RADIO

Sears, Roebuck and Co., Chicago - Philadelphia

459 L

WE GUARANTEE

that each and every article in this catalog is exactly as described and illustrated.

We guarantee that any article purchased from us will satisfy you perfectly; that it will give the service you have a right to expect; that it represents full value for the price you pay.

If for any reason whatever you are dissatisfied with any article purchased from us, we expect you to return it to us at our expense.

We will then exchange it for exactly what you want, or will return your money, including any transportation charges you have paid.

SEARS, ROEBUCK AND CO.

HERE ARE THE FACTS

Why Sears, Roebuck and Co.'s Radio Apparatus Gives Such Real, Genuine Service.

Right from the start we've been in this radio business. Many of you will recall our first Radio Catalog, distributed during the early part of 1916. And so, we are mighty proud to offer our customers the services of a pioneer staff of radio experts and buyers. Follow their suggestions and recommendations in this catalog and you will benefit by their years of experience.

Then, too, there's a whole lot of satisfaction and much confidence to be had in knowing that you're getting only such apparatus as is endorsed by the National Amateur Wireless Association and the American Radio Relay League. High grade radio sets and parts which our experts selected only after a careful search and many tests in our experimental laboratory. Sets and parts which incorporate the latest developments and practices in radio of today and, best of all, our tests have convinced us that they all work well and give the best and most efficient results for reception and transmission of radio waves.

Why We Can Sell High Quality Radio Equipment for Less Than You'd Pay Elsewhere.

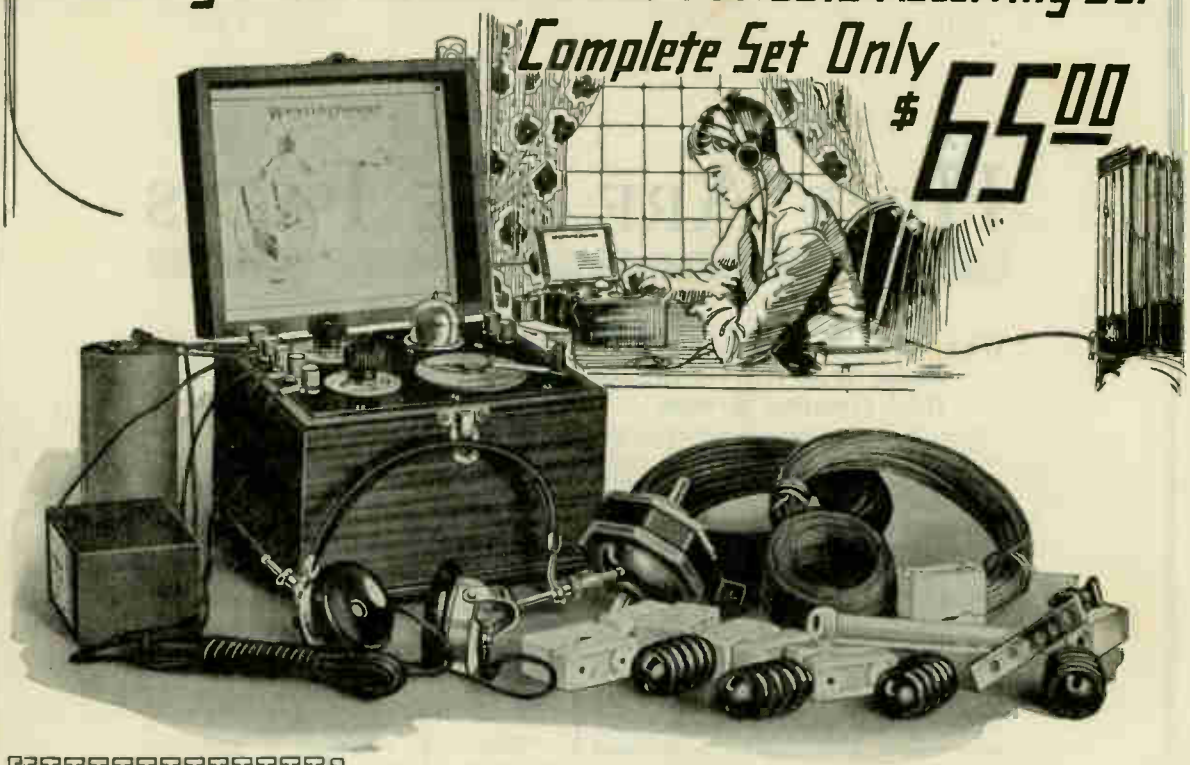
Just try to imagine the enormous volume of business we do and then picture the quantities of merchandise we must buy. Buying in such large quantities we naturally benefit, in that we get a much better price than our smaller competitors. Also, because our radio equipment is first tested in our laboratories and we know it conforms to our rigid standards. Then, too, having no salesmen's salaries and expenses we are able to offer you merchandise of unquestionable quality and excellence of workmanship at such low prices as you'll find in this catalog.

While it is impossible to guarantee the range of any radio apparatus, we have given ours a conservative rating which does not make any extravagant claims. When the broadcasting station is sending out loud and clear signals, and with favorable atmospheric conditions you can expect to hear over much greater distances than given in our ratings. Compare our prices and quality of radio sets and parts with the prices other dealers offer, or prices in other catalogs—you'll be surprised what a saving you can make by ordering from us.

SEARS, ROEBUCK AND CO.

Westinghouse Aeriola Senior Portable Receiving Set

Complete Set Only $65.00



The Complete Outfit Consists of:

1 Portable Receiving Set. Complete with Aeriotron Vacuum Tube WD-11.

1 Set of Sensitive 3,000-Ohm Head Phones.

1 "A" Battery, 1 Volt.

1 "B" Battery, 22½ Volts.

1 Complete Aerial and Ground Outfit, 6A9435, listed on page 31.

How to Order Replacement Tubes.

Should you break or burn out your vacuum tube, you can secure a tube for replacement by ordering our 6A9644 Aeriotron Vacuum Tube. Shipping weight, 1 lb..**$6.50**

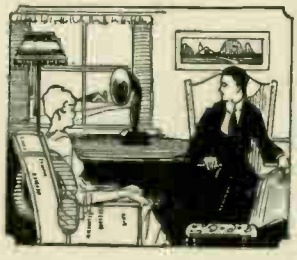
Receiving Radius 300 to 600 Miles

An ideal radio outfit for campers, tourists and persons situated in the rural districts. The Aeriola will be found especially useful to the farmer for the daily reception of market and weather reports and general radiophone broadcasting of musical programs. These messages are sent out by the U. S. Government and other stations on wave-lengths of 360 and 485 meters, and are received like regular telephone conversations. It is not necessary for the operator to know the telegraph codes. Thus, this instrument proves of great value to the great farming centers of the United States which are served by local radiophone broadcasting stations.

This set is particularly adapted to the rural districts, as the filament circuit is operated by an ordinary dry cell.

This set is also recommended for hunters, scouts and campers, as it may be carried by one man without overburdening him, even on a long hike. The complete outfit with the necessary batteries for its operation, the insulators and wire for the antenna, as well as the wire used for the ground connection, may be placed in a haversack. The total weight is less than 15 pounds. Shipping weight, 22 pounds.

6A9315¼—Complete set $65.00



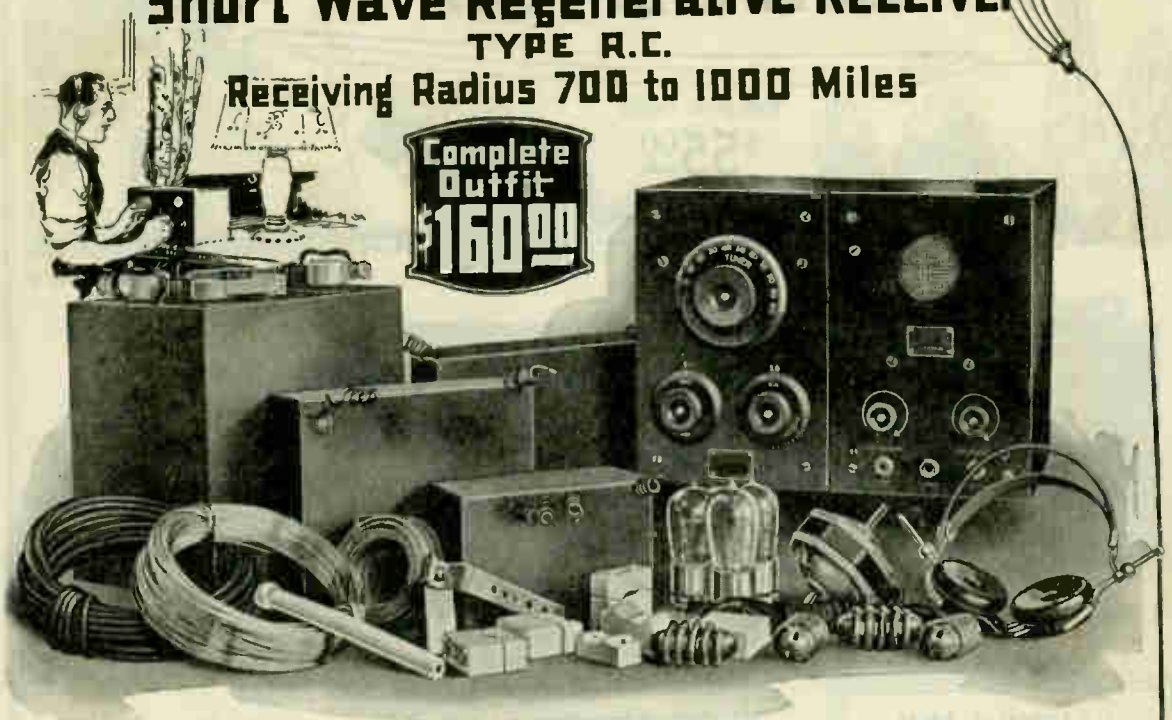
WESTINGHOUSE REGENERATIVE SETS

Short Wave Regenerative Receiver

TYPE R.C.

Receiving Radius 700 to 1000 Miles

Complete Outfit $160.00



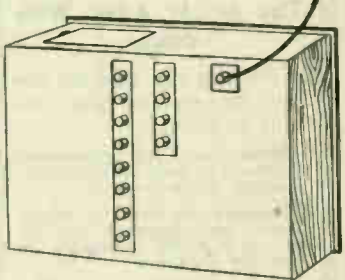
This receiver is our most sensitive and highest grade instrument and likewise it is one of the best that has been brought out for radiophone reception. With it you can bring in the music that you like best and hear the message of distant voices for hundreds of miles around.

Can you imagine anything more wonderful than being able to hear, any evening of the week, the music of great artists, the words of famous orators, church services, the news of the day, farmers' market reports, weather forecasts, the telling of pleasant tales for children as bedtime draws near? What's more wonderful is the fact that you can enjoy this entertainment, news and education right in your own home. You don't have to know anything about radio or electricity in order to operate this set, for a child can make the few simple adjustments just as well as an expert. And, after a little practice you will be able to tune in each station separately and tune out all others so that there will be no interference with the program you're "listening in" on.

The set comprises a combined detector and two-stage audio frequency amplifier unit. It will receive on any wave length within the range of 170 to 700 meters. Reception may be heard on the head phones or with a loud speaker simply by changing the plug connections. Where the loud speaker is used, the entire family may enjoy the program, as this set is capable of amplifying speech or music with the highest degree of clarity and tone quality. The two-stage audio frequency amplifier acts as a magnifier of the signals received by the detector, each stage magnifying the incoming signals many times. So you will readily understand why this set can pick up signals that simpler sets could not detect. The whole unit is mounted in an attractive mahogany case, equipped with a hinged cover. You won't find so many good features in any other radio set on the market.

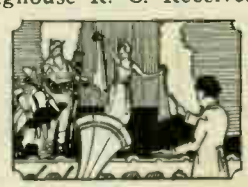
The set comes to you complete. It includes aerial and ground connections, lightning arrester, all batteries, one detector and two amplifier tubes, a pair of sensitive head phones, full instructions and a book on radio. Shipping weight, 120 pounds.

6A9316¼—Westinghouse R. C. Receiver Outfit, complete.....**$160.00**

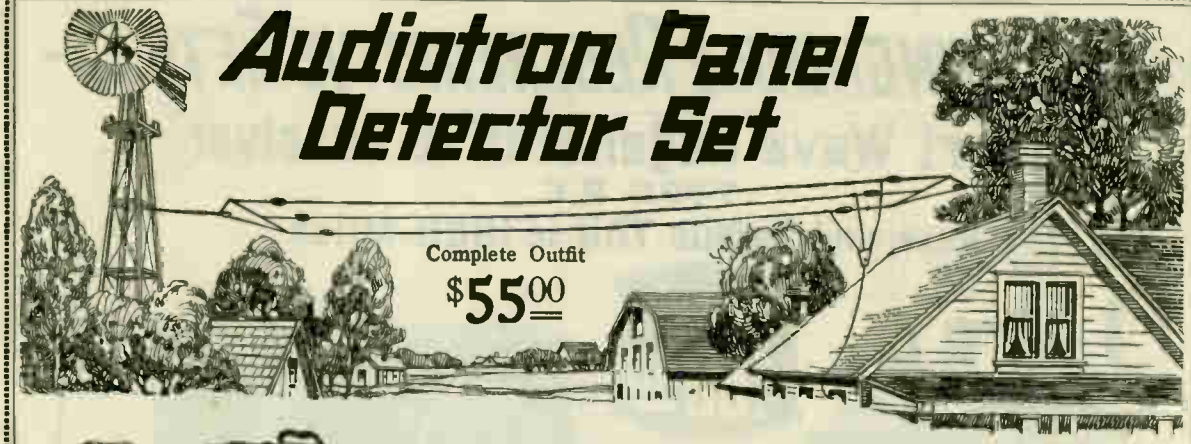


Back view of cabinet showing the binding posts to which the connections are made.

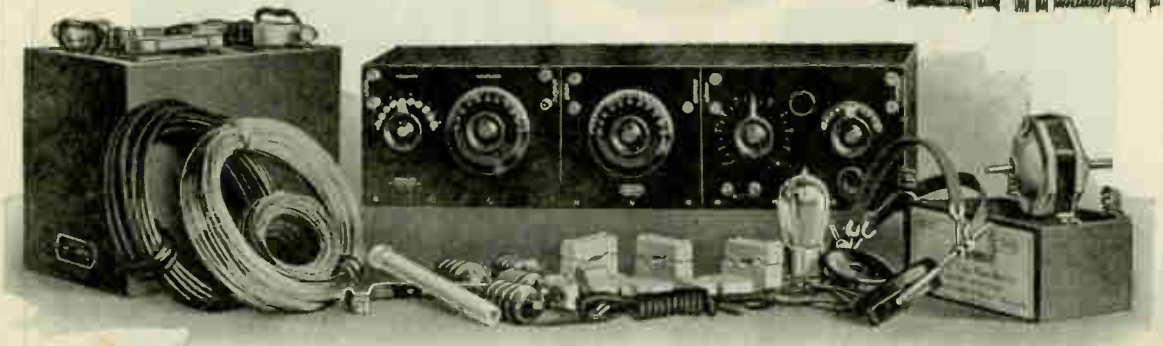
For entertaining your guests you should have a loud speaker. We especially recommend the Magnavox. See page 17.



Audiotron Panel Detector Set



Complete Outfit
$55.00



"LISTEN IN"

The Air Is Alive With Voices.

Almost any time of the day or evening you are able to hear:

Music—vocal and instrumental selections by great artists, operas, concerts, dance music, etc.

Lectures—the words of famous orators and statesmen who talk to you over the radiophone on everyday problems.

Church Services—are being broadcast Sunday morning, afternoon and evening from many churches in our larger cities.

News of the Day—local, state, national and foreign news, election returns, happenings in the sporting world, etc.

Farmers' Market Report—daily market reports on farm produce; also the latest quotations on stocks and bonds.

Weather Report—official reports on weather conditions throughout the country and forecasts for the next day.

Bedtime Stories—the telling of pleasant tales for children as bedtime draws near.

Range 300 to 500 Miles

Here's an inexpensive set with which you can "tap in on the air" and hear radiophone messages for a distance of 300 to 500 miles. It is made up of three standard panel units—a detector, variometer and variocoupler unit. You can take these units, set them side by side on the table, connect them up, which is easy to do since we furnish you with a book of instructions, and receive radiophone music and speech the very same day you get the outfit. If you wish, you can make a cabinet and assemble these units in the cabinet just as we show in the above illustration.

To this set it is possible to add other units and thereby enjoy a longer receiving radius and most sensitive results. By adding two amplifier panel units, shown on page 6, you will double the range of your set and also make it possible to use a loud speaker, instead of only the head phones. On the back cover of this catalog you will find this same set with two amplifier panel units included.

The outstanding feature of this panel detector set is the fact that you can at any time rearrange the various units and experiment with other hook ups. These panel units, when properly wired, are very sensitive in tuning and the tone produced is clear and remarkably free from tube noises, and can be depended upon for long receiving and good results. They are simple in operation and easily wired together by means of the binding post on the front of each panel.

The Complete Outfit Consists of:

1 Detector Panel, 6A9652, shown on page 5.
1 Variocoupler Panel, 6A9786, shown on page 5.
1 Variometer Panel, 6A9783, shown on page 5.
1 "B" Battery, 22½ Volts, 6A9600.
1 "A" Storage Battery, 6 Volts, 6A9521½.
1 Detector Tube, 6A9650.
1 Set of Head Phones.
150 Feet of Seven-Strand Copper Aerial Cable.
50 Feet of No. 14-Gauge Weatherproof Copper Wire.
75 Feet of No. 18-Gauge Insulated Bell Wire.
8 Aerial Strain Insulators.
6 Porcelain Cleats.
1 Porcelain Wall Tube.
1 Ground Clamp.
1 Aerial Lightning Arrester.
Shipping weight, 90 pounds.

Wood Cabinets Not Furnished.

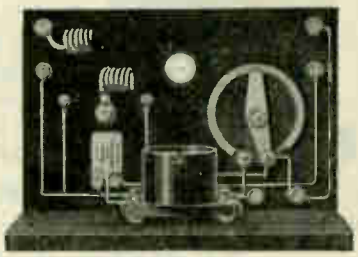
6A9611—Audiotron Panel Detector Set, complete.....$55.00

Audiotron Detector Panel

Price, Only $6.42

A Remarkable Value

Specially Designed for the Cunningham Audiotron Type C-300 and All Standard Four-Prong Base Tubes.



Molded Bakelite Panel Is 7¼ Inches Long, 5 Inches High and 3/16 Inch Thick

For long distance work and C. W. reception the vacuum tube is essential. Two batteries—filament and plate—are required for vacuum tube operation. A detector tube, due to its operating characteristic, is critical in adjustment; that is, both the A and B batteries must be carefully adjusted for maximum sensitiveness. Theoretically the amplifier requires no B battery adjustment, but since the impedance of coupling transformers is constant, a B battery control is desirable with an amplifier to adjust the tube impedance to that of the transformer. Therefore, the efficient detector panel should provide for proper control of the plate voltage as well as filament current.

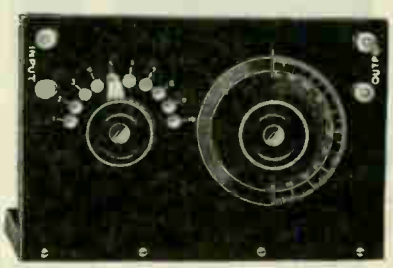
Success in tube operation depends a great deal on the control apparatus used. Loose connections, long leads, improper controls, are defects that are too often responsible for uncertain and inefficient results. The Audiotron Control Panel is designed to eliminate these defects and to provide a suitable mounting for the standard four-prong base tubes, especially the gas content detector such as Cunningham Audiotron Type C-300.

The panel, which is of genuine molded Bakelite, is 5x7¼x3/16 inch. The surface is highly polished glossy black and the lettering and scales are molded in and filled with white enamel. The filament current is controlled by Panel Rheostat, back mounted, and is provided with an open position. Audiotron Potentiometer, connected across the storage battery, provides the close adjustment of plate potential necessary for sensitive detector action. The grid leak is variable; grid condenser is back mounted and is the correct capacity for the new gas content detector tubes. Molded Bakelite Socket is used and supports the tube vertically, insuring maximum filament life. Its all Bakelite construction tends to eliminate induction and ground hums. An orifice in the panel permits a view of the filament. Binding posts and all metal parts are finished in polished nickel. The panel is mounted on a hardwood base, 7¼x3½ inches, finished in black, but can readily be mounted in a cabinet. The wiring is the approved bus bar type and is laid out so that the input and output terminals are at opposite sides. Two or more panels can therefore be mounted in a line to form any detector-amplifier combination. Terminals at the back of the panel are provided with flexible leads for the B battery connection. Shipping weight, 5 pounds.

6A9652—Audiotron Control Panel.....**$6.42**

Audiotron Variocoupler Panel

Variocoupler 6A9785 is also supplied mounted on a Bakelite panel, 5x7¼x3/16 inch. This panel is finished in glossy black and all lettering is white filled. Input and output binding posts are at opposite ends of the panel; special switch lever with Bakelite knob to match the dial knob is provided for varying the primary inductance. The wiring to the panel is of the approved bus bar type and all connections from the primary taps to the panel contacts are soldered. Hardwood base, 7¼x4x3/8 inch, is finished in black. Shipping weight, 6 pounds.



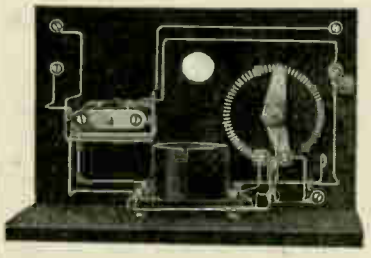
6A9786—Audiotron Variocoupler Panel.....**$10.12**

Audiotron Variometer Panel

Variometer 6A9782 is supplied mounted on a Bakelite molded panel, 5x5x$\frac{3}{16}$ inch, with hardwood base finished in black, 5x3x$\frac{3}{8}$ inch. Nickel plated binding posts are provided at opposite sides of the panel for input and output connections. The panel is the same height as the Audiotron Variocoupler and 6A9652 Detector Panel (page 5) and the arrangement of the binding posts permits ready interconnection of panels to form any desired receiving combination. Shipping weight, 6 pounds.

6A9783—Audiotron Variometer Panel with Dial.....**$8.22**

Audiotron Amplifier With Control Switch



This amplifier panel embodies new and distinct features through the incorporation of a special three-pole double throw twelve-contact rotary switch. This switch will do the work of two jacks and plugs and takes the place of the old style twelve-contact cam switch, with the further advantage of a wiping contact over a spring contact. Switch is mounted on rear panel opposite rheostat and is controlled by knob on front of panel. Detector and amplifier positions are engraved on front of panel. The rear view of panel shows a flexible lead on the right side for the positive B battery terminal; the negative terminal of the B battery is common with the A battery connection. Only one A battery is used for detector and amplifier panels. With the type C-300 tube used as both the detector and amplifier, the full 22½ volts are impressed on the amplifier tube and 18 to 22½ volts on the detector tube. When type C-301 detector is used as a detector, this panel can be used, although type C-300 will give better results. When used as a detector, type C-301 will take any plate voltage from 40 to 100. Switch rotates 90 degrees. When in center position all circuits are open. All wiring is bus bar type and terminals are arranged to connect in the amplifying transformer. Shipping weight, 6 pounds.

6A9573—Audiotron Amplifier. Without transformer.....**$ 6.79**
6A9696—Audiotron Amplifier. Complete with Transformer 6A9503..... **11.85**
For amplifying Transformers see page 22.

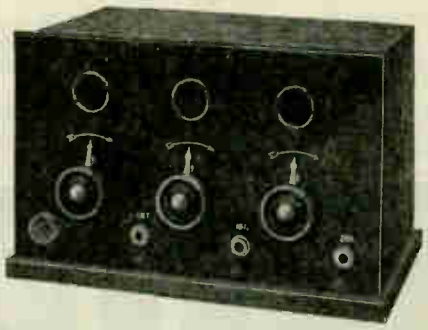
Audiotron Amplifier Units

This amplifier unit is designed to work in connection with Audiotron Detector Panel and is the same size as the detector unit. Panel is molded Bakelite and is fitted with rheostat control, tube socket and binding posts. All wiring is of the bus bar type. Ample space is provided for mounting in amplifier transformer desired. We furnish this unit both with and without transformer, as many experimenters already have transformers which they could use in this set.

This unit is especially designed for Cunningham Audiotron Amplifier Tube, Type C-301, and is also suitable for any standard four-prong tube on the market. Shipping weight, 8 pounds.

6A9570—Audiotron Amplifier Panel, without transformer.....**$4.53**
6A9571—Audiotron Amplifier Panel, complete with Transformer 6A9503..... **9.64**
For Amplifying Transformer see page 22.

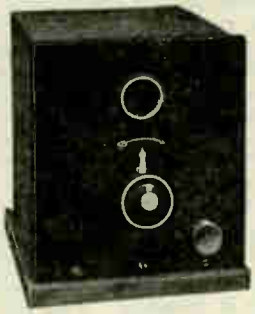
Detector and Amplifying Units



Detector and Two-Stage Amplifier Unit.

A compact unit of a detector and two stages of amplification all wired in one cabinet. In addition to a receiving transformer or regenerative receiver the parts needed to complete this unit are as follows: One detector and two amplifier tubes, one storage battery, one 22½-volt "B" battery, one 45-volt "B" battery, one pair phones and the aerial and ground connections. When connected you are ready to plug in with the phones, with a wide variation in the sound volume, by simply changing the plug to any one of the three jacks. Furnished complete with standard plug. Shipping weight, 12 pounds.

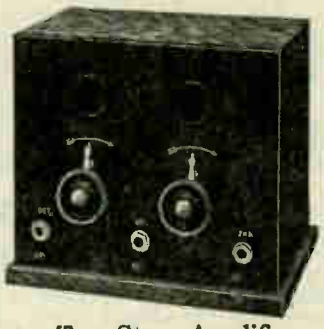
6A9689—Detector and Two-Stage Amplifier Unit **$43.75**



Detector Unit.

A detector of high efficiency and simple design, having all the necessary features for satisfactory and convenient operation. The grid condenser and variable grid leak are wired in the circuit, the grid leak being mounted on the front of panel. Sockets are of porcelain, made to fit standard four-prong base tubes, with rheostat control. Binding posts on rear of unit, so that nothing detracts from neat appearance. Shipping weight, 8 pounds.

6A9686—Detector Unit. **$14.60**

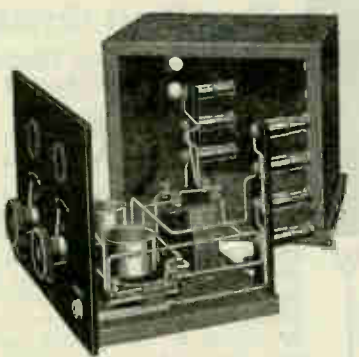


Two-Stage Amplifier Unit.

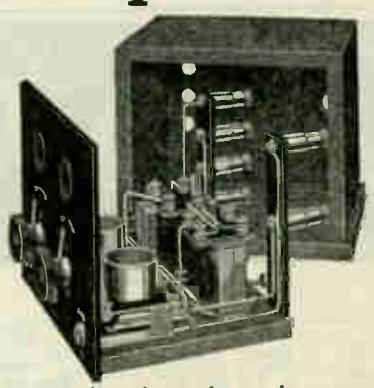
This unit can be used with the detector unit for two stages of amplification or can be combined with the Detector and One-Stage Amplifier to get the three stages of amplification when signals are weak and the three stages are needed. Automatic filament control is secured by three jacks wired into circuits. Furnished complete with one standard plug. Shipping weight, 11 pounds.

6A9688—Two-Stage Amplifier Unit **$39.00**

Detector and One-Stage Amplifier Unit



Consists of detector unit, complete with the addition of a transformer and socket with rheostat controls for both detector and amplifier tubes, all in one unit, wired complete. Two filament control jacks are built into this unit for convenience, which enable the operator to change rapidly to the detector circuit only when the amplifier is not needed and thus give the batteries longer life. Supplied complete with one standard plug. Shipping weight, 10 pounds.



The illustration above shows the assembly of the Two-Stage Amplifier and is used to show clearly the simple and sturdy construction of these units. The cabinets are of selected quarter sawed oak, stained inside and out, and are waxed and hand rubbed. Panels are of 3/16-in. formica and are 6⅛ in. high. The detector panel is 5⅝ in., the detector and two-stage panel, 10½ in., and the two others 7⅝ in. wide. The panels are fastened to a drawer subbase which is held firmly in cabinet by a thumbnut. Removing nut allows unit to be drawn out of cabinet quickly without the use of any tools.

6A9687—Detector and One-Stage Amplifier Unit **$34.50**

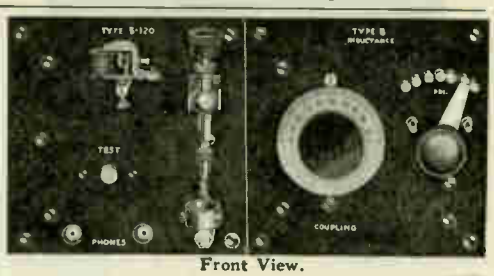
Build Your Radio Receiving Set

The Panel Unit System possesses several advantages over the fixed type of radio receiving apparatus, any type of set of the Unit System may be quickly assembled; it may be enlarged as you master each detail; it may be wired for any hook up desired. For the one who has not made a study of radio the Unit Panel System makes it possible to build a set and wire it correctly without assistance.

Each unit is manufactured from the best of material and made as near electrically and mechanically perfect as possible. These units are so designed that no matter how experienced the operator may become he will always have use for each and every one of the panels which go to make his set complete.

Crystal Sets

The first advancement made for the reception of radio waves was the crystal receiver. This type of detector is at all times popular because of the clear reception it insures and also the simple circuit which it employs. The set is a dependable receiver and is still preferred by many persons, even though the receiving radius is somewhat limited. For persons who are situated within a radius of 20 to 30 miles from a broadcasting station or amateurs who are interested in receiving code messages.



Front View.

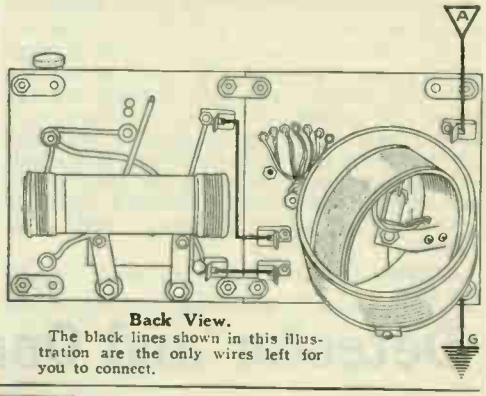
Two-Panel Crystal Set

A Complete Outfit Ready to Install

$21.39

The most simple type for crystal receiving is constructed of two panels. A Crystal Detector and Test Buzzer Unit 6A9627 and Variocoupler Unit 6A9667. These panels include a new style marine detector with removable cat whisker and mineral cup. Also a test buzzer circuit which includes the battery and does away with troublesome wire. The inductance is the new variocoupler panel with knob and dial and switch lever adjustment. This unit is designed to receive wave lengths from 150 to 500 meters, which includes all amateur and radiophone stations. The set includes our Ground Outfit 6A9435, one set of Head Phones 6A9211, and one pair of 6A9634 Brackets. Furnished with a blue print for wiring; also a small radio instruction book. See pages 30 and 31 for erecting an antenna. Shipping weight, 10 pounds.

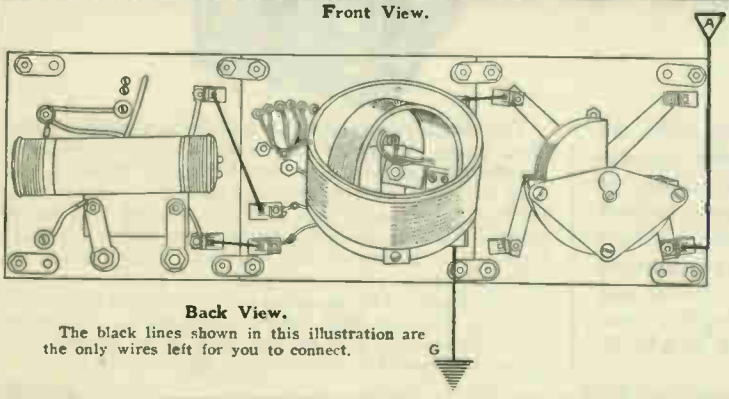
6A9308—Set complete **$21.39**



Back View.

The black lines shown in this illustration are the only wires left for you to connect.

Front View.



Back View.

The black lines shown in this illustration are the only wires left for you to connect.

Three-Panel Crystal Set

A Complete Outfit Ready to Install

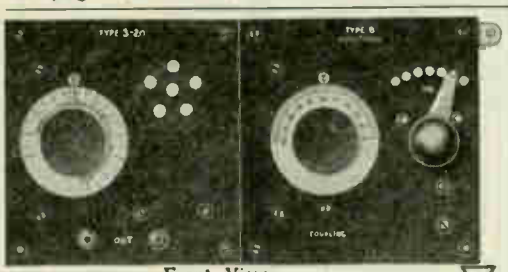
$26.81

This set consists of the two units described above and a 43-Plate Variable Condenser Unit 6A9576. In certain localities where amateur stations are numerous or where the receiving set is located near two broadcasting stations, trouble is often experienced in tuning in one station and tuning out the undesirable stations. The variable condenser unit will help overcome this trouble. This outfit also includes our Ground and Aerial Outfit 6A9435, one set of Head Phones 6A9211, and one pair of 6A9634 Brackets, also a small radio instruction book. When properly installed this set will give very good results. We do not carry cabinets in stock, but you could make one for a set of this kind which would add to its appearance. Shipping weight, 12 pounds.

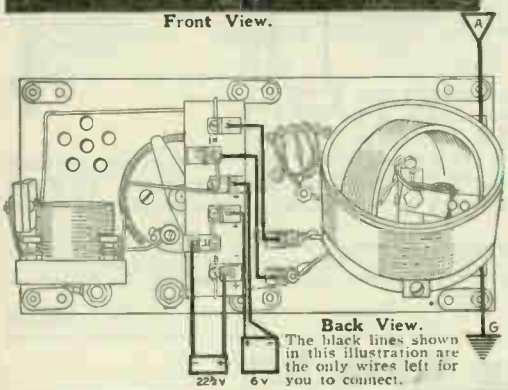
6A9309 .....**$26.81**

The Progressive Unit Panel Way

All Progressive Units are mounted on formica panels, 5 inches square, and are grained stain finish. Each panel has four connecting lugs which makes it very easy to connect one panel with another. Sets may be supported on brackets, such as are shown on page 13, or may be placed in a cabinet. These panels make an attractive set and one you can well afford to be proud of from the standpoint of the results it will give and its appearance. From the Units listed on pages 12 and 13 you can select the necessary parts to hook up any type of receiving set you care to build. As a help to our customers we have listed on these two pages and the two following pages sets which we have tested and know will give satisfactory results.



Front View.



Back View.
The black lines shown in this illustration are the only wires left for you to connect.

Two-Panel Vacuum Tube Set

A Complete Outfit Ready to Install. **$40.78**

The next step generally employed in enlarging the receiving set is the addition of the vacuum tube. This unit greatly increases the range and efficiency of the set, as it makes long distance receiving possible and also brings in local stations much louder.

This set will have a range of from 300 to 500 miles for ordinary receiving and under good conditions will receive much longer distances. This set employes only one tube and does not produce volume enough to operate a loud speaking attachment, but may be used with three or four pairs of phones. For this purpose it is best to use phones of the same make and resistance, as those sent with the set. By adding two One-Step Amplifier Units 6A9579, this set will operate a loud speaker.

The tube is operated with two batteries and requires a more complicated circuit than that used with crystal detector, so care must be taken to wire all connections according to the hook up. This set includes our Vacuum Tube Unit 6A9578 and Variocoupler Unit 6A9667. Radiotron Detector Tube 6A9650, 6-Volt Storage Battery 6A9520½, one 22½-Volt "B" Battery 6A9662, one pair of Head Phones 6A9212, Ground and Aerial Outfit 6A9435, and two Panel Brackets 6A9634, which makes a complete outfit ready to install. We also include a small radio instruction book. The blue print we furnish makes this operation very simple. See pages 30 and 31 for erecting an antenna. Shipping weight, 60 lbs.

6A9317 ..... **$40.78**

Three-Panel Vacuum Tube Set

A Complete Outfit Ready To Install. **$46.10**

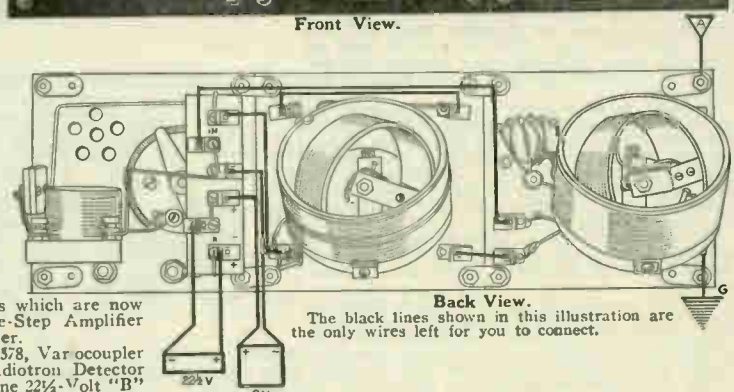
A tube set, being more sensitive than the crystal receiver, will tune in many stations and so it may be desirable to make the circuit more selective. This may be done by adding the Variometer Panel 6A9666 to the circuit. The addition of the variometer panel does not always mean that the signals will be brought in any louder. But the broadcasting station in many cases may be tuned in sharper and this will usually result in stronger and clearer signals.

These sets are especially recommended for persons who wish to hear distant stations and who are not interested in using a loud speaker. Also adapted for persons living in the rural districts who wish to receive stock and market reports and weather bulletins which are now being broadcasted daily. By adding two One-Step Amplifier Units 6A9579, this set will operate a loud speaker.

This set includes our Vacuum Tube Unit 6A9578, Variocoupler Unit 6A9667 and Variometer Panel 6A9666, Radiotron Detector Tube 6A9650, 6-Volt Storage Battery 6A9520½, one 22½-Volt "B" Battery 6A9662, one pair of Head Phones 6A9212, Ground and Aerial Outfit 6A9435 and one pair of Brackets 6A9634, which makes a complete outfit ready to install. We also include a small radio instruction book. The blue print we furnish makes the wiring of this set very easy. See pages 30 and 31 for erecting an antenna. Shipping weight, 62 pounds.

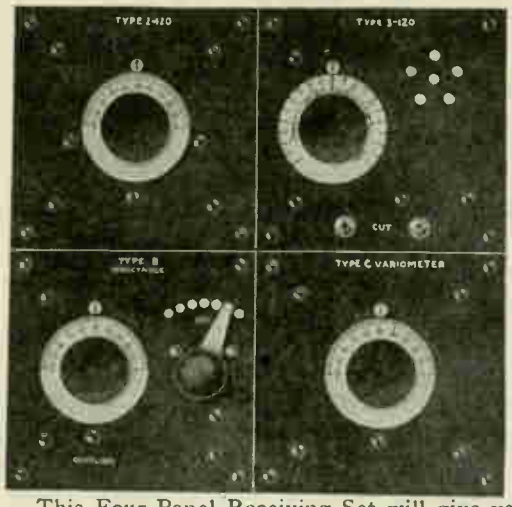
6A9334 ..... **$46.10**

Front View.



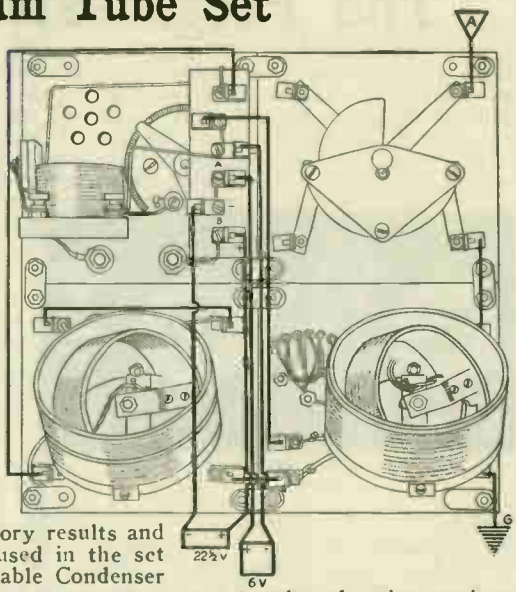
Back View.
The black lines shown in this illustration are the only wires left for you to connect.

