WE GUARANTEE

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

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

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

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

SEARS, ROEBUCK AND CO.
HERE ARE THE FACTS

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

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

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

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

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

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

SEARS, ROEBUCK AND CO.
The Complete Outfit Consists of:
1 Portable Receiving Set. Complete with Aeriotron Vacuum Tube WD-11.
1 Set of Sensitive 3,000-Ohm Head Phones.
1 “A” Battery, 1 Volt.
1 “B” Battery, 22½ Volts.
1 Complete Aerial and Ground Outfit, 6A945, listed on page 31.

How to Order Replacement Tubes.
Should you break or burn out your vacuum tube, you can secure a tube for replacement by ordering our 6A964 Aeriotron Vacuum Tube. Shipping weight, 1 lb. $0.50

Receiving Radius 300 to 600 Miles
An ideal radio outfit for campers, tourists and persons situated in the rural districts. The Aeriola will be found especially useful to the farmer for the daily reception of market and weather reports and general radiophone broadcasting of musical programs. These messages are sent out by the U.S. Government and other stations on wave-lengths of 360 and 485 meters, and are received like regular telephone conversations. It is not necessary for the operator to know the telegraph codes. Thus, this instrument proves of great value to the great farming centers of the United States which are served by local radiophone broadcasting stations.

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

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

6A931554—Complete set .......... $65.00
This receiver is our most sensitive and highest grade instrument and likewise it is one of the best that has been brought out for radiophone reception. With it you can bring in the music that you like best and hear the message of distant voices for hundreds of miles around.

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

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

6A9318½—Westinghouse R. C. Receiver Outfit, complete........$160.00

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

Complete Outfit
$55.00

“LISTEN IN”
The Air Is Alive With Voices.

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

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

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

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

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

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

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

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

Range 300 to 500 Miles

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

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

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

The Complete Outfit Consists of:

1 Detector Panel, 6A9652, shown on page 5.
1 Variocoupler Panel, 6A9786, shown on page 5.
1 Variometer Panel, 6A9783, shown on page 5.
1 "B" Battery, 22 1/2 Volts, 6A9600.
1 "A" Storage Battery, 6 Volts, 6A9215.
1 Detector Tube, 6A9650.
1 Set of Head Phones.
150 Feet of Seven-Strand Copper Aerial Cable.

50 Feet of No. 14-Gauge Weatherproof Copper Wire.
75 Feet of No. 18-Gauge Insulated Bell Wire.
8 Aerial Strain Insulators.
6 Porcelain Cleats.
1 Porcelain Wall Tube.
1 Ground Clamp.
1 Aerial Lightning Arrester.
Shipping weight, 50 pounds.

Wood Cabinets Not Furnished.

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

SEARS, ROEBUCK AND CO.
Molded Bakelite Panel Is 7 1/4 Inches Long, 5 Inches High and 3/16 Inch Thick

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

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

The panel, which is of genuine molded Bakelite, is 5x7 1/4x5 1/6 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, 7 1/4x3 1/2 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.

6A9852—Audiotron Control Panel.............$6.42

Audiotron Variocoupler Panel

Variocoupler 6A9785 is also supplied mounted on a Bakelite panel, 5x7 1/4x5 1/6 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 1/4x4x3 1/6 inch, is finished in black. Shipping weight, 6 pounds.

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

Variometer 6A9782 is supplied mounted on a Bakelite molded panel, 5x5x3/16 inch, with hardwood base finished in black, 5x3x3/4 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 Vario coupler and 6A9652 Detector Panel (page 5) and the arrangement of the binding posts permits ready interconnection of panels to form any desired receiving combination. Shipping weight, 6 pounds.

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

Audiotron Amplifier With Control Switch

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

6A9573—Audiotron Amplifier. Without transformer..........................$6.79
6A9666—Audiotron Amplifier. Complete with Transformer 6A9503..............11.85
For amplifying Transformers see page 22.

Audiotron Amplifier Units

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

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

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

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

6A9688—Detector and Two-Stage Amplifier Unit ............................................ $48.75

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

6A9686—Detector Unit ................................................................. $14.60

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

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

Detector and One-Stage Amplifier Unit

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

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 ¼-in. formica and are 6½ in. high. The detector panel is 5½ in., the detector and two-stage panel, 10½ in., and the two others 7½ in. wide. The panels are fastened to a drawer subbase which is held firmly in cabinet by a thumbnut. Removing nut allows unit to be drawn out of cabinet quickly without the use of any tools.

$34.50
Build Your Radio Receiving Set

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

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

Crystal Sets

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

Two-Panel Crystal Set
A Complete Outfit Ready to Install

$21.39

The most simple type for crystal receiving is constructed of two panels. A Crystal Detector and Test Buzzer Unit 6A922 and Variocoupler Unit 6A967. These panels include a new style marine detector with removable cat whisker and mineral cup. Also a test buzzer circuit which includes the battery and does away with troublesome wire. The inductance is the new variocoupler panel with knob and dial and switch lever adjustment. This unit is designed to receive wave lengths from 150 to 500 meters, which includes all amateur and radiophone stations. The set includes our Ground Outfit 6A9435, one set of Head Phones 6A9211, and one pair of 6A9634 Brackets. Furnished with a blue print for wiring; also a small radio instruction book. See pages 30 and 31 for erecting a set.

Three-Panel Crystal Set
A Complete Outfit Ready to Install

$26.81

This set consists of the two units described above and a 43-Plate Variable Condenser Unit 6A9576. In certain localities where amateur stations are numerous or where the receiving set is located near two broadcasting stations, trouble is often experienced in tuning in one station and tuning out the undesirable stations. The variable condenser unit will help overcome this trouble. This outfit also includes our Ground and Aerial Outfit 6A9435, one set of Head Phones 6A9211, and one pair of 6A9634 Brackets, also a small radio instruction book.

When properly installed this set will give very good results. We do not carry cabinets in stock, but you could make one for a set of this kind which would add to its appearance. Shipping weight, 12 pounds.

Page 8

SEARS, ROEBUCK AND CO.
The Progressive Unit Panel Way

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

Two-Panel Vacuum Tube Set
A Complete Outfit $40.78 Ready to Install.

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

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

The tube is operated with two batteries and requires a more complicated circuit than that used with crystal detector, so care must be taken to wire all connections according to the hook up. This set includes our Vacuum Tube Unit 6A9578 and VarioCoupler Unit 6A9667. Radiotron Detector Tube 6A9650, 6-Volt Storage Battery 6A9530, one 225-Volt "B" Battery 6A9662, one pair of Headphones 6A9213, Ground and Aerial Outfit 6A9435, and two Panel Brackets 6A9634, which makes a complete outfit ready to install. We also include a small radio instruction book. The blue print we furnish makes this operation very simple. See pages 30 and 31 for erecting an antenna. Shipping weight, 60 lbs.

Three-Panel Vacuum Tube Set
A Complete Outfit $46.10 Ready To Install.

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

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

This set includes our Vacuum Tube Unit 6A9578, VarioCoupler Unit 6A9667 and VarioMeter Panel 6A9666, Radiotron Detector Tube 6A9650, 6-Volt Storage Battery 6A9530, one 225-Volt "B" Battery 6A9662, one pair of Headphones 6A9213, Ground and Aerial Outfit 6A9435 and one pair of Brackets 6A9634, which makes a complete outfit ready to install. We also include a small radio instruction book. The blue print we furnish makes the wiring of this set very easy. See pages 30 and 31 for erecting an antenna. Shipping weight, 62 pounds.

SEARS, ROEBUCK AND CO.
Four-Panel Vacuum Tube Set

This Four-Panel Receiving Set will give very satisfactory results and is very easy to operate. It consists of the three units used in the set described at the bottom of page 8 and one 45-Plate Variable Condenser Unit 6A9576. If you are located where amateur stations are numerous or near two broadcasting stations the condenser will help tune out the undesirable stations. It will also help tune in a clear tone. To these four panels may be added one or two steps of amplification which will increase your signals, making it possible to use a loud speaker.

This set consists of a Vacuum Tube Unit 6A9578, Variocoupler Unit 6A967, Condenser Unit 6A9576, Variometer Unit 6A9666, Audiontron Detector Tube 6A9639, 6-Volt Storage Battery 6A9506, 22'/4-Volt "B" Battery 6A9682, one pair of Head Phones 6A9212, Ground and Aerial Outfit 6A9435 and one pair of Brackets 6A9634. A blue print is furnished showing how to wire this set and on pages 30 and 31 we explain how to erect an antenna. Shipping weight, 63 pounds.

A Progressive Long Wave Set

A Complete Outfit Ready $64.75 to Install, Only $41.50

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

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

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

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

This set consists of one Three-Coil Mounting and Variable Condenser Unit 6A9976, one Detector Unit 6A9578, one Amplifier Unit 6A9579 and Coils 6A9017, 6A9018, 6A9019, 6-Volt Storage Battery 6A9506, 22'/4-Volt "B" Battery 6A9682, one Detector Tube 6A9650, one Amplifier Tube 6A9651, Ground and Aerial Outfit, Head Phones 6A9212 and one pair of Brackets 6A9634. A blue print is included showing how this set should be wired. See pages 30 and 31 for erecting antenna. Shipping weight, 60 pounds.

$64.75
**Progressive Unit-Detector and Two Stage Amplifier Set**

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

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

**Complete,**

$137.00

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

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

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

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

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

Vario Coupler Unit.
New style Vario Coupler 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 vario meter 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 nearly 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 vario coupler unit. Shipping weight, 3 pounds.

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.

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

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.

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 from formica tube. Inductance is varied by means of seven-point switch on front of panel. This unit, together with Crystal Detector or Vacuum Tube Unit and Variable Condenser Unit, makes an excellent receiving set. Shipping weight, 4 lbs.

Varo Coupler Unit.
3,000-Meter Varo Coupler Unit. Consists of Bakelite tube, 4x3/4 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 varo 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. Coupler controlled by satin nickel dial, 0-30 scale. Panel marks engraved. Windings are protected by cambric tape wrapping. Shipping weight, 7 pounds.

