IN THIS ISSUE:

How to Build a One-Tube "Everybody's 100% Low Loss" Receiver Using a Home-Made Three Circuit Tuning Unit

How to Build a One-Tube Portable Loop Set

Extra Amplification for the Ultraloggo Reflex

Timely Tips

News for Amateurs

Ain't Radio wonderful! Here's little Billy Miller, 6333 Lakeview avenue, Chicago, having the time of his life in spite of the fact that the dip switch on one of the coils is disconnected. His father says that Billy takes an intense interest in Radio and is able to tune in local stations for himself. Maybe so, but we suspect that this time he is playing a joke on the grownups.
IT PAYS TO LOOK BEFORE YOU BUILD, WHEN IT COMES TO RADIO

This magazine receives many letters in a day's mail from its readers asking questions. Many of these questions complain of hookups which have been published in these columns fail to do as specified. Either they lack volume or they are without selectivity or they refuse to bring in the distant stations.

And yet, in the same mail we may receive letters from four times as many readers who have built the set and report wonderful results. Which all goes to prove that it is not the circuit or the hookup that is at fault, but the fellow who built the set.

Hookups and circuits, which are given publicity in these columns, have been PROVEN. The pictures that accompany the articles are from sets that have been built in our laboratory by members of the technical staff. At least three members of the staff have given them several days' tests under the usual home conditions. Before publication we know just what the set will do and the writer of the article describing construction and performance gives a truthful report on the same.

That our conclusions are correct is attested by the fact that hundreds of readers write to us and tell us they are getting the same satisfactory results as we have secured in our own experience with the set.

All this brings us to one point: There are too many who do not follow instructions. They read too hastily. They jump to conclusions. They assume that specifications may be ignored with impunity. They seldom read all that an author writes about the minute constructive details. They seem to be interested in picking up a few old ideas and the most elementary values, about keeping leads short, about placing the parts in a certain position on the panel or baseboard.

With a glance at the pictures and the schematic diagram in front of them they plunge into construction. They skimp on parts. They may use a .0025 mfd. variable condenser because they had one handy, when the specifications call for .0005 mfd.

They take a chance on the fixed condensers, also, either using whatever they have handy, or leaving them out altogether. They will wind up a coil that has fifty turns because that is the type of coil they used once before, although the specifications may call for a winding of sixty. They will hook up the filament negative to the stator plates of the receiver now appearing in EVERYBODY'S RADIO WEEKLY.

We go to considerable expense and trouble to give our readers model sets from which to build efficient radio receiving apparatus. Each set has been tested and we know they will work. Many readers build these sets.

We are interested in knowing just what results they are having. Of course those who have trouble write to us. It is the fellow who is successful that does not write. If we could get reports on their experiences it would act as a guiding hand to others, not so successful.

We are trying to make EVERYBODY'S RADIO Weekly everybody's magazine. The best way to do that is to have everybody help us edit it. You radiofans who have profited by reading our helpful suggestions ought to show your appreciation by writing briefly, but completely, about the set you have built and the reception you are getting. Won't you do this?

Carelessness in operating a radio set will bring the same result in radio as it does in any other human effort. Keep your set in working condition. It pays.

"It is not Everybody that can advertise in EVERYBODY'S RADIO Weekly," is a slogan that is worth much to readers of this publication. It means that the "gyp" manufacturer and dealer gets the same price in our advertising columns. There are many reputable firms that do not advertise with us. It may be our fault or theirs. However, you can count on the fact that those that do advertise in these columns are worthy of your confidence and trust. If they don't make good with you we will. If you want to play safe let the advertising columns of this magazine be your guide.
Everybody's 100% Low-Loss One-Tuber
Season's Popular Set Now in Everybody's Reach

Now, Everybody can have "Everybody's 100% Low-Loss" Receiver. It appears this week as a one-tuber. Its total cost is just exactly $13.50. It does everything that its bigger brothers can do, except it won't bring in the distant stations on a loud speaker. It brings in all the same stations, even those on the two coasts; it has all the wonderful selectivity and it has all the clarity of tone. You who have felt that three tubes were too much for your purse can now go to it and enjoy radio this winter with the rest of the world. When you get a few more pennies saved up we will show you how to add two stages of audio without tearing down your one-tube set.

By IVERSON C. WELLS

We are showing "Everybody's 100% Low-Loss" Receiver this week (Model No. 5) as a one-tuber. It is exactly like its big brothers, only it is just the detector unit, minus the audio amplification. Its cost should not exceed $13.50, using the best of low-loss parts. A homemade tuning unit helps keep the cost down.

This one-tuber will do everything the three-tube set will do, except deliver loudspeaker volume on the distant stations. It will give the same selectivity. It will bring in the same coast-to-coast stations. It will produce the same clarity of tone. It will deliver the same dependability.

One-tube sets, primarily, are headset outfits. This abbreviated edition of "Everybody's 100% Low-Loss" receiver is no exception. However, on local stations this little fellow will deliver sufficient volume to operate a loudspeaker and entertain a room full of folks.

The model set illustrated and described has done even better than that. In our laboratory tests it has brought WCBD (Zion, Ill.) forty miles away, without a loud speaker and heard comfortably anywhere in the room.