Four-Panel Vacuum Tube Set



A Complete Outfit Ready to Install, Only

$41.50



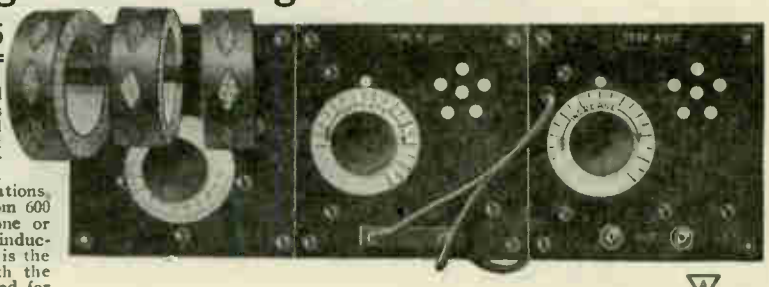
This Four-Panel Receiving Set will give very satisfactory results and is very easy to operate. It consists of the three units used in the set described at the bottom of page 8 and one 43-Plate Variable Condenser Unit 6A9576. If you are located where amateur stations are numerous or near two broadcasting stations the condenser will help tune out the undesirable stations. It will also help tune in a clear tone. To these four panels may be added one or two steps of amplification which will increase your signals, making it possible to use a loud speaker.

This set consists of a Vacuum Tube Unit 6A9578, Variocoupler Unit 6A9667, Condenser Unit 6A9576, Variometer Unit 6A9666, Audiotron Detector Tube 6A9650, 6-Volt Storage Battery 6A9520½, 22½-Volt "B" Battery 6A9662, one pair of Head Phones 6A9212, Ground and Aerial Outfit 6A9435 and one pair of Brackets 6A9634. A blue print is furnished showing how to wire this set and on pages 30 and 31 we explain how to erect an antenna. Shipping weight, 63 pounds.

6A9336 ..... **$41.50**

A Progressive Long Wave Set

A Complete Outfit Ready to Install, Only **$64.75**

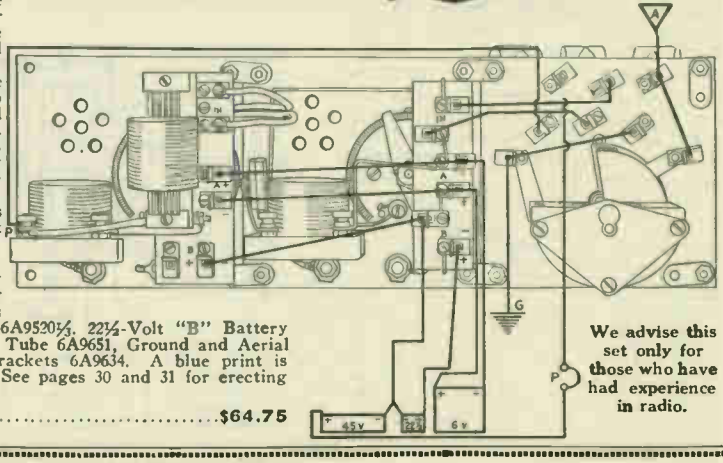


There are many radio operators interested in the study of technical radio science. This work calls for a complete knowledge of local and foreign regulations and government rules, which control time signals, weather reports and ship service all over the world.

In order to properly receive these stations which are transmitting on wave lengths from 600 to 12,000 meters, it is necessary to use one or more tubes and a long range variable inductance. The set which we advise for this use is the detector panel and one amplifier panel with the honeycomb coil panel. This set may be used for receiving many different wave lengths and the range is adjustable by changing the different coil combinations.

In order to tune in all the wave lengths the operator would need a complete set of honeycomb coils, but if only certain wave lengths are desired you can select the proper coils from this catalog. These sets will tune as low as 200 meters and as high as 600 meters. The set may be enlarged by adding an extra amplifier unit, this will increase the receiving range.

The aerial which we advise to be used with this set differs from the ordinary aerial in that it should be 150 to 200 feet in length and the one-wire type.

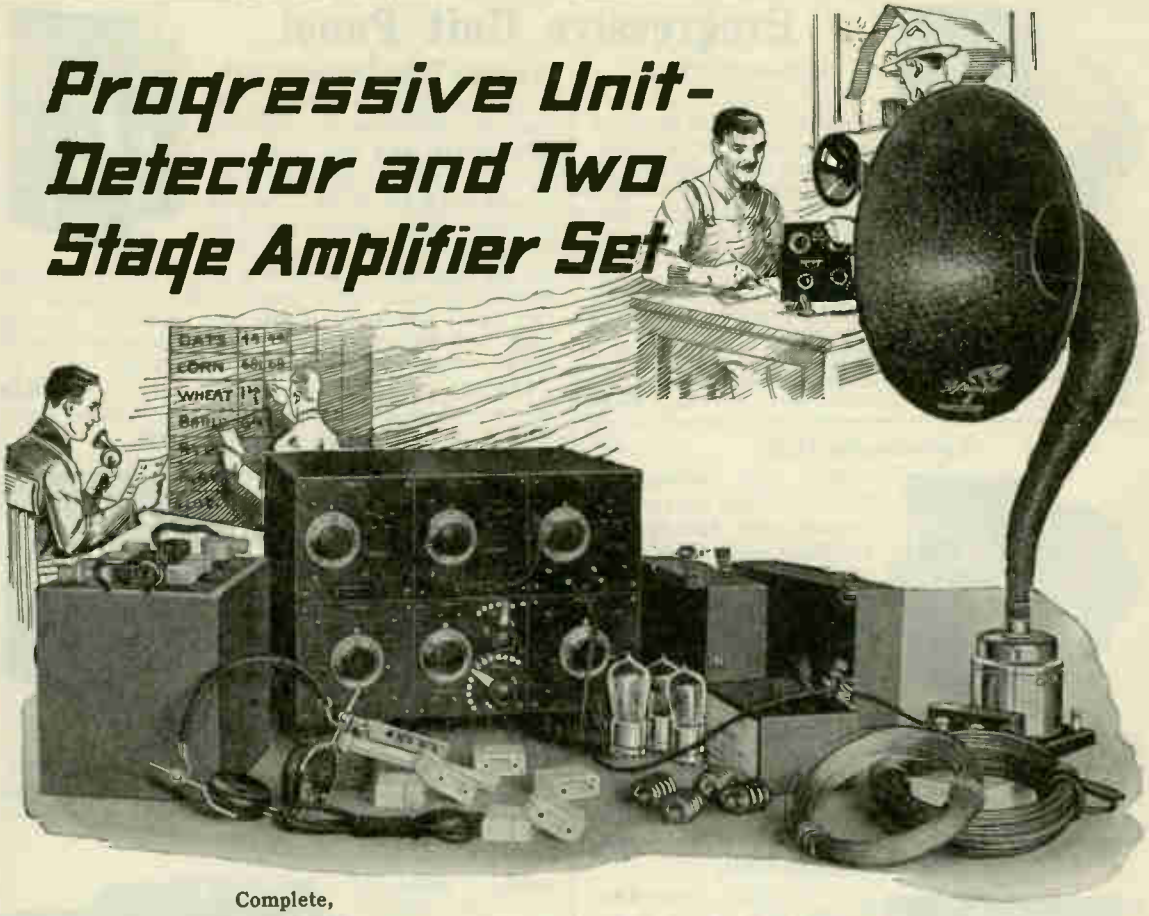


This set consists of one Three-Coil Mounting and Variable Condenser Unit 6A9796, one Detector Unit 6A9578, one Amplifier Unit 6A9579 and Coils 6A9717, 6A9718, 6A9719, 6-Volt Storage Battery 6A9520½, 22½-Volt "B" Battery 6A9662, one Detector Tube 6A9650, one Amplifier Tube 6A9651, Ground and Aerial Outfit, Head Phones 6A9212 and one pair of Brackets 6A9634. A blue print is included showing how this set should be wired. See pages 30 and 31 for erecting antenna. Shipping weight, 60 pounds.

We advise this set only for those who have had experience in radio.

6A9650 ..... **$64.75**

Progressive Unit-Detector and Two Stage Amplifier Set



Complete,

$137.00

The complete set, made up of six standard panels, which may be wired into a fine high grade receiver. This set, when completed, is not to be compared with any set now on the market at this price. This receiver will meet any of the present day demands for a set; that is, tune in distant stations and bring in local concerts so that they may be heard by everyone in the room. This outfit includes the detector and two amplifier panels with one variocoupler and 43 and 21-plate condenser panels. The amplifier tubes increase the volume of the incoming signals so that the set will easily operate a radio magnavox.

This outfit is uniform and complete in every detail, all units are equipped with standard parts, correct in design both electrically and mechanically. All parts are nickel plated and polished. The set may be mounted on the brackets or in a cabinet, as shown in illustration. The cabinet is not furnished.

$99.50 Without Loud Speaker.

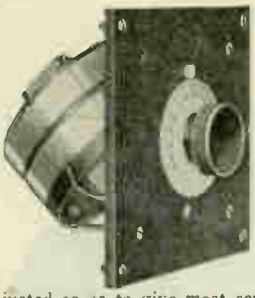
This outfit also includes a radio magnavox, which makes the outfit an exceptional value. This instrument is recognized as one of the most efficient loud speakers in use, and faithfully reproduces music and speech. It is also very sensitive when tuning in long distance stations. The panels should be assembled as shown in this catalog and then wired according to directions furnished with the set. See page 30 and 31 for erecting antenna.

The following is a list of the parts used in this set: Variocoupler Unit, 6A9663; Variable Condenser Unit, 6A9576; Variable Condenser Unit, 6A9577; Vacuum Tube Unit, 6A9578; Two One-Step Amplifier Units, 6A9579; Detector, 6A9650; Two Amplifying Tubes, 6A9651, 22½ Volts; "B" Battery, 6A9662; Two 45-Volt "B" Batteries, 6A9601; "A" Storage Battery, 6A9521; Magnavox Loud Speaker, 6A9779; Head Phones, 6A9612, and Ground Set, 6A9432; also an interesting book on radio.

6A9336—Complete. Shpg. wt., 120 lbs....$137.00

6A9332—Complete, without Magnavox Loud Speaker. Shipping weight, 100 pounds.....$99.50

Progressive Unit Panel

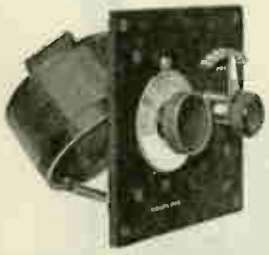


Variometer Unit.

High grade, mounted Variometer Unit, designed for use with variocoupler. Coils are especially treated, tubing wound with covered wire and varnished into place so as to avoid loose wire connections. The coils are accurately adjusted so as to give most sensitive tuning results. The unit is equipped with four clips to provide for shortest connection. When the unit is wired in the circuit the remaining rotor and stator clips should be connected to complete the circuit. The whole unit is very neat in appearance and is highly recommended for use in vacuum tube circuits. Shipping weight, 3 pounds.

6A9666—Complete with dial and knob.....**$5.32**

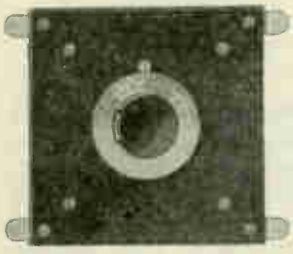
Variocoupler Unit.



New style Variocoupler Unit, designed for use with vacuum tube detector and amplifier units. This unit also gives very good results when used with one or two of the variometer units shown on this page. The coupler is designed to receive wave lengths from 150 to 500 meters and is constructed with a tapped primary coil and neatly wound secondary coil, mounted in a 180-degree adjustment. This unit is designed to combine maximum efficiency with most sensitive results and makes an ideal coupler for vacuum tube circuits. A high grade variocoupler unit. Shipping weight, 3 pounds.

6A9667—Variocoupler **$7.36**

Variable Condenser Unit.



Variable Condenser, .001 MF. This is our 6A9298 Condenser, mounted on unit panel. Fitted with 0-100 degree satin nickel dial. Designed to be easily shunted across aerial and ground. This is the first addition that should be made to the Beginners' Receiving Set Unit. Shipping weight, 1¼ pounds.

6A9576 .....**$5.42**

Capacity, .005 MF. Same as 6A9576, except fitted with our 6A9299 Condenser. Shipping weight, 1¼ pounds.

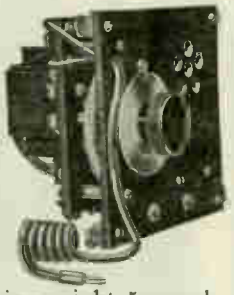
6A9577 .....**$4.56**

Vacuum Tube Detector Unit.

Vacuum Tube Control Unit. Consists of rheostat, Bakelite tube socket, grid leak, clips for A and B batteries, grid condenser and cord tip jacks. Tube is mounted behind panel, which is drilled so that the operator can see the filament. Rheostat is fitted with graduated metal dial, satin nickel finish, with indicating arrow and panel indicator. Takes any standard 4-prong tube. All terminals are marked. Detector tube is not included. Shipping weight, 3 pounds.

6A9578 .....**$8.15**

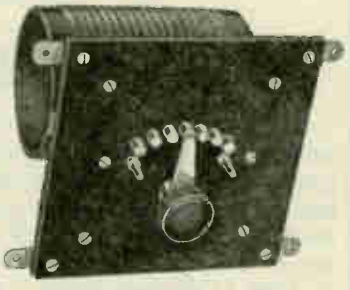
One-Step Amplifier Unit.



One-Step Amplifier. Consists of socket, rheostat, transformer, etc., all mounted behind unit panel. Bus bar wiring. So designed that it also may be used for first, second and third stage. Fitted with flexible cord which allows for plugging in at any stage by simply inserting cord tips from one to the other. Panel is designed for use with all standard 4-prong tubes. Very efficient in every respect. Shipping weight, 5 pounds.

6A9579 .....**$12.35**

3,500-Meter Inductance Unit.



This unit is of special interest to jewelers and all stations especially interested in receiving time signals, weather reports, etc. Unit consists of a tapped coil, wound with high frequency cable or Litzendraht on formica tube. Inductance is varied by means of seven-point switch on front of panel. This unit, together with Crystal Detector or Vacuum Tube Unit and Variable Condenser Unit, makes an excellent receiving set. Shipping weight, 4 lbs.

6A9793 .....**$6.85**

Vario Coupler Unit.

6A9663—Vario Coupler Unit, With Switches Front Mounted.

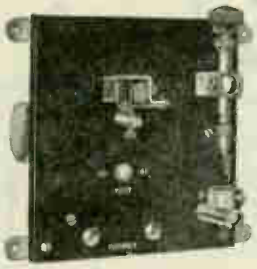
3,000-Meter Vario Coupler Unit. Consists of Bakelite tube, 4x4¾ inches, bank wound with "Litz" high frequency cable, with primary and secondary on same tube, except that part of the secondary winding is wound on a small vario unit, which, when placed in non-inductive relation, gives tight and loose coupling effect. Tests made with this coupler have proved it to be more efficient than the old style loose coupler. Primary is varied by means of 13-point switch; secondary by 6-point switch. Coupling controlled by satin nickel dial, 0-50 scale. Panel marks engraved. Windings are protected by cambric tape wrapping. Shipping weight, 7 pounds.

6A9663 .....**$14.65**

6A9636—Same as 6A9663, with all switches back mounted and fitted with dials. Shipping wt., 7 lbs..**$16.45**

6A9636—Vario Coupler Unit, With Switches Back Mounted.

Progressive Unit Panel

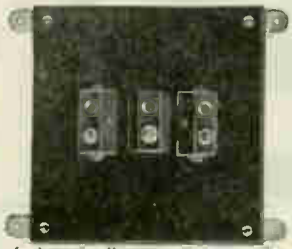


Crystal Detector and Test Buzzer Unit.

Many operators equip their stations with both a crystal and vacuum tube detector. By doing this they receive a great many signals with their crystal detector thereby prolonging the life of their vacuum tubes and batteries. A crystal detector should be a part of the receiving station as a "STAND-BY" so that the station will remain in operation should vacuum tubes burn out or batteries lose their energy unexpectedly. Unit consists of our Marine Galena Detector, Constant Tone Buzzer and Push Button, mounted on front of panel. Battery for operating buzzer is mounted in black fiber case on back of panel. Panel is wired for use in regular tuning circuit. Complete with battery. Shipping weight, 1 pound.

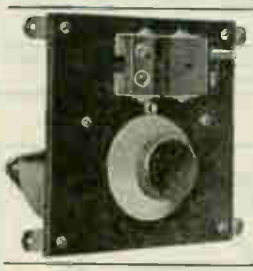
6A9627 ..... **$6.55**

Three-Coil Mounting Unit.



This unit is for use with any standard mounted inductance coils, and will make a valuable addition to the set, as it provides a means of receiving all classes of messages. Plugs are of molded black Bakelite and the two outside plugs are of the coupling type, which is a valuable feature. Plugs are drilled for use with our 6A9645 Extension Handle, page 28. We recommend "Q. S. A." Inductance Coils for use with this unit. Shipping weight, 1 pound.

6A9795 ..... **$4.24**

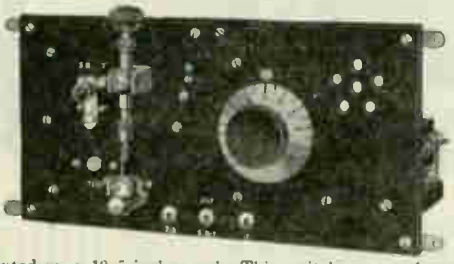


Two-Coil Mounting and Variable Condenser Unit.

This unit is made more flexible than the Single Coil Unit. For use with two mounted inductance coils. Has two Bakelite coupling plugs, drilled for our 6A9645 Extension Handle, page 28. Shipping weight, 1¼ lbs.

6A9797 ..... **$7.18**

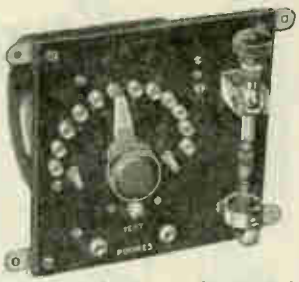
Combination Vacuum Tube—Crystal Control Panel Unit.



Mounted on a 10x5-inch panel. This unit is a step forward in the development of Radio Apparatus, as it enables the operator to receive on either crystal or vacuum tube at will by simply throwing one switch and changing one plug. Signals may be tuned in on either crystal or tube and changed to the other detector instantly. Ideal for use with jewelers' sets, etc. Shipping weight, 8 pounds.

6A9794—Combination Vacuum Tube—Crystal Control Panel Unit **$18.45**

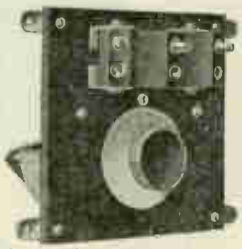
Beginners' Receiving Set Unit With Buzzer Test and Battery.



On this unit the test buzzer is wired into the detector circuit. Buzzer is mounted on back of panel and has two adjusting screws. White push button is mounted as shown, with the word "TEST" engraved just under it. Battery is a standard Shurlite two-cell tubular flash light battery, mounted in a black fiber case on rear of panel. The operator has only to touch the test button to determine whether his detector is set on a sensitive point on the crystal. This also provides means for instant adjustment until the most critical point is found. This buzzer test eliminates a great deal of wasted time when no signals are heard, due to the fact that the detector is not properly adjusted. Shpg. wt., 1¼ lbs.

6A9626—Beginners' Receiving Set Unit with buzzer test and battery **$8.57**

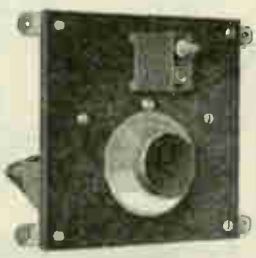
Three-Coil Mounting and Variable Condenser Unit.



Same as the Single Coil Unit, except equipped with regular three-coil mounting, which provides the most flexible and satisfactory combination. This unit and a set of "Q. S. A." Inductance Coils make an ideal receiving unit, covering the entire wave length range. Shipping weight, 1½ pounds.

6A9796 ..... **$7.59**

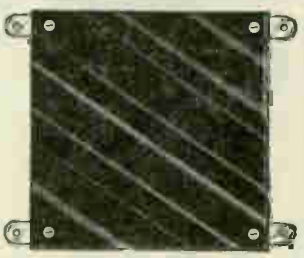
Single Coil Mounting and Variable Condenser Unit.



This unit is a complete receiving unit when used with either the Galena Detector Unit or Vacuum Tube Unit. Consists of Bakelite Panel Plug which will fit all mounted inductance coils, combined with 6A9576 Condenser Unit on page 12. We recommend "Q. S. A." coils for use with this unit. Shipping weight, 1¼ pounds.

6A9798 ..... **$5.76**

Blank Panel Unit.



Blank Panel. Size, 5x 5x$\frac{3}{16}$ inches. Grained satin finish; fitted with four 1-inch connecting lugs, held in place with nickel plated screws. May be used to mount inductance coils, plugs, buzzer and push buttons, switches, etc. Shpg. wt., 4 oz.

6A9575 ..... **$1.16**

Panel Supporting Brackets.

Panel Brackets. Cast iron bracket, black rubber enamel finish, made to fit unit panels. Fitted with screw for holding in place. Shipping weight, 8 ounces.

6A9634 ..... **35c**

Special Crystal Radio Sets

Practical, yet inexpensive radio sets that will bring in amateur stations, radio broadcasting, commercial messages, U. S. Government time signals, etc. And, too, they're so easily and quickly installed—all you need to do is to arrange the instruments on the table and make the few simple connections shown in the illustration. Think of being able to listen to church services, lectures, concerts, operas, etc., right in your own home almost any time you put on the head phones. So many people prefer these crystal sets because they require no batteries, and for this reason you need not disconnect your instruments when you're through listening in. It is impossible to state exactly how far these crystal sets will receive, as the range depends upon atmospheric conditions. Code signals can be heard from stations 100 to 500 miles away. However, for the reception of radio broadcasting you can expect to hear stations 20 to 30 miles away.

Receiving Radius From 20 to 30 Miles.

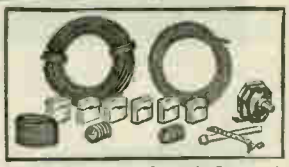
Complete Set, $22.08

Loose Coupler Crystal Outfit.

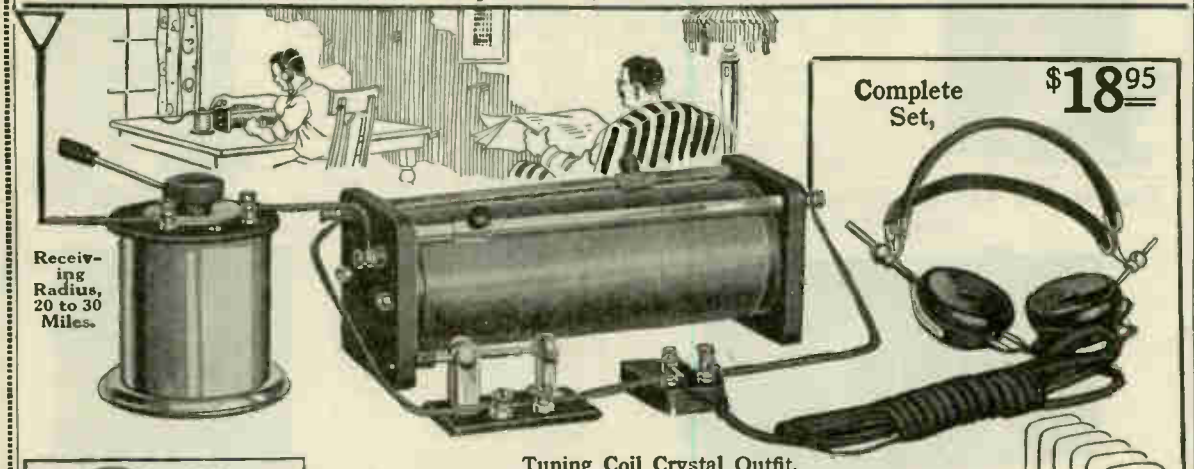
This is certainly a dandy outfit for the beginner in radio as well as those who wish to hear local broadcasting programs. The control is so simple that a child can make the adjustments and get excellent results. The outfit consists of a variable condenser, crystal detector and a pair of sensitive 2,000-ohm phones. Also a fixed condenser, loose coupler and complete aerial and ground outfit. In other words, it is complete in every way and ready for use. The coupler has a tuning capacity of 2,500 meters, which provides for long wave reception, such as naval stations and Government time signals. For best results we recommend that the instruments be connected as shown in the illustration. This hook up has been tried out and has given very good results. Of course you understand that there are many other ways of connecting up receiving instruments. Shipping weight, 27 pounds.

6A9306—Loose Coupler Crystal Outfit, complete.....**$22.08**

We recommend the above wiring connections, which is Hook Up No. 1, page 44.

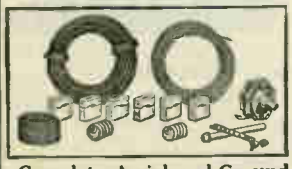


Complete Aerial and Ground Set, 6A9435, furnished with this Crystal Outfit.



Receiving Radius, 20 to 30 Miles.

Complete Set, $18.95



Complete Aerial and Ground Set, 6A9435, furnished with this Crystal Outfit.

Tuning Coil Crystal Outfit.

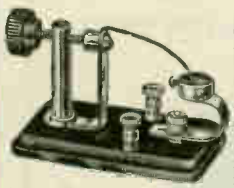
Here, too, is also a very fine crystal receiving set, but the tuning coil used is not quite as selective as the loose coupler above. The tuning coil will respond to wave lengths up to 1,000 meters. This set is composed of all high grade apparatus of the best workmanship and constructed so as to give most sensitive results. It consists of one 43-plate variable condenser which can be used in the aerial circuit, one tuning coil with fine slider adjustments and polished Bakelite ends, a cat whisker detector, one fixed condenser and a pair of 2,000-ohm phones. Also a complete antenna and ground outfit, with all the necessary parts for erecting a good aerial and wiring the set. Connect instruments as shown in illustration. You'll have lots of fun listening in and experimenting with this outfit. Shipping weight, 16 pounds.

6A9307—Tuning Coil Crystal Outfit, complete.....**$18.95**

We recommend the wiring connections shown in the above illustration, which is Hook Up No. 2, page 45.

Parts for Building Crystal Receiving Set

Great Lakes Detector Stand.



A very popular type mineral detector of the cat whisker type. The mineral cup is fitted with three screws and mounted on a curved brass holder, which may be placed at any angle by means of the adjusting nut on the base. Fine adjustment is obtained by means of the screw, which is fitted with a rubber composition knob. This screw works in a brass pillar against a flexible strip which holds the cat whisker. Piece of galena furnished with this detector. Mounted on hard rubber composition base, 3½x2⅛x⅜ inch, fitted with two binding posts. All metal parts nickel plated. Shipping wt., 1 lb.

6A9375—Great Lakes Detector Stand.....**$1.38**

Murdock Detector Stand.

A good detector stand at a low price. It will give efficient service either as regular equipment or as an auxiliary instrument. The base is hard rubber composition; binding posts are nickel plated; cup element holder; vertical adjustment. Mineral not furnished with this detector, but we recommend silicon. Size over all, 2⅝x1½x2 inches. Shipping weight, 8 pounds.

6A9219—Murdock Detector Stand.....**65c**

Radio Cartridge Rectifier.

This detector can be easily mounted on any set and does away with the necessity of a test buzzer circuit. Each cartridge has been thoroughly tested, and is constructed to last from four to six months if properly used. It can be used the same as any mineral detector, but has the advantage of requiring no adjustments, and with the same range of sensitiveness as any galena detector. This cartridge is particularly adapted for portable crystal sets, as it is completely enclosed. Caution should be taken against leaving the set connected during a lightning storm, as a heavy discharge may burn out the cartridge. Shipping weight, 1 pound.

6A9260—Radio Cartridge Rectifier.....**$1.38**

Army-Navy Test Buzzer.

This buzzer maintains a constant note and is recommended as an exciter for checking wave meters where pure note and ample energy are required.

It consists of practically a closed circuit field of low resistance having a steel armature to which is riveted a strap supporting a movable contact. The armature tension is adjustable by means of a screw with a milled head large enough to be easily and permanently adjusted with the fingers. The stationary contact is adjusted by means of a similar screw. Contacts are of genuine platinum, which is essential in order to maintain a constant note. The parts are mounted on a Condensite base to insure constancy in operation.

Diameter, 2 inches; height, 1¼ inches. The cap is attached to the base by a bayonet joint. Shipping weight, 6 ounces.

6A9437—Army-Navy Test Buzzer.....**$2.20**

Wireless Test Buzzer.

Detectors often lose their adjustment and need readjusting. By using a buzzer the adjustment of the detector is always known. The buzzer sets up tiny waves which pass through the detector, the same as incoming waves, and produce a sound in the receivers. If no sound is heard the detector point is not on a sensitive spot on the mineral and needs adjusting. The buzzer operates on one dry cell. A push button is used to close the circuit. The base and cover are made from sheet brass, nickel plated. The buzzer gives a high pitched sound, the frequency of the note being about 500 cycles. Size, 2⅛ inches in diameter, 1 inch high. Shipping weight, 8 ounces.

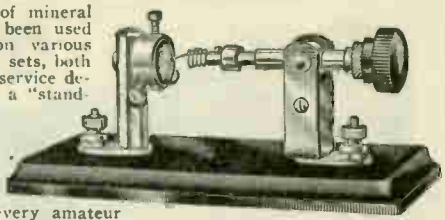
6A9208—Wireless Test Buzzer.....**61c**

Buzzer Test Push Button.

This push button is ideal for using with a test buzzer. It fits a ⅝-inch hole. Nickel plated, with pearl center. Shipping weight, 4 ounces.

6A9209—Buzzer Test Push Button.....**24c**

Marine Mineral Detector.



This type of mineral detector has been used extensively on various styles of ship sets, both as a regular service detector and as a "standby." We believe this is the finest mineral detector made, and recommend it to every amateur and experimenter. Detector shaft is mounted in a tube container. This tube container is mounted in a ball which in turn is supported by a socket joint which gives maximum adjustment range. A spiral spring is used on detector shaft and is mounted inside the tube. The tube slides through the ball and the coil spring insures permanent position. Cat whisker contact wire is held by means of clutch and is easily removed for changing wire, etc. Mineral is supported in brass cup by three screws. Cup is mounted on brass pillar. Detector is mounted on black molded base, 6x2½x⅜ inch. All metal parts are made from brass, heavily nickel plated and polished. Tested piece of galena is furnished. Shipping weight, 2 pounds.

6A9297—Marine Mineral Detector.....**$1.85**

Standard Galena Detector—Improved Model.

This detector has proved the most popular style in the amateur field. This latest improved model will undoubtedly become the most popular crystal detector on the market. The base is of hard rubber composition ¼ inch thick, fitted with polished nickel plated binding posts. A tested galena crystal is mounted by means of thumb screws in a nickel plated mineral cup which is held in place by means of a shock absorbing brass strip. Cup rotates in place, allowing very easy adjustment. This detector is not easily "knocked out," as the spring contact is held in place by adjusting screw. Size of base, 3¼x2⅛ inches; all metal parts nickel plated and polished. Shipping weight, 1 pound.

6A9262.....**$1.20**

Nickel Plated Brass Mineral Cup.

Fitted with three screws for mounting mineral. Cup is of nickel plated brass, polished. Hole in bottom of cup allows for mounting on detector stand or panel. Shipping weight, 5 ounces.

6A9486—Nickel Plated Brass Mineral Cup.....**19c**

Minerals and Crystals.

Our minerals are all high grade and we will replace any which are not sensitive or do not give satisfactory service. Sold by the piece. Each piece is large enough for any size detector cup, and often large enough for several renewals.

6A9320—Bornite. Shipping weight, 3 oz. Per piece **15c**
6A9321—Carborundum. Shipping weight, 3 oz. Per piece ...**15c**
6A9322—Copper Pyrites. Shipping weight, 3 oz. Per piece ..**8c**
6A9323—Galena. Shipping weight, 3 ounces. Per piece....**8c**
6A9324—Perron (Iron Pyrites). Shpg. wt., 3 oz. Per piece **10c**
6A9327—Silicon. Fused, Pure. Shpg. wt., 3 oz. Per piece ..**10c**
6A9328—Zincite, 100 per cent pure. Shpg. wt., 3 oz. Per piece.**35c**

Soft Metal.

6A9326—Soft Metal, for mounting minerals. Melts in hot water. Piece large enough to mount two minerals. Shipping weight, 5 ounces. Per piece.....**10c**

Triple A Grade Minerals.

These minerals are from the same high grade stock as our Arlington Tested Minerals, but they are subjected to bulk tests only and are not individually examined. They are sold by the ounce, 1 ounce being sufficient for from six to twelve renewals. Packed in round wooden boxes, sealed and labeled. Specially recommended to radio clubs, experimental stations, etc. Shipping weight, per 1-ounce box, 3 ounces.

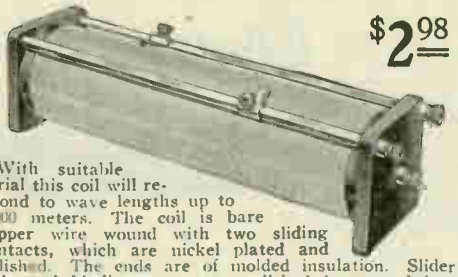
6A9288—Triple A Galena. 1-ounce box.....**25c**
6A9289—Triple A Silicon. 1-ounce box.....**25c**

Arlington Tested Minerals.

Each Arlington Tested Mineral has been individually tested, and unless it has shown extraordinary results it is discarded. They must bring in distant stations loud and clear. Individually wrapped and packed and sealed in a box. Each mineral is guaranteed to give satisfaction. Costs more—worth it. Shipping weight, per crystal, 2 ounces.

6A9285—Arlington Tested Galena. Per crystal.....**21c**
6A9286—Arlington Tested Silicon. Per crystal.....**21c**

Standard Double Slide Tuning Coil



$2.98

With suitable aerial this coil will respond to wave lengths up to 1,000 meters. The coil is bare copper wire wound with two sliding contacts, which are nickel plated and polished. The ends are of molded insulation. Slider rods and binding posts are polished brass and lacquered. Substantially made, efficient in service and attractive in appearance. Length, 8¼ inches. Shipping weight, 3 pounds.

6A9246—Standard Double Slide Tuning Coil.**$2.98**

High Grade ¼-Inch Slider.

Made to fit ¼-inch square rod and has molded insulating knob attached. Used extensively on tuning coils, loading coils, bridges, etc. Free running, positive contact. Finish is nickel plated, with hard polish. Shipping weight, 5 ounces.

6A9698—¼-Inch Slider.....**21c**

Round Brass Rod.

Suitable for making secondary coil rods, etc. Easy to saw, thread, etc. In two sizes; 2-foot lengths only.

6A9479—$\frac{3}{16}$-inch diameter, 2-foot lengths. Shipping weight, 1 pound.
Each, **12c**; per dozen.....**$1.00**

6A9480—$\frac{7}{32}$-inch diameter, 2-foot lengths. Shipping weight, 1 pound.
Each, **13c**; per dozen.....**$1.15**

Slider Rod.

A high grade rod to be used with slider shown on this page. Hard nickel plated finish to match the slider. These parts are used by many amateurs in building tuning coils and loose coupler sets. Furnished in two sizes.

6A9263—9-inch rod. Shipping weight, 8 ounces.**21c**
6A9265—14-inch rod. Shipping weight, 14 oz..**33c**

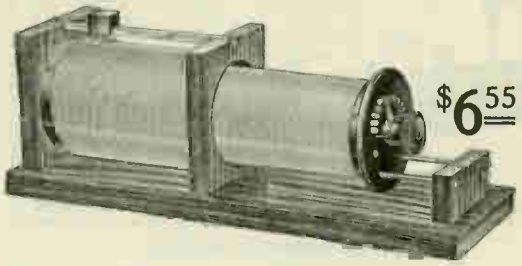
Grade M Formica Panel

Standard with the United States Government. Used extensively by commercial companies. Impervious to moisture. Dielectric strength is extremely high. Selected sheets. **Color,** black. **Finish,** highly polished on both sides. Smooth sawed edges, accurately squared.

Catalog No.	Size Sheet, In.	Shipping Wt.	
6A9590	6x 9x$\frac{1}{16}$	1 pound	**$0.65**
6A9591	6x 9x$\frac{3}{16}$	1 pound	**.90**
6A9592	6x 9x¼	1 pound	**1.10**
6A9492	6x12x$\frac{3}{16}$	1½ pounds	**1.22**
6A9493	6x18x$\frac{3}{16}$	2 pounds	**1.95**
6A9494	6x24x$\frac{3}{16}$	2½ pounds	**2.59**
6A9510	8x 9x$\frac{1}{8}$	2 pounds	**.80**
6A9513	8x 9x$\frac{3}{16}$	2 pounds	**1.20**
6A9516	8x 9x¼	2 pounds	**1.60**
6A9511	12x18x¼	4 pounds	**2.40**
6A9514	12x18x$\frac{3}{16}$	4 pounds	**3.50**
6A9517	12x18x¼	5 pounds	**4.80**
6A9512	18x24x⅛	4 pounds	**4.80**
6A9515	18x24x$\frac{3}{16}$	5 pounds	**6.95**
6A9518	18x24x¼	7 pounds	**9.50**

Receiving Transformer—Improved Model

Bakelite Coil Head. **Capacity, 2,500 Meters.**



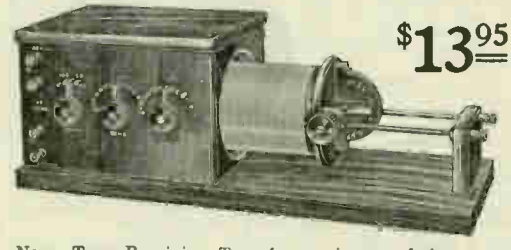
$6.55

In this receiving transformer the amateur is offered an efficient, well made, long wave length tuner at a low price. When you see it you will really be astonished to think of buying this instrument for $6.55. With it you can tune in with the big wireless stations, including Arlington, Key West and others using wave lengths of 2,500 meters and more. We have improved this instrument a great deal, the most notable feature being the use of a turned Bakelite coil head in place of the wooden head formerly used. All binding posts are now mounted on primary coil end. Longer coupling is also possible with this model. The windings of both coils are of green silk-cotton covered wire. The primary slider is mounted on a brass rod and works freely and with minimum wear on the wire. The slider is very selective, as it will make contact on a single turn. The secondary inductance is varied by means of a 10-point switch mounted directly on the Bakelite head. All woodwork is beautifully finished in mahogany. All metal parts are of brass, finished in polished nickel plate. Size of base, 18½x6 inches. Shipping weight, 14 pounds.

6A9333—Receiving Transformer **$6.55**

Navy Type Receiving Transformer

Improved Model—Improved Secondary Switch—Improved Primary Switch—Improved Mounting of Binding Posts.



$13.95

The Navy Type Receiving Transformer is one of the most popular instruments we offer and is of special interest to schools, experimental stations and wide awake amateurs.

The panel is of grade "M" grained finish formica, as is also the secondary switch. Binding posts and switch points are marked by engraved characters. Very high grade nickel plated and polished finish is used on all metal parts with the exception of the tops of the contacts. These contacts have a small shank and are driven into the panel. After driving in, the tops are surfaced on a disc grinder. This makes perfect switch action and eliminates all clicking in the receivers due to poor contact, as is the case when tops are nickel plated and polished. The windings are of green silk covered wire on non-shrinkable tubes. Woodwork is of fine hand rubbed mahogany finish.

The wave length range of our Navy Type Receiving Transformer is up to about 4,000 meters when used in connection with an ordinary amateur aerial. The single turn variation of the entire primary is obtainable by means of our special double control switch. The small 2-point switch to the left of the instrument is used for dead-ending the primary, past 1,000 meters. The secondary switch has 12 points, which allows a considerable overlap even when used with a very small variable condenser. This instrument is very suitable for receiving all wave lengths between 200 meters and 3,500 meters, which includes all amateur stations, the 600-meter commercial stations and the large Government time stations. Size of base, 18½x6¼ inches; height, 7 inches. Shipping weight, 25 pounds.

6A9259¼—Navy Type Receiving Transformer....**$13.95**

An Evening's Entertainment with the Loud Speaker

Dictograph Loud Speaker.

Regardless of the form of your radio receiving set, whether it is just a homemade receiving unit or one of the most elaborate type, provided it is equipped with one or two stages of amplification, the Dictograph Radio Loud Speaker will add to your enjoyment. A number of loud speaking devices have been brought out and offered for sale, but with the exception of very expensive loud speakers, which require separate amplifying apparatus, extra batteries, etc., there have been few practical loud speakers developed for the home which will reproduce programs without distortion, giving full volume to the voice and musical sounds, yet being simple and easy to operate and offered at a price within the reach of every owner of a radio receiving set. The 11-inch burnished copper bell horn is attached to a die cast, black enameled aluminum tone arm, with nickel trimmings. The sound chamber is enclosed in a solid hardwood ebony finish cabinet, mounted upon a rubber base to avoid marring highly polished surfaces. Its splendid finish and pleasing design make it a valuable addition to any receiving set. Shipping weight, 12 pounds.