SEARS, ROEBUCK AND CO.
Progressive Unit Panel

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

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
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<tr>
<td>6A9627</td>
<td>Beginners' Receiving Set Unit With Buzzer Test and Battery</td>
<td>$8.57</td>
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<tr>
<td>6A9796</td>
<td>Single Coil Mounting and Variable Condenser Unit</td>
<td>$7.59</td>
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<tr>
<td>5A9798</td>
<td>Three-Coil Mounting and Variable Condenser Unit</td>
<td>$5.76</td>
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<tr>
<td>5A9794</td>
<td>Combination Vacuum Tube—Crystal Control Panel Unit</td>
<td>$18.45</td>
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<tr>
<td>6A9795</td>
<td>Two-Coil Mounting and Variable Condenser Unit</td>
<td>$4.24</td>
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<td>6A9797</td>
<td>Three-Coil Mounting Unit</td>
<td>$7.18</td>
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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 Shurite two-cell tubular flash light battery, mounted in a black fiber case on rear of panel. The operator has only to touch the test button to determine whether his detector is set on a sensitive point on the crystal. This also provides means for instant adjustment until the most critical point is found. This buzzer test eliminates a great deal of wasted time when no signals are heard, due to the fact that the detector is not properly adjusted. Shpg. wt., 1 1/2 lbs.

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 1/2 pounds.

Blank Panel Unit.
Blank Panel. Size, 5x5 5x3/4 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, push buttons, switches, etc. Shpg. wt., 4 oz.

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

SEARS, ROEBUCK AND CO.

Page 13
Special Crystal Radio Sets

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

Receiving Radius From 20 to 30 Miles.

Loose Coupler Crystal Outfit.

This is certainly a dandy outfit for the beginner in radio as well as those who wish to hear local broadcasting programs. The control is so simple that a child can make the adjustments and get excellent results. The outfit consists of a variable condenser, crystal detector and a pair of sensitive 2,000-ohm phones. Also a fixed condenser, loose coupler and complete aerial and ground outfit. In other words, it is complete in every way and ready for use. The coupler has a tuning capacity of 2,500 meters, which provides for long wave reception, such as naval stations and Government time signals. For best results we recommend that the instruments be connected as shown in the illustration. This hook up has been tried out and has given very good results. Of course you understand that there are many other ways of connecting up receiving instruments. Shipping weight, 37 pounds.

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

Complete $22.82
Set, $18.95

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

Tuning Coil Crystal Outfit.

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

Complete Aerial and Ground Set, 6A9307, furnished with this Crystal Outfit.

Complete $22.82
Set, $18.95

We recommend the wiring connections shown in the above illustration, which is Hook Up No. 2, page 45.
Parts for Building Crystal Receiving Set

Great Lakes Detector Stand

A very popular type mineral detector of the cat whisker type. The mineral cup is fitted with a binding post and mounted on a curved brass holder, which may be placed at any angle by means of the adjusting nut on the base. Fine adjustment is obtained by means of the screw, which is fitted through a slot in a knurled knob. This screw works in a brass pillar against a flexible strip which holds the cat whisker. Piece of galena furnished with each detector. Base is hard rubber composition base, 3/4 x 2 x 3/4 inch, fitted with two binding posts. All metal parts nickel plated. Shipping wt., 1 lb. 6A9375—Great Lakes Detector Stand. $1.38

Murdock Detector Stand.

A good detector stand at a low price. It will give efficient service either as regular equipment or as an auxiliary instrument. The base is hard rubber composition; binding posts are nickel plated, and metal holder; vertical adjustment. Mineral not furnished with this detector, but we recommend silicon. Size over all, 3 3/4 x 3/4 x 2 inches. Shipping weight, 3 pounds. 6A9219—Murdock Detector Stand. 65c

Radio Cartridge Rectifier.

This detector can be easily mounted on any set and does away with the necessity of a test buzzer circuit. Each cartridge has been thoroughly tested, and is constructed to last from four to six months if properly used. It can be used the same as any mineral detector, but has the advantage of requiring no adjustments, and with the same range of sensitivity as any galena detector. This cartridge is particularly adapted for portable crystal sets. The stationary contact consists of a carbon point, which is held against a cylinder of graphite cemented to the base, 6 x 2V oinches. All metal parts are made from brass, heavily nickel plated and polished. Tested piece of galena is furnished with this detector, but we recommend silicon. Size over all, 4 x 3/4 x 2 inches. Shipping weight, 3 pounds. 6A9260—Radio Cartridge Rectifier. $1.38

Army-Navy Test Buzzer.

This buzzer maintains a constant note and is recommended as an exciter for checking wave meters where power is limited, and where complete energy is 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 mounted by a similar screw. Contacts are made of graphite and carbonium 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 1/2 inches. The cap is attached to the base by a bayonet joint. Shipping weight, 6 ounces. 6A9437—Army-Navy Test Buzzer. $2.20

Wireless Test Buzzer.

Detectors often lose their adjustment and need readjusting. By using a buzzer the adjustment of the detector is always known. The buzzer sets up tiny waves which pass through the detector, the same as incoming waves, and produce a sound in the receivers. If no sound is heard the detector point is not on a sensitive spot on the mineral and needs adjusting. The buzzer operates on one hand, the 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 5,000 cycles per minute. Size, 3 1/2 inches 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 3/4-inch hole. Nickel plated, with pearl center. Shipping weight, 4 ounces. 6A9209—Buzzer Test Push Button. 24c

Marine Mineral Detector.

This type of mineral detector has been used extensively on various styles of ship sets, both as a regular service detector and as a "stand-by." We believe this is the finest mineral detector made, and recommend it to every amateur and experimenter. Detector case is mounted in a tube container. This tube container is mounted in a box which is turn is supported by a socket joint which gives point which gives point of range. A spiral spring is used on detector shaft and is mounted in the tube. The tube slides through the hall and the evil spring insures permanent position. Cat whisker contact wire is held by means of clutch and is easily removed for changing wire, etc. Mineral is supported in brass cup by three screws. Cup is mounted on brass pillar. Detector is mounted on black molded base, 6 3/4 x 3/8 inch. All metal parts are made from brass, heavily nickel plated and polished. Tested piece of galena is furnished with this detector, but we recommend silicon. Size over all, 4 x 3/4 x 2 inches. Shipping weight, 2 pounds. 6A9297—Marine Mineral Detector. $1.85

Standard Galena Detector—Improved Model.

This detector has proved the most popular style in the amateur field. This latest improved model will undoubtedly become the most popular crystal detector on the market. The base is of nickel plated composition 3/4 inch thick, fitted with polished nickel plated binding posts. A tested galena crystal is mounted by means of a binding post in a nickel plated mineral cup which is held in place by means of a shock absorbing brass spring which is mounted on the place, allowing very easy adjustment. This detector is not easily "knocked out" as the spring assures permanent position by adjusting screw. Size of base, 3 3/4 x 3/4 inch; all metal parts nickel plated and polished. Shipping weight, 1 pound. 6A9526—Standard Galena Detector. $1.20

Nickel Plated Brass Mineral Cup.

Fitted with three screws for mounting cup. Cup is of nickel plated brass, polished. Tested cup allows for mounting on detector stand or panel. Shipping weight, 5 ounces. 6A9486—Nickel Plated Brass Mineral Cup. 10c

Minerals and Crystals.

Our minerals are all high grade and we will replace any which are not sensitive or do not give satisfactory service. Each piece is large enough for any size detector cup, and often larger for several renewals. 6A932C—Pyrite. Shipping weight, 3 oz. Per piece 15c 6A9341—Carvallite. Shipping weight, 3 oz. Per piece 15c 6A9321—Copper Pyrites. Shipping weight, 3 oz. Per piece 6c 6A9322—Galenite. Shipping weight, 3 oz. Per piece 5c 6A9323—Ferron (Iron Pyrites). Shipping weight, 3 oz. Per piece 10c 6A9327—Silver, Pure. Shipping weight, 3 oz. Per piece 10c 6A9328—Zincite, 100 per cent pure. Shipping weight, 3 oz. Per piece 35c 6A9329—Soft Metal, for mounting minerals. Melts in hot water. Piece large enough to mount two minerals. Shipping weight, 5 ounces. Per piece 10c

Triple A Grade Minerals.

These minerals are from the same high grade stock as our Arlington Tested Minerals, but they are suggested to hobby 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. Minerals are specially recommended to radio clubs, experimental stations, etc. Shipping weight, per 1-ounce box, 3 ounces. 6A9288—Triple A Galena. 1-ounce box. 25c 6A9289—Triple A Silicon. 1-ounce box. 25c

Arlington Tested Minerals.

Each Arlington Tested Mineral has been individually tested and unless it is shown extraordinary results is discarded. They must be in easy stations box and clear. Individually wrapped and packed and sealed in a box. Each mineral is guaranteed to give satisfaction. Shipping weight, per crystal. 6A9289—Special Tested Galena. Per crystal. 21c 6A9288—Arlington Tested Silicon. Per crystal. 21c
Standard Double Slide Tuning Coil

**$2.98**

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

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

High Grade ¼-Inch Slider.

Made to fit ½-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, 3 ounces.

6A9698—¼-Inch Slider.................21c

Round Brass Rod.

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

6A9479—½-inch diameter, 2-foot lengths. Shipping weight, 1 pound.

Each, 12c; per dozen ..................$1.00

6A9480—⅜-inch diameter, 2-foot lengths. Shipping weight, 1 pound.

Each, 13c; per dozen ..................$1.15

Slider Rod.

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

6A9263—9-inch rod. Shipping weight, 8 ounces. 21c

6A9265—14-inch rod. Shipping weight, 14 oz. .33c

Grade M Formica Panel


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Receiving Transformer—Improved Model

**$6.55**

Bakelite Coil Head. Capacity, 2,500 Meters.

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

Size of base, 18¾ x 24 inches. Shipping weight, 14 pounds.

6A9333—Receiving Transformer ............ $6.55

Navy Type Receiving Transformer

**$13.95**

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

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 300 meters and 3,500 meters, which includes all amateur stations, the 600-meter commercial stations and the large Government time stations. Size of base, 18¼ x 24¼ inches; height, 7 inches. Shipping weight, 25 pounds.

6A9259¼—Navy Type Receiving Transformer...$13.95
An Evening's Entertainment

with the Loud Speaker

Dictograph

Loud Speaker.

Regardless of the form of your radio receiving set, whether it is just a homemade receiving unit or one of the more 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. Here is a two-stage amplifier 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 standards of a radio receiving set. The 11-inch burned iron 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 real piano base to avoid marring highly polished surfaces. Its splendid finish and pleasing design make it at home in any receiving set having two stages of amplification. The shipping weight, 11/4 pounds.

$18.95

6A9769—Dictograph Loud Speaker.


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 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 and allow the needle to rest on the small center element of the Meteor Junior. This ingenuous instrument, which eliminates the necessity of numerous expensive head phones when entertaining a roomful of people, is a true economy. The Meteor Junior is an instrument that will improve any radio set. Put one on your phonograph today and realize the possibilities of radio music for quality of tone. Can be used with any receiving set having two stages of amplification. Shipping weight, 1 pound.

