo-Dyne will stand the closest comparison and satisfy the most particular. If you judge by price, the Neo-Dyne will be your final selection.

Sold in Chicago Exclusively By

PLYMOUTH RADIO SHOPS

Send All Mail Orders to Our Big Loop Store

SOUTH SIDE STORE,
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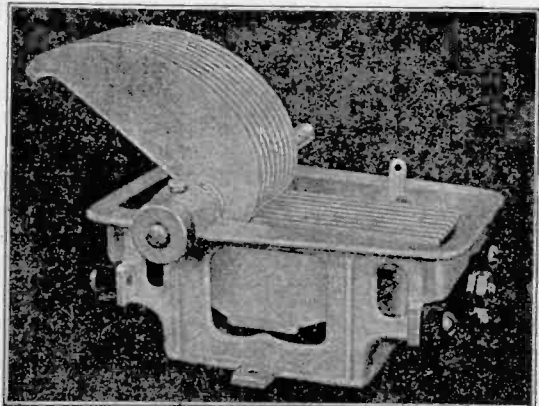
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The PERLESZ

Straight Line Frequency

Built solidly for durability—Never Warps or Wobbles—Always uniform—Permits matching of dials in R. F. Circuits.



.00025 mfd.\$5.50 .00035 mfd.\$6.50
.00031 mfd.6.00 .0005 mfd.6.75

Not only both the rotor and stator are made of one-piece die castings, but the dies have been so designed to insure absolute uniformity of air gap and the consequent change in capacity at all positions. Two or more condensers can be MATCHED for R. F. sets so dials tune evenly. Any length of shaft can be used so two or more condensers can be used tandem style if desired. Lobster Claw Design plates give TRUE straight line frequency operation, thus spacing all stations evenly on dial.

In actual tests losses serve as Government Standard Laboratory Condenser. First Commercial type equal of Laboratory type to be sold at ordinary condenser prices.

Covers wave lengths from 187 to 575 meters because losses are so low.

Go to your dealer TODAY and see the PERLESZ, or write for descriptive folder telling you of its exclusive features.

PERLESZ RADIO CORP.
664 W. Austin Ave., Chicago
Phone: Mon. 1188

THE EKKO COMPANY
Sales Representative
111 W. Monroe St., Chicago
Phone: Ran. 2126

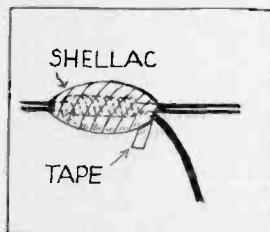
HELPS FOR THE BUILDER

LENGTH OF RADIO WAVES

Radio waves have different lengths and in leaving the transmitting station they travel in all directions in a series of wave-trains and at the tremendous speed of 183,000 miles per second. For example, if you were talking or singing into the transmitter at a broadcasting station your voice would project itself through the air or ether in a series of waves or wave-trains. These are similar in theory to the waves on a pool when a stone is dropped in the center. Little waves are formed in the pool and these travel in wave-trains from where the stone fell and right up to the sides of the pool. If you dropped several stones you would produce several wave-trains. This analogy, briefly described, is applicable to radio waves. The electricity in a broadcasting transmitter is the energy that makes radio waves possible, and the space around the earth resembles the pool, in the sense that it acts as a conductor through which these waves travel. You're welcome.

PREVENTING CORRODED JOINTS

It is a good idea to wipe off the aerial wire to remove particles of dust, etc., that have collected. However, the important thing is that the connection where the lead-in joins the an-



tenna is well soldered and electrically perfect. Corrosion at this joint is detrimental to reception. After making the joint solder well and wind several layers of friction tape over the joint, winding tightly.

After the tape is on, coat it with shellac making sure that it is all covered and there are no holes. Let the shellac dry and you will have a joint that will withstand corrosion for a long time.

HOW DRY CELLS ARE MADE

Some phans will be interested to learn that in dry cells the electrolyte is carried in the pores of some absorbent material, or combined with some gelatinous substance, so that the cell may be placed in any position without spilling the liquid. These cells are usually made with zinc and carbon elements. The zinc generally forms the outside of the cell, being made into a cylindrical can; in the center of this is the carbon. The space between the elements is filled with some absorbent material, such as mineral, wool, asbestos, sawdust, blotting paper, etc., and the whole including the depolarizer, is then soaked into the electrolyte, or the electrolyte is mixed with a hot solution of some gelatinous body, such as Irish moss, which mixture is poured into the cell; on cooling, it forms a soft jelly. You're welcome.

DIAGRAMS EASY TO READ

It is not difficult to read schematic diagrams. The symbols all represent something. The wiring plan is not necessarily to be followed exactly, so far as the route taken. These usually are indicated as they are for symmetrical appearance and ease of discernment. Neither are the units located in the exact position they should occupy. Position depends upon the parts. Place all parts where the leads will be the shortest between given points. Study the schematic diagram as given each week in EVERYBODY'S RADIO Weekly and then compare them with the pictorial plans of the same set. This will enable you to learn the symbols and how to place the parts correctly. You're welcome.

CONTROL KICKING IMPULSE

The far-flung lure and mystery of radio may keep your enthusiasm as a phan at high pitch, and let's hope it does. But always remember that the units in your receiver are scientific devices and must be handled accordingly.

Therefore, do not expect wonderful selectivity, volume and tone, in the first stage of your set in its initial operation. Some set builders are sadly lacking in patience-control, and right off the reel, as it were, they vent their ire on the manufacturer or dealer when reception is poor and things in general go wrong. Keep cool, old man, keep cool. You may have forgotten that you have an incorrect battery connection or an aerial disconnection or that some or all of your vacuum tubes are shot. You're welcome.

AERIAL'S LENGTH VITAL

A question often arises as to the best position in which to place an antenna. The average individual generally tries to place it in as near a horizontal line as possible. He often sacrifices four or five feet in height which might be obtained at one end of his installation for the purpose of keeping the wire perfectly level.

This should not be. The length of the aerial is the thing that counts. It could run straight up in the air, as far as that is concerned, and still produce excellent results. Therefore, if you could make your aerial longer or higher by raising one end of it, do so.

SINGLE CIRCUIT RECEIVERS

The phan who uses a single circuit tube receiver may grumble when he finds it impossible to tune out other stations while listening to one in particular. This type of receiver, he must remember, is naturally not as selective as others having a multiplicity of controls. The addition of a variable condenser will be found quite an aid in cutting out interference. You're welcome.

INCREASING DX

Remember that one stage of radio frequency placed before the tuning unit of any set will aid materially in making it a more selective one, but will not increase its range to any appreciable extent. Two stages, however, will add range and also increase selectivity and it might be remarked, also the complications of tuning. You're welcome.

