

RADIO



Sears, Roebuck and Co., Chicago-Philadelphia



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.

Radio Apparatus

Read the Following. It Explains Why You Should Purchase From This Catalog.

Early in the year 1916 we realized the possible advantages in the rapid development of wireless telegraphy. Appreciating the fact that there were very few places at the time where the student and radio enthusiast could purchase the necessary parts with which to carry on his studies and experiments, we decided that in order to better serve our customers we should put ourselves in a position to be able to supply a complete line of high grade parts.

After a careful search and many tests, during which time our first consideration was always quality, we issued our first complete radio catalog, and within a remarkably short time were recognized as the leader in this field. Within the short space of one year, we had received the endorsement of both the National Amateur Wireless Association and the American Radio Relay League, as witnessed by letters received from officials of these two organizations, copies of which are shown.

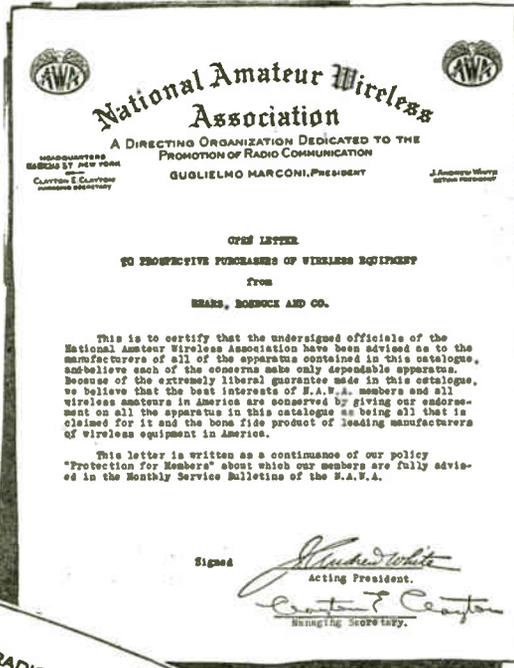
From the very start we have maintained quality, and have many times refrained from handling articles which looked like bargains, because our tests convinced us that in some cases they would not work well, even at the start, and in other cases where the product might have a satisfactory appearance and might work at the start, the windings or other parts would in a short time become loose, thereby rendering the article worthless.

Recently tremendous developments have been made, particularly in radiophone broadcasting, so that now many who care practically nothing for the technical knowledge, wish to listen in to the concerts, speeches, market reports, and other entertainment or information which is broadcasted nearly every hour of the day. With a view to aiding such in selecting sets or the proper parts to assemble a complete set, realizing at the same time that many cannot afford to buy a high priced set, some parts of which may within a comparatively short time be surpassed by other units more efficient than the latest development of today, we have shown on some of the following pages some complete sets and combinations of units which are, in our opinion, the best that present day markets offer.

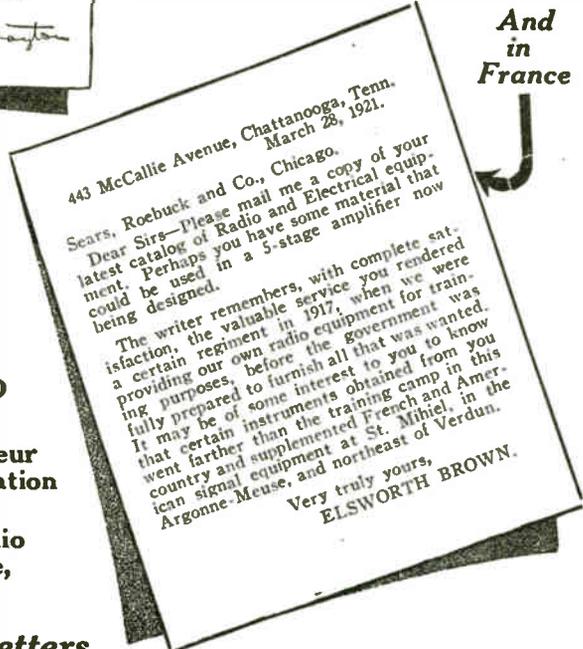
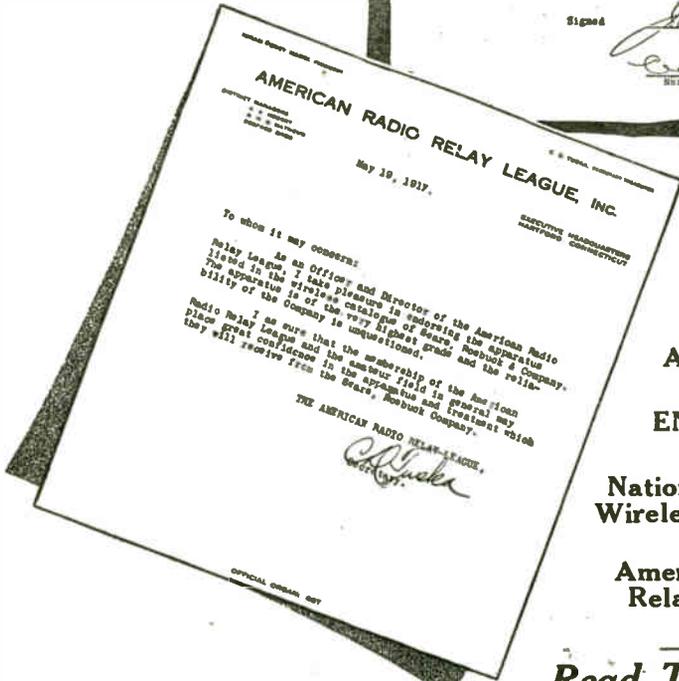
The complete sets offer the advantage that no knowledge of radio is needed to operate them, and it is a very simple matter to install any set wherever an aerial can be erected.

The panel unit sets have the advantage of being adaptable to any changes that may be desired at any time, and the operator becoming familiar with some of the fundamental theories of wireless reception, may wish to try other combinations than the one we suggest, which can easily be done.

At the outbreak of the recent war, radio for the amateur received a temporary setback, but many of our customers were immediately able to offer themselves to various branches of the service as experienced operators, and being thoroughly familiar with high grade apparatus, were able to adapt themselves at once to the standard parts used by the army and navy or marine corps. The letter which we here show is only one of many similar that we received.



And in France



Our Apparatus is ENDORSED by the National Amateur Wireless Association and the American Radio Relay League, Inc.

Read These Letters

We Guarantee

That each and every article in this catalog is exactly as described and illustrated. We guarantee that all our instruments are built on correct mechanical and electrical principles; that they are built by skilled workmen, and are high grade throughout. 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. While it is impossible to guarantee the range of any wireless apparatus, we have given ours a conservative rating which does not make any extravagant claims. During the past year there have been a number of important developments in the radio field. Some of these inventions have proved to be very practical, while others are decidedly of an experimental nature. With a view to keeping our catalog strictly up to date along lines of amateur radio apparatus, our laboratories have carefully compared and tested all of the recent developments in radio which might be of interest to the amateur. We guarantee that all of the articles shown in our catalog have been carefully tested and are in every way practical for radio use. 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 paid.

Westinghouse Regenerative Sets



Short Wave Regenerative Receiver Type R.C.

Receiving Radius 700 to 1,000 Miles.

The set comprises a combination of a short wave regenerative tuner and a detector and two-stage audio frequency amplifier unit. Distant radio telephone, amateur and ship stations may be received on any wave length within the range of 170 to 700 meters. Broadcasting may be received on either detector alone or with one or two stages of amplification by simply changing the head telephone plug connection. Where the magnavox or loud speaker is used, the entire family may enjoy radio concerts without the use of telephone receiver. The set is metallically shielded so as to prevent undesired noises, caused by capacity effects between the set itself and the operator's body. The receiver unit is very neat in construction and requires but one major adjustment in order to bring in desired signals and cut out undesired stations. A minute adjustment of this circuit is obtained by what is known as a "vernier" condenser which is connected in parallel with the antenna condenser. When a vacuum tube detector is used with this tuner, advantage is taken of the amplifying qualities of the regenerative circuit. In this case the degree of amplification is controlled by a small knob marked "tickler." The amplifier acts as a magnifier of the signals received by the detector. With each stage of amplification the incoming signals are magnified many times, so that with this detector and two-stage amplifier, signals which at times cannot be heard with simpler sets may be received with ease on a loud speaker. Three telephone jacks are mounted on the panel, and are arranged to control the internal circuits according to the desire of the operator. A screen window is provided in front of the panel in order that the operator may observe the brilliancy of the vacuum tubes. All the vacuum tubes are mounted on the same base, which in turn is mounted on heavy rubber shock absorbing supports. The whole unit is mounted in an attractive mahogany case, equipped with a hinged cover with all the elements necessary for vacuum tube detector and two-stage audio frequency amplifier. The complete outfit ready to install with aerial and ground wires and pair of sensitive 3000-ohm phones. A standard detector, two amplifier tubes, three "B" batteries and a storage battery are also included. Shipping weight, 120 pounds.

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

Aeriola Senior Portable Receiving Set

Receiving Radius 300 to 600 Miles.

Compact Detector Set.

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. These messages are sent out by the U. S. Government stations on wave-lengths of 400 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 radio-phone broadcasting stations.

This set is particularly adapted to the rural districts as the filament circuit is operated by an ordinary dry cell, thus doing away with the expense and inconvenience of a storage battery and is furnished complete, ready to install.

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.



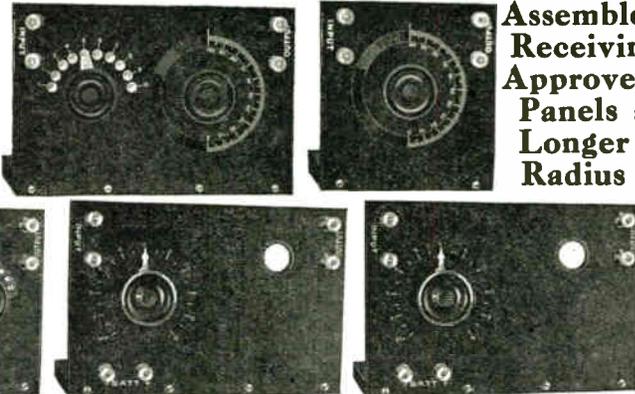
\$65⁰⁰

6A9315¼—Complete set.....\$65.00

Complete Panel Receiving Sets

Audiotron Detector and Two-Stage Amplifier Set

High Grade Bakelite Panel Units, Neat in Appearance and Easy to Operate



Assemble Your Own Receiving Set With Approved Standard Panels and Enjoy Longer Receiving Radius and Most Sensitive Results



The recent developments in the radio broadcasting field have created a large demand for a complete receiving set. Many persons interested in radio receiving today do not wish to go into the technical construction of a large radio outfit. Therefore, with a view to supplying this general demand and to be of service to our radio customers, we have carefully selected and tested certain panel units which we have found will give very good results when wired into a complete receiving set. At present, public interest is centered in radiophone broadcasting, so that the most desirable set is one that will give best results when receiving a speech or music. The set best-adapted to these purposes is the vacuum tube receiver. Many people desire to bring in the concerts so that they may be plainly heard in a large room and thus do away with the head receivers, and in order to do this, one or two stages of amplification must be added to the detector. A receiving set of this size can be used with nearly any type loud speaking device, and will have a receiving radius of from 800 to 1,000 miles under ordinary conditions when properly connected. The receiving radius also depends upon weather conditions, the size and height of aerial and the location of the set. For best results with this outfit, we advise the Radio Magnavox, listed on page 5 of this catalog. The outstanding feature of a radio set of this type, is the fact that the purchaser can be sure of the high quality of the apparatus, and the various parts may be rearranged at any time to adapt the set to latest developments in the radio art. These panels, when properly wired, are very selective 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. The panels shown on

this page are very simple in operation and are sent with complete instructions for wiring, so that an inexperienced person can easily assemble the set. All the connections are made on the front of the panels with the exception of the "B" battery leads, which are back panel connections. The set we suggest for radiophone reception is made up of five panels, mounted as shown in the illustration, and can be easily enclosed in a wooden case so that the whole unit will present a very neat appearance.

Below is a complete list of all the parts needed to construct this detector and two-stage amplifier set:

One 6A9652 Detector Panel, shown on page 6.....	\$ 6.42
Two 6A9571 Amplifier Panels, shown on page 6.....	19.20
One 6A9786 Variocoupler Panel, shown on page 7.....	10.12
One 6A9783 Variometer Panel, shown on page 7.....	8.22
One 6A9292 Variable Condenser Panel, shown on page 20.....	6.50
One 6A9650 Detector Tube, shown on page 21.....	4.60
Two 6A9651 Amplifier Tubes, shown on page 21.....	12.30
One 6A9521 Storage Battery, shown on page 28.....	13.68
One 6A9600 "B" Battery 22½, shown on page 29.....	1.71
One 6A9601 "B" Battery 45, shown on page 29.....	3.20
One 6A9216 Head Set, shown on page 22.....	4.40
One 6A9435 Aerial and Ground Outfit, shown on page 14.....	3.18
One 6A9779 Magnavox, shown on page 5.....	38.75

Shipping weight, 152 pounds. **\$132.28**

This list contains all the parts necessary to make a set capable of clearly tuning in radio concerts, and the set also includes a radio magnavox for reproducing the signals. A complete set of instructions with book is furnished with each set which gives all necessary instructions for wiring and installing the outfit. When writing for instructions, ask for Hook-Up No. 4.

Audiotron Panel Detector Set



A high grade panel receiving set, made up of units similar to those used in the set shown above. This outfit consists of a detector panel, variometer and variocoupler panel. All units are wired and make a very attractive outfit. This set is well adapted to receive radiophone speech and concerts, as well as code transmission. The set, when properly connected, will have a receiving radius of 300 to 500 miles. We furnish complete instructions for erecting the set, and advise that all connections be made carefully, as the results obtained depend largely upon the construction of the aerial and connections on the set. This outfit is made up of the following parts:

One 6A9652 Detector Panel, Shown on page 6.....	\$ 6.42
One 6A9786 Variocoupler Panel, shown on page 7.....	10.12
One 6A9783 Variometer Panel, shown on page 7.....	8.22
One 6A9600 "B" Battery, shown on page 29.....	1.71
One 6A9521 "A" Battery, shown on page 23.....	13.68
One 6A9650 Detector Tube, shown on page 21.....	4.60
One 6A9216 Head Set, shown on page 22.....	4.40
One 6A9435 Aerial and Ground Outfit, shown on page 14.....	3.18

Shipping weight, 90 pounds. **\$52.33**

This set is recommended for receiving market and weather reports and radiophone concerts where a loud speaking unit is not desired.



Progressive Unit Panel Sets

Combine Correct Radio and Mechanical Principles
Highest Grade Materials and Workmanship

A complete receiving set, made up of our panels. These panels can be easily assembled and wired to make a very efficient radio set with a wide receiving radius. The outfit will give very good results when used with a Magnavox, and makes an ideal receiver for use in the home. Each unit is made up of a standard instrument completely wired so that the set can be quickly assembled. The set is very neat in appearance and may either be mounted on the brackets, as shown in the illustration, or set in a neat wooden cabinet; the panels are provided with screw holes in each corner for this purpose. A set of this type

has many advantages over the large complete set, as it enables the amateur to start with two or more panels and add units from time to time to make a set of any desired radius. We have shown here three sets made up of Progressive panels, and also the receiving radius of each set in miles, so that a beginner will be able to judge which set is best suited for his purpose. It must be understood, however, that no definite receiving range can be given for any set, as this depends entirely upon the location of the set and the size and construction of the aerial.

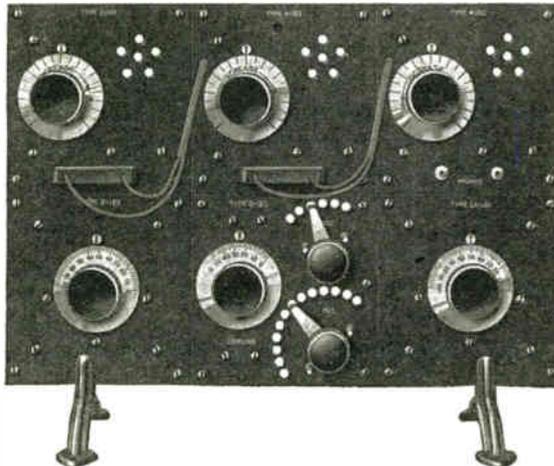
Detector and Two-Stage Amplifier Receiving Set.

A complete radio receiving set, embodying latest advances in coil windings and most efficient vacuum tube circuit. This outfit consists of six regular panel units, constructed to make detector and two-stage amplifier set with condenser and loose coupler tuning panels. This set can be used on wave lengths from 200 to 3,000 meters and will easily operate a Magnavox or loud speaker.

The outfit, if properly installed, will have a receiving radius of from 800 to 1,000 miles for phone and spark reception, and when used with the Magnavox makes an ideal set for the home, as the speech and music may be heard plainly in any part of an ordinary room. The set is made up of a 3,000-meter variocoupler unit, 43 and 21-plate condenser units, and a detector and two amplifier panels, together with tube sockets, rheostats and transformers. The outfit is sent complete with all necessary parts for erecting the aerial and wiring the set. Also blue prints for connecting the set will be sent with the order.

The following is a list of the parts used in this set:

One 6A9663 Panel, shown on page 9.....	\$14.65
One 6A9576 Panel, shown on page 9.....	5.42
One 6A9577 Panel, shown on page 9.....	4.56
One 6A9578 Panel, shown on page 8.....	8.15
Two 6A9579 Panel, shown on page 8.....	24.70
One 6A9650 Tube, shown on page 21.....	4.60
Two 6A9651 Tube, shown on page 21.....	12.50
One 6A9662 Battery, shown on page 29.....	1.59
Two 6A9601 Battery, shown on page 29.....	6.40
One 6A9435 Ground Set, shown on page 14.....	3.18
One 6A9519 Battery, shown on page 28.....	9.08
One 6A9216 Phones, shown on page 22.....	4.40
One 6A9779 Magnavox, shown on page 5.....	38.75
Shipping weight, 122 pounds.	
Complete	\$137.78



Vacuum Tube Detector Set.