However, do not permit me to mislead you. I do not want to raise any false hopes or lead anyone into expectations that cannot be fulfilled. You will need headphones to operate this little fellow. However, you will get all the stations in the country with it and you will get more volume in those old average at EVERYBODY'S RADIO Weekly Experimental Laboratory. It will deliver sufficient volume to operate a loudspeaker and entertain a room full of people. You can use it in the room and in the yard, like the bigger fellows.

Parenthetically, I expect to describe this aerial of ours some of these days. It is not an expensive one and can be constructed by most anyone, provided they have room for a good stretch of wire—say from 135 to 150 feet. And, by the way, don't overlook the fact that "Everybody's 100% Low-
The Cardwell to make the tuning just right for the special Tuning Unit The capacity used is .00035. for many imitators that have followed. of the first low-loss types manufac-
ing figures are shown in the illustra-	ion. These numbers are used in the descriptive text. as elsewhere.

1-Cardwell .00035 mfd. Vari-
2-Special Home-Built Tuning
3-4-Cutler-Hammer Rheostat,
4-Trolley Grid Condenser.
5-12-pF. Grid Leak. 2 meg.
6-Four Plain Binding Posts.
7-One large slot for Tuning
8-One Panel. Hard Rubber.
9-1 x 3/4. One Nose Board.
10-One Panel. Flexible Rubber.
11-One Panel. Black Bakelite.
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New One-Tube Set Works on Loop
“Wonder” Uses No Super-Regeneration or Reflex

Those of you who have marveled when your three tube set worked with the antenna and ground disconnected will be more than surprised to know that it is possible to get excellent reception from both local and some long distance stations on a loop aerial and with but one tube. This little wonder set uses no antenna or ground whatever, the only energy collector being the loop which is not critical as to direction. A coil of wire as shown in the photo, or even a seventy-five turn honeycomb coil will serve for a “loop.” The set’s beauty lies in its extreme simplicity and inexpensiveness. There are no trick coils, condensers, or transformers to buy.

Secret of Set Lies in Low Resistance

By LEWIS B. HAGERMAN

For phans living under conditions such that they cannot have an outside antenna the ideal set would be a Super-regenerative or some other multi-stage radio frequency arrangement that operates on a loop aerial. But there are those who cannot afford this and who wish to confine their investment to thirty or forty dollars and yet get good loop aerial. The set shown in the accompanying photo and plans is a variation of a circuit originated by the author some months ago and will do the seemingly impossible. That is, operate on a loop aerial with almost loud speaker volume and utilizing only one tube. There is no reflex, super-regeneration, heterodyning or “black magic” used to produce the results obtained. The circuit is based on direct coupling, low resistance to the incoming impulse, aided by regeneration. It will operate anywhere and can be built as compactly as desired for a portable outfit.

Using one of these sets a two stage amplifier, detector, rectifier and one variable condenser were had in a moving automobile, a street car and an elevated train. Interference from motors, generators, power lines, etc., is scarcely noticeable. With it the world series games were brought in on the loudspeaker so that the broadcasting could be heard a hundred feet away, although the set was located three feet from telegraph ticking in a steel building in the middle of the road. As for distance, it is limited. Stations within a radius of five miles are usually audible though.

The set shown on the accompanying photo is in the form of a portable outfit. The parts are mounted on a sheet aluminum panel, a small coil loop antenna, and for local reception anywhere in the city and is usable for pictures and plans is a variation of a circuit originated by the author some months ago and will do the seemingly impossible. That is, operate on a loop aerial with almost loud speaker volume and utilizing only one tube. There is no reflex, super-regeneration, heterodyning or “black magic” used to produce the results obtained. The circuit is based on direct coupling, low resistance to the incoming impulse, aided by regeneration. It will operate anywhere and can be built as compactly as desired for a portable outfit.

The Secret of the Everybody’s Ultraloop is well illustrated by this diagram.

The simplicity of the Ultraloop is well illustrated by this diagram.

The photo above illustrates the portability of the Ultraloop when made up in a small carrying case as described in this article. Note the layout of the parts. This is best for accomp-
**Ultraloggo Reflex “Roars” When Amplified with Two Stages**

We showed you last week the correct method of adding two stages of audio frequency amplification to the Ultraloggo set, telling you that the amplifier could be used on the Ultraloggo reflex, with results for this is shown in the accompanying diagram.

With the arrangement as illustrated, a set that will deliver almost the same results as a five-plate may be had though using only three tubes. This is possible thanks to the effective muting of the multi-tube reflex sets lies in reflexing the second tube of this outfit. We have eliminated this by reflexing only one tube, and also by using the output of this.

You are cautioned not to use any indiscriminately chosen apparatus. A list of apparatus that should be adhered to can be given at the end of this article.

The amplifier used in the Ultraloggo Reflex is as follows: (1) Amplifier of the first stage, (2) Amplifier of the second stage, (3) Transformer, (4) Power supply, (5) Condenser, (6) Tubes.

**Amplification for Ultraloggo**

Here is a diagram of the amplifier which we recommend for use with the Ultraloggo Reflex. The transformers and volume are the ones available at the local radio store.

**First Aid Tips for Care of Panels**

Radio panels can be divided into two classes, those with a polished surface, such as are generally used in receiving equipment, and those with a dull finish, such as slate, composition, fibre, or any of the resinous materials; sometimes rubberized similar products.