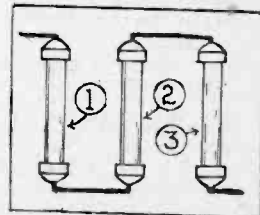
RECEPTION ON RAINY DAYS

There are two reasons why radio-cast reception is worse in rainy or cloudy weather than in clear weather. The first is that rain water on the antenna supports has the effect of forming a thin film of water that is slightly conductive.

The second reason is that in rainy weather the atmosphere is likely to be disturbed and stormy. All such disturbances increase the absorption of radio energy in transit. You're welcome.

RESISTANCE IN SERIES

Grid leaks connected in series have a resistance that is equal to the sum of their individual resistances. Dia-



gram shows how three grid leaks connected in series. Grid leak number 1 is ½ meg., grid leak number 2 is 1 meg., grid leak number 3 is 1½ meg. The sum of the three grid leaks is 3 meg.

DON'T SOLDER CONDENSER

When you are mounting fixed condensers, a small machine screw and nut should be used in preference to soldering, for if the iron is allowed to remain too long on the condenser, it will break down the insulation and ruin the condenser. You're welcome.

THE WHY OF FADING

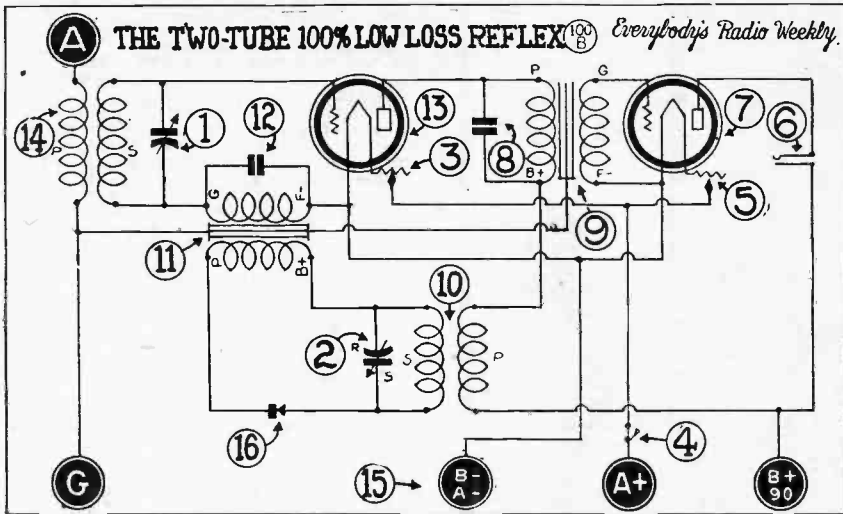
Phans are often puzzled about fading. This is due to one or more of the following reasons. Atmospheric disturbances, a swaying aerial, a defective receiving set, a defective transformer, etc. You're welcome.

Your Questions Answered Here

Everybody's Clearing House for Troubled Set Builders

An Expert Aid on Construction and Operation of Sets

QUESTIONS can be answered only by mail. Write your query on only one side of the sheet and enclose diagram of your circuit whenever it will aid us in locating your trouble. Address all letters for this department to Question and Answer Department, care of this magazine. Inclose stamped and addressed envelope if answer by mail is desired. In writing to other departments, use a separate sheet of paper. This will aid us considerably in serving you quickly.



Q.—I have seen the three-tube 100% Low Loss Reflex and would like a diagram showing how I can make a two-tube reflex on this order. **A.**—Here is the diagram you request. The list of parts are as follows: Fig. 1—.0005 mfd. variable condenser. Fig. 2—.0005 variable condenser. Fig. 3—25 Ohm rheostat. Fig. 4—Filament switch. Fig. 5—25 Ohm rheostat. Fig. 6—Open circuit jack. Fig. 7—Socket. Fig. 8—.001 Fixed condenser. Fig. 9—Audio frequency transformer (low ratio). Fig. 10—Ambassador radio frequency transformer. Fig. 11—Audio frequency transformer (low ratio). Fig. 12—.00025 Fixed condenser. Fig. 13—Socket. Fig. 14—Ambassador radio frequency transformer. Fig. 15—Binding posts. Fig. 16—R. W. crystal detector.—Herb Ernst, Marine City, Mich.

WHICH IS BEST SUPER?

5064—CLEVELAND, OHIO: I have built the Silver Marshall super that you had in your weekly some time ago, and now I want to build another and I want to know if there are any improvements over the last one you published. The set I have is a good one and has a good tone, but I cannot get WGY when WTAM is broadcasting. It is not sharp enough to suit me. I have spared no money on parts, and had one of the best radio mechanics build it for me. I am going to be frank. What is in your opinion the best super on the market or that can be built for me regardless of price?

When do you expect to enter Cleveland, Ohio, as a service station on radio sets?

Give me the dope on the subantenna. How deep must the lot be, and how much of the yard must you dig up? Is it as good as they claim it to be? Will it reach out as far as an outside aerial? Could I use it satisfactorily and to advantage on my Silver Marshall set?

If I have you build a set for me, how long would I have to wait? For I expect you to build the next one I have made up.

A.—We consider the Silver-Marshall set to be one of the best super-heterodynes on the market. The Welty Superadio and the St. James are of the same type of circuit, but using different parts. They also are in the superior class. We do not like the Silver-Marshall Autodyne six-tube, which we recently published, as well as we do the original 7-tube. It is all right in the hands of an expert radio phan, but requires too much adjustment for the average radio phan to risk himself on. In fact, that is almost true of any super, and that is one of the reasons why we do not print more superhets in our magazine.

We have recently placed the magazine in Cleveland on the newsstands, but do not intend to establish a service station there. We have enough grief trying to run the one in Chicago. Out-of-town readers may send their sets to us by prepaid parcel post or express, if they **PACK THEM SECURELY.**

Bury the subantenna about 6 inches or a foot. It is better to lay it in a straight line, so you will have to dig a small trench, almost the length of the aerial, which is 60 feet for the standard size. It will give you better selectivity, freedom from atmospheric disturbances and the equal range and volume of any outside aerial.

We will ship back within four days after we receive the parts. When the season is advanced, it will probably take a week's time.

ULTRALOGGO SPECIFICATIONS

5125—WHITING, IND.: Will you please show the diagram of the one-tube Ultraloggo and list of material, also send me directions for winding my own coils. I have a radio and audio Erla transformers. Tell me if they are right to use.

A.—For winding the Ultraloggo coil you will need one-half pound of number 22 DCC wire and one piece of hard rubber, bakelite or cardboard tubing four inches in diameter and three inches long.

