

How to Build Phone Transmitter with One 201A Tube

Everybody's 5¢

RADIO

WEEKLY

IVERSON C. WELLS, Editor and Proprietor

Vol. 3—No. 6

CHICAGO, SATURDAY, OCTOBER 24, 1925

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This Week

A Receiving Set That Cant Pick
Up Interference Through
Its Coils (Page 3)

How to Build Last Week's Five-
Tube DeLuxe Model Re-
ceiver (Page 5)

Two Hundred Helpful Hints for
Builder and Operator of
Radio Sets



HEART-TO-HEART TALKS BY THE EDITOR

Why We Repeat So Much

PERHAPS many of our old readers wonder why we repeat so much of the "Kindergarten stuff." Continually we are repeating that "Long aerials are essential for good distance work," that "One stretch of wire makes the best aerial for broadcast reception," that "two or more ground connections should be made" and that "the plate and grid leads on all tubes should be kept short." Every once in awhile we retell "How to do this and how to do that," until it would seem that our story has become threadbare.

We do all this for a purpose. The plan is a set policy with us. We're editing and publishing a radio magazine for the BEGINNER—for the fellow who doesn't know. The advanced experimenter gets a lot of kick out of EVERYBODY'S RADIO Weekly, of course. We see to it that he does. But, after all, nine hundred and ninety-nine readers out of every thousand are just creeping in radio and we want to please the masses. You are fortunate enough to be the one out of the thousand.

It is surprising how few people really THINK and while thinking, do it so that the memory of the thought remains to be called forth from its storage cell in the brain whenever required.

It is not everyone that reads EVERYTHING that is printed each week in this or any other magazine. Some readers skip here and there and only digest thoroughly that which is most attractive to the eye. There may be ten small paragraphs on a page, each one of which would be of real value to him, yet this type of reader will pass them over without a glance.

We had one of our long-time readers in the editorial sanctum just a few days ago. He had a five-tube set which someone built for him nearly one year ago. A few nights before he had heard a friend's set—the first and only one he had heard except his own. Up until that time he believed he was getting fair volume out of his receiver. He went home greatly perturbed.

Then he came to us. His set was in good condition and properly wired. It should give good service. An examination showed that he had hooked up the batteries erroneously. His mistake was corrected and he went home happy.

In a recent issue an illustration occupying almost half a page in space, with descriptive text accompanying, had been published. The picture showed

how to connect various batteries for series and parallel connections and gave a complete information, simply written, on their connections to the set. This same illustration had been published once before and on numerous occasions short paragraphs had appeared from time to time repeating the same story in condensed form.

On his own boast this same reader had said that he had been a subscriber from the first issue of this magazine and that he "Read every page every week." And, still he did not KNOW how to connect up a set of batteries to a receiving set.

Another reader last season boasted he read every line in every issue and to prove his point called attention to several statements made about merchandise in some of the smallest ads and named a number of small items in the editorial pages which he could recall off-hand.

Within fifteen minutes this same reader was asking us what we considered an "Ideal aerial." And yet, we dare say, this question of his is answered no less than half a dozen times in every issue of this magazine, either in the "Questions and Answers" department, or elsewhere. As a fact the current issue of the magazine which he was holding in his hand and which he said he had carried to and from work each day for several days, so he might read it thoroughly before the next issue was printed, answered his question THREE TIMES on the same page.

These two readers are just about the average. It is the way most of us read. We skip through hurriedly, get a mere impression of the idea conveyed, pass along to something else, and failing to STAMP the idea into our memory, lose it in the multitude of ideas we come across later. It seems that one idea sweeps away the other.

Thirty-five years of editing for the average reader has taught us the necessity of REPETITION. Therefore we repeat. We recount and retell. We hash and rehash. Things that radio-phans should know we keep hammering into them. Here and there they take root and stick. But, there are new crops of readers popping up over night. They must be reckoned with. So we keep up the repetition.

If those of you who read to REMEMBER feel sometimes that we are overdoing it, think of the nine hundred and ninety-nine that don't and pass over the offending item with a smile of sympathy. It is performing a REAL service.

NEXT WEEK: The third model of "Everybody's 1926 100% Low Loss" Three-Circuit receiver will be described. It will be shown as a One-tuber, but enough room left on base-board and panel to add one or two steps of audio amplification, and, in a pinch, an extra step of radio frequency ahead of the detector tube. This hookup is the last word in regenerative receivers, not only having volume, distance, tone-quality but extreme selectivity.

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Everybody's 5¢ RADIO

IVERSON C. WELLS, Editor

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JAMES GRAYAR WELLS
Technical Advisor

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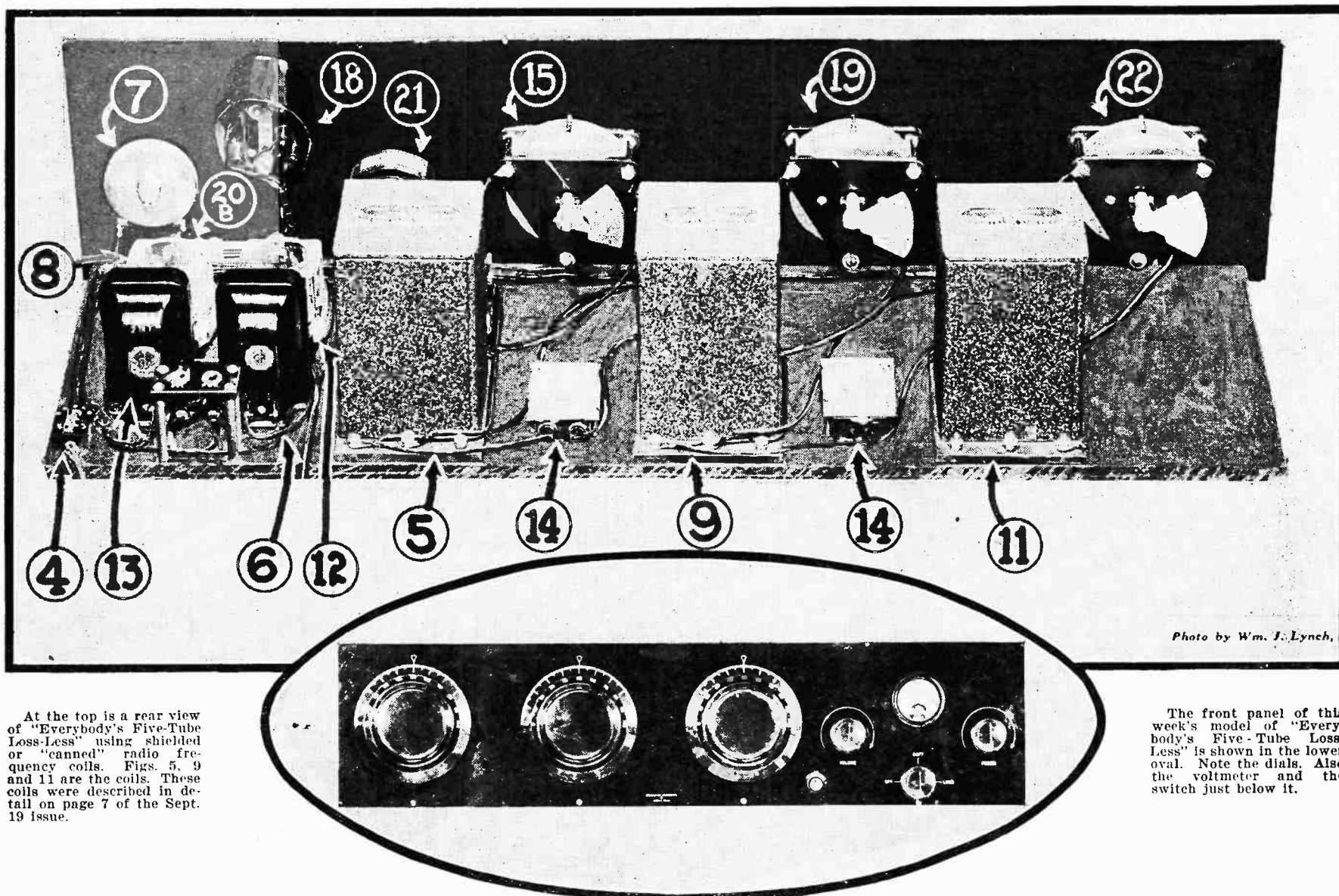


Photo by Wm. J. Lynch.

At the top is a rear view of "Everybody's Five-Tube Loss-Less" using shielded or "canned" radio frequency coils. Figs. 5, 9 and 11 are the coils. These coils were described in detail on page 7 of the Sept. 19 issue.

The front panel of this week's model of "Everybody's Five-Tube Loss-Less" is shown in the lower oval. Note the dials. Also the voltmeter and the switch just below it.

Nearby Stations Won't Bother This Set

By IVERSON C. WELLS

HERE'S a model of "Everybody's Five-Tube Loss-Less" receiver, 1926 type, that helps a whole lot in getting rid of one source of local interference which has been very difficult to dispose of, and that is, the kind that is picked up by the coils themselves. The coils used here are of the "canned variety." That means they are shielded.

Because of the type of coils used we have a set this week that delivers just what the aerial brings to it and no more. In fact, you can disconnect the aerial and ground and the set absolutely is quiet. This means the troublesome local station that is nearby and which persists in "hogging the whole dial," even when the set is tuned to a wavelength far, far removed from that of the offending station, is shut out just about as if it did not exist.

That is something worthwhile having in a set, but when coupled up with the natural selectivity of the aerial tuning, the volume and the tone quality of "Everybody's Five-Tube Loss-Less," it makes this week's model some set.

This pickup tendency of radio frequency coils has been the bane of multi-tube sets ever since they became popular. In cities like Chicago, New York and other metropolises, where the number of stations ever are on the increase, this source of interference is becoming, or rather has become, quite serious.

Before I take up the description of this set let me explain, for those that do not understand, just how coils pick up signals. We know that the long stretch of wire, commonly known as the "Aerial," has the power to collect radio waves and direct them into the receiving set. We know, also, that the coils in a receiver are, in fact, but a continuation of this aerial wire, and, therefore, also are energy collectors.

Now, the aerial wire, in itself, has a definite, or

This Five-Tuber Can Not Pick Up Through Its Coils

natural wavelength of its own. So have the coils. By "tuning" these coils—that is, by adding capacity to them or taking capacity away from them through the operation of a variable condenser—we change or vary the wavelength of the aerial and coils.

It is by this tuning process, plus the other factor of "coupling" between coils, we are enabled to adjust the antenna system to the same wavelength of the incoming signal from a desired or selected station, and because of this fact hear certain programs in preference to others.

Until the past year the ordinary arrangement of coils and other apparatus in a receiving set, assuming that both the apparatus and construction was of the efficient type, was sufficient for selective tuning. More radiocast stations have appeared, however. Some of these may be located quite close to receiving sets and cause distress in tuning. This is particularly true of those sets that happen to be fairly close to a station whose wavelength is close to the natural wavelength of the coils in the set.

When this condition exists a most selective set will fail in its performance. While the aerial may be performing its duty efficiently and while the coils themselves, as part of the TUNED antenna system, are performing their duty also efficiently, these same coils, acting or performing in an entirely different and independent capacity, are responsible for all the trouble. While they are a part of the tuning system, they also are acting as a small loop antenna and, as such, they are picking up some station close by which has a wavelength near their own, and

the most efficient tuning will not keep that offending station out.

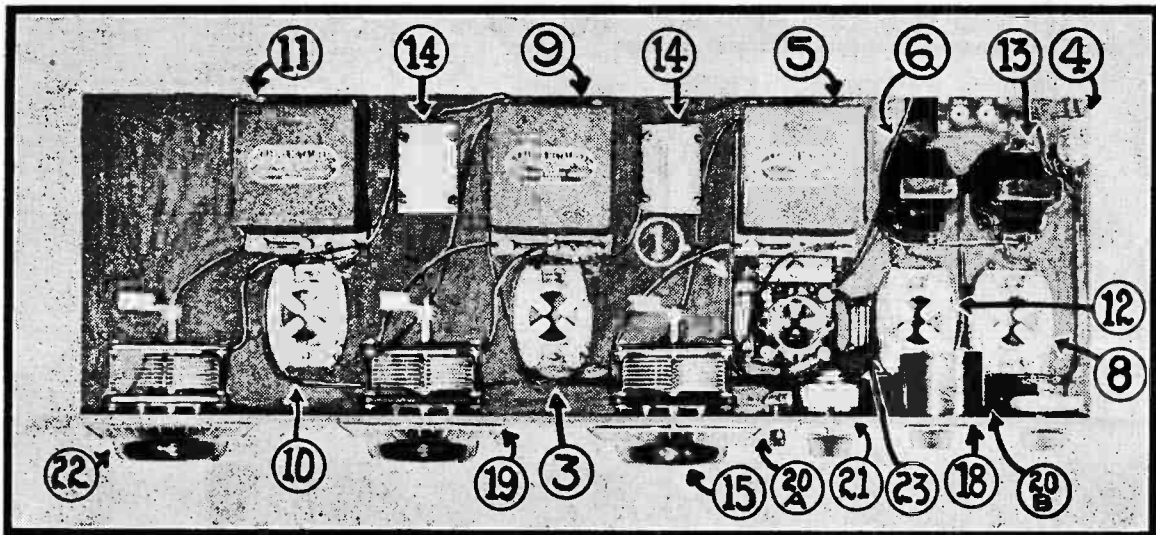
It has been the practice of designing engineers and advanced experimenters to throw a shield around the entire receiving set. This means that a cumbersome copper or aluminum box is placed within the cabinet and around the coils. This is attached to the ground wire, and the metal box, acting as a pickup or independent antenna system, draws the offending radio waves away from the coils and conveys the energy into the ground, where it will do no harm.

Last season McMurdo Silver designed a set of intermediate radio-frequency coils for his super-heterodyne receiver, using the shield idea for the coils. We thought at the time the idea a mighty good one and believed and still believe that the plan was responsible, very largely, for the extreme quietness of his receiver and its lack of extraneous noises which are so characteristic of the average super-heterodyne. Apparently he has abandoned the idea this year and, we believe, has sacrificed much of the quietness of last year's receiver by doing so.

In the model of "Everybody's Five-Tube Loss-Less" receiver this week we are using the Harper Metaloid radio-frequency coils. They are shielded. The shields are grounded, and this eliminates the pickup of signals by the coils themselves. We used these same coils in the September 19 issue in a similar hookup and described them there in detail.

I do not want to be understood as saying that these Harper Metaloids stand by themselves in the performance of this duty of squelching the local interfering station. They do not. We have hooked up and published in these pages recently several coils that do the same thing, to a more or less degree. Take, for instance, the Benjamin Twin Coils (binocular type) and the Ellis "D" coils. These have a negligible field, and because of that fact eliminate the pickup disaster. The Reichman

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



In the photographic illustration above (top view) the simplicity of the wiring scheme in "Everybody's Five-Tube Lossless" is evident. Note particularly how the radio frequency wires are kept widely separated, especially from the battery leads, which are cabled and are indistinctly shown near the panel running parallel with it. The pictorial diagram below and the schematic diagram at the bottom of the page will aid the home builder

Toroidal or "Doughnut" coils also are in the same general class in this respect. We have under test now in our Laboratory the new Naxson Toroidal coil, which also has this good asset and which we expect to show in a hookup at an early date. All of these coils, however, perform these same services in a different manner. They are not shielded and rely upon their peculiar structure to avoid the pickup liability.

In tuning this week's model set I do not know when I have had greater pleasure with a piece of radio apparatus. There is some mighty good merchandise used throughout, as the bill of specifications will disclose. The audio end depends upon General Radio transformers of the new type, and they are just about as near perfect as audios can be made. Not only have they a lot of kick, but they certainly take in all the frequencies and handle them ably. Then there are the glass sockets, the Yaxley rheostats and the General Radio variable condensers, not to say anything about the little touches of refinement here and there on the set which not only add a lot of conveniences, but greatly assist in the proper tuning of the receiver.

The set is very selective, has exceptional volume and is a distance getter. We have hooked up three or four models lately in our experimental work, using the Harper coils, and all give the same uniform performance. I have tuned in practically all of the popular stations, including those on the Pacific coast, and used the loudspeaker on every one. Strange to say, however, I got very few of the eastern stations. This seems to be a fault in location, as we have not had New York City, Springfield, Mass., and the other far eastern stations but very little at this station since we moved into our new quarters.

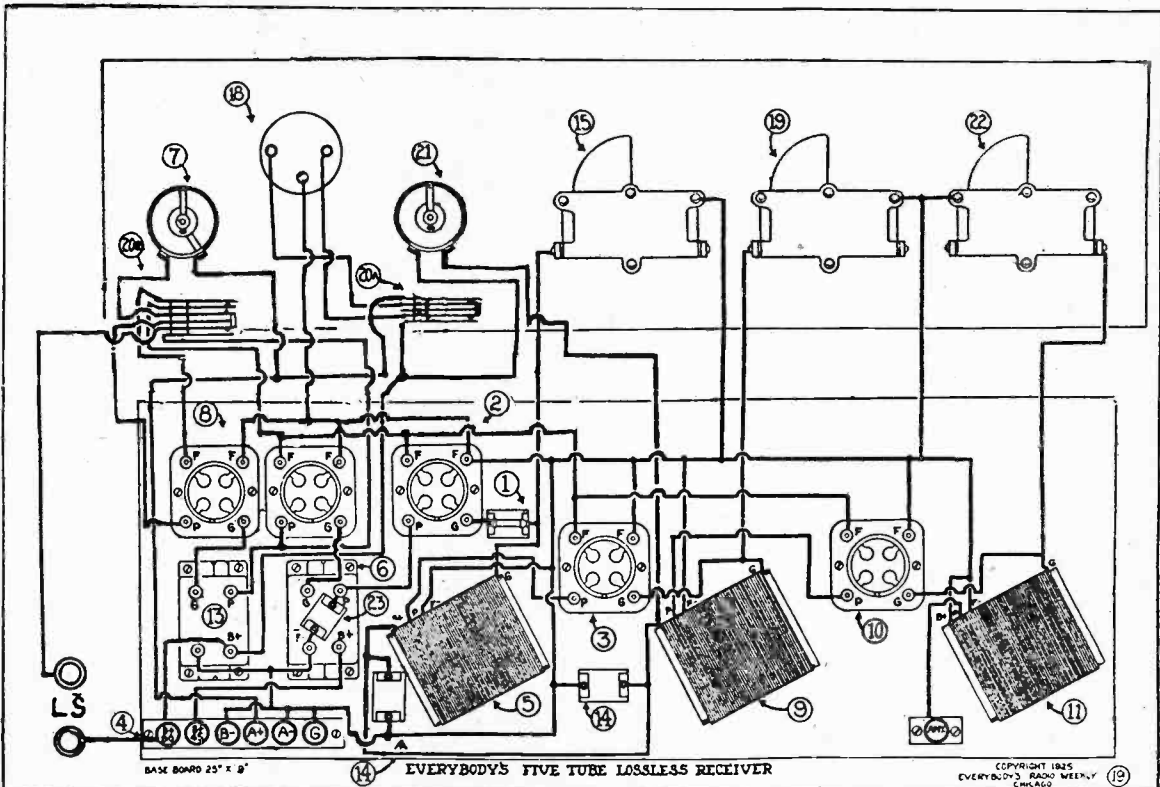
The far western and southern stations come in fine. The other night I had three California stations as loud as Davenport and Pittsburgh usually come in on the average five-tubers, and Kansas City and Fort Worth were equally as loud. Of course, New Orleans and Cincinnati are expected to give local station volume, as about every one in town reports them with great volume.