The type with polished surfaces quickly become marked, particularly in receiving sets, where the operator’s fingers come into contact with the panel when turning. Such a panel should be wiped over with a soft cloth occasionally to remove any spots that may appear on it.

This trouble may be remedied by a center punch should be used for laying out all holes. A spring prick punch is preferable for this.

**Amplifier**

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Here’s More About the “Superduc” Easy-to-Build Receiver Regains Old Popularity

In this issue we give you additional instruction on building the original “Superduc,” which was shown on this page last week. It is a variation of the old DeForest Ultra Audion circuit and enjoyed immense popularity last fall. Our experimental laboratory is now working on an “Improved Superduc” which will be ready in the near future.

THIS week we are presenting to you more detailed information on the Superduc. For those who wish to try the one-tuber and who cannot read our schematics, a pictorial diagram is submitted.

The exact hookup of the parts and panel assembly is shown in the accompanying picture. It shows the use of a Bradleystat and leak. These are very useful but any other standard parts that are fairly critical in adjustment may be substituted.

Care should be taken in selecting the grid leak. This unit controls the regeneration in a Superduc set to a high degree and should be as efficient as possible to obtain. Its range should be from 1/4 to 5 megohms, with a very gradual variation. Those going from a minimum to a maximum in a half turn are too rough in their adjustment. The variometer should be split. This means simply that the rotor coil and stator coil should be entirely separate from each other, leaving a tuning unit in which there are two rolls with two connections each.

In the pictorial sketch the connections that go to the outside terminals of the variometer are those that go to the plate windings, while those that go to the two terminals in the rear are the connections for the other windings. If your variometer differs slightly from that shown, do not let it bother you. Just connect the rotor and stator in place of the counterpoise lead to the plate connections. This will work out all right.

The variometer should possess other features also, besides just being “split.” It should have a high ratio of inductance to resistance, those speakers operating directly from the “B” battery. The ordinary type of battery speaker consumes as much juice off so as to prevent its running down continually have to remember to shut it off so as to prevent its running down. It should be closely connected and working as close to the stator as possible without touching it. This will transfer energy without sacrificing fineness of tuning of the three-circuit regenerative receiver.

The variable condenser is connected across the rotor terminals of the variometer that lead to the plate and grid connections on the tube. The potentiometer is connected directly across the “A” battery terminals, and the “P” battery negative, instead of going to the “A” positive, goes to the center connection of the potentiometer.

The photographs show the Superduc De Luxe, built in a glass cabinet. This illustrates the layout of parts and gives a general idea of the appearance of the set when finished. There is no particular advantage in using a glass cabinet except for appearance sake, as glass is not as good an insulator as either Bakelite or Radion. We used it because it allowed a clear view of the interior.

Possibly there may be some confusion as to the relationship between the Superduc De Luxe and the Superduc which has never been surpassed. These two sets are exactly the same in the Low Loss type. In fact, the different connections in addition to the Superduc of a .00025 variable condenser and a potentiometer.

The variable condenser is connected across the rotor terminals of the variometer that lead to the plate and grid connections on the tube. The potentiometer is connected directly across the “A” battery terminals, and the “P” battery negative, instead of going to the “A” positive, goes to the center connection of the potentiometer.

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Whether you have Superduc Deluxe with twisted iron wire handle and wood hand grip. This iron may be brought to a working heat in a minimal amount of time. It will retain its heat for a fairly long time.

NON-BATTERY SPEAKERS BEST

It is very expensive to have a loud-speaker that requires a battery to operate. It is also troublesome to continually have to remember to shut it off so as to prevent its running down the battery. The ordinary type of battery speaker consumes as much juice per hour as four tubes. For all practical purposes, where extreme volume is not necessary, those speakers operating directly from the set with no exterior source of power, are the most practical and economical.

TESTING “P” BATTERY

Now test the “P” batteries with a pair of pliers by short circuiting them to see if you get a spark. This would be ruinous to even a new battery.

Use a high-resistance voltmeter, and even then, leave the voltmeter connected only long enough to get a reading. A 22/3 volt “P” battery should be dispensed with and replaced with a fresh one when the voltage drops as low as 16% volts. Replace the 45-volt size when it drops to 28 volts, as this will insure better reception for you.

Above is the pictorial sketch of the Superduc as it was originally presented to the public. The parts, from left to right, are: 001 or .43 plate variable condenser, one split variometer, one variable grid leak and .00025 fixed condenser, one rheostat, one socket, binding posts, batteries and phones. You should certainly have no trouble building your set from a diagram of this type.
Radio Material Supply Co.

1 10x12" Radion or Bakelite panel
1 Bestone socket
1 Walmart 23-plate condenser

are given. It is advisable though, for permanent installa-
tion of this set.

These same directions apply to any type of this set.

YOU MONEY!

WHOLESALE
Radio Material Supply Co.

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1 Walmart 23-plate condenser

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YOU MONEY!

WHOLESALE
Radio Material Supply Co.
How to Make Low-Loss Tuning Unit
This Home-Built Inductance Sharpens Tuning Set

This page in EVERYBODY'S RADIO Weekly is devoted every issue to the home constructor and experimenter. It is a clearing house of ideas and readers are invited to send in any new wrinkles or helpful suggestions.

This section is sent with the suggestion be sure to make it clear. It is not necessary to supply a finished drawing. A simple pencil sketch will suffice.