If cardboard or fibre tubing is used it is advisable to soak it in paraffine to make it moisture proof. Exactly in the center of the tubing wind the primary or pickup coil. Five turns are wound on. Cut off the wire leaving about six inches at each end. Bore a small hole in the tubing just where the ends of the winding stop and draw the

loose ends through these holes. To prevent the coil from unwinding a small piece of sealing wax should be placed on the wire where it emerges from the holes.

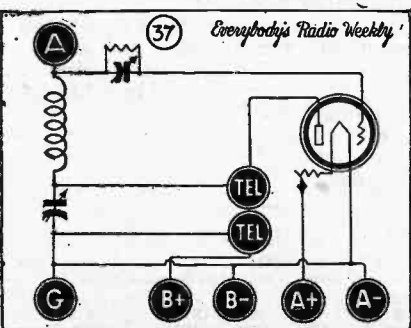
The secondary winding consists of sixty turns. Half of these, or thirty, are placed on either side of the primary or five-turn coil. Bore a small hole close to one side of the primary winding and put the wire through so that four or five inches is inside. Seal this securely to the inside of the coil with wax.

Start the winding making thirty turns as close to the primary as possible being sure that the turns are wound in the same direction. This is important because if you do not you will have a set of inductance coils "bucking" each other. When you have completed the thirty turns bore a small hole near the edge of the windings and insert about five inches of wire and seal in place with wax as before. The second thirty turns is started next to the primary by boring a small hole and inserting the end as before. These turns are wound exactly as the first thirty. This makes three separate windings on the coil. Gather up the two ends of the thirty turn coils that are next to the five turn coil in the center and wind them together making a neat splice, soldering it good. After this is done you have a sixty turn primary. It would be better of course to wind the sixty turns instead of having them split in the center. This is quite difficult so we suggest that you follow the way we have described.

COILS FOR LOSSLESS

5058—CHICAGO: I would like you to inform me if the Erla Circloid coils are O.K. in your five-tube radio frequency circuit and if the set oscillates on any wavelength without neutralizing it?

A.—We have not tested the Erla coils. If what they claim for them is true, they will work satisfactorily in the five-tube "Lossless" circuit. Our experience with other toroid coils have not been very encouraging. They tune too broadly.



Hookup No. 37—De Forest Ultra-Audion Circuit. A honeycomb coil is used which may be substituted by other types of coils. A variable grid condenser can be used. The other variable condenser is .001

"B" ELIMINATOR AGAIN

5068—CLEVELAND: A few questions regarding that "B" battery eliminator, by W. J. Rothschild, in your May 23d and June 6th, 1925, issue. I have used all parts mentioned; tried C301 A; UV-201 A and 216 tubes for rectifying, but do not get enough current out of it. I have 110 A. C. house current and use a variable bell transformer, but no use. My set is a five-tube Neutrodyne, using only 1/4 amp. tubes drawing 25 mil. (1) How can I get at least 90 volts out of eliminator? (2) What instrument can I test the rectified current with?

The eliminator will work fine on the detector or 'phones, but when the horn is turned on it comes in very soft. I also put a variable grid leak on eliminator for a 45 volts step on the 'phones and have switched them around, but of no use. The action of the eliminator is: if I put both clips (the 'phone 45+ and horn 90+ together) on the 90-volt output of the eliminator it works fine on the 'phones only. Also by using the full amount of output on the 'phones.

(1) Place a 200-volt step-up transformer in place of your present audio transformer. (2) Use a voltmeter with about a 150 reading.

SEND DIAGRAM.

5014—CHICAGO: I have built a 100% Low-Loss set using two 299 tubes, two 40-ohm rheostats, one double, one single circuit jack, two Benjamin sockets, 5-1 ratio, all-American transformer, 7 meg. grid leak and .00025 condenser. .00025 Premier condenser and Bremer-Tully tuner. Now I get good results on the detector tube, but when I plug in on the first stage I get it just as loud as on the detector tube, which should bring it in louder but doesn't. I rewound the set and tested each apparatus and found it O. K. I cannot find the trouble anywhere. I have built a few of these sets before, also a four-tube which I have at present and have wonderful results with these sets, but never run into any trouble like this. So if you will help me out of this predicament I will be very thankful to you.

It is evident that you have wired the jacks wrong but since you did not send us a diagram of the way you have hooked up the set, it is rather difficult for us to suggest how to improve it.

If you will send us this diagram, we will be glad to check it and make the necessary corrections.

AUTODYNE QUESTIONS.

5013—CHICAGO: In your Sept. 12 issue, you have a super autodyne receiver. I would like to build it for use with outside aerial.

If you think the change is O.K. I will go ahead.

2. Could I use 201-A tubes with it?
3. Could you suggest a receiver on the order of the above named set, for a 21-inch console cabinet?

You can use an outside aerial with the Autodyne, providing you use an antenna coupler in your set.

Use 201-A tubes throughout.

It would be crowding things together to put a set like this into a 21-inch console cabinet. However, it might be possible, but since you do not give us the exact measurements for the baseboard, it is rather difficult for us to tell you just how to lay out your parts.

SUPER-CONVERTER COMING

4084—CHICAGO: Have been a constant reader of your paper since first issue. Have not tried many of the hook-ups, as I work long hours and do not have time. However, I have a five-tube Neutrodyne composed of Fada parts, employing Howard hook-up principle. My set is selective, using inside aerial, with good volume within fifty miles, using first stage only, but on outside aerial is not very selective. Have had fair success this summer on DX on silent nights. WIBO and WBBM cause most of my trouble. Harmonics bad. Radio dealer and builder having store one-half block from my home has built Neutrodyne, 100% Everybody's Low-Loss with Unilog, radio frequency sets, and nothing but the Superheterodyne does the work here. Pfannstiehl, Gilfillan, Atwater-Kents, etc., are powerless to even cut out interference. Question 1. Will the Superhet unit you speak of to come improve the selectivity without sacrificing volume? 2. Will your unit be ready for publication soon? 3. Have you any suggestions to offer to improve my set?

We have not, as yet, completed the laboratory tests on the Superheterodyne converter. Since our principal object in view is to get a circuit that will be selective, we can not present it until it has reached this point of efficiency.

A simple method to gain selectivity without tearing down your circuit is to place a .0005 variable condenser in your antenna circuit, and tune it until you cut down the interference.