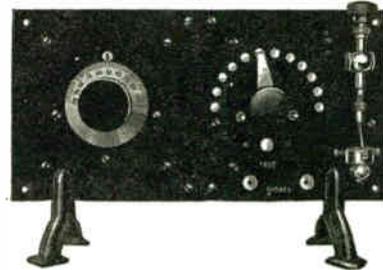
This set is recommended for the persons who desire to receive weather and market reports and radiophone concerts. Makes an ideal set for the farmer who lives within a radius of 100 to 200 miles of a broadcasting station, as this receiver can be used to tune in the market and weather reports, which are now a daily feature in all radiophone stations. The set can also be used to receive code at a distance of 500 miles and will give good satisfaction as a receiving outfit where a loud speaking device is not desired. The set is made up of the following panels: 3,000-meter variocoupler unit, equipped with new type coupling, which gives fine tuning and closer adjustment than old style loose coupler; vacuum tube control unit consisting of rheostat, Bakelite tube socket, grid leak, clips for A and B batteries, grid condenser and cord tip jacks. Unit takes any standard 4-prong tube. All terminals are marked. Also a variable condenser, .001 M. F. capacity; one 22½-volt "B" battery and 6-volt storage battery and a standard detector tube are furnished with the detector panel. A pair of 3,000-ohm phones and complete aerial and ground outfit. When ordering please specify the following numbers:



One 6A9576 Panel, shown on page 9.....	\$ 5.42
One 6A9663 Panel, shown on page 9.....	14.65
One 6A9578 Panel, shown on page 8.....	8.15
One 6A9650 Tube, shown on page 21.....	4.60
One 6A9217 Phones, shown on page 22.....	5.30
One 6A9519 Battery, shown on page 28.....	9.08
One 6A9662 Battery, shown on page 29.....	1.59
One 6A9435 Ground Set, shown on page 14.....	3.18
Shipping weight, 64 pounds.	
Complete	\$51.97

The Beginners' Crystal Set.

Beginners' complete receiving set, consists of 800-meter tuning coil, Galena detector, fixed condenser and cord tip jacks. Treated tube is used to hold single layer winding, which is protected by a cambric tape wrapping. Mineral detector has double adjustment and is very high grade in detail. Winding is tapped by means of a 10-point switch. Cord tip jacks make a certain contact and eliminate unsightly binding posts. Fixed condenser is connected across the phones. The set is equipped with a standard 43-plate condenser. This set is a very efficient crystal receiver and will have a radius of 100 miles for code reception, and will give very good results on radiophone work when used within a radius of 20 to 30 miles from a broadcasting station. When ordering this set, specify catalog numbers:



6A9626—Receiving unit	\$ 8.57
6A9576—Condenser	5.42
6A9216—Phones	4.40
6A9435—Aerial Ground Set.....	3.18
Shipping weight, 11¼ pounds.	
Total	\$21.57

Radio Magnavox

Radio Magnavox is a high grade type of sound magnifier, made on the electro-dynamic principle. It will reproduce radiophone speech or music to such a degree that the sound may be heard a considerable distance away from the receiving set. Equipped with a 14-inch horn. Should be used with 6-volt storage battery. Metal parts are finished in black enamel. The Radio Magnavox is today recognized as one of the most efficient types of sound magnifiers, and if sufficient amplification is used, it will produce volume enough to be heard in a large room or hall. The tone produced is very clear. The resistance in the unit is so high that the distant signals can be plainly reproduced. Shipping weight, 20 pounds.

6A9779—Radio Magnavox.....\$38.75



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. Very good results will be secured by plugging the loud speaker directly to the receiving unit and tuning in directly, but it will be found easier and simpler to tune in with a head set, provided there is one available. The Dictograph Radio Loud Speaker is the last word in a simple, compact, home type instrument. 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



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 room full 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. Shipping weight, 1 pound.

6A9780—Meteor Junior.....\$11.60

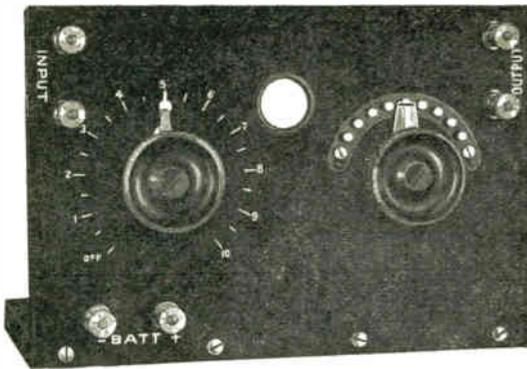
Phonograph Attachment

This device when attached to the tone arm of your Victrola, Silver-tone 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. Shipping weight, 1 pound.



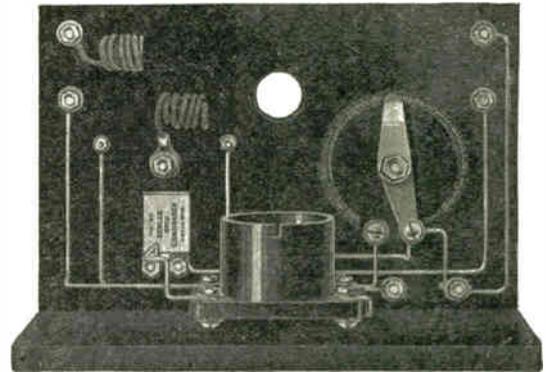
6A9778—Phonograph Attachment.\$9.05

Audiotron Bakelite Control Panel



Our Price, \$6⁴²
Only
A Remarkable Value

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



Molded Bakelite Panel Is 7¼ Inches Long, 5 Inches High and ¾ 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 5x7¼x¾ 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 Bakelite Control Panel.....\$6.42

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.

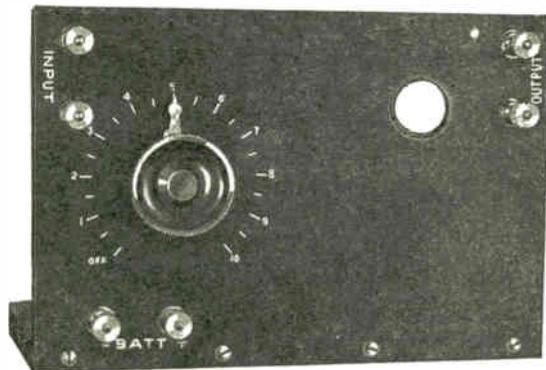
This unit is especially designed for Cunningham Audiotron Amplifier Tube, Type C-301, and is also suitable for any standard four-prong tube on the market. Shipping weight, 8 pounds.

6A9570—Audiotron Amplifier Panel, without transformer.....\$4.53

6A9571—Audiotron Amplifier Panel, complete with Transformer

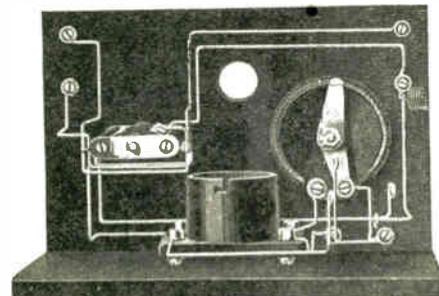
6A9503 9.60

For Amplifying Transformer see page 25.



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



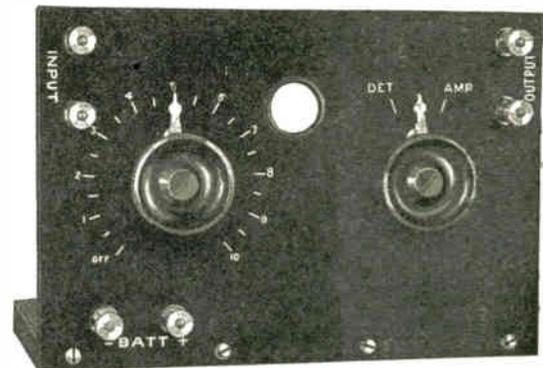
used as a detector, type C-301 will take any plate voltage from 40 to 100. Switch rotates 90 degrees. When in center position all circuits are open. All wiring is Bus-Bar type and terminals are arranged to connect in the amplifying transformer. Shipping weight, 6 pounds.

6A9573—Audiotron Amplifier. Without transformer.....\$ 6.79

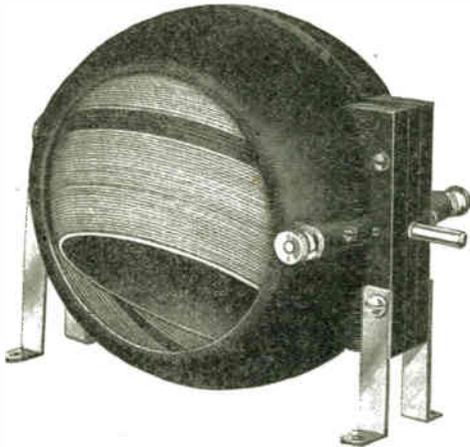
6A9690—Audiotron Amplifier. Complete with Transformer

6A9503 11.85

For Amplifying Transformers see page 25.



Audiotron Bakelite Molded Variometer and 180° Variocoupler



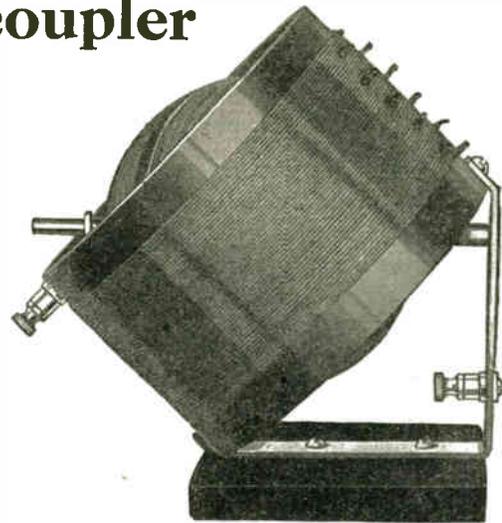
6A9781—Bakelite Variometer.

Audiotron Bakelite Molded 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 $3\frac{1}{4}$ inches and the shaft is of brass, $\frac{3}{16}$ 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 $5\frac{3}{4}$ inches and the over all length, except the protruding end of the shaft, is $5\frac{1}{4}$ 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 range 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



6A9784—Variocoupler.

Audiotron Variocoupler

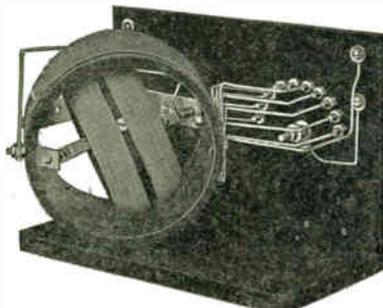
This variocoupler has an entirely new feature; namely, that the coupling range is 180 degrees instead of 90 degrees (as is the case with other variocouplers). The primary winding is green silk covered wire wound on a fiber tube, 4 inches in diameter by $2\frac{3}{4}$ inches deep. Ten taps are provided. 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 $3 \times 4 \times \frac{3}{8}$ inch and is therefore readily mounted on either a table or panel. The shaft is $\frac{3}{16}$ inch and the rotor is $3\frac{5}{8}$ inches maximum diameter. The over all height, including base, is $5\frac{1}{4}$ inches, and the total width, not including shaft extension, is $4\frac{7}{8}$ 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. Shipping weight, 3 pounds.

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

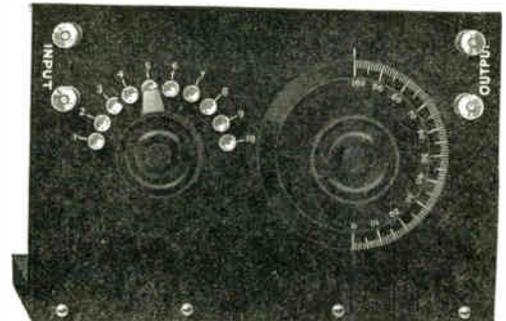
6A9785—Audiotron Variocoupler with 6A9646 Knob and Dial. Shipping weight, 3 pounds..... 4.72



6A9783—Variometer Panel.



Back of 6A9786 Variocoupler Panel.



6A9786—Variocoupler Panel.

Audiotron Variometer Panel

Variometer 6A9782 is supplied mounted on a Bakelite molded panel, $5 \times 5 \times \frac{3}{16}$ inch, with hardwood base finished in black, $5 \times 3 \times \frac{3}{8}$ 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 6) 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 Variocoupler Panel

Variocoupler 6A9785 is also supplied mounted on a Bakelite panel, $5 \times 7\frac{1}{4} \times \frac{3}{16}$ 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, $7\frac{1}{4} \times 4 \times \frac{3}{8}$ inch, is finished in black. Shipping weight, 6 pounds.

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

Progressive Unit Panels

Combines Correct Radio and Mechanical Principles and the Highest Grade Materials and Workmanship.

These units enable anyone to install a radio receiving set, and as progress is made additional instruments may be added to make the set complete for receiving all classes of signals from great distances. The units are designed so 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. In this way there is no apparatus to be discarded or to become obsolete. Units are all mounted on formica panels, 5x5x $\frac{3}{16}$ inch thick. All panels have grained satin finish and are fitted with $\frac{1}{8}$ -inch connecting lugs, which may be removed. Units are high grade in every way and embody correct design, both electrically and mechanically. All metal parts are nickel plated and polished. Panels may be supported by means of brackets, as shown. Two brackets only are needed to support any number of units. All connections are marked and are made by means of sure contact clips. Blue prints are furnished with each unit, showing how to connect all wires, etc.



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 whole unit is very neat in appearance and is highly recommended for use in vacuum tube circuits. Shipping weight, 3 lbs. 6A9666—Complete with dial and knob.....\$5.32



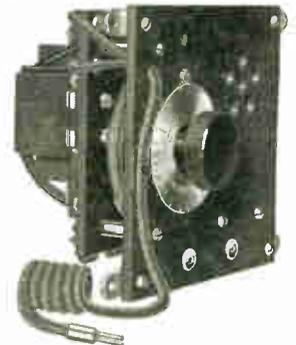
Variocoupler Unit.

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



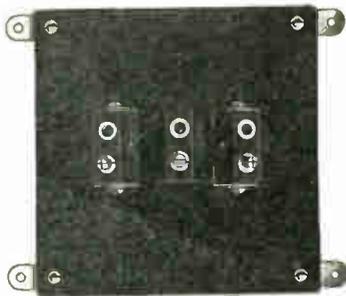
Vacuum Tube Unit.

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



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 27. We recommend "Q. S. A." Inductance Coils for use with this unit. Shipping wt., 1 lb. 6A9795\$4.24



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, $1\frac{1}{2}$ pounds. 6A9796\$7.59



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 27. Shipping weight, $1\frac{1}{4}$ pounds. 6A9797\$7.18



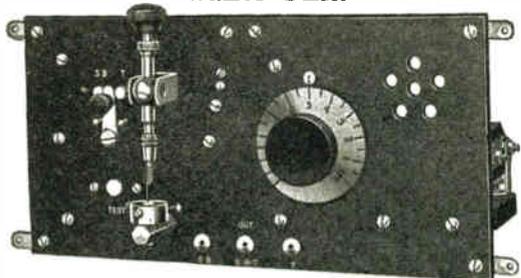
Single Coil Mounting and Variable Condenser Unit.

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 9. We recommend "Q. S. A." coils for use with this unit. Shipping weight, $1\frac{1}{4}$ pounds. 6A9798\$5.76

Progressive Unit Panels

The Progressive Unit Panel Set is suitable for use in any station. The advanced amateur and also the beginner will find units around which they can build a complete receiving set for long and short wave receiving, both damp and undamp, as well as radio telephone conversation, music, etc. We recommend that the beginner put up an aerial according to the available space which he may have, and let his first receiving set consist of 6A9626 Beginners' Unit with Buzzer Test, combined with one 6A9576 or 6A9577 Variable Condenser, as shown below and on page 4. As the student progresses he can easily add 6A9578 Vacuum Tube Unit, and any other units desired. A complete set of these panels will make a strictly high grade, sensitive receiving set which will more than please.

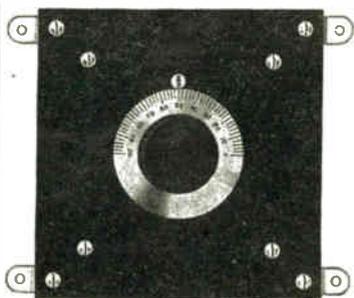
Combination Vacuum Tube—Crystal Control Panel Unit.



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

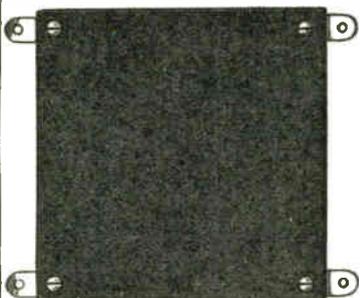
Variable Condenser Unit.



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, 1 1/4 pounds.

6A9576\$5.42
Capacity, .005 MF. Same as 6A9576, except fitted with our 6A9299 Condenser. Shipping weight, 1 1/4 pounds.
6A9577\$4.56

Blank Panel Unit.



Blank Panel. Size, 5x5 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. Shipping weight, 4 ounces.

6A9575\$1.16

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 pounds.

6A9793\$6.85

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 wt., 8 oz.

6A963435c

Vario Coupler Unit.



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

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

3,000-Meter Vario Coupler Unit. Consists of Bakelite tube, 4x4 1/4 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 weight, 7 pounds..... 16.45

Crystal Detector and Test Buzzer Unit.



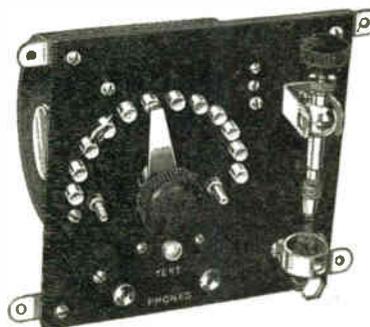
Many operators equip their stations with both a crystal and vacuum tube detector. By doing this they receive a great many signals with their crystal detector, thereby prolonging the life of their vacuum tubes and batteries. A crystal detector should be a part of the receiving station as a "STANDBY" so 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

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. Shipping weight, 1 1/2 pounds.

6A9626—Beginners' Receiving Set Unit, same as 6A9665, with buzzer test and battery.....\$8.57



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 4¼x¼ 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. Shpg.wt., 2 lbs.

6A9685—Variocoupler\$3.42



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 lbs.

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.