6A9769—Dictograph Loud Speaker **$18.95**

Magnavox Loud Speaker.

A roomful of people can listen to the entire program with the Magnavox. With this loud speaker you can treat your guests and family to real home entertainment, concerts and dances. It reproduces radiophone speech or music to such a degree and clearness of tone that it has also become very popular for use in churches, clubs, hotels and even dance halls. Can be used with any receiving set having two stages of amplification—the better the set, the more the magnavox can do for you. Consists of a 14-inch metal amplifying horn and a very sensitive loud reproducer which is mounted on a wood base. Finish is black. By all means get this Magnavox Loud Speaker if you want to get the most pleasure out of radio and the greatest satisfaction from your set. Shipping weight, 20 pounds.

6A9779—Magnavox Loud Speaker **$38.75**

Radio Music Perfectly Reproduced Through Your Phonograph.

The Meteor Junior converts your phonograph into the finest of loud talkers without detracting in the least from its power to play phonograph records. The radio music comes to you with cellolike sweetness, even more clearly than that reproduced from your records. The Meteor Junior is adaptable to any phonographic instrument. When you consider that you are using the wonderful sound box, tone arm and even the needle which has been perfected only after years of experimenting, you can realize the quality and sweetness of the tone which is so faithfully reproduced through the Meteor Junior. Anyone can attach the instrument in a few minutes. To operate, simply swing the tone arm, allowing the needle to rest on the small center element of the Meteor Junior. This ingenious instrument, which eliminates the necessity of numerous expensive head phones when entertaining a roomful of people, is a true economy. The Meteor Junior is an instrument that will improve any radio set. Put one on your phonograph today and realize the possibilities of radio music for quality of tone. Can be used with any receiving set having two stages of amplification. Shipping weight, 1 pound.

6A9780—Meteor Junior **$11.60**

Phonograph Attachment.

This device when attached to the tone arm of your Victrola, Silvertone or Columbia phonograph, gives you a very effective loud speaker for radio. Everyone can enjoy the wireless reproduction without the use of individual head sets. The horn is used to amplify the radio reception, producing a magnified full rich tone, in much the same manner as it increases the volume of sound from the sound box when a phonograph record is played. The Phonograph Attachment is interchangeable with the reproducer. Either device may be removed without the use of tools and the other inserted. Can be used with any receiving set having two stages of amplification. Shipping weight, 1 pound.

6A9778—Phonograph Attachment **$9.05**

HIGH GRADE HEAD PHONES

Brandes Head Phones.

These Matched-Tone Head Sets will give maximum service for many years. The parts are made of the most durable materials and every precaution is taken to prevent possible corrosion when exposed to damp air. All adjustments are made permanent, thus doing away with moving parts which always wear out. The phones are equipped with new design featherweight headband, which permits proper adjustment of receivers. Also furnished with polarity indicating cord. The receivers are highly polished aluminum and hard rubber, the conducting cords black and the headband is nickel finish, with olive green khaki covering. The receivers are very efficient and neat in appearance. Shipping weight, 1½ pounds.

6A9603—Brandes Superior Type Head Phones. Per pair **$6.96**

6A9604—Brandes Navy Type Head Phones. Per pair **$12.20**

Baldwin Head Phones.

Baldwin Mica Diaphragm Telephones are used extensively by the Bureau of Standards, U. S. Army and Navy and also by commercial radio companies. The mica diaphragm used makes the receiver more sensitive than any metal diaphragm type of telephone. The outstanding features in the construction and operation of the Baldwin receivers may be summed up briefly as follows:

1. The small armature is pivoted and designed to act as a fulcrum when connected to the diaphragm by a small link. There is no tension or springing of metal as in ordinary receivers.
2. Four pole pieces of single solenoid act upon both sides of a lightly balanced armature.
3. The force is concentrated at the exact center of a sensitive mica diaphragm (identically the same as in all high grade phonograph reproducers).

Fitted with a spring steel headband which is covered with woven cotton tubing. Has heavy mercerized cord. Shipping weight, 1½ pounds.

6A9531—Baldwin Improved Head Phones, Type E. Per pair **$11.80**

Frost Head Phones.

High grade and popular phones at a price within the reach of all. These phones can be relied upon to be sensitive, and tests show that they can be used to good advantage in loud speakers. The resistance is of the double magnet type, and the metal diaphragm is carefully adjusted in relation to the magnets. The workmanship is thoroughly tested after each step in construction, so as to insure most sensitive results. The phones are fitted with an Army-Navy style headband, covered with heavy webbing so as to give most comfort. Also a 6-foot connecting cord with round tip terminals. Shipping weight, 1½ pounds.

6A9211—Frost Head Phones. 2,000 ohms. Per pair **$3.60**

6A9212—Frost Head Phones. 3,000 ohms. Per pair **$4.30**

Audiotron Detector and Amplifier Tubes

$4.60 — E. J. Cunningham — $6.15

Amateurs' Favorite Since 1915

What the C-300 Tube Is.

This type of Audiotron tube supersedes the tubular type which has been most popular with the amateur since 1915. It incorporates the combined properties of the old style tube, but is superior to it in that it embodies the latest development in vacuum tube manufacture. These tubes have been subjected to extensive laboratory and operating tests and have been found to be uniform in operation and extremely sensitive.

How C-300 Is Made.

An entirely new method is used in the manufacture of type C-300. With an internal structure from which all occluded gases can be removed, the evacuation is carried to a high degree. After this a definite pressure of inert non-occluded gas is admitted, and this process is perfectly controlled. The type C-300 tube possesses a nearly perfect uniformity in plate voltage, signal audibility and sensitiveness, which is sustained throughout the operating life.

Type C-300 as an Amplifier.

This tube is a remarkable tone frequency amplifier, using the full voltage of 22½ volts on the plate. Used as an oscillator for regenerative amplification and C. W. reception, it gives maximum signal audibility, and oscillations are more stable and uniform. Best results are obtained as an amplifier when used with 6A9503 Amplifying Transformer.

Specifications.

Grid and Plate: Pure nickel, electrically welded to supports at each side, insuring perfect alignment of the electrodes and maximum mechanical strength.

Filament: Wire drawn tungsten, hairpin type, supported at three points.

Bulb: Pear shape clear glass; maximum diameter, 1¾ inches; maximum over all height, including base, 4⅝ inches.

Base: Standard four-prong type with brass shell.

Filament Current: 1 to 1.1 amperes at not over 5.4 volts.

Plate Voltage: 18 to 22½ volts for detector, 22½ volts for amplification.

Grid Leak: ½ megohm (approximate).

Grid Condenser: .00025 MFD.

Shipping weight, 1 pound.

6A9650—Audiotron Detector Tube $4.60

Radiotron Detector Tube—Type UV-200.

Has same specifications as 6A9650, shown above. Shipping weight, 1 pound.

6A9438—Radiotron Detector Tube $4.60

Requirements of the Amplifier Tube.

The performance of a vacuum tube is largely dependent on the circuit in which the tube is used. For radio frequency and power amplification, especially in complex and multi-stage circuits, the amplifier tube should possess such rigid characteristics that no A or B battery adjustment is necessary and amplification results without distortion. All gas action must be eliminated so as to obtain a pure electron current from filament to plate.

Amplification Increases Receiving Range.

With limited power at 200 meters the amateur working range depends entirely on the sensitiveness and efficiency of the receiving apparatus. The vacuum tube as an amplifier has revolutionized radio communication by making it possible to increase the strength and therefore the audibility of the received signal any number of times desired. Eight and ten-step amplifiers were used by our army in France. Many amateurs are now using one and two-step amplifiers, and some as many as five steps. A wireless phone with a normal range of 10 miles can be operated over a distance of 50 miles by the use of a two-step amplifier. The Cascade Amplifier is today recognized as an essential part of an efficient radio station.

C-301 as a Detector.

C-301 can be used as a detector with a grid condenser of .001 MFD, shunted by a grid leak of ½ to 2 megohms. As a detector it does not require close adjustment of filament current and plate potential and does not possess the same detector sensitiveness that C-300 does.

Specifications.

Grid and Plate: Pure nickel, electrically welded to supports at each side, insuring perfect alignment of the electrodes and maximum mechanical strength.

Filament: Wire drawn tungsten, hairpin type, supported at three points.

Bulb: Pear shape clear glass; maximum diameter, 1¾ inches; maximum over all height, including base, 4⅝ inches.

Base: Standard four-prong type with brass shell.

Filament Current: 1 ampere plus or minus 6 per cent at not over 6 volts.

Plate Voltage: 40 to 100 volts.

Grid Leak: ½ to 2 megohms as a detector.

Grid Condenser: .001 MFD as a detector.

Impedance: At 0 volts grid; 15,000 to 25,000 ohms at 40 volts plate; 10,000 to 15,000 ohms at 100 volts plate.

Amplification Constant: 6.5 to 8 at 40 volts plate; 8 to 10 at 100 volts plate.

Shipping weight, 1 pound.

6A9651—Audiotron Amplifier Tube $6.15

Radiotron Amplifier Tube—Type UV-201.

Has same specifications as 6A9651, shown above. Requires 40 volts for plate and 6-volt filament battery with rheostat. Shipping weight, 1 pound.

6A9540—Radiotron Amplifier Tube $6.15

Power Tubes for C. W. Telegraphy and Telephony.

Cunningham Audiotron Power Tubes.

These tubes are the latest product of the Research Laboratory of the General Electric Company, and are built to rigid specifications. Prices and specifications are as follows:

	Model	Output Conservative Rating	Filament Amps.	Filament Volts	Plate Voltage		Shipping Weight
6A9534	C-302	5 watts	2.35	7.5	350-400	$ 7.95	1 lb.
6A9535	C-303	50 watts	6.5	10.	1000	29.80	3 lbs.
6A9536	C-304	250 watts	15.	12.	4000 Max.	109.00	10 lbs.

Radiotron Power Tubes.

These tubes are the latest product of the Radio Corporation and are used extensively in experimental C. W. stations. Made in three sizes to cover all requirements. Prices and specifications are as follows:

	Model	Output Conservative Rating	Filament Amps.	Filament Volts	Plate Voltage		Shipping Weight
6A9537	UV-202	5 watts	2.35	7.5	350-400	$ 7.95	1 lb.
6A9538	UV-203	50 watts	6.5	10.	1000	29.80	3 lbs.
6A9539	UV-204	250 watts	15.	12.	4000	109.00	10 lbs.

C-302 and UV-202 are mounted in the standard four-prong receiving tube base. The larger tubes have special bases.

Notice to Purchasers of Vacuum Tubes.

The operating efficiency, hours of service, or degree of sensitiveness of the vacuum tubes shown on this page are not guaranteed by the manufacturer. Every effort has been made to produce a product which will operate economically and satisfactorily. Vacuum tubes should be handled and operated by experienced operators or in the presence of an experienced operator. We recommend that vacuum tubes be ordered separately for parcel post shipment. Five cents should be included to cover insurance. In accordance with the manufacturer's policy, we cannot allow claims for short life, defective operation, etc.

Vacuum Tube Rheostats

Panel Mounting Rheostat. Improved Model.

METEOR

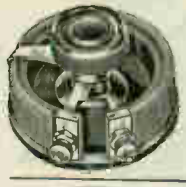
Our Own Trade Mark. Registered in the United States Patent Office.

Not a makeshift, but a specially made rheostat for back panel mounting only. This instrument has long been needed. It is not to be confused with the ordinary porcelain base rheostat made over for back mounting. Resistance is special non-corrosive alloy, mounted around Bakelite insulation, ¼ inch thick, 2¾ inches in diameter, and will not creep. Mounted on panel as shown in center illustration. The bolt is 1¼ inches long, which permits mounting on a panel of any thickness from ⅛ inch up. Knob is molded Bakelite, 1¾ inches in diameter. Pointer and bearing collar are heavily nickel plated. Contact to the resistance is made by laminated lever which is remarkably smooth running. Gives unusually close filament temperature adjustment on either 4 or 6-volt vacuum tubes, and is suitable for filament control of 5-watt transmitter tubes. This rheostat must be seen and used to be appreciated. Resistance, 2 ohms; capacity, 3 amperes continually. Shipping weight, 8 ounces.

Mounted on Panel.

6A9422—Panel Mounting Rheostat, complete with bushings and screws **$1.34**

G-R Rheostat, Portable Type.



The resistance of this instrument is approximately 7 ohms and it has a current carrying capacity of 1.5 amperes. Ruggedness of construction and smoothness of operation make this rheostat especially adapted to laboratory and radio use. It is particularly designed for use in regulating the filament current in vacuum tube circuits. Over all dimensions, 3 inches in diameter by 2½ inches high. Shipping weight, 10 ounces.

6A9653—G-R Rheostat, portable type **$2.35**

Porcelain Base Rheostat, New Model.

Used to regulate battery current for filament control. Can also be used with small motors, miniature lamps, etc. Coil will not slip out of place. Resistance, 10 ohms; capacity, 3 amperes continually; 4 inches in diameter, 1⅜₁₆ inch thick. Shipping weight, 1½ pounds.

6A9277—Porcelain Base Rheostat **69c**

Special 5-Watt Power Tube Rheostat.

Panel mounting type, designed for use with 5-watt power tube, and may be used with any receiving tube. Rheostat frame is turned from sheet formica. Resistance unit is made from high grade alloy wire, fitted with laminated lever which rotates from maximum to "OFF" position. Capacity, 6 ohms, 3 amperes. Dial is our special rheostat dial shown at the right. Complete with panel indicating point. Shipping weight, 8 ounces.

6A9679 ..... **$1.64**

National Rheostat Type "R."

One of the best known power rheostats on the market. This model is particularly suited for various uses in the radio field. Over all diameter is 3¼ inches; height at top of case, 2⅞ inches; to top of front mounted handle, 3⅞ inches; for use on any voltage up to 125 and may be used on other voltages, provided the current capacities are not exceeded. The large number of steps gives fine regulation with many points of control. Fitted with latest improved roller contact. Portable, or front of panel type, fitted with porcelain base. Back of panel, or panel mounting type, comes complete with mounting screws, etc. Specifications are as follows: Maximum amperage, first step, 2.5; capacity in amperage with entire resistance in circuit, 1.95; resistance, 12.5 ohms; number of steps, 97. Shipping weight, each, 2 pounds.

6A9680—National Rheostat for front of panel or portable use **$3.95**

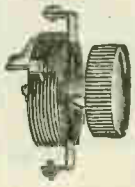
6A9681—National Rheostat for back of panel mounting. **4.75**

Junior Panel Rheostat.

Junior Panel Rheostat is similar in design to 6A9422. The resistance unit is mounted on a Bakelite disc 2 inches in diameter; 4 ohms resistance with a carrying capacity of 1½ amperes. It is especially designed for filament control of vacuum tubes operating on 4 or 6 volts. The resistance unit is a non-corrosive alloy and can be readily renewed. All metal parts are nickel plated and those showing in front of panel are bright polished nickel. An "off" position is provided, obviating the necessity of a filament switch. Furnished complete with molded 1¾-inch Bakelite knob, shaft, nickel plated pointer and supporting screw. Detector tubes must be carefully adjusted for maximum sensitiveness and signal audibility. This rheostat will increase your detector sensitiveness because of its ease of adjustment and the close control it provides. The large number of these rheostats now in use testify to their value and quality.

6A9371—Junior Panel Rheostat, 4 ohms resistance. Shipping weight, 5 ounces. **77c**

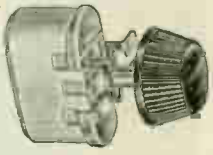
Micrometer Vernier Rheostat.



New type perfect filament control. Designed for use with all standard tubes and constructed to give finest filament adjustment. The rheostat is well made in every detail, has high grade resistance wire, mounted in solid fiber frame, contact is made by brass slider, constructed so as to eliminate all wearing effects and give a good adjustment at all times. This rheostat has new shut off feature which provides for instant break in circuit and does away with unnecessary turning. Fitted with 1¾-inch Bakelite knob with ⅜₂-inch bushing; all parts are nickel plated. The rheostat has a current capacity of 2.2 amperes and total resistance of 8 ohms. Furnished with two screws for panel mounting. Shipping weight, 8 oz.

6A9276 ..... **$1.00**

Bradleystat Filament Control.



This rheostat may be used where the finest filament adjustment is necessary. The resistance is controlled by varying the contact pressure of graphite discs and the screw adjustment permits a critical current regulation. The rheostat is of very strong construction and will handle a 1½ to 2½-ampere current to detector, amplifier or 5-watt power tube. Porcelain case encloses graphite discs, shaft fitted with Bakelite knob. Shipping weight, 1 pound.

6A9275—Bradleystat Filament Control. **$1.55**

Nichrome-Asbestos Rheostat.

A high grade panel mounting rheostat. Resistance element made from "Nichrome" wire and is mounted on a block of asbestos compound, turned from ½-inch sheet. Diameter of block, 3 inches. Made to fit directly against back of panel and held in place by ring nut. Contact lever made of phosphor bronze laminations and is ¾ inch wide, 1¾-inch radius; very smooth running and provided with "off" position; resistance, 6 ohms. Shipping wt., 1 lb.

6A9654—Nichrome-Asbestos Rheostat **$1.85**

Audiotron Potentiometer. New Type. Metal Contact.

6A9657 Potentiometer Unit.

6A9656 Lever Switch, shown with 6A9657 Potentiometer.

Detector tubes for maximum sensitiveness and signal audibility require careful adjustment of both A and B battery voltage. Single cell variation of the plate voltage is generally not sufficient. The ideal B battery control is by potentiometer, but in the past that form of control has shortened the B battery life. The electrical contact between graphite and carbon is also uncertain and variable.

In tube operation the A and B batteries are in series and the plate voltage can therefore be adjusted over a 6-volt range by a potentiometer across the filament of A battery. The new gas content detector tubes, such as Cunningham Type C-300, always have a sensitive range between 18 and 22½ volts. On other types of tubes the sensitive point will lie within a 6-volt range, and by the use of the proper fixed B battery voltage, the Audiotron Potentiometer can be used to adjust the plate voltage.

The resistance unit is molded from a special material and is not brittle like graphite or carbon. Eleven nickeled metal inserts are molded into the resistance material, permitting the use of a metal contact lever, and therefore perfect metal to metal electrical contact. The resistance is approximately 200 ohms and is connected directly across the filament battery. No depreciation, therefore, of the B battery results. With a 6-volt battery this unit provides ⅒ of a volt adjustment. Shipping weight, 5 ounces.

6A9657—Audiotron Potentiometer Unit, complete with panel mounting screws **70c**

6A9656—Rotary Lever Switch, specially made for use with 6A9657 Potentiometer. 1-inch radius. Polished nickel plated finish. Complete with coil spring, soldering lug and nuts. Molded knob. Shipping weight, 5 ounces. **43c**

Audiotron Bakelite Molded Variometer and 180° Variocoupler

Audiotron Bakelite Molded Variometer.

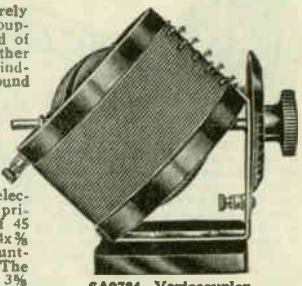
6A9781
Bakelite Variometer.

The stator is molded in two pieces from genuine Bakelite; primary winding is molded on the inside, insuring an absolutely rigid stator winding. The rotor is molded from Bakelite and this form of construction permits of minimum clearance between the rotor and stator windings. The maximum diameter of the rotor is 3¼ inches and the shaft is of brass, 5/16 inch in diameter. Binding post terminals are provided and brass supports permit of ready table mounting. The base at the front end is drilled and tapped to permit panel mounting. Only two screws are required. The bearings are of brass, fitted with a spring, insuring perfect contact. The over all height on table mounting is 5¾ inches and the over all length, except the protruding end of the shaft, is 5¼ inches. The total width of the variometer across the stator is 3 inches. This is an extremely large variometer, permitting the use of low resistance windings and the wave length is approximately 175 to 500 meters. This variometer is not to be compared with the small wooden types now on the market. Shipping weight, 3 pounds.

6A9781—Audiotron Variometer **$5.65**

6A9782—Audiotron Variometer with 6A9646 Knob and Dial. Shipping weight, 3 pounds..... **$6.20**

Audiotron Variocoupler.



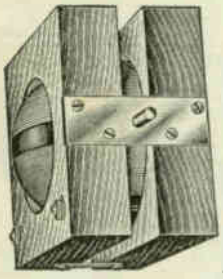
6A9784—Variocoupler.

This variocoupler has an entirely new feature; namely, that the coupling range is 180 degrees instead of 90 degrees (as is the case with other variocouplers). The primary winding is green silk covered wire wound on a fiber tube, 4 inches in diameter by 2¾ inches deep. Ten taps are provided. The secondary rotor is molded from Bakelite and the bearing construction, of special design, is extremely rigid and is reinforced with spring tension so as to insure perfect electrical contact at all times. The primary is mounted at an angle of 45 degrees on a wooden base 3x4x⅝ inch and is, therefore, readily mounted on either a table or panel. The shaft is 5/16 inch and the rotor is 3⅝ inches maximum diameter. The over all height, including base, is 5¼ inches, and the total width, not including shaft extension, is 4⅞ inches. This coupler will tune over a range of 150 to 500 meters with secondary variometer and with secondary condenser of .001 MFD, will tune to 700 meters. Shpg.wt., 3 lbs.

6A9784—Audiotron Variocoupler..... **$4.15**

6A9785—Audiotron Variocoupler with 6A9646 Knob and Dial. Shipping weight, 3 pounds **$4.72**

Variometer.



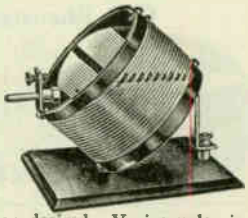
Wood parts are of thoroughly kiln dried stock, accurately turned and carefully finished. Stator and rotor windings are secured with special cement, which is colorless, extremely adhesive and has NO CAPACITY EFFECT.

BEARING PARTS are of brass, 1 inch in width, sunken flush with wood forms, allowing variometers to be mounted flat on back of panel without spacers, and also insuring rigidity and permanency of spacing between rotor and stator windings.

Special construction of the bearing shaft and contactors with phosphor bronze spring washer prevent loosening of the shaft and insure perfect electrical contact at all times. Stator blocks measure 4¾x4¾ inches. Shipping weight, 3 pounds.

6A9684—Variometer **$3.38**

Variocoupler.



Variocoupler winding is made over formica tubing 3½ inches in diameter, wire having raised points for taps.

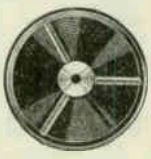
BEARING SHAFTS with spacing shoulders turned from the shaft itself are used, assuring good contacts between rotor windings and bearing standards without "pig-tailing."

BEARING STANDARDS are of flat brass stock, so made that variocoupler may be mounted on back of panel or directly on table, as desired. Variocoupler is completely assembled. Primary wire is No. 20-gauge and rotor wire is No. 22-gauge. Shipping weight, 2 pounds.

6A9685—Variocoupler **$3.42**

High Grade Indicating Dials

Beveled Bakelite Dial—Unit Molded—Clockwise Scale—Ground Edge—Bakelite Knob.



This 3-inch beveled edge dial is molded from genuine black Bakelite and will not warp or discolor. It is not brittle like composition. The surface is highly polished and will add to the appearance of any panel. The engraving is filled with white enamel and the 100-division scale reads from right to left for clockwise rotation.

The edge of each dial is ground true. The knob is molded Bakelite, 1⅝ inches in diameter, and is fastened to the dial by a special nickel plated brass bushing, as shown in the illustration. The bushing is drilled for 5/16-inch shaft and the set screw passes through both knob and bushing. The construction insures an absolutely true running dial. Back of dial is recessed and has molded-in ribs, as shown at the right. Shipping weight, either style, 4 ounces.

6A9646—3-Inch Bakelite Dial with knob and bushing, 5/16 in.. **57c**
6A9649—Same as 6A9646, with ¼-inch bushing..... **57c**

Composition Dial.

This dial is practically the same in general appearance as the high grade dial shown above, but is of composition. Supplied with bushing and set screw. Will fit either 5/16 or ¼-inch shaft. Shpg. wt., 6 oz.

6A9312—Composition Dial **26c**

Beveled Metal Dials—Polished Nickel Plated.

These dials are the same throughout as dials shown above at the right, except that edges are neatly beveled. Shipping weight, 5 ounces.

6A9789 — Same as 6A9648, except beveled edge **58c**

6A9790 — Same as 6A9787, except beveled edge **58c**

6A9791 — Same as 6A9788, except beveled edge **58c**

6A9792 — Same as 6A9682, except beveled edge **58c**

6A9789

High Grade Medal Dials With Bakelite Knobs.

6A9648

6A9787

6A9788

6A9682

Condenser and Variocoupler Dials.

Made of brass, satin nickel finish, with scales as illustrated. Dials rotate clockwise and are 2¼ inches in diameter. Each fitted with high grade black molded knob with knurled edge. Drilled for 5/16-inch rod and fitted with set screw. These dials are very pleasing in appearance and are specially suited for use with portable variable condensers, small variometers, etc. Shipping weight, each, 5 ounces.

6A9648—Metal Dial with Knob. Scale, 0 to 100..... **51c**

6A9787—Metal Dial with Knob. Scale, 0 to 50..... **51c**

Special Rheostat Dials.

For use with any size rheostat. Consist of flat metal dials made of brass with satin nickel finish. Fitted with high grade black molded knob with knurled edge. Drilled for 5/16-inch rod and fitted with set screws. Dials have graduations and lettering as illustrated. Shipping weight, each, 5 ounces.

6A9788 — Rheostat Dial. Scale, off, 1 to 10..... **52c**

6A9682 — Rheostat Dial with word "Increase"..... **52c**

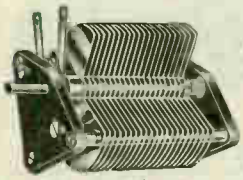
Dial Indicator Point.

For use with the above condensers; polished nickel plated brass with heavy center line, easily seen; fitted with one nut and suitable for use on all panels up to ¼ inch thick; can be used with any dial.

6A9678—Shipping weight, 1 ounce. Each, **5c**; ½ dozen. **27c**

Variable and Fixed Condensers

Spring Balanced—Heavy Plates—Formica Insulation. Reduced Prices.



Front and side view of panel mounting styles, 6A9298 and 6A9299. For ⅛, 3/16 or ¼-inch panels.

Heavy material used for making plates—No. 22 gauge hard sheet aluminum is used for all plates. This feature gives such stability that the rotary plates will not bend or become displaced with regard to the stationary plates. The capacity, therefore, cannot change and the condenser cannot get out of calibration. This construction is quite different from the ordinary condenser, using No. 26 gauge aluminum for plates, which is only .015 inch in thickness, while No. 22 gauge measures full .026 inch in thickness.

Oil Containers—6A9292 and 6A9294, portable type, are mounted in oiltight containers made from sheet brass, beautifully nickel plated and polished. Ground wire may be soldered to bottom of case. Tops are turned from sheet formica. Engraved 0-100 degree metal dial is used with indicating arrow engraved in top. Bakelite knob is used on dials. Binding posts are nickel plated and polished.

Spring Balance—The finest adjustment may be had by means of a coil spring placed against end block which holds the rotary plates in any position, making a balanced condenser. This feature is incorporated in both styles and makes the panel mounting condenser efficient in any position. **Spacers**—All spacers are turned from brass stock and are gauged before being used. No "poured" spacers are used.

Panel Mounting.

These condensers must be seen and used to be appreciated.

We list them in four sizes, suitable for all classes of radio telegraph and telephone work.

Panel mounting, 43 plate; 21 rotary, 22 stationary. Capacity, .001 MFD. Complete with mounting screws for panel. Shipping weight, 2¼ pounds.

6A9298 ..... **$2.75**

Panel mounting, 21 plate; 10 rotary, 11 stationary. Capacity, .0005 MFD. Complete with mounting screws for panel. Shipping weight, 1¾ pounds.

6A9299 ..... **$2.15**

Panel mounting, 11 plate; 5 rotary, 6 stationary. Complete with screws for mounting. Shipping weight, 1½ pounds.

6A9300 ..... **$1.83**

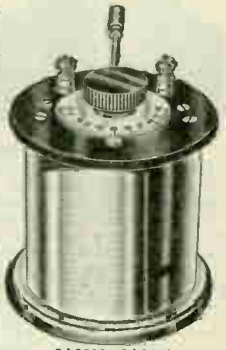
Panel mounting, 3 plate; 1 rotary, 2 stationary. Complete with screws. Shipping weight, 1 pound.

6A9305 ..... **$1.52**

Portable Type.

Portable type, 43 plate; 21 rotary, 22 stationary. Mounted in oiltight sheet brass case, polished nickel plated finish. Size of case, 3¾ inches high; 4¼ inches wide at base; 3 1/16 inches at top. Capacity, .001 MFD. 0-100 degree satin nickel plated scale, black letters, Bakelite knob. Height over all, 4½ inches. Shipping weight, 3 pounds.

6A9292 ..... **$6.50**



6A9292—6A9294
Portable style, in highly polished nickel plated case, oiltight.

Portable type, 21 plate; 10 rotary, 11 stationary. Mounted in oiltight sheet brass case, polished nickel plated finish. Size of case, 2½ inches high; 4¼ inches wide at base; 3 1/16 inches at top. Capacity, .0005 MFD. 0-100 degree satin nickel plated scale. Bakelite knob. Height over all, 3½ inches. Shipping weight, 2 pounds.

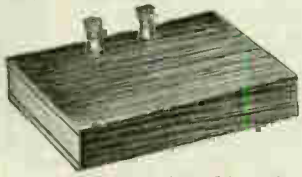
6A9294 ..... **$5.30**

Mica Grid Condenser and Grid Leak Combined.

Base and top made from formica sheet, base is 2½x1x⅛ inch, top is 1½x1x⅛ inch; grained finish. Best India mica is used; size, 1½x1x.003 inch. Active copper strip measures 1¼x.005x½ inch. The unit is held in place by means of two screws, as shown. Screws also act as binding posts and are fitted with molded knobs. Condenser capacity is .00025 MFD. Adjustable grid leak of about 2 megohms, made of gray fiber. This unit will be found very convenient for panel mounting, as it is very compact. Shipping weight, 4 ounces.

6A9658—Mica Grid Condenser and Grid Leak Combined **52c**

Pony Glass Plate Condenser.



We recommend this condenser to all amateurs desiring a condenser at a low price. Many amateurs have never used a secondary condenser with their small coils, as it was hard to get one of the proper capacity at a reasonable price. Condenser consists of special glass plates, coated with tin foil and formed into a compact unit, encased in a neat dark stained case with binding posts. Capacity is .0015 MF. tested to 15,000 volts. We recommend six in series parallel for a 1-K.W. 200-meter set. One condenser is the right capacity for spark coils up to and including the 2-inch size. Shipping weight, 2½ pounds.

6A9372—Pony Glass Plate Condenser **$1.65**

Condenser Unit Only for 6A9372 Condenser.

Consists of the complete condenser unit, less box. Suitable for mounting in rack, behind panel, in oil, etc. Used extensively by amateurs in making up transmitter units. Shipping weight, 2 pounds.

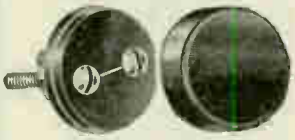
6A9625—Interior only **65c**

Tubular Fixed Condenser.

Can be used with great success in the receiving circuit. A high grade fixed condenser. The base and top are made of hard rubber composition and are mounted on a nickel plated tube. Capacity is .003 MFD. Shipping weight, 10 ounces.

6A9400—Tubular Fixed Condenser **90c**

Audiotron Variable Grid Leak.



A grid leak is necessary in the operation of vacuum tube detectors and amplifiers to permit the negative charge on the grid to discharge. A variable grid leak is most desirable, as the necessary resistance may vary from ½ to 5 megohms. The base of the Audiotron Grid Leak is molded from Bakelite and a pencil mark between the contact studs provides the variable resistance or leak. The metal cap is finished in black celluloid enamel and the studs are provided with washers and nuts for panel mounting. 6A9660 Grid Condenser will fit directly on screws. Shipping wt., 2 oz.

6A9659—Audiotron Variable Grid Leak **30c**

Variable Condenser Parts.

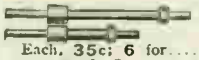
Plates.

Plates are made from sheet aluminum .026 inch thick, which is much heavier than used in the ordinary variable condenser. Plates are carefully inspected to insure a perfectly flat surface and can be assembled into a very rugged condenser of any desired capacity. Stationary plate measures 3¼ inches in diameter; 1 11/32-inch radius. Rotary plate measures 2½ inches in diameter; 1¼-inch radius.

6A9597—Aluminum Stationary Plate. Shipping weight, each, 2 oz. Each, 4c; 10 for 30c; 30 for 55c; 50 for 95c; 100 for..$1.60

6A9598—Aluminum Rotary Plate. Shipping weight, each, 2 oz. Each, 3c; 10 for 27c; 30 for 55c; 50 for 95c; 100 for..$1.60

Steel Spindle.



6A9758—Accurately turned from hard steel rod, 43 plate size, complete with brass nut. Shipping weight, 8 ounces.

Each, 35c; 6 for **$2.00**

6A9759—Same as 6A9758, except 21 plate size. Each ..... **.30**

6 for **1.70**

Stationary Studs.

Made entirely from brass, complete with regulating nuts and screws. Shipping weight, each, 3 oz.

6A9760—43 plate size. Each, 20c; 6 for **$1.08**

6A9761—21 plate size. Each, 18c; 6 for ..... **.96**

Gauged Plate Spacers.

◎ ● Turned from brass stock, each spacer gauged for accuracy. Shipping weight, dozen, 4 ounces.

6A9756—Large size. 7/16x.08 in. thick. Per doz., 24c; 100, $1.75

6A9757—Small size. 7/32x.08 in. thick. Per doz., 15c; 100, 1.00

Junior Fixed Condenser.

This unit has a capacity of .0016 MFD., and is mounted in a small black molded case with nickel plated binding screws. This type of condenser is very popular and is an ideal "stopping" condenser for use across the phones, etc. Measures 2¼ inches in diameter. Shipping weight, 8 ounces.

6A9411—Junior Fixed Condenser in case **64c**

Fixed Condenser.

Made of hard rubber composition with nickeled binding posts. A neat little condenser which will increase the efficiency of the station. It is often used to shunt across the receivers. Terminals are fitted with special cord tip clamps. Size, over all, 2⅝x1½ inches. Shipping weight, 5 ounces.

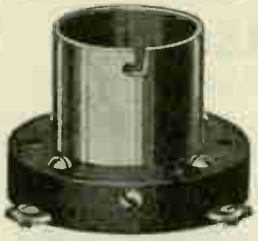
6A9264—Fixed Condenser **65c**

Audiotron Fixed Grid Condenser.

The conductors are stamped from copper sheet and insulated with paraffin paper. The entire unit is encased and impregnated and the terminals are spaced so as to mount on the back of the panel directly on the 6A9659 Grid Leak. Capacity is .00025 MFD., the correct value for the type C-300 Gas Content Detector. Shipping weight, 1 ounce.

6A9660—Audiotron Fixed Grid Condenser **15c**

Vacuum Tube Sockets



G. R. Tube Socket.

A very high grade socket, adapted for use with either power tubes or receiving tubes. The outstanding features of this socket are the positive contact springs and its unusually substantial and attractive appearance. The base is of molded Bakelite, while the tube receptacle and terminal screws are of brass with a polished nickel finish. The spring contacts are firmly inserted in the Bakelite base and held in position by threaded screws, thus insuring a good contact at all times. This socket may be used with any of the standard American four-prong tubes and transmitting tubes may be used by simply changing two screws. Two holes are provided in the base for table mounting. Shipping weight, 8 ounces.

6A9655
G. R. Tube Socket.....**$1.15**

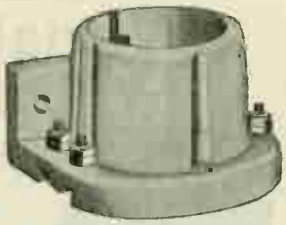
All Bakelite Molded Tube Socket for Panel or Table Mounting.

Elimination of the usual metal shell in the construction of the tube receptacle eliminates the ground hum and noises in operation, so frequently encountered in the operation of amplifiers.

This receptacle is designed for all standard four-prong base vacuum tubes. The entire socket is molded from black Bakelite, giving a highly polished surface, and the bayonet lock is reinforced with metal insert. The base of the socket is of sufficient depth to allow clearances between contact fingers and surface when used for table mounting.

The die molding insures absolute uniformity and accuracy of alignment. The contact fingers are nickel plated spring brass. Nickel plated binding post terminals are marked. Screws are provided for panel mounting. When mounted on panel the tube is set vertically, insuring maximum filament life. Each receptacle is tested. Base is 2¼x2¾ inches and the height is 1½ inches. Shipping weight, 8 oz.

6A9542—Bakelite Molded Tube Socket—Panel or Table Mounting **77c**



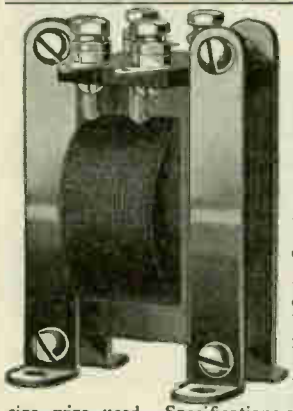
Porcelain Socket.

Made in one piece of porcelain, the same material that is used in the base of the vacuum tube to insulate the four prongs, thus recognizing the high dielectric value of porcelain for this purpose. The contacts are of special strong material, plated to eliminate corrosion of the contacts. The wires can be soldered to the contact posts without fear of melting the material of which the socket is made.

Socket is designed to prevent short circuiting the high voltage B battery current across the filament contacts, thus eliminating the danger of burning out the filaments through carelessly inserting the tube. This feature alone commends it for use in all kinds of apparatus. Will fit any standard four-prong tube base. Shipping weight, 8 ounces.

6A9533
Porcelain Socket.....**43c**

Transformers



Special Amplifying Transformer for New Cunningham Audiotron Type C-301 and Radiotron Type U. V-201 Tubes.

Especially designed for the new Audiotron and Radiotron Amplifier tubes. The result of exhaustive tests of every kind. Better results are obtained by using this transformer, as it is designed for these tubes. Other transformers were designed for general use before these new tubes were placed on the market. The most important factor entering into the construction of a transformer is the size wire used. Specifications are as follows:

Primary Winding—3,900 turns No. 44 B. & S. gauge enameled wire.
Primary Resistance—1,800 ohms (approximately).
Secondary Winding—12,000 turns No. 44 B. & S. gauge enameled wire.
Secondary Resistance—8,500 ohms (approximately).
Voltage Transformation Ratio—3.1.

Construction—High grade in every detail; cores are made from .007 silicon steel, which is the finest gauge made. Insulation is varnished cambric and silk. Method of winding cuts down distributed capacity to a minimum, and reduces energy loss in transformer.

Frame—Heavy brass, stamped; brushed finish. Primary and secondary terminals mounted on Bakelite on top of transformer.

Over All Size—3 inches high; 1⅞ inches wide.

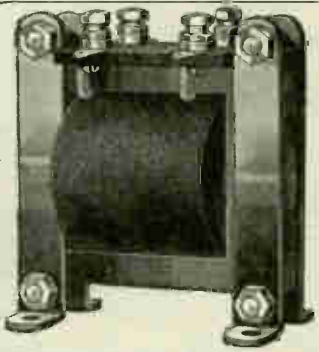
6A9503—Special Amplifying Transformer. Shipping weight, 1¼ pounds **$5.10**

6A9504—Coil and Core only. Shipping weight, 1 pound....**4.33**

Radio Frequency Transformer.

This transformer is designed for use in radio frequency circuits. The transformer is mounted in a highly nickel plated brass case, so constructed that it may be mounted in any standard tube socket. This transformer has given satisfactory results using as high as four stages of amplification. Efficient on wave lengths from 150 to 550 meters. Shipping weight, 1 pound.

6A9594
Radio Frequency Transformer....**$3.65**



Universal Amplifying Transformer.