CRITICAL TUNING

5124—CHICAGO: I have your "D" coil "Lossless" hooked up. Bought the coils for .0005 Barrett and Paden condensers and everything seems crowded into about two-thirds of the dials reading down. KYW comes in at about 600 instead of 850 up where she should. Coils were in box, marked for .0005 condensers and have 42 turns on sec. Ar. These condensers off? When I reverse "A" positive and "A" negative clips on my "A" battery set it sends music through just same with no difference in volume. That don't seem right to me as when the polarity of the "A" battery was changed on my B-T. Nameless it killed the set. B-T. logged KYW at 840, WMAQ 740, WEBB 520, etc. It was selective, but very critical to handle on Monday nights, that's why I tried the Ellis "D" low-loss.

A.—Your trouble seems to be in your tuning units. This unit should have 48 turns on the secondary, to match with the .0005 condenser.

Send Inquiries by Mail—Don't Phone Write on One Side of Paper

Owing to the mechanical requirements of this department, a few simple rules have been made for the handling of questions. They are easy to follow and work no hardship on you in securing the service. However, if they are not followed, it works a very real hardship on the technical men who must give you your answers. In fact, with the quantity of mail that is daily pouring into this department, the time has come when it will be impossible to take care of inquiries that do not comply with the following:

Write on one side of paper. Enclose stamped addressed envelope.

Use separate sheets of paper for messages to each department.

Write with typewriter or ink.

Send diagram of all hook-ups.

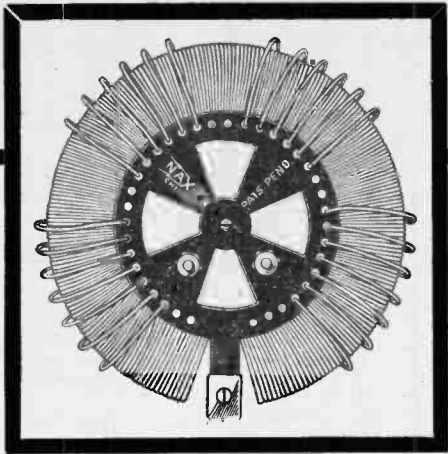
Supply us with complete information, but make your letter as brief and to the point as possible.

Do not write a lengthy description and tell how many stations heard. Get to the point of your trouble at once.

QUESTIONS CANNOT BE ANSWERED OVER THE PHONE.

There is no charge whatever for the advice and help we give you. All we ask is your co-operation, that we may serve you better.

Unusual
Results
Obtained



Selectivity
Clarity
Volume

NAXON

TOROIDAL TRANSFORMERS

7 Points of Superiority

- 1 Correctly distributed external primary.
- 2 Absence of unusual secondary eddy-current losses.
- 3 Maximum magnetic coupling with minimum capacity coupling.
- 4 Sturdy construction without coil housings to absorb energy.
- 5 Spaced low-resistance windings.
- 6 Silver plated primary reduces skin friction.
- 7 Each turn a perfect toroid. No trick style winding with losses at every angular bend.

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Practically all of the jobbers in this territory recognize Naxon Superiority and are stocking a supply. If your jobber cannot supply you as yet—write us direct.

RADIO FANS: Most dealers carry Naxon Toroidal Transformers. If your dealer cannot supply you, write to:

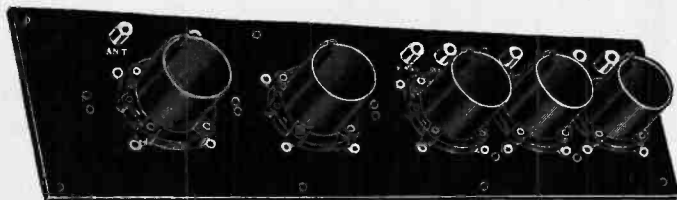
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4524-26 COTTAGE GROVE AVENUE
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Sub Panels, as well as Front Panels, can be furnished completely drilled with sockets assembled, in addition to machining, engraving and special machining as required. Quick delivery, superior workmanship which will assure a saving to you. We are pleased to quote on your requirements.

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CHICAGO, ILLINOIS
'Phone: Brunswick 3200

SEND DIAGRAM

5063—NEW YORK CITY: I have a three-tube regenerative set using 201A tubes and Acme transformers. The aerial is 125 feet, including lead-in. The hookup is as follows: 22-plate variable condenser ("Preferred") is used to tune the grid circuit of the detector tube. An Amrad basket weave variometer is used to tune the plate circuit of the detector tube. An A-C Dayton vario-coupler is used to tune the aerial. This coupler (70 turns primary) has four taps on one side of the primary about eight turns apart. It has five taps on the other side about twelve turns apart. The secondary of the coupler has fifty-four turns. The fixed condenser on the grid is a .00025 with an adjustable Durham leak.

While this set works excellent on local stations of 250 to 550 meters, I am unable to get any distance. Even Philadelphia, which is only 100 miles, comes in hardly audible on the speaker. All the lower meters are crowded on the lower figures of the dial and are hard to separate.

The regeneration in this set, obtained by use of the variometer is tremendous and the tone quality is excellent. I have always believed that this hookup should pull in great distance.

Am I using the proper capacity variable condenser for this vario-coupler? If not, what make would you suggest? Would a straight-line frequency condenser help any? How can I get more distance?

A.—All parts seem to be O. K. We would advise you to check over your set. See that all soldering joints are in good shape. Try a different sized grid leak. See that your aerial is well insulated from all points of contact. See that you have a good ground connection. Your tubes may be weak; try changing them around in the different sockets. Also see to it that your batteries are all well charged.

Inasmuch as you do not give us very much information on how you have your set hooked-up, we would suggest that you draw out your circuit just the way you have it wired up in your present set, and submit it to us. We may then prove of better service to you.

PfANSTIEHL HOOKUP

5071—CHICAGO: I have built the Pfanstiehl efficiency hookup and I am quite sure the hookup is correct, as I have gone over it twice. The set tunes so broadly I cannot separate WGN from WLS or WMAQ from KYW with sufficient volume to hear the programs. Have even shortened my aerial to 60 feet.

Can I in some way alter this set without adding apparatus to tune sharply? Have not received one DX station. Can you supply me with the information of the number of turns on the primary, secondary and tickler of the Pfanstiehl three-circuit tuner?

Referring to the "B" eliminator shown in May 23 issue, in place of the secondary of a Ford coil can I build a choke coil for this purpose? If so, of what diameter should the iron core be, number of wire and how many turns?

A.—We would advise you to convert your present set into our hookup in our issue of July 25. You will gain selectivity.

To improve your present set, disconnect the present primary, and put in a fixed primary of 10 turns wound in a 2½-inch circle, placed about ¼-inch from the secondary.

The Ford coil is best to use. Would not advise anything else.