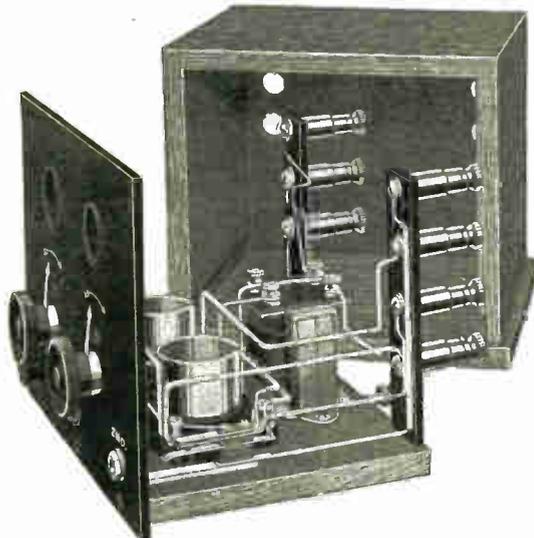
6A9688—Two-Stage Amplifier Unit\$39.00



Detector and 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.

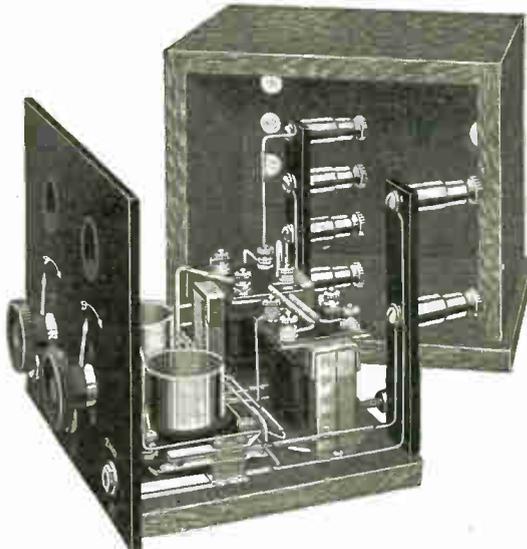
6A9689—Detector and Two-Stage Amplifier Unit\$43.75



Detector 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 lbs.

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

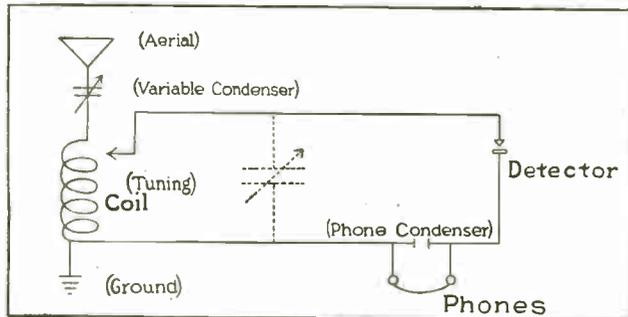


The illustration above shows the assembly of the Two-Stage Amplifier and is used to show clearly the simple and sturdy construction of these units. The cabinets are of selected quarter sawed oak, stained inside and out, and are waxed and hand rubbed. Panels are of ¾-inch formica and are 6¼ inches high. The detector panel is 5½ inches, the detector and two-stage panel 10½ inches, and the two others 7½ inches wide. The panels are fastened to a drawer sub-base which is held firmly in cabinet by a thumbnut. Removing this nut allows unit to be drawn out of cabinet quickly without the use of any tools.

Crystal Receiving Sets

For short distance radiophone and code reception the Crystal Receiving Set can be used to good advantage. A small set of this type enables the amateur to start with an inexpensive outfit and additional instruments may be added from time to time to enlarge the receiving radius of the set. These sets are especially recommended for the amateur who is interested in learning the code, as an outfit of this type will enable him to tune in the amateur stations as well as the nearby commercial stations. Crystal sets are also used near broadcasting stations, but the receiving range of such a set is limited, and we do not advise them to be used more than 20 to 30 miles from a radiophone station. These sets are very instructive and operate on the principles of the larger receiving sets. The amateur may experience some difficulty in selecting a good receiving set from the parts listed in this catalog, and to be of service in this respect we have carefully selected and tested the apparatus which would make a complete set. Below are shown two complete sets, made up of parts from this catalog, with a diagram for connecting the instruments.

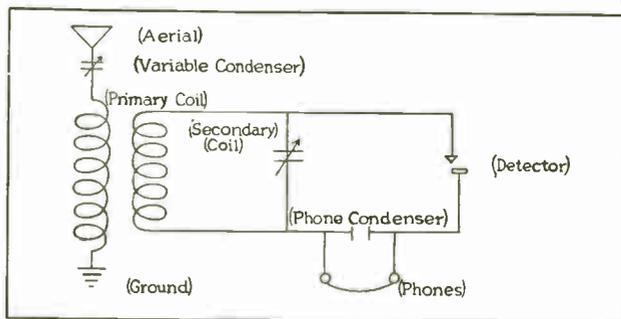
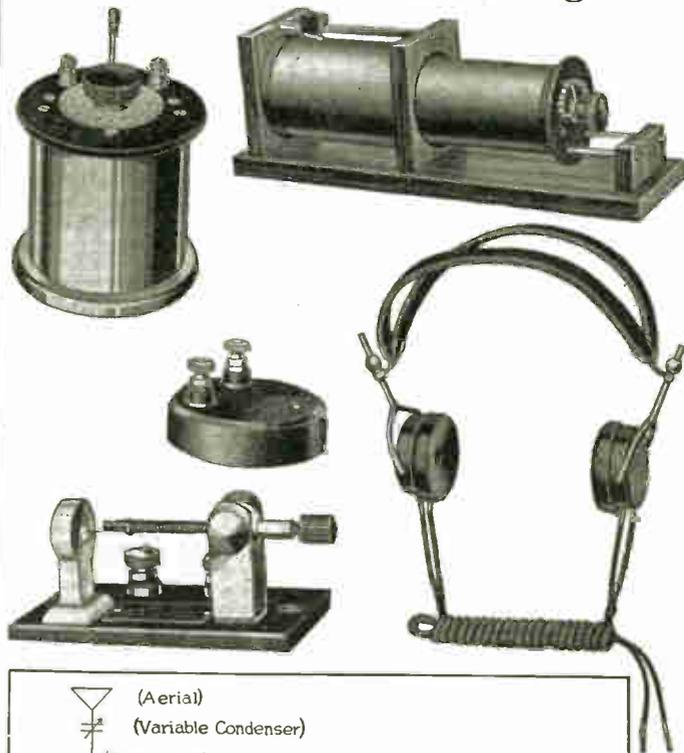
Tuning Coil Receiving Set



This set is composed of all high grade apparatus selected from this catalog. Each part is of the best workmanship and carefully constructed so as to give most sensitive results. The set consists of one 43-plate variable condenser which can be used in the aerial circuit, one high grade tuning coil with fine slider adjustment and polished Bakelite ends. The detector is of the approved cat whisker type. A stopping condenser and 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. When selecting this set, please order under the following catalog numbers:

6A9292—Condenser, shown on page 20.....	\$6.50
6A9246—Coil, shown on page 31.....	3.42
6A9264—Condenser, shown on page 24.....	.65
6A9216—Phones, shown on page 22.....	4.40
6A9435—Aerial and Ground Set, shown on page 14....	3.18
6A9261—Detector, shown on page 31.....	1.60
Shipping weight, 15 pounds 13 ounces.	\$19.75

Complete Crystal Receiving Set



A crystal outfit carefully selected to meet the demands of the present day beginner. This set has about the same receiving radius for radiophone concerts as the smaller outfit, but the tuning unit is of the loose coupler type instead of the 3-slide tuning coil. The coupler has a tuning capacity of 2,500 meters, which provides for long wave reception such as naval stations and Government time signals. The use of the loose coupler makes this receiving set much more selective, and an outfit of this kind can be depended upon to give very good results. There is no operating expense to a crystal set after it is once properly installed. This set 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. A 21-plate condenser may also be used, as shown in hook-up, but it is not necessary. For best results we advise the instruments to be wired according to the hook-up shown on this page. When selecting this set, please order under the following catalog numbers:

6A9333—Transformer, shown on page 32.....	\$6.55
6A9261—Detector, shown on page 31.....	1.60
6A9292—Condenser, shown on page 20.....	6.50
6A9411—Condenser, shown on page 24.....	.64
6A9216—Phones, shown on page 22.....	4.40
6A9435—Aerial and Ground Set, shown on page 14....	3.18
Shipping weight, 27 pounds.	\$22.87

AERIAL WIRE AND CABLE



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 pounds.

6A9979 $\frac{1}{4}$ —Standard 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 6A9979 $\frac{1}{4}$ and has greater mechanical strength. Recommended for large aeriels. 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.

6A9995 $\frac{1}{4}$ —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.

6A9994 $\frac{1}{4}$ —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
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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— $\frac{1}{8}$ inch wide, $\frac{1}{16}$ 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
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6A9997— $1\frac{1}{2}$ inch wide, $\frac{1}{16}$ inch thick. The amateur's favorite; very flexible. Composed of 168 No. 30 bare copper wires. Easy to work. Shipping weight, $\frac{1}{2}$ pound per 10 feet.

Per foot, 6c; 10 feet.....	50c
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Brass Ribbon

Hard drawn brass ribbon, 1 inch wide, $\frac{1}{32}$ inch thick. The right material for making oscillation transformers, etc. Also used extensively for connecting transmitting sets, etc. Shipping weight, 6 feet, 1 pound.

6A9498—Brass Ribbon.

Per foot.....	10c
Per 10 feet.....	90c

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

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, $\frac{1}{2}$ 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 aeriels. 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.

6A9989 $\frac{1}{4}$ —No. 14-Gauge Bare Copper Wire.

Per 100 feet..... (Shipping weight, $1\frac{1}{2}$ pounds)	\$0.39
Per 500 feet..... (Shipping weight, 9 pounds)	1.65
Per 1,000 feet..... (Shipping weight, 15 pounds)	3.20

6A9990 $\frac{1}{4}$ —No. 12-Gauge Bare Copper Wire.

Per 100 feet..... (Shipping weight, $2\frac{1}{2}$ 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.

6A9975 $\frac{1}{4}$ —No. 14-gauge, 25 feet. (Shipping weight, 1 pound)	\$0.23
Per 100 feet..... (Shipping weight, 3 pounds)	.74
Per 1,000 feet..... (Shipping weight, 28 pounds)	6.75

No. 6-Gauge Triple Braid Weatherproof

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.

6A9971 $\frac{1}{4}$ —No. 6 Triple Braid Weatherproof Wire.

Per foot.....	\$0.03
Per 100 feet..... (Shipping weight, 16 $\frac{1}{2}$ pounds)	2.35

No. 18 Insulated Copper Wire

Commonly known as annunciator or bell wire. Put up in $\frac{1}{2}$ or 1-pound coils (150 feet to the pound). Shipping weight, $\frac{1}{2}$ 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
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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, 3,350 pounds	\$297.50

Electrose Insulators

Special Wall Insulator.



6A9337



6A9338



6A9339-6A9340



6A9341

Catalog No.	Diam., Inches	Length Over All, Inches	Mechanical Strength, Lbs.	Electrical Value		Shipping Weight, Lbs.	Each
				Dry Volts	Rain		
6A9337—Ball Insulator.....	2 $\frac{1}{8}$	3 $\frac{1}{4}$	250	40,000	25,000	$\frac{1}{2}$	\$0.26
6A9338—Strain Insulator.....	1 $\frac{1}{2}$	5	1,000	40,000	15,000	$\frac{3}{4}$.35
6A9339—Strain Insulator.....	1 $\frac{1}{2}$	10 $\frac{1}{2}$	1,000	90,000	50,000	1 $\frac{1}{4}$.60
6A9340—Strain Insulator.....	1 $\frac{5}{8}$	15 $\frac{7}{8}$	1,500	125,000	75,000	2 $\frac{1}{4}$	1.55

For lead-in wires. Has $\frac{1}{4}$ -inch brass rod embedded in center. Diameter of body, 2 inches; length over all, $5\frac{1}{16}$ inches. Shipping weight, 1 pound.

6A9341
Special Wall Insulator.....\$1.45

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 inches; diameter of shoulder, 3 inches; $\frac{5}{8}$ -inch locking ring. Diameter threaded section, $1\frac{3}{4}$ inches, slight taper to bottom; $\frac{1}{2}$ -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, $9\frac{3}{8}$ inches; length outside end, $5\frac{1}{2}$ inches; inside end, $3\frac{7}{8}$ in.; $\frac{5}{8}$ -inch locknut; diameter at shoulder, $3\frac{1}{16}$ inches; diameter threaded section, $2\frac{1}{2}$ inches; tapering hole, $\frac{3}{4}$ inch inside end, $1\frac{1}{16}$ inch outside end. Shipping weight, 5 pounds.

6A9390—Commercial Wall Bushing.....\$3.00

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, $2\frac{3}{4}$ inches long by $1\frac{1}{4}$ inches in diameter. Shipping weight, each, 5 ounces; per dozen, 5 lbs.

6A9273—Porcelain Strain Insulator. Each.....7c
Per dozen76c



Electrose Extra Long Wall Bushing.



Polished black finish. Rain test, 20,000 volts; dry test, 40,000 volts. Length over all, $9\frac{1}{16}$ inches; length threaded section, $6\frac{1}{2}$ inches; 1-inch locknut; diameter threaded section, 1 inch; diameter of shoulder, 2 inches; tapering hole through insulator, $\frac{1}{4}$ inch outside end, $\frac{5}{16}$ inch inside end. Shipping weight, 4 pounds.

6A9388—Extra Long Wall Bushing.....\$1.80

Upright Insulator.

Polished black finish. Used extensively on spark gaps, oscillation transformers, condensers, aerial switches, etc. Height, over all, $2\frac{9}{16}$ inches; diameter of base, $1\frac{3}{8}$ inches; diameter of top, $1\frac{13}{16}$ inch. Brass bushings, $\frac{8}{32}$ inch in top and base. Shipping weight, 8 oz.

6A9387

Upright Insulator.....90c



High Voltage Lead Insulators

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 and wherever it is necessary to insulate properly. Small insulator is 40,000-volt Electrose molded type, same as used in 6A9207, ground switch unit. 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.

6A9290—High Voltage Lead Insulator. Height, $3\frac{3}{4}$ 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



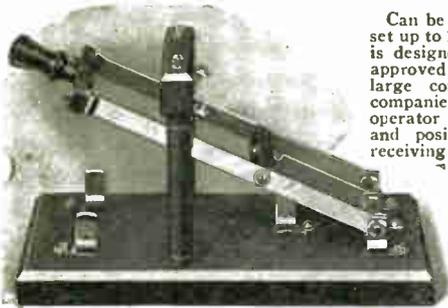
6A9290



6A9269

AERIAL AND GROUND SWITCHES

Murdock Aerial Switch



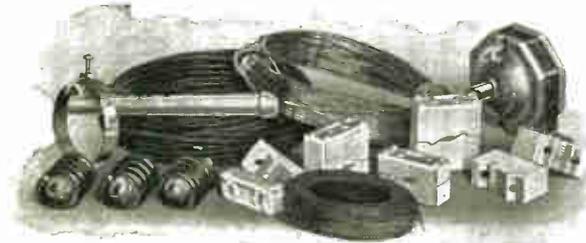
Can be used with any size set up to 1 K.W. This switch is designed along the most approved lines, as used by large commercial wireless companies. It enables the operator to secure a quick and positive change from receiving to transmitting or from transmitting to receiving.

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. This is a point worthy of a great deal of consideration and provides a means of safeguarding your receiving instruments, which alone is worth the price of this switch. A strong, well made switch at a price which makes it a good investment.

Base is hardwood, polished mahogany finish. The standard is ridged hard rubber composition, which provides good insulation. Switch blades are 8 inches long and are of rolled copper. Size over all, 11 3/4 x 5 3/4 x 5 1/2 inches. Shipping weight, 5 pounds.

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

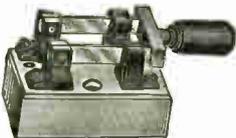
Antenna and Ground Outfit



A complete outfit with all the necessary parts for installing aerial and ground connections to any receiving set. This set consists of 125 feet of seven-strand copper aerial cable, with insulators, which will make a satisfactory aerial for receiving all of the amateur and radio-telephone wave lengths. Also 50 feet of No. 14-gauge weatherproof wire, with cleats, for the lead-in and ground wires. An approved lightning arrester and ground clamp are also furnished with the set. This outfit is designed to give most efficient aerial results and also protects the set against lightning. Can be easily installed on any building. Shipping weight, 7 pounds.

6A9435—Complete Outfit.....\$3.18

Baby Knife Switches



Double Pole Single Throw Switch. Base, 2x2 3/4 inches. Shipping wt., 2 oz.
6A8355.....\$3.5c

Double Pole Double Throw Switch. Size, 2 1/2 x 4 inches. Shipping wt., 1 pound.
6A8356.....\$4.5c

Single Pole Double Throw Switch. Base, 1 3/4 x 4 inches. Shipping wt., 12 oz.
6A8354.....\$2.8c

Single Pole Single Throw Switch. Base, 1 1/2 x 3 3/8 inches. Shipping weight, 6 ounces.

6A8353.....\$2.1c

Aerial Lightning Arrester

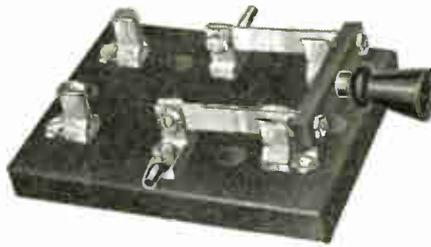


This Aerial Lightning Arrester has been designed especially for protecting radio receiving apparatus from atmospheric lightning disturbances in cases where the operator may have forgotten to close the aerial ground switch after use or where a sudden lightning storm may occur while the receiving instruments 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 weather-proof, enclosing circularly ribbed metal discharge plates, carefully insulated from each other and with their discharging areas separated by an air-gap of 3/60 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 4/4-inch centers. Shipping weight, 1 1/2 pounds.

6A9417—Lightning Arrester.....\$1.48

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, 6 3/8 inches long by 4 1/2 inches wide by 3/8 inch thick. Suitable for any size installation up to 1 K. W.; also very useful around the radio station for other purposes. A very popular item with the high grade amateurs. Shipping weight, 4 pounds.

6A9206.....\$9.7c

Slate Base Aerial Switch

Receives on double-pole side, transmits on three-pole side. Nicely finished angle blades. Mounted on slate base, 7x8x3/4 inch. A high grade aerial switch. Capacity, 1 K. W. Shipping weight, 6 pounds.