By JAMES GRAYAR WELLS

A simple method of arranging an aerial on a door should prove useful to flat dwellers and others whose space is limited.

At the top and bottom of the inside of the door there are objects that make it difficult to start the winding on the outside surface of the door. In fact, the last winding will bring the free end at the inside of the door. A simple and inexpensive tap switch might be used to bring in the desired station. This arrangement has been found successful. It has been used in distant stations.

SIMPLE SET TO BUILD
A regenerative receiver having but two controls may be connected up as shown below. Note that the ground lead goes to the junction of the rotor and stator. Since this is the case, only one-half of the total inductance of the coil is used.

The "B" battery should be variable from 16 to 20 volts. Regulation is accomplished in this case by means of the well-known ultra-station effect. If trouble is found in reaching the required wave-length, the variable edge of the bottom strip, so that the variometer from the antenna binding post may be brought to ground. In this case, the antenna should be connected as nearly as possible to the side of the grid leak which goes also to one side of the variometer.

MAKES PANEL MARKER
Many times when users are building a panel to make a marker for their dial to indicate the point they may get a reading instead of making a vertical line, as is customary. A little red paint may be made with the point of a drill. This may then be filled in with a little white lead or any white paint to contrast with the black panel.
Grid Leak Aids Tuning Your Receiver

The grid leak in most receivers is a very critical part. Improper tuning of the grid leak greatly affects the proper tuning of the receiver.

The action of the grid leak must be explained in connection with the action of the vacuum tube.

The tube filament when heated gives off electrons, and these electrons go through a positively charged plate, causing the plate charges to repel the electrons and hold the plate positively charged.

The plate of the tube is charged positively by the "B" battery. Unlike charges repel each other. The negatively charged plate and electrons are drawn out to the positively charged plate from the negatively charged filament.

There is a mesh of wire between the filament and plate through which the electrons must flow, and this is called the grid.

The incoming signals go directly to the grid, and as they are positive they cause the grid to become positive.

The grid being between the filament and plate, and a barrier or a 'grid leak' is placed between the plate and grid, and the plate is charged through the grid leak, instead of directly through the filament and plate.

No. 25. Grid Leak.
If Code Bothers, Learn to Use Potentiometer and Cut Down Tube Squeals

This page is a regular weekly department conducted especially for the operator of home radio receiving sets. Suggestions on efficient tuning, care and maintenance of tubes, batteries and other apparatus and equipment will find space here. If you have suggestions for timely articles let us have them. We will try to see that they are given space.

Learn Code to Keep Tab on Offender

Listeners-in complain that amateurs interfere with broadcasting. They do not mean, of course, that all amateurs do, but simply that some one transmitting code is interfering with the reception. Half the time it is probably ships which are sending or at least stations handling regular commercial work.

What these listeners-in should do, department of commerce officials say, is to learn to read code so they can identify the senders, getting the calls in order to report the offending stations if violations are found. Besides reporting the calls of the offenders breaking the regulations, efforts should also be made to ascertain and report the wave length used.

Here is a valid service of which you are receiving sets can render simply by learning the code and reporting breaches of the law. In a great many cases, such ionizing stations could be shut off immediately. The price of your set will be increased by this simple action.

How to Prevent Oscillations in a Set

Regenerative sets that have a tendency to oscillate too freely, even when the feed-back control is set as low as possible, may be stabilized by following one or more of these suggestions.

A-Cut the plate voltage on the set as low as the filament current permits.
B-Reduce the filament current.
C-Install a larger by-pass condenser across the telephones.
D-Connect the grid return to the positive side of the filament when using a triode or when the grid condenser is used for regeneration.
E-Use a lower resistance grid-leak (a variable if possible). Wound in coil form.
F-If oil-immersed set, increase the vacuum around the plate by placing a small piece of porcelain in the oil tank.

By following out one or more of these suggestions the trouble can be eliminated and the set will function much more smoothly. Try out all the items on any transmitter and you will find that you will be able to increase the range of the set as much as one hundred per cent.

PREPARING BASE BOARDS

There is a right and a wrong way oven the often-neglected baseboard. Be sure it is dry. Ribs dried is preferable. Boiler it in paraffin. Never use shellac of the common kind. Do not use paint or stains. Have it heavy enough to be a real support for the panel. It should be at least three-quarters of an inch thick. One inch is better.

Suggestions on efficient tuning, care and maintenance of tubes, batteries and other apparatus and equipment will find space here. If you have suggestions for timely articles let us have them. We will try to see that they are given space.

CIRCUITS BASICALLY THE SAME

All circuits, regardless of their name, are basically the same in principle. For instance, the three-circuit regenerative includes "The Old Reliable" of almost every amateur, and his "B" battery. There is no polarity to a resistance and consequently it makes no difference which side of the rheostat you use, or which "F" post of the socket is used at. It is often asked where a person may get a complete working knowledge of the science of radio reception. Some wish to go to schools, others with a correspondence course. Neither of the above is for you at present. There are so few teachers that actual working knowledge obtained will give you a head start that is invaluable. If you have no correspondence course or the like, try reading a good radio publication. You will find space for the amateur on the airwaves.

Traps How to Tube and Then Diverts It

In receivers utilizing the principle of regeneration it is not always a simple matter to cut down the functioning of the vacuum tube closely enough to prevent the greatest amplification of the signal without squelching caused by local oscillations. The reason is that the gain of the tubes cannot be decreased at will, but simply by cutting the filaments supply. Thus, the point reached is that the tube must be cut off. The object is to carry regeneration to a higher degree without affecting the tube.