$11.60

6A9780—Meteor Junior

HIGH GRADE

HEAD PHONES

$11.80

$3.60

$6.96

$5.96

$6A9601—Baldwin Improved Headphones, Type E. Per pair.......
$11.90

$6A9604—Brandes Navy Headphones. Per pair...........
$12.20

Brandes Head Phones.

These Matched-Tone Head Sets will give maximum service for many years. The phones 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 weigh balanced head band which permits proper adjustment of receivers. Also furnished with polarity indicating cord. The receiving units are highly polished aluminum and hard rubber, the conducting cords black and the head band is nickel finish, with olive green plastic covering. The receivers are very efficient and sound appearance. Shipping weight, 1 3/4 pounds.

$4.96

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

Frost Head Phones.

High grade and popular phones at a price within the reach of all. These phones can be relied upon to be sensitive, and tests show that they can be used to good advantage in loud speaker and broadcast work. The resistance is of the double magnet type, and the metal diaphragm is carefully adjusted in relation to the magnets. The weight is about 5 1/2 ounces. All are of the same type. Shipping weight, 1 1/2 pounds.

$12.60

$14.30

6A9211—Frost Head Phones, 2 ohms. Per pair...........

6A9212—Frost Head Phones, 3 ohms. Per pair...........

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Sears, Roebuck and Co.
Audiotron Detector and Amplifier Tubes

$4.60
E. J. Cunningham $6.15

Amateurs' Favorite Since 1915

What the C-300 Tube Is.

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

How C-300 Is Made.

An entirely new method is used in the manufacture of type C-300. With an internal structure from which all occluded gases can be removed, the evacuation is carried to a high degree. After this a definite pressure of inert non-occluded gas is admitted, and this process is perfectly controlled. The type C-300 tube possesses a nearly perfect uniformity in plate voltage, signal audibility and sensitivity, 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 220 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 GA950 Amplifying Transformer.

Specifications.

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

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

Bulb: Pear shape clear glass; maximum diameter, 1 3/4 inches; maximum over all height, including base, 4 1/2 inches.

Base: Standard four-prong type with brass shell.

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

Plate Voltage: 40 to 100 volts.

Grid Leaks: 1/2 megohm (approximate).

Condenser: .001 to .005 MFD.

Shipping weight, 1 pound.

6A9650—Audiotron Detector Tube $4.60

Radiotron Detector Tube—Type UV-200.

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

6A9438—Radiotron Detector Tube $4.60

Power Tubes for C. W. Telegraphy and Telephony.

Cunningham Audiotron Power Tubes.

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

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<th>Model</th>
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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:

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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 is made to handle these products as a product which will operate economically and satisfactorily. Vacuum tubes should be handled only 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 manufacturers' specifications we cannot allow claims for short life, defective operation, etc.
Vacuum Tube Rheostats

Panel Mounting Rheostat. Improved Model.

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, a mere substitute. The ordinary porcelain has proved unsuitable for high frequency work. The modern improved design for Nos. 2G9430-2G9435 is a high quality unit, especially designed for maximum efficiency in the latest microwave tubes. It is specially manufactured for switching and controlling of vacuum tubes. It incorporates all the latest improvements in design. The case is molded into a special die made of Bakelite. The entire panel is designed completely, and the control rheostat is mounted on a Bakelite disc 2 inches in diameter; 4 ohms resistance with a carrying capacity of 1/2 ampere. It is especially designed for high frequency use. The resistance control of vacuum tubes operating on 4 or 5 volts. The resistance unit is non-corrosive alloy and can be readily removed. All metal parts are nickel plated and those showing in front of panel are bright polished nickel. A true rheostat, eliminating the necessity of a filament switch. Furnished complete with molded Bakelite knob, shaft, nickel plated pointer and supporting screws. Contact lever must be carefully adjusted for maximum smoothness and signal audibility. This rheostat will increase your detection sensitivity and the ease of adjustment and the close control it provides. The large number of these rheostats now in use test to their value and efficiency.

Junior Panel Rheostat.

- 6A9721—Junior Panel Rheostat, 4 ohms resistance. Shipping weight, 2 ounces.

Micrometer Vernier Rheostat.

This rheostat may be used where the finest filament adjustment is necessary. The resistance is controlled by varying the contact pressure of the rheostat lever. The screw adjustment permits a critical current regulation. The rheostat is of rugged construction with a 1½ in.-wide Bakelite knob, ¼ in.-thick shaft. Fitted with 1½-in. Bakelite knob with ¾-in.-thick shaft, all parts are nickel plated. The rheostat has a capacity of 4 ohms and total resistance of 8 ohms. Furnished with two screws for panel mounting. Shipping weight, 8 oz.

Nichrome-Asbestos Rheostat.

A high-grade panel mounting rheostat. Resistance element made from "Nichrome" wire and is mounted on a block of asbestos covered with Bakelite. The rheostat is turned uniformly and is 2 inches in diameter; 3 inches in thickness; 1½ inches in width. Made to fit directly around the center of the filament socket. Contact lever made of phosphure bronze laminations and 3½ in.-thick Bakelite discs. 1½ inches in diameter; 3 inches in length. All metal parts are nickel plated. Built with 6 ohm resistance, 3 amperes. Fitted with Bakelite knob. Shipping weight, 1 pound.

Audiotron Potentiometer. New Type. Metal Contact.

Detector tubes for maximum sensitiveness and signal audibility require careful adjustment of the audio frequency. The potentiometer unit, both A and B battery voltage, single cell variation of the voltages is generally not sufficient. The ideal B battery control is by potentiometer, but in the past that form of control has shortened the B battery life. The electrical contact between graphite and carbon is also uncertain and variable. In tube operation the A and B batteries are in series and the plate voltage can therefore be adjusted over a 6-volt range by a potentiometer across the filament of A battery. The new gas coned detector tubes, such as Fuchtingh Type C-300, always have a positive range between 18 and 28½ 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 may control the filament plate voltage. The resistance unit is mounted on a specially designed Bakelite knob and is not brittle like graphite or carbon. Eleven nickel plated metal inserts are molded into the resistive unit, the 24-contact lever, and therefore perfect metal to metal electrical contact. The resistance is not affected by heat and is non-corrosive. The Audiotron Potentiometer unit is designed specifically for use with Audiotron Potentiometer. The unit is designed specifically for use with Audiotron Potentiometer. The unit is designed specifically for use with Audiotron Potentiometer. It is designed specifically for use with Audiotron Potentiometer.

Audiotron Potentiometer Unit, complete with 20 gauge, 22½-volt plate voltage. 6A9667—Audiotron Potentiometer Unit, complete with 20 gauge, 22½-volt plate voltage.

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. Rheostate frame is turned from sheet metal. Resistance unit is made from high grade alloy wire, fitted with laminated lever which rotates from maximum to "OFF" position. Capacity, 6 ohms. 3 amperes. Dial is our special rheostat dial shown at the right. Complete with porcelain base, 6A9679—Porcelain Base Rheostat. New Model. $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 dimension: 3½ inches; height at top of case, 3½ inches; to top of front mounted handle, 3½ inches; for use on any table 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, with the use of a metal contact lever, and therefore perfect metal to metal electrical contact. The resistance is not affected by heat and is non-corrosive. The Audiotron Potentiometer unit is designed specifically for use with Audiotron Potentiometer. The unit is designed specifically for use with Audiotron Potentiometer. The unit is designed specifically for use with Audiotron Potentiometer. It is designed specifically for use with Audiotron Potentiometer. 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Audiotron Bakelite Molded VarioCoupler and 180° VarioCoupler

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 3/4 inches and the shaft is of brass, 3/8-inch diameter. Bushing post terminals are provided and brass support is shielded by a sturdy table mounting. The base at the front end is drilled and tapped to permit panel mounting. Only one bearing is necessary for the bushing, which fits, with a spring, insuring perfect contact. The over-all height on table mounting is 5 1/2 inches and the ovel over all length, except the protruding end of the shaft, is 5 inches. The total width of the vario-meter across the stator is 3 inches. This is an extremely large vario-meter, permitting the use of low resistance windings and the wave length is approximately 175 to 500 meters. This vario-meter is not to be compared with the small wooden types now on the market. Shipping weight, 3 pounds.

6A9781—Audiotron VarioMeter

$6.65

6A9782—Audiotron VarioMeter with 6A9666 Knob and Dial. Shipping weight, 3 pounds. $6.20

VarioMeter.

Wood parts are of thoroughly kiln dried stock, accurately turned and carefully finished. Starter 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 length, and fitted flush with wood forms, allowing vario-meters to be mounted flat on the bearing itself without spacers, and also insuring rigidity and permanency of space between rotor and stator windings.

Special design 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 4 x 4 x 4 inches. Shipping weight, 3 pounds.

6A9684—VarioMeter

$3.38

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 dis-color. 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 screws are required. The graduation scale reads from right to left.

The edge of each dial is ground true. The knob is molded Bakelite, 1 1/4 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 3/8-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, giving a pleasing style, 4 ounces.

6A9666—1-Inch Bakelite Dial with knob and bushing. $57c

6A9669—Same as 6A9666, with 3/4-inch bushing. $57c

Composition Dial.

This dial practically the same in general appearance as the high grade dial shown above, but is of composition. Supplied with bushing and set screw. Will fit either 3/4 or 3/8-inch shaft. Shpg. wt., 6 oz.

6A9312—Composition Dial 26c

Beveled Metal Dials—Polished Nickel Plated.

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

6A9739—Same as 6A9648, except beveled edge. 88c

6A9790—Same as 6A9877, except beveled edge. 88c

6A9791—Same as 6A9788, except beveled edge. 88c

6A9792—Same as 6A9682, except beveled edge. 88c

Audiotron VarioCoupler.

This vario-coupler has an entirely new feature; namely, that the coupling range is 180 degrees instead of 90 degrees (as is the case with other vario-couplers). The primary winding is green silk covered wire wound on a fiber tube, 4 inches in diameter by 2 1/4 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 1 3/8 inches in height and is, therefore, readily mounted on either a table or panel. The shaft is 3/4 inch and the rotor is 3 1/2 inches maximum diameter. The overall height, including base, is 5 inches, and the total length, including shaft extension, is 4 1/4 inches. This coupler will turn over a range of 180 to 500, or over a range of 300, 500, or 900, and has a secondary vario-meter and with secondary condenser of 0.01 MFD, will tune to 700 meters. Shpg. wt., 3 lbs.

6A9784—Audiotron VarioCoupler with 6A9666 Knob and Dial.

Shipping weight, 3 pounds. $4.72

VarioCoupler.

VarioCoupler winding is made over formica tubing 3/4 inches in diameter, the wire having raised points for taps.