6A9405—Slate Base Aerial Switch.....\$2.67

Heavy Duty Ground Outfit



Consists of one 6A9406 600-volt, 100-ampere switch mounted on a composition waterproof insulating base, 25 feet No. 6-gauge weatherproof wire and 1/2 dozen one-wire porcelain cleats. This makes a fine grounding outfit and should be installed with every station. Shipping weight, 14 pounds.

6A9431 1/4—Complete Ground Outfit.....\$3.08

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, as shown in above illustration of 6A9431 1/4 Ground Outfit; capacity, 600 volts, 100 amperes. Size of base, 15x3x1 inch. Shipping weight, 4 3/4 pounds.

6A9406—Ground Switch.....\$2.20

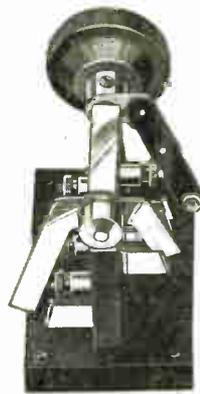
Ground Switch—Parts Only

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.....\$2.23

Aerial Change-Over Switch



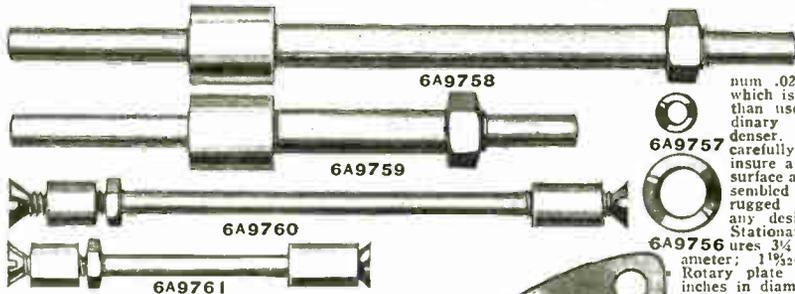
This switch comprises all good features of high priced change-over switches. Is very compact and neat in appearance and is operated by a simple twist of the wrist by means of the knob. This knob, being large and knurled, makes the operation very easy. All contacts are mounted on opposite sides of vertical 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 4 1/2 inches high. Shipping weight, 2 pounds.

6A9408—Aerial Change-Over Switch.....\$6.05

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 3 1/4 inches in diameter; 1 1/2-inch radius. Rotary plate measures 2 1/2 inches in diameter; 1 1/4-inch radius.

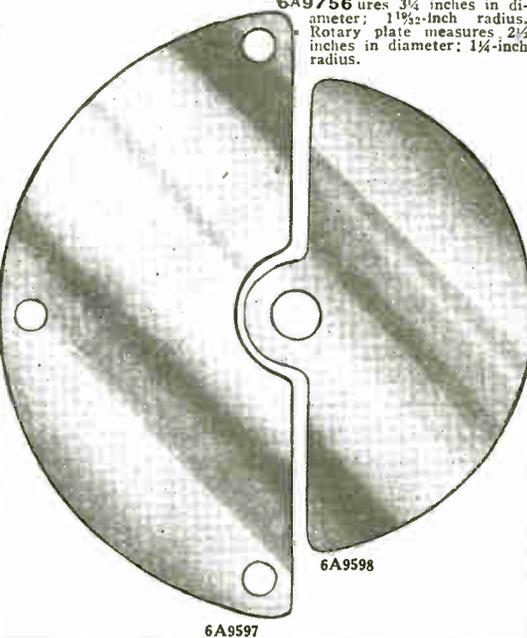
6A9597—Aluminum Stationary Plate. Shipping weight, each, 2 ounces.
Each \$0.04
10 for30
30 for55
50 for95
100 for 1.60

6A9598—Aluminum Rotary Plate. Shipping weight, each, 2 ounces.
Each \$0.03
10 for27
30 for55
50 for95
100 for 1.60

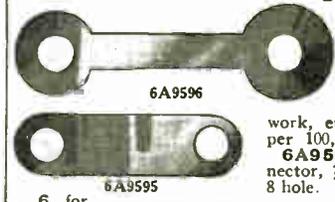
Steel Spindle.
6A9758—Accurately turned from hard steel rod, 43 plate size, complete with brass nut. Shipping weight, 8 ounces. Each \$0.35
6 for 2.00
6A9759—Same as 6A9758, except 21 plate size. Each \$0.30
6 for 1.70

Stationary Studs.
Made entirely from brass, complete with regulating nuts and screws. Shpg. wt., each, 3 oz.
6A9760—13 plate size. Each \$0.20
6 for 1.08
6A9761—21 plate size. Each18
6 for96

Gauged Plate Spacers.
Turned from brass stock, each spacer gauged for accuracy. Shipping weight, dozen, 4 ounces.
6A9756—Large size. 7/8x.08 inch thick
Per dozen \$0.24
Per hundred 1.75
6A9757—Small size. 7/8x.08 inch thick
Per dozen \$0.15
Per hundred 1.00



Copper Connecting Links.



Stamped from flexible sheet copper and are extensively used for connecting units, panel wiring, Bus-Bar work, etc. Shipping wt., per 100, 8 ounces.
6A9596—Copper Connector, 7/8 inch long. No. 8 hole.

6A9595
6 for 6c
50 for 40c
100 for 70c
6A9596—Copper Connector, 1 1/16 in. long by 3/16 in. wide, 1/4 in. diameter. No. 10 hole. Shpg. wt., 12 oz.
6 for 10c
50 for 50c
100 for 95c

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, 2 1/4 pounds.
6A9359—Aerial Suspension Rope. Per bundle. \$1.00

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. Very useful. Shipping weight, 5 ounces.
6A9486—Nickel Plated Brass Mineral Cup..... 19c

Round Brass Rod.

Suitable for making secondary coil rods, etc. Easy to saw, thread, etc. In two sizes; 2-foot lengths only.
6A9479—7/16-inch diameter, 2-foot lengths. Shipping weight, 1 pound. Each \$0.12
Per dozen 1.00
6A9480—7/32-inch diameter, 2-foot lengths. Shipping weight, 1 pound. Each \$0.13
Per dozen \$1.15

Aerial Suspension Pulley.

Galvanized iron pulley. Takes rope 5/16 inch or smaller; wheels, 1 1/2 inches in diameter. Ideal for use in suspending aerials. Shipping weight, 7 ounces.
6A9358—Aerial Suspension Pulley..... 8c

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 1 1/4 inches wide by 1/4 inch thick. Shipping weight, 6 ounces.
6A9272—Aerial Connector Block..... 21c

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 1 1/2 inches and provides a positive and convenient ground. Shipping weight, 4 ounces.
6A9313—Ground Clamp..... 9c

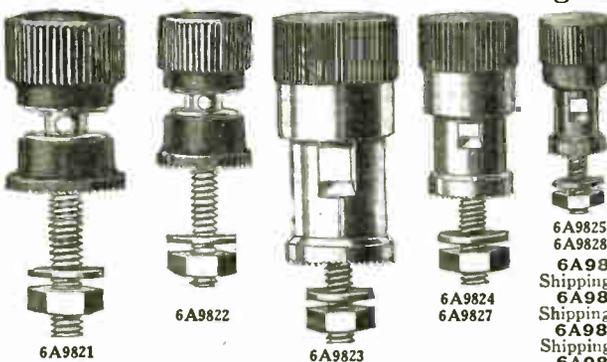
One-Wire Porcelain Cleats.

Heavy One-Wire Porcelain Cleats for supporting ground wire. Shipping weight, one dozen cleats, 2 pounds.
6A9397—Each 5c

High Grade 1/4-Inch Slider.

Made to fit 1/4-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
1/4-Inch Slider..... 21c

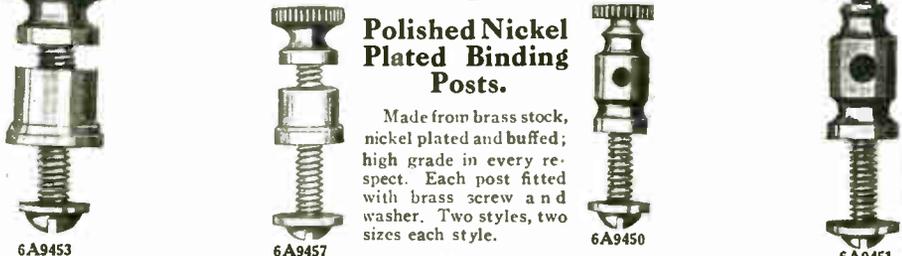
The Leader Binding Posts.



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 show actual size.

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 \$0.14
Per dozen 1.60
Shpg. wt., each, 3 oz.
6A9457 Each \$0.09
Per dozen 1.04
Shpg. wt., each, 3 oz.
6A9450 Each 8c
Per dozen 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 dozen90c
Shpg. wt., each, 3 oz.
6A9456—Same style as 6A9450. Each 8c
Per dozen90c
Shpg. wt., each, 1 oz.
6A9458—Same style as 6A9451. Each \$0.10
Per dozen 1.14
Shpg. wt., each, 2 oz.

Switch Levers, Contact Points

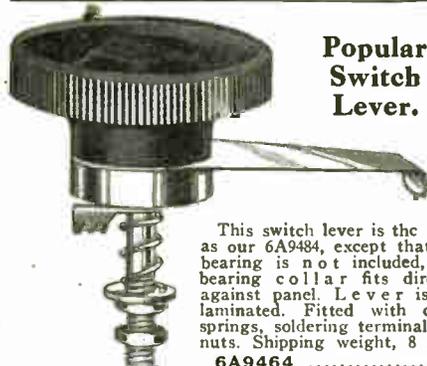
FORMICA PANELS.



Laminated Polished Nickel Plated Switch Lever.

A very high grade switch. 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, about 8 ounces.

6A9484—Laminated Nickel Plated Switch Lever58c



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. Shipping weight, 8 oz.

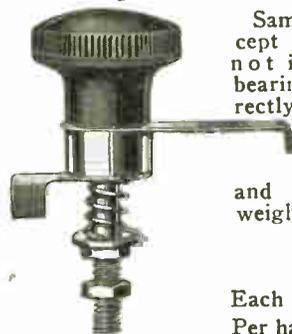
6A946439c

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 weight, each, 5 ounces.

6A9465

Each\$0.31
Per half dozen... 1.70



Midget Switch Lever.



An ideal small switch. Has many uses, such as secondary variation 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 ounces.

Nickel Plated. 6A9410—Midget Switch Lever.
Each\$0.25
Half dozen 1.35

Switch Lever Stop.

Turned from brass stock, nickel plated, highly polished. Makes fine appearance with our switch points and levers. Shipping weight, per set of two, 3 ounces.

6A9751

Two for.....11c
Per dozen.....60c



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.	Shpg. Wt.	
6A9590	6x 9x 1/2	1 pound	\$0.65
6A9591	6x 9x 3/4	1 pound	.90
6A9592	6x 9x 1/2	1 pound	1.10
6A9492	6x12x 3/4	1 1/2 pounds	1.22
6A9493	6x18x 3/4	2 pounds	1.95
6A9494	6x24x 3/4	2 1/2 pounds	2.59
6A9510	8x 9x 1/2	2 pounds	1.80
6A9513	8x 9x 3/4	2 pounds	1.20
6A9516	8x 9x 1/2	2 pounds	1.60
6A9511	12x18x 1/2	4 pounds	2.40
6A9514	12x18x 3/4	4 pounds	3.50
6A9517	12x18x 1/2	5 pounds	4.80
6A9512	18x24x 1/2	4 pounds	4.80
6A9515	18x24x 3/4	5 pounds	6.95
6A9518	18x24x 1/2	7 pounds	9.50

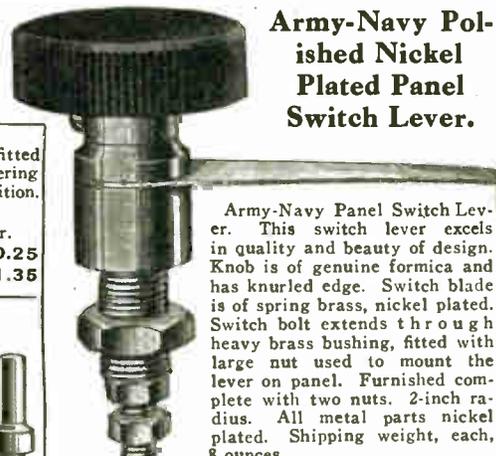
Nickel Plated Cap Nut.

Hexagon Cap Nut. Used in place of the ordinary nut on loose coupler, secondary rods and other places where the ordinary brass or iron nut would be unsightly and spoil the appearance of the best apparatus. Nickel plated brass, polished; 9/32-inch thread. Shipping weight, per dozen, 12 ounces.

6A9475—Hexagon Cap Nut. Per dozen.....48c



Army-Navy Polished Nickel Plated Panel Switch Lever.



Army-Navy Panel Switch Lever. This switch lever excels in quality and beauty of design. 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 ounces.

6A9463—Army-Navy Panel Switch Lever.
Each\$0.54
Per half dozen..... 3.10

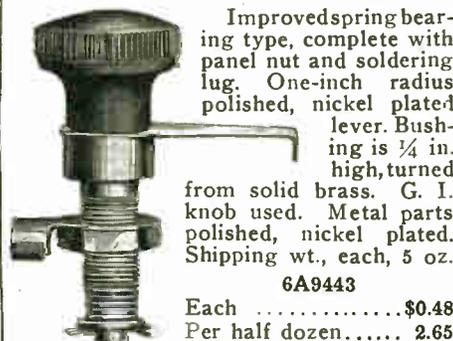
Unit Switch Lever.



Switch lever is used on our Progressive unit sets. It is very popular for all kinds of panel sets; presents neat appearance. 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 3/8 inch from panel to lever. Shipping weight, 5 ounces.

6A9628 33c

Army-Navy Junior Switch Lever.



Improved spring bearing type, complete with panel nut and soldering lug. One-inch radius polished, nickel plated lever. Bushing is 1/4 inch high, turned from solid brass. G. I. knob used. Metal parts polished, nickel plated. Shipping wt., each, 5 oz.

6A9443
Each\$0.48
Per half dozen..... 2.65

Switch Contact Points—Polished Brass and Polished Nickel Polished Nickel Plated Brass Switch Points.



Solid brass head, nickel plated, size, 3/16x3/16 in., otherwise same as 6A9251. Shipping weight, per dozen, 10 oz.

6A9472
Per dozen..\$0.31
Per 100..... 2.48



Shipping weight, per dozen, 10 ounces.

6A9473
Per dozen..\$0.30
Per 100..... 2.40



Shipping weight, per dozen, 10 oz.

6A9304
Per dozen..\$0.29
Per 100..... 2.35



Shipping weight, per dozen, 10 ounces.

6A9271
Per dozen..\$0.30
Per 100..... 2.40



Shipping weight, per dozen, 10 ounces.

6A9251
Per dozen.....\$0.31
Per 100..... 2.48

Polished Brass Switch Points.

6A9586—Same as 6A9472. Shipping weight, per dozen, 10 ounces. Per dozen..\$0.30 Per 100..... 2.40

6A9587—Same as 6A9473. Shipping weight, per dozen, 10 ounces. Per dozen..\$0.29 Per 100..... 2.30

6A9588—Same as 6A9304. Shipping weight, per dozen, 10 ounces. Per dozen..\$0.28 Per 100..... 2.28

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

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

All Illustrations Except Panel Show Actual Size.

Press Fit Switch Point.

This type of contact is extensively used. 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, 3/16x3/16 inch, with 3/32-inch shank, 1/16 inch long. Shipping weight, per dozen, 10 ounces.

6A9585—Press Fit Switch Point, polished nickel plating.
Per dozen.....\$0.19
Per 100..... 1.52
6A9584—Press Fit Switch Point, polished brass.
Per dozen.....\$0.18
Per 100..... 1.44

Insulating Knobs at Attractive Prices

ILLUSTRATIONS SHOW ACTUAL SIZE

Marconi Knob.



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

6A9461—Marconi Knob.
Each\$0.10
Per dozen..... 1.00

Marconi Knob.



Marconi Knob, for large panels, switchboards, variometers, transformers, etc. No bushing. Drilled for 3/16-inch rod at bottom and has 7/16-inch hole in top. Highly polished. Shipping weight, each, 4 ounces.

6A9460—Marconi Knob.
Each\$0.18
Per dozen 2.03



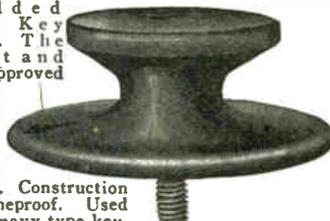
Knob.

Very popular Knob for loose couplers, variometers, loading coils, etc. Has 3/32 bushing. Shipping weight, each, 3 ounces.

6A9447—Knob.
Each\$0.14
Per dozen 1.55

Molded Navy Key Knob.

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



6A9381—Navy Key Knob.
Each 21c

New Style Government Knobs.

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. Each knob has a brass

6A9470

bushing, 10/32 thread, and two holes for stay pins.

6A9470
Each.....(Shipping wt., 4 oz.).....\$0.14
Per dozen..... 1.58

6A9303
Each.....(Shipping wt., 3 oz.)..... 9c
Per dozen98c



6A9303



6A9300

New Style Government Knobs.

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

Two sizes as shown.

6A9302
Each.....(Shipping wt., 4 oz.).....\$0.10
Per dozen..... 1.00

6A9380
Each.....(Shipping wt., 3 oz.)..... 8c
Per dozen.....90c

Ideal Knob.

This knob is used on several of our instruments. Polished black, knurled edge, fitted with nickel plated brass bushings, drilled for 3/16-inch rod and fitted with set screw. Shipping weight, each, 3 ounces.



6A9364—Ideal Knob.
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 3/32. Shipping weight, each, 5 ounces.



6A9467—Navy Type Knob.
Each\$0.27
Per dozen 3.04

Detector Knob.

Most popular Detector Knob. Fine for small and medium size instruments. Very neat and attractive. Has 3/32 bushing. Shipping weight, each, 2 ounces.



6A9462—Detector Knob.
Each 7c
Per dozen.....78c

Standard Detector Screw Knob.

Neat and attractive. Fitted with brass screw, 3/32 thread. Shipping weight, each, 3 ounces.



6A9468—Standard Detector Knob.
Each 8c
Per dozen.....89c

Junior Knob.

Used wherever a very small knob is needed. Has 3/32 bushing. Shipping weight, each, 2 ounces.



6A9446—Junior Knob.
Each 4c
Per dozen.....35c

Knob.