KYW (Chicago, with its numerous harmonies, doesn't get much of a chance with this set either, although at this station it is mighty hard to handle with the average set. We seem to have its full splash here, and it takes a most selective set and a careful tuning job to pull away from it. With the receiver illustrated today, KYW passes out of the picture within two points on the dial, more often "on a hair." Those who have seen some of the sets

Fig. 20B—Yaxley two-way two-circuit switch No. 60	1.25
Fig. 21—Centralab resistance, 200,000 ohms	2.00
Fig. 22—General Radio variable condenser, 250 mmf.	3.50
Fig. 23—Sangamo .002 fixed condenser50
Phenolite 7"x26"x1/4" panel	4.25
Hardware, baseboard, wire, etc.50

Total\$68.50

When you start to examine the details of the model illustrated, you will note on the front panel and in the bill of specifications above that provisions are made for a Jewell voltmeter and for two special filament switches. These switches are not necessary, of course, but are a little conceit of our laboratory and add considerably to the convenience in tuning. The switch, whose large knob is just beneath the voltmeter, has three points. At the left-hand point it turns off the batteries; at point No. 2 it switches in the detector tube, and at point No. 3 it turns on the two stages of audio. The smaller switch at the left of this knob is for the voltmeter. It remains at neutral at the center spot, but when turned to the left turns the voltmeter onto the "B" battery line to test its voltage, and when turned to the extreme right tests out the "A" bat-



operate at this station will attest that this is exceptional.

The full list of parts used in this week's model are given below:

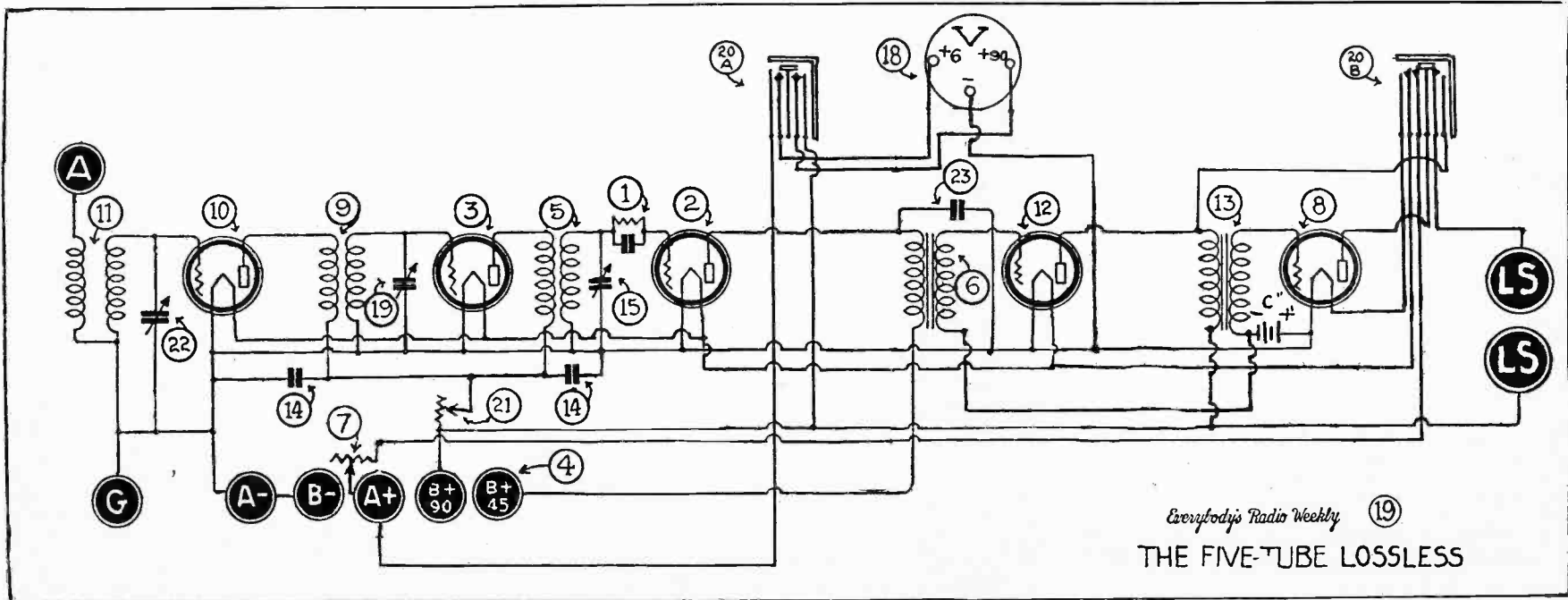
Fig. 1—X L vario denser type "G," \$1.50; and 2 meg. Durham grid leak, 50c.	\$2.00
Fig. 2—Benjamin detector socket	1.00
Fig. 3—Duray glass socket	1.25
Fig. 4—Jones Cabelug, 4-foot length	1.00
Fig. 5—Harper Metaloid radio frequency transformer	5.00
Fig. 6—General Radio audio frequency transformer, 6 to 1 ratio	6.00
Fig. 7—Centralab 4 to 6-ohm rheostat	1.25
Fig. 8—Duray glass socket	1.25
Fig. 9—Harper Metaloid radio frequency transformer	5.00
Fig. 10—Duray glass socket	1.25
Fig. 11—Harper Metaloid radio frequency transformer	5.00
Fig. 12—Duray glass socket	1.25
Fig. 13—General Radio audio frequency transformer, 2 to 1 ratio	6.00
Fig. 14A—Dublier 1 mfd. by-pass condenser	1.25
Fig. 14B—Dublier 1 mfd. by-pass condenser	1.25
Fig. 15—General Radio variable condenser, capacity 250 mmf.	3.50
Fig. 18—Jewell volt meter, pattern No. 135—7.5 to 150 reading	8.50
Fig. 19—General Radio variable condenser, capacity 250 mmf.	3.50
Fig. 20A—Yaxley "A" and "B" voltmeter switch, No. 12	1.25

tery, the operator being enabled to give a reading on either battery at will.

There is rather a complicated wiring scheme for these two switches, but it is shown clearly in the pictorial sketch. Those who do not care to follow the idea can use the hookup published last week, for which construction plans are given on page 5 of this issue.

There is no necessity for giving complete wiring details on this week's model, as last week's model can be followed. By referring to the illustrations on this and preceding pages and then to the construction details on page 5 of this same issue, one can go ahead and build his set easily. However, for those who may find the going hard, we will print special construction details next week.

We are giving one more hookup of "Everybody's Five-Tuber" in next week's issue and then will let the five-tube fellows rest for awhile. We have a three-circuit regenerative hookup coming out of the experimental stages of the laboratory, which we referred to in recent issues. We may have this ready for the October 31 issue, but if it is not ready by then we will give you a single-tube hookup of our standard three-circuit hookup, and follow later with the new circuit.



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THE FIVE-TUBE LOSSLESS

How to Wire Lossless Five-Tube

Constructional Details Make Hookup Work Easy for Anyone

HOW to wire up last week's 1926 De Luxe model of "Everybody's Five Tube Lossless" is given here on this page so simply told most anyone can follow the instructions and make a set that will work.

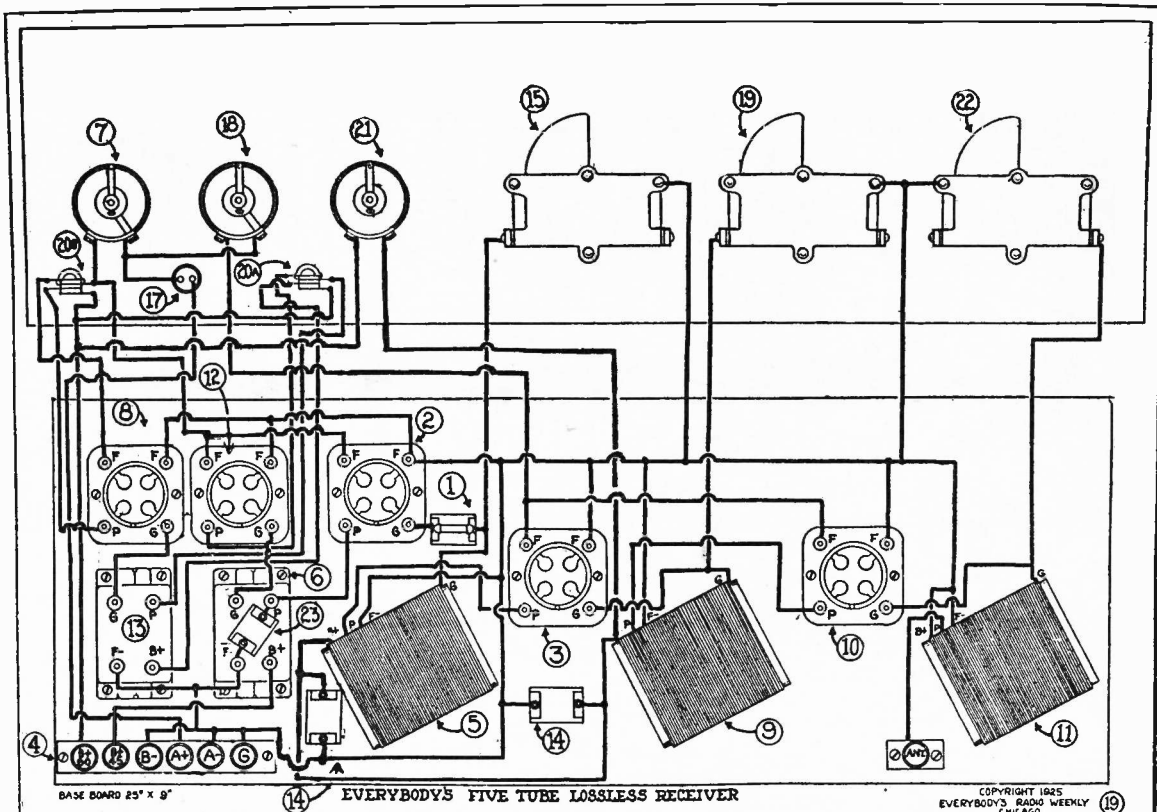
Follow closely the location of parts and by all means cable the leads if you want to get what is promised of this hookup. This same data may be followed in hooking up this week's model set shown on page 3 and 4, if you do not use the special battery switch and voltmeter.

Observe the set from the rear and starting with variable condenser (Fig. 22) at the right side of the panel. A lead goes from the rotor of variable condenser (Fig. 22) to the rotor of variable condenser (Fig. 19) and from here continues to the "F" minus post of the socket (Fig. 10), and from here to the start of the secondary winding of the radio frequency transformer (Fig. 11). A lead from the start of the secondary winding of the radio frequency transformer (Fig. 11) goes to the start of the primary winding of this same transformer.

A lead from the "F" minus post of socket (Fig. 10) goes to the "A" minus, "B" minus, ground connection on the Multiplug bracket (Fig. 4). A lead from the "F" minus post of second radio frequency socket (Fig. 3) goes to the "A" minus "B" minus, ground connection of the Multiplug bracket (Fig. 4). A lead from the "F" minus post of detector socket (Fig. 2) goes to the "A" minus, "B" minus, ground connection of the Multiplug bracket. (Fig. 4). A lead from the "F" minus post of first audio socket (Fig. 12) goes to the "A" minus. "B" minus, ground connection of the Multiplug bracket (Fig. 4). A lead from the "F" minus post of last audio socket (Fig. 8) goes to the "A" minus, "B" minus, ground connection of the Multiplug bracket (Fig. 4).

A lead from the rotor post of variable condenser (Fig. 15) goes to the "F" minus post of socket (Fig. 3) and continues to the start of the second secondary winding of radio frequency transformer (Fig. 9). A lead from the stator post of variable condenser (Fig. 22) goes to the end of the secondary winding of radio frequency transformer (Fig. 11) and from here continues to the "G" post of first radio frequency socket (Fig. 10). A lead from the stator post of variable condenser (Fig. 19) goes to the end of the secondary winding of radio frequency transformer (Fig. 9) and from here continues to the "G" post of second radio frequency socket (Fig. 3). A lead from the stator post of variable condenser (Fig. 15) goes to the end of the secondary winding of radio frequency transformer (Fig. 5) and from here to one side of grid leak of condenser (Fig. 1). The other side of grid leak and condenser (Fig. 1) is attached to the "G" post of detector socket.

In all previous "Lossless" sets we have used three rheostats, one for the three radio frequency tube, one for the detector tube and one for the two audio tubes. In this 1926 model only two are used, one for the radio frequency tube and one for both the two audio tubes and the detector, as this circuit employs a filament control switch for the last audio. In the hole formerly used by the third rheostat a



This is the Pictorial diagram of Everybody's Five-Tube Loss-Less Receiver 1926 Model. The schematic diagram, if you prefer it, is at bottom of this page.

200,000-ohm resistance is mounted. To resume the wiring, a lead goes from the right post of resistance (Fig. 21) to the start of the primary winding of radio frequency transformer (Fig. 9) and continues to the start of the primary winding of radio frequency transformer (Fig. 5). A lead from the left post of resistance (Fig. 21) goes to the "B" plus 90 connection of the Multiplug bracket (Fig. 4).

A lead from the right post of rheostat (Fig. 18) goes to the right post of rheostat (Fig. 7) and from here continues to the left post of filament switch (Fig. 17). A lead from the right post of filament switch (Fig. 17) goes direct to the "A" plus connection of the Multiplug bracket (Fig. 4). A lead from the left post of rheostat (Fig. 18) goes to the "F" plus post of second radio frequency socket (Fig. 3) and from here continues to the "F" plus post of first radio frequency socket (Fig. 10). A lead from the left post of rheostat (Fig. 7) goes to the top prong of filament control jack (Fig. 20B) and from here continues to the "F" plus post of first audio frequency socket (Fig. 12) continuing to the "F" plus post of detector socket (Fig. 2).

A lead from the top prong of interstage jack (Fig. 20A) goes to the "P" post of first audio tube (Fig. 12). A lead from the next or second prong from the top of interstage jack (Fig. 20A) goes to the "P" post of last audio frequency transformer (Fig. 13). A lead from the third prong from the top of interstage jack (Fig. 20A) goes to the "B" plus post of last audio frequency transformer (Fig. 13).

A lead from the bottom prong or frame of interstage jack (Fig. 20A) goes to the bottom prong of filament control jack (Fig. 20B). A lead from the third prong from the top of filament control jack (Fig. 20B) goes to the "P" post of last audio socket (Fig. 8).

A lead from the end of the primary winding of radio frequency transformer (Fig. 11) goes to the antenna binding post as shown in the pictorial diagram or the lead-in of the antenna can be attached direct to the coil. A lead from the end of the primary winding of radio frequency transformer (Fig. 9) goes to the "P" post of first radio frequency socket (Fig. 10). A lead from the start of the secondary winding of radio frequency transformer (Fig. 5) goes to the "F" minus post of socket (Fig. 2). A lead from the end of the primary winding of radio frequency transformer (Fig.

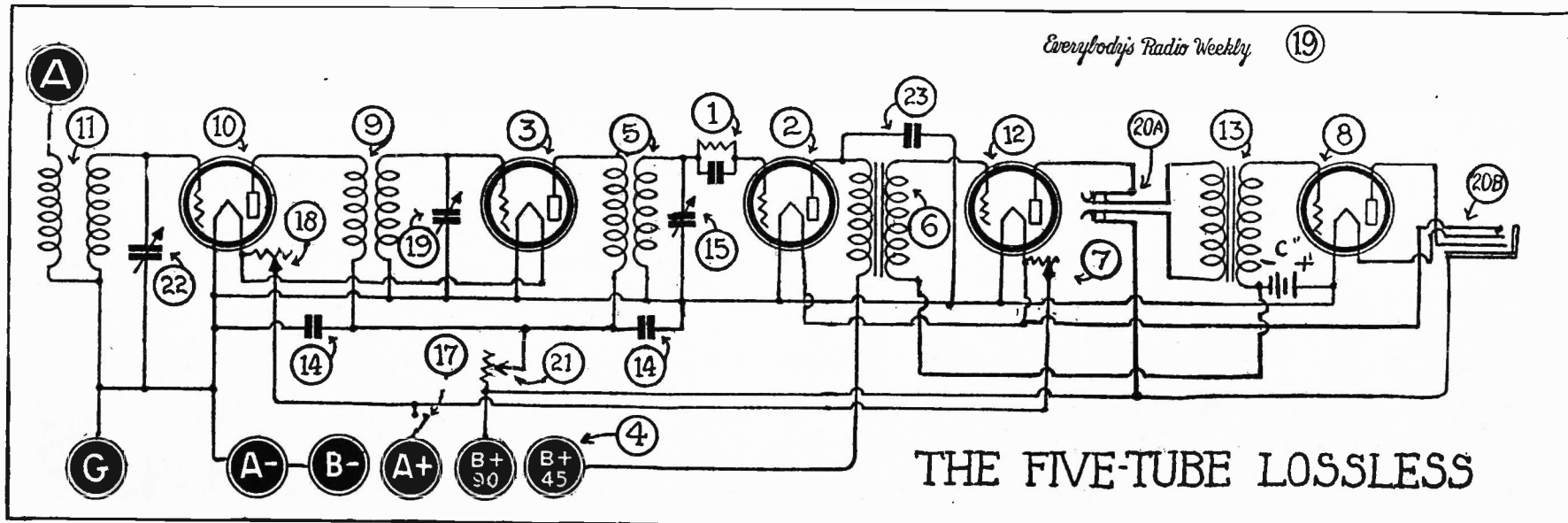
5) goes to the "P" post of detector socket (Fig. 2).