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

BEARING STANDARDS are of flat brass stock, the entire length of the shaft itself is used, assuring good contacts between rotor windings and bearing standards without "pig-tailing."

Vario-Coupler may be mounted on back of panel or directly on table, as desired. Vario-Coupler is completed by assembled Primary wire No. 20-gauge and rotor wire is No. 22-gauge. Shipping weight, 2 pounds.

6A9685—VarioCoupler

$3.42

High Grade Indicating Dials

High Grade Medal Dials With Bakelite Knobs.

Condenser and VarioCoupler Dials.

Made of brass, satin nickel finish, with scales as illustrated. Dials rotate clockwise and are 2 1/2 inches in diameter. Each fitted with high grade T.M. molded Bakelite knob with knurled edge. Drilled for 3/8-inch shaft and fitted with set screw. These dials are very pleasing in appearance and are specially suited for use with portable variable condensers, small vario-meters, etc. Shipping weight, each, 5 ounces.

6A9648—Metal Dial with Knob. Scale, 0 to 100. 10c

6A9787—Metal Dial with Knob. Scale, 0 to 50.... 8c

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 Bakelite knob with knurled edge. Drilled for 3/8-inch rod and fitted with set screws. Dials have graduations and lettering as illustrated. Shipping weight, each, 5 ounces.

6A9788—Rheostat Dial, Scale, off to 1 to 100.... 52c

6A9682—Rheostat Dial 1 with word "Increase".. 52c

Dial Indicator Point.

For use with the above condensers; polished nickel plated brass in heavy center line, easily seen; fitted with one nut and suitable for use on all panels up to 3/4 inch thick; can be used with any dial.

6A9678—Shipping weight, 1 ounce. Each, 6c; 1/2 dozen, 27c.
Variable and Fixed Condensers

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

Heavy material used for making plates—No. 22 gauge hard sheet aluminum is used for all plates. This feature gives such stability that the rotator plate is not likely to 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 all plates, which is only .015 inch in thickness. While No. 22 gauge measures full .036 inch in thickness.

Oil Containers—6A9292 and 6A9294, portable, are made in oiltight containers, made from sheet brass, beautifully nickel plated and polished. Ground plate may be soldered to bottom of case. Gears are turned from sheet brass. Engraved 0-100 degree metal dial is used with indicating arrow engraved in top. Bakelite knob in center of dial is made from special bakelite and nickel plated and polished.

Spring Balance—The finest adjustment may be had by means of a coil spring instead of the usual clamp which holds the rotary plates in alignment. Well 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.

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 apparatus demanding a condenser at a low price. Panel mounting, 43 plate; 21 rotary, 22 stationary. Capacity, .001 MFD. Complete with mounting screws for panel. Shipping weight, 2.4 pounds.

6A9298

Panel mounting, 21 plate; 10 rotary, 11 stationary. Capacity, .002 MFD. Complete with mounting screws for panel. Shipping weight, 1.9 pounds.

6A9299

Panel mounting, 11 plate; 5 rotary, 6 stationary. Complete with screws for mounting. Shipping weight, 1.5 pounds.

6A9300

Panel mounting, 3 plate; 1 rotary, 2 stationary. Complete with mounting screw, shipping weight, 1 pound.

6A9303

Mica Grid Condenser and Grid Leak Combined.

Base and top made from formica sheet, base is 2% x 1 1/4 inch, top is 1 1/4 x 1 1/2 inch; grained finish. Best India mica is used; size, 1 1/8 x 0.001 inch. Active copper strip measures 1 1/8 x 0.0011/2 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 bakelite insulators. .0005 MFD. Adjustable grid leak of about 2 megohms, made of grey fiber. This unit will be found useful for panel mounting, as it is very compact. Shipping weight, 4 ounces.

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

Pony Glass Plate Condenser.

We recommend this condenser for anyone desiring a small 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. Condensers consist of special 3 x 6 plates, isolated with tin foil and bounded into a case, enclosed in a neat dark stained case with binding posts. Capacity, .0005 MFD. Tested to 15,000 volts.

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, 65c.

6A9625—Interior only

Tubular Fixed Condenser.

Can be used with great success in the receiving circuit. A neat little condenser. The bases and plates are made of hard rubber composition and are mounted on a nickel plated tub. Capacity, .003 MFD. Shipping weight, 10 ounces.

6A9400—Tubular Fixed Condenser. 90c

Audiotron Variable Grid Leak.

A grid leak is necessary in the operation of vacuum tube detectors and amplifiers to permit the negative charge on the grid to discharge. A variable grid leak is most desirable, as the necessary resistance may vary from 14 to 5 megohms. All parts of the Audiotron Grid Leak is molded from Bakelite and a pen cil type binding post studs provides the variable resistance or leak. The metal cap is finished in black cellouild enamel and the studs are of bakelite. This unit is very popular and is an ideal "stopping" condenser for use across the receiver. This type is 2 inches in diameter. Shipping weight, 8 ounces.

6A9411—Junior Fixed Condenser in case. 64c

Fixed Condenser.

Made of hard rubber composition with nickel plated binding posts. A neat little condenser which will increase the efficiency of the station. It is often used to plug across the receivers. Terminals are fitted with special cord tip clamps. Size, over all, 2% x 1 1/4 inches. Heavy duty, 5 ounces.

6A9264—Fixed Condenser. 65c

Audiotron Fixed Grid Condenser.

The condensers are stamped from copper sheet and insulated with paper and aluminum. The entire unit is incased and inregurated and the terminals are fixed in the back of the panel directly on the 6A9659 Grid Leak. Capacity, .00025 MFD, the correct value for the type C-300 Gas Condenser. Shipping weight, 1 ounce.

6A9660—Audiotron Fixed Grid Condenser. 15c

Variable Condenser Parts.

Plates.

Plates are made from sheet aluminum .026 inch thick, which is much lighter than ordinary condensers. Capacity, .001 MFD. Plates are carefully inspected to insure a perfectly smooth and clean plane. They can be assembled into a very rugged condenser of any desired capacity. Stationary plate measures .001 MFD in diameter; 1 7/8-inch radius. Rotary plate measures .0005 MFD in diameter; 1 1/8-inch radius. 6A9579—Aluminum Stationary Plates. Shipping weight, each 2 oz. Each, 4c; 10 for 30c; 50 for 95c; 100 for $1.60. 6A9509—Aluminum Rotary Plates. Shipping weight, each 2 oz. Each, 3c; 10 for 27c; 50 for 95c; 100 for $1.60.

Steel Spindle.

6A9758—Accurately turned from hard steel; 15 plate size; complete with brass nut. Shipping weight, 8 ounces.

Each, 35c; 6 for $1.00. 6A9759—Same as 6A9758, except 21 plate size. Each, 60c; 6 for $1.00.

Stationary Suts.

Made entirely from brass, complete with regulating nut and screw. Each 30c; 6 for $1.00. 6A9760—4 plate size. Each, 20c; 6 for $1.08. 6A9761—21 plate size. Each, 18c; 6 for $0.96.

Gauged Plate Spacers.

$2.00. 6A9762—Large size, 3 1/8 in. thick. Per dozen, 4c; 100 for $11.75. 6A9787—Small size, 5/8 in. thick. Per dozen, 12c; 100 for $1.00.

Junior Fixed Condenser.

This unit has a capacity of .0016 MFD, and is mounted in a small black molded case with nickel plated binding screws. This type of condenser is very popular and is an ideal "stopping" condenser for use across the receivers. This type is 2 inches in diameter. Shipping weight, 8 ounces.

6A9411—Junior Fixed Condenser in case. 64c

SEARS, ROEBUCK AND CO.
Vacuum Tube Sockets

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

All Bakelite Molded Tube Socket for Panel or Table Mounting. Elimination of the usual metal shell in the construction of the tube receptacle eliminates the ground hum and noises in operation, so frequently encountered in the operation of amplifiers. This receptacle is designed for all standard four-prong base vacuum tubes. The entire socket is molded from black Bakelite, giving a highly polished surface, and the bayonet lock is reinforced with metal insert. The base of socket is of sufficient depth to allow clearance between contact fingers and surface when used for table mounting. The die molding insures absolute uniformity and accuracy of alignment. The contact fingers are nickel plated spring brass. Nickel plated binding post terminals are marked. Screws are provided for panel mounting. When mounted on panel the rest of the tube is set vertically, insuring maximum filament life. Each receptacle is tested. Base is 2¼ x 2¼ inches and the height is 1½ inches. Shipping weight, 6 ounces.

Porcelain Socket. Made in one piece of porcelain, the same material that is used in the base of the vacuum tube to insulate the four prongs, thus recognizing the high dielectric value of porcelain for this purpose. The contacts are of special strong material, plated to eliminate corrosion of the contacts. The wires can be soldered to the contact posts without fear of melting the material of which the socket is made. Socket is designed to prevent short circuiting the high voltage B battery current across the filament contacts, thus eliminating the danger of burning out the filaments through carelessly inserting the tube. This feature alone commends it for use in all kinds of apparatus. Will fit any standard four-prong tube base. Shipping weight, 8 ounces.

Transformers

Special Amplifying Transformer for New Cunningham Audiotron Type C-301 and Radiotron Type U V-201 Tubes. Especially designed for the new Audiotron and Radiotron Amplifier tubes. The result of exhaustive tests of every kind. Better results are obtained by using this transformer, as it is designed for these tubes. Other transformers were designed for general use before these new tubes were placed on the market. They are the most important factor entering into the construction of a transformer is the size wire used. Specifications are: Primary Winding—5,000 turns No. 44 B. & S. gauge enamelled wire. Secondary Winding—12,000 turns No. 44 B. & S. gauge enamelled wire. Secondary Resistance—800 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 base of transformer. Over All Size—3 inches high; 1¼ inches wide.

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 broadcasting lengths from 150 to 550 meters. Shipping weight, 1 pound.

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 tubes as he desires. High grade construction throughout. Specifications: Primary, winding, 4,000 turns No. 40 B. & S. gauge enamelled wire, secondary resistance—800 ohms (approximately). Secondary winding, 15,000 turns No. 40 B. & S. gauge enamelled wire. Secondary resistance, about 5,000 ohms (approximately). All insulation is varnished cambric and silk. Binding posts are on Bakelite top. Core of 0.007 silicon steel. Frame is heavy copper, brushed finish.

Type A-700 Amplifying Transformer. This transformer differs in construction from others in the design of the magnetic circuit. Transformer is of the shell type, as shown. It is possible to place two or these transformers in an amplifying unit where they are very close together, without any ill effects, such as howling, which quite often happens in other type transformers, on account of promagnetic coupling between transformers. Primary and secondary terminals are brought out on Bakelite panel, which is nicely finished and engraved. Shipping weight, 1 pound.