FOOTE COAST-COIL

5095—BROOKLYN, N. Y.: My first number of EVERYBODY'S RADIO was September 26 and now I would like to get some of the back numbers or information from you on your one-tube or the three-tube with two stages of audio. I have two Amertrans which are very satisfactory, and I have had most everything in front of them except a satisfactory three-circuit tuner. Will you please give me the information on the "Everybody's 100% Low-Loss" one-tube, or on the three-tube in which I can use the Amertrans? I would like to use an Amoco Allocating .0005 S. L. F. condenser if possible and 199 tubes.

What is your opinion of the Foote Coast-Coil three-circuit tuner with fixed secondary of about 45 turns and rotating primary and tickler of about 22 turns each? Can you give me the size of the wire and coils and number of turns so that I can make up a tuner similar to the Buell?

Where can I procure back numbers of EVERYBODY'S RADIO?

A.—The use of the Foote Coast-Coil three-circuit tuner with fixed secondary of 45 turns and rotating primary and tickler of 20 turns will be all right. Use number 26 wire.

We can supply you with back numbers of our magazine if you state the issues desired.

DE LUXE LOW-LOSS

5079—CHICAGO: A year ago I constructed your 1924 three-tube "De Luxe 100% Low-Loss" model receiver. It has very good tonal quality on locals and I often get California faintly on the loud speaker.

I would like to build a set with more pep on DX, but would not like to lose any tone quality. Is your "100% Low-Loss Reflex" (3-tube) more powerful and does

(Continued on page 15)

The Backbone of Adams Perfected



RADIO JACKS

Here is the foundation of ADAMS radio jacks—and right here they begin to build their reputation. See how it hugs the panel—how it tapers back towards the insulating posts. Note its thickness—ample proof of its rigidity and strength.

It's Made of Brass, Too—

There's no flexibility or give to this frame. Then follow the phosphor bronze springs—wide spaced, notched and tinned terminals—Bakelite insulators and pure silver contact points.

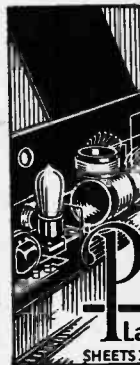
Only in ADAMS radio jacks are all these features combined. No wonder they have been

"Approved by 'Everybody's' Radio Weekly. They have withstood the most severe laboratory tests submitted by this magazine and have been adopted as regular equipment on many of their hook-ups. Go to your dealer today, or write for illustrated folder showing the complete ADAMS line. ADAMS RADIO MFG. CO. 1042 W. Van Buren St. Chicago, Ill.

—for radio insulation!

... highest dielectric strength! Highest tensile strength! Do you know Phenolite? ... It is the new material that is establishing a new standard of quality in radio insulation. Write us and we will tell you where you can obtain radio panels of genuine Phenolite. Address National Vulcanized Fibre Co., 2808 W. Lake Street, Chicago.

Ask to see our richly decorated Phenolite panels—the last word in receiving set beauty.



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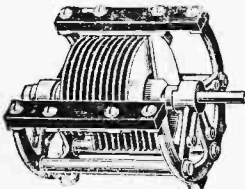
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THE NEW BUELL

THREE-CIRCUIT TUNER

CUTS LIKE A KNIFE

Pushes through Chicago's TWENTY-SEVEN stations as if they did not exist. Works three tubes on a loud speaker on coast-to-coast (from Chicago). If it does these things in Chicago it will work much better elsewhere. The BUELL Three-Circuit Tuner is the simplest made. No gears—no cams—no levers—nothing to get out of order. Smallest made. Takes up one-fourth the space of most tuners. Makes big sets smaller. Just the thing for portable sets. And yet it has a kick on distance signals! It's the coils that do it. Pancakes have the highest inductance because the distributed capacity is lowest. The BUELL new adjustable ball-and-socket primary is the secret of BUELL selectivity. Insures any coupling—loose or tight. The BUELL usually is at the best dealers, or by mail, **\$4.85** postpaid.



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Made in two types—Straight-Line Frequency and Straight-Line Capacity. You can have your choice. No difference in electrical qualities—neither can be surpassed. Straight-Line Frequency spreads stations equally over dial. It comes in .00035 mfd. at \$5.00. This Straight-Line Capacity is .00025 mfd. at \$4.50 and .0005 mfd. at \$5. This is the sturdiest condenser on the general market. The plates are 1/16-inch thick. The frame is die cast of aluminum and extra heavy. Large ball bearings insure free action of rotor plates. Special adjustment to keep plates in alignment. Minimum amount of dielectric. OUTSIDE of field. Pigtail soldered direct to lugs. No losses—no resistance. Makes sets tune SHARP anywhere.

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SUBSCRIBE TO EVERYBODY'S RADIO WEEKLY. TWO DOLLARS THE YEAR.

Phorum for Phans

Readers of EVERYBODY'S RADIO Weekly are invited to express their comments and opinions on timely subjects of general interest through this department. There are no restrictions except that you must write on ONE SIDE of the paper only and you should confine your remarks to a legitimate discussion of subjects of general interest. The editor assumes no responsibility for the opinions of those who contribute to this department. Address your letters to Phorum Editor, EVERYBODY'S RADIO Weekly.

Can You Beat This?

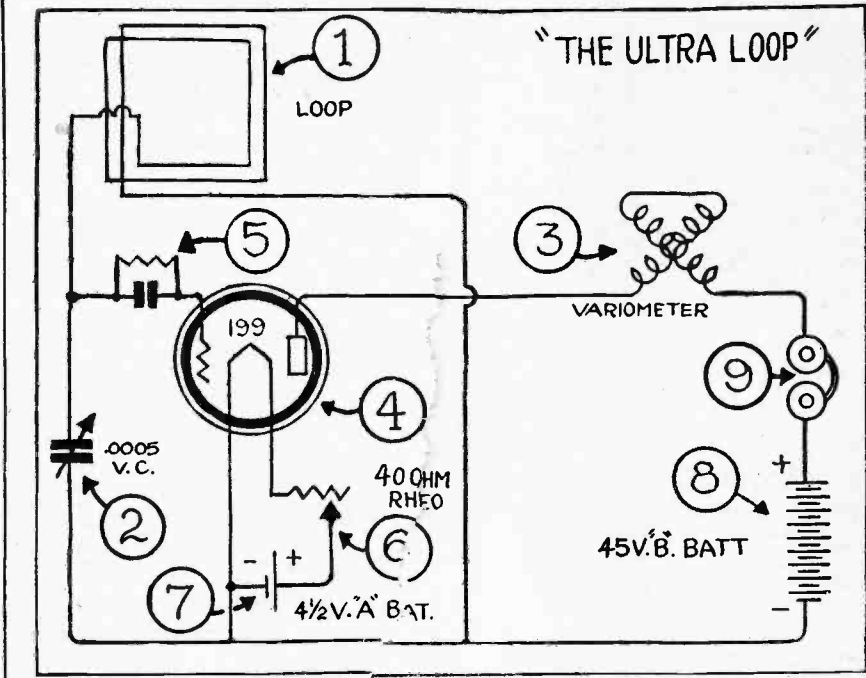
One-Tube Record

Phew, what a record! In a letter to us, Mr. Charles Dockarty, 433 Roslyn Place, Chicago, writes about the records he has made with his one-tube set. Here is what he says:

I think that this one-tube record will totally eclipse all my others. It is better than the 3 and 5-tube sets I know of. My log book begins July 20, 1925, but I am only going to send in the past week from October 12 to October 18. Here it is:

October 12, silent night:	Vernier
WCX—7:15, tenor solo.....	15
WLW—7:19, Hotel Gibson.....	45
WCAP—7:25, Memorial Hall, choir.....	31
WOC—7:30.....	28
WVU—7:38.....	61
WIP—7:50.....	56
KDKA—8:10.....	78
WPL—8:12, overture from Verdi.....	75
WBS—8:20 Scotch comedian.....	68
WSAI—8:30.....	72
WMAK—8:43, "Just a Little Drink".....	91
WSBM—8:48.....	90
WAFD—8:53, "O, Boy, What a Girl".....	85
WSMB—9:00, jazz orchestra.....	77
WBAN—9:15.....	73
WTAM—9:25, classical music.....	59
WHAS—9:35, song of India.....	55
WOR—9:40, orchestra.....	51
WMBF—10:03, Miami, Fla.....	52
WLRK—10:14, jazz orchestra.....	53
KOA—10:18, organ.....	75
WCCO—10:20.....	46
WCAE—10:21, "Yearning".....	35
WBAP—10:23, jazz orchestra.....	29
WOAW—10:45, solo.....	16
WSM—10:34.....	85
WSB—11:16, Harmony Four.....	41
WGR—11:23, "Remember".....	73
WGHP—11:35, dance orchestra.....	84
WHAD—12:06, orchestra.....	78
KOIL—12:11.....	83
WDAF—12:13, "Normandy".....	60
WANG—12:15, "Brown Eyes".....	74
WKRC—12:54, "Let's Wander Away".....	48
9XAG—1:14 a. m.....	25
KNX—1:48 to 2:01 a. m., California. Cry very faint.	
October 13, Tuesday	
WOC—2:55, chimes.....	28
WREO—5:55, dinner concert.....	16
WPL—5:58, organ.....	78
KDKA—5:59.....	76
WLW—9:22, melody by Grieg.....	46
WCX—9:24, laughing song.....	15
WOAW—9:40, banjo orchestra.....	10
WEAF—9:50, opera.....	22
WPL—9:55.....	81

Mr. Dockarty breaks ground for you, phans. We would like to hear from others that can do as well if not better. Must go some to cover these stations! Let's hear from all of you.



Portable Loop Receiver

We have a letter from H. Nilson, 2051 N. Clark Street, Chicago, Illinois, who has lost his copy of EVERYBODY'S RADIO in which a one-tube portable loop receiver was given. He writes:

Several months ago you published in EVERYBODY'S RADIO an article about a one-tube portable loop receiver which had been perfected in your laboratories.

I was quite interested and put away the hookup for future reference. Unfortunately it has been lost and as I would now like to build the set I am writing to you in the hope that you can send me another copy of this hookup.

We herewith present the diagram of the hookup you desire. This circuit

Reader Feels Sore


Mr. Falk Harmel, 709 Longfellow Street, N. W., Washington, D. C., says that EVERYBODY'S RADIO is a truthful publication. In the following words he has to say:

Yesterday, while scanning various periodicals in a rack of a newsstand, I espied EVERYBODY'S RADIO Weekly. It was a new one to me and I bought it. After reading it through, I felt very sore—sore because you confined such an excellent and TRUTHFUL radio publication to the Windy City, leaving the rest of us radio bugs unaware of its existence. How come?

"It Isn't Everybody That Can Advertise in EVERYBODY'S."

YAXLEY Rheostats

Don't compare this rheostat with any other rheostat made because it is DIFFERENT. It is a marvel in design and construction. Coil is air cooled, exposed on all sides. Adjustable contact sliding lever. No vernier required. One nut mounting. Price with knob (etched dial plate, 15 cents extra).....



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Yaxley Booklet Free

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Battery Eliminator

You can't buy a battery eliminator as good as the one you can make yourself with our blue-print plans and instructions. Eliminates both A and B batteries. Plans show how to make necessary changes in receiver. Construction is simple. Operates from any standard lighting current. Send \$1.50. Specify type of receiver and whether direct or alternating current is used. Satisfaction guaranteed.

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WEEKLY

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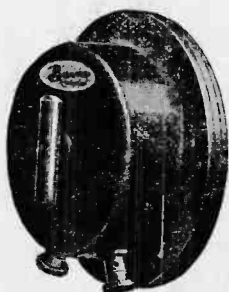
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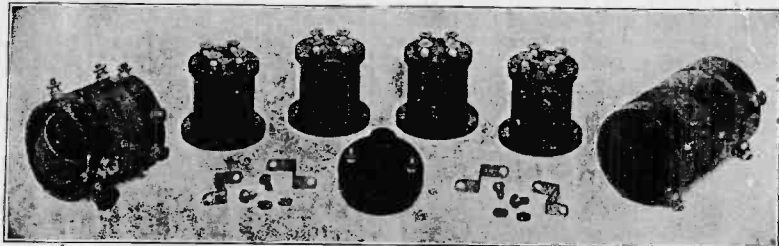
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3-Tube DX Special

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Your article in the issue I bought (Oct. 3) on the Reflex three-tube is excellent and I read with considerable interest and satisfaction your comments on reflexes in general, because what you say exactly bears out my experience with the Erla Reflex set I had last winter which used up six tubes in short order, not to mention the number of crystals which went to the bad, and finally caused me to junk the set in disgust and to swear off forever on reflexes.

Your publication should enjoy a wide circulation here in the East and incidentally, it will save the great many radio experimenters lots of worry, time and money in falling for every new hook-up which appears in print.

The breezes from the Windy City are beginning to blow a great number of EVERYBODY'S RADIO out into other cities, even to the country villages. From the letters we receive every corner of the earth gets a copy and sometimes three or four.

100% for Everybody's 100%

A. L. Roberts, Canton, Ohio, is a real 100 percenter. While he has a little hum in his set he is a hummer and writes to us as follows:

I just want to let you know that I have built "Everybody's Six-Tube 100%" set. Completed it at 9:30 p. m. a week ago Saturday night and at 9:35 we were listening in. It started off without a hitch and certainly is fine. I'll put it up against any superhet made.