By-pass condenser (Fig. 14A) is placed between the wire from the start of the primary winding of second radio frequency transformer (Fig. 9) going to the resistance (Fig. 21), and the lead going to the "A" minus, "B" minus, ground connection of the Multiplug bracket. By-pass condenser (Fig. 14B) is placed between the wire from the start of the primary winding of radio frequency transformer (Fig. 5) going to the resistance (Fig. 21) and the lead going to the "A" minus, "B" minus, ground connection on the Multiplug bracket. In previous "Lossless" hook-ups we have used only one 1 mfd. by-pass condenser.

A lead from the "G" post of first audio frequency transformer (Fig. 6) goes to the "G" post of audio socket (Fig. 12). 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 "P" post of first audio frequency transformer (Fig. 6) goes to the "P" post of detector socket (Fig. 2). A lead from the "B" plus post of first audio frequency transformer (Fig. 6) goes to the "B" plus 45 connection of the Multiplug bracket (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 continues to the "A" minus, "B" minus, ground connection of the Multiplug bracket (Fig. 4). In case a "C" battery is desired, remove this latter wire going to the A minus, "B" minus, ground connection and attach it to the negative side of the "C" battery. Run a wire from the plus post of the "C" battery to the "A" minus, "B" minus, ground connections of the Multiplug bracket. Fixed condenser (Fig. 23) is placed between the "P" and "F" minus posts of first audio frequency transformer (Fig. 6).

FUNCTION OF THE TICKLER COIL

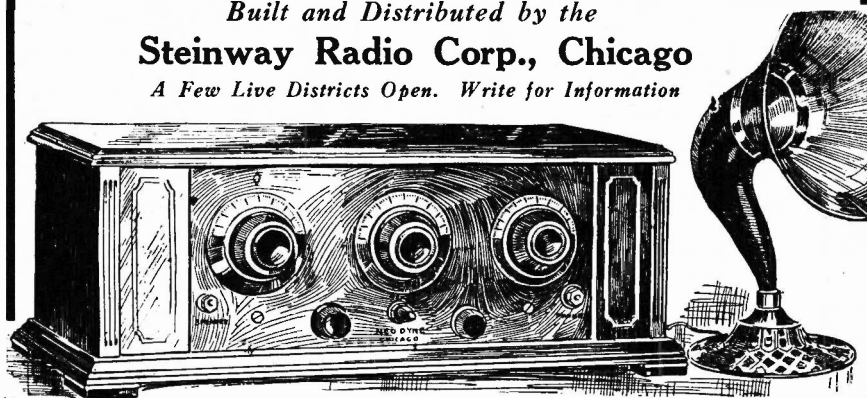
The tickler coil is the small coil that rotates in a three circuit tuning set. It has no conductive relation to the other two coils and is coupled to the secondary coil only by inductive relation. In other words, there is no actual wire connection between the two coils. There is an electro-magnetic field set up in the two coils which are connected through air dielectrics when the two coils are placed close enough to permit of such coupling. You're welcome.



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ONE
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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.

Get stations as far as California at will. With all Chicago stations on, got 2LO, London, England.

Melvin Figgins,
1350 62nd St.

On stormy night when static was strong, easily tuned in stations from coast to coast.

Fred Hatch,
130 E. 55th St.

On Oct. 12, friends and I picked up distant stations at will on loud speaker. Set highly selective.

G. Strodic,
632 N. Clark.

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.

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The thing that makes radio so fascinating, has been developed in the Neo-Dyne to a point of perfection. Once you get the knack of tuning this set, you can bring in the stations you want to hear as easily as tune out the ones you don't want to hear. To really enjoy radio, own a Neo-Dyne and choose your programs to suit your moods.

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Home Made Capacity Finder

In many of the present-day efficient hookups the fixed condenser plays an important part. Construction engineers, in describing these hookups, tell the novice builder to try a .001 fixed condenser at a certain point and if that does not work to try another value and still another until the proper value is determined. He cannot be more definite as the type of apparatus and the length of leads controls the value of the condenser.

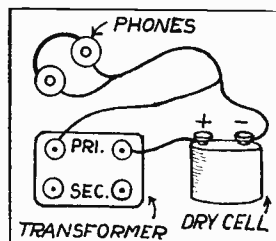
To hook up a set and tear it down several times in this blind hunt for the proper condenser value not only is a lot of extra work, but it is costly, because several condensers may have to be purchased before the right one is found.

Here is a small home made device that can be used as a capacity finder which every home-experimenter should have in his workshop. By its use the proper value may be quickly and accurately determined before the set is hooked up and one condenser purchased.

Two narrow strips of copper are cut to the proper length with holes in either end of both strips for six-thirty-two bolts. Five fixed condensers of different values are soldered to these two strips, all in series. The bridge thus formed may be mounted on a piece of bakelite or hard rubber for convenience in handling, using the bolts for this purpose. A further refinement may be added by soldering on terminal posts to each condenser.

FIXING AUDIO TROUBLE

Trouble is often experienced with the audio frequency transformer. The usual difficulty is loose or broken connections. Sometimes there is a break in one of the windings. Test the primary and secondary as follows: Get your phones and a dry cell and connect one terminal of the dry cell, by wire, to the primary and the other terminal to one of the 'phone tips. Then touch the other 'phone tip to the other primary tap. Should you hear a click the primary is O.K. Then proceed to test the secondary in the same manner. Radio frequency transformers should be tested in the same way. You're welcome.



LENGTH OF AERIALS

So many phans complain about their sets not being selective for local broadcasting stations, where there are several within a mile or two. They cut down the length of their aerials to get selectivity and thus reduce their chance for reaching out for distance. It is much better to rebuild the set so that it will work on a long aerial. You will then get volume, long range and selectivity.



Chicago Sales Office: Ambassador Sales Co.,
326 West Madison Street, Chicago.

ENSIGN

STRAIGHT LINE CONDENSER

Spaces wavelengths evenly over dial of 300 degrees. Tune sharply. No losses.

Made by CARLETON SANDERS
Mishawaka, Ind.
Factory Representatives: Curtis-Lager Fixture Co., Jackson Blvd. at Franklin St., Chicago.

MARKING PANELS

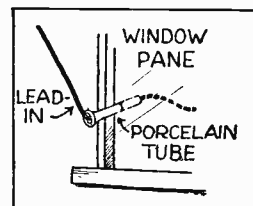
A line is difficult for the average phan to make on a panel with a hard surface. The line will be irregular and is not stopped when wanted. A better way to make marks for dial reading is to use a drill of small diameter and make a small circle. This depression can be filled with a little white lead and it will present a better appearance than a bungled mark.

HOW TO INCREASE SELECTIVITY

If you place one stage of radio frequency in front of any tuning unit of a set it will aid materially in the selectivity of the receiver, but it will not increase the range. If two stages are used the range will be increased and also the selectivity, but you have the complications of tuning.

INSULATE YOUR LEAD-IN

The lead-in for an aerial must be insulated properly for efficient operation. A poor lead-in is as bad, if not worse, than a poor aerial. Keep the lead-in wire, which should be No. 14



covered wire, at least five feet from all walls. Bring it into the house preferably by means of a porcelain tube fitted in a hole drilled either in the window pane or through the sash. Of the two the window pane is to be preferred. You're welcome.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

Of EVERYBODY'S RADIO Weekly published weekly at Chicago, Illinois, for October, 1925.

State of Illinois, } ss.
County of Cook, }

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared Iverson C. Wells, who, having been duly sworn according to law, deposes and says that he is the publisher of the EVERYBODY'S RADIO Weekly and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Iverson C. Wells, 2721 S. Michigan Ave., Chicago; editor, Iverson C. Wells, 2721 S. Michigan Ave., Chicago; managing editor, Charles F. Smisor, 2721 S. Michigan Ave., Chicago.

2. That the owner is: (If the publication is owned by an individual his name and address, or if owned by more than one individual the name and address of each, should be given below; if the publication is owned by a corporation the name of the corporation and the names and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given.) Iverson C. Wells, 2721 S. Michigan Ave., Chicago.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder of security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

IVERSON C. WELLS.

Sworn to and subscribed before me this 10th day of October, 1925.

(SEAL)

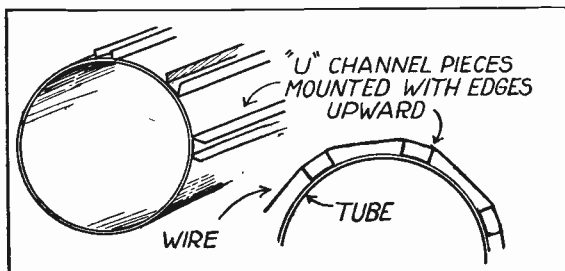
JAMES T. MOORE.

(My commission expires July 25, 1929.)

METHOD FOR WINDING COILS

Contest Entry
By G. C. GILLOTTE,
933 Fulton St., Antigo, Wis.

I have a convenient method of winding low-loss coils, which can be done quickly with practically no expense to the experimenter. Go to some photographer using old style glass dry plates. He will give you any amount of the stiff channel pieces of fiber board material used to separate plates in the



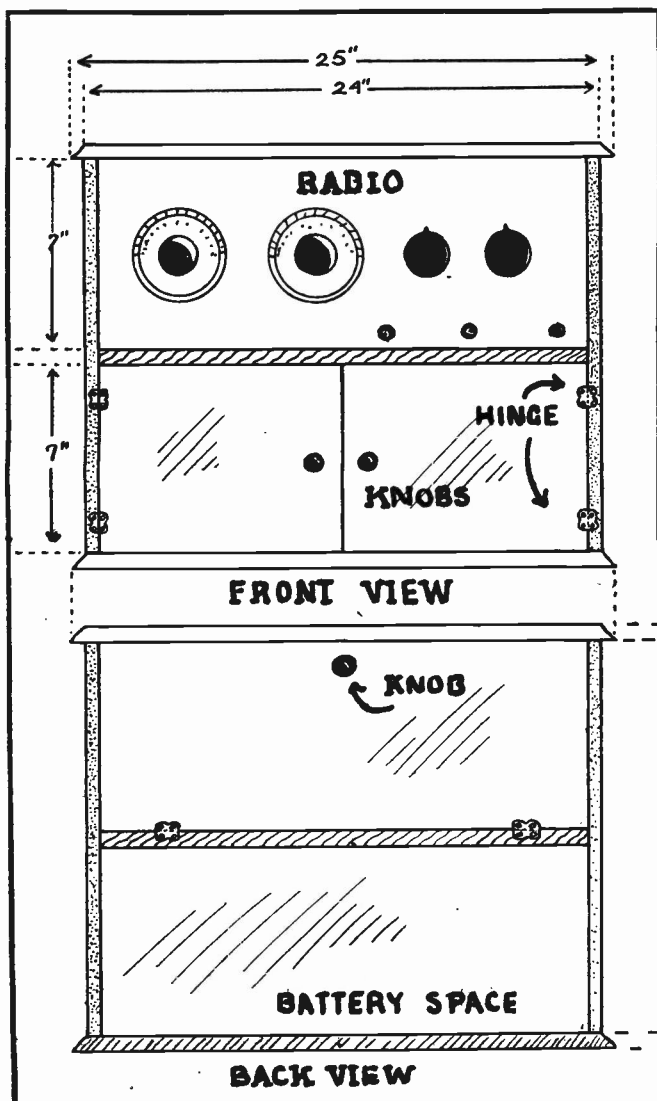
container. Snip these channel pieces off at the correct length and attach lengthwise to your tubes with a good cement. This will give you a support where the wire touches but on the two edges of the channel and about one-eighth inch from the tube. I have wound several coils this way and they are unusually durable.

TUNING A FOUR CIRCUIT COCKADAY

To tune the Four Circuit Cockaday tuner, first set the tap switch at the approximate wave-length of the station which you wish to receive. Facing the panel, the taps at the right will give you the low wave-lengths while the taps in the center will give you the intermediates and the taps at the left the extremely high waves. To pick up a station at about 360 meters, for instance, set the tap switch at about the center tap, then rotate until you hear a signal which will come in with the usual regenerative whistle. If there is interference clear it up with your condensers. Skill in tuning this receiver is more easily acquired than with most circuits in this class and with a little practice you should get very good results. A distant range of 2,500 miles has been claimed for it by some phans. In the tests and experiments with this type of tuner, carried out in Everybody's Radio laboratory, some months ago, it was found to have a consistent range of approximately 1,000 miles. You're welcome.

CONDENSER CAPACITY

If the distance separating the plates of the variable condenser is varied, the capacity of the condenser will be changed and the natural frequency of its circuit altered. The result will be a change in the frequency of the "beats." Since the number of "beats" per second is equal to the difference in the frequencies of the two oscillating circuits, it follows that the change in the number of "beats" will denote the change in frequency. If it is a parallel plate condenser its capacity is equal to the area of each plate in square centimeters multiplied by 12.56, times the distance between the plates. 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.

CONSOLE AND CABINET

On page 13 of the October 3rd issue of **EVERYBODY'S RADIO** there appeared a description of an \$8.00 console, but the cut accompanying the article was that of a radio cabinet. To make it clear for readers interested in the making of a cabinet or console we herewith present both articles and both illustrations:

AN \$8.00 CONSOLE

This week's entries are headed by A. W. Claussen of 5527 Indiana Avenue, Chicago, who says:

"For those that are planning to build a console cabinet, view this plan of a combination console cabinet and writing desk. Any phan with a little ambition and energy can build one. A cabinet such as this hides the unsightliness of a horn, batteries, wires, etc., and the writing desk section suggests many convenient advantages, such as a place for log book, magazines, writing material, etc.

"The tools necessary are a hammer, saw, coping saw, screwdriver, plane, wood rasp and auger. The material required is as follows:

- Two pieces of $\frac{3}{4}$ "x17"x17" (top sides).
- Two pieces of $\frac{3}{4}$ "x4"x13 $\frac{1}{2}$ " (upper side braces).
- Two pieces of $\frac{3}{4}$ "x1 $\frac{3}{4}$ "x13 $\frac{1}{2}$ " (lower side braces).

- Two pieces of $\frac{3}{4}$ "x4"x25 $\frac{1}{2}$ " (upper front and back braces).
- Two pieces of $\frac{3}{4}$ "x18"x29" (top and lower compartment floor).
- Two pieces of $\frac{1}{2}$ "x8"x15" (partition for speaker and batteries).
- One piece of $\frac{1}{2}$ "x15"x27" (upper compartment floor).
- One piece of $\frac{3}{4}$ "x1 $\frac{3}{4}$ "x25" (lower brace).
- One piece of $\frac{3}{4}$ "x17"x27" (front and desk).
- Four turned banister rounds (for legs).
- Three pairs of hinges.
- Three desk brackets.

Wood, dye, varnish, and sandpaper.

"The pigeon holes for desk, desk back of cabinet and speaker are made of one-quarter inch box boards. The wide boards can be made by joining narrow boards together with wooden pegs.

"First cut out the top side braces with a coping saw, then cut lower side braces. Now bore two holes three-eighths inch and a half inch deep two inches apart in each end of upper side brace, and one hole same size in each end of lower side brace. Glue a wooden peg in each hole. Fit the legs together by boring same size holes in the legs and glue. Cut front, back and lower braces and glue together in the same way. Put on the lower compartment floor. This can be done by placing two inch screw into the top of each leg and each side brace. You now have a table, onto which you build the upper part of the cabinet.

"In building the upper part, join side with the back boards and a three-quarter by inch and a half piece on the top in the front. Fit this to table with wooden pegs the same as the legs are joined. The inner compartments are now built. In building the inner compartment allow two inches for the dials when the door is closed. The top and front are put on with hinges, and the desk brackets to hold when open.

"After the cabinet is built, sandpaper; dye the wood the shade desired.

"My cabinet was made of gum wood, dyed with walnut wood dye, given a coat of thin varnish, several coats of polishing wax and rubbed with a woolen cloth until a hard wax finish was procured. "The cost will be about \$8.00."

HOME-MADE CABINET

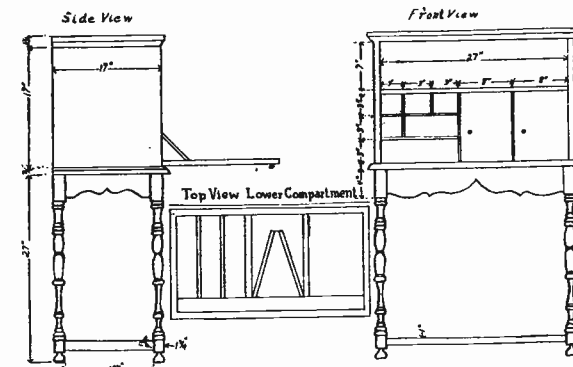
Alex. Bockelman, 7502 Harrison street, Forest Park, Ill., made a very attractive cabinet for his radio set from a few boards well selected and planed and sanded.

Here are the drawings of a RADIO cabinet which I found very satisfactory in my home. It prevents my youngster from playing with the RADIO.

He has a hobby of turning the dials and knobs and the result was that I had to buy new batteries very often.

I used plain pine boards three-eighths inch thick for the body and two by four's for the legs. What the cost would be I could not say as the material that I used is what I had on hand, with the exception of the hardware and glue.

The batteries are kept in the drawer and the wires are passed through one-fourth inch holes in the rear



of the cabinet, the wires should be long enough to allow the radio to be brought forward for inspection or repaired and also that the drawer may be opened to inspect the batteries.

An old writing desk can easily be converted into a cabinet in a very short time. Hope that you phans who have the same trouble that I had will build this cabinet and have the same feeling of relief.

BASE BOARD REQUIREMENTS

Old constructional ideas for sets were to use wood for base boards. If a board must be used, select one that is thoroughly dry and soak it in hot paraffin. It is much better to use the same material as is used for the front panel, only of a cheaper grade. A little more money put into the base board construction will give better results in the set.

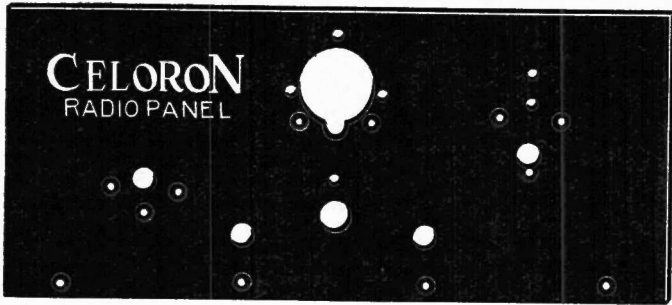
A great many of the manufactured sets of present day construction do not use any base board, all instruments are mounted on the panel. Panel mounted instruments not only present a neat appearance but they allow the builder to make short leads. You're welcome.