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**SEARS, ROEBUCK AND CO.**

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| WHA | WHB | WHC | WHD | WHE | WHF | WHG | WHH | WHI | WHJ | WHK | WHL | WHM | WHN | WHO | WHP | WHQ | WHR | WHS | WHT | WHU | WHV | WHW | WHX | WHY | WHZ |

Radiophone Broadcasting Stations

| WLAR | Samuel Woodworth | WLAB | WLC | WLD | WLE | WLF | WLG | WLH | WLJ | WLL | WLM | WLN | WLO | WLP | WLR | WLS | WLT | WLU | WLV | WLD | WLF | WLG | WLL | WLM | WLN | WLO | WLP |
| WLAR | WLAB | WLC | WLD | WLE | WLF | WLG | WLH | WLJ | WLL | WLM | WLN | WLO | WLP | WLR | WLS | WLT | WLU | WLV | WLD | WLF | WLG | WLL | WLM | WLN | WLO | WLP | WLR | WLS | WLT | WLU | WLV | WLD | WLF | WLG | WLL | WLM | WLN | WLO | WLP | WLR | WLS | WLT | WLU | WLV | WLD | WLF | WLG | WLL | WLM | WLN | WLO | WLP |

459

SEARS, ROEBUCK AND CO.
Jacks, Plugs and Binding Posts

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 3/4, 3/8 or 1/2 inch panels. Length, over all, 3 1/8 inches. Insulation is of high grade and will withstand 110-volt breakdown. Half of the threads are of nickel silver and contact points of pure silver and has highly buffed finish. Sturdy construction, perfect spring adjustment, gripping contact screws 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 wiring. The terminals are heavily silvered. Shipping weight, 6 ounces.

Radio Plug.

This plug will fit all standard jacks; finished in cord rubber insulation and best non-conductor bushings. The plug is mechanically correct in construction and requires no special tools for connecting. The cord tips are brought through the handle and inserted in the screw assembly shown in the direction for fastening the cords. Length, over all, 1 inch.

Cord Tip Plug.

With this new type of plug your receiver tip ends are inserted in the distance when placed in spreader. Length, over all, 2 1/2 inches. Shipping weight, 8 ounces.

Cord Tip Jack—Improved Model.

Does away with protruding binding posts, and forms a means of quickly changing jacks; finished in cord rubber Jack is nickel plated brass, fitted with one nut for holding plug. Jack will take any standard telephone receiver tip end. Jack is complete with cord tip of standard size. This jack is used on our "H" Series Panel. Shipping weight, each, 4 ounces.

Polarity Indicating Plugs, With Jack.

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

Formica Cord Tip Spreader.

Many amateurs mount two or three jacks, using with head sets and for use in making quick changes on direct current and amplifiers, etc. Cord tip spreader provides a means of mounting the cord tip plug, enabling them in 4 pieces to be changed in one operation. Jacks should be placed on panel so as to be the proper distance between tips in order to prevent spreading. Length, over all, 3 1/4 inches. Spreader is made of formica, grain satin finish, fitted with two brass screw nickel plated and highly polished. Shipping weight, 2 ounces.

The Leader Binding Posts.

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

The Leader 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.

Formica Cord Tip Spreader.

Multiplunctype Radio Plug.

This multiplunctype plug enables you to use four or less jacks, together with one jack. It is constructed so that when two or more jacks are to be handled, they are in series, as they are wired in theCuinonng of connecting them, the springs are obtained by this method so that the phone connections are multiplied in width. With each multiplunctype plug we furnish three tips in each jack, so as to complete the connection it is necessary for all terminals to be occupied. Length, over all, 3 1/4 inches. Shipping weight, 3 1/2 ounces.

Universal Helix Clip.

Formica Cord Tip Spreader.

Multiplunctype Radio Plug.

Copper Connecting Links.

Used for making connections on the Helix and Oscillation Transformers. Nickel plated. Length, 1 inch; wide, 1/4 inch. Shipping weight, 1 oz.

Lacquered Brass Binding Posts.

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

Copper Connecting Links.

Universal Helix Clip.

Lacquered Brass Binding Posts.

Copper Connecting Links.

Universal Helix Clip.

Copper Connecting Links.

Universal Helix Clip.

Lacquered Brass Binding Posts.

Copper Connecting Links.

Universal Helix Clip.

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.

Copper Connecting Links.

Universal Helix Clip.

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.

Copper Connecting Links.

Universal Helix Clip.
**Honeycomb Coils, Plugs and Mountings**

"OSA" Honeycomb Coils.

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

- **Coil Only. Not Mounted.**
  
<table>
<thead>
<tr>
<th>Catalog</th>
<th>No. of Shpg.</th>
<th>No. of Turns</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>6A9699</td>
<td>25</td>
<td>6 oz.</td>
<td>4 ec</td>
</tr>
<tr>
<td>6A9700</td>
<td>35</td>
<td>6 oz.</td>
<td>4 ec</td>
</tr>
<tr>
<td>6A9701</td>
<td>35</td>
<td>6 oz.</td>
<td>4 ec</td>
</tr>
<tr>
<td>6A9702</td>
<td>75</td>
<td>6 oz.</td>
<td>4 ec</td>
</tr>
<tr>
<td>6A9703</td>
<td>150</td>
<td>8 oz.</td>
<td>4 ec</td>
</tr>
<tr>
<td>6A9704</td>
<td>150</td>
<td>8 oz.</td>
<td>4 ec</td>
</tr>
<tr>
<td>6A9705</td>
<td>300</td>
<td>9 oz.</td>
<td>4 ec</td>
</tr>
<tr>
<td>6A9706</td>
<td>250</td>
<td>11 oz.</td>
<td>4 ec</td>
</tr>
</tbody>
</table>

Tapped Honeycomb Coil Unit.

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

<table>
<thead>
<tr>
<th>Catalog</th>
<th>No. of Shpg.</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>6A9714</td>
<td>25</td>
<td>1 lb.</td>
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<tr>
<td>6A9716</td>
<td>35</td>
<td>1 lb.</td>
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<tr>
<td>6A9717</td>
<td>35</td>
<td>1 lb.</td>
</tr>
<tr>
<td>6A9719</td>
<td>35</td>
<td>1 lb.</td>
</tr>
<tr>
<td>6A9720</td>
<td>100</td>
<td>1 1/4 lbs.</td>
</tr>
<tr>
<td>6A9721</td>
<td>150</td>
<td>1 3/4 lbs.</td>
</tr>
<tr>
<td>6A9722</td>
<td>250</td>
<td>2 lbs.</td>
</tr>
</tbody>
</table>

Universal Coil Mounting.

This makes honeycomb coil up to 1,500 turns. One end of the fiber coil loop is fixed to the Honeycomb coil by Bakelite coil retaining plug and the other end is adjustable to any size coil as shown. Shipping weight, 3 pounds.

<table>
<thead>
<tr>
<th>Catalog</th>
<th>No. of Shpg.</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>6A9734</td>
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<td>0.5 oz.</td>
</tr>
<tr>
<td>6A9735</td>
<td>35</td>
<td>0.5 oz.</td>
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<tr>
<td>6A9737</td>
<td>50</td>
<td>0.5 oz.</td>
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<tr>
<td>6A9738</td>
<td>75</td>
<td>0.5 oz.</td>
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<tr>
<td>6A9739</td>
<td>100</td>
<td>0.5 oz.</td>
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<tr>
<td>6A9740</td>
<td>150</td>
<td>0.5 oz.</td>
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<tr>
<td>6A9741</td>
<td>200</td>
<td>0.5 oz.</td>
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<tr>
<td>6A9742</td>
<td>250</td>
<td>0.5 oz.</td>
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<tr>
<td>6A9743</td>
<td>300</td>
<td>0.5 oz.</td>
</tr>
<tr>
<td>6A9744</td>
<td>400</td>
<td>0.5 oz.</td>
</tr>
<tr>
<td>6A9745</td>
<td>500</td>
<td>1 lb.</td>
</tr>
<tr>
<td>6A9746</td>
<td>600</td>
<td>1 lb.</td>
</tr>
<tr>
<td>6A9747</td>
<td>750</td>
<td>1 lb.</td>
</tr>
<tr>
<td>6A9748</td>
<td>1,000</td>
<td>1 lb.</td>
</tr>
<tr>
<td>6A9749</td>
<td>1,500</td>
<td>1 lb.</td>
</tr>
</tbody>
</table>

Bakelite Plugs.

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

**Stationary Panel Mounting Plug.**

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

**Variable Panel Mounting Plugs.**

Used in making the variable panel mounting on any honeycomb radio sets. They receive the coil retaining plugs of the variable honeycomb show. Plug is drilled for use with Extension Handle. 6A9645 shown below as at A.C. panel mounting plug. Extension Handle 6A9645 are accepted fit with any variable panel mounting plug. Order by catalog number.

<table>
<thead>
<tr>
<th>Catalog</th>
<th>No. of Shpg.</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>6A9645</td>
<td>25</td>
<td>0.14 lbs.</td>
</tr>
<tr>
<td>6A9646</td>
<td>25</td>
<td>0.14 lbs.</td>
</tr>
</tbody>
</table>

**Coil Retaining Plug.**

Many amateurs have honeycomb coils without mounting plugs. By using a fiber strip, tape or some other material, coils may be mounted to this plug. Brass strip is inserted in the plug, making soldered contact to coil leads. Fitted with nickel plated brass strips for securing coil mounting. Shipping weight, 4 ounces.

**Extension Handle.**

Same as used on 6A9550 Coil Mounting. Made from brass rod, nickel plated and polished. Fitted with molded insulated handle. Threaded to fit variable panel mounting plugs and furnished with locknut. Length, 5 1/4 inches. Shipping weight, 3 ounces.

<table>
<thead>
<tr>
<th>Catalog</th>
<th>No. of Shpg.</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>6A9665</td>
<td>25</td>
<td>0.24 lbs.</td>
</tr>
</tbody>
</table>

**Pacent Duo-Laterally Honeycomb Coils.**

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

<table>
<thead>
<tr>
<th>Catalog</th>
<th>No. of Shpg.</th>
<th>Weight</th>
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<tbody>
<tr>
<td>6A9755</td>
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<td>0.42 lbs.</td>
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<tr>
<td>6A9756</td>
<td>35</td>
<td>0.50 lbs.</td>
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<tr>
<td>6A9757</td>
<td>50</td>
<td>0.88 lbs.</td>
</tr>
<tr>
<td>6A9758</td>
<td>75</td>
<td>1.24 lbs.</td>
</tr>
<tr>
<td>6A9759</td>
<td>100</td>
<td>1.68 lbs.</td>
</tr>
<tr>
<td>6A9760</td>
<td>150</td>
<td>2.55 lbs.</td>
</tr>
</tbody>
</table>

**Portable Three-Coil Mounting.**

Comprises one or two such variable Bakelite panel mounting plugs mounted on Bakelite panel as shown. The two variable plugs are fitted with cluster handles so that the operator’s hand is far enough away from the coils to prevent any capacity effect while tuning. Rear of panel is fitted with six binding posts. Unit is supported by two black enameled brass rods, 3 1/2 inches high, mounted on black wooden base. Size of base 6 1/8 x 4 1/4. 1/3 inch in diameter of binding post, 1/4 inch width, 3 1/2 inches high. Shipping weight, 5 pounds.