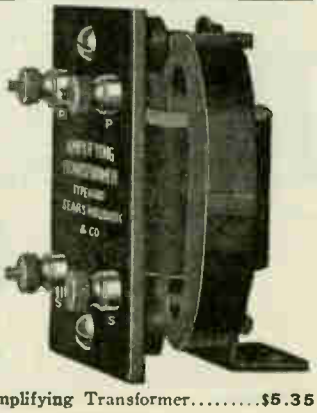
Recent tests show this transformer to give maximum results when using Type C-301 Audiotron Tube as an amplifier. Low impedance.

Designed for use wth any tube on the market, including the new types. This transformer will give excellent results and the experimenter may change bulbs as he desires. High grade construction throughout. Specifications: Primary winding, 4,000 turns No. 40 B. & S. gauge enameled wire. Primary resistance, 900 ohms (approximately). Secondary winding, 15,000 turns No. 40 B. & S. gauge enameled wire. Secondary resistance, about 5,000 ohms (approximately). All insulation is varnished cambric and silk. Binding posts are put on Bakelite top. Cores are made of .007 silicon steel. Frame is heavy brass, stamped; brushed finish.

6A9732—Universal Amplifying Transformer. Shipping weight, 1½ pounds **$3.04**

6A9733—Coil and Core only. Shipping weight, 1 pound....**2.28**

Type A-700 Amplifying Transformer.



This transformer differs in construction from others in the design of the magnetic circuit. Transformer is of the shell type, as shown. It is possible to place two or these transformers in an amplifying unit where they are very close together, without any ill effects, such as howling, which quite often happens in other type transformers, on account of promagnetic coupling between transformers. Primary and secondary terminals are brought out on Bakelite panel, which is nicely finished and engraved. Shipping weight, 1 pound.

6A9602—Type A-700 Amplifying Transformer.....**$5.35**

Radiophone Broadcasting Stations

KDAB	Inter. Ship Corp.	Hog Island, Pa.
KDAH	Davis Pkg. Co	Fairport, Va.
KDEN	Henry Ford	Northville, Mich.
KDEP	Henry Ford	Northville, Mich.
KDGA	Standard Oil Co. of N. J	Tel. Broadcasting Stations—
KDGT	S. W. Wireless Tel. & Tel. Co	Tulsa, Okla.
KDGU	Bethlehem Shipbuilding Corp.	Quincy, Mass.
KDIC	Gen. Pet. Co. of Cal	Ferris Oil Field, Wyo.
KDJ	Geo. H. Taylor	Fall River Mills, Calif.
KDKA	Westinghouse Elec. & Mfg. Co.	East Pittsburgh, Pa.
KDKF	Seamen's Church	New York City
KDLY	Sugarland Indus	Sugarland, Tex.
KDMK	Radio Tel. & Tel. Co.	Fort Worth, Texas
KDN	Leo J. Meyberg	San Francisco, Calif.
KDNT	San Joaquin Light Power Corp.	Bakersfield, Calif.
KDNU	San Joaquin Light Power Corp.	Fresno, Calif.
KDPH	Detroit Edison Co.	Detroit, Mich.
KDPI	Detroit Edison Co.	Superior, Mich.
KDPJ	Detroit Edison Co.	Port Huron, Mich.
KDPM	Westinghouse Elec. Co	Cleveland, Ohio
KDPS	Humble Oil Refining Co.	Baytown, Tex.
KDPT	So. Elec. Co.	San Diego, Calif.
KDPU	Calif. Edison Co.	Cascada, Calif.
KDPV	So. Calif. Edison Co.	Camp 60, Calif.
KDPW	So. Calif. Edison Co.	Camp 61, Calif.
KDQ	Louis Wasmer	Seattle, Wash.
KDQN	Pac. Gas & Elec. Co.	Fall River Valley, Calif.
KDQO	Pac. Gas & Elec. Co.	San Francisco, Calif.
KDQU	Pac. Gas & Elec. Co.	San Francisco, Calif.
KDRO	Beth. Shipbuilding Corp.	San Francisco, Calif.
KDYL	Telegram Publishing Co.	Salt Lake City, Utah
KDYM	Savoy Theater	San Diego, Calif.
KDYN	Great Western Radio Corp.	Redwood City, Calif.
KDYO	Carlson & Simpson	San Deigo, Calif.
KDYP	Howard N. Findlay	Hera, N. J.
KDYQ	Oregon Institute of Technology	Portland, Ore.
KDYR	Pasadena Star News Pub. Co.	Pasadena, Calif.
KDYS	The Tribune	Great Falls, Mont.
KDYU	Herald Publishing Co.	Klamath Falls, Ore.
KDYV	Cope & Cornwell Co.	Salt Lake City, Utah
KDYW	Smith, Hughes & Co.	Phoenix, Ariz.
KDYX	Star Bulletin	Honolulu, Hawaii
KDYY	Rocky Mountain Radio Corp.	Denver, Colo.
KDZA	Arizona Daily Star	Tucson, Ariz.
KDZB	Frank E. Siefert	Bakersfield, Calif.
KDZD	W. R. Mitchell	Los Angeles, Calif.
KDZE	The Rhodes Co.	Seattle, Wash.
KDZF	Automobile Club of So. Calif.	Los Angeles, Calif.
KDZG	Cyrus Pierce & Co.	San Francisco, Calif.
KDZH	Fresno Evening Herald	Fresno, Calif.
KDZI	Electric Supply Co.	Wenatchee, Wash.
KDZJ	Excelsior Radio Co.	Eugene, Ore.
KDZK	Nevada Machinery & Electric Co.	Reno, Nev.
KDZL	Rocky Mountain Radio Corp.	Ogden, Utah
KDZM	E. A. Hollingworth	Centralia, Wash.
KDZN	Newberry Electric Corp.	Los Angeles, Calif.
KDZQ	Mortier Generator Co.	Denver, Colo.
KDZR	Bellingham Publishing Co.	Bellingham, Wash.
KDZT	Seattle Radio Assn.	Seattle, Wash.
KDZU	Western Radio Corp.	Denver, Colo.
KDZW	Claudem W. Gerdes	San Francisco, Calif.
KDZX	Glad Tidings Tabernacle	San Francisco, Calif.
KDZZ	Kinney Bros. & Sipprell	Everett, Wash.
KEA	Adam Lipko	Seldovia, Alaska
KED	Philippine Insular Government	Balabac, P. I.
KEN	Dr. A. E. Banks	San Diego, Calif.
KEO	Philippine Insular Government	Bongao, P. I.
KEV	Philippine Insular Government	Cagayan de Sulu, P. I.
KEW	Philippine Insular Government	Balabac, P. I.
KFAB	Pacific Radiofone Co.	Portland, Ore.
KFAC	Glendale Daily Press	Glendale, Calif.
KFAD	McArthur Bros. Mercantile Co.	Phoenix, Ariz.
KFAE	State College of Wash.	Pullman, Wash.
KFAF	Western Radio Corp.	Denver, Colo.
KFAJ	University of Colorado	Boulder, Colo.
KFAN	The Electric Shop	Moscow, Idaho
KFAP	Standard Publishing Co.	Butte, Mont.
KFAQ	City of San Jose	San Jose, Calif.
KFAR	Studio Lighting Service Co.	Hollywood, Calif.
KFAS	Reno Motor Supply Co.	Reno, Nev.
KFAT	S. T. Donohue	Eugene, Ore.
KFAU	Independent Sch. Dist. of Boise	Boise, Idaho
KFAV	Cooke & Chapman	Vencie, Calif.
KFAW	The Radio Den	Santa Ana, Calif.
KFAY	W. J. Virgin Milling Co.	Central Point, Ore.
KFBA	Ramey & Bryant Radio Co.	Lewiston, Idaho
KFBB	F. A. Buttrey & Co.	Havre, Mont.
KFBC	W. K. Asbill	San Diego, Calif.
KFBD	Clarence V. Welch	Hanford, Calif.
KFBE	Reuben H. Horn	San Luis Obispo, Calif.
KFBF	F. H. Smith (Butte S. of T.)	Butte, Mont.
KFBG	First Presbyterian Church	Tacoma, Wash.
KFBH	Thomas Musical Co.	Marshfield, Ore.
KFBI	Airline Transpn. Co.	Los Angeles, Calif.
KFBJ	Boise Radio Supply Co.	Boise, Idaho
KFBK	Kimball Upson Co.	Sacramento, Calif.
KFBL	Leese Bros.	Everett, Wash.
KFBM	Cook & Foster	Astoria, Ore.
KFBN	Borch Radio Corp.	California (Portable)
KFBQ	Savage Elec. Co.	Prescott, Ariz.
KFBS	Trinidad Elec. Supply Co.	Trinidad, Colo.
KFBV	Clarence O. Ford	Colorado Springs, Colo.
KFCB	Nielsen Radio Supply Co.	Phoenix, Ariz.
KFCC	Auto. Supply Co.	Wallace, Idaho
KFCD	Salem Electric Co.	Salem, Ore.
KFDA	Adler's Music Store	Baker, Ore.
KFEC	Moier Frank Co.	Portland, Ore.
KFC	Northern Radio & Elec. Co.	Seattle, Wash.
KFI	Earle C. Anthony (Inc.)	Los Angeles, Calif.
KFL	Garrison Babcock	Portland, Ore.
KFM	Southern Calif. Edison Co.	Seattle, Wash.
KFR	Airline Transportation Co.	Camp 61-C
KFT	American Tugboat Co.	Los Angeles Calif.
KFU	The Precision Shop	Gridley, Calif.
KFV	Foster Bradbury Radio Store	Yakima, Wash.
KFZ	Doerr Mitchell Electric Co.	Spokane, Wash.
KGA	Tribune Publishing Co	Everett, Wash.
KGB	Wm. A. Mullins Electric Co.	Tacoma, Wash.
KGE	Electric Lighting Supply Co.	Hollywood, Calif.
KGF	Pomona Fixture & Wiring Co.	Pomona, Calif.
KGG	Hallock & Watson Radio Serv.	Portland, Ore.
KGI	R. C. of A.	Oakland, Calif.
KGN	Northwestern Radio Mfg. Co.	Portland, Ore.
KGO	Altadena Radio Laboratory	Altadena, Calif.
KGU	Marion A. Murony	Honolulu, Hawaii
KGW	Oregonian Publishing Co	Portland, Ore.
KGY	St. Martins College, Rev. S. Ruth	Lacey, Wash.
KHD	C. F. Aldrich Marble & G. Co.	Colorado Springs, Colo.
KHJ	C. R. Kieruff & Co.	Los Angeles, Calif.
KHQ	Louis Wasmer	Seattle, Wash.
KII	United Press	Kahuku, Hawaii
KJB	Puget Sound Telephone Co.	San Francisco, Calif.
KJC	Standard Radio Co.	Los Angeles, Calif.
KJJ	The Radio Shop	Sunnyvale, Calif.
KJO	C. O. Gould	Stockton, Calif.
KJR	Vincent I. Kraft	Seattle, Wash.
KJS	Bible Institute of Los Angeles	Los Angeles, Calif.
KLB	J. J. Dunn & Co	Pasadena, Calif.
KLN	Noggle Electric Works	Del Monte, Calif.
KLP	Colin B. Kennedy Co.	Los Altos, Calif.
KLS	Warner Bros	Oakland, Calif.
KLX	Tribune Publishing Co.	Oakland, Calif.
KLZ	Reynolds Radio Co.	Denver, Colo.
KMC	Lindsay Weatherill & Co.	Reedley, Calif.
KMJ	San Joaquin Light & Power Corp.	Fresno, Calif.
KMO	Love Electric Co	Tacoma, Wash.
KNJ	Roswell Public Service Co.	Roswell, New Mexico
KNN	Bullock's	Los Angeles, Calif.
KNR	Beacon Light Co.	Los Angeles Calif.
KNT	North Coast Products Co	Aberdeen, Wash.
KNV	Radio Supply Co.	Los Angeles, Calif.
KNX	Electric Lighting Supply Co.	Los Angeles, Calif.
KOA	Young Men's Christian Assn.	Denver, Colo.
KOB	N. M. Col. Agr. & Mech. Arts	State College, New Mexico
KOE	Spokane Chronicle	Spokane, Wash.
KOG	Western Radio Electric Co.	Los Angeles, Calif.
KOJ	University of Nevada	Reno, Nev.
KON	Holzwasser (Inc.)	San Diego, Calif.
KOP	Detroit Police Department	Detroit, Mich.
KOQ	Modesto Evening News	Modesto, Calif.
KPO	Hale Bros.	San Francisco, Calif.
KQI	University of California	Berkeley, Calif.
KQL	Arno A. Kluge	Los Angeles, Calif.
KQP	Blue Diamond Electric Co.	Hood River, Ore.
KQT	Electric Power & Appliance Co.	Yakima, Wash.
KQV	Doubleday Hill Electric Co.	Pittsburgh, Pa.
KQW	Charles D. Herrold	San Jose, Calif.
KQY	Stubbs Electric Co.	Portland, Ore.
KRE	Maxwell Electric Co.	Berkeley, Calif.
KSC	O. A. Hale & Co.	San Jose, Calif.
KSD	Post Dispatch	St. Louis, Mo.
KSL	The Emporium	San Francisco, Calif.
KSS	Prest & Dean Rad. Rsch. Lab.	Long Beach, Calif.
KTA	Examiner Printing Co	San Francisco, Calif.
KTW	First Presbyterian Church	Seattle, Wash.
KUO	Examiner Printing Co	San Francisco, Calif.
KUS	City Dye Wks. & Laundry Co.	Los Angeles, Calif.
KUY	Coast Radio Co.	El Monte, Calif.
KVQ	J. C. Hobrecht	Sacramento, Calif.
KWG	Portable Wireless Tel. Co.	Stockton, Calif.
KWH	Los Angeles Examiner	Los Angeles, Calif.
KXD	Herald Publishing Co.	Modesto, Calif.
KXS	Braun Corp.	Los Angeles, Calif.
KYF	Thearle Music Co	San Diego, Calif.
KYG	Willard P. Hawley, Jr.	N. Portland, Ore.
KYI	Alfred Harrell	Bakersfield, Calif.
KYJ	Leo. J. Meyberg Co	Los Angeles, Calif.
KYW	Westinghouse Elec. & Mfg. Co	Chicago, Ill.
KYY	The Radio Telephone Shop	San Francisco, Calif.
KZC	Public Mkt. & Mkt. Stores Co.	Seattle, Wash.
KZI	Irving S. Cooper	Los Angeles, Calif.
KZM	Preston D. Allen	Oakland, Calif.
KZN	The Desert News	Salt Lake City, Utah
KZV	Wenatchee Battery & Motor Co.	Wenatchee, Wash.
KZY	Atlantic Pacific Radio Sup. Co.	Oakland, Calif.
WAAB	Times-Picayune	New Orleans, La.
WAAC	Tulane University	New Orleans, La.
WAAD	Ohio Mechanics Institute	Cincinnati, Ohio
WAAE	St. Louis Chamber of Com	St. Louis, Mo.
WAAF	Union Stock Yards & Trans. Co.	Chicago, Ill.
WAAG	Elliott Electric Co	Shreveport, La.
WAAH	Commonwealth Electric Co.	St. Paul, Minn.
WAAI	Sullivan Pond Creek Co	Pike, Kans.
WAAJ	Eastern Radio Institute	Boston, Mass.
WAAK	Gimbel Bros	Milwaukee, Wis.
WAAL	Minn. Trib. & And. Bmsh. Co	Minneapolis, Minn.
WAAM	I. R. Nelson Co.	Newark, N. J.

Radiophone Broadcasting Stations—Continued

WAAN	University of Missouri	Columbia, Mo.
WAAO	Radio Service Co	Charlestown, W. Va.
WAAP	Otto W. Taylor	Wichita, Kans.
WAAQ	New England Motor Sales Co	Greenwich, Conn.
WAAR	Groves Thornton Hardware Co	Huntington, W. Va.
WAAS	Georgia Radio Co	Decatur, Ga.
WAAT	Jersey Review	Jersey City, N. J.
WAAU	H. C. Kuser	Philadelphia, Pa.
WAAV	Athens Radio Co	Athens, Ohio
WAAW	Omaha Grain Exchange	Omaha, Neb.
WAAX	Radio Service Corp	Crafton, Pa.
WAAY	Yahrling Rayner Piano Co	Youngstown, Ohio.
WAAZ	Hollister Miller Motor Co	Emporia, Kans.
WAH	Midland Refining Co	El Dorado, Kans.
WBAA	Purdue University	West Lafayette, Ind.
WBAB	Andrew J. Potter	Syracuse, N. Y.
WBAD	Sterling Electric Co	Minneapolis, Minn.
WBAE	Bradley Polytechnic Institute	Peoria, Ill.
WBAF	Fred M. Middleton	Moorestown, Ohio
WBAG	Diamond State Fibre Co	Bridgeport, Pa.
WBAH	The Dayton Co	Minneapolis, Minn.
WBAJ	Marshall Gerken Co	Toledo, Ohio
WBAM	I. B. Rennyson	New Orleans, La.
WBAN	Wireless Phone Corporation	Patterson, N. J.
WBAO	James Milliken University	Decatur, Ill.
WBAP	Worthiam Carter Publishing Co	Fort Worth, Tex.
WBAQ	Myron L. Harmon	South Bend, Ind.
WBAR	Hamilton Oil Corp	Orange, Tex.
WBAS	Hamilton Oil Corp	Orange Field, Tex.
WBAT	Hamilton Oil Corp	Tulsa, Okla.
WBAU	Republican Publishing Co	Hamilton, Ohio
WBAV	Erner & Hopkins Co	Columbus, Ohio
WBAW	Marietta College	Marietta, Ohio
WBAX	John H. Stenger, Jr	Wilkes-Barre, Pa.
WBAY	American Telephone & Tel. Co	New York, N. Y.
WBAZ	Times Dispatch Publishing Co	Richmond, Va.
WBI	Northern State Normal School	Marquette, Mich.
WBL	T. & H. Radio Co	Anthony, Kans.
WBS	D. W. May (Inc.)	Newark, N. J.
WBT	Southern Radio Corp	Charlotte, N. C.
WBU	City of Chicago	Chicago, Ill.
WBZ	Westinghouse Elec. & Mfg. Co	Springfield, Mass.
WCAA	Mende Pocahontas Coal Co	Tralee, W. Va.
WCAB	Newburgh News Ptg. & Pub. Co	Newburgh, N. Y.
WCAC	John Fink Jewelry Co	Fort Smith, Ark.
WCAD	St. Lawrence University	Canton, Ohio
WCAE	Kaufman & Baer Co	Pittsburgh, Pa.
WCAF	Michigan Limestone & Chem. Co	Rogers, Mich.
WCAG	Daily States Publishing Co	New Orleans, La.
WCAH	Entrekin Electric Co	Columbus, Ohio
WCAI	American Legion State Headquarters	Topeka, Kans.
WCAJ	Nebraska Wesleyan University	University Place, Neb.
WCAK	Alfred P. Daniel	Houston, Tex.
WCAL	St. Olaf College	Northfield, Minn.
WCAM	Villanova College	Villanova, Pa.
WCAN	Southeastern Radio Tele. Co	Jacksonville, Fla.
WCAO	Sanders & Stayman Co	Baltimore, Md.
WCAP	Central Radio Service	Decatur, Ill.
WCAQ	Tri-State Radio Mfg. & S. Co	Defiance, Ohio
WCAR	Alamo Radio Electric Co	San Antonio, Tex.
WCAS	Wm. Hood Dunwoody Ind. Inst	Minneapolis, Minn.
WCAT	South Dakota School of Mines	Radio City, S. Dak.
WCAU	Philadelphia Radiophone Co	Philadelphia, Pa.
WCAV	J. C. Dice Electric Co	Little Rock, Ark.
WCAW	Quincy Her'd & Quincy E. S. Co	Quincy, Ill.
WCAX	University of Vermont	Burlington, Vt.
WCAY	Kesselman O'Driscoll Co	Milwaukee, Wis.
WCAZ	R. E. Compton & O. W.-Genl	Quincy, Ill.
WCD	Raleigh Wyoming Coal Co	Edwright, W. Va.
WCE	Findley Electric Co	Minneapolis, Minn.
WCG	I. W. T. Co	New York, N. Y.
WCI	R. C. of A	Barnegat, N. J.
WCE	Findley Electric Co	Minneapolis, Minn.
WCJ	A. C. Gilbert Co	New Haven, Conn.
WCK	Stix-Baer-Fuller	St. Louis, Mo.
WCM	University of Texas	Austin, Tex.
WCN	Clark University	Worcester, Mass.
WCX	Detroit Free Press	Detroit, Mich.
WDAA	Ward-Belmont School	Nashville, Tenn.
WDAB	H. C. Summers & Son	Portsmouth, Ohio
WDAC	Illinois Watch Co	Springfield, Ill.
WDAE	Tampa Daily Times	Tampa, Fla.
WDAF	Kansas City Star	Kansas City, Mo.
WDAG	J. Laurance Martin	Amarillo, Tex.
WDAH	Mine & Smelter Supply Co	El Paso, Tex.
WDAI	Hughes Electric Corp	Syracuse, N. Y.
WDAJ	Atlanta & West Pt. R. R. Co	College Park, Ga.
WDAK	The Courant	Hartford, Conn.
WDAL	Florida Times-Union	Jacksonville, Fla.
WDAN	Glenwood Radio Corp	Centenary College, Shreveport, La.
WDAO	Automotive Electric Co	Dallas, Tex.
WDAP	Chicago Board of Trade	Chicago, Ill.
WDAQ	Hartman-Riker Elec. & Mch. Co	Brownville, Pa.
WDAR	Lit Brothers	Philadelphia, Pa.
WDAS	Samuel A. Waite	Worcester, Mass.
WDAT	Delta Electric Co	Worcester, Mass.
WDAU	Slocum & Kilburn	New Bedford, Mass.
WDAV	Muskogee Daily Phoenix	Muskogee, Okla.
WDAW	Georgia Railway & Power Co	Atlanta, Ga.
WDAX	First National Bank	Centerville, Iowa
WDAY	Kenneth M. Hance	Fargo, N. Dak.
WDK	R. D. Mayes	Detroit, Mich.
WDM	Church of the Covenant	Washington, D. C.
WDR	Inter City Radio Co	Susanville, Calif.
WDS	Mann S. Valentine	Richmond, Va.
WDT	Ship Owners Radio Service	New York, N. Y.
WDY	Radio Corporation of America	Roselle Park, N. J.
WDW	Radio Construction & Elec. Co	Washington, D. C.
WDV	John O. Yeiser, Jr	Omaha, Neb.
WDZ	James L. Bush	Tuscola, Ill.
WEAA	Fallain & Lathrop	Flint, Mich.
WEAB	Standard Radio Equipment Co	Fort Dodge, Iowa
WEAC	Baines Electric Service Co	Terre Haute, Ind.
WEAD	Northwest Kans. Radio Sup. Co	Atwood, Kans.
WEAE	Viginia Polytechnic Institute	Blacksburg, Va.
WEAF	Western Electric Co	New York, N. Y.
WEAG	Nichols-Hineline-Bassett Lab	Edgewood, R. I.
WEAH	Wich. B. of T. & Lander R. Co	Wichita, Kans.
WEAI	Cornell University	Ithaca, N. Y.
WEAJ	University of South Dakota	Vermillion, S. Dak.
WEAK	Julius B. Abercrombie	St. Joseph, Mo.
WEAM	Borough of North Plainfield	North Plainfield, N. J.
WEAN	Shepard Co	Providence, R. I.
WEAO	Ohio State University	Columbus, Ohio
WEAP	Mobile Radio Co	Mobile, Ala.
WEAQ	Young Men's Christian Assn	Berlin, N. H.
WEAR	Baltimore American & N. P. Co	Baltimore, Md.
WEAS	Hecht Co	Washington, D. C.
WEAT	John J. Fogarty	Tampa, Fla.
WEAU	Davidson Bros. Co	Sioux City, Iowa
WEAV	Sheridan Electric Service Co	Rushville, Neb.
WEAW	Arrow Radio Laboratories	Anderson, Ind.
WEAX	T. J. M. Daly	Little Rock, Ark.
WEAY	Wifi Horwitz, Jr	Houston, Tex.
WEAZ	Donald Redmond	Waterloo, Iowa
WEB	Benwood Co	St. Louis, Mo.
WEH	Miland Refining Co	Tulsa, Okla.
WEW	St. Louis University	St. Louis, Mo.
WEY	Cosradio Co	Wichita, Kans.
WFAA	A. H. Belo & Co	Dallas, Tex.
WFAB	Carl F. Woese	Syracuse, N. Y.
WFAC	Superior Radio Co	Superior, Wis.
WFAD	Watson Weldon Motor Sup. Co	Salina, Kans.
WFAF	H. C. Spratley Co	Poughkeepsie, N. Y.
WFAG	Radio Engineering Laboratory	Waterford, N. Y.
WFAH	Electric Supply Co	Port Arthur, Tex.
WFAJ	Hi-Grade Wireless Instr. Co	Asheville, N. C.
WFAK	Domestic Electric Co	Brentwood, Mo.
WFAL	Houston Chronicle Pub. Co	Houston, Tex.
WFAM	Times Publishing Co	St. Cloud, Minn.
WFAN	Hutchinson Electric Service Co	Hutchinson, Minn.
WFAP	Brown's Business College	Peoria, Ill.
WFAQ	Mo. W. Col. & Cam. Rad. Co	Cameron, Mo.
WFAR	Hall & Stubbs	Sanford, Me.
WFAS	United Radio Corp	Fort Wayne, Ind.
WFAT	Daily Argus-Leader	Sioux Falls, S. Dak.
WFAV	University of Nebraska	Lincoln, Neb.
WFAW	Arrow Radio Laboratories	Anderson, Ind.
WFAX	A. L. Kent	Binghampton, N. Y.
WFAY	Daniels Radio Supply Co	Independence, Kans.
WFAZ	South Bend Tribune	Charleston, S. C.
WFI	Strawbridge & Clothier	Philadelphia, Penna.
WFO	Rike-Kumler Co	Dayton, Ohio
WGAB	QRV Radio Co	Houston, Tex.
WGAC	Orpheum Radio Stores Co	Brooklyn, N. Y.
WGAD	Sp.-Am. S. of Radiotelegraphy	Ensenada, P. R.
WGAF	Goller Radio Service	Tulsa, Okla.
WGAG	Wisconsin Radio Show	Milwaukee, Wis.
WGAH	New Haven Electric Co	New Haven, Conn.
WGAJ	W. H. Gass	Shenandoah, Iowa
WGAK	Macon Electric Co	Macon, Ga.
WGAL	Lancaster Elec. Sup. Constr. Co	Lancaster, Pa.
WGAM	Orangeburg Radio Equip. Co	Orangeburg, S. C.
WGAN	Cecil E. Lloyd	Pensacola, Fla.
WGAQ	W. G. Patterson	Shreveport, La.
WGAR	Southwest American	Fort Smith, Ark.
WGAS	Ray-Di-Co. Organization	Chicago, Ill.
WGAT	American Legion	Lincoln, Neb.
WGAU	Marcus G. Limb	Wooster, Ohio
WGAV	B-H Radio Co	Savannah, Ga.
WGAW	Ernest C. Albright	Altoona, Pa.
WGAX	Radio Electric Co	Washington, Ohio
WGAY	North Western Radio Co	Madison, Wis.
WGAZ	South Bend Tribune	South Bend, Ind.
WGF	The Register & Tribune	Des Moines, Iowa
WGH	Montgomery Light & Power Co	Montgomery, Ala.
WGI	American Radio Research Corp	Medford Hillside, Mass.
WGL	Thomas F. J. Howlett	Philadelphia, Pa.
WGM	Atlanta Constitution	Atlanta, Ga.
WGO	Inter City Radio Co	Chicago, Ill.
WGR	Federal Telegraph Co	Buffalo, N. Y.
WGU	The Fair	Chicago, Ill.
WGV	Interstate Electric Co	New Orleans, La.
WGY	General Electric Co	Schenectady, N. Y.
WHA	University of Wisconsin	Madison, Wis.
WHAA	State University of Iowa	Iowa City, Iowa
WHAB	Clark W. Thompson	Galveston, Tex.
WHAC	Cole Bros. Electric Co	Waterloo, Iowa.
WHAD	Marquette University	Milwaukee, Wis.
WHAE	Automotive Electric Service Co	Sioux City, Iowa.
WHAF	Radio Electric Co	Pittsburgh, Pa.
WHAG	University of Cincinnati	Cincinnati, Ohio
WHAH	John T. Griffin	Joplin, Mo.
WHAI	Radio Equipment & Mfg. Co	Davenport, Iowa.
WHAJ	Bluefield Daily Teleg	Bluefield, W. Va.
WHAK	Roberts Hardware Co	Clarksburg, W. Va.
WHAL	Phillips, Jeffery & Derby	Lansing, Mich.
WHAM	University of Rochester	Rochester, N. Y.
WHAN	Southwestern Radio Co	Wichita, Kans.
WHAO	Frederic A. Hill	Savannah, Ga.
WHAP	Dewey L. Otta	Decatur, Ill.
WHAQ	Semmes Motor Co	Washington, D. C.
WHAR	Paramount Radio & Elec. Co	Atlantic City, N. J.
WHAU	Corinth Radio Supply Co	Corinth, Miss.

Radiophone Broadcasting Stations

WHAS	Courier-Jour. & Louisville Times	Louisville, Ky.
WHAT	Yale Democrat-Yale Telep. Co	Yale, Okla.
WHAV	Wilmington Electrical Sup. Co	Wilmington, Del.
WHAW	Pierce Electric Co	Tampa, Fla.
WHAX	Holyoke Street Ry. Co	Holyoke, Mass.
WHAY	Huntington Press	Huntington, Ind.
WHAZ	Rensselaer Polytechnic Inst	Troy, N. Y.
WHB	Sweeney School Co	Kansas City, Mo.
WHD	West Virginia University	Morgantown, W. Va.
WHK	Warren R. Cox	Cleveland, Ohio
WHN	Ridgewood Times P. & P. Co	Ridgewood, N. Y.
WHQ	Rochester Times Union	Rochester, N. Y.
WHU	Wm. B. Duck Co	Toledo, Ohio.
WHW	Stuart W. Seeley	Lansing, Mich.
WHX	Iowa Radio Corp	Des Moines, Iowa
WIAA	Waupaca Civic & Com. Assn	Waupaca, Wis.
WIAB	Joslyn Automobile Co	Rockford, Ill.
WIAC	Galveston Tribune	Galveston, Tex.
WIAD	Ocean City Yacht Club	Ocean City, N. J.
WIAE	Mrs. Robert E. Zimmerman	Vinton, Iowa
WIAF	Gustav E. DeCortin	New Orleans, La.
WIAG	Matthews Electrical Supply Co	Birmingham, Ala.
WIAH	Continental Radio & Mfg. Co	Newton, Iowa
WIAI	Heer Stores Co	Springfield, Mo.
WIAJ	Fox River Valley Radio S. Co	Neenah, Wis.
WIAK	Journal-Stockman Co	Omaha, Neb.
WIAL	Standard Service Co	Norwood, Ohio
WIAM	F. M. Tarbox	Dunmore, Pa.
WIAN	Chronicle & News Pub. Co	Allentown, Pa.
WIAO	Sch. of Eng. of Mil. & Wis	Milwaukee, Wis.
WIAP	Radio Development Corp	Springfield, Mass.
WIAQ	Chronicle Publishing Co	Marion, Ind.
WIAR	J. A. Rudy & Sons	Paducah, Ky.
WIAS	Burlington Hawkeye-Home E. Co	Burlington, Iowa
WIAT	Leon T. Noel	Tarkio, Mo.
WIAU	American Trust & Savings Bank	Le Mars, Iowa
WIAV	New York Radio Laboratories	Binghamton, N. Y.
WIAW	Saginaw Radio Electric Co	Saginaw, Mich.
WIAX	Capital Radio Co	Lincoln, Neb.
WIAY	Woodward & Lothrop	Washington, D. C.
WIAZ	Electric Supply Sales Co	Miami, Fla.
WII	Radio Corp	New Brunswick, N. J.
WIK	K. & L. Electric Co	McKeesport, Pa.
WIL	Continental Electrical Sup. Co	Washington, D. C.
WIO	Tropical Radio Teleg. Co	Fort Morgan, Ala.
WIP	Gimbel Bros	Philadelphia, Pa.
WIZ	Cino Radio Manufacturing Co	Cincinnati, Ohio
WJAB	American Radio Co	Lincoln, Neb.
WJAC	Nebraska Wesleyan University	University Place, Neb.
WJAD	Jackson's Radio Eng. Lab	Waco, Texas
WJAE	Texas Radio Syndicate	San Antonio, Texas
WJAF	Munsey Press	Muncie, Ind.
WJAG	Huse Publishing Co	Norfolk, Neb.
WJAH	Central Park Amusement Co	Rockford, Ill.
WJAJ	Y. M. C. A	Dayton, Ohio
WJAK	White Radio Laboratory	Stockdale, Ohio
WJAL	Victor Radio Corp	Portland, Me.
WJAM	D. M. Perham	Cedar Rapids, Iowa
WJAN	Peoria-Star Peoria Radio S. Co	Peoria, Ill.
WJAP	Kelley-Duluth Co	Duluth, Minn.
WJAQ	Capper Publications	Topeka, Kans.
WJAR	The Outlet Co	Providence, R. I.
WJAS	Pittsburgh Radio Supply House	Pittsburgh, Pa.
WJAT	Kelly-Vawter Jewelry Co	Marshall, Mo.
WJAU	Yankton College	Yankton, S. D.
WJAV	Indian Pipe Line Corp	Princeton, Ind.
WJAW	Reinemund Hardware Co	Audubon, Iowa
WJAX	Union Trust Co	Cleveland, Ohio
WJAY	Iowa State Fair	Des Moines, Iowa
WJAZ	Chicago Radio Lab	Chicago, Ill.
WJC	Indian Pipe Line Corp	Owensboro, Ky.
WJD	Richard H. Howe	Granville, Ohio
WJH	White & Boyer Co	Washington, D. C.
WJK	Service Radio Equipment Co	Toledo, Ohio
WJT	Electric Equipment Co	Erie, Pa.
WJX	De Forest Radio T. & T. Co	New York, N. Y.
WJZ	Westinghouse Elec. & Mfg. Co	Newark, N. J.
WKAA	Republican Times & H. F. Parr	Cedar Rapids, Iowa
WKB	Sweeney School Co	Kansas City, Mo.
WKAC	Star Publishing Co	Lincoln, Neb.
WKAD	Chas. Loof (Crescent Park)	East Providence, R. I.
WKAE	W. S. Radio Supply Co	Witchita Falls, Tex.
WKAG	Edwin T. Bruce	Louisville, Ky.
WKAH	Planet Radio Co	West Palm Beach, Fla.
WKAJ	Fargo Plumbing & Heating Co	Fargo, N. Dak.
WKAK	Okiuskee County News	Okemah, Okla.
WKAL	Gray & Gray	Orange, Tex.
WKAM	Hastings Daily Tribune	Hastings, Neb.
WKAN	Alabama Radio Mfg. Co	Montgomery, Ala.
WKAP	Dutee W. Flint	Cranston, R. I.
WKAQ	Radio Corp. of Porto Rico	San Juan, P. R.
WKAR	Michigan Agriculture College	East Lansing, Mich.
WKAS	L. E. Lines Music Co	Springfield, Mo.
WKAT	Frankfort Morning Times	Frankfort, Ind.
WKAV	Laconia Radio Club	Laconia, N. H.
WKAW	Turner Cycle Co	Beloit, Wis.
WKAX	Wm. A. MacFarlane	Bridgeport, Conn.
WKAY	Brenau College	Gainesville, Ga.
WKAZ	Landau's Music & Jewelry Co	Wilkes-Barre, Pa.
WKC	Joseph M. Zamoiski	Baltimore, Md.
WKN	Riechman-Crosby Co	Memphis, Tenn.
WKY	Oklahoma Radio Shop	Oklahoma City, Okla.
WLAB	George F. Grossman	Carrollton, Mo.
WLAC	North Carolina State College	Raleigh, N. C.
WLAD	Arvanette Radio Supply Co	Hastings, Neb.
WLAF	Johnson Radio Supply Co	Lincoln, Neb.
WLAG	Cutting & Washington R. Corp	Minneapolis, Minn.
WLAH	Samuel Woodworth	Syracuse, N. Y.
WLAJ	Waco Electrical Supply Co	Waco, Tex.
WLAK	Tulsa Radio Co	Bellows Falls, Vt.
WLAM	Morrow Radio Co	Tulsa, Okla.
WLAN	Putman Hardware Co	Springfield, Ohio
WLAO	Anthracite Radio Shop	Houlton, Me.
WLAP	W. V. Jordan	Louisville, Ky.
WLAQ	A. E. Schilling	Kalamazoo, Mich.
WLAR	Mickel Music Co	Marshalltown, Iowa
WLAS	Hutchinson Grain Radio Co	Hutchinson, Kans.
WLAT	Charles G. Bosch Company	Burlington, Iowa
WLAV	Electric Shop	Pensasola, Fla.
WLAW	Police Dept. City of N. Y	New York, N. Y.
WLAX	Greencastle Com. Broadcast Sta	E. Greencastle, Ind.
WLAY	Northern Commercial Co	Fairbanks, Alaska
WLAZ	Hulton Jones Elec. Co	Warren, Okla.
WLB	University of Minnesota	Minneapolis, Minn.
WLC	Inter. Radio Teleg. Co	Rockland, Me.
WLK	Hamilton Manufacturing Co	Indianapolis, Ind.
WLW	Crosley Manufacturing Co	Cincinnati, Ohio
WMAC	J. Edw. Pege	Cazenovia, N. Y.
WMAB	Radio Supply Co	Oklahoma City, Okla.
WMAD	Atchinson County Mail	Rock Port, Mo.
WMAF	Round Hills Radio Corp	Dartmouth, Mass.
WMAG	Tucker Electric Co	Liberal, Kans.
WMAH	General Supply Co	Lincoln, Neb.
WMAJ	Drovers Telegram Co	Kansas City, Mo.
WMAK	Norton Laboratories	Lockport, N. Y.
WMAL	Trenton Hardware Co	Trenton, N. J.
WMAM	Beaumont Radio Equip. Mail	Rock Port, Mo.
WMAN	Louisiana State Fair Assn	Shreveport, La.
WMAP	Utility Battery Service Co	Easton, Pa.
WMAQ	Chicago Daily News, The Fair	Chicago, Ill.
WMAR	Waterloo Elec. Supply Co	Waterloo, Iowa
WMAS	Radio Equipment Co	Richmond, Va.
WMAT	Paramount Radio Corp	Duluth, Minn.
WMAV	Alabama Polytechnic Institute	Auburn, Ala.
WMAX	K. K. Radio Supply Co	Ann Arbor, Mich.
WME	Swan Island Rockland R. C. S	Washington, D. C.
WMV	Doubleday Hill Elec. Co	Belfast, Me.
WNAB	Park City Daily News	Bowling Green, Ky.
WNAC	Shepard Stores	Boston, Mass.
WNAD	Okla. Radio Engineering	Norman, Okla.
WNAF	Enid Radio Distributing Co	Enid, Okla.
WNAG	Rathert Radio Elec. Shop	Cresco, Iowa
WNAH	Wilkes-Barre Radio Rep'r Shop	Wilkes-Barre, Pa.
WNAL	R. J. Rockwell	Omaha, Neb.
WNAN	Broad St. Baptist Church	Columbus, Ohio
WNJ	Shotton Radio Mfg. Co	Albany, N. Y.
WNN	Inter Radio Teleg. Co	E. Hampton, N. Y.
WNO	Wireless T. Co. of H. Co., N. J	Jersey City, N. J.
WOAA	Dr. Walter Hardy	Ardmore, Okla.
WOAE	Midland College	Fremont, Neb.
WOAI	Southern Equipment Co	San Antonio, Texas
WOC	Palmer School of Chiropractic	Davenport, Iowa
WOE	Buckeye Radio Service Co	Akron, Ohio
WOH	Hatfield Electric Co	Indianapolis, Ind.
WOI	Iowa State College	Ames, Iowa
WOK	Pine Bluff Co	Pine Bluff, Ark.
WOO	John Wanamaker	Philadelphia, Pa.
WOQ	Western Radio Co	Kansas City, Mo.
WOR	L. Bamberger & Co	Newark, N. J.
WOS	Missouri State Marketing Bur	Jefferson City, Mo.
WOU	Metropolitan Utilities District	Omaha, Neb.
WOZ	Palladium Printing Co	Richmond, Ind.
WPAN	Levy Bros. Dry Goods Co	Houston, Tex.
WPA	Fort Worth Record	Fort Worth, Tex.
WPE	Central Radio Co	Kansas City, Mo.
WPG	Nushawg Poultry Farm	New Lebanon, Ohio
WPI	Electric Supply Co	Clearfield, Pa.
WPJ	St. Joseph's College	Philadelphia, Pa.
WPL	Fergus Electric Co	Zanesville, Ohio
WPM	Thomas J. Williams	Washington, D. C.
WPO	United Equipment Co	Memphis, Tenn.
WQAQ	West Texas, Radio Co	Abilene, Tex.
WRAU	Amarillo Daily News	Amarillo, Tex.
WRK	Doron Bros. Electric Co	Hamilton, Ohio
WRL	Union College	Schenectady, N. Y.
WRM	University of Illinois	Urbana, Ill.
WRP	Fed. Inst. of Radio Telegraphy	Camden, N. J.
WRR	City of Dallas	Dallas, Tex.
WRW	Tarrytown Radio Research Lab	Tarrytown, N. Y.
WSA	Cutting Westinghouse R. Corp	Siasconset, N. Y.
WSAV	Clifford W. Vick R. Const. Co	Houston, Tex.
WSB	Atlanta Journal	Atlanta, Ga.
WSC	Inter. Radio Teleg. Co	Babylon, N. Y.
WSE	Ind. Wireless Tel. Co	New York City
WSK	Panama R. R. Co	Chatham, Mass.
WSL	J. & M. Electric Co	Utica, N. Y.
WSN	Ship Owners Radio Service	Norfolk, Va.
WSO	Radio Corp of Am	Rockland, Me.
WSV	L. M. Hunter	Little Rock, Ark.
WSX	Erie Radio Co	Erie, Pa.
WSY	Alabama Power Co	Birmingham, Ala.
WTAW	Agricultural-Mechanical Col. Sta	College Station, Tex.
WTG	Kansas State Agricultural Col	Manhattan, Kans.
WTK	Paris Radio Electric Co	Paris, Tex.
WTP	George M. McBride	Bay City, Mich.
WWB	Daily News Printing Co	Canton, Ohio
WWI	Ford Motor Co	Dearborn, Mich.
WWJ	Detroit News	Detroit, Mich.
WWL	Loyola University	New Orleans, La
WWT	McCarthy Bros. & Ford	Buffalo, N. Y
WWX	Postoffice Dept	Washington, D. C.
WWZ	John Wanamaker	New York, N. Y.