Without some such scheme as this it is not possible to reach the maximum in regeneration before tube oscillations commence.
How to Purchase Condensers for Your Set

There is no more important unit in a radio receiver than the variable condenser; yet it is one with which the public has been most consistently "gyped" by the unscrupulous "fly by night" manufacturer.

Unless the condenser is designed and constructed very carefully, the variable condenser will wreak even the most efficient circuits.

The majority of the cheap variable condensers available on the market suffer from a number of defects, any one of which is fatal.

Their plates are too thin, and usually bent out of alignment with the rear of the rotor box. As a result, they short circuit at certain settings, or else they are so badly spaced that there is no even and steady variation of capacity when they are adjusted.

Another bad feature is the looseness sustained through bad insulation of the rotor from the stator plates. If the two sets of plates are thin and flat plates it is extremely important that the bushing in which the rotor shaft revolves be constructed of the highest grade material. The best available, or the best arrangement, of course, is hard rubber washers and bars.

There are two forms of contacting with the rotor plates, one by means of a simple compression and the other with a flexible joint. Of the two, the latter is by far the most positive and the most efficient. A bad rubbing contact is the cause of most losses in a condenser than anything else.

In many of the condensers of the better type, the "Sure Contact" contact arrangement allowed for the rotor plates is a metal extension which fits around the shaft of the rotor plates underneath the locking nut. Where the mechanical design is not absolutely accurate it is quite possible that a slight "play" may be experienced at different points in the setting of the condenser.

The best possible condenser design is one whereby there are positive stops provided in such a manner that the rotor plates are completely and absolutely out of the stator plates. They cannot be turned any further in any one direction, and correspondingly there is a stop which prevents any further movement when the plates are entirely outside the stator plates.

With such condensers it is in no case possible to solder a flexible copper wire connection to the shaft. The other end of this flexible connector is joined to the binding post provided to enable the user to wire the condenser into his set. This type has a minimum of losses.

The majority of trouble cases in receivers can be traced to bad variable condensers. This is particularly true of sets which are very broad in tuning.

It is not possible to get good selectivity with condensers which are inefficiently designed.

Another difficulty that invariably will result from badly constructed condensers is variable signal strength. In fact, it is impossible to get good selectivity with condensers which are inefficiently designed.

It is always best to use the manufacturer's template for this purpose. The slightest error in alignment of the holding screws will place a tenfold increase on the condenser and pull the rotor plates out of the true position.

We Build, Repair and Rewire All Sets and Circuits.

Mail Orders Promptly Filled.

The special feature of this binding post is the "Sure Contact" which is made to make connections to the receiver. It is impervious to dirt and it will not rust. The special feature of this binding post is its ability to hold, without a twist, even in case the wire is twisted three quarters of an inch.

Electrical goods are the most delicate article in the market and must never be handled carelessly.

Crystal Set Good Reproducer

If one is satisfied to listen to local reception a common crystal set will do excellently. The main thing is to come from a crystal set as near as possible to a radio set and as far as possible from a crystal set. The only drawback is that it will not receive distant stations and has only telephone volume.

Radio WavesGet Through Very Small Slits

We are likely to talk rather loosely about the "screened in" state of old structures, about the impossibility of receiving radio waves from distant buildings and the like.

No doubt such shielding effects do occur, but their exact nature seems to have been masked by any accuracy and completeness. Of course, the first investigations of this type have been reported to the Institution of Electrical Engineers.

Loop antennas attached to receiving sets of great sensitivity were placed inside concrete metal tanks, inside open-ended cylinders of wire or metal, inside cages of wire screen and in various other situations where screening was to be expected.

The results indicate that the most important feature of an efficient screen is the existence of metallic circuits in it. For example, a cage of wire netting is an effectual screen if the wire is electrically connected at all joints. A more intricate wire arrangement in closed loops is effectual. If the noise is one that the circuits or wire netting that is not electrically connected at all joints, a similar closure is not effective.

Perhaps the most striking instance reported by Mr. Bardfield is that of a receiving loop that was entirely enclosed in a solid iron barrel or iron, as though it were inside the lumen of an automobile tire. The two terminals of the coil came out through small metal holes in the tire wall. This cover produced a practically perfect screen, although as wide as the metal of it was continuous.

But when a transverse slit was cut in the metal of the barrel around the receiving coil enough of the radio waves to produce a high frequency signal immediately penetrated the slit.

Even when the slit was as narrow as it was possible to make it without producing actual metallic contact a substantial amount of radio energy continued to pass through it.

It is hard to reconcile these results with the supposedly great screening ascribed to the steel frameworks of American skyscrapers. It seems evident that the exact extent of such metal structures on the radio waves deserve more careful and adequate study than they have received.

There is an excellent problem for amateurs who are experimentally inclined. A model of a typical skyscraper, showing the exact values of signals obtainable on such floor and on each part of the structure, might be of the greatest value to radio science as an aid to the practical man and to provide for the reception of broadcasts in such buildings.

Radio Doctors, Inc.
Headquarters for Editor Wells' Hookups

Complete Parts, as specified for 100\% $13.50

Low Loss Receiver, one-tube set.