VACUUM TUBE THEORY

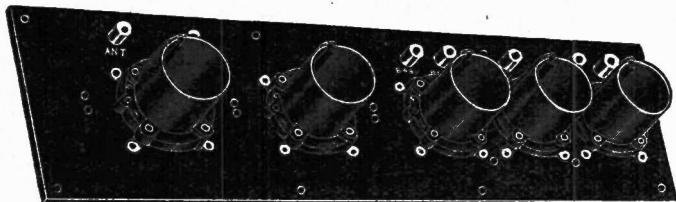
With the lighting of the filament it discharges electrons which impinge on the plate because of its difference in the potential. While these electrons are passing from the filament to the plate they also pass through the wires to the grid. Current can only flow between the filament and plate with the electrons, therefore a current can only flow in the tube when it has connection to the negative terminal and to the plate of the positive terminal of the "B" battery. You're welcome.

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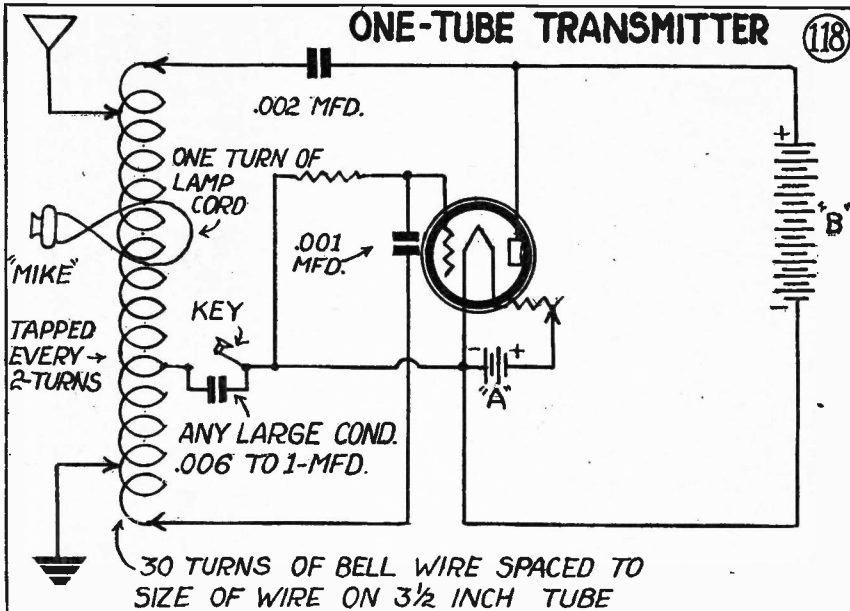
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How to Build a Transmitter With One 201-A Tube

IN ANSWER to many calls for a one-tube transmitter, using the ordinary 201A tube, that is simple and easy to build and yet efficient in operation, we are describing a setup that meets these demands and has the added factor of low cost, since it may be constructed for \$10 to \$15.

Most of the parts can be found in the experimenter's junk box, and if the builder does not care to use phone operation, the microphone may be left out. The list of parts are:

- One C. W. inductance (with wave length adjusting clips).
- One standard tube socket, suitable insulation used to stand high voltages.
- One 2,000 micro-microfarad (.002 mfd.) plate blocking condenser.
- One 1,000 micro-microfarad (.001 mfd.) grid condenser.
- One telegraph key for C. W. code work. Cut out switch preferred.
- One 5,000 to 10,000 ohm grid leak.
- One type 201A tube.

The inductance may be bought ready-made, or can be made as follows: Procure some tubing about six inches in diameter and ten inches long. The material should be of bakelite or hard rubber of a good grade. It can be a framework of skeleton type or solid cylinder. Heavy cardboard may be used if it is treated by boiling in bees-wax or paraffin.

Wind thirty turns of wire, using nothing smaller than No. 18, and with a double-wrapped insulation. Bell wire will do very well, as it is the right size and well insulated. The turns are spaced the size of the wire, and this

may be done by winding two wires together and after completion remove one of them. Taps are brought out every two turns by twisting small loops in the wire. These taps are scraped of their insulation so that clips may be attached to adjust to best operation. Two brass angles may be attached at both ends for mounting on a baseboard.

The schematic diagram speaks for itself. If phone operation is wanted, one turn of lamp cord may be wound around the inductance and the two ends connected to the microphone. Another way for modulating the set would be to connect the microphone in series with the ground lead. Both ways will give good results on low-power work.

When using phone the key must be shorted out with a switch, or if the key is equipped with one this may be used. The condenser across the key may be any large value or may be left out entirely if sparking at the key contacts is not bad.

As to power, standard "B" batteries may be used and the 201A tube will stand 200 volts, drawing between ten and twenty-five milliamperes per hour. A six-volt storage battery is used for lighting the filament.

Using code about 50 miles may be covered and phone about six miles may be depended upon. Greater distances than this, of course, have been achieved under favorable conditions.

CALLS HEARD

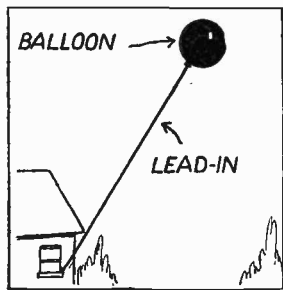
2ctn, Troy, N. Y. (40 meters): bz1ab, bz2sp, q2mk, d7ec, f8ct, g2kf, g2nm, g2od, g2sz, g5bv, g5sl, g6lj, g6tm, rfb5, lpz, 4ol, 4sa, 6ajj, 6asu, 6bby, 6ct, 6cgw, 6cto, 6vc, wlr, wnp, wap, ner, nfv, nve, 5lh, 6ox sgc.

2ev, New York City, (40 meters): 1aas, 1ael, 1alu, 1apz, 1awq, 1axa, 1aww, 1bgo, 1btr, 1cmx, 1ef, 3aa, 3aef, 3afw, 3bel, 3bjp, 3cel, 3ckl, 3hd, 4aae, 4ae, 4er, 4fg, 4jj, 4oa, 4oy, 4rz, 4sl, 4wj, 4xe, 5abi, 5agw, 5hy, 5nj, 5ph, 5qy, 5uk, 5va, 5agk, 5ajl, 5ark, 5asn, 5aap, 5ac, 5aee, 5afd, 5alv, 5akb, 5apo, 5aul, 5ay, 5bdu, 5blp, 5bmb, 5bnh, 5blp, 5buv, 5byn, 5byv, 5cct, 5ckf, 5cml, 5cp, 5dnf, 5dqf, 5dqf, 5eb, 5gl, 5ow, 5oq, 5ado, 5aek, 5akf, 5amx, 5aqt, 5atq, 5azp, 5bbj, 5bcn, 5bcs, 5bcx, 5beb, 5bek, 5bht, 5bna, 5bpb, 5bvh, 5byw, 5ccn, 5cuo, 5dac, 5dex, 5dkv, 5dlit, 5dpx, 5dqu, 5drr, 5duj, 5dtk, 5gx, 5og, 5pb, 5wo, 5wu, 5zk, 5nrl, 5clam, 5c3a, 5c3g, 5a2yl, 5aef, 5ch2e, 5gal, 5ias, 5m9a, 5rbb5.

9ddu, elcho, wis. (40 meters): 1aac, 1abp, 1acp, 1act, 1aep, 1ahg, 1ahl, 1all, 1ajo, 1alw, 1ams, 1anq, 1aos, 1apc, 1are, 1arf, 1arh, 1atj, 1awe, 1axa, 1ayq, 1axl, 1bdh, 1bes, 1bgo, 1bgq, 1bls, 1bql, 1bvb, 1bvl, 1byx, 1cab, 1cak, 1ccx, 1ckk, 1ckp, 1cmp, 1cmf, 1cmx, 1cof, 1af, 1am, 1cl, 1el, 1iv, 1ka, 1mk, 1my, 1pz, 1st, 1so, 1te, 1uc, 1uk, 1uw, 1wl, 1xa, 1xf, 2acp, 2aes, 2afn, 2afp, 2agb, 2agl, 2agt, 2agw, 2amj, 2apl, 2awf, 2bbx, 2bee, 2bkr, 2blp, 2box, 2bqg, 2bum, 2byw, 2cbg, 2cnk, 2cpa, 2ctn, 2cty, 2cvj, 2cvu, 2cyu, 2cyw, 2bc, 2bw, 2co, 2gk, 2gx, 2gy, 2ha, 2kf, 2ll, 2lu, 2lu, 2mu, 2nf, 2qs, 2rm, 2wc, 2wr, 2xaf, 2aww, 2afq, 2agw, 2apv, 2auv, 2awf, 2bmy, 2bnu, 2buy, 2bva, 2bv, 2cdx, 2cel, 2chg, 2ckg, 2ab, 2bz, 2fc, 2gx, 2jw, 2mq, 2mv, 2ot, 2qw, 2st, 2sm, 2ut, 2vx, 2wr, 2aae, 2af, 2cu, 2ee, 2eg, 2en, 2er, 2fb, 2fi, 2fs, 2fw, 2fx, 2gl, 2hd, 2he, 2hu, 2it, 2jc, 2jd, 2jr, 2js, 2jl, 2jn, 2ka, 2kb, 2kc, 2kd, 2ke, 2kf, 2kg, 2kh, 2ki, 2kj, 2kl, 2km, 2kn, 2ko, 2kp, 2kq, 2kr, 2ks, 2kt, 2ku, 2kv, 2kw, 2kx, 2ky, 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2bm, 2bn, 2bo, 2bp, 2bq, 2br, 2bs, 2bt, 2bu, 2bv, 2bw, 2bx, 2by, 2bz, 2ca, 2cb, 2cc, 2cd, 2ce, 2cf, 2cg, 2ch, 2ci, 2cj, 2ck, 2cl, 2cm, 2cn, 2co, 2cp, 2cq, 2cr, 2cs, 2ct, 2cu, 2cv, 2cw, 2cx, 2cy, 2cz, 2da, 2db, 2dc, 2dd, 2de, 2df, 2dg, 2dh, 2di, 2dj, 2dk, 2dl, 2dm, 2dn, 2do, 2dp, 2dq, 2dr, 2ds, 2dt, 2du, 2dv, 2dw, 2dx, 2dy, 2dz, 2ea, 2eb, 2ec, 2ed, 2ee, 2ef, 2eg, 2eh, 2ei, 2ej, 2ek, 2el, 2em, 2en, 2eo, 2ep, 2eq, 2er, 2es, 2et, 2eu, 2ev, 2ew, 2ex, 2ey, 2ez, 2fa, 2fb, 2fc, 2fd, 2fe, 2ff, 2fg, 2fh, 2fi, 2fj, 2fk, 2fl, 2fm, 2fn, 2fo, 2fp, 2fq, 2fr, 2fs, 2ft, 2fu, 2fv, 2fw, 2fx, 2fy, 2fz, 2ga, 2gb, 2gc, 2gd, 2ge, 2gf, 2gg, 2gh, 2gi, 2gj, 2gk, 2gl, 2gm, 2gn, 2go, 2gp, 2gq, 2gr, 2gs, 2gt, 2gu, 2gv, 2gw, 2gx, 2gy, 2gz, 2ha, 2hb, 2hc, 2hd, 2he, 2hf, 2hg, 2hh, 2hi, 2hj, 2hk, 2hl, 2hm, 2hn, 2ho, 2hp, 2hq, 2hr, 2hs, 2ht, 2hu, 2hv, 2hw, 2hx, 2hy, 2hz, 2ia, 2ib, 2ic, 2id, 2ie, 2if, 2ig, 2ih, 2ii, 2ij, 2ik, 2il, 2im, 2in, 2io, 2ip, 2iq, 2ir, 2is, 2it, 2iu, 2iv, 2iw, 2ix, 2iy, 2iz, 2ja, 2jb, 2jc, 2jd, 2je, 2jf, 2jg, 2jh, 2ji, 2jj, 2jk, 2jl, 2jm, 2jn, 2jo, 2jp, 2jq, 2jr, 2js, 2jt, 2ju, 2jv, 2jw, 2jx, 2jy, 2jz, 2ka, 2kb, 2kc, 2kd, 2ke, 2kf, 2kg, 2kh, 2ki, 2kj, 2kl, 2km, 2kn, 2ko, 2kp, 2kq, 2kr, 2ks, 2kt, 2ku, 2kv, 2kw, 2kx, 2ky, 2kz, 2la, 2lb, 2lc, 2ld, 2le, 2lf, 2lg, 2lh, 2li, 2lj, 2lk, 2lm, 2ln, 2lo, 2lp, 2lq, 2lr, 2ls, 2lt, 2lu, 2lv, 2lw, 2lx, 2ly, 2lz, 2ma, 2mb, 2mc, 2md, 2me, 2mf, 2mg, 2mh, 2mi, 2mj, 2mk, 2ml, 2mn, 2mo, 2mp, 2mq, 2mr, 2ms, 2mt, 2mu, 2mv, 2mw, 2mx, 2my, 2mz, 2na, 2nb, 2nc, 2nd, 2ne, 2nf, 2ng, 2nh, 2ni, 2nj, 2nk, 2nl, 2nm, 2no, 2np, 2nq, 2nr, 2ns, 2nt, 2nu, 2nv, 2nw, 2nx, 2ny, 2nz, 2oa, 2ob, 2oc, 2od, 2oe, 2of, 2og, 2oh, 2oi, 2oj, 2ok, 2ol, 2om, 2on, 2oo, 2op, 2oq, 2or, 2os, 2ot, 2ou, 2ov, 2ow, 2ox, 2oy, 2oz, 2pa, 2pb, 2pc, 2pd, 2pe, 2pf, 2pg, 2ph, 2pi, 2pj, 2pk, 2pl, 2pm, 2pn, 2po, 2pp, 2pq, 2pr, 2ps, 2pt, 2pu, 2pv, 2pw, 2px, 2py, 2pz, 2ra, 2rb, 2rc, 2rd, 2re, 2rf, 2rg, 2rh, 2ri, 2rj, 2rk, 2rl, 2rm, 2rn, 2ro, 2rp, 2rq, 2rr, 2rs, 2rt, 2ru, 2rv, 2rw, 2rx, 2ry, 2rz, 2sa, 2sb, 2sc, 2sd, 2se, 2sf, 2sg, 2sh, 2si, 2sj, 2sk, 2sl, 2sm, 2sn, 2so, 2sp, 2sq, 2sr, 2ss, 2st, 2su, 2sv, 2sw, 2sx, 2sy, 2sz, 2ta, 2tb, 2tc, 2td, 2te, 2tf, 2tg, 2th, 2ti, 2tj, 2tk, 2tl, 2tm, 2tn, 2to, 2tp, 2tq, 2tr, 2ts, 2tt, 2tu, 2tv, 2tw, 2tx, 2ty, 2tz, 2ua, 2ub, 2uc, 2ud, 2ue, 2uf, 2ug, 2uh, 2ui, 2uj, 2uk, 2ul, 2um, 2un, 2uo, 2up, 2uq, 2ur, 2us, 2ut, 2uu, 2uv, 2uw, 2ux, 2uy, 2uz, 2va, 2vb, 2vc, 2vd, 2ve, 2vf, 2vg, 2vh, 2vi, 2vj, 2vk, 2vl, 2vm, 2vn, 2vo, 2vp, 2vq, 2vr, 2vs, 2vt, 2vu, 2vv, 2vw, 2vx, 2vy, 2vz, 2wa, 2wb, 2wc, 2wd, 2we, 2wf, 2wg, 2wh, 2wi, 2wj, 2wk, 2wl, 2wm, 2wn, 2wo, 2wp, 2wq, 2wr, 2ws, 2wt, 2wu, 2wv, 2ww, 2wx, 2wy, 2wz, 2xa, 2xb, 2xc, 2xd, 2xe, 2xf, 2xg, 2xh, 2xi, 2xj, 2xk, 2xl, 2xm, 2xn, 2xo, 2xp, 2xq, 2xr, 2xs, 2xt, 2xu, 2xv, 2xw, 2xx, 2xy, 2xz, 2ya, 2yb, 2yc, 2yd, 2ye, 2yf, 2yg, 2yh, 2yi, 2yj, 2yk, 2yl, 2ym, 2yn, 2yo, 2yp, 2yq, 2yr, 2ys, 2yt, 2yu, 2yv, 2yw, 2yx, 2yz, 2za, 2zb, 2zc, 2zd, 2ze, 2zf, 2zg, 2zh, 2zi, 2zj, 2zk, 2zl, 2zm, 2zn, 2zo, 2zp, 2zq, 2zr, 2zs, 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2hl, 2hm, 2hn, 2ho, 2hp, 2hq, 2hr, 2hs, 2ht, 2hu, 2hv, 2hw, 2hx, 2hy, 2hz, 2ia, 2ib, 2ic, 2id, 2ie, 2if, 2ig, 2ih, 2ii, 2ij, 2ik, 2il, 2im, 2in, 2io, 2ip, 2iq, 2ir, 2is, 2it, 2iu, 2iv, 2iw, 2ix, 2iy, 2iz, 2ja, 2jb, 2jc, 2jd, 2je, 2jf, 2jg, 2jh, 2ji, 2jj, 2jk, 2jl, 2jm, 2jn, 2jo, 2jp, 2jq, 2jr, 2js, 2jt, 2ju, 2jv, 2jw, 2jx, 2jy, 2jz, 2ka, 2kb, 2kc, 2kd, 2ke, 2kf, 2kg, 2kh, 2ki, 2kj, 2kl, 2km, 2kn, 2ko, 2kp, 2kq, 2kr, 2ks, 2kt, 2ku, 2kv, 2kw, 2kx, 2ky, 2kz, 2la, 2lb, 2lc, 2ld, 2le, 2lf, 2lg, 2lh, 2li, 2lj, 2lk, 2lm, 2ln, 2lo, 2lp, 2lq, 2lr, 2ls, 2lt, 2lu, 2lv, 2lw, 2lx, 2ly, 2lz, 2ma, 2mb, 2mc, 2md, 2me, 2mf, 2mg, 2mh, 2mi, 2mj, 2mk, 2ml, 2mn, 2mo, 2mp, 2mq, 2mr, 2ms, 2mt, 2mu, 2mv, 2mw, 2mx, 2my, 2mz, 2na, 2nb, 2nc, 2nd, 2ne, 2nf, 2ng, 2nh, 2ni, 2nj, 2nk, 2nl, 2nm, 2no, 2np, 2nq, 2nr, 2ns, 2nt, 2nu, 2nv, 2nw, 2nx, 2ny, 2nz, 2oa, 2ob, 2oc, 2od, 2oe, 2of, 2og, 2oh, 2oi, 2oj, 2ok, 2ol, 2om, 2on, 2oo, 2op, 2oq, 2or, 2os, 2ot, 2ou, 2ov, 2ow, 2ox, 2oy, 2oz, 2pa, 2pb, 2pc, 2pd, 2pe, 2pf, 2pg, 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2fs, 2ft, 2fu, 2fv, 2fw, 2fx, 2fy, 2fz, 2ga, 2gb, 2gc, 2gd, 2ge, 2gf, 2gg, 2gh, 2gi, 2gj, 2gk, 2gl, 2gm, 2gn, 2go, 2gp, 2gq, 2gr, 2gs, 2gt, 2gu, 2gv, 2gw, 2gx, 2gy, 2gz, 2ha, 2hb, 2hc, 2hd, 2he, 2hf, 2hg, 2hh, 2hi, 2hj, 2hk, 2hl, 2hm, 2hn, 2ho, 2hp, 2hq, 2hr, 2hs, 2ht, 2hu, 2hv, 2hw, 2hx, 2hy, 2hz, 2ia, 2ib, 2ic, 2id, 2ie, 2if, 2ig, 2ih, 2ii, 2ij, 2ik, 2il, 2im, 2in, 2io, 2ip, 2iq, 2ir, 2is, 2it, 2iu, 2

BALLOON AERIALS

There are on the market balloons at low cost, of the rubber type common at carnivals, but stronger in construction, that may be purchased at a nominal sum. These may be filled with ordinary household cooking gas, or a small tank of hydrogen may be obtained and the balloon filled from that.