Used on many instruments shown in this catalog. Fine for detectors, condensers, small switches, etc. Has 3/32 bushing. Shipping weight, each, 2 ounces.



6A9469—Knob.
Each 5c
Per dozen48c

Knob.

Highly recommended for spark gaps, loose couplers, secondary switch, variable condenser, etc. Has 3/32 bushing. Shipping weight, each, 2 ounces.



6A9448—Knob.
Each\$0.20
Per dozen..... 2.00

Knob.

This knob is adapted to many uses. It is used on detectors, tuning coil sliders, loading coils, small rheostats, etc. Has 3/32 bushing. Shipping weight, each, 2 ounces.



6A9445—Knob.
Each 4c
Per dozen35c

Knob.

Used extensively on small panels, spark gaps, etc. Bushing 3/32 thread. Shipping weight, each, 3 ounces.



6A9485—Knob.
Each\$0.10
Per dozen 1.00

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, 1 3/8 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 3/16-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, 3/16 inch.....57c
- 6A9649—Same as 6A9646, with 1/4-inch bushing.....57c

Composition Dial

This dial is practically the same in general appearance as the high grade dial shown at left, but is of composition. Supplied with bushing and set screw. Will fit either 3/16 or 1/4-inch shaft. Shipping weight, 6 ounces.

- 6A9312—Composition Dial.....26c

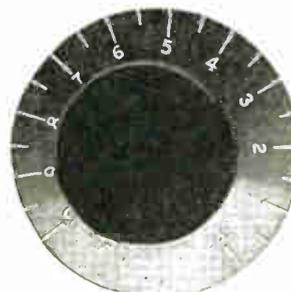
High Grade Metal Dials With Bakelite Knobs



6A9648



6A9787



6A9788



6A9682

Condenser and Variocoupler Dials

Made of brass, satin nickel finish, with scales as illustrated. Dials rotate clockwise and are 2 1/4 inches in diameter. Each fitted with high grade black molded knob with knurled edge. Drilled for 3/16-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 3/16-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

Beveled Metal Dials—Polished Nickel Plated



6A9789

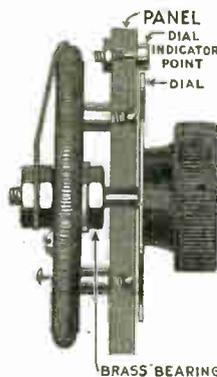
These dials are the same throughout as dials shown above, except that edges are neatly beveled. Shipping wt., 5 oz.

- 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

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 above. 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 3 1/4 inches; height at top of case, 2 7/8 inches; to top of front mounted handle, 3 3/8 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

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 1/4-inch thick; can be used with any dial.

- 6A9678—Shipping weight, 1 ounce. Each.....5c
- Per one-half dozen.....27c



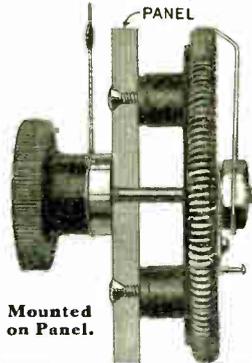
Vacuum Tube Access



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

Panel Mounting Rheostat

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, $\frac{1}{4}$ inch thick, $2\frac{3}{4}$ inches in diameter, and will not creep. Mounted on panel as shown in center illustration. The bolt is $1\frac{1}{4}$ inches long, which permits mounting on a panel of any thickness from $\frac{1}{8}$ inch up. Knob is molded Bakelite, $1\frac{3}{8}$ 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

Junior Panel Rheostat

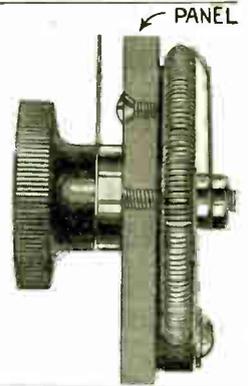
Junior Panel Rheostat is similar in design to 6A9422. The resistance unit is mounted on a Bakelite disc 2 inches in diameter; 4 ohms resistance with a carrying capacity of $1\frac{1}{2}$ amperes. It is especially designed for filament control of vacuum tubes operating on 4 or 6 volts. The resistance 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 $1\frac{3}{8}$ -in. 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



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 $2\frac{1}{2}$ inches high. Shipping weight, 10 ounces.

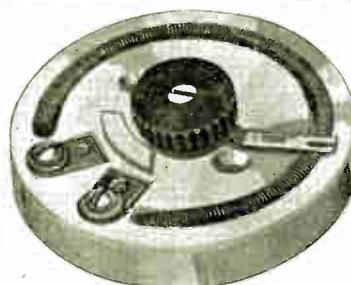
6A9653—G-R Rheostat, portable type. . . . \$2.35



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, $1\frac{3}{16}$ inch thick. Shipping weight, $1\frac{1}{2}$ pounds.

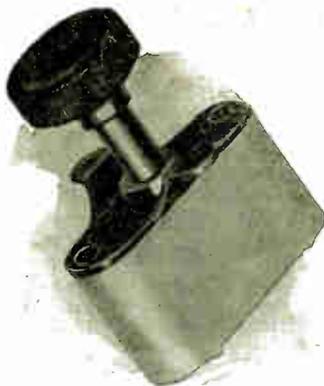
6A9277—Porcelain Base Rheostat.69c



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 $1\frac{1}{2}$ to $2\frac{1}{2}$ -ampere current to detector, amplifier or 5-watt power tube. Porcelain case encloses graphite discs, shaft fitted with Bakelite knob. Shipping weight, 1 pound.

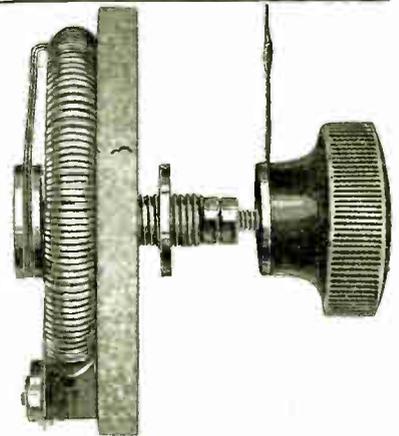
6A9275—Bradleystat Filament Control. \$1.55



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 $\frac{1}{2}$ -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 $\frac{3}{8}$ inch wide, $1\frac{1}{4}$ -inch radius; very smooth running and provided with "off" position; resistance, 6 ohms. Shipping weight, 1 pound.

6A9654—Nichrome-Asbestos Rheostat. \$1.85



Vacuum Tube Accessories

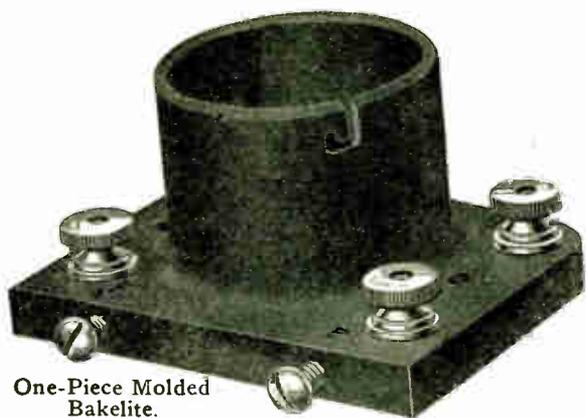
Molded Tube Socket Panel or Table Mounting

usual metal shell in the construction of the tube the ground hum and noises in operation, so freed in the operation of amplifiers.

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

The 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 2 1/4 x 2 1/4 inches and the height 1 1/2 inches. Shipping weight, 8 ounces.

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



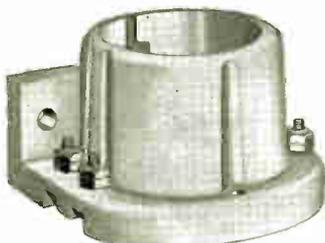
One-Piece Molded Bakelite.

G-R Tube Socket



A very high grade tube socket fitted with positive contact springs and is unusually substantial and attractive. Base is of molded Bakelite, and the tube and terminal screws are of brass with polished nickel finish. This socket is adapted to any of the standard four-prong tubes. Transmitting tubes can be used by simply changing two screws. Shipping weight, 8 ounces.

6A9655—G-R Tube Socket. \$1.37



Porcelain Socket

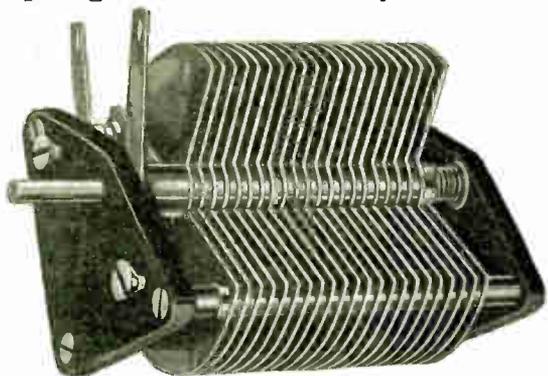
This Socket is made in one piece of porcelain, the same material that is used in the base of the vacuum tube to insulate the four prongs, thus recognizing the high dielectric value of porcelain for this purpose. The contacts are of special strong material, plated to eliminate corrosion of the contacts. 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 36c

Laboratory Variable Air Condensers

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



Front and side view of panel mounting styles, 6A9298 and 6A9299. For 1/8, 3/16 or 1/4-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.



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

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, 2 1/4 pounds. **6A9298** \$2.75
- Panel mounting, 21 plate; 10 rotary, 11 stationary. Capacity, .0005 MFD. Complete with mounting screws for panel. Shipping weight, 1 3/4 pounds. **6A9299** \$2.15
- Panel mounting, 11 plate; 5 rotary, 6 stationary. Complete with screws for mounting. Shipping weight, 1 1/4 pounds. **6A9300** \$1.83
- Panel mounting, 3 plate; 1 rotary, 2 stationary. Complete with screws. Shipping weight, 1 pound. **6A9305** \$1.52

Reduced Prices

Portable Type.

- Portable type, 43 plate; 21 rotary, 22 stationary. Mounted in oiltight sheet brass case, polished nickel plated finish. Size of case, 3 3/4 inches high; 4 1/4 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, 4 1/2 inches. Shipping weight, 3 pounds. **6A9292** \$6.50
- Portable type, 21 plate; 10 rotary, 11 stationary. Mounted in oiltight sheet brass case, polished nickel plated finish. Size of case, 2 1/2 inches high; 4 1/4 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, 3 1/2 inches. Shipping weight, 2 pounds. **6A9294** \$5.30

Audiotron Detector

Audiotron Amplifier

\$4⁶⁰

E. J. Cunningham

\$6¹⁵



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 and is superior to the old type tube 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 6A9732 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 Construction: Wire drawn tungsten hairpin type, supported at three points.

Bulb: Pear shape clear glass; maximum diameter, 1¼ inches; maximum over all height, including base, 4⅞ 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, .0025 MFD.

Shipping weight, 1 pound.

6A9650—Audiotron Detector\$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 ¼ 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.

Filament Current: 1 ampere plus or minus 6 per cent at not over 5.4 volts (the rating of a 6-volt storage battery when nearly discharged).

Bulb: Pear shape clear glass. Maximum diameter, 1¼ inches; maximum over all height, including base, 4⅞ inches.

Base: Standard four-prong, brass shell.

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\$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 are as follows:

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

C-302 and UV-202 are mounted in the standard four-prong receiving tube base.

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:

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

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.

High Grade Head Sets

A high grade set of receivers offered at a very reasonable price. These phones compare favorably with the mica diaphragm and amplifying head sets listed at a much higher price, 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.

6A9216—Double Set. 2,000 ohms.....\$4.40

6A9217—Double Set. 3,000 ohms..... 5.30



Baldwin Receivers

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 Receiver, Type E. Per pair.....\$11.85



Brandes Receivers

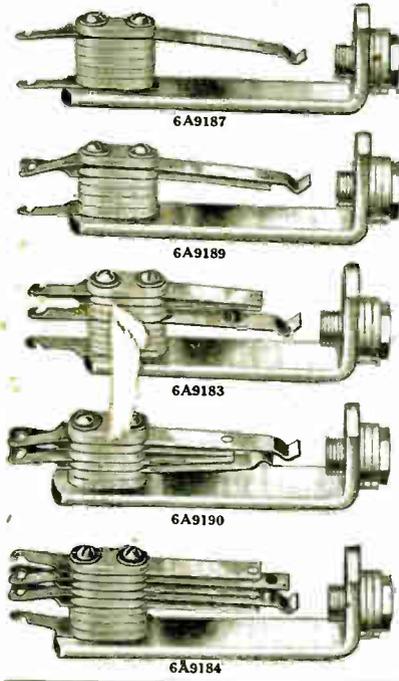
These Matched-Tone Head Sets will give maximum service for many years. The parts are made of the most durable materials and every precaution is taken to prevent possible corrosion when exposed to damp air. All adjustments are made permanent, thus doing away with moving parts which always wear out. The phones are equipped with new design feather weight 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 wt., 1½ lbs.

6A9603—Brandes Superior Type Receiver. Per pair.....\$ 7.16

6A9604—Brandes Navy Type Receiver. Per pair..... 13.42



Small Well Finished Jacks.

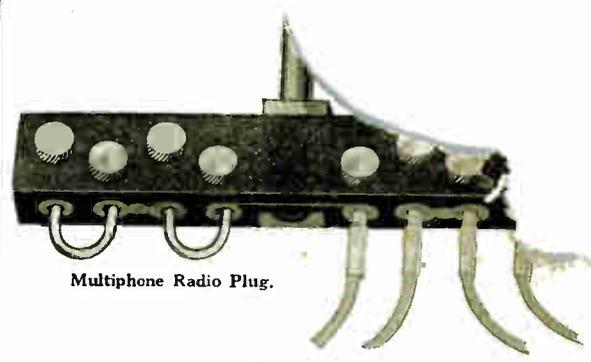


These small, neat, well finished jacks have been specially designed for panel work and are of standardized construction so as to be interchangeable with other standard makes. Can be mounted on 1/8, 3/16 or 1/4-inch panels. Insulation is of high grade and will withstand 110-volt breakdown test. Contact springs are of nickel silver and contact points of pure 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 44c
- 6A9189—Jack 47c
- 6A9183—Jack 67c
- 6A9190—Jack 54c
- 6A9184—Jack 81c

One Plug for 1 of Ph



Multiphone Radio Plug.

This is a new plug, designed to answer the needs of the radio fan who does not use a loud speaker. 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. This enables you to use one, two, three or four sets of phones if desired. Shipping weight, 10 ounces.

- 6A9195—Multiphone Radio Plug.....\$2.37

Radio Plug.



A very practical and efficient telephone plug for amateur use. 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 quarter turn on this adjustment makes a secure contact on the tip. A small loop is provided for fastening the cords. Shipping weight, 8 ounces.



6A9194—Radio Plug..... 89c

Cord Tip Radio Plug.



Cord Tip Plug.

With this new type of plug your receiver cord tips are attached directly to plug. No longer necessary for you to remove tips, form loops and fasten under head of screws. This plug is handsomely finished, polished hard rubber sleeve, solid plug body, machine turned from 1 1/16 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 of the plug with sleeve removed. Shipping weight, 8 ounces.



Cord Tip Plug With Sleeve Removed.

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, 2 1/2 inches. Shipping weight, 4 ounces.

6A9191

92c

Cord Tip Jack—Improved Model.

Illustration shows actual size. Does away with unsightly 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. Makes positive wiping contact, which is self cleaning. Neat in appearance and efficient in operation. Each jack is complete with cord tip of standard size, as shown. 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. Illustration shows actual size.

- 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. Jack should be placed on panel so as to be the proper distance between tips when placed in spreader. Illustration shows actual size. 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

Condenser

It has a capacity of .0016 M.F.D., mounted in a small black molded with nickel plated binding screws. This type of condenser is very popular as an ideal "stopping" condenser for use across the phones, etc. Measures 2 1/4 inches in diameter.

6A9411—Junior Fixed Condenser in case. Shipping weight, 8 ounces.....**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, 2 3/8 x 1 1/2 inches. Shipping weight, 5 ounces.

6A9264—Fixed Condenser.....**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 M.F.D. Shipping weight, 10 ounces.

6A9400

Tubular Fixed Condenser.....**90c**

Beginners' Wireless Practice Set

For Learning the Wireless Code.



Provides an excellent method of quickly learning the code.

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, 7 x 4 1/2 inches. Shipping weight, 5 lbs.

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

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 1/2 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 weight, 2 ounces.

6A9659

Audiotron Variable Grid Leak.....**30c**

Mica Grid Condenser and Grid Leak Combined



Base and top made from formica sheet, base is 2 1/2 x 1 x 1/8 inch, top is 1 1/2 x 1 x 1/8 inch; grained finish. Best India mica is used; size, 1 1/2 x 1 x .003 inch. Active copper strip measures 1 1/4 x .005 x 1/2 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 M.F.D. 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**

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 M.F.D., the correct value for the type C-300 Gas Content Detector. Shipping weight, 1 ounce.

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

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, 2 1/2 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**

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 or A battery. The new gas content detector tubes, such as Cunningham Type C-300, always have a sensitive range between 18 and 22 1/2 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.

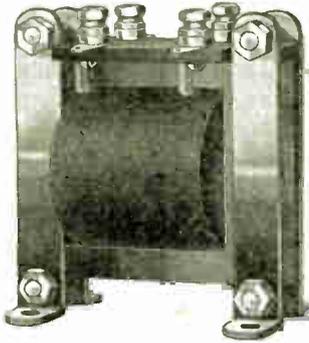
The resistance unit is molded from a special material and is not brittle like graphite or carbon. Eleven nickeled metal inserts are molded into the resistance material, permitting the use of a metal contact lever, and therefore perfect metal to metal electrical contact. The resistance is approximately 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 9/10 of a volt adjustment. Shipping wt., 5 oz.

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**

Special Amplifying Transformer for New Audiotron Type C-301 and Radiotron Type

Universal Amplifying Transformer



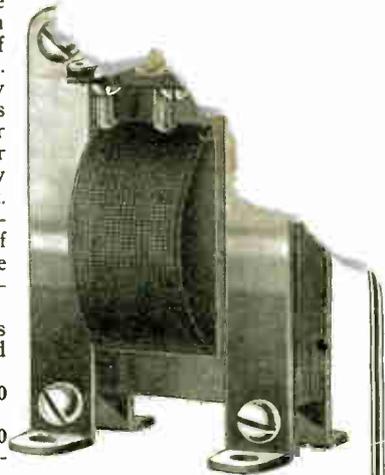
Recent tests show this transformer to give maximum results when using Type C-301 Audiotron Tube as an amplifier. Low impedance.