FREE REPRINTS. Sample Set on Demonstration

We Build, Repair and Rewire All Sets and Circuits. Let Us Build Your Set For You.

Open Evenings and Sundays—Week Days till 6 p.m., Sundays till 11 a.m.

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Used by Magnetism in its Low Gravity Hook-up

SELF-ADJUSTING

Always Available Always Ready

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"OMET" "B" BATTERIES

At Your Dealers

with

ELECTRICAL MFG. AGENCY

222 North State Street

CHICAGO

SPECIAL TO READERS OF EVERYBODY'S RADIO

A "B" battery of the "OMET" type is a far better unit to use than a "B" battery of the ordinary type. The "OMET" battery will stand up to the full gravity hook-up, and is ideal for 360 meter work. The "OMET" battery can be obtained from your dealers.

"OMET" "B" BATTERIES

SPECIAL TO READERS OF EVERYBODY'S RADIO

SPECIAL TO READERS OF EVERYBODY'S RADIO

AMBRASSADOR COILS are the most suitable known to radio to play a diode, as a point contact, or as a screen grid oscillator. They are especially suitable for radio sets with apparatus that was not made for it.

CRYSTAL SET GOOD REPRODUCER

If one is satisfied to listen to local reception a common crystal set will do excellently. The main thing is to come from a crystal set as near as possible to a radio set and as far as possible from a crystal set. The only drawback is that it will not receive distant stations and has only telephone volume.

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Open Evenings and Sundays—Week Days till 6 p.m., Sundays till 11 a.m.

Mail Orders Promptly Filled.

Radio Doctors

504 So. State St.
Your Questions Are Answered Here
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 Dept. of this magazine. Enclose stamp and addressed envelope if answer by mail is desired. In writing to other departments, use a separate sheet of paper.

Asking a Lot of a Set

563-CHICAGO: Will you kindly assist me in obtaining a wiring diagram of your Ultraloggo set in order that I may experiment with several tubes and combinations not employed in your diagrams in the October issue? I have obtained several sets of parts which I consider might be of value if tried with a larger storage battery. I have experimented with several sets and have used all the parts except the 

Mark the name of "Druid." Its chief

appeals

299 Tubes and Ultraloggo

Another way you might ask your

Ultraloggo set will work

The Ultraloggo will operate forty

sets and combinations. If you will let me

willing to send two pairs of 23 Plates

itself when received. What ratio transformers shall I

me with the Ultraloggo and I would like to

WDAE. I have a V-shape 76-foot aerial in my attic.

An exhaustive explanation of the

762-CHICAGO: I have October 18 copy of your

I am interested in the Ultraloggo

are available without cost from the publisher.

Substituting Tuning Unit

The Ultraloggo is used in the

are superior to the other. I would de

would advise me by return mail, stamped two.

Winthrop Ave., about 800 to 700 yards from

I intended getting a three-tube Ambassador to be purchased and the layout of the hookup. Considering my un-

volume and clearness, considering my un-

as regards selectivity, distance, and tuning. Oct. 4, would serve my purpose and which

I want to get a set selective enough

In spite of the request which was printed here last week, numer-

your several settings, and the kind of battery to be used? Also would like

in "Everybody's 100% Low-Loss" Receiver.

200-CHICAGO: I need diagram of the Ultraloggo compared to 

Ultraloggo set. If you have not back copies of these articles I would

4 plates Won't Do for 17 Plates

205-Chicago: In regard to your "Ultraloggo" receiver you show a sepa-

counters. Will a benefits plan

with the equipment. On Oct. 25 I

In asking about your hook-up

as to weather. I am enclosing a sample of the only
tube, copper clad, unsolderable. Ultraloggo compared to Beetle, also unclad. (2) Fi-

the wire is made.

prevent eddy currents, and have no other

735-CHICAGO: Will you kindly assist me in obtaining a wiring

of "Druid." The

are available without cost from the publisher.

Ultraloggo set. If you have not back copies of these articles I would

Interference Eliminator

188-CHICAGO: I am in receipt of your "Everybody's 100% Low-

Low-Loss" receiver I purchased in your store. The

as the above set, please send me a hook-

in the October 16 issue, and the Model 6. I will gladly give you any in-formation that may be helpful to you. I find that the sets in which the
do or get 1235 transformers, but will not get 554. The

Tubes, used in "Everybody's 100% Low-Loss" Receiver, and in our Ultraloggo circuit, do not have the same characteristics as those used in the Ultraloggo circuit.

Is that correct?

On the other hand, we do not expect as much volume or as much

If not, will the Ultraloggo one-tube set work?

The Ultraloggo will operate fairly sat-

The Ultraloggo circuits will operate with dry cells, but would have to replace these unless you used your set several hours each day. A 60 ohm condenser in series with the coil will do better work than a 500 ohm condenser at the same time.

We have published a list of the various Tuning Units that can be used for Ultraloggo receivers.

We would advise using, if possible, a 3 to 1 transformer in series with the coil.

The Ultraloggo Transformer will work with any ordinary receiver and will be of great advantage if you have a set with no transformer.