The hydrogen gas has considerable lifting power and will raise a small aerial to a height sufficient to obtain good reception. Naturally the only disadvantage is that this kind of vertical aerial is not practical on rainy or windy days. It is a recognized fact that a vertical aerial is one of the best for the reception of clear signals. You're welcome.

POLING THE PHONE RECEIVERS

A simple and certain means of determining the proper poling of telephone receivers is to look at the image of a small light source reflected in the diaphragm. When direct current is sent through the windings, if the light image becomes larger, the diaphragm is drawn toward the magnets and the poling is correct. If the light image becomes smaller the diaphragm springs away from the magnets and the poling should be reversed. Better check both receivers of the set to make sure they are not reversed against each other. The poling of loudspeakers, which do not use a balanced magnetic circuit and through which the space current is fed directly, is as important as for headsets.

USES A FOUR-WIRE CAGE

Leonard Still (9BMX), St. Paul, Minn., has an antenna of four wires, semi-vertical cage, sixty feet long, used in conjunction with a five-wire fan counterpoise that is forty feet long. The receiver is of K. E. Hassell's design, with the secondary mounted on small plugs so that it might be changed. A step of audio-amplification is used. The transmitter uses the three-coil Meissner circuit with a condenser tuned plate circuit. A five-watt tube is used with sixty watts input.

HOW TO MAKE SERIES ANTENNA CONDENSER

A series antenna condenser easily may be made by any handy ham by removing some of the plates in a Cardwell or any condenser of a similar type. It will stand quite a high voltage without jumping over. The rubber insulation is sufficient for the spacing of the plates obtained and will not break down. Washers must replace the thickness of the plates removed. The break-down voltage may be doubled by cutting out a couple of sections from the stator.

PLACING YOUR BATTERY LEADS

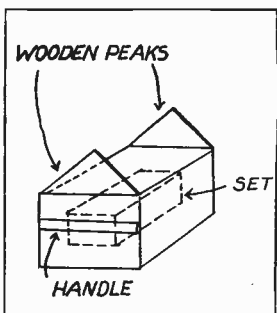
Battery leads should not be placed in the field of the condensers and especially between the coils and the condensers. Bunch the leads, and cable them if you wish, but keep them back of the condenser field or so far in front as not to cause trouble. They pick up radio frequency currents mighty easily.

SPACED COILS EASY TO WIND

It is a simple matter to wind a coil with each turn of wire spaced a short distance from the next one. Start the coil with thread and wire, at the same time applying considerably more tension to the wire than when no thread is used. After the coil is wound and the end of the wire fastened, the thread may be unwound. It is much easier if you can persuade a friend to hold a spool of wire in one hand and a spool of thread in the other, while you use both hands to turn the coil form. You're welcome.

HOW TO SHIP SET

We know from experience the condition receivers arrive in which are shipped by inexperienced packers, although extreme care is used in packing them, one out of ten does not get broken. Here is a good way to pack your receiver to insure it against breakage.



As the illustration shows, the set is placed in a wooden box wide enough to leave ten inches of space around the set on all six sides between the box. The set should be wrapped in strong paper and the ten-inch space filled with excelsior. Two triangular shaped pieces of wood are nailed to the box forming peaks, as shown in the drawing. These pieces prevent the box from being turned upside-down. Handles can be put on the ends of the box for ease in handling. Glass cabinets are shipped in this type of box without being broken. You're welcome.

KEEPING COILS CLEAN

The person who takes pride in the building of sets usually wants to have the coils clean and bright, if silk covered wire is used. The perspiration from the hands soils the wire in the winding process. It is best to wear a clean pair of gloves while doing the work. You're welcome.

Causes for Broadness in Tuning Most Sets

A good deal of the broadness in tuning receiving sets is due to the fact that the coils really are functioning as a species of miniature aerials, picking up signals from other stations on the air and mixing these with the tuned-in signals from the aerial.

Let us give this some thought and analysis. Let us suppose that the natural wave-length of the outside aerial is 205 meters. In other words that it vibrates in harmony with signals having a wave-length corresponding to that number of meters. Your antenna coupler or coil may have an individual natural wave-length of 210 meters. If your set has radio frequency coils, these may have natural individual wave-lengths of 210 and 220 meters respectively.

By adding the natural wave-length of your antenna coil to the natural wave-length of your aerial, the total natural wave-length of the entire antenna system is 415 meters. By rotating the variable condenser this wave-length may be increased or decreased as desired.

Assuming that the two coils in the antenna coupler are properly coupled for true selectivity and it is found that the set still is broad in its tuning, it is more than likely that the trouble is due to the pickup qualities of all the coils in the receiver. In other words, these coils each are acting as small loop antennas and are picking up signals of other stations at wave-lengths nearest to their own wave-lengths and mixing these in with the tuned-in signals which the aerial has delivered to the receiver. Usually some strong local station signal whose wave-length is close to the natural wave-length of the coil comes in strongest and with sufficient volume to drown out other signals not so near this natural wave-length.

Correction of this trouble up until recently was accomplished usually by shielding the entire radio receiving set—lining the cabinet with copper or aluminum plates which are in turn grounded. Sometimes vertical shielding plates were built up and around the coils.

The intermediate radio frequency transformers introduced last year by the Precise Radio Corporation for their Super-Heterodyne Kits, utilized this method. In this case the metal shield was grounded so that any strong atmospheric disturbances would be diverted direct to the ground and thus prevented from being picked up by the coils. The Harper Metaloid radio frequency coils used in tuned-radio frequency circuits is the first shielded coil of this type and was introduced this season. There are other methods of preventing these pickup of strays which designers have utilized in the construction of radio frequency transformers. Coils of this type are the Figure 8 or D coils, Toroidal coils and Binocular coils. Owing to their peculiar construction they do not have a pickup tendency and when used more selective sets can be constructed.

Keep Top of Battery Clean

Mr. Phan, see to it that the top of your battery is clean. Wipe off the acid and water that accumulates there.

When filling the battery keep the water just about a quarter of an inch above the plates.

Fill the battery with distilled water, but do not add the acid yourself if you are inexperienced. You may get an improper solution. Have a battery station do this for you when it is needed.

Do not let the battery fall or give it any unnecessary hard handling. Battery jars are often broken in this way and the result is a lowered capacity and drop in voltage.

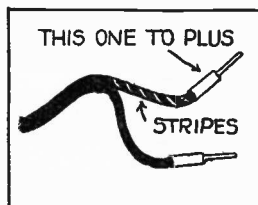
Keep the battery away from heat or fire. It is dangerous to have the battery near a fire of any kind as the gas in it is very inflammable. Keep the battery in a dry place, as it may become rotted due to moisture and it is therefore easy for the acid to attack and ruin the battery.

Use a hydrometer in testing the battery. In making a short to test it weakens the plates and causes short life. The use of a voltmeter, however, is all-right providing you know how to use it, but otherwise you may damage the plates. It is safer for the novice to stick to the use of the hydrometer for this reason.

Be careful not to charge the battery at a higher rate than the one specified, as too rapid a charge is apt to damage it. This is also true if you discharge it at more rapid a rate than the one indicated on the tag. You're welcome.

CONNECT LOUDSPEAKER RIGHT

Most loudspeakers are so constructed that to attach one side of horn to the wrong terminal in the set not only reduces volume considerably but also, eventually, will seriously injure the loudspeaker by changing its polarity. On such loudspeakers one of the phone-cords attached to them is marked either with red dots, stripes or solid red color. This cord must be attached to the "B" plus terminal of the receiver's output posts. If they do not have any distinguishing colors or marks try out the polarity by inserting first one cord and then the other in one of the terminals. The improvement is so marked it will be easy to determine the proper polarity. You're welcome.



A LINE OR TWO ABOUT AERIALS

An outside aerial is necessary in order to get the best results from practically all sets. However, some radio frequency sets operate well on a loop indoor aerial. Lamp socket aerials are very satisfactory in many places. In others they completely fail. Dealers usually sell them on a returnable basis for this reason. You're welcome.

WHEN A TUBE WORKS BEST

New 201A tubes, when used as radio frequency amplifiers, work best at 4½ volts on a filament. You're welcome.

BATTERY SHOULD BE PROPER SIZE

When you buy a battery be sure to consider the size needed for your particular set. It is possible to get results from a five-tube or three-tube receiver with the smaller B batteries, but the experiment will prove costly in the long run because of the rapid depreciation in the smaller sizes and the drain required, as well as the constant need of frequent renewals. Therefore it is wise to consider the type of tubes, and the number of them and the range desired when purchasing the batteries. Thus you should determine the size and number and batteries needed. You're welcome.

THAT CONTINUAL WHISTLING NOISE

If there is a continual shrill whistle in your set when the amplifiers are used, it means that the grid and plate leads are too close together or the transformers are poorly designed. It was believed at one time that the interacting fields in the transformers caused the shrill whistling and the usual procedure was to place the transformer at such an angle as to eliminate the stray field. This was only partly true. Today, however, with improved shielded transformers and better design this source of trouble has been removed. If the whistling does persist, proper separation of the grid and plate leads will solve the problem. Sometimes a small fixed by-pass condenser of .001 Mfd capacity is used to correct the defects in wiring. The best method is to use correct wiring. You're welcome.

MANIPULATING THE TICKLER

In tuning a regenerative set, the tickler of a three circuit tuning unit is held at zero until the signals are brought in as loud as possible with the other tuning devices and then varied until the regeneration is at its strongest. When this has been reached, it may be necessary to tune still finer with the variable condenser. You're welcome.

HOW AND WHY TUBES WORK

To comprehend the workings of the vacuum tube, consider the filament as being located at one side of the tube and the plate at the other, with the grid in between. When the filament is heated by electric currents from the battery, electrons fly off toward the plate, but in so doing they are forced to pass through the grid. The waves coming into the grid from the aerial are first positive and then negative, like alternating current. When the negative half of the current comes to the grid, it does not let them pass. An instant later, when the positive half appears on the grid, the electrons pass to the plate with an added impetus, because the waves on the grid are added to those coming from the filament. During all this procedure the plate is connected through a battery to the phones or loud speaker and every time the electrons are allowed to pass from the filament to plate, they produce an impulse. These impulses being controlled by the grid, coincide with the wireless waves on the grid and the sound produced, therefore, must agree with those sent out by the broadcasting station. You're welcome.

LOCATING POOR TUBES

A poor or defective tube is often difficult to detect. Although all of the tubes light up it is no indication that each one is working properly. It is a good plan to change the tubes around in the sockets while listening in on the detector jack. In this way the best tubes can be used in the radio frequency stages and the poor tubes can be located and discarded or used in the audio stages. It is best before buying tubes, to have them tested in a set that is operating. You're welcome.



Burns SPEAKER *with* CONCERT UNIT

Distinctive and pleasing in design. Remarkable volume with exactness of reproduction. Adds to the enjoyment of any receiving set. Made up with flare of horn in several handsome finishes.

THE HEART OF THE SPEAKER

The large size and scientific construction of the Concert Unit gives the remarkable tone values which combined with the special amplifying properties of the Burns Horn produce the wonderful results obtained.

LIST PRICES

No. 205B	With black flare.....	\$22.50
No. 205D	Mahogany tinted flare.....	25.00
No. 205P	Mother-of-Pearl flare.....	30.00
No. 100	Phonograph Unit.....	10.00
No. 120	Concert Unit.....	12.00

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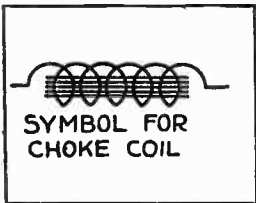


CONCERT UNIT

HELPS FOR THE BUILDER

WHAT A "CHOKE" COIL IS

Choke coils in a radio set are used to hold back or "choke down" certain forms of current or certain frequencies while permitting others to pass freely. They also are used to oppose fluctuations in the strength of the current passing through them in the circuit. These coils possess considerable self-inductance, but relatively very little resistance. When a choke coil of the proper value is used in a direct current circuit it has a tendency to prevent fluctuations in the current and keep the current "smooth." An illustration of this use is found in the case of a loudspeaker where a fixed condenser of small value and a choke coil are employed to increase the efficiency of the



loudspeaker. A choke coil is "shunted across" the output terminals (the plate and "B" battery posts) of a receiving set. In one of the leads from one end of the choke coil to the loudspeaker a small fixed by-pass condenser is used. It may be from 0.1 mfd. to 0.5 or 0.6 mfd. The condenser permits the passage of high frequency or alternating currents, but blocks the direct currents. The choke coil passes the direct current, but retards the audio or modulated currents. This not only prevents injury to the loudspeaker, but also improves the quality of the tones it sends forth. The pitch of the tone from the loudspeaker may be raised or lowered by changing the size of the fixed condenser. The higher the capacity used the higher the pitch of the loudspeaker. A small semi-variable condenser such as the "XL-Vario" or "Turn-It" can be used in this manner very advantageously. You're welcome.

erties. Often the coloring matter used in the materials is a conductor, such as carbon, for instance, and if present in sufficient quantities will destroy the value of the material for insulating purposes.

Other substances absorb water easily and in some instances the presence of even a small amount of moisture will considerably increase the dielectric constant.

The value of the dielectric constant also depends on the kind of voltage applied and the manner in which it is applied. For accurate results the conditions under which the material is to be used and the manner and source from which the current is to be supplied must be stated.

It should be understood that dielectric materials are NOT perfect insulators, but that they do have a very small conductivity.

HOW "LOOP" AERIAL WORKS

The inside aerial of the "loop" variety is an interesting apparatus. The principle upon which it works is practically identical with that of the electric dynamo. In the latter a number of coils corresponding to the loop antenna are rotated in a powerful magnetic field. The purpose of rotating them is in order that they may move with respect to the field and thus have a voltage generated in them. The amount of voltage depends upon the speed at which the wires are swept through the field. In the case of the "loop" the process is merely reversed. The coil stands still while the field, or radio frequency impulses, move swiftly past the coil, thus setting up a current in it.

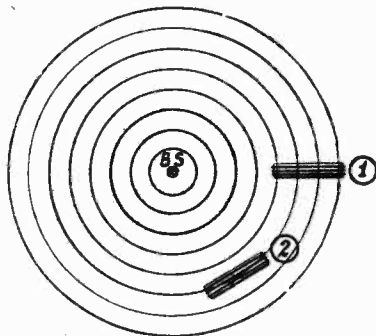
The speed at which the "field" moves, of course, cannot be varied and, approximately, always is the speed of light. In every type of antenna an approaching radio wave induces an emf. (electric motive force) in the wires. In the case of the "loop," the induced emf. causes a current to flow in a circuit connected to the detecting apparatus. It often happens that signals may be heard on a sensitive receiver when the aerial is entirely disconnected. In such cases the wiring in the set itself is picking up the signals and acting as a coil or loop antenna.

The usual kind of loop antenna consists of four turns of copper wire wound on a frame about four feet on a side. The amount of energy received on such an antenna is naturally far less than that received on an out-

Values of Dielectrics

The following values of various dielectric substances, as determined by the United States Bureau of Standards will prove useful and interesting to all experimenters:

Substances	Values of Dielectric Constant
Air	1.0
Paper (Dry)	1.5 to 3.0
Paraffin	2.0 to 3.0
Hard rubber	2.0 to 4.0
Transformer oil	2.5
Paper (Located as used in cables)	2.5 to 4.0
Shellac	3.0 to 3.7
Sulphur	3.0 to 4.2
Wood (Maple, dry)	3.0 to 4.5
Wood (Oak, dry)	3.0 to 6.0
Cotton seed oil	3.1
Beeswax	3.2
Silk	4.6
Molded material (Shellac base)	4.0 to 7.0
Mica	4.0 to 8.0
Glass	4.0 to 10.0
Castor oil	4.7
Porcelain (Unglazed)	5.0 to 7.0
Molded material (Phenolic Bakelite)	5.0 to 7.5
Vulcanized fiber	5.0 to 8.0
Celluloid	7.0 to 10.0
Marble	9.0 to 12.0
Water (Distilled)	81.1



From the accompanying table it will be seen that while air is the best known insulating material, water, by comparison, is such a poor insulator that it actually may be considered as a fair conductor, having 81 times the conductivity of air.

On the other hand, paper, when entirely dry, is an excellent insulator, having only one and one-half to three times the conductivity of air, while glass and mica have upwards of four times the conductivity of air.

The wide variation shown in the values given for some substances is due to the fact that the different kinds and grades of the different materials vary considerably in many of their physical properties, including their electrical properties.

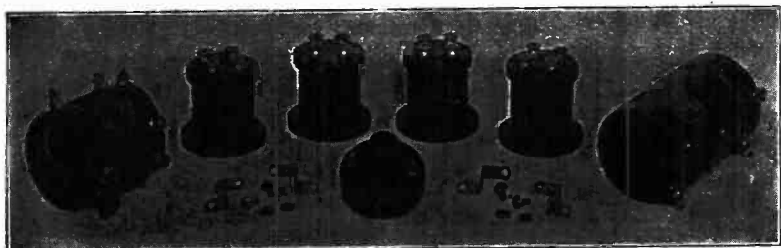
A large number of kinds of glass, for instance, are made for various purposes, and having very different prop-

side aerial. It is well to feature the fact here that satisfactory results cannot be secured in loop reception unless good vacuum tube amplifiers (radio frequency amplifiers) are used ahead of the detector to amplify many times the feeble current received in the coil.