Used Ensign condensers, Benjamin R. F. coils instead of binoculars and three Thorndarson 2-1 R. F. transformers. The only trouble is that on most stations east of Chicago it is too strong. Am using a Utah loudspeaker. There is a slight hum in it just like a transformer hum. It doesn't hurt anything, but it shouldn't be there. Expect to be in Chicago this week and will talk to you about it. Am 100% for "Everybody's 100%."

It is sure a satisfaction to get reception just as soon as a set is completed. You have indeed made a good set from good plans. To follow out instructions carefully is the one main thing in set building. You have done this, Mr. Roberts.

One-Tube Set Gets Them

William H. Eldridge, 1646 N. Newkirk Street, Philadelphia, writes:

Like 4,327,172 others, I have been trying hookups without number, purchasing material as per "ads" that do not do one-half what is claimed, putting in an outlay of time, patience and money, you might say, and no results—only to accumulate a nice pile of "junk" of obsolete material. I have been reading EVERYBODY'S RADIO Weekly for some weeks and have come to the conclusion that you have the right dope and am going to follow it in the future.

I have a little one-tube outfit, among others, made by Vesco Radio Co. of Oakland, Cal., that gets them when others fail. Would like to add two stages of A. F. and if possible, one of R. F. to this set.

Quite a number of us take a chance on building various sets with no results. Some of the simpler hookups give better results than the more complicated multiplicity of tube sets.

Wonders at the Price

Edward L. Dixon, 815 East 72nd street, Cleveland, Ohio, is one of our many new friends from the outside world who has just "discovered" us. He writes:

A few weeks ago while in Chicago I picked up at one of the newsstands one of your magazines and wish to let you know what I think of it.

I was so impressed with that issue that I was about to subscribe, but found that my newsdealer here in Cleveland is handling it, so have been taking it from him, but expect to subscribe for same shortly as it is cheaper and then I know I will get it weekly.

How do you do it for 5 cents? I consider it the biggest value ever put out and to say that I am pleased with the good things found in it is putting it mildly. I consider it a wonderful magazine and never want to miss an issue.

We are thinking very seriously of raising the price to ten cents—not because we do not think it has been worth every cent of five cents, but because we want to enlarge the magazine somewhat, and the extra five cents will help us do it. The blank paper alone in each issue costs us almost as much as the price. Perhaps some of our readers will help us form our mind on the ten-cent price. What say, fellow phans? Will you pay ten cents just as readily as the five cents? Let us hear from you on this.

Improvements on Contest Article

Leslie L. Moore, 1531 W. Adams Street, Chicago, desires to make improvements and writes:

I noticed in recent EVERYBODY'S RADIO Weekly, that I had won the "Home Builders' Contest," for July. I would like to make a request. If possible, I would like a "Bates" tuner, in the set I receive for my prize. In return, would be glad to send in, for publication, some improvements I have made in my prize winning article. Hoping you will be able to grant my request.

If you have improvements to make, let us have them. Always want the best there is in radio.



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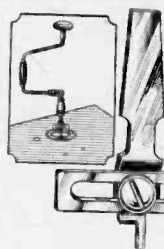
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I Make No Charge for This Service

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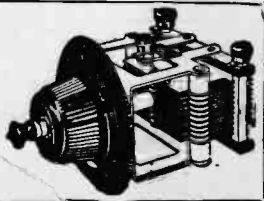
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No Loss Condenser

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103 (One-Type One-Stage R. F.)	\$2.25
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19 (Five-Tube Lossless, R. F.)	4.65

Panels shipped C. O. D. same day order is received. Send orders by mail or phone. Our factory is one block west of Halsted street car line and one block from Halsted street Metropolitan "L".

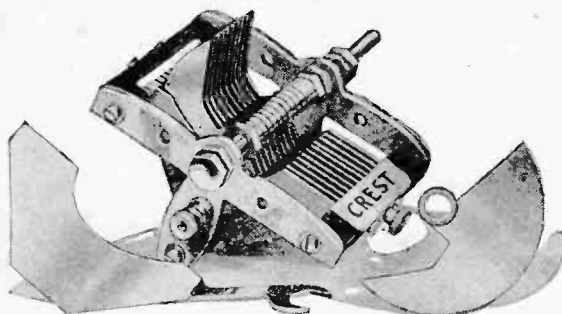
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Modified Straight Line Frequency

Used by Famous Manufacturers such as

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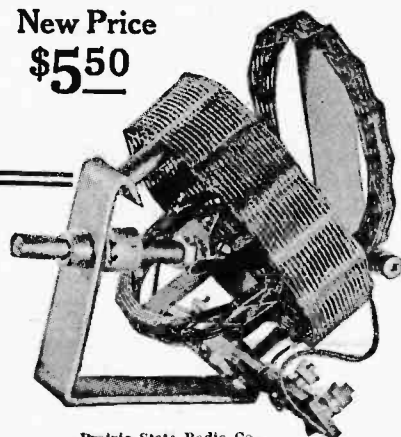
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CREST RADIO CORPORATION

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The Improved Gen-Ral Tuner

New Price
\$5.50



It's the first Three-Circuit Tuning Unit that does not have to offer an apology. Scientifically designed as to inductance, relation of inductance and mechanical action of inductance, it gives maximum efficiency. It is highly selective. It gives the utmost in volume and its tickler action is smooth.

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Wm. A. Wetly Co., 33 S. State St.
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TEMPLE
ceramic exponential horn, semi-adjustable unit.
THE ONLY
way you can get the utmost satisfaction from your set.
Hear it at your dealer's or at "Everybody's" Laboratory.
PAROCELLS & CO.
29 W. Washington St. Chicago



\$21
Cabinet type \$31

(Continued from page 12)
It give as pure a tone as the straight "100% Low-Loss?"
Also how does the tone quality of the "Lossless" (5-tube) compare to the above mentioned receivers? How does the new Armstrong set's tone compare?
A.—Our 3-tube "Low-Loss" is a better distance getter. The 3-tube Low-Loss Reflex has more power and tone quality.
The tone quality of our 5-tube "Lossless" will be about the same as our 3-tube, but will be much more powerful.
The tone quality of the new Armstrong will be about the same.

PREMIER O. K.

5060—CHICAGO: I would like to know if the radio frequency transformer made by the Premier Electric Company of Chicago is an efficient instrument? In size, it is the same as the "Hedghog" audio transformers. It is sealed in a fiber container, and the trade name of the instrument is "Radiotron."
I cannot afford to make a mistake in buying, and I would like information on this article. Is the "Crofoot" condenser as good? Is the "Hedghog" audio transformer good?