Switch Levers, Contact Points, Insulating Knobs

Army-Navy Junior Switch Lever. Improved spring bearing type, complete with panel nut and soldering lug. 1-inch radius. Polished, nickel plated lever. Bushing is ¾ inch high, turned from solid brass. G. I. knob used. Metal parts polished, nickel plated. Shipping weight, each, 5 ounces.

6A9443 ..... 48c

Popular Switch Lever. Same as 6A9443, except that bearing is not included and bearing collar fits directly against panel. Fitted with coil spring, terminal and nuts. Shipping wt., each, 5 oz.

6A9465 ..... 31c

Unit Switch Lever. This style is used on our Progressive unit sets. Lever is made of brass, nickel plated and polished, fitted with coil tension spring and two nuts. Knob is of black composition and knurled. 1½-inch radius. Bearing is ⅜ inch from panel to lever. Shipping weight, 5 ounces.

6A9628 ..... 33c

Popular Switch Lever. This switch lever is the same as our 6A9484, except that the bearing is not included, and bearing collar fits directly against panel. Lever is not laminated. Fitted with coil springs, soldering terminal and nuts. Shpg. wt., 8 oz.

6A9464 ..... 39c

Laminated, Polished Nickel Plated Switch Lever. Bearing type, with coil spring. Blades of solid brass, two blades making the complete lever. Lever is ground after blades are in place, which makes the switch unusually smooth running. All metal parts above panel nickel plated. Bakelite knob. Fitted with bushing, washers, spring, nuts and soldering terminal. 1½-inch radius. Shipping weight, 8 oz.

6A9484 ..... 58c

Army-Navy Polished Nickel Plated Panel Switch Lever. Knob is of genuine formica and has knurled edge. Switch blade is of spring brass, nickel plated. Switch bolt extends through heavy brass bushing, fitted with large nut used to mount the lever on panel. Furnished complete with two nuts. 2-inch radius. All metal parts nickel plated. Shipping weight, each, 8 oz.

6A9463 ..... 54c

Midget Switch Lever. An ideal small switch. Has many uses, such as secondary vibration switch, "on" and "off," etc. Made of nickel plated brass, fitted with washers, two nuts and soldering lug. Knob is molded composition. Shipping weight, 4 oz.

6A9410

Each ..... 25c Half dozen ... $1.35

Marconi Knob.

Marconi Knob, for large panels, switchboards, variometers, transformers, etc. No bushing. Drilled for 5/16-inch rod at bottom and has 1/16-inch hole in top. Highly polished. Shipping weight, each, 4 ounces.

6A9460

Each $0.18
Per dozen 2.03

Marconi Knob.

Marconi Knob same pattern as 6A9460. Used extensively on high grade loose couplers, panel sets and laboratory apparatus. Drilled for 5/16-inch rod at bottom, 1/16-inch hole at top. Shipping weight, each, 3 ounces.

6A9461

Each $0.10
Per dozen 1.00

Navy Knob.

Black Electrose Navy Knob. Highly polished. Same style as 6A9382, and makes a fine appearance when used with it. Has 9/32-inch bushing. Shpg. wt., each, 3 oz.

6A9383

Each $0.10
Per dozen 1.00

Knob.

Highly recommended for spark gaps, loose couplers, secondary switch, variable condenser, etc. Has 9/32-inch bushing. Shpg. wt., each, 2 oz.

6A9448

Each $0.20
Dozen 2.00

Detector Knob.

Fine for small and medium size instruments. Very neat and attractive. Has 9/32-in. bushing. Shpg. wt., each, 2 oz.

6A9462

Each ... 7c
Doz. ... 78c

New Style Government Knobs.

6A9470

6A9303

Late design, used extensively on government and high grade experimental apparatus. Large and small sizes shown. These knobs are used with our Bakelite dials. Top is concave. Has a brass bushing, 15/32 thread, and two holes for stay pins.

6A9470

Each ..... (Shipping wt., 4 oz.) $0.11
Per dozen 1.24

6A9303

Each ..... (Shipping wt., 3 oz.) .... .09
Per dozen ..... .98

6A9380

6A9302

Same style as 6A9470 and 6A9303, except instead of having bushing is drilled to take 3/8-inch rod. Top is countersunk for nut. Two holes in bottom for stay pins. Used extensively on regenerative sets, variometers, etc.

6A9302

Each ..... (Shipping wt., 4 oz.) $0.10
Per dozen 1.00

6A9380

Each ..... (Shipping wt., 3 oz.) .... .08
Per dozen ..... .90

All illustrations on this page show half size.

Molded Navy Key Knob.

Molded Navy Key Knob. Latest and most approved type. Adds speed and accuracy to operating. Construction is flame-proof. Used on our navy type key, and on many of the best keys. Has 9/32-inch stem, which will fit most all keys. Shipping weight, each, 3 ounces.

6A9381 ..... 21c

Knob.

Very popular Knob for loose couplers, variometers, loading coils, etc. Has 9/32-inch bushing. Shpg. wt., each, 3 oz.

6A9447—Knob.

Each ..... 14c Per dozen ... $1.55

Knob.

Fine for detectors, condensers, small switches, etc. Has 9/32-in. bushing. Shpg. wt., each, 2 oz.

6A9469

Each ... 5c
Doz. ... 48c

Knob.

Used on detectors, tuning coil sliders, loading coils, small rheostats, etc. Has 9/32-inch bushing. Shpg. wt., each, 2 oz.

6A9445

Each 4c
Dozen ... 35c

Junior Knob.

Used wherever a very small knob is needed. Has 9/32-inch bushing. Shpg. wt., each, 2 oz.

6A9446

Each 4c
Dozen ... 35c

Knob.

Used extensively on small panels, spark gaps, etc. Bushing, 9/32 thread. Shipping wt., each, 3 oz.

6A9485

Each. $0.10
Doz. 1.00

Standard Detector Screw Knob.

Neat and attractive. Fitted with brass screw, 9/32 thread. Shpg. wt., each, 3 oz.

6A9468

Each 8c
Dozen .. 89c

Nickel Plated Brass Switch Contact Points.

Solid brass, nickel plated; two nuts, ¼-inch diameter, ¼-inch head, ⅝-inch length of thread. Shpg. wt., per dozen, 12 oz.

6A9472

Doz. $0.31
100 .. 2.48

Size, ¼-inch diameter, ⅜-inch head, otherwise same as 6A9472. Shpg. wt., per dozen, 10 oz.

6A9473

Doz. $0.30
100 2.40

Solid brass head, nickel plated, size, 5/16x5/16 in., otherwise same as 6A9251. Shpg. wt., per dozen, 10 oz.

6A9304

Doz. $0.29
100 2.35

Solid brass head, nickel plated, size, ¼x5/16 in., otherwise same as 6A9251. Shpg. wt., per dozen, 10 oz.

6A9271

Doz. $0.30
100 .. 2.40

Solid brass head, nickel plated, size, ¼x¼ inch. Fitted with brass screw and soldering lug. Interchangeable type. Can be used many times, as no solder need touch the thread. Shpg. wt., per dozen, 10 oz.

6A9251

Dozen ... $0.31
100 .. 2.48

Polished Brass Switch Points.

6A9586 — Same as 6A9472. Shipping weight, per doz., 10 oz.
Doz. $0.30
100 .. 2.40

6A9587 — Same as 6A9473. Shipping weight, per doz., 10 oz.
Doz. $0.29
100 .. 2.30

6A9588 — Same as 6A9304. Shipping weight, per doz., 10 oz.
Doz. $0.28
100 .. 2.28

6A9589 — Same as 6A9271. Shipping weight, per dozen, 10 ounces.
Dozen $0.29
100 ... 2.32

6A9599 — Same as 6A9251. Shipping weight, per dozen, 10 ounces.
Dozen $0.30
100 ... 2.40

Navy Knob.

Black Electrose Navy Knob. Highly polished. Has brass bushing ⅜-in., 16-thread, ¾ inch deep. Excellent for high grade apparatus. Shpg. wt., 10 oz.

6A9382 ..... 36c

Ideal Knob.

Polished black, knurled edge, fitted with nickel plated brass bushings, drilled for 5/16-inch rod and fitted with set screw. Shipping weight, each, 3 ounces.

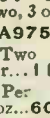
6A9364—Each .. $0.21
Per dozen 2.45

Hard Rubber Knob.

Used on Navy type loose couplers, variometers, variable condensers, wave meters, etc. Made of genuine hard rubber with knurled edge. Fitted with solid nickel plated brass bushing, threaded. 9/32-inch. Shipping weight, each, 5 ounces.

6A9467—Each .. $0.27
Per dozen 3.04

Switch Lever Stop.



Turned from brass stock, nickel plated, highly polished. Shpg. wt., per set of two, 3 oz.

6A9751

Two for... 11c
Per doz... 60c

Press Fit Switch Point.

It is placed in panel by drilling a slightly smaller hole and pressing switch point in up to head. Connection is made by soldering. Size of head, 5/16x5/16 inch with 9/32-inch shank, 1/16 inch long. Shipping weight, per dozen, 10 ounces.

6A9585

Press Fit Switch Point, polished nickel plate.

Per dozen. $0.19
Per 100 ... 1.52

6A9584

Press Fit Switch Point, polished brass.

Per dozen. $0.18
Per 100 . 1.44

Jacks, Plugs and Binding Posts


6A9187

Small Well Finished Jacks.


6A9189


6A9183


6A9190


6A9184

These small, neat, well finished jacks have been specially designed for panel work and are of standardized construction so as to be interchangeable with other standard makes. Can be mounted on ⅛, 3/16 or ¼-inch panels. Length, over all, 3¼ inches. Insulation is of high grade and will withstand 110-volt breakdown test. Contact springs are of nickel silver and contact points of purse silver. Frame is nickel plated and has highly buffed finish. Sturdy construction, perfect spring adjustment, gripping contact of springs on tip and sleeve of plug. Packed in individual containers.

A particularly desirable feature is the "spread" arrangement of the spring terminals which allows twice the usual amount of space for soldering to the wiring. These terminals are heavily tinned. Shipping weight, 6 ounces.

6A9187—Jack. Each 44c
6A9189—Jack. Each 47c
6A9183—Jack. Each 67c
6A9190—Jack. Each 54c
6A9184—Jack. Each 81c

Radio Plug.

This plug will fit all standard jacks; finished in hard rubber insulation and best non-conductor bushings. The plug is mechanically correct in construction and requires no tools for connecting. The cord tips are brought through the handle and inserted in the screw adjustment. A small loop is provided for fastening the cords. Length, over all, 3¼ inches. Shpg. wt., 8 oz.

6A9194—Radio Plug 89c

Cord Tip Radio Plug.


Cord Tip Plug.


Cord Tip Plug With Sleeve Removed.

With this new type of plug your receiver cord tips are attached directly to plug. This plug is handsomely finished, polished hard rubber sleeve, solid plug body, machine turned from 1/16 inch brass. Size of tip and length of body same as other standard plugs. Can be used with any standard make of jack; design and construction embody features recognized as good practice. Cord tips slip into the base of plug, and are held firmly in place by simply tightening the two screws, as shown in the illustration of plug with sleeve removed. Length, over all, 2½ inches. Shipping weight, 8 ounces.

6A9182—Plug 82c

Modern Radio Plug.

Plug is fitted with a knurled insulating handle, which may be removed, as shown in the illustration, so that receiver cord may be easily fastened. One special feature of this plug is the large space provided for fastening receiver cords. Plug is of solid brass with polished nickel plated end. For use with any style radio telephone receivers. Over all length of plug, 2¼ inches. Shipping weight, 4 ounces.

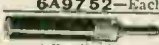
6A9191 ..... 58c

Cord Tip Jack—Improved Model.

Does away with protruding binding posts, and forms a means of quickly changing connections, using cord tips. Jack is nickel plated brass, fitted with one nut for holding against panel; spring copper contact strip. Jack will take any standard telephone cord tips. Length, over all, 1 inch. Makes positive wiping contact, which is self cleaning. Each jack is complete with cord tip of standard size. This jack is used on our Progressive Unit Panel Set. Shipping weight, each, 4 ounces.

6A9752—Each, 36c; 6 for $2.10

Polarity Indicating Plugs, With Jack.



Affords the best means of connecting receiver cord to jack. Made of brass, nickel plated and polished; handle is of fiber and is furnished in either red or black. Connection is made without soldering and it is only necessary to unscrew fiber handle and insert cord. Positive contact is made by fraying the end of the cord and screwing in place. Length, over all, 1 inch.

6A9771—Cord Tip Jack, same as 6A9752, complete with polarity indicating plug with **black handle**. Shipping weight, 4 ounces 48c
6A9772—Cord Tip Jack, same as 6A9752, with polarity indicating plug with **red handle**. Shipping weight, 4 ounces 48c
6A9773—Set of two 6A9752 Cord Tip Jacks; one polarity indicating plug with **black handle** and one polarity indicating plug with **red handle**. Shipping weight, 4 ounces. Set of 4 pieces (2 jacks, 2 plugs) 95c

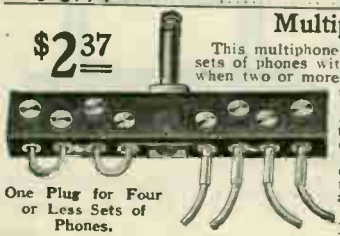
Formica Cord Tip Spreader.

Many amateurs mount two of our cord tip jacks for using with head sets and for use in making quick changes on detector and amplifier panels, etc. Cord tip spreader provides a means of mounting the cord tips and holding them in place so that both can be changed in one operation. Jacks should be placed on panel so as to be the proper distance between tips when placed in spreader. Length, over all, 2½ inches. Spreader is made of sheet formica, grain satin finish, fitted with two brass screws, nickel plated and highly polished. Shipping weight, 2 ounces.

6A9774 ..... 35c

Multiphone Radio Plug.

$2.37


One Plug for Four or Less Sets of Phones.

This multiphone plug enables you to use four or less sets of phones with one jack. It is constructed so that when two or more receivers are to be connected to your set, they are connected in series, as tests have shown that better results are obtained by this method than if the phones are wired in multiple. With each multiphone plug we furnish three wire loops, as to complete the series connection it is necessary for all terminals to be occupied. Length, over all, 3⅝ inches. Shipping weight, 10 oz.

6A9195—Multiphone Radio Plug $2.37

The Leader Binding Posts.


6A9821


6A9822


6A9825
6A9828


6A9824
6A9827


6A9823
6A9826

The latest development in binding post manufacture, so made that the heads will not come off and yet will unscrew enough to allow plenty of room for wires. Openings in all sizes will take standard telephone cord tip. Special knurled base makes excellent contact and prevents turning. Built for long service. Positive contact for fine wires or solid terminals is assured by lock grip. Furnished complete as shown. Illustrations are one-half actual size.

6A9821—Black Molded Insulated Post. Shipping weight, 2 ounces 20c
6A9822—Black Molded Insulated Post. Shipping weight, 2 ounces 19c
6A9823—Polished Nickel Binding Post. Shipping weight, 3 ounces 35c
6A9824—Polished Nickel Binding Post. Shipping weight, 2 ounces 16c
6A9825—Polished Nickel Binding Post. Shipping weight, 1 ounce 11c
6A9826—Polished Brass Binding Post. Shipping weight, 3 ounces 33c
6A9827—Polished Brass Binding Post. Shipping weight, 2 ounces 14c
6A9828—Polished Brass Binding Post. Shipping weight, 1 ounce 9c

Binding Posts.

Polished Nickel Plated Binding Posts.

Made from brass stock, nickel plated and buffed; high grade in every respect. Each post fitted with brass screw and washer. Two styles, two sizes each style.


6A9453
Each .$0.13
Per dozen 1.45
Shpg. wt., each, 3 oz.


6A9457
Each .$0.09
Per dozen 1.04
Shpg. wt. each, 3 oz.


6A9450
Each 8c
Per doz. .87c
Shpg. wt., each, 1 oz.


6A9451
Each .$0.10
Per dozen 1.09
Shpg. wt., each, 2 oz.

Lacquered Brass Binding Posts.

Same as our nickel plated binding posts, except finished in lacquered brass.

6A9454
Same style as 6A9453.
Each .$0.10
Per dozen 1.14
Shpg. wt., each, 3 oz.

6A9455
Same style as 6A9457.
Each 8c
Per doz..90c
Shpg. wt., each, 3 oz.

6A9456
Same style as 6A9450.
Each 8c
Per doz..90c
Shpg. wt., each, 1 oz.

6A9458
Same style as 6A9451.
Each .$0.10
Per dozen 1.14
Shpg. wt., each, 2 oz.

Copper Connecting Links.


6A9596


6A9595

Stamped from flexible sheet copper and are extensively used for connecting units, panel wiring, Bus-Bar work, etc. Shipping weight, per 100, 8 ounces.

6A9595—Copper Connector, ⅞ inch long. No. 8 hole.
6 for 6c
50 for 40c
100 for 70c

6A9596—Copper Connector, 1⅛ inches long by 3/16 inch wide, ⅛ inch diameter. No. 10 hole.
6 for 10c
50 for 50c
100 for 95c

Universal Helix Clip.

Used for making connections on the Helix and Oscillation Transformer. Nickel plated. Length, 1 inch; width, 1½ in. Shpg. wt., 1 oz.

6A9409 Universal Helix Clip 7c

Honeycomb Coils, Plugs and Mountings

"QSA" Honeycomb Coils.

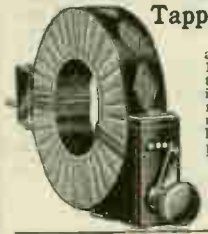
Mounted or unmounted honeycomb coils that are equally effective on all wave lengths. Coils that give greater selectivity and sharp tuning. They are impregnated in Dupont enamel and no varnish is used in their makeup. Inside diameter is 2 inches; width of coil face, 1 inch. Mounted coils are complete with Bakelite retaining plug and a hard fiber moisture proof strip. **Order by catalog number.**

Coil Only, Not Mounted.

Catalog No.	No. of Turns	Shpg. Wt.	Each	Catalog No.	No. of Turns	Shpg. Wt.	Each
6A9699	25	6 oz.	44c	6A9708	300	12 oz.	$0.79
6A9700	35	6 oz.	45c	6A9709	400	14 oz.	.83
6A9701	50	6 oz.	54c	6A9710	500	14 oz.	.93
6A9702	75	6 oz.	55c	6A9711	600	14 oz.	1.08
6A9703	100	8 oz.	58c	6A9712	750	14 oz.	1.28
6A9704	150	8 oz.	64c	6A9713	1,000	14 oz.	1.52
6A9705	200	9 oz.	69c	6A9714	1,250	14 oz.	1.85
6A9706	250	11 oz.	74c	6A9715	1,500	14 oz.	2.35

Coil and Plug, Mounted, Complete.

6A9716	25	1 lb.	$1.31	6A9724	300	2 lbs.	$1.68
6A9717	35	1 lb.	1.33	6A9725	400	2 lbs.	1.71
6A9718	50	1 lb.	1.38	6A9726	500	2¼ lbs.	1.85
6A9719	75	1½ lbs.	1.39	6A9727	600	2¼ lbs.	2.01
6A9720	100	1½ lbs.	1.48	6A9728	750	2½ lbs.	2.28
6A9721	150	1½ lbs.	1.52	6A9729	1,000	2¾ lbs.	2.48
6A9722	200	2 lbs.	1.58	6A9730	1,250	2¾ lbs.	2.81
6A9723	250	2 lbs.	1.61	6A9731	1,500	2¾ lbs.	3.33



Tapped Honeycomb Coil Unit.

This unit operates efficiently over a wave length range of from 600 to 15,000 meters. It consists of an 800 turn "Q S A" honeycomb coil, tapped in approximately the following turns ratio: 25, 45, 75 and 100 per cent. The mounting includes a standard Bakelite coil retaining plug and a four-point switch with molded end stops. The wire leads to the switch points are made short as possible. Shipping weight, 3 pounds.

6A9566—Tapped Honeycomb Coil Unit.....**$5.05**

Universal Coil Mounting.

This mounting takes any size of honeycomb coil up to 1,500 turns. One end of the fiber coil loop is fixed to the Bakelite coil retaining plug and the other end is adjustable to any size coil, as shown. Shipping weight, each, 8 ounces.

6A9549 — Universal Coil Mounting.
Each.....**$0.54**
Three for.**1.56**

Bakelite Plugs.

Molded from genuine Bakelite. Highly polished black finish. Cover all requirements and will work in combination with plugs used on the different makes of honeycomb coils, etc.

Stationary Panel Mounting Plug.

This plug is used in making the stationary panel mounting on a honeycomb receiving set. It is this mounting which receives the coil retaining plug of the stationary honeycomb coil. Metal inserts are drilled and fitted with two nickel plated screws for panel mounting. Standard size. Shipping weight, 4 ounces.

6A9563—Stationary Panel Mounting Plug.**47c**

Variable Panel Mounting Plugs.

Used in making the variable panel mountings on honeycomb radio sets. They receive the coil retaining plugs of the variable honeycomb coils. Plug is drilled to take Extension Handle 6A9645 shown below at the right. Mounting arms, binding posts, etc., all nickel plated and polished. Standard size. Shipping weight, 6 ounces.

6A9564 — Variable Panel Mounting Plug.....**77c**
6A9565 — Variable Panel Mounting Plug. Same as 6A9564, except fitted with nuts in place of binding posts. .**72c**

Coil Retaining Plug.

Many amateurs have honecomb coils without mountings. By using a fiber strip, tape or some other material, coils may be mounted to this plug. Brass inserts extend through the plug for making soldered contact to coil leads. Fitted with nickel plated brass strips for securing coil mounting. Standard size. Shipping weight, 4 ounces.

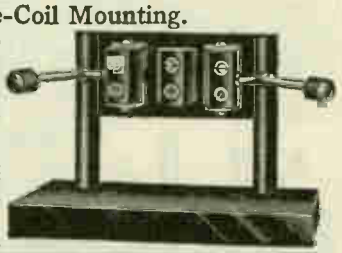
6A9562—Coil Retaining Plug.....**48c**

Pacent Duo-Lateral Honeycomb Coils.

These coils are very efficient for either long or short wave reception. By using combinations of coils, with the proper number of turns, in connection with variable condensers and a vacuum tube unit, it is possible to cover practically all wave lengths, and therefore receive signals from exceptional distances and from all classes of stations. All coils have an inside diameter of 2 inches and measure 1 inch across coil face. **Order by catalog number.**

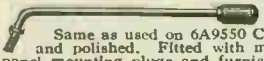
Catalog Number of Unmounted Coil Only. Solid Wire	Size of Conductor B. & S. Gauge	No. of Turns	D. C. Resistance in Ohms	Inductance at 800 Cycles in Mil-Henrys	Natural Wave Length in Meters	Distributed Capacity in Micro-Micro Farads	Effective Resistance and Time Constant of Coils at Various Wave Lengths in Meters: Wave Length in Meters	Resistance in Ohms	Time Constants in Micro-Second	Outside of Coil in Inches	Shipping Weight, Ounces	Coil Only
6A9735	24	25	0.42	0.039	65	30	200 300 400	4.3 2.2 1.6	9.07 17.73 24.4	2 5/16	4	$0.47
6A9736	24	35	0.50	0.0717	92	33	200 450 600	16.6 3.4 2.4	4.32 21.1 19.9	2¼	5	.48
6A9737	24	50	0.88	0.149	128	31	300 700 900	18.2 3.8 3.1	8.17 39.2 48.0	2 5/16	5	.56
6A9738	24	75	1.24	0.325	172	26	800 600 500	9.1 12.4 18.9	35.8 26.2 13.0	2⅜	6	.57
6A9739	24	100	1.68	0.555	218	24	1,000 800 600	15.2 20.0 32.0	36.5 27.8 17.2	2½	6	.62
6A9740	24	150	2.56	1.30	282	17	1,500 1,000 860	30.0 40.0 49.2	43.4 32.5 26.4	2⅝	8	.66
6A9741	25	200	4.44	2.31	358	16	1,500 1,200 1,000	26.7 35.3 103.	86.5 65.4 22.4	2½	8	.70
6A9742	25	249	5.65	3.67	442	15	2,500 2,000 1,500	45.9 65.2 120.	80.0 56.3 30.6	2 15/16	9	.74
6A9743	25	300	7.11	5.35	535	17	2,500 2,000 1,500	80. 119. 210.	66.9 45. 25.5	3	11	.79
6A9744	25	400	10.7	9.62	656	13	4,000 3,000 2,500	75. 120. 172.	128. 80. 56.	3¼	12	.82
6A9745	25	500	12.4	15.5	836	13	4,000 3,000 2,500	138. 241. 355.	112. 64.4 43.6	3½	12	.91
6A9746	28	600	27.8	21.6	1,045	14	10,000 5,000 3,000	42. 82. 227.	515. 263. 95.2	3⅝	12	1.09
6A9747	28	750	35.3	34.2	1,300	14	10,000 5,000 3,000	63. 151. 505.	543. 226. 67.7	3 9/16	12	1.28
6A9748	28	1,000	50.2	61.0	1,700	13	11,000 10,000 7,000	93. 101. 169.	657. 603. 361.	3¾	14	1.48
6A9749	28	1,250	66.9	102.5	2,010	11	11,000 10,000 7,000	144. 162. 293.	711. 632. 350.	4 1/16	14	1.84
6A9750	28	1,500	88.4	155.0	2,710	13	11,000 10,000 7,000	250. 295. 650.	820. 526. 238.	4 5/16	14	2.31

Portable Three-Coil Mounting.



Consists of one stationary and two variable Bakelite panel mounting plugs mounted on Bakelite panel as shown. The two variable plugs are fitted with extension handles so that the operator's hand is far enough away from the coils to prevent any capacity effect while tuning in. Rear of panel is fitted with six binding posts. Unit is supported by two black enameled brass rods, 3½ inches high, mounted on black wooden base. Size of base, 6⅝x3¼x 1 1/16 inch; length of panel, 4⅛ inches; length of handle, 5¼ inches. Shipping weight, 5 pounds.

6A9550—Portable Three-Coil Mounting.....**$5.65**



Extension Handle.

Same as used on 6A9550 Coil Mounting. Made from brass rod, nickel plated and polished. Fitted with molded insulated handle. Threaded to fit variable panel mounting plugs and furnished with locknut. Length, 5¼ inches. Shipping weight, 4 ounces.

6A9645—Extension Handle.....**24c**

Stranded Aerial Cable

Seven-Strand No. 22 Copper Aerial Cable.

Composed of seven strands No. 22 B. & S. gauge copper wire. Used extensively by experimenters, amateurs, etc. Put up in standard coils as listed below. Not sold any other way. Shipping weight, per 100 feet, 2 lbs.

6A9979¼—Stranded Copper Aerial Cable.

Per	100 feet	$0.64
Per	250 feet	1.55
Per	500 feet	3.00
Per	1,000 feet	5.65

Seven-Strand No. 20 Copper Aerial Cable.

6A9980—This size is larger than 6A9979¼ and has greater mechanical strength. Recommended for large aerials. Put up in standard coils of 100 feet only. Shipping weight, per 100 feet, 3 pounds.

Per	100 feet	$0.95
Per	200 feet	1.80

Seven-Strand No. 18 Copper Aerial Cable.

6A9981—Standard Navy size. Recommended for all schools, clubs and large experimental stations. Put up in standard coils of 100 feet only. Shipping weight, per 100 feet, 4 pounds.

Per	100 feet	$1.35
Per	200 feet	2.60

Stranded Phosphor Bronze Aerial Cable.

Composed of seven strands No. 22 B. & S. gauge phosphor bronze wire. Combines high conductivity and mechanical strength. Used by the United States and foreign governments and by all commercial companies. Put up in standard coils as listed below. Not sold any other way. Shipping weight, 3 pounds per 100 feet.

6A9995¼—Stranded Phosphor Bronze Aerial Cable.

Per	50 feet	$ 1.15
Per	100 feet	2.10
Per	250 feet	5.00
Per	500 feet	9.00
Per	1,000 feet	17.75

Seven-Strand No. 22 Tinned Copper Aerial Cable.

Composed of seven strands No. 22 B. & S. gauge tinned copper wire. Wire is tinned to prevent corrosion. Used extensively by commercial and government stations. Put up in standard coils as listed below. Not sold any other way. Shipping weight, per 100 feet, 3 pounds.

6A9994¼—Stranded Tinned Copper Aerial Cable.

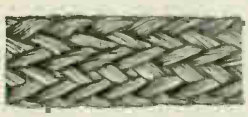
Per	100 feet	$0.85
Per	500 feet	3.75
Per	1,000 feet	6.50

Litzendraht Wire.

6A9942—Consists of twenty strands of No. 38 special Belden enameled wire, twisted and covered with a double serving of white silk. Shipping weight, 8 ounces per 100 feet.

Per 100 feet 65c

Flat Braided Copper Cable.



Used extensively for connecting transmitting apparatus, motor and generator repair work, lead-in work, etc. Comes in two sizes, as follows:

6A9996—⅝ inch wide, ⅛ inch thick, composed of 360 No. 30 bare copper wires. Flexible and is easily soldered, cut, etc. Shipping weight, 1 pound per 10 feet.

Per foot, 9c; 10 feet 85c

6A9997—1⅛ inch wide, 1/16 inch thick. The amateur's favorite; very flexible. Composed of 168 No. 30 bare copper wires. Easy to work. Shipping weight, ⅛ pound per 10 feet.

Per foot, 6c; 10 feet 50c

Spaghetti Varnished Tubing.

An exceptionally high grade varnished tubing used for wiring panel sets where proper insulation is desired. The tubing is finished with many thin layers of varnish, each coat properly baked and carefully rubbed down. The tubing is durable and flexible and oil or acid will not affect it. Best for high tension work. Sold only in 36-inch lengths. Shipping weight, 3 ounces.

6A9903—To fit 14-gauge wire or smaller. Per piece 19c
6A9904—To fit 18-gauge wire or smaller. Per piece 19c

No. 18 Insulated Copper Wire.

Commonly known as annunciator or bell wire. Put up in ⅛ or 1-pound coils (150 feet to the pound). Shipping weight, 1⅛ pounds.

6A9900—No. 18 Insulated Wire. Per pound 47c

Office Wire.

6A9902—Office Wire No. 18, in 1-pound coils (about 95 feet to the pound). Same as annunciator wire, but with heavier and thicker insulation.

Per pound 54c

Aerial Wire

Copperweld Antenna Wire.

Radio frequency currents, when conducted by wires at the sending and receiving stations, travel through a thin layer of metal along the exterior of the wires because of the phenomena known as "skin effect." The loss of radio energy in the wires depends on the electrical conducting properties of this exterior layer of metal. Copperweld wire is 50 per cent stronger than copper wire of equal size and will stay up under severe sleet and wind loads when other wires would be wrecked. Copperweld may be strung taut so that the antenna will not sway in the wind; this insures clear receiving. Shipping weight, 100 feet, 1½ pounds.

6A9984—14-Gauge Copperweld Antenna Wire.

Per 100 feet		40c
Per 200 feet		76c

Aluminum Aerial Wire.

Aluminum wire has been used for years for making small aerials. Put up in standard coils as listed below. Not sold any other way.

6A9983—No. 14-Gauge Aluminum Wire.

Per 50 feet	(Shipping weight, 12 ounces)	23c
Per 100 feet	(Shipping weight, 1 pound)	39c

6A9982—No. 12-Gauge Aluminum Wire.

Per 50 feet	(Shipping weight, 12 ounces)	25c
Per 100 feet	(Shipping weight, 1 pound)	45c

Bare Copper Aerial Wire.

Put up in standard coils as listed below. Not sold any other way.

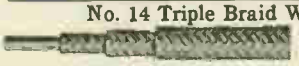
6A9989¼—No. 14-Gauge Bare Copper Wire.

Per	100 feet	(Shipping weight, 1½ pounds)	$0.39
Per	500 feet	(Shipping weight, 9 pounds)	1.65
Per	1,000 feet	(Shipping weight, 15 pounds)	3.20

6A9990¼—No. 12-Gauge Bare Copper Wire.

Per	100 feet	(Shipping weight, 2½ pounds)	$0.57
Per	500 feet	(Shipping weight, 12 pounds)	2.55
Per	1,000 feet	(Shipping weight, 25 pounds)	4.95

No. 14 Triple Braid Weatherproof Wire.



No. 14-gauge wire is now approved by the National Board of Fire Insurance Underwriters for ground connections. This wire is much easier to handle than the No. 4 or No. 6-gauge wire previously required.

Covered with three saturated braids. For outside work only. Made to meet weather conditions better than rubber covered.

6A9975¼—No. 14-gauge, 25 feet ... (Shpg. wt., 1 lb.) ... $0.23
Per 100 feet ... (Shpg. wt., 3 lbs.) ... .74
Per 1,000 feet ... (Shpg. wt., 28 lbs.) ... 6.75

No. 6-Gauge Triple Braid Weatherproof Wire.

Some cities and localities still require No. 6-gauge wire for ground connections. Although heavier and more expensive, it is preferred by many amateurs today.

6A9971¼—No. 6 Triple Braid Weatherproof Wire.

Per foot		$0.03
Per 100 feet	(Shipping weight, 16½ pounds)	2.35

Brass Ribbon.

Hard drawn brass ribbon, 1 inch wide 1/32 inch thick. The right material for making oscillation transformers, etc. Also used extensively for connecting transmitting sets, etc. Shipping weight, 6 feet, 1 lb.

6A9498—Brass Ribbon.

Per foot, 10c; per 10 feet 90c

Radio Towers.

Our steel Radio Towers are of extra strong construction and are properly proportioned and braced. Every corner post, brace, band girth, bolt and nut is heavily galvanized after all cutting, punching and other machine work is done. This insures every part of the steel being covered with non-rusting material. Towers are braced diagonally as well as crosswise at every corner post joint, making them exceptionally strong and rigid. Towers are full height; every corner post section is 10 feet 6 inches long—the extra 6 inches being allowed for the lap of one post section over the one below it. This feature makes it a stronger and better weight tower and also prevents water from running into the corner post joints. The prices are for towers complete with platform, ladder, rod guides, truing spider, bed plates, anchor posts and anchor plates, and building instructions for erecting. Regularly furnished with anchor posts and plates for fastening in the ground, but can furnish special anchor plates for setting in concrete if so ordered at the same price. Shipped from factory in INDIANA.

32A4150—60-Foot Radio Tower. Weight, 1,410 pounds $87.75
32A4151—70-Foot Radio Tower. Weight, 2,050 pounds $125.50
32A4152—80-Foot Radio Tower. Weight, 2,500 pounds $170.25
32A4153—90-Foot Radio Tower. Weight, 3,050 pounds $231.00
32A4154—100-Foot Radio Tower. Weight, 3,550 pounds $297.50

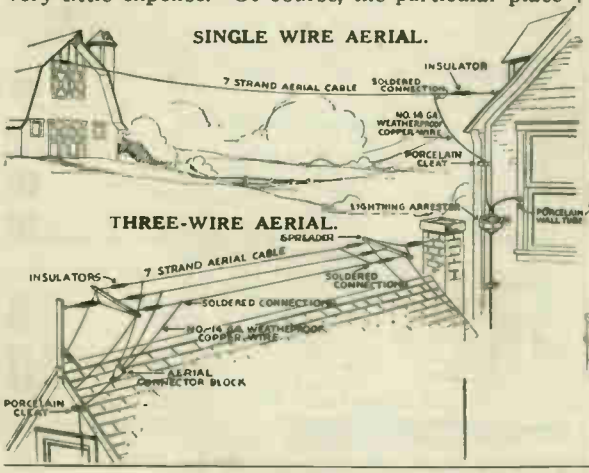
Simple Outside Aerials

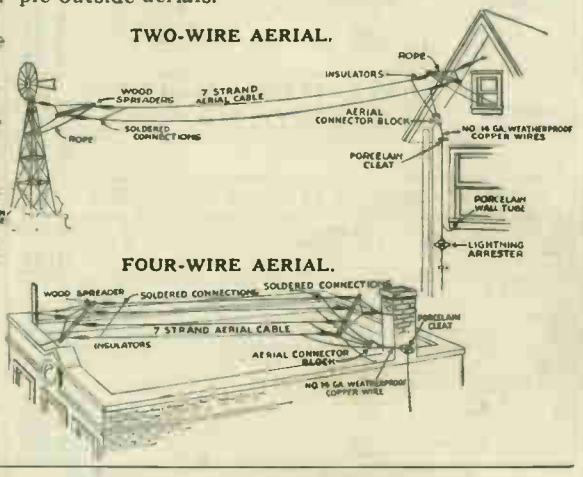
Instructions on How to Build and Install

Erecting a good antenna is the first step in installing a radio outfit and perhaps one of the most important, as its construction, position and the way it is hung will materially affect the distance you may receive.

The ideal and most satisfactory type of antenna, for reception and transmission of radio waves, is the so called "outside aerial." We will explain how easily you can construct just such an aerial and with very little expense. Of course, the particular place and the immediate surroundings where you wish to erect your aerial will greatly determine its length and the height at which it may be suspended.

We will assume that the site of your proposed aerial is the one that is most often taken advantage of—the roof of the house, or it might be suspended between the barn and the house, or possibly between the windmill and the house. For such sites we recommend any one of the following types of simple outside aerials.





Aerial and Ground Parts

Aerial Connector Block.

The weakest point in most amateur stations is where the wires from the aerial join the lead-in. This aerial connector block does away with soldered joints and loose connections. Is made of solid brass, easy to install and will last a lifetime. Size, 2 inches high by 1¾ inches wide by ¾ inch thick. Shipping weight, 6 ounces.

6A9272—Aerial Connector Block..... **21c**

Aerial Suspension Rope.

One-fourth inch in diameter. Made of good quality long fiber cotton, smoothly braided. Will give good service on any outside installation. Put up in bundles of 100 feet. Shipping weight, 2¼ pounds.

6A9359—Aerial Suspension Rope. Per bundle..... **$1.00**

Aerial Suspension Pulley.

Galvanized iron pulley. Takes rope 5/16 inch or smaller; wheel, 1½ inches in diameter. Ideal for use in suspending aerials. Shipping weight, 7 ounces.

6A9358—Aerial Suspension Pulley..... **8c**

Anchor Gap.

In case the lightning switch is forgotten, the anchor gap protects the apparatus. It is connected between the ground and aerial wires. Made of hard rubber composition ring with two adjustable electrodes. Shipping weight, 12 ounces.

6A9245—Anchor Gap, 2-point..... **75c**

Ground Clamp.

For connecting ground wires to pipe or rods. Fits any size up to 1½ inches and provides a positive and convenient ground. Shipping weight, 4 ounces.