Designed for use with 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.

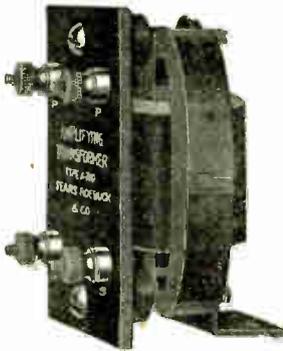
- 6A9732—Universal Amplifying Transformer. Shipping weight, 1½ pounds.....\$3.04
- 6A9733—Coil and Core only. Shipping wt., 1 lb.. 2.28

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; 1¾ inches wide.
- 6A9503—Special Amplifying Transformer. Shipping weight, 1½ pounds.....\$5.10
- 6A9504—Coil and Core only. Shipping weight, 1 pound.. 4.33



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 of 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

Radio Frequency Transformer



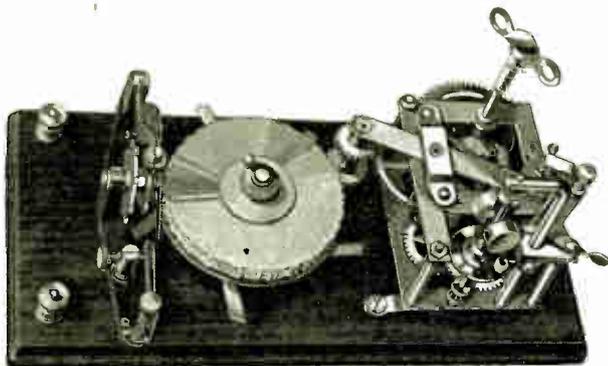
This transformer is designed for use in radio frequency circuits. The transformer is mounted in a highly nickel plated brass case, so constructed that it may be mounted in any standard tube socket. This transformer has given satisfactory results using as high as four stages of amplification. Efficient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

6A9594—Radio Frequency Transformer\$3.65

The Omnigraph Instructor

Learn to Be a Commercial Operator

Used by U. S. Navy, U. S. Army, Department of Commerce and Radio Schools.



One of the best known instruction machines on the market. This set is used by the Department of Commerce, U. S. Government, in conducting their tests for operators' licenses, etc.

This set is 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, as it is used in many schools throughout the country at the present time. Mounted on mahogany finish base, 11x6 inches. Booklet of instructions included with each instrument. Shipping weight, 8 pounds.

6A9223—The Omnigraph Instructor\$21.00

"Q S A" Inductances

Impregnated in Dupont Enamel. No Varnish Used.



These coils are a departure from the present method of making inductances of this type, as they are impregnated in Dupont enamel and no varnish is used in their makeup. This gives them an added efficiency. The coils are wound with each layer directly over the next lower. In experimental and amateur operating efficiency this type of winding is equal to any other style. Mounted coils are complete with Bakelite plugs and a hard fiber moisture proof strip.

Coil Only, Not Mounted.

Catalog No.	Number of Turns	Shipping Weight		Catalog No.	Number of Turns	Shipping Weight	
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

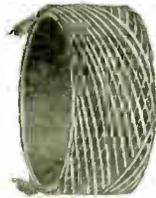
Coil and Plug, Mounted, Complete.

Catalog No.	Number of Turns	Shpg. Wt.		Catalog No.	Number of Turns	Shpg. Wt.	
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	2 1/4 lbs.	1.85
6A9719	75	1 1/2 lbs.	1.39	6A9727	600	2 1/4 lbs.	2.01
6A9720	100	1 1/2 lbs.	1.48	6A9728	750	2 1/2 lbs.	2.28
6A9721	150	1 1/2 lbs.	1.52	6A9729	1,000	2 3/4 lbs.	2.48
6A9722	200	2 lbs.	1.58	6A9730	1,250	2 3/4 lbs.	2.81
6A9723	250	2 lbs.	1.61	6A9731	1,500	2 3/4 lbs.	3.33

Pacent Duo-Lateral Inductance Coils

These Coils Are Used for Long and Short Wave Receiving and Incorporate the Following Features:

Lower Natural Period—Lower High Frequency Resistance—Very Low Distributed Capacity—Lower Direct Current Resistance—Higher Self Inductance—High Grade Mechanical Construction.



6A9735

By using several of these coils 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, or long. Order by catalog number.

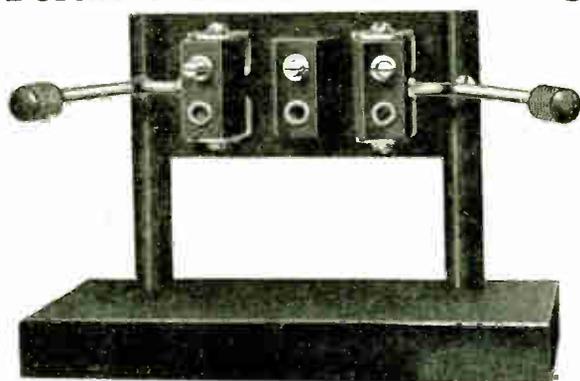


6A9743

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-Farads	Effective Resistance and Time Constant of Coils at Various Wave Lengths in Meters			Outside of Coil in Inches	Shpg. Wt. in Oz.	Coil Only
							Wave Length in Meters	Resistance in Ohms	Time Constants in Micro-Second			
6A9735	24	25	0.42	0.039	65	30	200	4.3	9.07	2 3/16	4	\$0.47
							300	2.2	17.73			
							400	1.6	24.4			
6A9736	24	35	0.50	0.0717	92	33	200	16.6	4.32	2 1/4	5	.48
							450	3.4	21.1			
							600	2.4	19.9			
6A9737	24	50	0.88	0.149	128	31	300	18.2	8.17	2 3/16	5	.56
							700	3.8	39.2			
							900	3.1	48.0			
6A9738	24	75	1.24	0.325	172	26	800	9.1	35.8	2 3/8	6	.57
							600	12.4	26.2			
							500	18.9	13.0			
6A9739	24	100	1.68	0.555	218	24	1,000	15.2	36.5	2 1/2	6	.62
							800	20.0	27.8			
							600	32.0	17.2			
6A9740	24	150	2.56	1.30	282	17	1,500	30.0	43.4	2 5/8	8	.66
							1,000	40.0	32.5			
							800	49.2	26.4			
6A9741	25	200	4.44	2.31	358	16	1,500	26.7	86.5	2 1/2	8	.70
							1,200	35.3	65.4			
							1,000	103.	22.4			
6A9742	25	249	5.65	3.67	442	15	2,500	45.9	80.0	2 15/16	9	.74
							2,000	65.2	56.3			
							1,500	120.	30.6			
6A9743	25	300	7.11	5.35	535	17	2,500	80.	66.9	3	11	.79
							2,000	119.	45.			
							1,500	210.	25.5			
6A9744	25	400	10.7	9.62	656	13	4,000	75.	128.	3 1/4	12	.82
							3,000	120.	80.			
							2,500	172.	56.			
6A9745	25	500	12.4	15.5	836	13	4,000	138.	112.	3 1/2	12	.91
							3,000	241.	64.4			
							2,500	355.	43.6			
6A9746	28	600	27.8	21.6	1,045	14	10,000	42.	515.	3 1/8	12	1.09
							5,000	82.	263.			
							3,000	227.	95.2			
6A9747	28	750	35.3	34.2	1,300	14	10,000	63.	543.	3 5/16	12	1.28
							5,000	151.	226.			
							3,000	505.	67.7			
6A9748	28	1,000	50.2	61.0	1,700	13	11,000	93.	657.	3 3/4	14	1.48
							10,000	101.	603.			
							7,000	169.	361.			
6A9749	28	1,250	66.9	102.5	2,010	11	11,000	144.	711.	4 1/16	14	1.84
							10,000	162.	632.			
							7,000	293.	350.			
6A9750	28	1,500	88.4	155.0	2,710	13	11,000	250.	820.	4 1/16	14	2.31
							10,000	295.	526.			
							7,000	650.	238.			

Bakelite Coil Mountings and

Portable Three-Coil Mounting

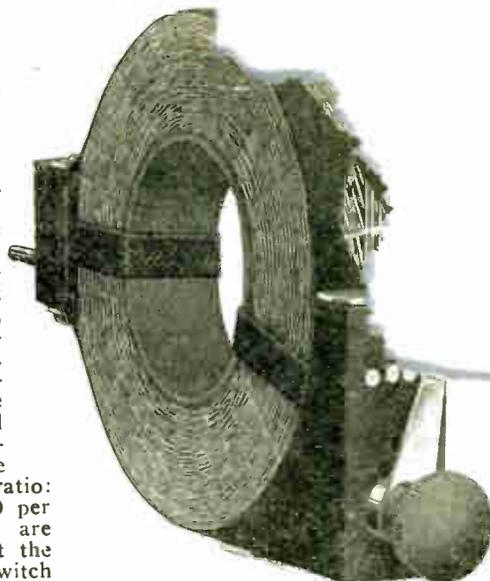


Consists of one stationary and two variable Bakelite coil plugs mounted on Bakelite panel as shown. Two variable plugs are fitted with extension handles and no complicated gearing, etc., is used. This method of varying the coupling keeps the operator's hand far enough from the coils to prevent any capacity effect. Rear of panel is fitted with six binding posts, as shown. Unit is supported by two black enameled brass rods, 3½ inches high, mounted on black wooden base. Size of base, 6¾x3¼x1¼ inch; length of panel, 4½ inches; length of handles, 5¼ inches. Shipping weight, 5 lbs.

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

Inductance Coil Receiving Unit

This unit will operate over a wave length of from 600 to 15,000 meters and consists of an 800-turn Meteor "QSA" inductance coil mounted on a standard Bakelite plug, to which is attached a four-point switch and switch lever, mounted on a special Bakelite frame. The frame is molded in one piece from Bakelite. Coil is tapped in approximately the following turns ratio: 25, 45, 75 and 100 per cent. End stops are molded in so that the movement of the switch is limited within the range of the four contacts. The wiring to the switch is most carefully done and the leads to the switch points are made as short as possible. The amount of power available on long wave lengths is such that a slight dead end loss can be permitted in the use of this efficiently tapped coil. The experimenter will find this unit most useful in making up long and short wave receiving sets, etc. Shipping weight, 3 pounds.



6A9566—Inductance Coil Receiving Unit.....\$5.05



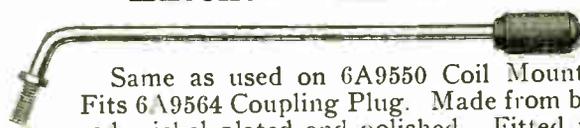
Universal Coil Mounting

This mounting takes any size coil up to 1,500 turns. Consists of Bakelite plug and fiber coil loop, which is adjustable to any size coil, as shown. Shipping weight, each, 8 ounces.

6A9549—Universal Coil Mounting.

Each\$0.54
3 for..... 1.56

Extension Handle



Same as used on 6A9550 Coil Mounting. Fits 6A9564 Coupling Plug. Made from brass rod, nickel plated and polished. Fitted with molded insulated handle. Threaded to fit panel plug and furnished with locknut. Length, 5¼ inches. Shipping weight, 4 ounces.

6A9645—Extension Handle.....24c

Bakelite Plugs

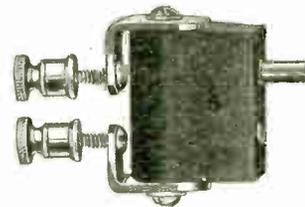
These plugs are molded from genuine Bakelite and are given a highly polished black finish. They are not to be compared with any cheap composition plugs, which crumble and present a poor appearance. Plugs come in three styles, which cover all requirements, and will work in combination with plugs used on the different makes of coils, etc.



Bakelite Coil Plug

Many amateurs have coils without mountings. By using fiber strip, tape or some other materials, 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 Plug...48c



Bakelite Panel Coupling Plug

Used in making two or three-coil mountings with variable coupling. Plug is drilled to take Extension Handle 6A9645 shown below at the left. Mounting arms, binding posts, etc., all nickel plated and polished. Standard size. Shipping weight, 6 ounces.

6A9564

Panel Coupling Plug.....77c

6A9565

Panel Coupling Plug. Same as 6A9564, except fitted with nuts in place of binding posts. Shipping weight, 6 ounces.....72c

Bakelite Panel Plug

Metal inserts are drilled and fitted with two nickel plated screws for panel mounting. Most useful in every radio set. Standard size. Shipping weight, 4 ounces.

6A9563—Panel Plug.....47c



Meteor Rectifier



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 over-

charging, 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 four to ten 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, 10 pounds.

6A9683—Meteor Rectifier.....\$13.45

6-Volt Radio Storage Batteries Reduced Prices

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.



- 6A9519 $\frac{1}{3}$ —Storage Battery. 6-volt, 40 ampere-hour. Shipping weight, 35 pounds.....\$ 9.08
- 6A9520 $\frac{1}{3}$ —Storage Battery. 6-volt, 60 ampere-hour. Shipping weight, 40 pounds..... 10.90
- 6A9521 $\frac{1}{3}$ —Storage Battery. 6-volt, 90 ampere-hour. Shipping weight, 50 pounds..... 13.68
- 6A9522 $\frac{1}{3}$ —Storage Battery. 6-volt, 120 ampere-hour. Shipping weight, 55 pounds..... 16.76
- 6A9523 $\frac{1}{3}$ —Storage Battery. 6-volt, 150 ampere-hour. Shipping weight, 65 pounds..... 19.82

METEOR

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

"B" Batt

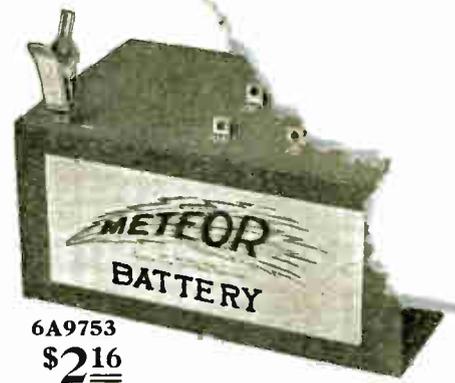


6A9661
93c

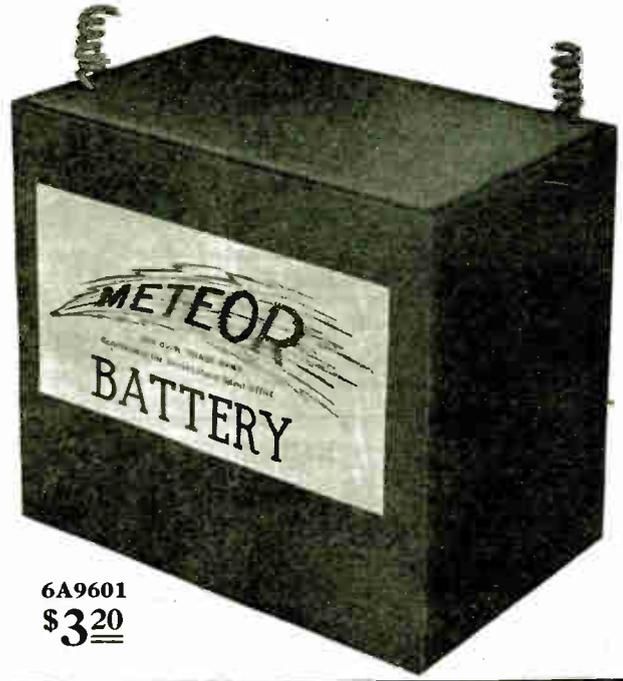


6A9662
\$1⁵⁹

6A9600
\$1⁷¹



6A9753
\$2¹⁶



6A9601
\$3²⁰

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.

6A9661—22½-Volt Battery, U. S. Signal Corps type. Size, 5x3x2¼ inches. Shipping weight, 4 pounds.93c

6A9662—22½-Volt Battery with 18-volt tap, U. S. Navy type. Recommended for use with new Audiotron and Radiotron Tubes. Size, 6½x4x3 inches. Shipping weight, 9 pounds**\$1.59**

6A9600—22½-Volt Battery, U. S. Navy type. 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**

6A9753—22½-Volt Battery, U. S. Navy-Laboratory type. 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 lbs.**\$2.16**

6A9601—45-Volt Battery, new type, developed to meet the requirements of the new Audiotron and Radiotron Amplifier Tubes. Size, 6½x2¾x7¾ inches. Shipping weight, 12 pounds.**\$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 lb.



6A9607
4½-Volt "B" Battery Unit40c

Shurlite Three-Cell Flash Light Battery.



Used to make up "B" battery for Vacuum Tubes. Our large sales keep our flash light battery stock moving and our batteries are never old when they reach you. Shipping weight, 6 ounces.
6A9051—Shurlite Flash Light Battery27c

Radiation Ammeter. Special Model.

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

It is quite necessary on the higher grade sending outfits to enable efficiency to be attained, and will make a handsome addition to any black enameled; binding posts nickel plated. Glass is etched below in black on white background. Diameter of case across glass front, 3 1/2 inches; back, 4 1/4 inches; measures 2 1/2 inches from front to back. Shipping weight, 1 1/2 pounds.

- Special Jewell Thermo-Couple Radiation Ammeter, scale 0.5-11.00
- Special Jewell Thermo-Couple Radiation Ammeter, scale 0-10 11.25

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 2 1/4-inch flush type case with a flange 3/4 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

Standard Hot-Wire Ammeter.

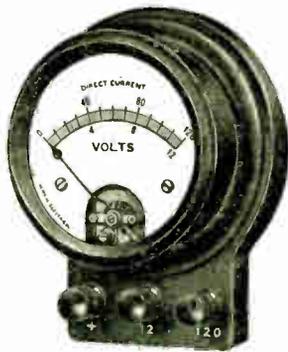
Designed especially for wireless transmission circuits. Accurately calibrated. Has zero adjuster. Mounted on black insulated base, 3 inches in diameter; diameter of front, 2 3/4 inches; depth, 1 1/4 inches. Scale 0 to 3 amperes. Nickel plated. Shipping weight, 1 1/2 ounces.