The turns of a loop antenna possess a distributed capacity of their own and the coil has a natural or fundamental wave length of its own, which is the wave length radiated by it when oscillating freely by itself without being loaded with any other capacity or inductance. These types of aerial should be used with variable condensers of sufficient capacity to bring them into resonance at 500 to 600 meters. For indoor use and for all ordinary purposes the wire used in loop antenna construction should be No. 20 or 22 common insulated copper wire with solid conductor.

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This is a SUPERADIO Product—Your Guarantee of Satisfaction! A most selective, a most powerful, a long ranged, a fine toned 8-tube super. Intermediate transformers matched to identical peaks and filter tuned to same peak. Kit includes Antenna Coupler, Oscillator Coupler, Special Variable Condenser, Tuned Input Transformer, 3 matched intermediate transformers and hardware. Complete with booklet, diagrams and full sized working drawings which positively assure perfect success. Order now. Only \$17.50.

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With Dialog Vernier Dials and Other World's Finest Quality Parts

When assembled, this receiver will equal the performance of any other 5 tube set ever devised. Now, greater efficiency obtained through unique circuit and through use of only such parts as match laboratory standards. Never before has a kit of such high quality parts been made up for a 5 tube set. Each part in each kit individually tested. Uses either 5 tubes or 4 tubes and Welty's Crystector—which kills static. Working drawings and full instructions. Order now. Kit price.....

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3-Tube DX Special

\$38.50 A kit of high quality parts individually tested. Makes up into an amazingly selective, abundantly powered 3 tube regenerative receiver. Considering the quality of parts furnished, this kit at \$38.50 is an exceptional value. Drawings and instructions included.

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Welty's Crystector

Reduces Static



A uniquely and substantially designed crystal detector that fits into the standard base socket. It employs a high grade crystal which is "hot" all over and has a adjustable "catwhisker." When substituted for the detector tube in any neutrodyne or tuned R. F. receiver static is so greatly reduced that it is hardly audible. Ideal for year-round reception—local and distance. Every set of the above two types should have a Welty's Crystector. Order now, \$4.00.

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Your Questions Answered Here

Everybody's Clearing House for Troubled Set Builders

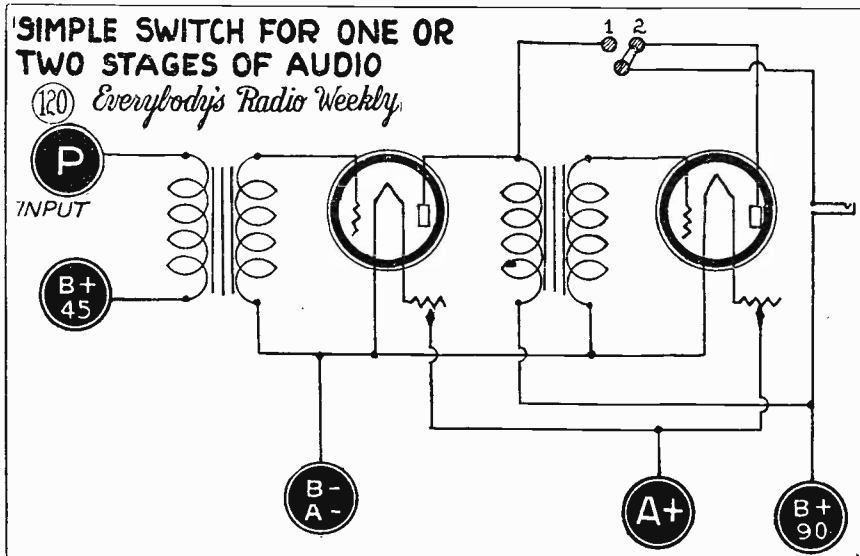
An Expert Aid on Construction and Operation of Sets

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.

MORE TURNS ON SECONDARY

5084—LOS ANGELES, CALIF.: I have built a "100% Low Loss" receiver with no results. I am using a Bremer Tully 23-plate variable condenser, Benjamin sockets, Acme audio transformers, Pacent rheostats, a good jack and switch. Now, where the shoe pinches is in the coil, I believe. While in Chicago I was a constant reader of EVERYBODY'S RADIO and I think it one of the best radio magazines published. I could not buy an Ambassador coil when I built my set, but a coil that looks identical except for the color of the wire was the best I could do. It is an Uncle Sam tuner three circuit. Can the coil mentioned be used with equal results as obtained with an Ambassador? The coil has the same number turns on all windings as the Ambassador. The primary is red Litz; the secondary is blue solid copper wire, and the tickler is white Litz. Coils are same diameter. The trouble is the set is not selective and it does not tune on the right numbers. For instance, KFI, a Los Angeles station, comes in on 85 where it should come in on about 60. KLH of Oakland comes in on 96. It is a 509 meter station. If U. S. coil cannot be used as it is, please give me number of turns and sizes of wire to wind on forms. Have a good antenna and ground, new "B" batteries and "A" battery is kept full. Also have three new tubes that test O. K. Have had a "100% Low Loss" in Chicago, using Ambassador coil, and got results more than I expected over 42 stations in less than two weeks.

Yes, the coil you mention will give you just as equal results. Space your primary of ten turns farther from your secondary. This will aid you in selectivity. You should have about 5 more turns on your secondary to get KFI and KLH in the proper places. Your coil can be used, and will be O. K. if corrected as stated above.



Hookup No. 120: Two stages of audio frequency amplification with a switch for cutting out the last stage and using the first stage only. When the switch is at point No. 2, as shown in the diagram, both stages are on as the plate of the last tube is connected to the top prong of the jack. When the switch arm is making contact with contact point No. 1, it causes the "P" post of the first transformer to be connected to the top prong of the jack.

WRONG CONDENSER

5073—LIMA, OHIO: (1) I built your one tube traveler's portable, using 23 plate variable condenser, set dial at 100 with rotor plates all out, got stations with plates all out and every few degrees until plate is about half in, that is, up to 50 on the dial. But the last half gives me nothing at all. Built the coil as per directions. Wonder if I have too many turns, or not enough on the secondary.

(2) Will the new Buell 3-circuit tuner work with a 15 plate straight line condenser? This condenser is listed as .00035.

(3) I am going to build the "DeLuxe 4-tuber," published in September 26th issue of EVERYBODY'S, and will use two of above mentioned condensers. Will they be O. K.? They are Low Loss.

(4) Can I wind a coil to take the place of the antenna coupler that you specify for the above circuit? If so, please give size of coil, number of wire and turns for secondary and primary.

(5) Also tell me if you call the start of the winding, at the top of the coil, the beginning or the end. Where do you refer to it in your diagram?

(1) You have a wrong capacity condenser. You should use a .00025. Set your dials at 100 with rotor plate all in. You will then have a correct dial reading.

(2) A .00025 capacity condenser is right for the Buell tuner.

(3) They will work O. K. with coils to match.

(4) You can wind your own coils. Procure a Bakelite tube 3 inches in di-

ameter, 3 1/2 inches long, with a primary of 10 turns, secondary of 55 turns for a .00035 condenser. For a .00025 capacity you will need 62 turns of secondary.

(5) It all depends on what coil is used.

SET NOT SELECTIVE ENOUGH

4064—CHICAGO: I am a constant reader of your publication and am writing you for advice as I am in trouble.

I have built your hookup appearing in (I believe) the May 23rd issue. It is a three-tube low-loss.

I built the set Sunday afternoon and tried it out Sunday night, although there was not much on the air locally. I brought in WOC loud and clear. Monday night (Silent Night) I brought in WTAS-Elgin, WSMB-New Orleans, WSAI - Cincinnati, WMC - Memphis, WBAP-Fort Worth, WLW-Cincinnati, Zion City, WHT-Deerfield and KMA-Shenandoah, all loud and clear on the loud speaker. Tuesday night when all the locals were on I found that the set is not selective on locals as I could not bring any one station without hearing some other one. I got WMBB way up with KYW even when I used a .00025 fixed condenser in the aerial. My list of parts is as follows: Gen-Ral Tuner, Erla .00025 variable condenser, 3 Erla sockets, I Erla .001 fixed condenser, 1 40-ohm rheostat that I do not know the name of, I Yaxley 6-ohm rheostat, a .00025 fixed condenser and grid-leak that I do not know the name of and 3 RCA tubes. I live about one and one-half miles from WMBB and if you can suggest anything that would

make this set selective, I would appreciate hearing from you either by letter or through your publication.

If you have a .0005 variable condenser, you can place it in series with your antenna circuit in place of the fixed condenser you now use. This will give you a good deal more selectivity, and will not be such a drain on your volume.

As you did not furnish us with a diagram of your circuit, we are not able to check any other trouble, and, of course, we cannot see how to get the utmost efficiency, but if you are able to bring such stations as you list, we take it that it is well constructed. Of course, you will appreciate that local interference is quite a problem this season, and it is quite a task to break through and bring in DX.

We are sending two tickets to the demonstration room, and would be glad to have you visit us some evening.

GIVE US THE DETAILS

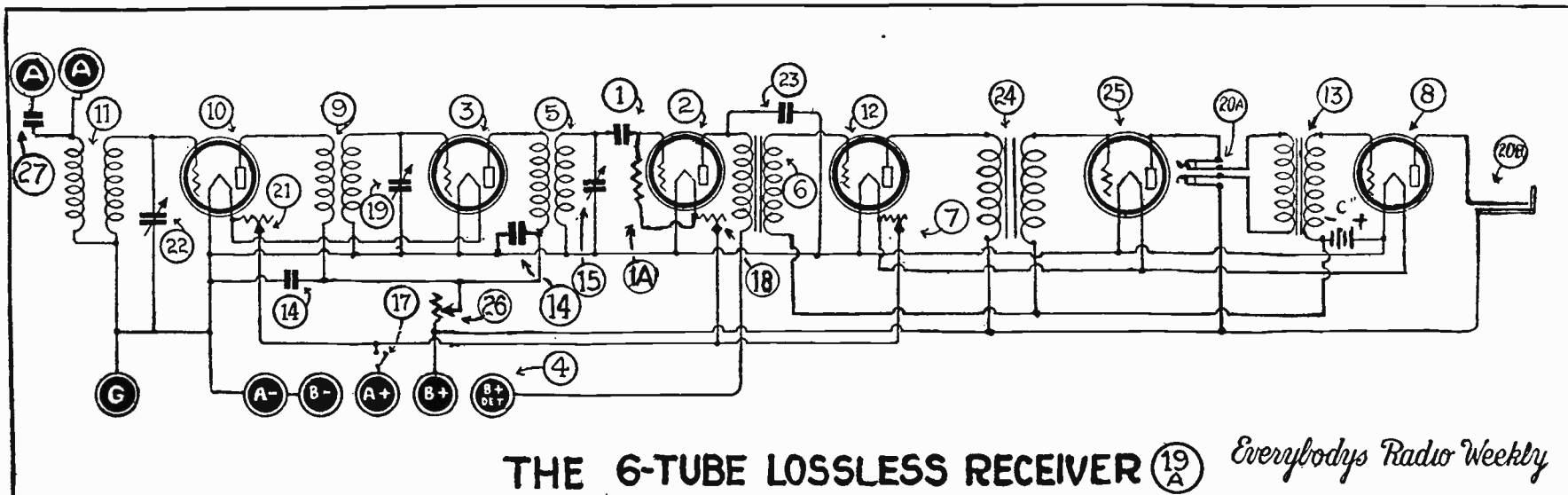
4033—CHICAGO: Would you like to help me in tracing out the trouble in my "Everybody's three-tube Low-Loss receiver"? I built this set yesterday and the connections seem to be O. K. because any time I turn the rheostats off a click is heard in the loud speaker. Please send me a pictorial diagram so I can understand better. I am sending you the diagram that I got here.

In your letter of January 22nd, you do not state what is wrong with your "Everybody's three-tube 100% Low-Loss" receiver. You merely mention that you are having trouble. If you had a complete copy of the issue in which this appeared and followed the instructions given, we see no reason why the set should not do all that is claimed for it. Perhaps your "B" battery connections are not made right or your tube is lighting but not oscillating, or your aerial and ground connections are not right. Any one of these minor troubles could interfere with the reception. You ask for a pictorial diagram. The diagram we use to illustrate the set is about as complete as it would be possible to present and about as easily understood as any radio publication or book could give you. We go to a great deal of trouble and expense to prepare our hook-ups in such a way so that the greenest amateur can understand them and so far have not been able to hit upon a more perfect plan.

WANTS TO REFILL TUBES

4034—CHICAGO: I have some tubes which I have blown. Would you recommend me to have them refilled? Will they work as good as new?

It has been our experience that it does not pay to have tubes refilled. New tubes can be purchased for almost the same price that you will have to pay to have tubes refilled.



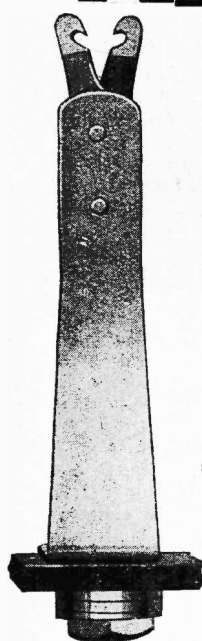
THE 6-TUBE LOSSLESS RECEIVER (19A)

Everybody's Radio Weekly

Hookup 6P—Three stages of radio frequency and three stages of audio frequency amplification. It differs slightly from other hookups we have had before by having a plate resistance on the "B" plus 90. List of parts are: Fig. 1—.00025 fixed condenser. Fig. 1A—2-meg. grid leak. Fig. 2—Tube, 201A. Fig. 3—Tube, 201A. Fig. 4—Binding posts. Fig. 5—Radio frequency transformer. Fig. 6—Audio frequency transformer, low ratio. Fig. 7—6-ohm rheostat. Fig. 8—Tube, 201A. Fig. 9—Audio frequency transformer. Fig. 10—Tube, 201A. Fig. 11—Radio frequency transformer. Fig. 12—Tube, 201A. Fig. 13—Audio frequency transformer, low ratio. Fig. 14—1-mfd. by-pass condenser. Fig. 15—Variable condenser, capacity depends on type of radio frequency transformer used. Fig. 17—Battery switch. Fig. 18—20-ohm rheostat. Fig. 19—Variable condenser, capacity depends on type of radio frequency transformer used. Fig. 20A—Interstage jack. Fig. 20B—Single-circuit jack. Fig. 21—6-ohm rheostat. Fig. 22—Variable condenser, capacity depends on type of radio frequency transformer used. Fig. 23A—.001 fixed condenser. Fig. 23B—.004 fixed condenser. Fig. 24—Audio frequency transformer. Fig. 25—Tube, 201A. Fig. 26—200,000 ohms plate resistance. Fig. 27—.00025 fixed condenser used for long and short aerials.

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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.

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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.

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Three Circuit Tuner

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GEN-RAL Three-Circuit Tuner

This is the low-loss tuner that made "Everybody's" IMPROVED 100% Low-Loss Three-Tube Set famous. See July 25 issue. Don't take any chances with other apparatus. Use just what Editor Wells specified and get the same results he did. Price, at all dealers, or by us, postpaid \$5.50

GEN-RAL ANTENNA COUPLER
This is the low-loss Radio Frequency Transformer or Antenna Coupler with the VARIABLE primary used in the IMPROVED 100% Low-Loss Wonder in the July 25 issue of "Everybody's." Price at all dealers, or by us, postpaid \$3.50

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Electric & Radio Supply Co., 165 N. Wells St.
Hudson-Ross, 116 S. Wells St.
E. O. Jackson & Co., 501 S. State St.
Nelson Elect. Co., 508 S. Dearborn St.
Pioneer Hardware Co., 225 N. Wells St.
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KARAS HARMONIK



\$7

KARAS ELECTRIC COMPANY
4048 North Rockwell Street, Chicago

WANTS DOPE ON R. F. CONNECTIONS

4090—MILWAUKEE, WIS.: Referring to your issue of May 16, 1925, the article on "How to Add One Stage of Radio to Your Set." I have read the article through several times and there are a few questions I would like to ask in respect to this before I start work on adding this stage to my set. I am not a "Hair Trigger Set Builder," and want to know where I am at before I do anything, consequently I would appreciate it very much if you will advise me in respect to the following: I am using a "Globe Regenerative" three-tube set, using C-12 tubes. On my set I am using three cells of dry battery for my "A" battery, and have three "B" battery leads to the set, one is the B negative, one 20-volt and one 60-volt positive. Now then, in the hookup No. 105, shown on page three, as I understand it, the post marked "P" is connected to the antenna lead of my present set (you understand I do not wish to make this stage an integral part). Where do I connect the ground lead of my present set? Do I connect the "A" battery leads from the radio stage direct to the "A" battery I am now using, or do I have to use an extra cell of "A" battery? Do I have to run another lead from my B minus to this stage, or connect across to the present B minus lead in my regular set? Do I have to add any more "B" battery or will my present "B" battery consisting of three 22½-volt "B" batteries be sufficient? I do not quite understand the instructions which say to "disconnect the jumper between the secondary and primary coils."

I would certainly appreciate it greatly if you will clear me up on these details. I must be awfully dumb but I can't figure out these connections from the article by Ray Gibson to save my neck. I have all the parts necessary and everything, but am pretty much at sea as to how to connect up the outfit, consequently will await your reply before making any connections.

In the July 4 issue you will find complete instructions for hooking up the one stage of radio frequency into a Low-Loss circuit.

As you will see, the P on the RF unit goes to the aerial binding post, and there is no connection on the ground lead of the three-tube unit, but the ground of the radio frequency unit is used for a connection as the part from here to the A and B minus of the three-tube set. The A battery connections on both units are connected together. The end of the primary, which would ordinarily go to the ground, is connected to the B plus 90.

If you will get the copy of the July 4 issue, or send us five cents for one, you will be able to understand very clearly how these connections are made.

PERHAPS YOUR QUESTION IS HERE.

5034—CHICAGO: (1) Will it be an advantage to use Belden rubber-covered wire or something similar to this wire the set throughout, and for the battery leads? What kind is best? (2) Is glass or tin foil a particular advantage for insulating purposes? (3) In view of the different plate voltage is there some advantage in using a separate rheostat for the detector? It is not easy with a storage battery to have a certain plate voltage, and to maintain it constant. I am thinking that possibly it would help to vary the filament current instead of the plate. (4) Is there any advantage in having a separate rheostat for either the audio or radio frequency end of the set? (5) Can High Mu tubes of the 199 type be secured, and where? Can they be used throughout this set? (6) Is it an advantage to put the battery switch in the A plus side, and if so, are A plus and B plus put together? (7) Are the Silver-Marshall condensers sufficiently fine enough for easy tuning of this set? If not, kindly give me the names of other straight-line condensers which will be suitable.