6A9313—Ground Clamp..... **6c**

Consists of a 600-volt, 100-ampere switch mounted on a composition waterproof insulating base, 25 feet No. 6-gauge weatherproof wire and ½ dozen one-wire porcelain cleats. This makes a fine grounding outfit and should be installed with every station. Shipping weight, 14 pounds.

6A9431¼—Complete Aerial Grounding Switch Outfit..... **$2.98**

One-Wire Porcelain Cleats.

Heavy One-Wire Porcelain Cleats for supporting aerial lead-in or ground wire. Shipping weight, one dozen cleats, 2 pounds.

6A9397—Each..... **5c**

Outdoor Lightning Arrester.

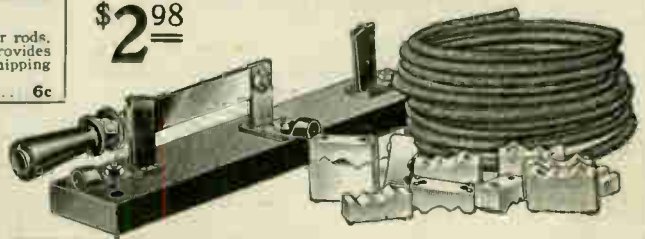
This Aerial Lightning Arrester has been designed especially for protecting radio receiving apparatus from atmospheric lightning disturbances in cases where the operator may have forgotten to close the aerial grounding switch after use or where a sudden lightning storm may occur while the receiving instruments are in use. Besides efficiently protecting the receiving apparatus, it practically eliminates any fire hazard which might exist were lightning disturbances permitted to enter the station on account of an unprotected aerial lead.

The arrester consists of an all porcelain body, thoroughly weatherproof, enclosing circularly ribbed metal discharge plates, carefully insulated from each other and with their discharging areas separated by an air gap of 1/100 inch. Heavy set screw connections are provided for making necessary connections; it may be suspended either by means of these connectors or attached to any suitable support by means of a steel band and screws, which are also supplied. Screw holes for mounting are spaced on 4¼-inch centers. Shipping weight, 1½ lbs.

6A9417—Outdoor Lightning Arrester..... **$1.48**

Aerial Grounding Switch Outfit.

$2.98



Simple Outside Aerials

(Continued)

Some of the best results in radio reception are obtained with the single wire aerial. We urge you to erect this type if you are fortunate enough to have two convenient objects from which you can suspend a single wire 75 to 125 feet long and raised at least 35 feet above the ground. However, the higher it is above the ground, the better. In case the distance between these objects is limited to less than 75 feet, that is anywhere from 50 to 75 feet, it is desirable to construct the two-wire type, spacing the wires about 2 feet apart. For an aerial of less than 50 feet, we recommend either the three-wire or four-wire type, spacing the wires not less than 18 inches apart. It is interesting to know that the number of wires is of little advantage in securing louder signals when the broadcasting station is nearby. But the addition of more wires to the single wire aerial does increase its capacity and long distance receiving, especially on high wave lengths.

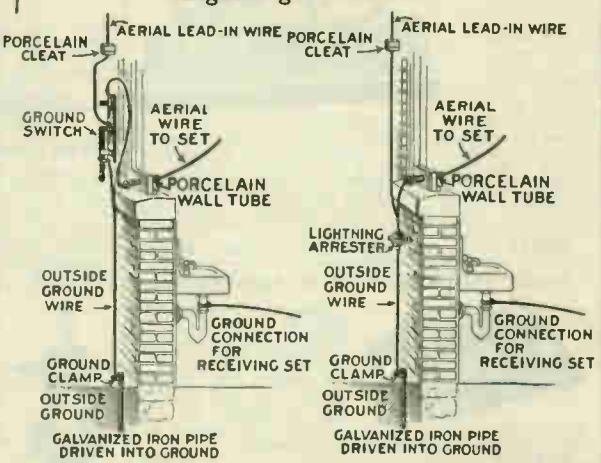
Having decided on the length of the aerial and the type best suited for your requirements, you can then figure from the illustration what material you will need. Seven-strand No. 22-gauge bare copper cable is more desirable for aerial wire than single strand No. 12 or 14-gauge bare copper wire. Next to the aerial wire, proper insulation is the most important point and the right insulating material must be used so as to have as perfect an insulation between the aerial and the ground as can be obtained.

For the convenience of our customers we list below four complete Aerial and Ground Outfits for installing the four aerials illustrated. Order the one you require and thereby assure yourself of getting the right materials which have been carefully selected by our radio experts. Not only that—you save a bit of money in that the price for the outfit is much less than the total price of the parts.

Ground Connection.

The best ground connection for your receiving set and the one that is most easily secured is a connection made to any water pipe running into the ground. It is advisable to make the connection to the pipe by means of a ground clamp, similar to the one furnished with our Aerial and Ground Outfits. With these outfits is also furnished sufficient No. 14-gauge weatherproof wire for the ground wire leading to your radio set. A good ground connection may also be secured by driving a galvanized iron pipe 4 to 6 feet into the earth and to this pipe you can attach the ground clamp. Another way is to bury poultry fencing 2 or 3 feet in the earth. If you use the last method, you should solder the ground wire to the poultry wire at several points.

Lightning Protection.



The lead-in wire from the aerial must be provided with an approved lightning arrester or aerial grounding switch, properly connected and located outside the building as near as practicable to the point where the wires enter the building. In making an outside ground connection for the lightning arrester or grounding switch a galvanized iron ground rod driven 4 to 6 feet in the earth may be used. The illustration shows how to connect the aerial lead-in wire and the ground to the lightning arrester or grounding switch. We furnish an approved Lightning Arrester with our Aerial and Ground Outfits.

The National Board of Fire Underwriters require either an aerial ground switch or an approved lightning arrester. The switch must always be closed when you are not operating your set. See our Aerial Grounding Switch Outfit 6A9431¼, on opposite page at bottom.

Aerial and Ground Outfits

These outfits are complete with all the necessary parts for installing the aerial and ground connections to any receiving set. The parts included in each outfit have been carefully selected by our experts and we recommend each part as being especially well designed and constructed for the purpose it serves. In each outfit we have included a coil of No. 18-gauge bell wire which will come in handy for connecting up your instruments. You'll find it very easy to construct an aerial from one of these complete outfits. And, too, you'll be more than pleased with the efficient aerial results and always confident in knowing that your set is protected against lightning.

Single Wire Aerial Outfit.

The complete outfit consists of:

125 Feet of Seven-Strand Copper Aerial Cable.
50 Feet of No. 14-Gauge Weatherproof Copper Wire.
75 Feet of No. 18-Gauge Insulated Bell Wire.
2 Aerial Strain Insulators.
6 Porcelain Cleats.
1 Porcelain Wall Tube.
1 Ground Clamp.
1 Aerial Lightning Arrester.

Shipping weight, 7 pounds.

6A9435—Complete outfit **$3.18**

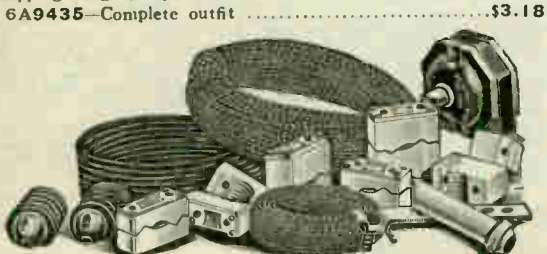


Illustration Showing Single Wire Aerial Outfit.

Two-Wire Aerial Outfit.

The complete outfit consists of:

150 Feet of Seven-Strand Copper Aerial Cable.
50 Feet of No. 14-Gauge Weatherproof Copper Wire.
75 Feet of No. 18-Gauge Insulated Bell Wire.
1 Aerial Connector Block.
6 Aerial Strain Insulators.
6 Porcelain Cleats.
1 Porcelain Wall Tube.
1 Ground Clamp.
1 Aerial Lightning Arrester.

Shipping weight, 8 pounds.

6A9434—Complete outfit..... **$3.70**

Three-Wire Aerial Outfit.

The complete outfit consists of:

150 Feet of Seven-Strand Copper Aerial Cable.
50 Feet of No. 14-Gauge Weatherproof Copper Wire.
75 Feet of No. 18-Gauge Insulated Bell Wire.
1 Aerial Connector Block.
8 Aerial Strain Insulators.
6 Porcelain Cleats.
1 Porcelain Wall Tube.
1 Ground Clamp.
1 Aerial Lightning Arrester.

Shipping weight, 9 pounds.

6A9433—Complete outfit..... **$3.84**

Four-Wire Aerial Outfit.

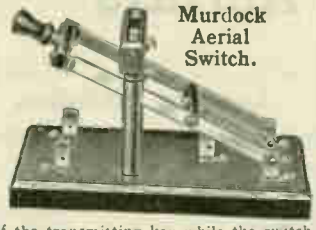
The complete outfit consists of:

200 Feet of Seven-Strand Copper Aerial Cable.
50 Feet of No. 14-Gauge Weatherproof Copper Wire.
75 Feet of No. 18-Gauge Insulated Bell Wire.
1 Aerial Connector Block.
10 Aerial Strain Insulators.
6 Porcelain Cleats.
1 Porcelain Wall Tube.
1 Ground Clamp.
1 Aerial Lightning Arrester.

Shipping weight, 10 pounds.

6A9432—Complete outfit..... **$4.30**

Switches



Murdock Aerial Switch.

Can be used with any size set up to 1 K.W. It enables the operator to to secure a quick and positive change from receiving to transmitting or from transmitting to receiving.

The danger of damaging the receiving instruments by accidental touching of the transmitting key while the switch is in the receiving position is eliminated by the additional blade in the rear, which opens the transmitting circuit when the switch is in the receiving position.

Base is hardwood, polished mahogany finish. The standard is rigid hard rubber composition, which provides good insulation. Switch blades are 8 inches long and are of rolled copper. Size, over all, 11⅝x5¾x5½ inches. Shipping weight, 5 pounds.

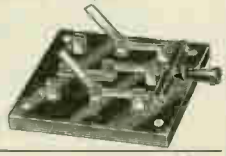
6A9221—Commercial Type Aerial Switch ... **$4.30**

Double Pole, Double Throw Aerial Switch.

New and very popular type of aerial switch. Switch is heavy duty type, 30-ampere, 250 volt, mounted on slate base, 6¾ inches long by 4½ inches wide by ¾ inch thick. Suitable for any size installation up to 1 K. W., also very useful around the radio station for other purposes. Shipping weight, 4 pounds.

6A9206 ..... **97c**

Slate Base Aerial Switch.



Receives on double-pole side, transmits on three-pole side. Nicely finished angle blades. Mounted on slate base, 7x8x¾ inch. A high grade aerial switch. Capacity, 1 K. W. Shipping weight, 6 pounds.

6A9405—Slate Base Aerial Switch **$2.67**

Ground Switch.

The fire underwriters in many localities require a double throw, single pole switch for grounding the aerial when not in actual use. This is a protection against lightning. The ground wire from the switch should be No. 6 gauge, and the switch should be at least 600 volts, 100 amperes, and no smaller than this switch. Ground switch is mounted on a composition waterproof insulating base; capacity, 600 volts, 100 amperes. Size of base, 15x3x1 inch. Shpg. wt., 4¾ lbs.

6A9406—Ground Switch **$2.20**

Ground Switch—Parts Only.

Many amateurs prefer to mount their ground switch in their own way, and to meet this demand we are offering our 6A9406 Ground Switch, complete without base, as shown in illustration. Shipping weight, 2 pounds.

6A9580—Ground Switch—Parts only. Per set. **$1.65**

Baby Knife Switches.

Double Pole Single Throw Switch. Base, 2x2¾ inches. Shipping wt., 2 oz.

6A8355 ..... **35c**

Double Pole Double Throw Switch. Base, 2½x4 inches. Shipping wt., 1 lb.

6A8356 ..... **45c**

Single Pole Double Throw Switch. Base, 1⅝x4 inches. Shipping weight, 12 ounces.

6A8354 ..... **28c**

Single Pole Single Throw Switch. Base, 1⅛x3⅛ inches. Shipping weight, 6 ounces.

6A8353 ..... **21c**

Wood Base Switches.

For use on telephones, closed circuit bell systems, burglar alarms and battery circuits in general. Used in connection with 6A9200 Beginners' Practice Set. Hardwood base with rubbed oil finish. Shipping wt., 3 oz.

6A8550—1-point ... **10c** | **6A8552**—3-point ... **16c**
6A8551—2-point ... **12c** | **6A8553**—4-point ... **18c**

Electrose Insulators

6A9337

6A9338

6A9339-6A9340

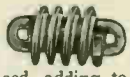
Catalog No.	Diam., Inches	Length Over All, Inches	Mechanical Strgth., Lbs.	Electrical Value: Dry Volts	Electrical Value: Rain	Shpg. Wt., Lbs.	Each
6A9337—Ball Insulator	2⅛	3¼	250	40,000	25,000	⅛	$0.26
6A9338—Strain Insulator	1½	5	1,000	40,000	15,000	¾	.35
6A9339—Strain Insulator	1⅝	10½	1,000	90,000	50,000	1¼	.60
6A9340—Strain Insulator	1⅝	15⅝	1,500	125,000	75,000	2¼	1.55

Wall Insulator.

For lead-in wires. Has ¼-inch brass rod embedded in center. Diameter of body, 2 inches; length over all, 5/16 in. Shipping weight, 1 lb.

6A9341—Special Wall Insulator **$1.45**

Porcelain Strain Insulator, Improved Model.



A small but highly efficient insulator. Made of porcelain, heavily and deeply ribbed, brown glazed. It has protected and smoothly turned holes in each end for wires. Size of ends has been increased, adding to the strength of the insulator. Size, over all, 2¾ inches long by 1¼ inches in diameter. Shipping weight, each, 5 ounces; per dozen, 5 pounds.

6A9273—Porcelain Strain Insulator. Each..... **7c**
Per dozen..... **76c**

Commercial Wall or Roof Insulator.

Rain test, 25,000 volts; dry test, 55,000 volts. Length of insulator, 10 inches; length, over all, 13 inches; length below shoulder, 6 inches; diameter of top, 4 in.; diameter of shoulder, 3 inches; ⅝-inch locking ring. Diameter, threaded section, 1¾ inches, slight taper to bottom; ½-inch solid brass rod. Shipping weight, 5 pounds.

6A9391—Commercial Wall or Roof Insulator **$5.50**

Commercial Wall Bushing.

Rain test, 35,000 volts; dry test, 60,000 volts. Length, over all, 9⅛ inches; length, outside end, 5½ inches; inside end, 3⅞ inches; ⅝-inch locknut; diameter at shoulder, 3 1/16 inches; diameter, threaded section, 2½ inches; tapering hole, ¾ inch inside end, 1 1/16 inch outside end. Shipping weight, 5 pounds.

6A9390—Commercial Wall Bushing **$3.00**

Electrose Extra Long Wall Bushing.

Polished black finish. Rain test, 20,000 volts; dry test, 40,000 volts. Length, over all, 9 1/16 inches; length, threaded section, 6½ inches; 1-inch locknut; diameter, threaded section, 1 inch; diameter of shoulder, 2 inches; tapering hole through insulator, ¼ inch outside end, 7/16 inch inside end. Shipping weight, 4 pounds.

6A9388—Wall Bushing..... **$1.80**

Upright Insulator.

Polished black finish. Used extensively on spark gaps, oscillation transformers, condensers, aerial switches, etc. Height, over all, 2 9/16 inches; diameter of base, 1⅝ inches; diameter of top, 1 3/16 inch. Brass bushings, 9/32 inch in top and base. Shipping weight, 8 ounces.

6A9387—Upright Insulator **90c**

High Voltage Lead Insulators.

6A9290

These insulators provide very efficient means for carrying lead-in wires, ground wires and transmitter connecting strips. Should be used on corners in roofs, on the wall or floor or wherever it is necessary to insulate properly. Small insulator is 40,000-volt Electrose molded type. Base is made from heavy iron strip with four mounting holes and is neatly japanned in black. Copper jaw is suitable for holding high frequency cable, bare or insulated wire, copper braid, brass ribbon, etc. Jaw is also drilled, which provides a convenient means of stringing cable through holes. Large insulator is Electrose and is especially suitable for carrying aerial lead-ins over edge of roofing and for running leads along the wall, connecting high power transmitting apparatus, etc.

6A9269

6A9290—High Voltage Lead Insulator. Height, 3¾ inches. Shipping weight, 2 lbs. Each, **$1.39**; per half dozen **$8.24**

6A9269—High Voltage Lead Insulator. Height, 9 inches. Shipping weight, 3 lbs. Each **$2.25**

Aerial Change-Over Switch.

This switch comprises all good features of high priced change-over switches. Is very compact and neat in appearance and is operated by a simple twist of the wrist by means of the knob. This knob, being large and knurled, makes the operation very easy. All contacts are mounted on opposite sides of vertical formica support, which allows no accumulation of dust or dirt to lower the resistance of the insulation. Due to the special construction of this switch, when the change is made from sending to receiving, the aerial is grounded for a fraction of a second before the receiving position is reached, thus draining the aerial of any residual charge and preventing any disagreeable kick in the telephone receivers.

The closing of the switch in the sending position also closes the power circuit which starts the rotary gap motor and places power at the disposal of the key.

Insulating and nickel parts are in satin finish. Switch measures 5 inches long, 3 inches wide and 4½ inches high. Shipping weight, 2 pounds.

6A9408—Aerial Change-Over Switch **$5.10**

Morse Telegraph Instruments

Our Improved Learner's Telegraph Outfits.

Consists of a full size solid trunnion key and a 4-ohm sounder mounted on a polished hardwood base. Sounder lever, sounding posts and key switch lever are of lacquered brass. Key lever is nickel plated and buffed. All parts are adjustable. A small instruction book, dry battery and connecting wire are included. Shipping weight, 5 pounds.

6A9151 ..... **$3.25**

Our Special Learner's Telegraph Outfit includes an improved 4-Ohm Learner's Instrument, described above, battery and connecting wire. A copy of "The Telegraph Instructor," a cloth bound 347-page textbook of telegraphy, is included instead of the small instruction book. Shipping weight, 6 pounds.

6A9153 ..... **$4.00**

The Telegraph Instructor. By G. M. Dodge. A newly revised edition. A complete text on Morse (railway and commercial) telegraphy for the student or operator. Used by many schools as a text book. Shpg. wt., 1½ lbs.

6A9177 ..... **$1.62**

Our Double Learner's Telegraph Outfit. This consists of two Improved 4-Ohm Learner's Instruments, four dry batteries, two instruction books and 300 feet of insulated copper wire. The instruments may be installed in different rooms, or in two houses on adjacent lots, and the operators can practice sending and receiving messages. Shipping weight, 19 pounds.

6A9155 ..... **$7.75**

Improved 4-Ohm Learner's Telegraph Instrument, without battery or connecting wire. Shipping weight, 3 pounds.

6A9161 ..... **$2.80**

Improved 20-Ohm Learners' Telegraph Instrument, the same as the 4-Ohm instrument, except that sounder is wound to 20 ohms to increase its sensitiveness. Shpg. wt., 3lbs. 11 oz.

6A9163 ..... **$2.75**

Learn to Be a Commercial Operator.

The Omnigraph Instructor.

Used by U. S. Navy, U. S. Army, Department of Commerce and Radio Schools. This set is used by the Department of Commerce, U. S. Government, in conducting their tests for operators' licenses, etc.

Furnished complete with five records and will send at a rate of speed from 5 to 100 words per minute. Messages can be changed in the fraction of a second, even while the machine is running. Provided with five movable message changers. Each dial is divided into five equal parts, making the dials, so far as changing the message is concerned, equal to twenty-five dials. The spring motor is of good quality and will run off 1,200 words on one winding. Unit can be used in connection with any of our wireless buzzers, together with one dry cell. Metal parts are finished in enamel or lacquered brass. This instrument will enable you to learn wireless at home. Mounted on mahogany finish base, 11x6 inches. Booklet of instructions included with each instrument. Shipping weight, 8 pounds.

6A9223—The Omnigraph Instructor. **$21.00**

Private Line Sets.

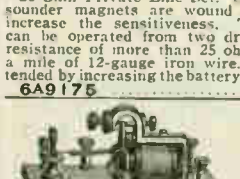
4-Ohm Private Line Set. Consists of our Aluminum Lever Giant Sounder 6A9180 and bar Standard Steel Lever Key 6A9186, mounted on one base of polished hardwood. The quality and finish of this set is high grade throughout. Shipping weight, 3 pounds 13 ounces.

6A9174 ..... **$3.80**

20-Ohm Private Line Set. Same as above, except that sounder magnets are wound to a higher resistance to increase the sensitiveness. Two of these instruments can be operated from two dry batteries through a line resistance of more than 25 ohms, which is equivalent to a mile of 12-gauge iron wire. The distance can be extended by increasing the battery power. Shpg. wt., 3lbs. 13 oz.

6A9175 ..... **$4.00**

Standard Relay.



20-Ohm Standard Relay. This relay is a very sensitive, nicely adjusted and handsomely finished instrument. Frame is lacquered brass; the armature is nickel plated. Mounted on a polished hardwood base with sub-base of black enameled cast iron. Suitable for telegraph lines up to 10 miles; also burglar and fire alarm systems. Shipping weight, 2¼ pounds.

6A9188 ..... **$3.15**

Giant Sounders.

4-Ohm Giant Sounder. This is a rapid, loud aluminum lever sounder with lacquered brass frame. Magnets are covered with polished hard rubber and leads are thoroughly insulated. The sounder is mounted so that a resonating air space is maintained between the base plate and the polished hardwood mounting board. All parts are adjustable. Shpg. wt., 1½ lbs.

6A9180 ..... **$2.30**

20-Ohm Giant Sounder. Same as 6A9180, except that magnets are wound to a higher resistance to increase its sensitiveness over longer lines. Shpg. wt., 1½ lbs.

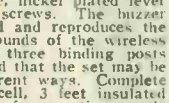
6A9181 ..... **$2.50**

Beginners' Wireless Practice Set.

This set consists of a wireless key and buzzer, mounted on a polished wood base. The key has black enameled frame, nickel plated lever and adjusting screws. The buzzer is nickel plated and reproduces the high pitched sounds of the wireless stations. The three binding posts are so connected that the set may be used five different ways. Complete with one dry cell, 3 feet insulated wire, diagram of connections, code chart and instructions. Size of base, 7x4½ inches. Shipping wt., 5 lbs.

6A9200—Beginners' Wireless Practice Set **$2.40**

Legless Key.



Standard Steel Lever Key, legless. Steel lever and switch strap are heavily nickel plated and buffed. Black composition key and switch knobs. Fully adjustable. Shpg. wt., 10 oz.

6A9185 ..... **$1.90**

Wireless Keys

Navy Type Radio Key.

Coin Silver Contacts.

This key embodies the most approved advances made during the war. It has several outstanding features which make it a most satisfactory key. All parts are made to withstand hard usage and render good service under all operating conditions. Key may be used on any set up to and including 5 K.W. Contacts are of stamped coin silver ⅝ inch in diameter, spun into solid brass containers which are removable, permitting cleaning and inspection of contacts. Extra contacts are listed below. Current is carried direct to binding posts instead of through the bearings.

Key knob is the latest flameproof type, which, on account of its construction, allows the operator to work faster and longer without tiring.

All metal parts are solid brass, heavily nickel plated, mounted on blue marble base, beveled and polished. Base has two holes for mounting key as desired. Dimensions are as follows: Size of base, 6 inches long, 3½ inches wide, 1 inch high. Over all length, lever, 7½ inches. Shipping weight, 6½ pounds.

6A9449—Meteor Navy Type Radio Key **$4.89**

Extra Contacts.

Coin Silver Contacts for 6A9449 Key. Mounted in nickel plated brass containers to fit the key. Come in sets of two contacts, one upper, one lower. Shipping weight, 6 ounces.

6A9471—Extra Contacts. Per set **$1.14**

Superior Wireless Key—Improved Model.

This key is all that its name implies. We believe it is without doubt one of the finest wireless keys ever made. It is provided with large hardened contact points, size No. 6, mounted on screws, making them renewable and adjustable. The base, lever, binding posts and screws are all heavy brass, finished in gold lacquer. Knob is of hard rubber composition and is of the flameproof type. Allows the operator to work faster and longer without fatigue. Easily taken apart and cleaned. This key is a handsome addition to any wireless set and is suitable for use with 1 K.W. sets, or less. Shipping weight, 1 pound.

6A9373—Superior Wireless Key **$2.48**

Extra Contacts.

Interchangeable with contacts used on 6A9373 Superior Wireless Key. Set consists of upper and lower contact, complete with insulation, etc. Shipping weight, 4 ounces.

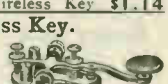
6A9605—Extra Contacts. Per set **43c**

Beginners' Wireless Key.

A good reliable Key which is suitable for small spark coil sets. Mounted on wooden base with steel lever and stamped frame. Nicely finished. Shipping weight, 1 pound.

6A9242—Beginners' Wireless Key **$1.14**

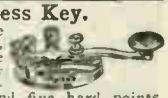
Army Wireless Key.



This key is an improvement over other types, inasmuch as the contact points are removable for cleaning and inspection. Points are of No. 8 Brown & Sharpe gauge coin silver. Mica insulated. Has heavy brass base and bronze lever, with additional copper current carrying strip. Highly polished brass, finished in gold lacquer. Has hard rubber knob mounted with a screw. Suitable for hard and heavy work. Shipping weight, 1 pound.

6A9240—Army Wireless Key **$2.60**

Reliable Wireless Key.



The lever is made of one piece of steel, nickel plated, with a fine bearing. Frame is of lacquered brass, finely finished. Each key has adjustable spring holder and fine hard points, which prevent sticking. A high grade key at a low price. Shipping weight, 1 pound.

6A9205—Reliable Wireless Key **$2.04**

Steel Lever Key.

Standard Steel Lever Key with legs. Same as 6A9185 except that it is made with legs 1¾ inches long, which pass through table, clamping the key and serve as binding posts. Shipping wt., 12 oz.

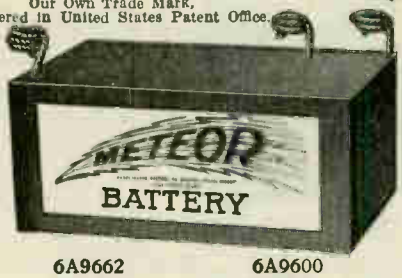
6A9186 ..... **$1.75**

"B" Batteries

METEOR

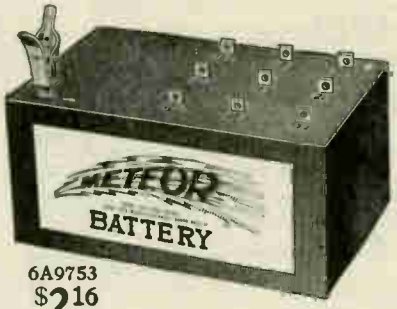
Our Own Trade Mark,
Registered in United States Patent Office.

6A9661
93c

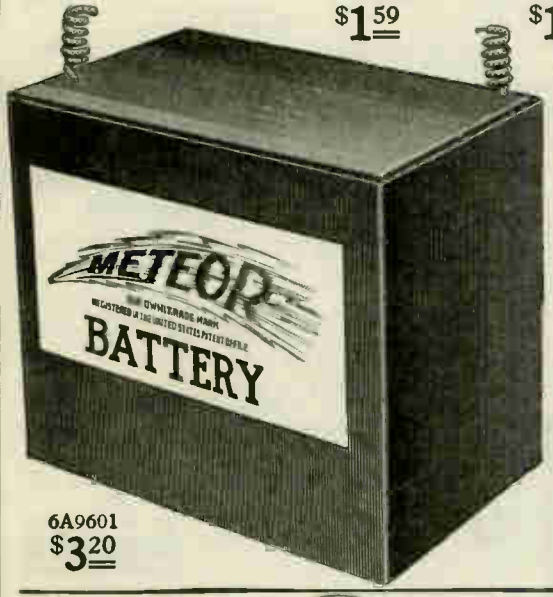


6A9662
$1.59

6A9600
$1.71



6A9753
$2.16



6A9601
$3.20

These batteries are made under our supervision and we believe them to be the equal of any other "B" batteries on the market today. On account of our large sales, our stock is never old, so that you may always be sure you will receive a fresh battery that will give you good service. The batteries will show a uniform voltage and active life and have remarkable recuperative powers.

22½-Volt Battery, U. S. Signal Corps Type.

6A9661—Size, 5x3x2¼ inches. Shipping weight, 4 pounds **93c**

22½-Volt Battery With 18-Volt Tap, U. S. Navy Type.

6A9662—Recommended for use with new Audiotron and Radiotron Tubes. Size, 6½x4x3 inches. Shipping weight, 9 pounds **$1.59**

22½-Volt Battery, U. S. Navy Type.

6A9600—Same size as 6A9662, tapped for 18 volts, 19½ volts, 21 volts. Especially recommended for use with new Audiotron and Radiotron Tubes. Shipping weight, 9 pounds **$1.71**

22½-Volt Battery, U. S. Navy-Laboratory Type.

6A9753—Nine taps single cell variation, 10½, 12, 13½, 15, 16½, 18, 19½, 21, 22½. Taps are made by means of brass strip, drilled to facilitate making positive soldered contact. Volt variation is on "Positive" side of battery. Standard testing clip is furnished with each battery. Shipping weight, 9 pounds.. **$2.16**

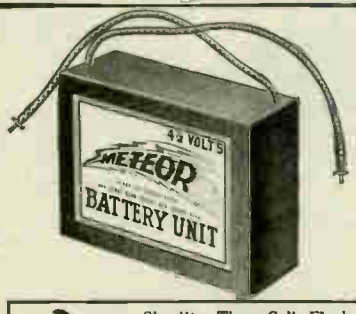
45-Volt Battery, New Type.

6A9601—Developed to meet the requirements of the new Audiotron and Radiotron Amplifier Tubes. Size, 6⅝x2¾x7¾ inches. Shipping weight, 12 lbs.... **$3.20**

4½-Volt "B" Battery Unit.

A "B" Battery Unit that may be used in making up batteries of any desired voltage in steps of 4½ volts. Five of these units with the terminals connected make a standard 22½-volt battery, or ten may be used to make a 45-volt battery. These units possess the advantage that if any one unit should become dead the entire battery is not ruined, and a new unit may be inserted in place of the dead one at small expense. Shipping weight, 1 pound.

6A9607
4½-Volt "B" Battery Unit **40c**



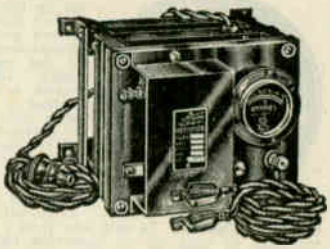
Shurlite Three-Cell Flash Light Battery.

Small size 4½-volt unit used to make up "B" batteries for Vacuum Tubes. Our large sales keep our flash light battery stock moving and our batteries are never old when they reach you. Size, 1⅛ inch thick, 2 inches wide, 2¼ inches high. Shpg.wt., 4 oz.

6A9051—Shurlite Flash Light Battery **27c**

Meteor Rectifier or Battery Charger

Only $13.45

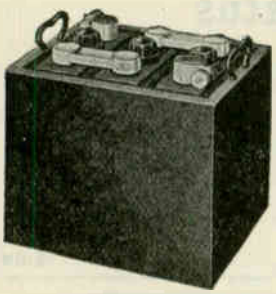


A money and time saver. A very simple to operate and highly efficient device for recharging storage batteries. Can be used to charge any 6-volt storage battery, and no technical knowledge is necessary. All outer parts of this instrument may be touched with utmost freedom at any time, as there is no danger of shock. All exposed parts carry but a few volts potential, which cannot be felt. The action of the recharger is automatic. All that is necessary is to screw the plug into any electric light socket on a 110-volt 60-cycle circuit, connect the leads to the two poles of the battery and the charging will immediately commence and continue until the battery is fully charged. There is no danger of overcharging, as the rate of charge automatically tapers. In contrast to other chargers, the battery connections may be reversed without danger to battery; the indicator on the ammeter will swing to the opposite side and the charging will continue. If the current is shut off, the charging will stop, but the battery will not discharge, and as soon as current is applied again the charging will resume. This device will fully charge any 6-volt storage battery at a cost of from 4 to 10 cents, depending upon the ampere-hour rating of the battery and the amount paid per kilowatt hour for the current. Furnished complete as shown, with book of directions which fully explains operation of rectifier and the care of storage batteries. Shipping weight, 20 pounds.

6A9683—Meteor Rectifier.....**$13.45**

6-Volt Radio Storage Batteries

Reduced Prices



Only $9.08 (40-Ampere) to $19.82 (150-Ampere)

A storage battery developed for radio service under the exacting specifications of the United States Government during the recent war. Extra thick plates and the highest grade insulation are the basis of an unusually high ampere-hour capacity and long life.

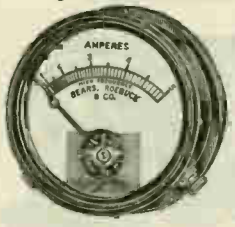
Assembled in neat, clean wood case. Highest grade rubber jars, tested under 20,000 volts, give absolute protection against leakage. Lead headed knurled binding posts make quick connections easy.

Shipped direct from depots in Chicago, Ill., Philadelphia, Penna., Atlanta, Ga., Minneapolis, Minn., or San Francisco, Calif. Cannot be shipped by parcel post.

6A9519⅓—Storage Battery.	6-volt,	40-ampere hour.	Shipping weight, 35 lbs....	**$ 9.08**
6A9520⅓—Storage Battery.	6-volt,	60-ampere hour.	Shipping weight, 40 lbs....	**10.90**
6A9521⅓—Storage Battery.	6-volt,	90-ampere hour.	Shipping weight, 50 lbs....	**13.68**
6A9522⅓—Storage Battery.	6-volt,	120-ampere hour.	Shipping weight, 55 lbs....	**16.76**
6A9523⅓—Storage Battery.	6-volt,	150-ampere hour.	Shipping weight, 65 lbs....	**19.82**

Radio Voltmeters and Ammeters

Jewell Thermo-Couple Radiation Ammeter.



This instrument is especially made for us by the manufacturers of the famous Jewell electrical instruments. It is well known among radio operators that the thermo-couple type of radiation ammeter is the most satisfactory type in use today. This instrument combines a heater wire and a thermo-couple consisting of a pair of crossed wires made of a special alloy, which are connected to a standard D'Arsonval movement.

This instrument will not only enable you to tune your set properly to the oscillating circuit, but will also give you accurate readings of the current radiated. Readings taken at any time can be compared with any other readings with accurate conclusions. In this way it is possible to greatly increase the efficiency of your set by observing readings of this ammeter when making changes in your wiring or in your apparatus.

Instruments of the thermo-couple type are used by nearly all large commercial and Government stations, and it is the type recommended for the highest grade outfits. This instrument is furnished only in the front of board type, with binding posts for front connection, placed at a convenient angle on the instrument case; scales are large and easily read.

Case is black enameled; binding posts nickel plated. Glass is etched below scale; scale is in black on white background. Diameter of case across glass front, 4¼ inches; across back, 4¾ inches; measures 2½ inches from front to back. Shipping weight, 5 pounds.

6A9632—Special Jewell Thermo-Couple Radiation Ammeter, scale 0-5 ..... **$11.00**

6A9633—Special Jewell Thermo-Couple Radiation Ammeter, scale 0-10 ..... **11.25**

Jewell Ammeters and Milliammeters.

For vacuum tube circuits. Entirely self contained and of the same dimensions and pattern as Jewell Voltmeters. Makes panel uniform in appearance when used together.

6A9764—Jewell Ammeter, range 0-5, for filament current in 2 or 3 vacuum tubes. Shipping weight, 1 pound **$5.50**

6A9765—Jewell Milliammeter, same finish and pattern as ammeter, 10-milliampere scale. For measuring plate current in receiving tube. Shipping weight, 1½ lbs **$5.55**

6A9766—Jewell Milliammeter, 100-milliampere scale. For measuring plate current in single sending or transmitting tube. Shipping weight, 1½ pounds **$5.60**

6A9767—Jewell Milliammeter, 300 milliampere scale. For use where several tubes are used in parallel. Shipping weight, 1 pound **$5.65**

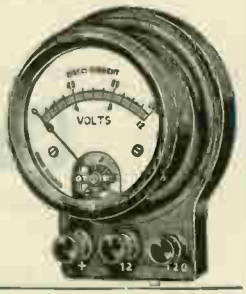
Standard Hot-Wire Ammeter.

Designed especially for wireless transmission circuits. Accurately calibrated. Has zero adjuster. Mounted on black insulated base, 3 inches in diameter; diameter of front, 2¾ inches; depth, 1¼ inches. Scale, 0 to 3 amperes. Nickel plated. Shipping weight, 12 ounces.

6A9491—Standard Hot-Wire Ammeter **$6.50**

D. C. Voltmeter.

A new style double range instrument which fills the need for a low priced meter for checking battery voltages. The range of the meter is 0 to 12 or 0 to 120, depending upon the binding posts to which connections are made, which takes care of the "A" Battery under all conditions and also the "B" Battery up to the highest voltage commonly used for receiving. Instrument is mounted in black polished case and can be used for table or panel mountings. Shipping weight, 3 pounds.



6A9639

D. C. Voltmeter..... **$9.10**

Jewell Voltmeters.

Successful continuous wave radio operation cannot be had without the use of voltmeter to accurately indicate plate voltage; without meter there is no indication as to whether voltage is too low, preventing the tube from functioning properly, or if too high, shortening the life of the tube.

6A9763—Jewell Flush Type Voltmeter, panel mounting, furnished in black metal case, 2½ inches in diameter; flange diameter, 2¾ inches; scale, 0-500 volt, complete with external resistance to be connected in series with instrument. Shipping weight, 1 pound **$13.25**

6A9762—Same as above, 0-50 scale, etc. Shpg. wt., 1 lb.. **5.50**

Combination Filament Ammeter.

Standardize your tube operation by the use of this combination instrument.

A single instrument with a self contained switch for reading the current in the filament of any tube of a group of three, without breaking the circuit. Heretofore it has been necessary to use three ammeters to check the current in the tubes while operating. This instrument has been especially designed for receiving sets and will accomplish the same results. It has three 1.5 ampere shunts, self contained, with terminals on the back, a common terminal to be attached to the battery and three terminals to go to the tubes or their rheostats.

The switching device merely enables the instrument to read the current in either of the three shunts without opening the main circuit or interfering in any way with the operation of the set.

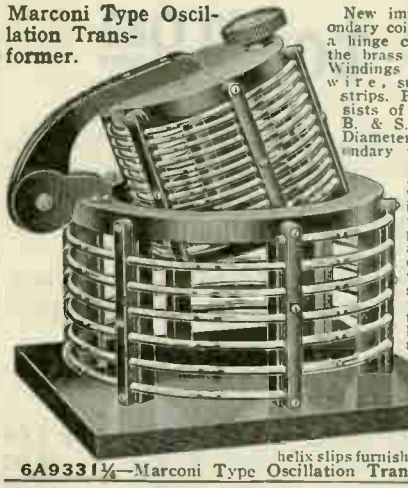
The meter is finished in a 2½-inch flush type case with a flange 3¼ inches across, and contains a high grade miniature movement. A regular mounting hole is cut in the panel with a small groove in its lowest part for the switch shaft.

No vacuum tube set can be considered complete without this instrument. Shipping weight, 2 pounds.

6A9640—Combination Filament Ammeter..... **$9.15**

Transformer and Helix Apparatus

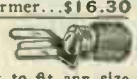
Marconi Type Oscillation Transformer.



New improved model. Secondary coil is now mounted by a hinge coupling, eliminating the brass rod formerly used. Windings are of solid copper wire, supported by formica strips. Primary winding consists of six turns of No. 3 B. & S. solid copper wire. Diameter, 10½ inches. Secondary winding consists of twelve turns of No. 5 B. & S. copper wire. Diameter, 6½ inches. All conducting parts are supported by formica and do not come in contact with any woodwork. This instrument is designed for efficient work on the amateur wave lengths and has a range of adjustment well above and below 200 meters. Woodwork is polished mahogany finish. Two helix slips furnished. Shpg. wt., 28 lbs.

6A9331½—Marconi Type Oscillation Transformer... **$16.30**

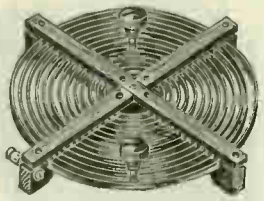
Helix Clip.



A most practical way of getting leads to oscillation transformer, condenser, etc. Clip is especially made to take flat ribbon or braid, but is easily bent to fit any size rod or wire. Has insulating knob and connecting screw. Shpg. wt., 4 oz.