- 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 finish in black metal case, 2 1/2 inches in diameter; flange diameter, 2 3/4 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. Shipping weight, 1 pound.....\$5.50



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, 1 1/2 pounds.....\$5.55

6A9766-Jewell Milliammeter, 100-milliampere scale. For measuring plate current in single sending or transmitting tube. Shipping weight, 1 1/2 pounds.....\$5.60

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



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

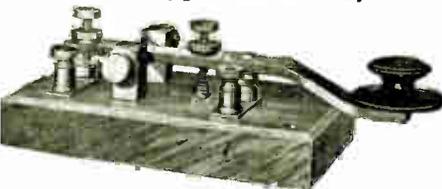
\$4.89



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

Navy Type Radio Key.

Coin
Silver
Contacts.



\$4.89

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 5/16 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, 3 1/2 inches wide, 1 inch high. Over all length, lever, 7 1/2 inches. Shipping weight, 6 1/2 lbs.

- 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

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

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 lb.

- 6A9240-Army Wireless Key.\$2.60

High Grade Tuning Coils

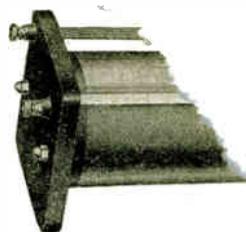
Wound with bare copper wire in a lathe cut groove, on treated tubes. Winding cannot become loosened. Ends are of molded Bakelite; slider rods and slider, nickel plated brass. Nine-inch tuner has a range of about 1,000 meters with the average amateur aerial. Fourteen-inch tuner will tune to approximately 2,800 meters, average amateur aerial. No varnish is used to keep winding in place, as its use increases the internal capacity and lowers the efficiency of the coils.



6A9546—Double Slide Tuning Coil. Length, 9 inches. Shipping weight, 4 pounds\$2.63

6A9547—Double Slide Tuning Coil. Length, 14 inches. Shipping weight, 6 pounds\$5.40

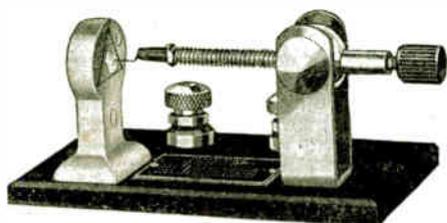
Stand



With suitable aerial this wave lengths up to 1,000 meters. 1 bare copper wire wound, with two slip contacts, which are nickel plated and polished, ends are of molded insulation. Slider rod binding posts are polished brass and lac. Substantially made, efficient in service attractive in appearance. Length, 8 3/4. Shipping weight, 3 pounds.

6A9246—Standard Double Slide Tuning Coil\$3.42

Crystal Detector

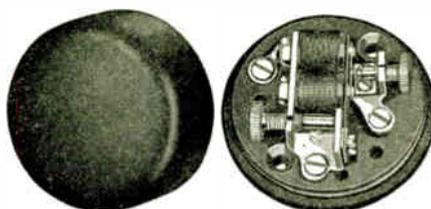


A new type mineral detector, made by the Wireless Specialty Company, and constructed with a view to long service and most sensitive results. Parts are mounted on polished bakelite base, 2x3 1/2 inches, covered on the bottom with green felt. All parts are nickel plated and detector is fitted with tested galena crystal neatly mounted in soft metal on new style mineral cup. The detector is equipped with a cat whisker and ball socket rod adjustment, which provides for a wide range over the mineral and insures most sensitive contact. Shipping weight, 1 pound.

6A9261—Mineral Detector, complete with Crystal.....\$1.60

A new type mineral detector, made by the Wireless Specialty Company, and constructed with a view to long service and most sensitive results. Parts are mounted on polished bakelite base, 2x3 1/2 inches, covered on the bottom with green felt. All parts are nickel plated and detector is fitted with tested galena crystal neatly mounted in soft metal on new style mineral cup. The detector is equipped with a cat whisker and ball socket rod adjustment, which provides for a wide range over the mineral and insures most sensitive contact. Shipping weight, 1 pound.

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. All connecting wires liable to be broken are eliminated. Contacts are of genuine platinum, which is essential in order to maintain a constant note. The parts are mounted on a Condensate base to insure constancy in operation.

Diameter, 2 inches; height, 1 1/4 inches. The cap is attached to the base by a bayonet joint. Shipping weight, 6 ounces.

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

Minerals and Crystals

Only the very best selected pieces of minerals are suitable for wireless detectors. Ordinary pieces are not sensitive and are, therefore, of no value for wireless purposes. 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 ounces. Per piece.....15c
6A9321—Carborundum. Shipping weight, 3 ounces. Per piece.....15c
6A9322—Copper Pyrites. Shipping weight, 3 ounces. Per piece.....8c
6A9323—Galena. Shipping weight, 3 ounces. Per piece.....8c
6A9324—Ferron (Iron Pyrites). Shipping weight, 3 ounces. Per piece.....10c
6A9327—Silicon. Fused, Pure. Shipping weight, 3 ounces. Per piece.....10c
6A9328—Zincite, 100 per cent pure. Shipping weight, 3 ounces. 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

The Radio Cartridge Rectifier



A distinct advance in radio crystal detectors. This detector can be easily mounted on any set, and does away with the necessity of a test buzzer circuit. This 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 lb.

6A9260—The Radio Cartridge Rectifier.....\$1.38

A distinct advance in radio crystal detectors. This detector can be easily mounted on any set, and does away with the necessity of a test buzzer circuit. This 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 lb.

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, 2 1/2 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 5/8-inch hole and is easily placed in any table top. Nickel plated, with pearl center. Shipping weight, 4 ounces.



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

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

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. Shpg. wt., per 1 ounce box, 3 oz.

6A9288—Triple A Galena. 1-ounce box.....28c
6A9289—Triple A Silicon. 1-ounce box.....28c

Slider Rod.

A high grade rod to be used with slider 6A9698, shown on page 15. 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 ounces.....33c



High Grade 1/4-Inch Slider.

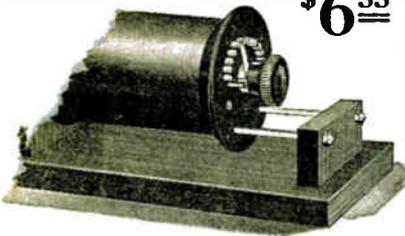
Made to fit 1/4-inch square rod and has molded insulating knob attached. Used extensively on tuning coils, loading coils, bridges, etc. Free running, positive contact. Finish is nickel plated, with hard polish. Shipping weight, 5 oz.

6A9698 1/4-Inch Slider.....21c

Receiving Transformer—Improved Model

Light Coil Head.

Capacity, 2,500 Meters.



\$6⁵⁵

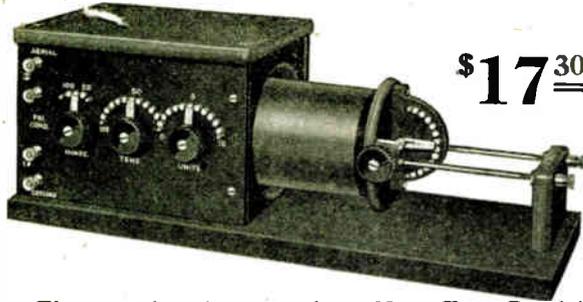
In this receiving transformer the amateur is offered an efficient, well made, long wave length tuner at a low price. When you see it you will really be astonished to think of buying this instrument for \$6.55. With it you can tune in with the big wireless stations, including Arlington, Key West and others 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

mahogany. All metal parts are of brass, finished in polished nickel plate. Size of base, 18½x6 inches. Shipping weight, 25 pounds.

6A933—Receiving Transformer.....\$6.55

Navy Type Receiving Transformer

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



\$17³⁰

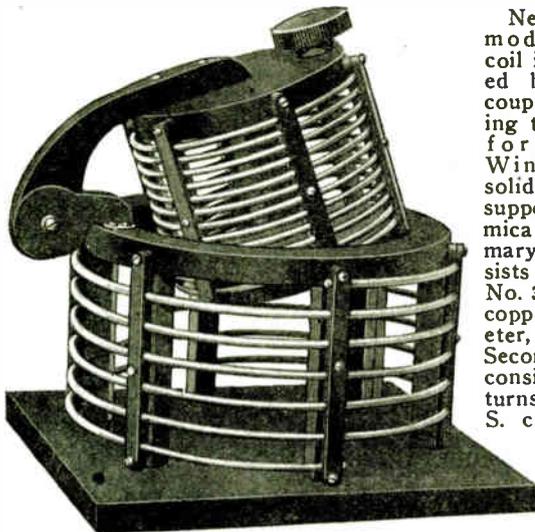
The Navy Type Receiving Transformer is one of the most popular instruments we offer, and is of special interest to schools, experimental stations and wide-awake amateurs.

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.....\$17.30

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 clips furnished. Shipping weight, 28 pounds.

6A9331¼—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. Shipping weight, 4 ounces.

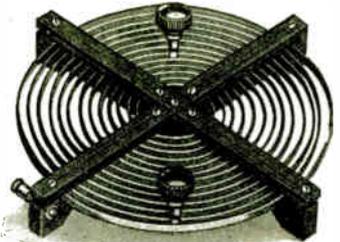
6A9630—Helix Clip18c



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



This helix embodies the same design and construction as is used in many commercial units. 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

Universal Helix Clip

Used for making connections on the Helix and Oscillation Transformer. Nickel plated. Shipping weight, 1 ounce.

6A9409—Universal Helix Clip.....7c

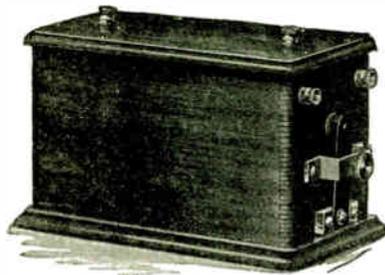


Superior Wireless Spark C

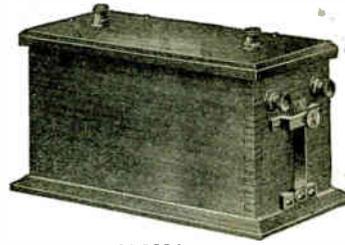
Amboy, Ill.
Feb. 17, 1921
Sears, Roebuck and Co.,
Chicago, Ill.

Gentlemen:--
I wish to tell you
about your spark coils.
Last August I got one
of your 1-inch spark
coils. They are rated to
send only 8 miles but I
covered 32 miles. I think
they are a wonderful
coil.

Very truly yours,
Donald L. Vaughan.
Amboy, Ill.



6A9427
6A9249
6A9250



6A9234
6A9235
6A9236

6A92

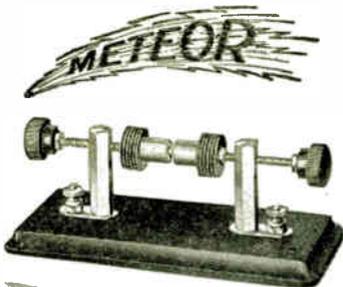
Superior Wireless Spark Coils are built for Wireless Telegraphy and are quite different in construction from the ordinary spark coil. These coils are designed to operate on dry cells, wet cells or storage battery. They are guaranteed to give their rated spark length between needle points. The secondary 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 $\frac{3}{4}$ 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 effi-

ciency will appeal to the experimenter because of low current consumption, which means long life set of batteries. The number of batteries required to operate these coils successfully is as follows:

- $\frac{1}{4}$ -inch operates on 4 dry cells.
- $\frac{1}{2}$ -inch operates on 5 dry cells.
- $\frac{3}{4}$ -inch operates on 5 dry cells.
- 1 -inch operates on 6 dry cells.
- 1 $\frac{1}{2}$ -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	
6A9232—Superior Spark Coil.....	$\frac{1}{4}$ inch	4 pounds	\$ 3.70
6A9233—Superior Spark Coil.....	$\frac{1}{2}$ inch	6 pounds	4.45
6A9234—Superior Spark Coil.....	$\frac{3}{4}$ inch	8 pounds	6.10
6A9235—Superior Spark Coil.....	1 inch	8 pounds	6.38
6A9236—Superior Spark Coil.....	1 $\frac{1}{2}$ 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

Radiator Spark Gap

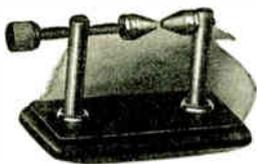


Shipping weight, 2 pounds.

6A9237—Meteor Radiator Spark Gap.....\$1.84

Very efficient. Open gap. Fitted with zinc electrodes $\frac{5}{16}$ inch in diameter, $\frac{1}{2}$ inch long. Has six cooling flanges. Metal posts of brass, nickel plated and polished. Polished rubber composition base, $2\frac{1}{2} \times 6\frac{7}{16}$ inches. Height, $2\frac{1}{2}$ in.

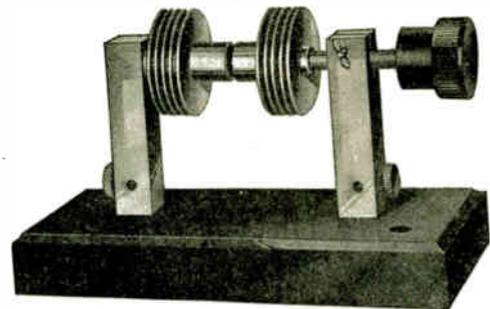
New Model Spark Gap



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 $\frac{1}{4}$ 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 $5\frac{3}{8} \times 2\frac{1}{2} \times \frac{3}{4}$ inch. Uprights are of heavy brass rod, $\frac{1}{2}$ inch square, $2\frac{1}{4}$ inches high, nickel plated and polished. Electrodes are turned from zinc stock and are $\frac{7}{16}$ inch long by $\frac{1}{2}$ inch in diameter. Radiators are of aluminum, $1\frac{3}{8}$ 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. Shipping weight, $2\frac{1}{2}$ pounds.

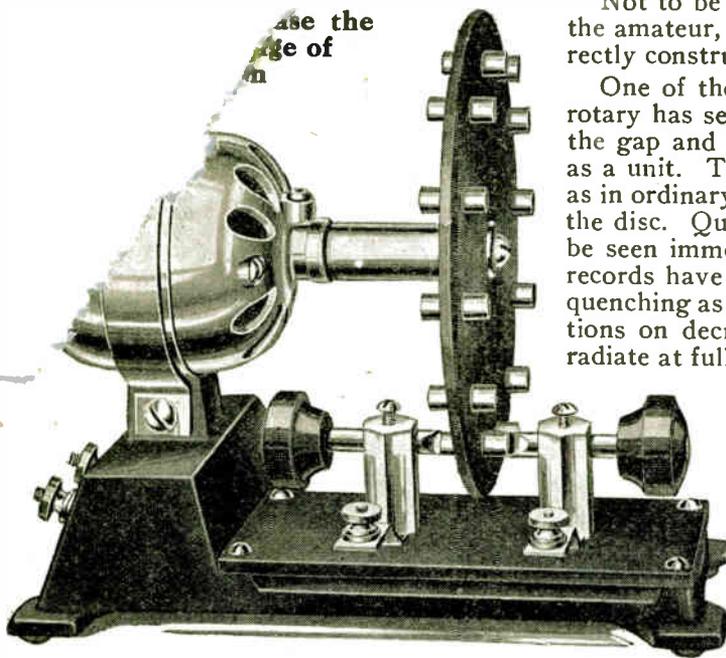
6A9606—Heavy Duty Spark Gap.....

Franklin Rotary Spark Gap

Duty Type

40,000-Volt

500-Cycle Note



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 gap 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 1/2 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 3/16 inches. Ample insulation is provided and gap will not flash over at 40,000 volts. Twelve rotor electrodes are set 1/2 inch from edge of disc, and rotor clears base only about 5/8 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 1/16-inch brass rod. Frame has rubber feet.

Operation: In operation this gap will not wobble, 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**

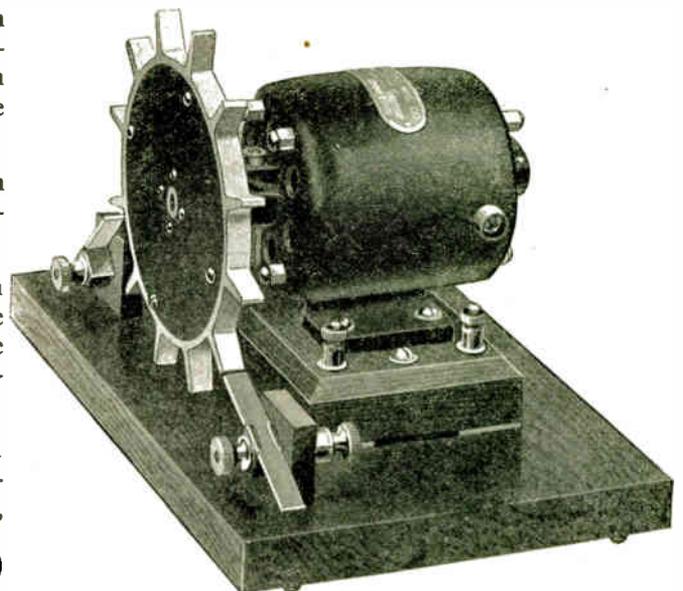
Rotary Spark Gap

This gap embodies all the latest improvements made in rotary spark dischargers 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 1/4-inch formica disc, and has twelve electrodes, 1/8 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 1/4 and 1/2-K.W. sets. Shipping weight, 12 pounds.



3619—Rotary Spark Gap..... **\$16.50**

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 \$14.50.

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

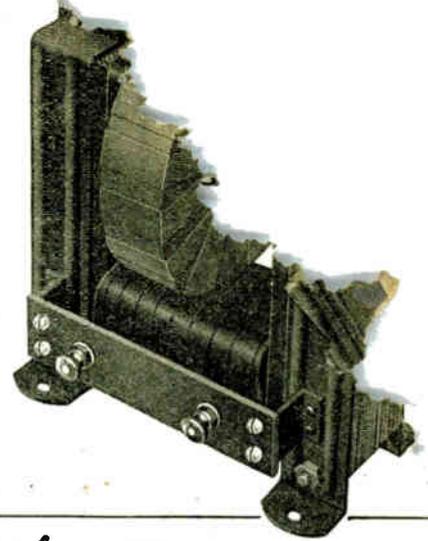
Winding and Construction: The dry air insulated construction has been adhered to. Primary winding is for 110-volt, 60-cycle, alternating current. Secondary coil is mounted on upper yoke of the magnetic circuit. This coil is very carefully constructed of high grade materials. A cheaper coil of this size 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.