A.—All the items made by the Premier Company you have mentioned have been tested and tried out by us under practical conditions and are highly efficient.

Both Crofoot condensers and Hedghog audio transformers are good.

TROPADYNE VS. SUPER-HETERODYNE

5092—BROOKLYN, N. Y.: What advantage has the Tropadyne circuit using tuned intermediate transformers over the super-heterodyne using untuned transformers? What super-heterodyne circuit do you consider the best all-around receiver for reception of broadcast programs?
Kindly give diagram of a "B" eliminator for use on the A. C. current with "B" voltage up to 350 volts. D. C. to operate 3 VT 2s on an audio frequency amplifier.

A.—In regard to the transformers for your set, they will depend upon the circuit used in the super-heterodyne. There is little to choose between them.

There are several good super-heterodyne circuits. There are several popular assemblies under trade names that use these circuits. The "Best" and the "Cotton" are good ones.

While the "B" eliminator is in its infancy and none gives the very best of results, it would be difficult to describe one for the voltage you mention at this time.

THREE-TUBE LOW-LOSS

5090—CHICAGO: I wish to build your 100% Low-Loss three-tube receiver. Will the small UV-199 tubes work well? Are the new De Forest tubes better than the ordinary tubes? What must be the capacity of a variable condenser when used with the Flewelling three-circuit tuner? What is the best variable condenser on the market now?

A.—The tubes will work all right, but you will sacrifice a small amount of volume and distance. The De Forest tubes are very efficient tubes. The condenser used for the Buell tuner should be .00025 capacity. Some of the best variable condensers on the market are the Buell, Karas, Barrett & Paden, Premier Crowfoot, Ambassador, Stewart and National.

VOLUME ON LOW LOSS

5067—CHICAGO: I have recently completed "Everybody's 100% Low Loss" receiver. It has exceptional volume over any other three-tube set I ever have heard. I am using the following parts: One 23-plate condenser, .0005 capacity. U. S. Tool Co.; one home made three-circuit tuner, as specified; three Kellogg sockets, 201A type; two Acme transformers, 4 1/2 to 1 ratio; two Howard rheostats, 25 ohms each; one Electrad grid leak, variable; one .00025 fixed condenser; one .001 fixed condenser; one .0005 fixed condenser.

You will note that none of the parts specified are of the low loss type. Also that I am using a .0005 fixed condenser across the secondary of the second stage transformer because of a whistle. There is some distortion. Are my transformers too high?

I have a little trouble in separating WBCN, WMBB, WTAS and WGES. Can this be overcome by reducing the number of turns on the primary, and how many? Would a six-ohm rheostat have any effect in tuning? Have you any suggestions to make in improving this set?

A.—We would suggest that you place your primary a little farther away from your secondary. The farther away it is from the secondary, the more selective your set will be. It will reduce your volume a little.

Leave the same amount of turns on primary (10). To relieve the whistle in your audio transformer, try less voltages on your detector. A 6-ohm rheostat will work better on the two audio tubes.



Announcing a new and very practical battery connector, the Jones Cabelug consisting of a five-wire coded cable, anchored to an insulated block, cable ends projecting from the block serving as terminals for the set leads. The block is permanently mounted on the panel or sub-panel, allowing the set builder to complete his wiring arrangement, and leaving nothing to connect but the battery leads. No binding posts required.

HOWARD B. JONES
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NOW SOLD AT \$2.50

NO INTERSTAGE COUPLING. NO PICK-UP OF STRAYS. Sharp tuning. Increased volume. It is the coil used by "Everybody's Lossless" Hook-up.

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Ranging from \$36.50 up for a 5-tube Radio Frequency Set.

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Q R S RED TOP TUBES ARE Better

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SUBSCRIBE TO EVERYBODY'S RADIO WEEKLY. TWO DOLLARS THE YEAR.

(Editorial Announcement)

We Have Some New Hookups Coming Soon In "Everybody's Radio Weekly"

As a result of experiments made in the Laboratories of **EVERYBODY'S RADIO Weekly** the past few months several new hookups have been developed for our readers. Some of these are modifications or improvements on other hookups. Others might be termed entirely new products, although they are based on fundamentals long used in one form or another.

These hookups cover the entire range of regeneration, radio frequency, a combination of regeneration and radio frequency, and of audio frequency. The first of the hookups appeared on Page Three Aug. 1 issue—the first successful use of **FOUR** stages of audio frequency, as far as we know. Others will appear later. Here are some you may expect in early issues, none of which, as far as we know, ever has been given public introduction:

The first **SUCCESSFUL** employment of three or more stages of **RADIO** frequency amplification.

The first **SUCCESSFUL** employment of **TWO** or more stages of radio frequency with a three-circuit tuning unit using a tickler feedback **REGENERATIVE** detector circuit.

The first **SUCCESSFUL** employment of a unit that will convert any regenerative or tuned radio frequency receiver into a super

heterodyne receiver with only an outlay of \$8 to \$10. This device, which can be made by any home setbuilder, will rescue thousands of useless neutrodynes that now are laid away on the shelf. Even the muchly abused and now discarded single-circuit receiver can be turned into a useful and non-interfering, unobjectionable receiver, with all the advantages of a super heterodyne.

The first **SUCCESSFUL** remote control **AUTOMATIC** radio receiving set, by which from ten to twenty of your favorite stations may be tuned in by simply pushing a button. No tuning will be required and the set can be operated from the electric light circuit, only one dry cell battery of 1½ volts being used. It will be far easier to operate than a victrola. Any home set-builder can construct the set at a cost of from \$15 to \$50, this depending upon how much of the apparatus he will construct himself or purchase ready-made.

Another new hookup is an All-Wave Receiver which will tune in on both the present radiocast wavelength programs and the short-wave station programs which will be so popular this Fall and Winter. It also will cover contemplated lower radiocast wavelengths which Mr. Hoover threatens to impose upon the owner of radio sets in September or October.

This catalogue of coming hookups does not cover the entire list of new hookups we have in store for our readers by any means. It merely gives you an idea of what you can expect if you are a consistent reader of EVERYBODY'S RADIO Weekly. You are advised not to pass up a single issue from this date on. If you do

you will MISS something. Better go to your newsdealer TODAY and tell him to save you a copy each week, or better still use the coupon below and have EVERYBODY'S RADIO Weekly delivered each week at your home. Then you will be SURE.

Sign Below and Mail This Coupon TODAY

EVERYBODY'S RADIO Weekly,
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I want to get all the new hookups you have devised for this Fall and Winter. I don't want to miss a single one. So enroll me as a regular yearly subscriber. I enclose \$2 for a year's subscription.

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