6A9630—Helix Clip..... **18c**

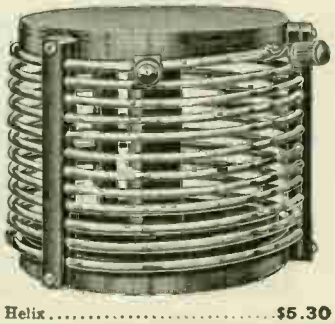
Pancake Helix.



An ideal tuning coil for the small spark coil set. Coil is of brass ribbon, wound in a slotted wooden frame. Frame is mahogany finish. All of the inductance is accessible, which enables the operator to tune within close limits. Furnished with two clips. Diameter of coil, 8 inches. Shipping weight, 3½ pounds.

6A9252—Pancake Helix..... **$2.39**

Marconi Type Helix.

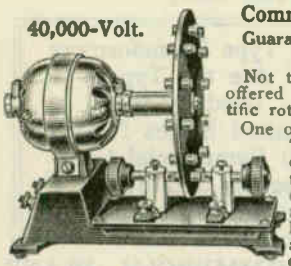


The winding consists of twelve turns of No. 5 solid copper wire, held in place by means of formica strips. These strips are securely fastened to a heavy wooden frame; all woodwork is mahogany finish. This instrument will be found to be very efficient as a helix loading inductance, or to be used in making an oscillation transformer. Also useful in CW sets. Two special clips are furnished with each instrument. Height, 8 inches; diameter, 9½ inches. Shipping weight, 10 pounds.

6A9631—Marconi Type Helix..... **$5.30**

Spark Gaps and Spark Coils

Franklin Rotary Spark Gap.



40,000-Volt.

Commercial Heavy Duty Type. 500-Cycle Note.

Guaranteed to increase the efficiency and range of your station.

Not to be compared with the ordinary rotary spark gap offered the amateur, and is offered to those wishing a scientific rotary, correctly constructed.

One of the most efficient rotary spark gaps ever offered. This rotary has several distinct features which increase the efficiency of the gap and in turn increase the efficiency of the transmitting set as a unit. The current travel is only 3 inches instead of about 10, as in ordinary gaps where the current has to travel half way around the disc. Quenching is very high, and an increase in radiation will be seen immediately on installation. Many amateur long distance records have been made with this gap. This rotary gas has such quenching as to enable the amateur to conform to the present regulations on decrement. The short current travel enables the set to radiate at full efficiency on a 200-meter wave or less. Specifications are as follows:

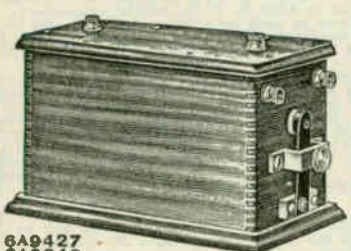
Motor: A rotary spark gap is no better than the motor used, and for this reason particular care was taken in selecting a motor for this instrument. We believe the Hamilton Beach motor is the best small motor obtainable and have, therefore, used it in this gap. Motor is universal, 110-120 volts, 25-60 cycles, AC or DC, and has self aligning bearings and balanced armature. Speed of gap, 4,000 R.P.M. with disc. Can be used with any ⅓ or 1 KVA set; also sets of higher power up to voltage of 40,000.

Disc is of 3/16-inch sheet Bakelite, lathe turned with dull satin finish. Diameter of disc, 6 5/16 inches. Ample insulation is provided and gap will not flash over at 40,000 volts. Twelve rotor electrodes are set ⅛ inch from edge of disc, and rotor clears base only about 5/64 of an inch, which allows a high factor of safety. Stationary electrodes are mounted on Bakelite base and are adjustable as shown in the illustration. Terminals are extended 2 inches from pillars and have heavy binding posts. Bakelite base has satin grained finish to match disc. The entire unit is mounted on cast iron frame, especially made for this gap only.

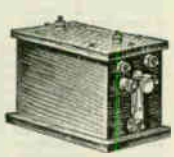
Finish: Motor housing, shaft, collar, stationary electrodes and terminals are nickel plated and polished, giving a most pleasing appearance. Base has black japanned finish, oven baked. Rotor studs are cut from 5/16-inch brass rod. Frame has rubber feet.

Operation: In operation this gap will not wabble, vibrate or creep, as each disc is balanced before assembling. The spark points are renewable and burn away evenly. Operation is very smooth and the note very sharp, this being partly due to the stationary electrodes being made with a wedge point so that the spark does not drag or jump before the parts are in line. One station card, 6A9198, furnished with each gap. Shipping weight, 10 pounds.

6A9330—Franklin Rotary Spark Gap..... **$30.00**



6A9427
6A9249
6A9250



6A9234
6A9235
6A9236

6A9232
6A9233

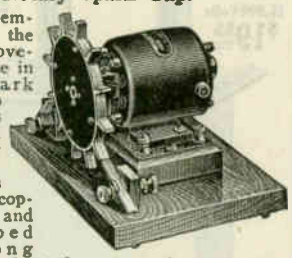
Superior Wireless Spark Coils.

Superior Wireless Spark Coils are built for Wireless Telegraphy and are quite different in construction from the ordinary spark coil. These coils are designed to operate on dry cells, wet cells or storage battery. They are guaranteed to give their rated spark length between needle points. The secondary coil is considerably larger than used in most spark coils, and this feature alone is of great value, as the spark produced is heavy and energetic. Coils are mounted in a neat oak case with brass trimming and with condenser in base to decrease sparking at the contact points. They consume less current than other coils, requiring but 6 to 8 volts and ¼ of an ampere to 4 amperes, according to size of coil. Vibrators are all high frequency type, which are not liable to stick. These coils will stand hard usage and their high efficiency will appeal to the experimenter because of their low current consumption, which means long life for a set of batteries. The number of batteries required to operate these coils successfully is as follows:

¼-inch operates on 4 dry cells.
½-inch operates on 5 dry cells.
¾-inch operates on 5 dry cells.
1 -inch operates on 6 dry cells.
1½-inch operates on 6 dry cells.
2 -inch operates on 8 dry cells.
3 -inch operates on 12 dry cells.
4 -inch operates on 12 dry cells.

Catalog No.	Spark Length	Shipping Weight	Price
6A9232—Superior Spark Coil	¼ inch	4 pounds	$ 3.70
6A9233—Superior Spark Coil	½ inch	6 pounds	4.45
6A9234—Superior Spark Coil	¾ inch	8 pounds	6.10
6A9235—Superior Spark Coil	1 inch	8 pounds	6.38
6A9236—Superior Spark Coil	1½ inches	8 pounds	8.70
6A9427—Superior Spark Coil	2 inches	15 pounds	12.20
6A9249—Superior Spark Coil	3 inches	16 pounds	22.50
6A9250—Superior Spark Coil	4 inches	20 pounds	28.00

Rotary Spark Gap.



This gap embodies all the latest improvements made in rotary spark discharges and makes an ideal gap for amateur work. Has a heavy copper rotor and is equipped with strong stationary electrodes mounted on formica, to provide for a clean break in spark.

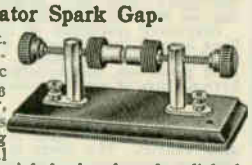
The motor is 110-volt and is mounted on a strong wooden base and has a speed of 5,000 R.P.M., which permits a frequency of 250-500 cycles.

The rotor is cast of best copper, mounted on ¼-inch formica disc, and has twelve electrodes, ⅛ inch thick. The corners and edges are all buffed smooth and the entire rotary element is highly polished and will permit the handling of voltages up to 40,000.

The entire gap is mounted upon a mahogany base with a beautiful hand rubbed finish and will give very satisfactory results with ¼ and ½-K.W. sets. Shipping wt., 12 lbs.

6A9619—Rotary Spark Gap.....**$16.50**

Radiator Spark Gap.



Very efficient. Open gap. Fitted with zinc electrodes 5/16 inch in diameter, ½ inch long. Has six cooling flanges. Metal posts of brass, nickel plated and polished. Polished rubber composition base, 2½x6 5/16 inches. Height, 2½ inches. Shpg. wt., 2 lbs.

6A9237—Meteor Radiator Spark Gap **$1.84**

New Model Spark Gap.

This spark gap has one stationary electrode and one adjustable electrode. The one moving part helps make the gap easy to adjust and keeps it in adjustment. Has polished nickel plated binding posts and zinc electrodes. Mounted on hard rubber composition base. Capacity up to ¼ K. W. Shipping weight, 1 pound.

6A9301—New Model Spark Gap....**74c**

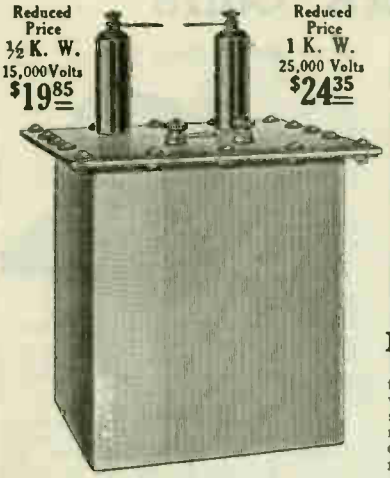
Heavy Duty Spark Gap.

This gap is designed for use with any size transformer set, up to and including 1 kilowatt. Base is black glazed porcelain and measures 5¾x2½x¾ inch. Uprights are of heavy brass rod, ½ inch square, 2¼ inches high, nickel plated and polished. Electrodes are turned from zinc stock and are 7/16 inch long by ½ inch in diameter. Radiators are of aluminum, 1¾ inches in diameter, large enough to conduct heat from the electrodes. Adjustable electrode is fitted with fine screw adjustment and is secured by locking screw as shown. Posts are drilled to receive connecting wire. Ribbon or braid may be connected to posts by means of heavy screw used.

We believe this is the finest heavy duty stationary spark gap made. Shpg. wt., 2½ lbs.

6A9606—Heavy Duty Spark Gap.**$2.24**

Oil Type Radio Transformers



Reduced Price ½ K. W. 15,000 Volts $19.85

Reduced Price 1 K. W. 25,000 Volts $24.35

OIL COOLED—OIL INSULATED

GUARANTEED TO INCREASE YOUR TRANSMITTER EFFICIENCY AT LEAST 20 PER CENT.

For High Voltage Operation the Oil Cooled and Oil Insulated Transformer Is the Only Design Recognized by Electrical Engineers

Oil Type Transformers Are the Type Used by the United States Navy and Commercial Companies and by All Foreign Governments

PUTS THE AMATEUR ON THE COMMERCIAL PLANE.

From an engineering standpoint the oil cooled, oil insulated transformer is the ideal type for all high voltage operation. As all transformers used in wireless transmission work arc of the high voltage type, it is evident that the best form of engineering practice should be followed in this line of work. The art of wireless wave transmission has made great strides within the past few years and it is of much importance to the operator that the most important part of his equipment, the transformer, should represent the latest improvement as applied to this particular field.

The greatest refinements of transformer construction have been demanded by the United States Government and by the commercial companies because of the exacting conditions under which these units work. Freedom from mechanical and electrical defects and the ability to operate over extended periods of time have been of paramount importance. The oil immersed transformer has proved to be the only type that will stand up under these conditions.

As never before, the operators have become a vital factor in the wireless art, and it is for their special benefit that these transformers are placed before them in the belief that they not only recognize but demand the best apparatus obtainable.

Heretofore practically all of the wireless transmission transformers have been of the air cooled and insulated construction. Air is a very indefinite insulation medium. Between very dry air, which is a fairly good insulation, and moisture laden air, a very poor insulation, we have a range of variable values of questionable protective worth. Condensation of moisture often occurs and this, of course, is fatal to high voltage air insulated apparatus. When high voltage windings are exposed, the possibility of injury is always present. Then, too, in the operation of high tension transformers, transitory surging occurs. Under such conditions the oil insulated type offers a definite protection not found in the air type.

The efficiency of the oil immersed transformer is always much higher than the air cooled. The presence of a positive insulating medium allows a better distribution of iron and copper losses, resulting in a better balanced design. Oil is a much better heat conductor than air and readily dissipates the transformer core and copper losses, keeping the core and windings at all times cool. When it is recalled that the copper losses increase with the temperature, it is evident that the windings must not be allowed to coop up heat and create hot spots within their section. Oil is the best known cooling medium to prevent this.

Specifications.

Case—The case is made of sheet steel with a coating of battleship gray enamel. The cover is of hard fiber on which are assembled the primary and secondary terminals. An oil plug is also provided for filling transformer with oil. The oil level should come within ½ inch of the cover. Oil is shipped in separate containers in the same box as transformer.

Construction—The transformer core is built of high grade laminated sheet steel particularly adapted for high voltage work. Both high and low voltage windings are carefully wound by the most approved methods and assembled by skilled workmen. Each unit is carefully tested before allowed to be shipped.

Terminals—Both high and low tension terminals are mounted upon the transformer cover. Heavy brass binding posts are used on the primary side. The secondary terminals are supported by hard rubber bushings, as shown in illustration.

Operation—Magnetic shunts and flux leakage designs have a tendency to distort the normal wave form of the circuit. For this reason no such schemes are used in these transformers. The design of the core and windings is such as to limit the current input to the normal rated capacities. There is therefore no tendency of transformers blinking the lights of the circuits to which transformers are attached. In operation it will be found that these transformers will resonate easier and will give a smoother discharge than the leakage flux type. As a "kick back" preventer it is recommended that a 110-volt 60-watt lamp be connected across the primary terminals of transformer. It is also recommended that these transformers be used on rotary spark gaps of such speed and points as will give a 250-cycle note. A twelve-point disc with a speed of 3,500 to 4,000 R. P. M. will be satisfactory. If a smaller number of points be used or a lower R. P. M., the other factor should vary correspondingly. Impedance coils, rheostats and the like are not required, as these transformers are designed with current limiting characteristics.

The range and efficiency of the ½-K. W. 200-meter class of stations have been severely handicapped on account of the low secondary voltage of the air cooled, air insulated types now on the market. This voltage rarely exceeds 10,000, whereas the voltage for maximum efficiency should be 15,000, for the reason that with the lower potential so much condenser capacity is required that the wave length of 200 meters is exceeded. The ½-K. W. size of this design has a secondary potential of 15,000 volts. With the use of a rotary spark gap giving a 250-cycle tone the condenser capacity required for the ½-K. W. size is .0045 MF.

The 1-K. W. size has a potential of 25,000 volts, which has proved to be the value giving the highest efficiency for this size unit on 200 meters. With the use of the rotary gap, giving a 250-cycle tone, the condenser capacity required is .0032 MF.

These transformers are not to be compared with the air cooled, air insulated type on the market, as competitive tests will show. They are offered to the operator who is striving for the best. The installation of one of these transformers will mean new transmitting records and 20 per cent increase in transmitter efficiency. Furnished complete with oil. One Station Card, 6A9198, furnished with each transformer.

Catalog No.	K. W.	Amperes	Primary Voltage, 60 Cycles	Secondary Voltage	Size of Case	Height of Secondary Insulator Posts	Shpg. Wt., Complete With Oil	Each
6A9169	½	6	105-115	15,000	8 in. long, 7 in. wide, 10 in. high	2½ inches	27 lbs.	$19.85
6A9170	1	12	105-115	25,000	8½ in. long, 8 in. wide, 11 in. high	3 inches	40 lbs.	24.35

Dubilier Mica Condensers

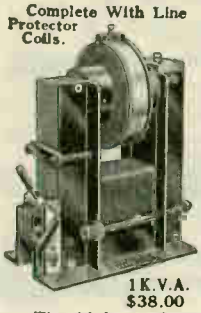
Used by the U. S. Navy, U. S. Army Signal Corps, U. S. Army Air Service, Laboratories, First Class Amateurs and Commercial Companies.

Few electrical instruments have been subjected to more severe tests since 1915 than the Dubilier Mica Condenser—the dampness of the trenches, the salt air and rough usages on the seas, and the dry and freezing conditions above the clouds, on airplanes. Each condenser is built up of more than a thousands units of foil and carefully selected mica films. Air, moisture and small vacuum pockets are eliminated from each section or unit. This condenser is used by seven governments and practically all commercial companies. Shipped direct from factory in NEW YORK CITY.

Catalog No.	Type	Watts	Maximum Testing Voltage	M. F. D.	Shipping Weight, Pounds	Each
6A9620½	D-101	500	14,000	.007	12	$27.50
6A9621½	D-102	1,000	21,000	.007	12	48.50
6A9622⅓	D-111	500	14,000	.01	12	33.25
6A9623⅓	D-112	1,000	21,000	.01	12	52.75

Transformers and Choke Coils

Thordarson Type "R" Wireless Transformer.



Complete With Line Protector Coils.

1 K.V.A. $38.00

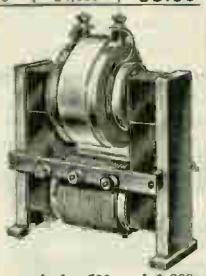
This design of wireless transformer has several mechanical and electrical features that are great improvements over previous designs. All castings have been eliminated and the framework is built of formed sheet steel and brass. The same principle as used on previous transformers has here been adhered to in the magnetic circuit, namely, having an external magnetic shunt, with this important difference, however, that instead of moving the entire magnetic shunt at one end with spring and screw, the magnetic shunt here is rigidly secured and stationary, and the intensity of the magnetic field around the magnetic shunt is varied by means of a V shape laminated steel tongue moving in the air gap, thereby adjusting the width of the air gap. An adjustment with so little noise is extremely difficult to obtain by any mechanism that moves the entire magnetic shunt. This tongue is graduated so that the air gap can be easily read and adjusted for any current input desired.

The high tension coil is carefully wound in layers with special insulated paper between each layer. The outer metal band also serves as a terminal of the high tension coil, thereby eliminating high tension cable and high tension insulators. The high tension coil being impregnated, it is practically moisture proof. Line protectors included with transformer.

The prices and dimensions are as follows for 60-cyle operation:

Catalog No.	K. V. A.	Height, Inches	Width, Inches	Length, Inches	Amperes	Weight, Pounds	Secondary Voltage	Each
6A9376¼	⅛	9	5⅛	9	1 to 6	28	10,000	$20.50
6A9378¼	1	14	6	12	2½ to 14	46	24,000	38.00

Acme Radio Transformers.



The uniform results obtained by using Acme transformers has established the fact that the non-resonant type of transformer is best adapted for the amateur station equipped with rotary spark gap. These transformers were brought out and placed on the market after considerable experimental work to determine just what the best operating conditions should be in those amateur stations supplied with commercial frequencies. These transformers are designed to draw their full radio power from line, when used with rotary gap, operating at from 700 to 800 sparks per second and with a condenser of .007 MF. Lower gap speeds reduce the power input slightly. Acme Transformers show an exceptionally high power factor, being from .7 to .95, and show an over all efficiency at full load of from 82 to 90 per cent, according to the size and type. For this reason choke coils are unnecessary.

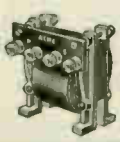
High grade materials are used in the construction of these transformers, and each unit is tested under actual working conditions. Primary binding posts are metal on Bakelite strip, and the 500 and 1,000-watt sizes are tapped to reduce the power input to one-half. Secondary terminals are mounted at top of coil and provided with safety gap. One 6A9198 Wall Card included. Specifications are as follows:

6A9608¼—¼-K.W. Transformer. Primary, 110 volts, 60 cycles; secondary voltage, 900. Shipping weight, 20 pounds $15.00

6A9609¼—½-K.W. Transformer with ⅓-K.W. tap. Primary, 110 volts, 60 cycles; secondary voltage, 11,000. Shipping weight, 30 pounds $21.00

6A9610¼—1-K.W. with ⅓-K.W. tap. Primary 110 volts, 60 cycles; secondary voltage, 15,000. Shipping weight, 45 pounds $32.00

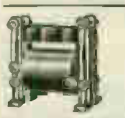
Modulation Transformers.



The microphone or transmitter used in C. W. radio telephony is connected, as a rule, to the oscillating system through a modulation transformer, which allows the C. W. to be properly varied at the voice frequencies. This transformer is suitable for this purpose; primary and secondary impedances are of the proper values to give most satisfactory results. Care should be observed not to overload the transformer, which under proper working conditions will not distort the speech. Shipping weight, 3 pounds.

6A9614—Type A-3 Modulation Transformer, completely mounted, with engraved panel $6.90

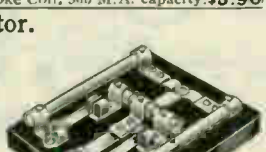
Choke Coils.



In order to smooth out the pulsations in the direct current supply to keep the direct current constant when modulating, and to prevent the high frequency from getting into the power transformer, it is essential that a choke coil be inserted in the direct current leads. These choke coils successfully fulfill these conditions. Shipping weight, 3 pounds.

6A9613—1½ Henry Single Coil Choke Coil, 500 M.A. capacity..$5.90

Unit Line Protector.



Protects primary winding of the transformer, spark gap motor, house wiring, etc. This line protector is correctly designed and is well constructed. Protection is gained through use of two graphic rods of 1,000 ohms each, connected in series and bridged across the line where it is connected to the transformer. The neutral between the two rods is connected to a ground terminal, affording an easy path for high frequency surges, etc. A grounded and fused safety gap is also provided to take care of the current from any accidental short circuit which might allow the pressure from the condensers to get into the primary circuit. Base is mahogany finish and measures 4x6x1 inch. Shipping weight, 4 pounds.

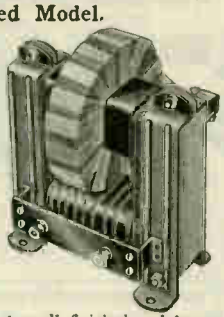
6A9581—Unit Line Protector $4.05

Line Protector Coils.

Special wire wound coils, molded in on porcelain tubes. Two coils required, one for each side of the line. The coils may be placed directly on the transformer primary terminals and grounded to the frame. Shipping weight, 1 pound.

6A9318—Line Protector Coils. Per pair..... 65c

½ K.V.A. 10,000-Volt Transformer. Improved Model.



The amateur's ideal transformer. This transformer is the result of a great deal of experimental work, and we are offering it only after it has proved to be an excellent piece of apparatus. It is an efficient small transformer, offered to the amateur fully guaranteed. Think of buying a high grade ½ K. V. A. transformer, giving a secondary voltage of 10,000, for $12.75.

Frame is of sheet steel, well finished and heavy enough to insure safe mounting. Reduction in weight of 15 per cent.

Winding and Construction: The dry air insulated construction has been adhered to. Primary winding is for 110-volt, 60-cycle, alternating current. Secondary coil is mounted on upper yoke of the magnetic circuit. This coil is very carefully constructed of high grade materials. A cheaper coil of this size would not give service on a secondary voltage of 10,000.

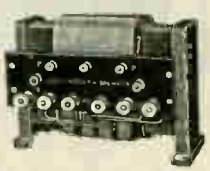
Transformer is well balanced and sturdily built. Can be mounted on wall panel or table. Improved model has primary terminals mounted on terminal board and secondary terminals fitted with safety gap. One pair of "Kickback" coils furnished with each transformer. Finished in black enamel.

We include 6A9198 Station Card with each transformer.

Size over all: Height, 9¼ inches; length, 7½ inches; width, 5 inches. Weight, 20 pounds. Shipping weight, 30 pounds.

6A9314¼—Meteor ½ K. V. A. Wireless Transformer $12.75

C. W. Power Transformers.



C. W. transmission has many advantages over that of spark discharges, as with C. W. the supply of energy to the antenna is continuous, undamped and of one sharp frequency, while with spark discharges it is intermittent, damped and of more than one frequency. Continuous undamped waves have for a given amount of energy output only a small amount per oscillation at definite wave length, as contrasted with the spark system, which has a large amount of energy in a small interval of time, after which a period of idleness exists when no energy is being radiated. To handle large amounts of energy in a small interval of time requires large voltages, producing strains on the antenna, leakage and brush discharges. The great advantage of C. W. transmission lies in the receiving end which, being tuned to one frequency, receives all the available energy, as it exists at one frequency only, and being a persistent oscillator is more easily affected by a continuous supply.

The ACME C. W. POWER TRANSFORMERS are designed to operate from 110 volts 60 cycles source on the primary, and have two secondary windings of 550 volts each for the 200-watt size and 375 volts for the 75-watt size, and two tertiary windings of 12 volts each, one for rectifying tube filament heating and the other for power tube filament heating. The secondary windings are connected in series with a terminal at the junction so that two rectifying tubes may be used simultaneously, thereby utilizing both halves of the alternating current and voltage waves. By putting a condenser of from 2 MF. to 6 MF. across the direct current terminals and choke coils in series with the direct current leads, it is possible to obtain practically an unfluctuating, uniform direct current and voltage for supplying the plate currents of the transmitting power tubes. The tertiary windings are supplied for lighting the filaments, eliminating the use of batteries. The latter winding is tapped in the center and forms one terminal of the direct current supply. By tapping the winding in the center in this manner the direct current flowing in the tube is forced to divide on reaching the filament, preventing excessive current in one side of the filament, which would greatly shorten its life, and in the case of the oscillating tubes, prevents the grid from becoming alternately positive and negative. Fluctuation in the voltage may also be reduced by adjusting the rectifying filament rheostats.

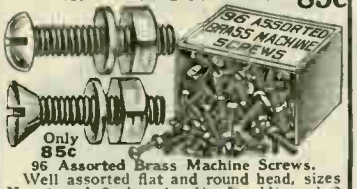
6A9611—C. W. Power Transformer, 200 watts, mounted. Shipping weight, 15 lbs ..$19.00

6A9612—C. W. Power Transformer, 75 watts, mounted. Shipping weight, 12 lbs.. 14.00

Build Your Own Radio Set and Save Money

NOTE OUR LOW PRICES ON HIGH GRADE TOOLS.

FOR RADIO BUILDERS. 85c



Only 85c

96 Assorted Brass Machine Screws.
Well assorted flat and round head, sizes No. 6 and 8, lengths ½, ¾, 1¼ and 2 inches, No. 32 thread, complete with washers and nuts. If you are contemplating building a radio set this assortment is one of the first things you will need. Wt., 12 oz.
9A3020 ..... 85c

1 Pound Assorted Wood Screws. 16c Big Value!

In assorted sizes, lengths and finishes. Package contains about 200 screws.
9A4271—Per 1-lb. package... 16c

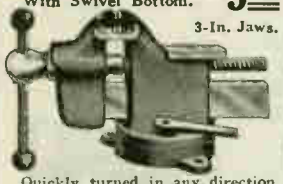
Wire Brads. 8c Per Lb. and Up.

9A4292—In 1-lb. pkgs. State length.

Length, in.	½	⅝	¾	1	1¼	1½
Gauge wire	19	18	18	17	16	15 15
Per pound	18c	16c	14c	12c	10c	9c 8c

Solid Steel Slide Bar Vise. $3.90

With Swivel Bottom.



3-In. Jaws.

Quickly turned in any direction and securely fastened by movement of lever. Furnished with bolts for fastening vise to bench.

	Width Jaws, In.	Shpg. Wt., Lbs.	
99A5201	2½	12	$3.20
99A5202	3	15	3.90
99A5203	3½	19	4.70
99A5204	4	31	5.90

6-Strand Galvanized Wire.

9A2840—Ideal for use as guy wires. Weight, 3 pounds.
Per 100 feet 49c

Grinds Like Sixty!

Our High Power Fast Cutting Corundum Tool Grinders.

They turn easily and grind fast and are quickly clamped to bench or table. Equipped with adjustable tool rest.

$4.95 6-Inch Size.
99A5538 6x1¼-inch wheel. Shipping weight, 23 pounds $4.95

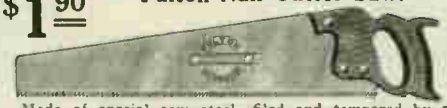
99A5537 5x1-inch wheel. Shipping weight, 12 pounds ... $3.95

99A5536 4x¾-inch wheel. Shipping weight, 5 pounds $2.95

Wizards for Sharpening Small Tools or for Light Grinding.

Fine for Sawing Formica Panels.

$1.90 Fulton Nail Cutter Saw.

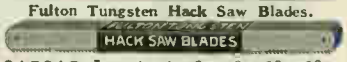


Made of special saw steel, filed and tempered by a process which makes it exceedingly hard, but very tough. Can be filed when dull, but does not require setting, being taper ground. 18-inch blade. Weight, 1¼ pounds.
9A5057 ..... $1.90

EXTENSION HACK SAW FRAME. 55c

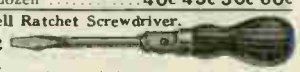
Blade is adjustable to right angles with frame. Takes blade from 8 to 12 inches. Price includes one 8-in. blade. Wt., 1 lb.
9A5023 ..... 55c

Fulton Tungsten Hack Saw Blades.



9A5018—Length, in.	8	9	10	12
Weight, dozen, oz	4	6	8	8
Per dozen	40c	45c	50c	60c

Goodell Ratchet Screwdriver. 80c

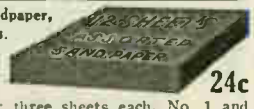


4-In.

Turning knurled ferrule sets ratchet to work either right or left, also sets blade rigid. Give length of blade.

Blade, in	4	5	6	8	10
Wt., oz	4	5	6	7	8
9A5447	80c	85c	95c	$1.05	$1.15

Assorted Sandpaper, 12 Sheets. 24c



Assorted two sheets each, No. 0, No. ½ and No. 2; three sheets each, No. 1 and No. 1½. Weight, 11 ounces.
9A6270—12 sheets 24c

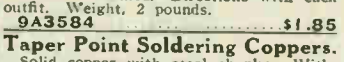
"THE RADIO" $1.85

Portable Soldering Outfit.

One filling (about 2 ounces alcohol) keeps copper at correct soldering temperature for about 20 minutes. Outfit includes one self-heating alcohol soldering copper, one small cake of "Speco" for tinning soldering copper and one piece of wire solder and flux combined. Directions with each outfit. Weight, 2 pounds.
9A3584 ..... $1.85

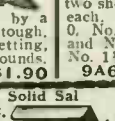
Taper Point Soldering Coppers. 40c

Solid copper with steel shanks. Without handles. State size number.



9A3575—No.	1	2	3	4
Weight, lbs	¾	1	1½	2
Per single iron	30c	40c	55c	70c

"Speco" Solid Sal Ammoniac.



Fine for cleaning and tinning soldering coppers. Wt., 4 oz.
9A3557—Cake 23c

1 Pound Wire Solder. 32c

9A3558—Highly recommended for radio work. Flows at minimum degree of heat. In coils of 1 pound.
Per coil 32c

Soldering Paste.

9A3556 In cans of 1 pound. Per can, 30c

Wood Handle for Soldering Coppers.

9A3576 With wire ferrules. Wt., 2 oz. 4c

Small Size Little Giant Screw Plates. $8.50

Round adjustable dies, 1/16 inch in diameter. Small figures to right of sizes indicate number of threads to inch. U. S. standard thread. Weight, 1½ pounds.

9A5659—Factory No. D. 10. Cutting screw gauge sizes, Nos. 2^{56}, 3^{48}, 4^{36}, 5^{30}, 6^{32}, 8^{32}, 10^{24}, 12^{24}, 14^{20}, 16^{18} inch, 10 taps, 10 dies, stock and adjustable tap wrench. Per set $8.50

9A5657—Factory No. D. 5. Cutting screw gauge sizes, Nos. 4^{30}, 6^{32}, 8^{32}, 10^{24}, 12^{24} inch, 5 taps, 5 dies, stock and adjustable tap wrench. Per set $5.80

Knurled Center Punch. 14c

Diameter, ⅜ in. Weight, 2 oz.
9A5734 ..... 14c

24c and up FOR WIRING RADIO SETS.

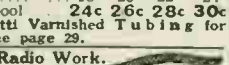
Bare Soft Copper Wire. Weight, including spool, 8 oz. State gauge.

Gauge	18	20	22	24
9A4319—Spool	24c	26c	28c	30c

For Spaghetti Varnished Tubing for above wire see page 29.

Ideal for Radio Work. $1.00

Long Nose Lap Joint Side Cutting Pliers.



Forged steel. Length, 5½ in. Weight, 4 oz.
9A5836 ..... $1.00

Fulton Handy Pliers.

20c 30c 35c According to Size.

9A5832—Give length.

Length, 6 in. Wt., 8 oz	20c	Length, 8 in. Wt., 12 oz	30c	Length, 10 in. Wt., 14 oz	35c

THESE PLIERS ARE DROP FORGED AND VARY A TRIFLE IN LENGTH.

Drop Forged Steel Snips. 70c

Length, 7 inches; 2-inch cut. Weight, 8 ounces.
9A5848 ..... 70c

Forged Steel Wing Dividers. 55c 8-Inch

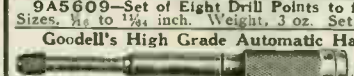
9A5496 State size. Size, 6 inches. Wt., 4 oz 45c
Size, 8 inches. Wt., 6 oz 55c
Size, 10 inches. Wt., 8 oz 75c

Goodell's Two-Speed High Grade Hand Drill. $3.80

Takes drills up to ¼ inch. Head is hollow, with screw cap. Length, 14¼ inches. No drill points included. Weight, 2½ lbs.
9A5606 ..... $3.80

9A5609—Set of Eight Drill Points to fit above drill. Sizes, 1/16 to 1/4 inch. Weight, 3 oz. Set of 8 25c

Goodell's High Grade Automatic Hand Drill.

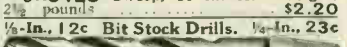


Price includes eight drill points, 1/16 to 1/4 in., in hollow handle. Length, 9½ inches. Weight, 8 ounces.
9A5601 ..... $1.65

The Improved Fulton Special Ratchet Bit Brace. $2.20

Takes regular square shank bits and round shank bits up to ⅜ in. in diameter.
9A5428—Sweep, 10 inches. Weight, 2½ pounds $2.20

⅛-In., 12c Bit Stock Drills. ¼-In., 23c

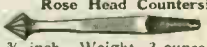


These drills fit any bit brace and will drill steel, iron, brass, etc. Will also bore Bakelite or Formica panels.

9A5622—State size wanted.

Size, in.	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2
Wt., oz	1	1	1	2	2	2	2	2
Each	8c	10c	12c	14c	17c	20c	23c	26c
Size, inch	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4
Weight, oz	2	4	4	4	6	6	6	6
Each	30c	37c	45c	52c	60c	67c	75c	82c

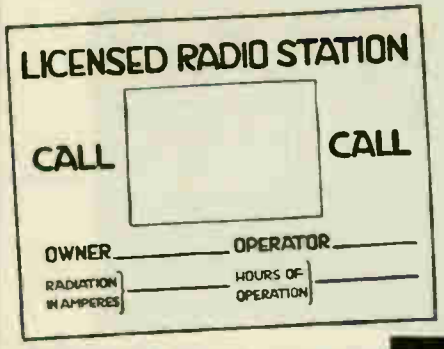
Rose Head Countersink Bit. 32c



Countersinks holes up to ¾ inch. Weight, 3 ounces.
9A5640 ..... 32c

ALL WEIGHTS AND MEASUREMENTS GIVEN ON THIS PAGE ARE APPROXIMATE AND MAY VARY A TRIFLE.

Attractive Signs Needed in Every Radio Station



Very popular. Card gives visitors desired information at a glance. "Licensed Radio Station" in bright red and word "Call" in black, the words "Owner" and "Operator," "Radiation in Amperes," "Hours of Operation" in red. Background is white, cardboard, size 8x10 inches. Used extensively and has desired effect. Shipping weight, 5 ounces.

6A9196 .....9c

Indicating arrow is used extensively by radio clubs, universities, at electrical shows, etc. Background is red, indicating arrow and "Radio Station" in white. Size, 10x6 inches. DON'T HIDE YOUR STATION — POINT THE WAY. Shipping weight, 4 oz.

6A9199 .....9c

At least one of these cards should be in every transmitting station. Size of cardboard, 8x10 inches. Word "Danger" and "skull and crossbones" are bright red. Words "Hands off" and "High Voltage Wireless Apparatus" in black. Background is white. Very effective. We include one of these cards with our rotary spark gap, oil condenser and transformers. Shipping weight, 5 ounces.

6A9198 .....9c

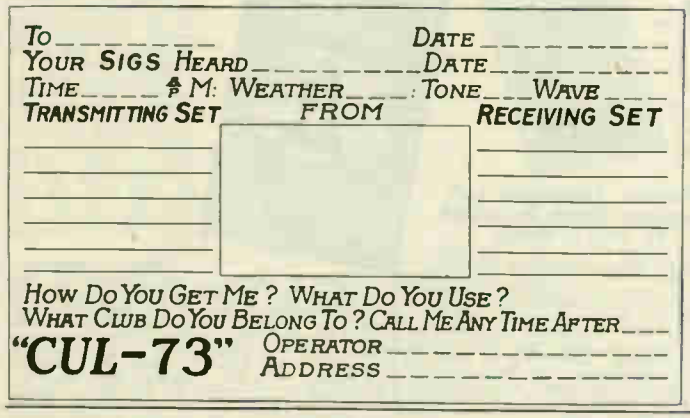
"Zone of Quiet" bright red. "Radio Receiving Station" and fork lightning in black. Background is white, cardboard, size 8x10 inches. Very effective and used extensively by all classes of stations. Shipping weight, 5 ounces.

6A9197 .....9c

Wireless Code Chart

This Chart has the Continental Wireless Code, with instruction for learning, all printed on one side. Size of chart, 4⅝x7⅜ inches. Printed on cardboard. Shipping weight, 3 ounces.

6A9398—Wireless Code Chart 5c



"CUL 73" Post Cards

Ready to Mail—No Stamp Required.

Used by wide awake amateurs everywhere as a means of keeping posted as to the efficiency of their stations, transmission records, etc. Send one to every station you hear. They will reply and you will always have a station record worth keeping. Space in center is for your station call. Printed on regular U. S. Government 1-cent postal card, ready to mail without stamp. Shipping weight, per dozen, 4 ounces.

6A9193

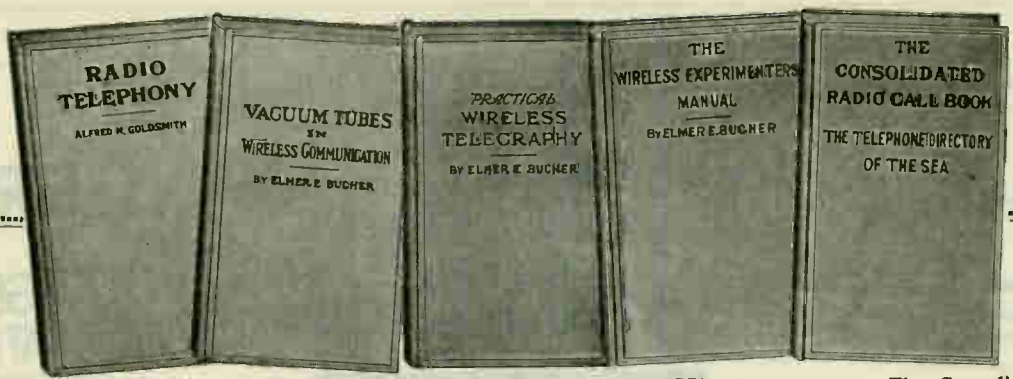
Per dozen.....$0.35
Per hundred..... 2.85

Radio Map of the United States

A Complete List of Commercial and Radio Phone Stations.

Every amateur station should contain an official radio map. These maps are attractively finished in black, with the station letters in red and the districts in blue. The map itself measures 19x27 inches, and shows the location of all stations. A complete list of stations in alphabetical order by cities and by call letters is also given. Because of our large sales you can always be confident that you will not receive an old edition. New editions are released every several months. The map shows the location of all Government, commercial and broadcasting stations, amateur districts and the standard divisions of time; also contains new radio regulations, foreign call letters and other information valuable to the radio operator. Shipping weight, 5 ounces.

6A9203.....16c



Series of Practical Books on Wireless

A Book of the Newest and Most Interesting Branch of Radio Communication.

This complete text on radio telephony is used by radio engineers, radio electricians in the Navy, men in the Signal Corps and men in the Aviation Service who handle radio equipment. Amateurs and others who desire to be clearly informed concerning this newest and most interesting branch of electric communication should have this book. It is written in clear style. The text deals largely with the practical aspects of radio telephony and its future. It is fully illustrated with wiring diagrams.

Is very complete, practically every aspect of radio telephony being covered in detail. Shipping weight, 2 pounds.

6A9342—Radio Telephony..... **$1.65**

A Practical Text Book for Operators and Experimenters.

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The Consolidated Radio Call Book.