(1) It would be an advantage to use Belden rubber-covered wire. (2) Glass is excellent for insulation. Tin foil is not an insulator. It is a conductor and therefore its use is directly opposite to that of glass, bakelite, rubber or other insulating materials. (3) It is better to have a separate rheostat, but one to control the filament voltage. It has no control over the plate "B" voltage. (4) Yes, there is an advantage in having a separate rheostat for

either the audio or radio frequency end of the set. (5) The Newark Electric Co., at 226 W. Madison St., probably stocks these tubes. They are especially adapted to the audio circuit as the makers claim, although we have not had them in our laboratory for test. (6) Either side may be used in putting the "A" battery switch in the "A" battery line. We desire to put the "B" battery minus the "A" battery minus together in order to get a true plate-voltage, and also a common return for all by-pass condensers. (7) The Silver-Marshall or any of the good Low-loss condensers will answer. The Karas, Buell, Barrett & Paden, Cardwell, General, Ambassador and any of the other straight-line condensers we have specified will serve you.

ULTRALOGGO HOWLS

4086—CHICAGO: 1. Will you please send me a hook-up for an Ultraloggo set with a three-step amplifier? 2. Would the arrangement of transformers and their close proximity to one another cause the set to howl when a certain place is reached on the amplifier rheostat? Explanation: I have an Ultraloggo with a three-step amplifier. The detector tube is a WD-12 and the three amp. tubes are WD-11's, all on one rheostat (the Amp.). With 22½ volts on plate of detector tube and 90 volts on the three amplifier tubes, when I reach a certain maximum spot on the amplifier rheostat, a shrill howl is emitted. I use Thordarson 2 to 1 transformers and they and the tubes are packed into the cabinet with not a space to spare. 3. The coil I use is four inches in diameter and the primary has five turns of No. 22 DCC, and the secondary has sixty turns split with the primary in center. But with a low loss condenser I am unable to get KYW. How can I raise the wave length of the set.

I like this circuit because of its simplicity in tuning and certainly would appreciate it very much if you could give me some pointers on how to stop my trouble.

We do not advise the construction of an Ultraloggo for use in this city, as the great number of broadcasting stations make it necessary for a high selective circuit, and the Ultraloggo, while it is noted for its volume, is not selective. Naturally, it can't be, in order to give this volume with the small number of tubes it uses. The manner in which your parts are laid out is undoubtedly what is causing the inter-coupling that brings in the squealing and howling. You did not mention the capacity of your condenser, but it should be of .00035 capacity to cover the complete wave band with sixty turns secondary. Plug in on second stage and if you fail to notice the howling, you may be sure it is caused from the third stage of audio—then place a .002 fixed condenser across the secondary of the last audio stage. You can use 45 volts on the plate of detector tube.

WANTS TO CONVERT SET

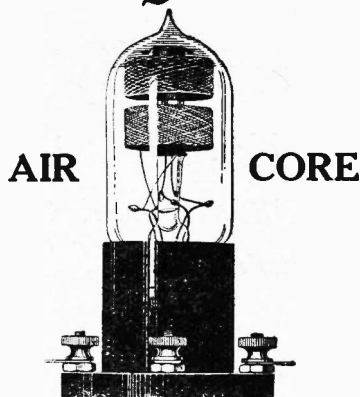
5082—BROOKLYN, N. Y.: I bought the October 3d issue of EVERYBODY'S RADIO and must say I am certainly pleased with its contents. I have found it a great deal more interesting than some of the 25 and 35 cent radio magazines published. (1) If the "100% Low Loss 4-tube" set you recommend so highly was described in any of your issues, please send me a copy. (2) I have a four-tube Anderson "Superdyne," described in another publication; but would like to build a set having a double straight line frequency condenser, making one less control. What is your opinion of such a set?

We certainly are glad you like our magazine. We have tried to make it more valuable to you than the high-priced magazines, and still give it to you at one-fifth to one-seventh the price.

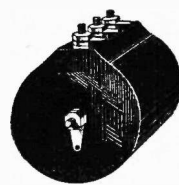
(1) "Everybody's 100% Low-Loss Four-tube" has been described in a number of recent issues with different combination of parts. We are sending you one of these recent issues as you request.

(2) If only two coils are tuned by the dial or tandem condensers, and the coils are well-matched, there is no reason why you shouldn't meet with success. We would prefer the "Everybody's 100% Low-Loss Four-tube" to the set you have. It is likely you can use the parts you have, and convert your set with very little trouble.

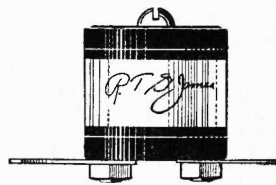
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OSCILLOSCOPE



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Convert your old St. James set into the new circuit in one hour using your present equipment. It's a dandy. Ask your dealer for free copy of circuit.

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Here is a layout that is easy to construct and operate. Our services and co-operation insure satisfaction.

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Cuts holes in RADIO PANELS

From 3/8 to 3 Inches
For Jacks, Switches,
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Costs no more than one large drill.
PRICE 65c

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I WILL BUY EVERYBODY'S RADIO PARTS FOR YOU

Free 24-Hour Shopping Service for Readers of This Magazine

I will buy any apparatus mentioned in this magazine and send it, carefully packed, direct to your door, at its regular list price, plus only parcel post and insurance.

I Make No Charge for This Service
If you want and can't find the parts for "Everybody's Radio Five-Tube Low-Loss" described on page 4 of this issue, let us do it for you. Send check or money-order.

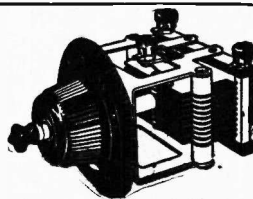
Let me do your radio shopping. I know where to get every item you want for your set. This shopping service has the endorsement of Everybody's Radio Weekly.

THE MAIL ORDER RADIO CO.
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The Only Real MICROMETER TYPE

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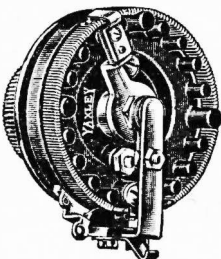
The MELOFORMER Is Made Differently

Don't compare it with any other audio transformer. There is no other transformer like it. There never was one like it. It is different in physical design and construction. It is different in electrical action. It is a new transformer—a transformer that is built on an entirely different principle. The Meloformer does not use laminated plates. It has departed from the beaten path. It uses an iron core that is cylindrical in shape. It uses a shell that is cylindrical in shape. Both cylinders are slit longitudinally. This eliminates the troublesome eddy currents. It presents an evenly distributed iron path. It produces perfectly stabilized impedance. It prevents leakage flux. It automatically prevents stray coupling.

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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) **\$1.35**



YAXLEY Battery Switch

It's a quick "make" quick "break" "A" battery switch and should be in every radio receiving set. Neat and compact—quick, positive snap-break contact. One nut mounting in single hole. Hard rolled bronze springs—constructed for lifelong service. You see it every week in the laboratory models of "Everybody's Radio." Price, each..... **50c**



Yaxley Booklet Free

This is not the entire Yaxley line. Write for the Free Yaxley Booklet describing all the Yaxley Approved Radio Products. One of the newest Yaxley items is the Yaxley Wall Socket Jack. You can wire every room with radio by their use. Write today.

Jobbers and Dealers Everywhere



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RW The Long Distance Crystal Detector



Used by "Everybody's" in its Long-distance Hook-up

SELF-ADJUSTING

ALWAYS SENSITIVE; ALWAYS READY AT ALL RELIABLE DEALERS or—Send \$1.50 and your dealer's name for one by prepaid post.
R. W. Mfg. Co., 228 N. Halsted Street
CHICAGO, ILL.

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

UNILOG TUNES SHARPLY

4067—CHICAGO: I wish to say that I am using a Unilog on a three-tube set and on our local stations it is all that could be expected. WTAM, WEAR and WHK come in with great volume and clearness on loud speaker, but am unable to reach outside stations. The set is very selective and permanent in logging. I would like to reach distance, and am at a loss to know if I can make any changes that will bring in distance.

Since you are receiving local stations with good volume and clearness, and since your set is very selective, it is evident that there is nothing wrong with the circuit itself. It is just possible that you are not using the Unilog properly. As you know, this is a very critical instrument since it logs all stations on one control and is so sharp that half a point on the dial will cut out a station.

In tuning the Unilog, keep the tickler knob turned just below the point it breaks into oscillation and move the large condenser dial slowly until you hear the station signal. Then turn your tickler knob until the signal strengthens, and you will then receive the call. It takes some little practice to get used to the Unilog due to this selective feature, but after one has become accustomed to it, one can cut out local interference and go after distance much easier than with many of the complicated controls used in other circuits.

NO DX OR SELECTIVITY

5069—NEW YORK CITY: I have just completed your "100% Low loss" receiver with one-stage audio frequency but I can only get locals and no selectivity. The materials used are as follows: 1 Ambassador 3 Circuit Tuner, fixed primary; 1 Tunewell Variable Condenser, 23 plate Low Loss; 1 F.M.C. Audio Transformer, Grid Leak, Condenser, Aerial, etc., as specified.

To get selection I have tried in order, variable condenser, in aerial; variable grid leak, in ground; rewound the primary with 8 turns of number 18 D.C.C. wire. This made some improvement but all stations over 361 meters take about 40 degrees and I get no distance at all.

Will you please put me right on this? Would one stage of radio frequency help, and what should the windings be?

With the little information you have given us, we are at a loss to know what really is your trouble. Your aerial may be too long, you may have poor ground, batteries may not be up to the standard, there may be a bad soldering joint, poor wiring, etc. Probably you do not tune right. Keep your tickler advanced right up and under the point of oscillation at all times. This enables you to get selectivity and volume. One stage of radio frequency will give you more selectivity. Would advise this, if you can not master the detector alone.

SUPER AUTODYNE

5081—NEW YORK CITY: (1) What is Silver-Marshall, Inc., address? (2) If I send for the kit of the Super Autodyne receiver, do I have to remit the money with the order or will they send it to me? (3) Is it the best of parts that they use in the Super Autodyne? (4) Is it a good selective set? Also, does it go for distance from New York? (5) Have you a better hookup that will give me better selectivity and distance than the Super Autodyne?

(1) Silver-Marshall is located at 102 S. Wabash Ave., Chicago. (2) Yes. (3) Yes. (4) Yes. (5) We prefer the regular 7-tube Silver-Marshall Super because it is easier for the novice to tune and operate, but if you will take pains to learn how to adjust the bridge circuit, the Autodyne will save you one tube.

NIGHT AND DAY RECEPTION

Long range reception has more volume and tone at night than during the day. This is a rather curious phenomenon, which radio engineers attribute to the actinic rays of the sun. The absence of these rays at night tends to conserve and strengthen the radio-frequency energy which during the daytime is absorbed by the sun's rays. However, on extremely short wave range it has been found by amateurs and experimenters that greater distance can be covered during the day than at night. You're welcome.

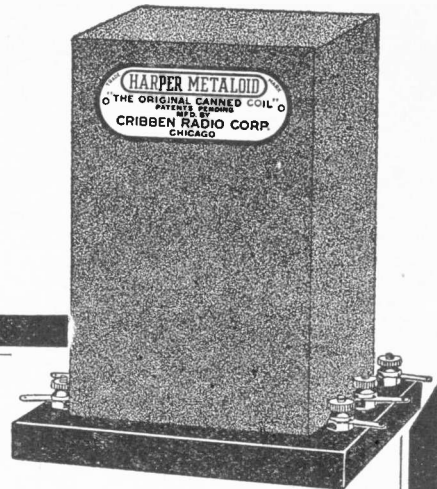
Everybody's Radio Uses

HARPER

METALOID

"The Original Canned Coil"

in This Week's Issue



A Shielded Radio Frequency Transformer

Price \$5 Each

It picks up no strays or outside disturbances. It eliminates inter-stage coupling. It prevents stray feed-back and allows better control of regeneration. It reduces interference from strong local stations. The effective electromagnetic and electrostatic SHIELDING makes this possible. You don't have to worry about WHERE or HOW you place HARPER METALOIDs in your set. There's no critical angle—there's no coupling between coils or between coils and other apparatus. You don't have to worry about your wire leads running too close. Place your hand on the coils. Lay your screwdriver across the tops of all three coils—it makes no difference.

What HARPER METALOIDs Are

They are space-wound solenoid coils—the highest type of all inductances. A large space of AIR surrounds them. Then the protecting shielding covers them. Each coil is MATCHED with a master. The primaries are tapped for all tubes. The terminals are brought out so that wiring is simply made. The mounting base is 3 1/4 x 4 1/2 inches. Because of the effective shielding the coils may be placed touching each other and close to other apparatus. This means COMPACTNESS in construction. Don't worry about your radio frequency set any more. Throw out your old coils and install HARPER METALOIDs. They are easily substituted.

Write today for FREE Technical Circular and hookups especially prepared by W. W. Harper, the designer of the METALOID. It tells you all about this NEW method of using radio frequency.

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Radio Manufacturers: Don't Make Your Radio Schedule Until You Know Our Story

THE MOST SENSATIONAL SUCCESS IN THE RADIO PUBLICATION FIELD

Established October 4, 1924. Circulation reached press-room facilities in first four weeks. Reached top lineage of competitors in first six weeks. There is no other publication like it in its field. We send the customer DIRECT to the dealer—not "maybe sometime," but TODAY. It's weekly. It's 5 cents. It's just as big as the 35-cent monthlies. It prints no news—no programs—no filler. It prints only hookups and how-to-do-it articles. All advertisers and their products are guaranteed to readers. Laboratory tests on all advertised products makes this possible. No gyp merchandise accepted. Our slogan: "It Isn't Everybody That CAN Advertise in Everybody's" makes your ad a hallmark of quality.

Mass Circulation Where the Buyers Are

We proved our worth in the Chicago field last year. We're doing the same thing in the national field this season. We have added New York City, Boston, Philadelphia, Pittsburgh, Buffalo, Cleveland, Toledo, Detroit, Omaha, Davenport, Minneapolis, St. Louis, Kansas City, Louisville, Cincinnati, Atlanta, New Orleans, Denver, Dallas, Fort Worth, San Francisco, Los Angeles, Seattle and all other important radio centers.

100,000 Circulation Guaranteed for the Season of 1925 and 1926

We expect to reach 150,000. Concentrated circulation in radio centers—no scattered distribution with its waste. First six weeks of publication in 1924 more than 30,000 SOLD weekly in Chicago alone—three times as much as by all other radio publications combined.

We Secure Dealers and Jobbers

Our merchandising plan gives manufacturers complete city-wide distribution instantaneously. We appoint factory representatives, get jobbers-tieup and assist in dealer sales. Ask ANY of our advertisers how we rate with them.

Let These Advertisers Be Your Guide

"Cost per cash sale lowest of any medium we use," says Ambassador Sales Corp., manufacturers of Ambassador Tuners, Transformers, etc. "Your magazine and merchandising plan gave us complete Chicago distribution in a few weeks. Cost per inquiry second lowest on our list, although you make no claims for mail order business."

"We've used your medium exclusively and so all results are due to you. You gave us complete city-wide distribution for our products in Chicago in a few weeks' time," says Turn-It Sales Co., makers of Turn-It Grid-leaks and Condensers. "It's the most profitable medium we used."

"We tried to get Chicago distribution in usual manner without success," says Samson Electric Mfg. Co., makers of Samson Transformers. "Couldn't budge jobbers or dealers. They told us to advertise in Everybody's Radio Weekly and they'd buy. We did. They bought. We got distribution in less than two weeks. The pulling power of your magazine is a marvel."

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"It Isn't Everybody That CAN Advertise in Everybody's"

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\$4.85 **\$4.85**

**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 **\$4.85** mail, postpaid.

GET OUR NEW HOOKUP

It uses regeneration in second stage of radio as well as detector stage. This will give you the selectivity you will need this winter. It is the set that enables you to build the weak signals up till you hear them clearly. Not a beginners' hookup, but one intended for the advanced constructor. WRITE TODAY FOR IT.

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PHILADELPHIA: CLEVELAND:
H. C. Roberts Elect. Co. Cleveland Products Co.
Frank Stewart Co. The M. & M. Co.
NEW YORK:
Wallace Radio Co.

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.

8000 Miles on a Three-Tube Set

H. E. Browne, 849 Leland Avenue, Chicago, was much interested in a three-tube set owned by a New Zealander and wrote to him for more information about his set. Here is what he writes:

I daresay you will recall the statement published in EVERYBODY'S RADIO Weekly some time ago of a record in DX accomplishment accomplished by a New Zealander, Mayor Wm. Lock of Nelson, N. Z., in getting WEBH on a three-tube set, a distance of over 8,000 miles.

I wrote Mr. Lock for the particulars of his hookup which he kindly forwarded me. I enclose his letter and diagram for publication as I feel sure the readers will be interested in a three-tube set that receives 8,000 miles.

I must thank Mr. Harbaugh of Indiana for pointing out the error in the printed instructions of his crystal set. The correction was made by the writer but without success. The only real results I obtained from this set was to follow the original printed instructions with the following exception instead of connecting the starting end to the ground binding post, connect the ground binding post to the left-hand switch arm. Mayor Lock's letter follows:

Your letter of the 31st of March is at hand with sketch enclosed, which were of interest to me, thanks. Enclosed diagram of the circuit set is an ordinary well known variety. I think that its success is due to

Last night, October 1, between the hours of six and one, I tuned in the following stations: WEEI, WBZ, Boston; WHN, WEAF (direct), New York City; WGY, Schenectady; WCAU, Philadelphia; WCAE, Pittsburgh; KDKA, East Pittsburgh; WSAI, WLW, Cincinnati; WWJ, WCX, WJR, Detroit; WSB, Atlanta; WFBM, Indianapolis; WOS, Jefferson City, Mo.; WFAA, Dallas; WBAP, Fort Worth; WOC, Davenport; WDAF, Kansas City; KOHL, Council Bluffs; KMA, KFNE, Shenandoah, Iowa; KTHS, Hot Springs, Ark.; WOAW, Omaha; WSMB, New Orleans, La.; WHIO, Des Moines; WCBF, Zion; KFKU, Lawrence, Kan.; WORD, Batavia; WTAX, Strator, Ill.; CKY, Winnipeg; WCCO, WAMD, WHAT, Minneapolis; WGN, WHIT, WLS, WEBH, WLAZ, WOK, WENR, WTCB, WBBM, WIBO, WTAS, WMAQ, WQJ, WBCN, KYW, WAAF, WGES, all of Chicago; KFEL, KOA, Denver; KFI, KILJ, KFSG, Los Angeles; KPO, San Francisco; KGO, KIX, Oakland; KNX, Hollywood; KJR, Seattle. That makes sixty-two stations in one night and no guess work.