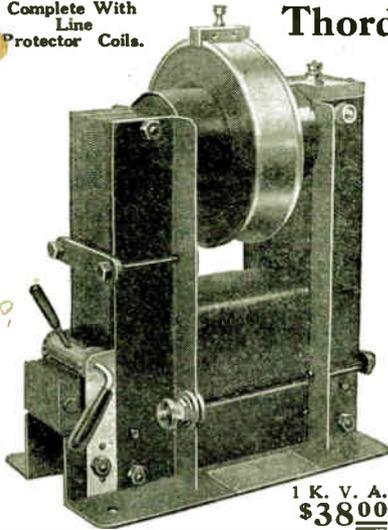
Size over all: Height, 9¼ inches; length, 7½ inches; width, 5 inches. Weight, 20 pounds. Shipping weight, 30 pounds.

6A931¼—Meteor ½ K. V. A. Wireless Transformer.....\$14.50



Complete With
Line
Protector Coils.

Thordarson Type "R" Wireless Transformer



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-cycle operation:

Catalog No.	K. V. A.	Height, Inches	Width, Inches	Length, Inches	Amperes	Weight, Pounds	Secondary Voltage	Each
6A9376¼	½	9	5½	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

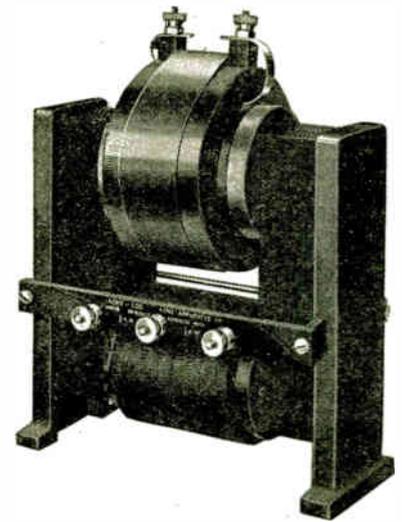
The uniform results obtained by using Acme transformers has established the fact that the non-resonant type of transformer is best adapted for the amateur station equipped with rotary spark gap. These transformers were brought out and placed on the market after considerable experimental work to determine 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 ¼-K.W. tap. Primary, 110 volts, 60 cycles; secondary voltage, 11,000. Shipping weight, 30 pounds.....\$21.00

6A9610¼—1-K.W. with ½-K.W. tap. Primary 110 volts, 60 cycles; secondary voltage, 15,000. Shipping weight, 45 pounds.....\$32.00



Oil Type Radio Transformers

OIL COOLED—OIL INSULATED

GUARANTEED TO INCREASE YOUR TRANSMITTER EFFICIENCY AT LEAST 20%

Reduced Price

1 K. W.
25,000 Volts
\$2435



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 are 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 1/2 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 1/2-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 1/2-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 1/2-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 Number	K.W.	Amperes	Primary Voltage, 60 Cycles	Secondary Voltage	Size of Case	Height of Secondary Insulator Posts	Shipping Weight, Complete With Oil	
6A9189	1/2	6	105-115	15,000	8 in. long, 7 in. wide, 10 in. high	2 1/2 inches	27 lbs.	\$19.85
6A9170	1	12	105-115	25,000	8 1/2 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 Tested Voltage	M. F. D.	Shipping Weight, Pounds	
6A9620 1/2	D-101	500	14,000	.007	12	\$27.50
6A9621 1/2	D-102	1,000	21,000	.007	12	48.50
6A9622 1/2	D-111	500	14,000	.01	12	33.25
6A9623 1/2	D-112	1,000	21,000	.01	12	52.75



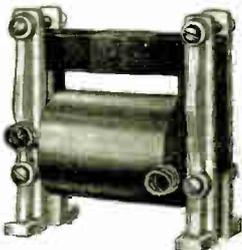
C. W. Power Tra

C. W. transmission has many advantages over t with C. W. the supply of energy to the antenna is co. one sharp frequency, while with spark discharges it is of more than one frequency. Continuous undamped amount of energy output only a small amount per oscil length, as contrasted with the spark system, which has a in a small interval of time, after which a period of idleness e is being radiated. To handle large amounts of energy in a requires large voltages, producing strains on the antenna, le charges. The great advantage of C. W. transmission lies i. ck which, being tuned to one frequency, receives all the available energ at one frequency only, and being a persistent oscillator is more er continuous supply.

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

- 6A9611—C. W. Power Transformer, 200 watts, mounted. Shipping weight, 15 pounds.....\$19.00
 6A9612—C. W. Power Transformer, 75 watts, mounted. Shipping weight, 12 pounds..... 14.00

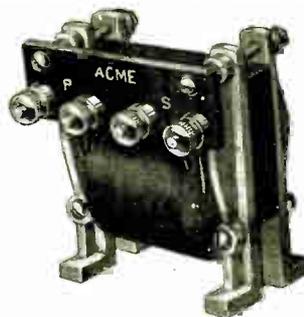
Choke Coils



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

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. Shpg. wt., 3 lbs.

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

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 wt., 1 lb.

- 6A9318—Line Protector Coils. Per pair.....85c

Map of the United States

Complete List of Commercial and Radio Phone Stations

Every radio station should contain an official radio map. These maps are attractively finished, with the station letters in red and the districts in blue. The map itself measures 10x6 inches, and contains a complete list of stations in alphabetical order. The map shows the locations of all Government, commercial and broadcasting stations, amateur districts and the divisions of time; also contains new radio regulations, foreign call letters and other information valuable to the radio operator. Shipping weight, 5 ounces.

16c

"CUL 73" Post Cards

Ready to Mail—No Stamp Required

To _____	DATE _____
YOUR SIGS HEARD _____	DATE _____
TIME _____ P. M. WEATHER _____	TONE _____ WAVE _____
TRANSMITTING SET _____	FROM _____ RECEIVING SET _____
	
How Do You Get Me? What Do You Use? What Club Do You Belong To? Call Me Any Time After _____	
"CUL-73" OPERATOR _____	ADDRESS _____

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 post card, ready to mail without stamp. Shipping wt., per doz., 4 oz.

6A9193
 Per dozen.....\$0.35
 Per hundred.....2.85

Wireless Code Chart



This Chart has the Continental Wireless Code, with instructions for learning, all printed on one side. Size of chart, 4 1/4 x 7 3/4 inches. Printed on cardboard. Shipping weight, 3 oz.

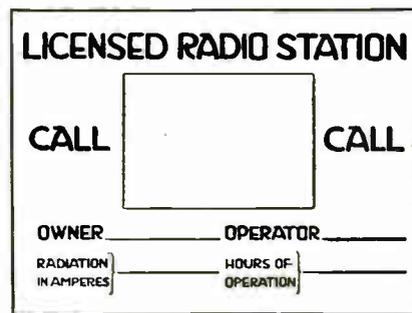
6A9398—Wireless Code Chart.....5c

Attractive Signs Needed in Every Radio Station



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.

6A91989c



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.

6A91969c



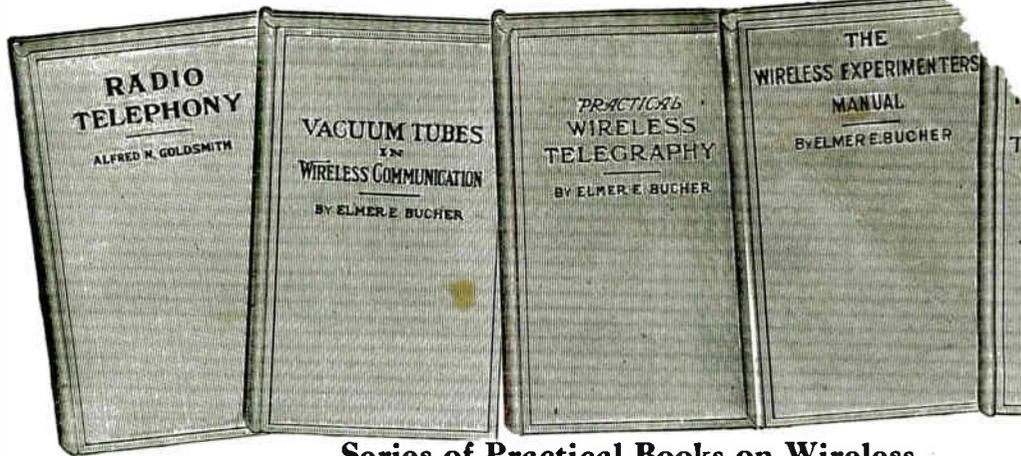
6A91999c



"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.

6A91979c

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 ounces.



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 and previously unpublished photographs of "wireless telephone" apparatus.

The book is very complete, practically every aspect of radio telephony being covered in detail. There are over 400 separate topics listed in a carefully prepared index. 247 pages. Weight, 2 pounds.

6A9342—Radio Telephony..... \$2.04

A Practical Text Book for Operators and Experimenters.

This volume shows over 140 different circuits for the practical use of vacuum tubes as detectors, radio or audio frequency amplifiers, regenerative receivers, beat receivers and generators of radio frequency currents.

The two, three and four element oscillation valves are described in detail together with the circuits used in daily practice. Cascade amplifiers of the latest type for long distance reception are comprehensively treated. Up to date circuits for the vacuum tube generator are shown. Modern wireless telephone circuits are thoroughly explained.

A series of graphic charts in the appendix reveals the functioning of the vacuum tube in an elementary manner. The technical introduction reviews the problem of continuous and discontinuous wave transmitters and receivers. Fully illustrated. Bound in red cloth. 174 pages. Weight, 2 pounds.

6A9343—Vacuum Tubes in Wireless Communication..... \$1.86

Revised Edition. Enlarged With New Chapter on Location of Trouble, Maintenance, Repairs.

A textbook which treats each topic separately and completely, furnishing a progressive study from first principles to expert practice. Starting with elementary data, it progresses, chapter by chapter, over the entire field of wireless fundamentals, construction and practical operation.

The 340 illustrations alone, specially drawn, form a complete diagrammatic study and impression upon the reader's mind, a pictorial outline of the entire subject. Many of these illustrations reveal details of construction of the newest types of sets and apparatus.

Practical Wireless Telegraphy is a practical man's book from cover to cover and up to the minute. Size, 6x9 inches, 350 pages. Handsomely bound in full cloth with cover stamped in black. Weight, 2 pounds.

6A9344—Practical Wireless Telegraphy..... \$1.89

The Wireless Experimenters' Manual.

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Wireless Construction and Installation for Beginners.

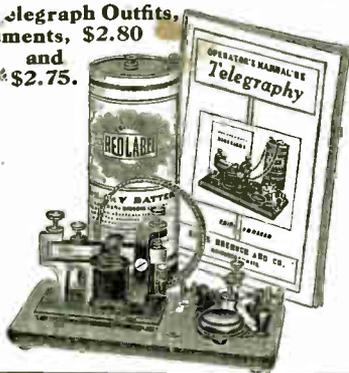
A practical handbook giving detailed instructions for the construction of aeriels, etc. Also complete instructions for making and operating a Boy's Wireless Outfit. The book contains a great deal of practical information which is a great help to the experimenter. Paper cover in colors. Size, 5 1/4 x 7 1/4 inches, 74 pages. Weight, 4 ounces.

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Telegraph Outfits, Instruments, \$2.80 and \$2.75.

...ver, switch Key buffed. A small battery and included. Shipping weight, 6 pounds. \$4.00



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...ole Learner's Telegraph Outfit. This consists of two Improved 4-Ohm Instruments, four dry batteries, two instruction books and 300 feet of plated copper wire. The instruments may be installed in different rooms, 20 houses on adjacent lots, and the operators can practice sending and receiving messages. Shipping weight, 19 pounds. \$7.75

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Standard Steel Lever Key, legless. Steel lever and switch strap are heavily nickel plated and buffed. Black composition key and switch knobs. Fully adjustable. Shipping weight, 10 ounces. 6A9185 \$1.90

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Red Label Dry Battery. Shipping weight, 2 3/4 lbs. 6A8635 Each 34c Per dozen (shipping weight, 30 pounds) \$4.00



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Private Line Set.



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. Shipping weight, 3 pounds 13 ounces. 6A9175 \$4.00

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20-Ohm Standard Relay. This relay is a very sensitive, nicely adjusted and handsomely finished instrument. The 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 in length, and for burglar and fire alarm systems. Shipping weight, 2 1/2 pounds. 6A9188 \$3.15



Giant Sounder, 4-Ohm.

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., 1 1/4 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. Shipping weight, 1 1/4 pounds. 6A9181 \$2.50



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Wire cutter and pliers. Will hold on flat, square and round surfaces. Forged steel, properly tempered. The 6-inch pliers will hold up to 1/4-inch rods; 8-inch and 10-inch will hold up to 1-inch rods. Give length. 9A5832

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

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Fulton Tungsten Hack Saw Blades. HACK SAW BLADES. 9A5018—Length, in. 8 9 10 12 Weight, doz., oz. 4 6 8 8 Per dozen 40c 45c 50c 60c

Goodell's Two-Speed High Grade Hand Drill. Takes drills up to 3/8 inch. Head is hollow, with screw cap. Length, 14 1/2 in. No drill points furnished. Wt., 2 1/2 lbs. 9A5606 \$3.80

9A5609—Set of Eight Drill Points to fit 9A5606, Hand Drills. Assorted sizes, 1/8 to 1 1/4 inch. Weight, 3 ounces. Per set of 8 25c

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9A5656—Cutting 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/8, 1 1/4, 1 1/2, 1 3/4, 2, 2 1/4, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6, 6 1/2, 7, 7 1/2, 8, 8 1/2, 9, 9 1/2, 10, 10 1/2, 11, 11 1/2, 12 inch, 5 taps and 5 dies, stock and adjustable tap wrench. Per set \$5.85

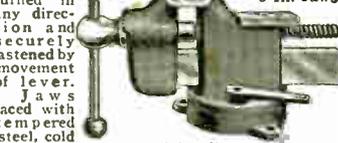
BIT STOCK DRILLS. 12c 1/8-Inch 23c 1/4-Inch

These drills fit any bit brace and will drill steel, iron, brass, aluminum or other metals. Will also bore Bakelite or Formica panels or any kind of wood. Points of drills should be kept well oiled when drilling metal. 9A5622—State size wanted.

Size, inch..	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	3	3 1/2	4
Weight, oz.	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	3	3 1/2	4
Each.....	8c	10c	12c	14c	17c	20c	23c	26c	30c	35c	40c	45c	50c	55c	60c	65c	70c	75c
Weight, oz.	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	3	3 1/2	4
Each.....	30c	37c	45c	59c	78c	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00

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With Swivel Bottom. 3-In. Jaws.



Quickly turned in any direction and securely fastened by movement of lever. Jaws faced with tempered steel, cold rolled steel screw and handle, steel sliding bar. Furnished with bolts for fastening vise to bench. Width Jaws, In. Opens, In. Shpg. Wt., Lbs. 99A5201 2 1/2 2 1/2 12 3.20 99A5202 3 3 1/2 15 3.90 99A5203 3 3/4 4 19 4.70 99A5204 4 6 31 5.90

Solid Steel Slide Bar Vise. \$3.60

3-In. Jaws.



Has solid steel slide bar, cold rolled steel screw and handle, jaws faced with tempered steel. Furnished with bolts for fastening to bench. Width Jaws, In. Opens, In. Shpg. Wt., Lbs. 99A5195 2 1/2 2 1/2 13 \$2.90 99A5196 3 3 1/2 15 3.60 99A5197 3 3/4 4 17 4.30 99A5198 4 6 29 5.20

Little Giant \$8.25

Round adjustable dies, 1 inch in diameter. Cutting 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/8, 1 1/4, 1 1/2, 1 3/4, 2, 2 1/4, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6, 6 1/2, 7, 7 1/2, 8, 8 1/2, 9, 9 1/2, 10, 10 1/2, 11, 11 1/2, 12 inch. 6 taps and 6 dies, stock and adjustable tap wrench. U. S. standard thread. In hardwood case. Wt., 2 1/2 lbs. 9A5661 \$8.25



Per set. 9A5661 \$8.25

Little Giant \$8.25

Round adjustable dies, 1 inch in diameter. Cutting 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/8, 1 1/4, 1 1/2, 1 3/4, 2, 2 1/4, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6, 6 1/2, 7, 7 1/2, 8, 8 1/2, 9, 9 1/2, 10, 10 1/2, 11, 11 1/2, 12 inch. 6 taps and 6 dies, stock and adjustable tap wrench. U. S. standard thread. In hardwood case. Wt., 2 1/2 lbs. 9A5661 \$8.25



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Portable Soldering Outfit.



A convenient and practical outfit for radio work or for general household use. One filling (about 2 oz. 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 1/2 2 3 4 No. 2 Wt. lbs. 3/4 1 1 1/2 2 Per single iron 30c 40c 55c 70c

Wood Handle for Soldering Coppers. 4c

9A3576—With wire ferrules. Weight, 2 ounces. Each. 4c

Wire Solder. 9A3558

Highly recommended for radio work. Flows at minimum degree of heat. In coils of 1 pound. Per coil 28c

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"Speco" Solid Sal Ammoniac. Fine for cleaning and tinning soldering coppers. No filing of coppers necessary. Tinned coppers cause solder to flow smoothly. Wt., 4 ounces. 9A3557—Cake. 23c

ONE POUND SOLDERING PASTE

9A3556—A highly concentrated soldering paste put up conveniently for use in cans of 1 lb. Per can 30c

10-In. Sweep \$2.20

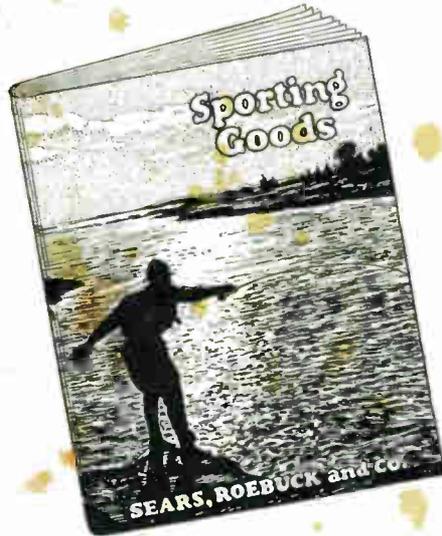
The Improved Fulton Special Ratchet Bit Brace. Roller bearings. Takes regular square shank bits and round shank bits up to 3/4 inch in diameter. 9A5428—State size wanted. Sweep, 10 in. Wt., 2 1/2 pounds \$2.20

ONE POUND SOLDERING PASTE

9A3556—A highly concentrated soldering paste put up conveniently for use in cans of 1 lb. Per can 30c

9A3557—Cake. 23c

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