<table>
<thead>
<tr>
<th>Catalog</th>
<th>No. of Shpg.</th>
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<tbody>
<tr>
<td>6A9750</td>
<td>25</td>
<td>1.80 lbs.</td>
</tr>
<tr>
<td>6A9751</td>
<td>35</td>
<td>2.14 lbs.</td>
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<tr>
<td>6A9752</td>
<td>50</td>
<td>2.55 lbs.</td>
</tr>
<tr>
<td>6A9753</td>
<td>100</td>
<td>4.82 lbs.</td>
</tr>
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</table>

**Extension Handle.**

Same as used on 6A9550 Coil Mounting. Made from brass rod, nickel plated and polished. Fitted with molded insulated handle. Threaded to fit variable panel mounting plugs and furnished with locknut. Length, 5 1/4 inches. Shipping weight, 3 ounces.

<table>
<thead>
<tr>
<th>Catalog</th>
<th>No. of Shpg.</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>6A9664</td>
<td>25</td>
<td>0.24 lbs.</td>
</tr>
</tbody>
</table>

SEARS, ROEBUCK AND CO.
Aerial Wire

Copperweld Antenna Wire.

Radio frequency currents, when conducted by wires at the sending station, are supposed to travel through a thin layer of metal along the exterior of the wires because of the phenomena of skin effect. All of the energy in the wires depends on the electrical conducting properties of this 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 strong enough to keep the antenna from swaying in the wind; this increases the receiving. Shipping weight, 100 feet, 1/4 pounds.

Per 100 feet 1/4 pounds $40 c
Per 200 feet 1/4 pounds $75 c

Aluminum Aerial Wire.

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

Per 50 feet (Shipping weight, 12 ounces) $ 2 c
Per 100 feet (Shipping weight, 1 ounce) 5 c
Per 1000 feet (Shipping weight, 15 pounds) 30 c

Bare Copper Aerial Wire.

Per foot and in standard coils as listed below. Not sold any other way.

Per 50 feet (Shipping weight, 1 ounce) 2 c
Per 100 feet (Shipping weight, 1 ounce) 4 c
Per 1000 feet (Shipping weight, 15 pounds) 30 c

No. 14 Triple Braid Weatherproof Wire.

No. 14-gauge wire is now approved by the National Board of Fire Underwriters for ground connections. This wire is much easier to handle than the 4 or No. 6-gauge wire previously required. It is well insulated. The work of installing is much easier and makes weather conditions better than rubber covered.

Per 100 feet (Shipping weight, 1 lb.) $ .23
Per 1000 feet (Shipping weight, 28 lbs.) $ .65

No. 6-Gauge Triple Braid Weatherproof Wire.

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

Per foot 6 lbs. $ .03

Brass Ribbon.

Hard drawn brass ribbon, 1 inch wide 1/4 inch thick. The right material for making oscillation transformers, etc. Also used extensively for connecting transmitting sets, etc. Shipping weight, 6 feet, 1 lb.

Per foot 10 c

Radio Towers.

Our steel Radio Towers are of extra strong construction and are properly proportioned and braced. Every corner post, brace, band girt and bolt is heavily galvanized after all coating, 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. The net result makes it a stronger and better weight tower and also prevents water from running up the corner post joints. The prices are for towers complete with platform, ladder, rod guides, truss, pit, bed plates, anchor posts and anchor plates, and building instructions for erecting. Regularly furnished in lengths of posts and plates for fastening in the ground, but can furnish special anchor plates for setting in ground if so ordered at the same price. Shipped from factory in INDIANA.

324 A150—60-Foot Radio Tower. Weight, 1,410 pounds $675.00
324 A151—70-Foot Radio Tower. Weight, 1,650 pounds $910.00
324 A152—80-Foot Radio Tower. Weight, 1,890 pounds $1,210.00

Office Wire:

Commonly known as annunciator or bell wire. Put up in 1/4 or 1-pound coils (150 feet to the pound). Shipping weight, 1/4 pounds.

No. 18 Insulated Copper Wire.

Commonly known as annunciator or bell wire. Put up in 1/4 or 1-pound coils (150 feet to the pound). Shipping weight, 1/4 pounds.

Per 1000 feet $ .47

Office Wire.

No. 10 Insulated Copper Wire.

Commonly known as annunciator or bell wire. Put up in 1/4 or 1-pound coils (150 feet to the pound). Shipping weight, 1/4 pounds.

Per 1000 feet $ .47

Simple Outside Aerials
Instructions on How to Build and Install

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

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

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

Aerial and Ground Parts

Aerial Connector Block.
The weakest point in most amateur stations is where the wires from the aerial join the lead-in. This aerial connector block does away with soldered joints and loose connections. It 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 1/8 inch thick. Shipping weight, 6 ounces. 6A9272—Aerial Connector Block 21c

Aerial Suspension Rope.
One-fourth inch in diameter. Made of good quality long fiber cotton, smoothly braided. Will give good service on any outside installation. Put up in bundles of 100 feet. Shipping weight, 2 1/2 pounds. 6A9369—Aerial Suspension Rope Per bundle 1.00

Aerial Suspension Pulley.
Galvanized iron pulley. Takes rope 3/8 inch or smaller; wheel, 1 1/2 inches in diameter. Ideal for use in suspending aerials. Shipping weight, 7 ounces. 6A9368—Aerial Suspension Pulley 8c

Anchor Gap.
In case the lightning switch is forgotten, the anchor gap protects the apparatus. It is connected between the ground and aerial wires. Made of hard rubber composition; ring with 1/2 inch adjustable electrodes. Shipping weight, 12 ounces. 6A9246—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 6c

One-Wire Porcelain Cleats.
Heavy One-Wire Porcelain Cleats for supporting aerial lead-in or ground wire. Shipping weight, one dozen cleats, 2 pounds. 6A9397—Each 3.00

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

The arrester consists of an all porcelain body, thoroughly weatherproof, enclosing circularly ribbed metal discharge plates, carefully insulated from each other and with their discharging areas separated by an air gap of 1/4 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 1/2-inch centers. Shipping weight, 1 1/2 lbs. 6A9417—Outdoor Lightning Arrester $1.48

Aerial Grounding Switch Outfit.
Consists of a 500-volt, 100-ampere switch mounted on a composition waterproof insulating base, 25 feet No. 6-gauge weatherproof wire and 3/4 dozen one-wire porcelain cleats. This makes a fine grounding outfit and should be installed with every station. Shipping weight, 14 pounds. 6A9431½—Complete Aerial Grounding Switch Outfit $2.98

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SEARS, ROEBUCK AND CO. 459
Simple Outside Aerials

(Continued)

Some of the best results in radio reception are obtained with the single wire aerial. We urge you to erect this type if you are fortunate enough to have two convenient objects from which you can suspend a single wire 75 to 125 feet long and raised at least 35 feet above the ground. However, the higher it is above the ground, the better. In case the distance between these objects is limited to less than 25 feet, that is anywhere from 50 to 75 feet, it is desirable to construct the two-wire type, spacing the wires about 2 feet apart. For an aerial of less than 50 feet, we recommend either the three-wire or four-wire type, spaced through wires not less than 18 inches apart. It is interesting to know that the number of wires is of little advantage in securing louder signals when the broadcasting station is nearby. But the addition of more wires to the single wire aerial does increase its capacity and long distance receiving, especially on high wave lengths.

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

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

Ground Connection.

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

Lightning Protection.

The lead-in wire from the aerial must be provided with an approved lightning arrester or aerial grounding switch properly connected and located outside the building as near as practicable to the point where the wires enter the building. In making an outside ground connection for the lightning arrester or grounding switch a galvanized iron ground rod driven 4 to 8 feet in the earth may be used. The illustration shows how to connect the aerial lead-in wire and the ground to the lightning arrester or grounding switch. We furnish an approved Lightning Arrester with our Aerial and Ground Outfits.

The National Board of Fire Underwriters require either an aerial ground switch or an approved lightning arrester. The switch must always be closed when you are not operating your set. See our Aerial Grounding Switch (unit 6A9434) on opposite page at bottom.

Aerial and Ground Outfits

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

Single Wire Aerial Outfit.

The complete outfit consists of:

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

Shipping weight, 7 pounds.

| 6A9435—Complete outfit | $3.18 |

Illustration Showing Single Wire Aerial Outfit.

Two-Wire Aerial Outfit.

The complete outfit consists of:

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

Shipping weight, 8 pounds.

| 6A9433—Complete outfit | $3.70 |

Three-Wire Aerial Outfit.

The complete outfit consists of:

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

Shipping weight, 9 pounds.

| 6A9433—Complete outfit | $3.84 |

Four-Wire Aerial Outfit.

The complete outfit consists of:

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

Shipping weight, 10 pounds.

| 6A9432—Complete outfit | $4.30 |
Switches

Murdock Aerial Switch.

Can be used with any size set up to 1 K.W. It enables the operator to meet this demand by offering a quick and positive means of connecting or disconnecting the aerial to the transmitter or receiver to or from the aerial.

The danger of damaging the receiving apparatus by accident by touching the transmitting key while the switch is in the receiving position is eliminated by the addition of a rubber blade in the rear, which opens the transmitting circuit when the key is actuated in the receiving position.

Base is hardwood, polished mahogany finish. The standard is rigid rubber composition, which provides good insulation. Switch blades are 8 inches long and 3 inches wide by % inch thick. Suitable for any aerial switch, 1 K.W. also very useful around the radio station for outdoor purposes. Shipping weight, 4 pounds.
6A9206

Double Pole, Double Throw Aerial Switch.

New and very popular type of aerial switch. Switch is heavy duty type, 30-ampere, 250 volt, 60 cycle, 6,000 volt, on slate base, 6% inches long by 4% inches wide by % inch thick. Suitable for any aerial switch. K. W., also very useful around the radio station for indoor purposes. Shipping weight, 4 pounds.
6A9405

Slate Base Aerial Switch.