With Ultraloggo Transformer

With Ultraloggo Transformer
The New Marvelous
BEACON
CRYSTAL DETECTOR
The Beacon Will—When Others Fail

Gold Point
Positive Contact
Negative Contact
Versatile Detector
Combination

For Sale by All Reliable Dealers
Chicago—J. T. 
New York—J. J. T."}

ECONOMICAL, EFFICIENT, EVERLASTING

The plates are made of nickel and iron. The plate condenser and iron, thereby giving the best results obtainable. Type A, 100 Volt Single Stage...$2.50 Type B, 200 Volt Single Stage...$3.00 Type C, 400 Volt Single Stage...$4.00 3 Plate and 4 Plate Condensers complete on all good deals.

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Radio Proved
Correctly Explained in the Book
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Explanations:
LIGHT, COLOR, FREQUENCY, MAGNETIC, GRAYTATUATION, SOUND, and how to
Make Your Set Treasure.

Liberty Antenna Supports 100%
Ask your dealer

ADVERTISING MANAGERS!
If you can sell a book in 25 cts., we can
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F. M. "EVERYBODY'S" Radio Weekly.

Liberty Antenna. Costs for one week.

For seal by all Reliable Dealers
Chicago—J. T. 
New York—J. J. T."

Liberty Antenna Supports 100%
**False Harmonics Can Be Overcome by Grounding**

This page each week will be devoted to the problems and interests of the amateur code worker. Hook-ups, construction and operation data and information of a general nature will be given space. Amateurs are invited to send in hook-ups, lists of stations worked, or suggestions as to ways to make the department more helpful to their fellow workers. We are particularly interested in having descriptions and pictures of amateur stations.

### How to Make Your Filter Condensers

It isn't everybody that can afford to dig down in their pockets and plant down money promiscuously for experimental apparatus. It's mighty handy sometimes to be able to make some of our own condensers.

For instance, filter condensers. These can be built at very little expense and in a very short time. All that is required is a last-minute scrap store, a drug store, and a dollar or so and some patience.

The theory is the same as any other condensers except that aluminum plates are used as conductors. Ten of these are employed and are filled to a depth of metal until the rod is just saturated solution (all that water will take up) of sodium phosphate.

These condensers are then stacked one on top of another, separated by glass rods that are bent over a flame to fit over the edges, and placed in a crock large enough to allow about an inch clearance all around.

On the bottom of the crock is a tin plate to which is attached a wire that is one of the terminals of the condenser and runs to the top of the jar through a glass rod. The other terminal of the condenser is connected to the top pole.

Now fill the jar to the top with transformer oil and the unit will be complete.

Don't be afraid to use it as it will handle $150 volts safely and is self-healing.

### Make Coils Self-Supporting

Diode or heater coils may be eliminated and the trouble of the串联的 loss eliminated by pleasing in appearance and efficiency by winding the coils on a large glass tube and winding the coil in a solution of collodion. This will harden the coil and hold the wire in the form wound without any other support.

### Stations Worked

Amateurs are invited to send in their logs so that the department and follow it closely.

Your Filter Condensers

Don't unnecessarily overload or push your tube. It is better and cheaper in the long run to increase your power by adding an extra tube than to be continually put to the expense of buying new ones.

Tag Your Battery Leads

Leads from the "A" battery and the "B" batteries should be tagged with little tags marked with the voltage and polarity for each lead. This will prove a reminder and prevent mistakes in selecting the proper lead wire to use.

A Good Space Saver

The use of a combination rheostat and socket is a good space saver in a receiver where compartments is one of your particular requirements.

Makes Unit Panels

Phonographic records are made of a composition that makes a fair insulation. If squares are cut from them and mounted at right angles to solid baseboards these can be used as unit panels for tuning units, variable-ads, variometers, condensers, etc. When these units come in handy for experimental work in buggouts.
Any Boy Can Have One of These Radio Sets FREE

What boy doesn't want to own a REAL radio receiving set—one that will bring in ALL the stations far and near on a loud speaker—a set that is complete in every detail—a set with all the tubes, all the batteries, the phones and the loud speaker, the aerial, the ground—everything and absolutely NOTHING to buy?

Many boys have expensive Low-Loss Variable Condenser, a set of high-priced Low-Loss Tuning Units, a head set of the sensitive type or a loud speaker that can be heard blocks away? Who doesn't want one or more of the high-grade parts that go to make up a REAL radio set or amplifier?

Well, here's a chance for EVERY boy that reads this announcement to have his every wish fully gratified and without spending a single penny.

We're Conducting a Big Contest

Enroll at any time with Real Prizes

Closes Dec. 31, 1924

You Can Win One of These Four Wonderful Radio Sets

First Prize—UNILOG

Model D—Five-Tube Set—Value $200


This set comes completely equipped in a mahogany-finish cabinet; loud speaker, horn with Baldwin unit; aerial and ground wires; insulators, etc. Operate the minute you get it. Value $200

Second Prize—UNILOG

Model C—Four-Tube Set—Value $150

This model is identical with the above, except it uses one stage of radio frequency, the three-circuit regenerative detector and two stages of audio amplification. It has a range of from 1,500 to 2,500 miles on a loud speaker under favorable conditions and has the permanently logged, one dial operation features. It has the same selectivity of the Model D UNILOG and almost as much volume. Occupies 3/4 space of the ordinary four or five-tube set. Gives more volume than the five-tube tubeophone.