If your set is good enough, there is no need for further development in radio, and from the number of stations picked up we do not see any need to build another one trying for better reception.

Don't Expect the Impossible

A. P. Austad, 4312 Forty-third Avenue South, Minneapolis, does not ask

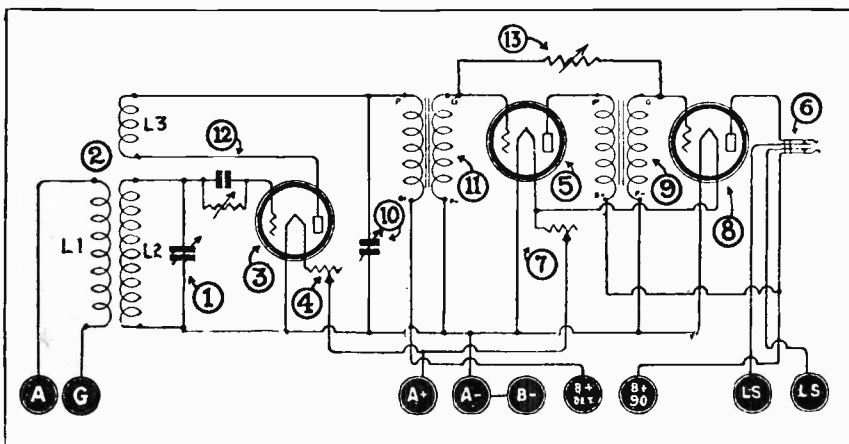


Diagram of Mr. Lock's set. You will note it is "Everybody's 100% Low-Loss Hookup, with the exception of the variable grid leak (Fig. 13)

a favorable location, as I am on the sea coast over one hundred miles from the nearest broadcasting station, patent adjustment of the variable grid leak, voltage of detector valve, and a good high aerial, single wire 90 feet long and 50 feet high. It may interest you to know that we got KGO, San Francisco, over a year ago; the first, or one of the first, to get radio telephony or reception from the U. S. A. We got KGO three or four times a week. The set was built by my son. The earth consists of a number of gasoline tins and sheets of corrugated iron buried in the ground close to the set. I cannot see how induction could have helped the reception as there are very few receiving sets here, the only other person to receive WEBH was Mr. Scott. He has a fine set but lives over twenty miles from me.

The lists of parts used in Mr. Lock's set are as follows:

Fig. 2—Three spider web coils: L-1 35 turns, L-2 35 turns, L-3 50 turns. These coils give a range approximately 160 to 390 meters and were used for WEBH. For 2-FC Sydney 1100 meters were used. L-1 150 turns (H C), L-2 200 turns (H C), L-3 150 turns (H C). Fig. 2—.0005 mfd. variable cond. with vernier. Fig. 3—Tube. Fig. 4—25-ohm rheostat. Fig. 5—Tube. Fig. 6—Jack. Fig. 7—6-ohm rheostat. Fig. 8—Tube. Fig. 9—5 to 1 Federal audio frequency transformer. Fig. 10—.001 mfd. will be found to be an easy control of the reaction. Fig. 11—3 to 1 audio frequency transformer. Fig. 12—Variable grid leak and .00025 fixed condenser. Fig. 13—Variable grid leak, this can be omitted if desired but is found to increase the volume. If set refuses to oscillate reverse the connections of L-3.

Two Tube Single Circuit.

N. P. Maxon, 200 W. 58th Street, Minneapolis, Minnesota, has an exceptional two-tube he writes about as follows:

I am a steady reader of your publication and believe it to be the best and most helpful magazine for the radio phan that is put out.

I have never operated any larger set than I now have, which is a two-tube single circuit regenerative with WD-11 tubes, but as far as I am concerned, it is good enough.

for the impossible, but wants a set and writes:

I have just lately run across EVERYBODY'S RADIO Weekly and only had two copies, the last being the Oct. 3rd issue. I am going to get it regular hereafter. I sure like your style of discussing things. I have been building sets off and on for four years, but have not found one yet that suits me.

I am interested in your five-tube "Lossless," but can I use any of the parts from my old set?

I don't expect a set to do the impossible things, but want it to bring in DX under favorable conditions, but the strong point is quality and fair volume.

Now that is talking. If most of us would consider these points in a radio set there would be little dissatisfaction among users of receiving sets.

Uses Gas Pipe for Aerial

G. B. Ashton, 1939 Bryant avenue, South, Minneapolis, Minn., writes of his success with one of our hookups, and also gives the Phorum phans a pretty good first-aid suggestion on aerials. He writes:

I have been buying your magazine ever since I ran across one on a newsstand in Chicago. My first copy was the one describing your 100% Low-Loss doped up. Later I saw where you were offering \$1.00 per copy for this issue. I dug mine out and after looking it over, decided if it was worth a dollar to anyone else it was worth that to me, so I kept it.

Your latest improved 100% Low-Loss, using the cable wiring, is a wonder. I have built a two-tube using the parts I had on hand plus a low-loss coil bought for \$1.00 at Kresge's. I am using an old Crosley book type condenser I bought over three years ago in Chicago for \$1.25.

Using an outside aerial of 100 feet of No. 12 solid copper enameled wire, with glass insulators (10c glass candlesticks). I brought in the following stations: KOA, KDKA, WSMB, WSB, WSAI, WMAK, WFAA, and, last but not least, KGO. I have written for verification of the Oakland station because some of the multi-tube set owners seem to doubt my word when I tell them about it.

I have not listed any Chicago stations because they come in so well and regularly that I almost consider them local.

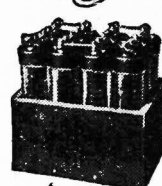
Recently I moved into an apartment where they would not permit me to put up my aerial. I am now using the gas pipe as an aerial and the steam radiator as a ground. The locals, WCCO, WHAT and WAMD, come in plenty loud enough to operate a baby Baldwin loudspeaker. I

BONG

Radio
"A & B"
Batteries



Perfect Reception



No Plates
No Separators

BONG BATTERY CORP.
7264 W. GRAND AVE., CHICAGO

Build Your Own \$1.50 A and B 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.

Engineers' Service Company
Suite 203-E, 15 Park Row, New York, N. Y.



No Loss
Glass
Insulated
Terminal
Strip

SOMETHING NEW

For Sale by
ATLAS RADIO STORES
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Ellis "D" Coil

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.

FOR SALE IN LOOP
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Cuts wood, iron and bakelite. Especially designed for radio set builders. Highly tempered steel blades. Sold by radio dealers and hardware stores or sent by mail, postpaid, with six blades.....\$1.00

Dealers and others write for circular and full information.



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Lakewood 1408

Q R S RED TOP TUBES ARE Better

They've Been Tested by "Everybody's Radio." At All Dealers

FOR CLEAR, BELL-LIKE RECEPTION

THOMAS Collapsible LOOP AERIALS

Unexcelled for volume, distance, selectivity and elimination of interference. Center tap for Superheterodynes. Full Directional Control. Beautifully finished. Large loops have 8 taps for various wire lengths. Guaranteed.

LARGE HEX., turns on 9/16" radius.....\$12.00
SMALL HEX., turns on 7/16" radius.....\$12.00
LARGE SQUARE.....8.50
SMALL SQUARE.....12.00

Ask Your Radio Store for Them

W. I. THOMAS CO.

217 North Desplaines St. CHICAGO

Everybody's 5¢ RADIO WEEKLY

The Only Radio Magazine That Can Tell the Truth

It can and does do this because its advertising columns do not control its editorial policy, but its editorial policy controls its advertising columns.

Advertisers must do what they promise our readers they will do. Their merchandise must do what they say it will do.

We set a standard for our advertisers. Their merchandise must measure up to that standard. They must pass a rigid test in our laboratory.

They must "make the grade" in actual practice. When they do this our advertising and our editorial columns are open to them.

"It Isn't Everybody That Can Advertise in Everybody's"

Just anything and anybody cannot measure up to these requirements. In one week we refused our advertising columns to almost as much advertising as we accepted. There is scarcely a week we do not reject advertising you see in other

publications. They can't "make the grade" with us. "It isn't Everybody that can Advertise in Everybody's." That's a mighty good slogan for everyone except the fellow who doesn't belong.

We all like to be in GOOD company. Advertisers in this magazine are always in GOOD company. It is a distinction to be an advertiser in this magazine. The fact that an "ad" does appear in this magazine is the hallmark of QUALITY.

When You See It Advertised In EVERYBODY'S RADIO You Know It's Worth Buying

Readers know they can buy SAFELY any merchandise that is advertised in EVERYBODY'S RADIO Weekly. They know it has passed the test. They know it wouldn't be there if it wasn't all right to buy. They know, too, that we stand

back of everything that is advertised in this publication—that we will go the limit to give them their dollar's worth—that we will see that every advertiser makes good on anything he advertises with us that fails to live up to his promise, even if we have to dig down in our pockets to do so.

Now You Know Why We Can And Do Tell The Truth

You know why we can NAME the exact parts we use in our hookups. You know why we can describe their characteristics. You know why we can and do sincerely tell our readers that such and such a thing is the right thing to buy and use.

This frankness—this unbiased presentation of information readers WANT and should have, is a RADICAL departure in publications of this class. It has made friends of the radiophans of Chicago. It has made friends of the honest merchandiser of radio parts and equipments.

We Invite the Honest Advertiser to Join the QUALITY Group

Any manufacturer of honest apparatus and equipment, whose merchandise and policies can measure up to our standards, is invited to associate himself with the QUALITY crowd to make it possible for our friendly readers to know of and to select of his merchandise, because it is merchandise they should know of and use.

ADVANCE

In Rates Coming
EVERYBODY'S RADIO Weekly, in six brief weeks last year, attained a complete city-wide and suburban "coverage" in Chicago. More copies were sold each and every week than all other publications combined. This year we are in the national field. Concentrated circulation in the same thorough and quick manner in all important radio centers. An advance in advertising rates is announced for November 15. Advertising contracted for prior to November 15 will be accepted at the present rates and will give protection for one year from date.

To those that can "make the grade" we have a merchandising plan that will give sure-fire distribution in the quickest possible time. A representative of our Merchandising Service will call promptly on phone or mail request and present this unusual plan.

EVERYBODY'S RADIO WEEKLY

IVERSON C. WELLS, Editor and Publisher
CHICAGO

NEW YORK OFFICE
Chester E. Roberts, Adv. Mgr.
100 East 42nd St.
Phone: Ashland 0861

CHICAGO OFFICE
W. G. Morford, Adv. Mgr.
2721 South Michigan Ave.
Phone: Calumet 3316

have had WBBM and WOK loud enough to hear all over the room on head phones. I pick up WBBM quite often. I don't know if such an arrangement would work in all cases, but it seems like it would be worth a trial where an outside aerial was out of the question.

I looked all over Minneapolis for a copy of EVERYBODY'S Radio last week, but failed to find one. Aug. 29 was the last I got. What is wrong? More power to you and your good work.

Certainly glad to know of your success with our hookups. You know now, as many thousands of others know, that this little regenerative receiver is just about everything we said for it.

Your experience with the gas-pipe aerial is interesting, although not new. Sometimes such an arrangement would be satisfactory, and again it would not be. It all depends on the length of the pipe and the location conditions.

There are two reasons you did not get your magazine on the news stands there. One is that about that time we changed distributors in the Twin Cities, seeking to improve our service, and probably there was a little gap between the changes. The last two issues we just couldn't print enough copies with our press facilities to supply the country-wide demand.

Has No Use for Arresters

Jesse C. Hayer, 1104 N. Richmond Street, Chicago, takes exception to the use of an arrester in the aerial line and says:

I have, for a number of years, observed that there are no tornadoes in mountainous regions; no floods in the great level countries. I have also been told, and have observed, that all energy, whether air, water, electricity or human, in most cases, always follows the path of least resistance. I also notice on page 6, September 12 issue of EVERYBODY'S RADIO Weekly, an illustration of a "perfect aerial" in which you say, "It would be better if the aerial was continued unbroken, and, therefore, unsoldered, direct to the receiver." There is, also, in this illustration a lightning arrester which, of course, leads to the ground. This type of arrester is a very common type, which may be run most anywhere. If electricity follows the path of least resistance, what advantage is there in the use of an arrester of this type or any other type. If the aerial is "run in an unbroken, unsoldered line direct to the receiver."

I may be all wrong, but I can not see any more use for an arrangement of this kind than there would be in providing the gold fish with raincoats.

A double throw switch with one side run to the ground is, in my opinion, practical; provided, however, the owner is alert enough to throw the switch in case there is an electrical storm.

If you can explain the virtues of the commercial lightning arrester for any other purpose than to carry on business, I would be pleased beyond measure; provided, however, you can do it logically.

Yes, but who of us will always think of throwing a switch? That is why lightning arresters have been invented. They will take the place both of a switch and the forgetfulness of the set owner. In your criticism of the arrester you overlook the fact that it has a GAP that takes FIVE HUNDRED VOLTS at least of current (such as a lightning bolt would have) to jump across and go to the ground instead of the set. And that's where we want the lightning to go—in the ground. Radio currents are very feeble and CANNOT make the gap in the arrester. Therefore, they go where we want them—into the receiver.

Defends "Nameless" Circuit

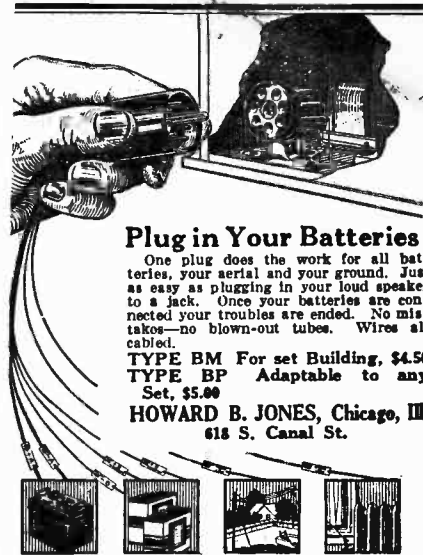
George Kinsman, 4625 N. Hermitage avenue, Chicago, comes to the defense of the "Nameless." He writes:

You folks are all wrong in regard to the Bremer-Tully Nameless causing interference in nearby receiving sets. The Nameless does use a large antenna coil as you say and probably would cause radiation if both radio frequency tubes oscillated, but here is where you make a mistake. You seem to think they both do, as you say the three-plate condenser controls the oscillation of the TUBES. However, only the second RF tube in the Bremer-Tully Nameless oscillates. The first RF tube is self neutralizing, never oscillates, and is not controlled by the small balancing condenser. The oscillations from the second RF tube to cause interference would have to pass through the primary of the second radio frequency transformer which consists of only three and one-half turns and through a non-oscillating blocking tube, the first RF tube.

You admit that oscillations will not pass a small primary winding not to mention a blocking tube and therefore, I guess, my point is proven: The Nameless will not cause interference in nearby receiving sets. In fairness to the Nameless you ought to print this.

We do not recollect having said that the "Nameless" was a blooper. If we did it was a slip—we know better. Perhaps you refer to one of our Phorum phans.

The "Nameless," as we have observed in these pages from time to time, is a very good circuit, especially in the hands of an experienced operator. It's quite a bit critical, and the operator must be patient to get out of it what is there.



Plug in Your Batteries!

One plug does the work for all batteries, your aerial and your ground. Just as easy as plugging in your loud speaker to a jack. Once your batteries are connected your troubles are ended. No mistakes—no blown-out tubes. Wires all cabled.

TYPE BM For set Building, \$4.50
TYPE BP Adaptable to any Set, \$5.00

HOWARD B. JONES, Chicago, Ill
618 S. Canal St.

Jones
MULTI-PLUG
THE STANDARD SET CONNECTOR

Now Ready

Blue Prints

Popular Hookups

Use full-size working blue prints of hookups. Full-size front panel layout, full-size back panel and baseboard layout and schematic drawings. Anyone can hook up these popular sets without the least trouble. Sent postpaid.

Model 8A—100% IMPROVED Low-Loss 1-Tube.....\$0.50
Model 8C—100% IMPROVED Low-Loss 3-Tube......75
Model 8D—100% Low-Loss 4-Tube..... 1.00
Model 19—Five-Tube Lossless..... 1.00
Model 80B—100% Low-Loss Reflex 2-Tube......75
Model 100C—100% Low-Loss Reflex 3-Tube..... 1.50
Model 181C—Uniting Reflex 3-Tube..... 1.00

Blue Print Dept.

EVERYBODY'S RADIO WEEKLY
2721 Michigan Avenue CHICAGO

MARWOL

Radio Receiving Sets

The finest line of receiving sets produced at prices to fit every purse.

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

THE BARSOOK COMPANY
SELLING AGENTS

53 West Jackson Blvd., CHICAGO

TAKE NO CHANCES

Subscribe Everybody's Radio Weekly is a QUICK seller. News-stands often are sold out. Make sure of your copy and subscribe for a year. Price... \$2.00
It saves you money, too. Price...
EVERYBODY'S RADIO WEEKLY
2721 S. Michigan Ave., Chicago.

Radioads Department

A Clearing House for All Wants

Classified advertisements will be inserted in this department at 30 cents per word each issue with a minimum charge of \$2. Count two initials as one word. No cuts or display type permitted. Money must accompany order. Box numbers can be used in "blind" ads. All answers will be returned to advertisers postpaid free. Address orders to Radioads Dept., EVERYBODY'S RADIO Weekly, 2721 S. Michigan Ave., Chicago.

We exercise all reasonable care in accepting radio ads, but can, of course, guarantee none of them.

PARTS FOR SALE

FOR SALE—Condensers, 75c. Surplus stock, high grade, vernier and plain. Variable condensers, all sizes. While they last, 75c. Good three-inch dials, 15c. Satisfaction guaranteed or your money refunded. Order immediately. First come, first served. Radio Supply Co., Bluffton, Ohio.

FOR SALE—\$200 Howard Neutrodyne, old type 100. Western Electric type 10D Loud Speaker, \$30. Five-tube Tuned R. F. Receiver, low-loss type, \$75. G. E. Tungar five-ampere charger, new bulb, \$15. All in good condition. Address R. F. Tomamichel, 2450 N. Racine Ave., Chicago, Ill.

(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 neotrodynes 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,
2721 South Michigan Ave., Chicago.

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.

(Your Name)

(Your Street Address)

(Your City and State).....

Start with Issue of, 1925.

October 10, 1925.

JUST PIN A

\$2

Bill Here

And Mail **TODAY**
It Pays for a Whole Year