Receives on double-pole side, transmits on three-side. Nifty finished angle blades. Mounted on slate base. 6% inches long by % inch wide by % inch thick. Suitable for any aerial switch. K. W. Shipping weight, 6 pounds.
6A9405-Slate Base Aerial Switch $2.67

Ground Switch.

The fire underwriters in many localities require a double throw, single pole switch, for grounding the aerial when not in actual use. This is a protection against lightning. The ground wire from the switch should be No. 6 gauge, and the switch should be at least 600 volts, 100 amperes, and no smaller than this switch. Double throw is mounted on a composition waterproof insulating base; capacity, 600 volts, 100 amperes. Length of base, 1% inch. Shipping weight, 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.
6A9860-Ground Switch—Parts only. Per set $1.65

Baby Knife Switches.

Double Pole Single Throw Switch.
Base % inch. Shipping wt., 4 oz.
6A8356

Double Pole Double Throw Switch.
Base % inch. Shipping wt., 4 oz.
6A8356

Single Pole Single Throw Switch.
Base % inch. Shipping wt., 2 oz.
6A8354

Single Pole Double Throw Switch.
Base % inch. Shipping wt., 3 oz.
6A8354

Wood Base Switches.

For use on telephones, closed circuit, bell systems, burglar alarms and battery circuits in general. Used in connection with 6A9200 Practice base and rubber base b a e with rubber oil finish. Shipping wt., 3 oz.
6A8550-1 point...10c 6A8552-3 point...16c

Electrose Insulators

6A9337-Wall Insulator...2% 2% 3% 250 40,000 250 6c 6A9338-Strain Insulator...1% 1% 3% 250 40,000 250 4c 6A9339-Pole Insulator...1% 1% 3% 250 40,000 250 4c

Wall Insulator.

For lead-in wires. Has % inch brass rod embeded in center. Diameter of holes, 3/6 inch long by all % inch in diameter. Shipping weight, 1% lbs.
6A9341-Special Wall Insulator $1.48

Commercial Wall or Roof Insulator.

Rain test, 25,000 volts; dry test, 55,000 volts. Length of insulator, 10 inches; height, over all, 1% inches; length below shoulder, 6 inches; diameter of base, 4 inches; diameter of shoulder, 3 inches; % inch locknut for wires. Shipping weight, 5 pounds.
6A9390-Commercial Wall or Roof Insulator $5.50

Electrose Extra Long Wall Bushing.

Polished black finish. Rain test, 20,000 volts; dry test, 40,000 volts. Length over all, 9% inches; length, threaded section, 6% inches; 1-inch locknut; diameter, threaded section, 1 inch; diameter of shoulder, 2 inches; tapping hole, % inch outside diameter, % inch inside diameter. Shipping weight, 4 pounds.
6A9388-Wall Bushing $1.80

High Voltage Lead Insulators.

These insulators provide very efficient means for carrying lead-in wires, ground wires and transmitter connecting links. Should be used on corners in roofs, on the wall or floor or wherever it is necessary to insulate properly. Small insulator is 40,000-volt Electrose molded type. Base is made from heavy iron strip with four mounting holes and is neatly finished in black. Copper jaw is suitable for holding high frequency cables. In case the iron base is used, the iron base should be tapped on to the insulator. Shipping weight, 6 ounces.
6A9320-High Voltage Lead Insulator. Height, 3% inches. Shipping weight, 2 lbs. Each, 1% lbs. 6A9290-High Voltage Lead Insulator. Height, 9 inches. Shipping weight, 3 lbs. Each, 1% lbs.

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. Weathered and increased, adding to the strength of the insulator. Size, over all, 2% inches long by 1% inches in diameter. Shipping weight, each, 5 ounces per dozen. 6A9273-Porcelain Strain Insulator. Each... .7c Per dozen. 76c

Commercial Wall Bushing.

Rain test, 35,000 volts; dry test, 60,000 volts. Length, over all, 9% inches; length, outside end, 5% inches; inside end, 6% inches; % inch locknut; diameter of base, 3% inches; diameter of shoulder, 2% inches; tapping hole, 3% inch, 3% inch outside diameter, % inch inside diameter. Shipping weight, 5 pounds.
6A9390-Commercial Wall Bushing $13.00

Upright Insulator.

Polished black finish. Used extensively on spark gaps, oscillation transformers, condensers, aerial switches, etc. Height, over all, 9% inches; diameter of base, 3% inches; diameter of top, 1% inch. Brass bushings, % inch in top and base. Shipping weight, 6 ounces.
6A9387-Upright Insulator 90c

Aerial Change-Over Switch.

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

The closing of the switch in the sending position closes the power circuit which starts the service switch in the placing the power at the disposal of the key.

Insulating and nickel parts are in satin finish. Switch measures 6 inches long, 3 inches wide and 4% inches high. Shipping weight, 2 pounds.
6A9408-Aerial Change-Over Switch $15.10

SEARS, ROEBUCK AND CO. 450
Morse Telegraph Instruments

Our Improved Learner’s Telegraph Outfits.

Consists of a full size solid trunion key and a 4-ohm sounder mounted on a polished hardwood base. Sounder lever, sounder points and key switch lever are of lacquered brass. Key lever is nickel plated and buffed. All parts are adjustable. A small instruction book, dry battery and connecting wire are included. Shipping weight, 6 pounds.

The Telegraph Instruct. $3.25

Our Special Learner’s Telegraph Outfit includes an improved 4-Ohm Learner’s Instrument, described above, battery and connecting wire. A copy of the Telegraph Instructor, a cloth bound 347-page textbook of telegraphy, is included instead of the small instruction book. Shipping weight, 7 pounds.

6A9153 $4.00


6A1977 $1.62

Our Double Learner’s Telegraph Outfit. This consists of two improved 4-Ohm Learner’s Instruments, four dry batteries, two instruction books and 300 feet of insulated copper wire. The instruments may be installed in different rooms, or in two houses on adjacent lots, and the connecting wire, sounder, key and signals are all adjustable. The instrument will enable you to learn wireless at home. Shipping weight, 7 pounds.

6A1955 $7.75

Improved 4-Ohm Learner’s Telegraph Instrument, without battery or connecting wire.

Shipping weight, 3 pounds.

6A9161 $2.80

Improved 20-Ohm Learners’ Telegraph instrument, the same as the 4-Ohm instrument, except that sounder is wound to 20 ohms to increase its sensitiveness. Shp. wt., 3 1/2 oz.

6A9163 $2.75

The Ommigraph Instructor.

Used by U. S. Navy, U. S. Army, Department of Commerce and Radio Schools. This set is used by the Department of Commerce, U. S. Navy, and by various institutions conducting their tests for operators’ licenses, etc. The instrument 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, twenty-five disk. The spring motor is oil filled and provided with twenty-five disk. The spring motor is oil filled and

6A9223 The Ommigraph Instructor.

Beginners’ Wireless Practice Set.

4-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 of resistance of more than 25 ohms, which is equivalent to a mile of 12-gauge iron wire. The dials can be extended by increasing the battery power. Shp. wt., 3 lbs. 1 oz.

6A9174 $4.00

Standard Relay.

20-Ohm Standard Relay. This relay is sensitive, nicely adjusted and handsomely finished in polished black lacquered brass; the armature is of silver. Mounted on a polished hardwood base with sub-base of black lacquered iron. Suitable for telegraph lines up to 10 miles; also burglar and fire alarm systems. Shipping weight, 2 lbs. 14 oz.

6A9188 $13.15

Giant Sounders.

4-Ohm Giant Sounder. This is a rapid, loud aluminum lever sounder with lacquered brass face, but parts are covered with polished hard rubber and leads are thoroughly insulated. Sounder and magnets are wound to a higher resistance to increase its sensitiveness over long lines. Shipping weight, 1 lb. 10 oz.

6A9181 $2.50

20-Ohm Giant Sounder. Same as above, except that sounder magnets are wound to a higher resistance to increase its sensitiveness over long lines. Shipping weight, 2 lbs. 10 oz.

6A9180 $2.30

Wireless Keys

Navy Type Radio Key. Coin Silver Contacts.

This key embodies all the improvements and have advanced features which make it a most satisfactory key. All parts are adjustable. Shipping weight, 2 lbs. 10 oz.

6A9449—Navy Type Radio Key $4.89

Extra Contacts. Coin Silver Contacts for 6A9449 Key. Mounted in nickel plated brass containers to fit the key. Shipping weight, 6 ounces.

6A947—Extra Contacts. Per set $1.14

Supior Wireless Key—Improved Model.

This key is all that its name implies. We believe that it is a result of double inventing the finest key, because both the Virgil and we have made it. It is provided with insulated contact points, size No. 6 mounted on screws, making them renewable and adjustable. The base is heavy brass, finished in gold lacquer. Knob is of hard rubber composition and is the finest available. The key is so designed that it can work faster and longer without fatigue.

6A9373 Superior Wireless Key $2.48

Extra Contacts. Interchangeable with contacts used on 6A9373 Superior Wireless Key. Set consists of upper and lower contacts, complete with insulation, etc. Shipping weight, 4 ounces. 6A9374—Extra Contacts. Per set 43c

Beginners’ Wireless Key.

A good reliable key which is suitable for small school sets or for home use. Mounted on wooden base with steel lever and binding posts. Armature is of nickel plated brass base and points are of No. 8 Brown & Sharpe gauge coin silver. Nickel plated brass 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, cold chart and instructions. Size of base, 7/4 sq. inches. Shipping wt., 5 lbs.

6A9200—Beginners’ Wireless Precise $2.40

Legless Key.

Standard Steel Lever Key, legless. Shipping weight, 2 lbs. 14 oz.

6A9166 $1.90

Standard Steel Lever Key with legs. Same as above except that it is made with one inch longer base through table, elamping the key at a more comfortable position. Shipping wt., 12 oz.

6A9186 $1.75

SEARS, ROEBUCK AND CO. Page 33
These batteries are made under our supervision and we believe them to be the equal of any other "B" batteries on the market today. On account of our large sales, our stock is never old, so that you may always be sure you will receive a fresh battery that will give you good service. The batteries will show a uniform voltage and active life and have remarkable recuperative powers.