Comes completely equipped in a mahogany-finish cabinet as the Model D type, Mahogany-finish cabinet; four 199 tubes; necessary dry cell "A" batteries; "B" batteries; headphones; loud speaker with Baldwin unit; aerial and ground wires and ready to operate the minute you get it. Value $150

Third Prize—UNILOG

Model B—Three-Tube Set—Value $125

It uses the UNILOG three-circuit regenerative circuit detector with two stages of audio amplification. It will not radiate, it tunes on ONE dial and is permanently logged for you at the factory and comes to you with a printed list of the stations and their number on the dial. Simply turn to the station number you want and your station comes in.

The most selective three-circuit set in the world. Has the same extreme selectivity of the Models C and D type already described and will tune out the most powerful local station with ease. Has more volume than any other three-circuit set and most stations under favorable conditions come in with loud-speaker reception. Its range is from 1,000 to 1,500 miles under perfect condition. Occupies half the space of ordinary three-tube sets. Same equipment as the other models.

Value $125

Fourth Prize—UNILOG

Model A—One-Tube Set—Value $75

This set is the same as Model B, UNILOG except it is without amplification. It has the same ONE dial and permanently logged features, the set is complete. Just as permanent, just as useful as the factory and supplied with a printed list of the stations and their log. Will not radiate. Separate radio frequency amplification. Any amplifiers may be added to make it a four-tube or a five-tube set. These amplifiers consist of two "A" tubes in 769 cabinets that can be used as three-circuit regenerative detector units. Prize winner may obtain these units without paying a penny. (See plan at right.)

The Model A set comes complete equipped with all the necessary batteries, one 199 tube, loud speaker, aerial and ground wires, insulators, etc. No loud speaker goes with this set. Prize winner may obtain one without spending a penny. (See plan at right.) Value of Model A set—$75

It's a subscription-getting contest for EVERYBODY'S RADIO Weekly. Every ambitious boy can enter this contest. There's no entry fee. You don't have to buy anything to be a contestant. The boys that get the most subscribers get the prizes. EVERY contestant wins SOMETHING. There won't be any BLANKS. You're paid for every subscription you obtain, whether you win a prize or not.

The contest may be entered at any time up to the day it closes, which is MIDNIGHT, Dec. 31, 1924. The award of prizes will be announced shortly after New Year's Day.

HOW ANY BOY CAN WIN THE PRIZE

If you want to enter this contest all you have to do is to have one of your parents or your guardian fill out the coupon below and mail it to us. Promptly we will send you sample copies of EVERYBODY'S RADIO Weekly, an identification card showing that you are an AUTHORIZED Agent of our company empowered to obtain subscriptions and collect for us. It contains full instructions how to start about your work, and enroll your name as a contestant. There's nothing hard about getting subscriptions for EVERYBODY'S RADIO Weekly. It is from one-half to one-fifth the price of other magazines, comes out every week, is just made for boys. All you have to do is to show your friends and neighbors a copy, tell them that it costs only $2 for a copy every week for a full year, take their $2, give them a receipt and send the money and names and addresses to us. (City and State)

YOU GET GOOD PAY FOR YOUR WORK

We will credit you in the contest with each cash subscription sent us for the big prizes, and besides will send you for each subscription sent in a credit coupon valued at 50 cents, with which you can buy any radio set or parts made by anyone, anywhere. If there should be any ties for the prizes, each contestant so tied will receive a set.

EVERYbody who enters this contest has a chance to win a prize. Even if you do not win one of the big prizes you will get one subscription fee for your work. As the credit coupons you get can be saved up until you get enough of them to buy what you want to buy. Then go to any radio store or look at any advertisement of any standard radio sets or apparatus, pick out what you want and send the coupons to us and we will see that you get that product without you spending one cent of money. The coupons are transferable and each one worth 50 cents in radio equipment when presented to us.

HOW TO ENROLL—Clip and Mail Today

There's a coupon below. Get one of your parents or your guardian to fill it out for you. Fill in each blank line carefully in ink and be sure to sign your name as a contestant. It is not necessary to write a letter. If there should be any ties for the prizes, each contestant so tied will receive a set.

Every day's work—one subscription that will win the prize you want. You CAN win one of the prizes—if you work hard enough and begin at once. You are sure to get good pay for every subscription you get whether you win a prize of not. Clip the coupon, have it filled out today and win a real Radio Receiving set.

Boys' Contest Editor, EVERYBODY'S RADIO WEEKLY

South Union Avenue at 41st Street, CHICAGO

I wish you to enroll (Write in boy's name here).

(Boy's Street Address)..............................

(He Cites State and Zip Code)

In your prize contest for a Radio Set, I stand sponsor for his honesty and integrity and guarantee that he will send you the full amount of all money collected for him for subscriptions and will give him every assistance which might bring him success. Send the identification card, sample copies of the paper, and I will see that he gets them.

(Parent's or Guardian's Signature)..............................

(Boy's Street Address)..............................

(City and State)..............................

DON'T DELAY, ACT TODAY IF YOU WISH TO WIN

Delay has cost many a victory. Clip and mail the coupon immediately and get started in this contest. One day's work—one afternoon's effort, may bring you just the prize you want. Every boys' contest in the world—equal to a ten-tube, super heterodyne.

(Boy's Name)..............................

Boys' Contest Editor, EVERYBODY'S RADIO WEEKLY

EVERYBODY'S RADIO WEEKLY

So. Union Avenue at 41st Street, CHICAGO

"Every Boy Can Have One of These Radio Sets FREE"

EVE...