This is one book every radio operator must have. Contents as follows: Cable rates; notes on foreign stations; high power radio stations of the world; international abbreviations; stations transmitting press and schedules; radio calls, including ships and stations, arranged alphabetically by call letters, radio calls arranged alphabetically by stations, and radio calls arranged alphabetically by vessels; also a list of licensed amateur radio stations in the United States. Also special class of commercial radiograms. General notes and information on American, British, Canadian and French radio compass stations. Information and list of stations transmitting time signals. Weather and hydrographic reports. Latest edition bound in heavy paper, size 8¾x6 inches. Shipping wt., 1 lb.

6A9353—The Consolidated Radio Call Book..... **95c**

How to Pass U. S. Government Wireless License Examinations.

Contains 142 Government Examination Questions Answered for Elementary Students of Wireless Telegraphy. It is used a great deal by schools, and is valuable to all students who wish to become commercial operators. The book is divided into parts, as follows:

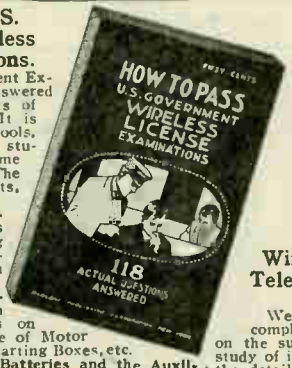
Part One — Transmitting Apparatus. Includes diagram of transmitting set with questions pertaining to the operation answered in full.

Part Two—Motor Generators. Contains fifteen questions and answers on the Operation and Care of Motor Generators, including Starting Boxes, etc.

Part Three—Storage Batteries and the Auxiliary Set. Defines specific gravity of a cell, capacity of a cell, normal rate of discharge of a battery; contains a complete circuit diagram for a modern auxiliary or emergency set and a description of the action of the set.

Part Four—Antennae or Aerials. A very interesting part. Different style aerials are shown, and the questions and answers cover the construction and erection; also how to test insulation, etc.

6A9351—How to Pass U. S. Government Wireless License Examinations..... **52c**



Wireless Telegraphy and Telephony Simply Explained.

By Alfred P. Morgan.

We believe this is one of the most complete and comprehensive treatises on the subject ever published, and a close study of its pages will enable one to master the details of the wireless transmission of messages. The book treats the subject from an entirely new standpoint. Several very novel and original ideas have been carried out in its making. Illustrated by over 150 interesting photographs and drawings. All diagrams have been made in perspective, showing the instruments as they actually appear in practice. The drawings are carefully keyed and labeled.

Among the Contents Are:

Introductory. Wireless Transmission and Reception. The Ether. Wireless in the Army and Navy, Wireless on an Airplane. How a Message Is Sent and Received. The Wireless Telephone. The Ear. How We Hear. Sound and Sound Waves. The Vocal Cords. The Structure of Speech. The Telephone. Transmitter and Receiver. The Photophone. The Thermophone. The Selenium Cell. The Means for Radiating and Intercepting Electric Waves. Aerial Systems.

Bound in cloth with embossed cover. Size, 5x7¼ inches. 148 pages. Shipping wt., 1 lb.

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How to Conduct a Radio Club.

Describing Parliamentary Procedure, Indoor and Outdoor Experiments, 5,000-Mile Receiving Set and Many Other Features.

In all places where wireless telegraphy has made a niche for itself the advantages of forming a "Radio Club" are sooner or later recognized and then arises the question, "How shall we go about it?" We suggest that you get this book and you will soon learn "How to go about it."

Table of Contents:

Chapter I, Advice for the Amateur; II, The Formation of a Radio Club; III, Instruction in the Telegraphic Codes; IV, A 200-Meter Amateur Set; V, An Amateur's Wave-Meter and Its Uses; VI, The Measurement of the Logarithmic Decrement; VII, Explanation of the Theory of Operation of the Receiving Tuner; VIII, Receiving Tuners; IX, The Vacuum Valve Amplifier; X, "Break-In" Systems; XI, The Radio Variometer; XII, Amateur Wireless Telegraph During the Summer; XIII, An Amateur Portable Wireless Set. Shipping weight, 1 pound.

6A9352—How to Conduct a Radio Club..... **50c**

Lessons in Wireless Telegraphy.

The book is divided into thirty lessons, each lesson dealing with a separate subject and following in logical order so that repetition and possibility of confusion are avoided. It not alone describes the actual workings and construction of the instruments that go to make up a wireless station in sufficient detail to prove of great value to the experienced student, but treats the subject in such a manner that even the beginner will have no trouble in clearly grasping the matter. Size, 5¼x7¼ inches. 62 pages. Shipping wt., 4 oz.

6A9355—Lessons in Wireless Telegraphy..... **25c**

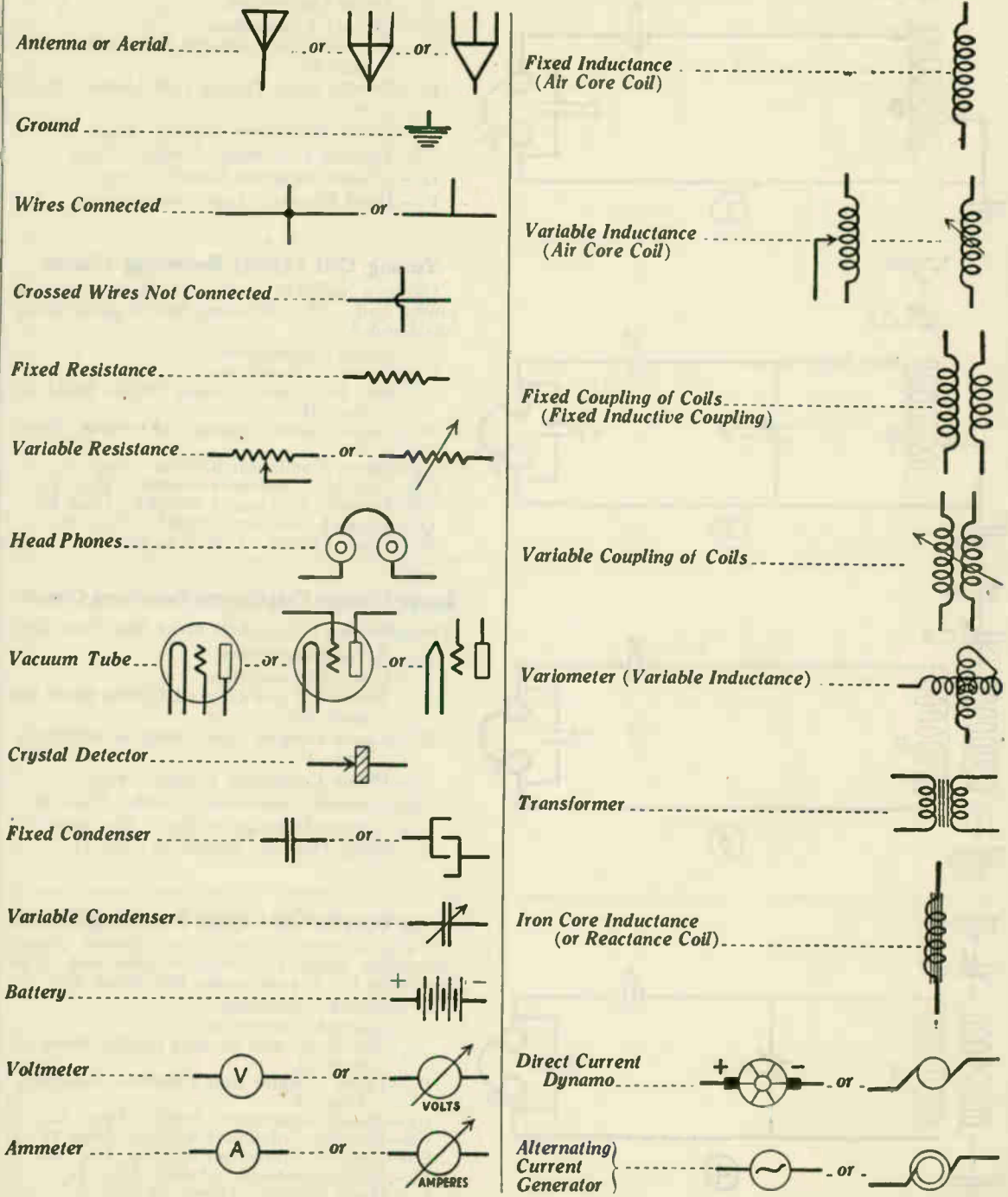
Wireless Construction and Installation for Beginners.

A practical handbook giving detailed instructions for the construction of aerials, etc. Also complete instructions for making and operating a Boy's Wireless Outfit. The book contains a great deal of practical information which is a great help to the experimenter. Paper cover in colors. Size, 5¼x7¼ inches, 74 pages. Shipping weight, 4 ounces.

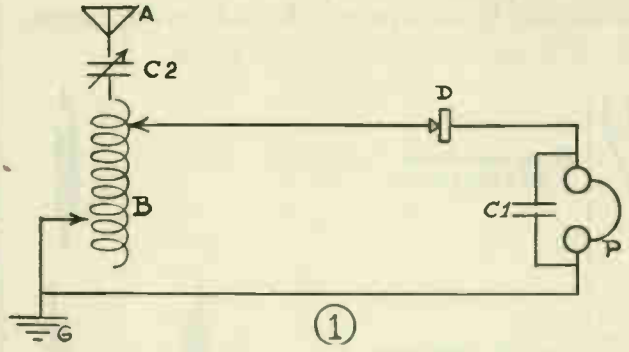
6A9357—Wireless Construction and Installation for Beginners..... **25c**

Study These Symbols Carefully

So you may more clearly understand the hook ups on the following pages. They are standard symbols and used throughout the study of radio.



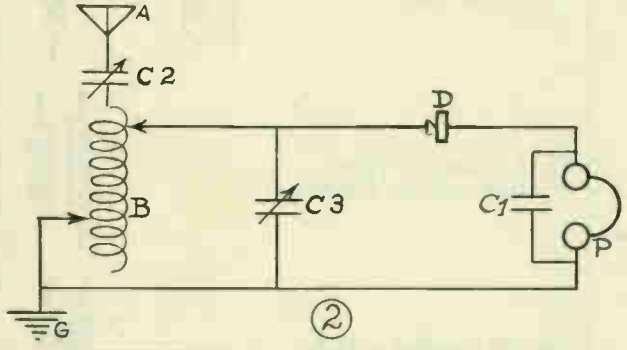
Hook Ups



Tuning Coil Crystal Receiving Circuit.

The following list of parts make this Hook Up:

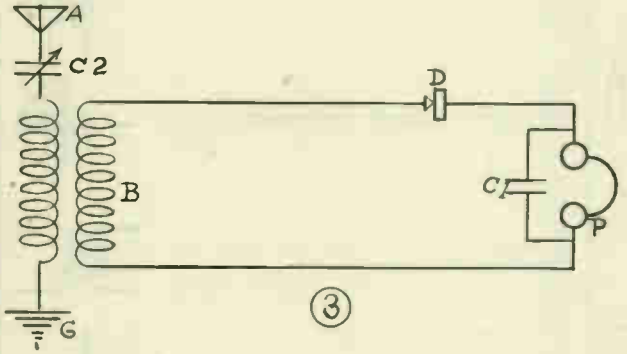
A —Aerial Connection.
G —Ground Connection.
See Aerial and Ground Outfits listed on page 31.
B —Double Slide Tuning Coil 6A9246. Page 16.
C1—Phone Condenser 6A9264. Page 21.
C2—Variable Condenser 6A9292. Page 21.
D —Crystal Detector 6A9297. Page 15.
P —Head Phones. Listed on page 17.



Tuning Coil Crystal Receiving Circuit.

Using a variable condenser shunted across tuning coil. The following list of parts make this Hook Up:

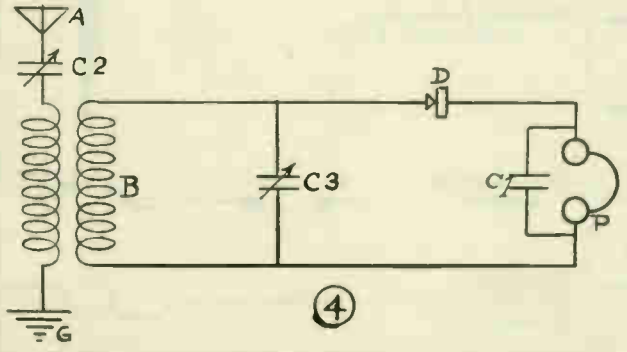
A —Aerial Connection.
G —Ground Connection.
See Aerial and Ground Outfits listed on page 31.
B —Double Slide Tuning Coil 6A9246. Page 16.
C1—Phone Condenser 6A9264. Page 21.
C2—Variable Condenser 6A9292. Page 21.
C3—Variable Condenser 6A9294. Page 21.
D —Crystal Detector 6A9297. Page 15.
P —Head Phones. Listed on page 17.



Loose Coupler Coil Crystal Receiving Circuit.

The following list of parts make this Hook Up:

A —Aerial Connection.
G —Ground Connection.
See Aerial and Ground Outfits listed on page 31.
B —Loose Coupler Coil 6A9333 or 6A9259¼. Page 16.
C1—Phone Condenser 6A9264. Page 21.
C2—Variable Condenser 6A9292. Page 21.
D —Crystal Detector 6A9297. See page 15.
P —Head Phones. Listed on page 17.



Loose Coupler Coil Crystal Receiving Circuit.

Using a variable condenser shunted across secondary winding of loose coupler coil. The following list of parts make this Hook Up:

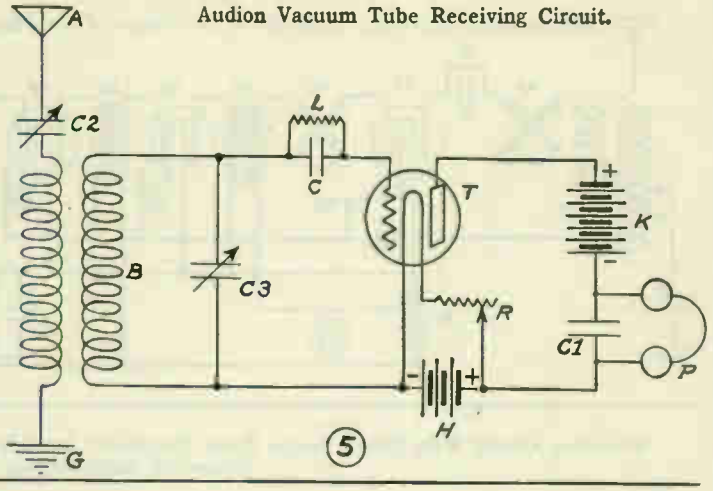
A —Aerial Connection.
G —Ground Connection.
See Aerial and Ground Outfits listed on page 31.
B —Loose Coupler Coil 6A9333 or 6A9259¼. Page 16.
C1—Phone Condenser 6A9264. Page 21.
C2—Variable Condenser 6A9292. Page 21.
C3—Variable Condenser 6A9294. Page 21.
D —Crystal Detector 6A9297. Page 15..
P —Head Phones. Listed on page 17.

Hook Ups

The following is a list of parts needed to make this Hook Up:

A—Aerial Connection } See Aerial and Ground
G—Ground Connection } Outfits listed on page 31.
B—Loose Coupler Coil 6A9333 or 6A9259¼. Page 16.
C—Grid Condenser 6A9660. Page 21.
C1—Phone Condenser 6A9264. Page 21.
C2—Variable Condenser 6A9298. Page 21.
C3—Variable Condenser 6A9299. Page 21.
H—"A" Battery. See 6-Volt Storage Batteries listed on page 35.
K—"B" Battery (30-60 volts). Page 34.
L—Grid Leak 6A9659. Page 21.
P—Head Phones. Page 17.
R—Rheostat. Page 19.
T—Detector Tube 6A9650. Page 18.

Audion Vacuum Tube Receiving Circuit.

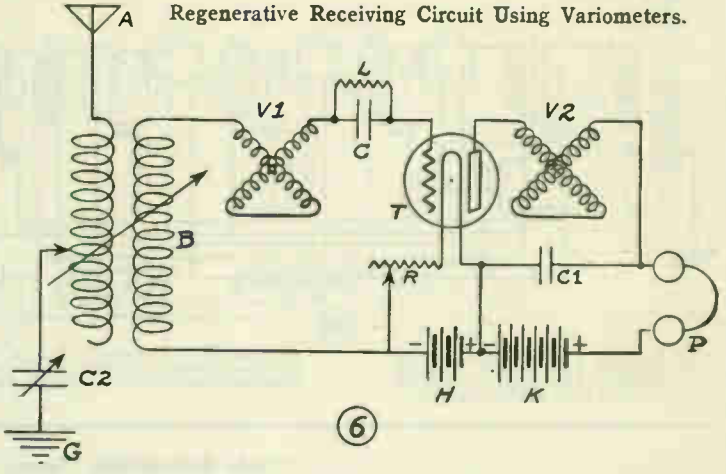


⑤

The following is a list of parts needed to make this Hook Up:

A—Aerial Connection } See Aerial and Ground
G—Ground Connection } Outfits listed on page 31.
B—Variocoupler 6A9685 or 6A9784. Page 20.
C—Grid Condenser 6A9660. Page 21.
C1—Phone Condenser 6A9264. Page 21.
C2—Variable Condenser 6A9298. Page 21.
H—"A" Battery. See 6-Volt Storage Batteries listed on page 35.
K—"B" Battery (22½ volts). Page 34.
L—Grid Leak 6A9659. Page 21.
P—Head Phones. Page 17.
R—Rheostat. Page 19.
T—Detector Tube 6A9650. Page 18.
V1—Grid Variometer 6A9684 or 6A9781. Page 20.
V2—Plate Variometer 6A9684 or 6A9781. Page 20.

Regenerative Receiving Circuit Using Variometers.

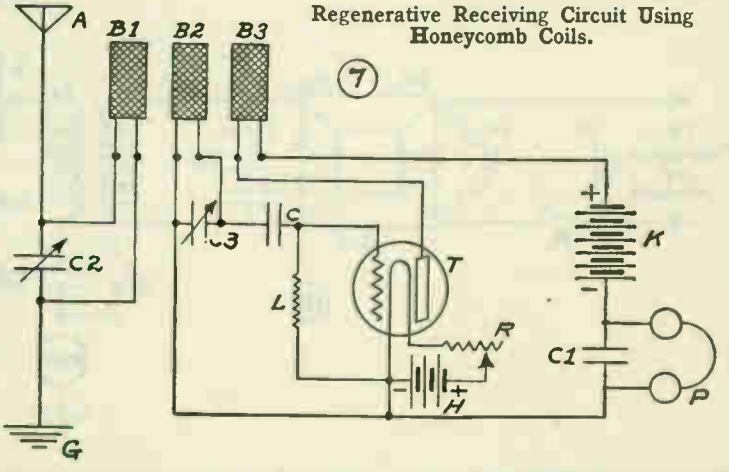


⑥

The following is a list of parts needed to make this Hook Up:

A—Aerial Connection } See Aerial and Ground
G—Ground Connection } Outfits listed on page 31.
B1—Honeycomb Coil (Primary). Page 28.
B2—Honeycomb Coil (Secondary). Page 28.
B3—Honeycomb Coil (Tickler). Page 28.
C—Grid Condenser 6A9660. Page 21.
C1—Phone Condenser 6A9264. Page 21.
C2—Variable Condenser 6A9298. Page 21.
C3—Variable Condenser 6A9299. Page 21.
H—"A" Battery. See 6-Volt Storage Batteries listed on page 35.
K—"B" Battery (22½ volts). Page 34.
L—Grid Leak 6A9659. Page 21.
P—Head Phones. Page 17.
R—Rheostat. Page 19.
T—Detector Tube 6A9650. Page 18.

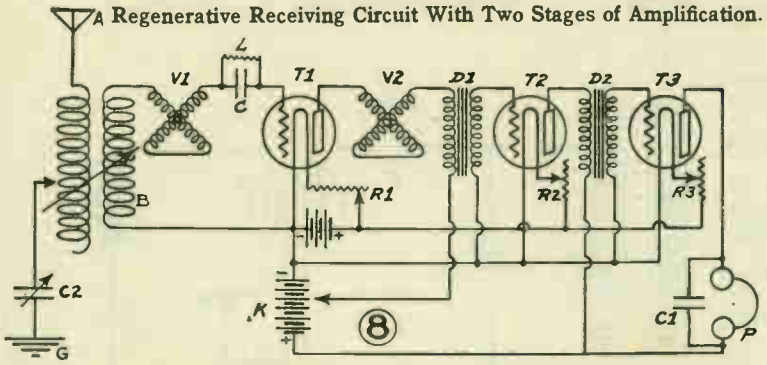
Regenerative Receiving Circuit Using Honeycomb Coils.



⑦

Hook Ups

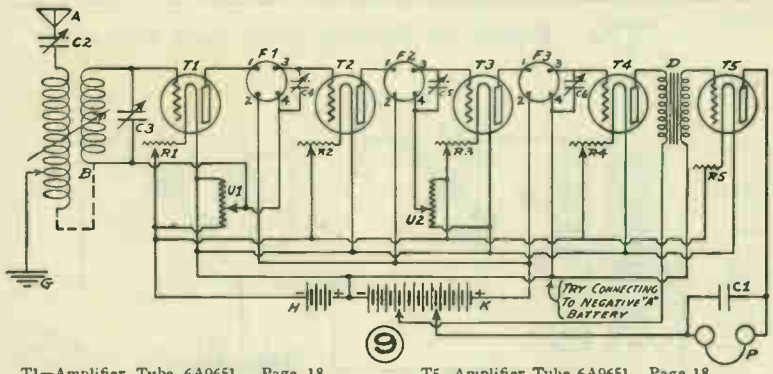
A Regenerative Receiving Circuit With Two Stages of Amplification.



The following list of parts make this Hook Up:

A —Aerial Connection. See Aerial and Ground Outfits listed on page 31.
G —Ground Connection. See Aerial and Ground Outfits listed on page 31.
B —Variocoupler 6A9685 or 6A9784. Page 20.
C —Grid Condenser 6A9660. Page 21.
C1—Phone Condenser 6A9264. Page 21.
C2—Variable Condenser 6A9298. Page 21.
D1—Amplifying Transformer. Page 22.
D2—Amplifying Transformer. Page 22.
H —"A" Battery. See 6-Volt Storage Batteries listed on page 35.
K —"B" Battery (90-112½ volts). Page 34.
L —Grid Leak 6A9659. Page 21.
P —Head Phones. Page 17.
R1—Rheostat. Page 19.
R2—Rheostat. Page 19.
R3—Rheostat. Page 19.
T1—Detector Tube 6A9650. Page 18.
T2—Amplifier Tube 6A9651. Page 18.
T3—Amplifier Tube 6A9651. Page 18.
V1—Grid Variometer 6A9684 or 6A9781. Page 20.
V2—Plate Variometer 6A9684 or 6A9781. Page 20.

Receiving Circuit With Three Stages Radio Frequency Amplification, Detector and One-Stage Audio Frequency Amplification.

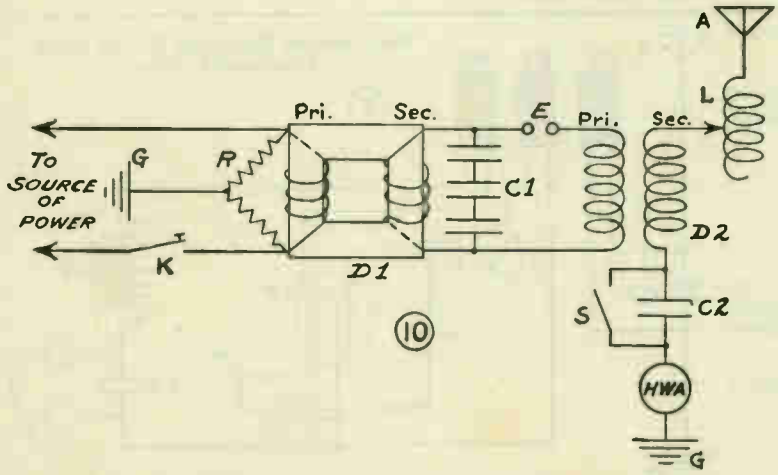


T1—Amplifier Tube 6A9651. Page 18.
T2—Amplifier Tube 6A9651. Page 18.
T3—Amplifier Tube 6A9651. Page 18.
T4—Detector Tube 6A9650. Page 18.
T5—Amplifier Tube 6A9651. Page 18.
U1—Potentiometer (200-ohm) 6A9657. Page 19.
U2—Potentiometer (200-ohm) 6A9657. Page 19.

The following list of parts make this Hook Up:

A —Aerial Connection. See Aerial and Ground Outfits listed on page 31.
G —Ground Connection. See Aerial and Ground Outfits listed on page 31.
B —Variocoupler 6A9685 or 6A9784. Page 20.
C1—Phone Condenser 6A9264. Page 21.
C2—Variable Condenser 6A9298. Page 21.
C3—Variable Condenser 6A9299. Page 21.
C4—Variable Condenser 6A9305. Page 21.
C5—Variable Condenser 6A9305. Page 21.
C6—Variable Condenser 6A9305. Page 21.
D —Amplifying Transformer. Page 22.
F1—Radio Frequency Transformer 6A9594. Page 22.
F2—Radio Frequency Transformer 6A9594. Page 22.
F3—Radio Frequency Transformer 6A9594. Page 22.
H —"A" Battery. See 6-Volt Storage Batteries listed on page 35.
K —"B" Battery (120-200 volts). Page 34.
P —Head Phones. Page 17.
R1—Rheostat. Page 19.
R2—Rheostat. Page 19.
R3—Rheostat. Page 19.
R4—Rheostat. Page 19.
R5—Rheostat. Page 19.

Code Transmitting Circuit.



The following list of parts make this Hook Up:

A —Aerial Connection. See Aerial and Ground Outfits listed on page 31.
G —Ground Connection. See Aerial and Ground Outfits listed on page 31.
C1—Condenser 6A9620. Page 38.
C2—Condenser.
D1—Transformer 6A9314¼. Page 39.
D2—Oscillation Transformer 6A9331¼. Page 36.
E —Spark Gap 6A9330. Page 37.
K —Wireless Key. Page 33.
L —Load Coils.
R —One Pair Line Protector Coils 6A9318. Page 39.
S —Single Pole Switch 6A8353. Page 32.
HWA—Hot Wire Ammeter 6A9491. Page 36.

How to Order
and Other Information

Order under one name

If possible, have all the members of the family order under one name—**the name of the head of the family.** This name should always be written plainly and always the same way. For example: If the name of the head of the family is J. P. Thompson, sign the two initials and the name every time. Don't sign the order simply J. Thompson. If you have no middle name, please write the first name in full. For example: John Thompson, not merely J. Thompson. When we receive all orders from the same family under one and the same name, the keeping of our records is simpler and prevents mistakes and delays.

Order blanks

Order blanks are enclosed in this catalog. Additional blanks, if wanted, will be sent upon request. If at any time you have no order blanks, write your order on any paper.

Write in any language

We can read it. We receive orders in all languages; all are handled with the same promptness.

Necessary information

Give name and number of article in catalog; also size and color where necessary. It is also advisable to check your order carefully to see that the necessary information is correctly stated before enclosing your order in the envelope.

How to send money

We require cash with order. You are perfectly safe in sending cash with order, for our guarantee protects you. If you are not satisfied with the goods you receive we will exchange them for other goods you want, or return your money, together with all transportation charges you paid. You can send the money to us in any of the following ways:

1—Postoffice money order.
2—Express money order.
3—Bank draft.
4—Cash by registered mail.
5—Your personal check.

When goods are to be shipped by parcel post, be sure to include additional money to pay for postage.

If you live on a rural route you can give the letter containing your order and money to your carrier and he will buy a money order for you at the postoffice and enclose it in the envelope with your order and mail it to us.

Change of address

If you change your postoffice address, street address, rural route, or box number, please let us know at once. In notifying us be sure to give your old address as well as your new one. This will enable us to send catalogs or letters to the correct address and thus avoid inconvenience to you.

Transportation charges

All transportation charges are to be paid by the customer.

When goods are to be shipped by parcel post be sure to include additional money to pay for postage.

When goods are to be shipped by freight or express and there is no freight or express agent at your shipping point, you must send additional money to prepay the freight or express charges. If there is an agent you can pay the charges when shipment reaches you. It is only necessary to prepay freight or express charges when there is no agent at your station. See our big General Catalog for express and freight rates.

Freight is the cheapest

Parcel post and express rates are low, but the cheapest way of shipping is by freight. The biggest savings are made by our customers who plan their purchases in advance. Instead of having small orders shipped to them by express or parcel post, they figure out all the supplies they will need for two or three months and order them all at once, shipped by freight. In this way they make a considerable additional saving on the larger order.

If you order goods sent by freight or express be sure to give your shipping point if it is different from your postoffice.

Factory shipments

In order to make our prices as low as we do we find it necessary to ship many of the heavy, bulky articles we sell direct from the various factories where they are made, or from a warehouse, thus saving our customers freight and cartage to our store, double handling and other expenses. The descriptions tell you when goods are shipped from factory or warehouse. By far the greater part of our merchandise is shipped direct from our store.

When you don't tell us how to ship

In this case we will consider that you have left it to our judgment and we will ship your goods the way it will cost you the least.

Rates for Parcel Post Shipments

Your postmaster will tell you the parcel post zone in which your postoffice is located, measuring from our store.

All merchandise shipped by mail takes parcel post rates. Packages up to 4 ounces in weight are carried at the rate of 1 cent an ounce, regardless of distance. Packages over 4 ounces are charged for by the pound. The rate per pound varies according to the distance, which is measured by the Government zone system, each zone covering a certain number of miles from point of shipment. Distances and rates are shown in the table below. Packages carried by parcel post are handled just like any other mail matter. They are delivered to your box by your rural mail carrier if you live on a rural route, or delivered to your door if you live in a city where there is carrier service, or delivered to your local postoffice if you live where there is no carrier service.

Loaded or primed cartridges or shells, other explosives, inflammable articles and poisons cannot be shipped by parcel post, nor articles measuring more than 7 feet in length and girth combined.

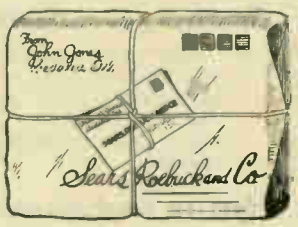
RATE TABLE FOR PARCEL POST SHIPMENTS

This table shows the charges when shipping by parcel post, according to the weight of the packages and according to distance by zones.	LOCAL ZONE For Shipments From Our Store to Customers Within Local Zone	ZONES 1 & 2 Not Over 150 Miles From Our Store	ZONE 3 151 to 300 Miles From Our Store	ZONE 4 301 to 600 Miles From Our Store	ZONE 5 601 to 1,000 Miles From Our Store	ZONE 6 1,001 to 1,400 Miles From Our Store
Weight of Package	Charges Required	Charges Required	Charges Required	Charges Required	Charges Required	Charges Required
Over 4 oz. up to 1 lb.	5c	5c	$0.06	$0.07	$0.08	$0.09
Over 1 lb. up to 2 lbs.	6c	6c	.08	.11	.14	.17
Over 2 lbs. up to 3 lbs.	6c	7c	.10	.15	.20	.25
Over 3 lbs. up to 4 lbs.	7c	8c	.12	.19	.26	.33
Over 4 lbs. up to 5 lbs.	7c	9c	.14	.23	.32	.41
Over 5 lbs. up to 6 lbs.	8c	10c	.16	.27	.38	.49
Over 6 lbs. up to 7 lbs.	8c	11c	.18	.31	.44	.57
Over 7 lbs. up to 8 lbs.	9c	12c	.20	.35	.50	.65
Over 8 lbs. up to 9 lbs.	9c	13c	.22	.39	.56	.73
Over 9 lbs. up to 10 lbs.	10c	14c	.24	.43	.62	.81
Over 10 lbs. up to 11 lbs.	10c	15c	.26	.47	.68	.89
Over 11 lbs. up to 12 lbs.	11c	16c	.28	.51	.74	.97
Over 12 lbs. up to 13 lbs.	11c	17c	.30	.55	.80	1.05
Over 13 lbs. up to 14 lbs.	12c	18c	.32	.59	.86	1.13
Over 14 lbs. up to 15 lbs.	12c	19c	.34	.63	.92	1.21
Over 15 lbs. up to 16 lbs.	13c	20c	.36	.67	.98	1.29
Over 16 lbs. up to 17 lbs.	13c	21c	.38	.71	1.04	1.37
Over 17 lbs. up to 18 lbs.	14c	22c	.40	.75	1.10	1.45
Over 18 lbs. up to 19 lbs.	14c	23c	.42	.79	1.16	1.53
Over 19 lbs. up to 20 lbs.	15c	24c	.44	.83	1.22	1.61
Over 20 lbs. up to 21 lbs.	15c	25c	.46	.87	1.28	1.69
Over 21 lbs. up to 22 lbs.	16c	26c	.48	.91	1.34	1.77
Over 22 lbs. up to 23 lbs.	16c	27c	.50	.95	1.40	1.85
Over 23 lbs. up to 24 lbs.	17c	28c	.52	.99	1.46	1.93
Over 24 lbs. up to 25 lbs.	17c	29c	.54	1.03	1.52	2.01
Over 25 lbs. up to 26 lbs.	18c	30c	.56	1.07	1.58	2.09
Over 26 lbs. up to 27 lbs.	18c	31c	.58	1.11	1.64	2.17
Over 27 lbs. up to 28 lbs.	19c	32c	.60	1.15	1.70	2.25
Over 28 lbs. up to 29 lbs.	19c	33c	.62	1.19	1.76	2.33
Over 29 lbs. up to 30 lbs.	20c	34c	.64	1.23	1.82	2.41
Over 30 lbs. up to 31 lbs.	20c	35c	.66	1.27	1.88	2.49
Over 31 lbs. up to 32 lbs.	21c	36c	.68	1.31	1.94	2.57
Over 32 lbs. up to 33 lbs.	21c	37c	.70	1.35	2.00	2.65
Over 33 lbs. up to 34 lbs.	22c	38c	.72	1.39	2.06	2.73
Over 34 lbs. up to 35 lbs.	22c	39c	.74	1.43	2.12	2.81
Over 35 lbs. up to 36 lbs.	23c	40c	.76	1.47	2.18	2.89
Over 36 lbs. up to 37 lbs.	23c	41c	.78	1.51	2.24	2.97
Over 37 lbs. up to 38 lbs.	24c	42c	.80	1.55	2.30	3.05
Over 38 lbs. up to 39 lbs.	24c	43c	.82	1.59	2.36	3.13
Over 39 lbs. up to 40 lbs.	25c	44c	.84	1.63	2.42	3.21
Over 40 lbs. up to 41 lbs.	25c	45c	.86	1.67	2.48	3.29
Over 41 lbs. up to 42 lbs.	26c	46c	.88	1.71	2.54	3.37
Over 42 lbs. up to 43 lbs.	26c	47c	.90	1.75	2.60	3.45
Over 43 lbs. up to 44 lbs.	27c	48c	.92	1.79	2.66	3.53
Over 44 lbs. up to 45 lbs.	27c	49c	.94	1.83	2.72	3.61
Over 45 lbs. up to 46 lbs.	28c	50c	.96	1.87	2.78	3.69
Over 46 lbs. up to 47 lbs.	28c	51c	.98	1.91	2.84	3.77
Over 47 lbs. up to 48 lbs.	29c	52c	1.00	1.95	2.90	3.85
Over 48 lbs. up to 49 lbs.	29c	53c	1.02	1.99	2.96	3.93
Over 49 lbs. up to 50 lbs.	30c	54c	1.04	2.03	3.02	4.01
Over 50 lbs. up to 51 lbs.	30c	55c	1.06			
Over 51 lbs. up to 52 lbs.	31c	56c	1.08			
Over 52 lbs. up to 53 lbs.	31c	57c	1.10			
Over 53 lbs. up to 54 lbs.	32c	58c	1.12			
Over 54 lbs. up to 55 lbs.	32c	59c	1.14			
Over 55 lbs. up to 56 lbs.	33c	60c	1.16			
Over 56 lbs. up to 57 lbs.	33c	61c	1.18			
Over 57 lbs. up to 58 lbs.	34c	62c	1.20			
Over 58 lbs. up to 59 lbs.	34c	63c	1.22			
Over 59 lbs. up to 60 lbs.	35c	64c	1.24			
Over 60 lbs. up to 61 lbs.	35c	65c	1.26			
Over 61 lbs. up to 62 lbs.	36c	66c	1.28			
Over 62 lbs. up to 63 lbs.	36c	67c	1.30			
Over 63 lbs. up to 64 lbs.	37c	68c	1.32			
Over 64 lbs. up to 65 lbs.	37c	69c	1.34			
Over 65 lbs. up to 66 lbs.	38c	70c	1.36			
Over 66 lbs. up to 67 lbs.	38c	71c	1.38			
Over 67 lbs. up to 68 lbs.	39c	72c	1.40			
Over 68 lbs. up to 69 lbs.	39c	73c	1.42			
Over 69 lbs. up to 70 lbs.	40c	74c	1.44			

Within Local Zone and Zones 1, 2 and 3, packages up to 70 pounds in weight are carried. The limit of weight for all other zones is 50 pounds. Articles measuring more than 7 feet in length and girth combined, explosives, inflammable articles and poisons cannot be shipped by parcel post.

Books Parcel post rates apply to books as follows: All books up to and including 8 ounces in weight will be carried at the rate of 1 cent for 2 ounces to any part of the United States, regardless of distance, and all books over 8 ounces in weight will take the regular parcel post rates according to weight and zone.

How to Return Goods to Us by Parcel Post.



The Way to Return Goods to Us by Parcel Post.

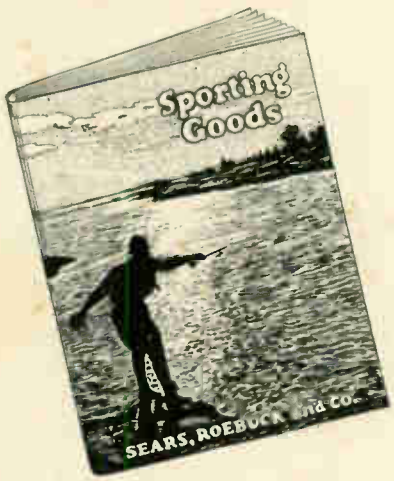
WHEN YOU RETURN GOODS BY PARCEL POST, PUT THE LETTER YOU WRITE AND THE BILLS FOR THE GOODS IN AN ENVELOPE AND PASTE OR TIE THE ENVELOPE SECURELY TO THE OUTSIDE OF THE PACKAGE. In addition to the postage you put on the package, put 2 cents postage on the envelope.

About Transportation Charges.

When goods are to be shipped by parcel post, do not send stamps to pay the postage for shipping package, but add the amount for postage to the amount of the merchandise and include in the remittance you send us. This charge for mailing must be paid in advance, as no provision has been made for the collection of mailing charge on delivery.

When goods are to be shipped by freight or express and there is no freight or express agent at your shipping point, you must send money to prepay the transportation charges. If there is an agent you can pay the transportation charges when shipment reaches you. It is only necessary to prepay freight or express charges when there is no agent at your station. See our Big Catalog for complete information about freight and express rates and charges.

Throughout our catalogs you will find the shipping weight is given in the description of merchandise. Occasionally, according to the nature of the merchandise, we are obliged to give the actual weight. In such cases a few ounces extra in weight must be allowed for wrapping and packing, according to the nature of the goods.



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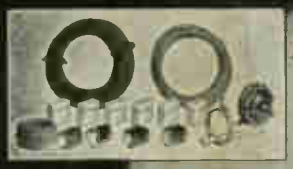
Audiotron Detector and Two-Stage Amplifier Set



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Assemble Your Own Receiving Set With Approved Standard Panels and Enjoy Longer Receiving Radius and Most Sensitive Results.

COMPLETE SET

$135.00

TO ACCOMMODATE the many people who desire to purchase a complete radio receiving set without going into the technical construction, we have tested many sets and have decided that this Audiotron Detector and Two-Stage Amplifier Set would give the best results. When hooked up properly you can receive stations from 800 to 1,000 miles. It is easy to operate and the tone produced is clear and sharp. With the instructions furnished this set can be easily put together. The set includes everything necessary for building antenna, ground and a complete receiving and tuning set with a loud speaker.

Below is a list of parts included with this set:

One 6A9652 Detector Panel, two 6A9571 Amplifier Panels, one 6A9786 Variocoupler Panel, one 6A9783 Variometer Panel, one 6A9292 Variable Condenser, one 6A9650 Detector Tube, two 6A9651 Amplifier Tubes, one 6A9521 Storage Battery, one 6A9600 "B" Battery (22½ volts), two 6A9601 "B" Batteries (45 volts), one 6A9603 Head Set, one 6A9435 Aerial and Ground Outfit and one 6A9779 Magnavox. Shipping weight, 152 pounds.

6A9310 ..... **$135.00**