22½-Volt Battery, U. S. Signal Corps Type.
6A9661—Size, 5x3x2 1/4 inches. Shipping weight, 4 pounds .......................... 93c

22½-Volt Battery With 18-Volt Tap, U. S. Navy Type.
6A9662—Recommended for use with new Audiotron and Radiotron Tubes. Size, 6 1/2x4x3 inches. Shipping weight, 9 pounds .......................... $1.59

22½-Volt Battery, U. S. Navy Type.
6A9600—Same as 6A9662, tapped for 18 volts, 19 1/2 volts, 21 volts. Especially recommended for use with new Audiotron and Radiotron Tubes. Shipping weight, 9 pounds .......................... $1.71

22½-Volt Battery, U. S. Navy-Laboratory Type.
6A9733—Nine taps single cell variation, 10 1/2, 12, 13 1/2, 15, 16 1/2, 18, 19 1/2, 21, 22 1/2. Taps are made by means of brass strip, drilled to facilitate making positive soldered contact. Volt variation is on "Positive" side of battery. Standard testing clip is furnished with each battery. Shipping weight, 9 pounds... $2.16

45-Volt Battery, New Type.
6A9601—Developed to meet the requirements of the new Audiotron and Radiotron Amplifier Tubes. Size, 6 1/4x2 3/4x7 1/4 inches. Shipping weight, 12 lbs... $3.20
Meteoric Rectifier or Battery Charger

Only $13.45

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

6A9683—Meteoric Rectifier ........................................... $13.45

6-Volt Radio Storage Batteries
Reduced Prices

Only $9.08 to $19.82

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 amper-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 ½—Storage Battery. 6-volt, 40-ampere hour. Shipping weight, 35 lbs... $9.08
6A9520 ½—Storage Battery. 6-volt, 60-ampere hour. Shipping weight, 40 lbs... $10.90
6A9521 ½—Storage Battery. 6-volt, 90-ampere hour. Shipping weight, 50 lbs... $13.68
6A9522 ½—Storage Battery. 6-volt, 120-ampere hour. Shipping weight, 55 lbs... $16.76
6A9523 ½—Storage Battery. 6-volt, 150-ampere hour. Shipping weight, 65 lbs... $19.82

SEARS, ROEBUCK AND CO. Page 35
Radio Voltmeters and Ammeters

Jewell Thermo-Couple Radiation Ammeter.

This instrument is especially made for use 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 heater wire and a thermo-couple consisting of a pair of crossed wires made of a special alloy, which are connected to a standard D'Arsonval movement. This instrument will not only enable you to tune your set properly to the oscillating circuit, but also give you accurate readings of the current radiated. Reading 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.

6A9262—Special Jewell Thermo-Couple Radio Ammeter.

Jewell Voltmeters.

Successful continuous wave radio operation cannot be had without the use of voltmetro 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. 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.

6A9633—Jewell Thermo-Couple Voltmeter...

Transformer and Helix Apparatus

Marconi Type Oscil-lation Transformer.

New improved model. Secondary coil now mounted by a brass 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. 16 B & S solid copper wire. Diameter, 10% inches. Secondary winding consists of twelve turns of No. 6 B & S copper wire. Diameter, 6% inches. All conducting parts are supported by formica and do not come in contact with any metalwork. This instrument is designed for efficient work on the amateur wave lengths and has a range of adjustment well above and below 200 meters. Woodwork is polished mahogany finish. Two helix slips furnished. Shpg. wt., 24 lbs.

6A9331—Marconi Type Oscillation Transformer...

Helix Clip.

A most practical way of getting leads to oscillation transformer, condenser, etc. Clip is especially designed for brass rod or wire. Has insulating knob and connecting screw. Shpg. wt., 4 oz.

6A98252—Pancake Helix...

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 parts are accessible, which enables the operator to tune within close limits. Furnished with two clips. Diameter of coil, 8 inches. Shipping weight, 3 1/2 pounds.

6A9165—Marconi Type Helix...

Marconi Type Helix.

The winding consists of twelve turns of No. 35 B & S 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 is found to be very efficient as a helix loading inducer, or to be used in sending an oscillation transformer. Also useful in CW sets. Two special clips furnished with each instrument. Height, 8 inches; diameter, 9% inches. Shipping weight, 10 pounds.

6A9166—Marconi Type Helix...
Spark Gaps and Spark Coils

**Franklin Rotary Spark Gap.**

*Commercial Heavy Duty Type. 500-Cycle Note.*

Guaranteed to increase the efficiency and range of your station.

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

One of the most efficient rotary spark gaps ever offered. This rotary gap 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 gap has such quenching as to enable the amateur to conform to the present regulations on decrements. 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, 4,200 R.P.M. In this gap can be used with any % or 1 KVA set: also sets of higher power up to voltage of 40,000.

**Disc:** Is of 3/4-inch thick Bakelite, lathe turned with dull satin finish. Diameter of disc, 6½ inches. Ample insulation is provided and gap will not flash over at 40,000 volts. Twelve rotor electrodes are set ½ inch from edge of disc, and rotor clear base only about ¼ 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 3 inches from pillars and have heavy binding posts. Bakelite base has satin smooth finished to match disc. The entire unit is mounted on cast iron frame, especially made for this gap. Operation: In operation this gap will not wobble, vibrate or creep, as each disc is balanced before assembling. The spark points are renewable and look good and sound. Operation is very smooth and the note very sharp, this being partly due to the stationary electrodes being made with a wedge of wood, which will not add or jump before the points are in line. One station card, 6A9198, furnished with each gap. Shipping weight, 10 pounds.

**Superior Wireless Spark Coils.**

Superior Wireless Spark Coils are built for Wireless Telegraphy and are quite different in construction from the ordinary spark coil. These coils are designed to operate on dry cells, wet cells or storage battery. They are guaranteed to give their rated spark length between needle points. The secondary coil is considerably larger than used in most spark coils, and this feature adds greatly to its 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 2 to 6 volts and ¼ of an ampere in amperes, according to size of coil. Vibrators are all high frequency type, which are not liable to stick. These coils will stand hard usage and their high efficiency will appeal to the experimenter because of their low current consumption, which means long life for a set of batteries. The number of batteries required to operate these coils successfully is as follows:

- **¼-inch** operates on 4 dry cells.
- **½-inch** operates on 5 dry cells.
- **¾-inch** operates on 6 dry cells.
- **1-inch** operates on 6 dry cells.

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<th>Catalog No.</th>
<th>Spark Length</th>
<th>Shipping Weight</th>
<th>Price</th>
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**Rotary Spark Gap.**

This gap embodies all the latest improvements made in rotary spark discharges and makes an ideal gap for amateur work. Has a heavy copper rotor, and is equipped with strong stationary electrodes mounted on fornice, to provide for a clean break in spark. The motor is 110-volt and is mounted on a standard wooden base and has a speed of 5,000 R.P.M., which permits a frequency of 250-500 cycles. The rotor is made of best copper, mounted on 3/4-inch fornice disc, and has twelve electrodes, 3/4-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 and is a beautiful hand rubbed finish and will give very satisfactory results with 3/4 and 3/4-K.W. sets. Shipping wt., 12 lbs. 6A9018—Rotary Spark Gap....$16.80

**New Model Spark Gap.**

This spark gap has one stationary electrode and one adjustable electrode. The 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 ¾ K. W. Shipping weight, 1 lb.

6A9031—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 3½ x 2½ x 2½ inches. Uprights are of heavy brass rod, ½ inch square, 2½ inches high, nickel plated and polished. Electrodes are turned from zinc stock and are ½ inch long by ½ inch in diameter. Radiators are of aluminum, ¾ 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. Suitable for use with the stationary sparkgap made. Shpg. wt., 24 lbs. 6A9006—Heavy Duty Spark Gap.$2.84

**Shipment:**

- **6A9322 to 6A9329:** 1 lb.
- **6A9330 to 6A9331:** 2 lbs.
- 6A9018: 12 lbs.
- 6A9031: 1 lb.
- 6A9006: 24 lbs.
Oil Type Radio Transformers

**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 efficient and best transformer be utilized when the equipment is improved, as applied to this particular field.

The greatest refinement 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 has been of paramount importance. The oil immersed transformer has proved to be the only type that will stand up under these conditions.

The use of glass or oil, or combinations of these two materials, has 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.

Herefore 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.

**Case—The Case Is Made of Sheet Steel with a Coating of Barnebrock 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 with 14-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 Cause the Normal Wave Form to Squirt. For This Reason Various Schemes Are Used in These Transformers. The Design of the Core and Windings Is Such As to Limit the Current Input to the Normal Capacity. There Is Therefore No Tendency of Transformers Blking the Lights of the Circuits to Which Transformers Are Attached. In Operation It Will Be Found That These Transformers Will Recone Easily and Will Give a Smoother Discharge Than the Leakage Flux Type.**

**Oil Immersed Transformers are Not to Be Compared with the Air Cooled, Oil Insulated Type on the Market, as Competitive Tests Will Show. They Are Offered to the Operator who is Seeking for the Best. The Installation of One of These Transformers Will Mean New Transmitting Record and 20 Per Cent Increase in Transmitter Efficiency.**

**Specifications.**

- **Catalog No.**
- **K. W.**
- **Amperes**
- **Primary Voltage, 60 Cycles**
- **Secondary Voltage**
- **Size of Case**
- **Height of Transformer Posts**
- **Ships Weight With Oil**
- **Each**

**Dubilier Mica Condensers**


Few electrical instruments have been subjected to more severe tests since 1915 than the Dubilier Mica Condensers—the dampness of the trenches, the salt air and rough usage on the seas, dry and freezing conditions above the clouds, on airplanes. Each condenser is built up of more than a thousand units of the finest and best grades of mica films. Air, moisture and small vacuum pockets are eliminated from each section or unit. This condenser is the result of many years of experiments and practically all commercial companies.

**Shipping Weight, Pounds**

**Catalog No.**

<table>
<thead>
<tr>
<th>Type</th>
<th>Watts</th>
<th>Maximum Testing Voltage</th>
<th>M. F. D.</th>
<th>Shipping Weight, Pounds</th>
<th>Each</th>
</tr>
</thead>
<tbody>
<tr>
<td>6A6620%</td>
<td>D-101</td>
<td>500</td>
<td>14,000</td>
<td>.007</td>
<td>12</td>
</tr>
<tr>
<td>6A6621%</td>
<td>D-112</td>
<td>1,000</td>
<td>21,000</td>
<td>.01</td>
<td>12</td>
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<tr>
<td>6A6622%</td>
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<td>500</td>
<td>14,000</td>
<td>.01</td>
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<td>1,000</td>
<td>21,000</td>
<td>.01</td>
<td>12</td>
</tr>
</tbody>
</table>

**Price**

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

**Reduced Price**

| 1/2 K. W. | 15,000 Volts | $19.85 |

**Puts the Amatuer 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 efficient and best transformer be utilized when the equipment is improved, as applied to this particular field.

- The greatest refinement 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 has been of paramount importance. The oil immersed transformer has proved to be the only type that will stand up under these conditions.

- The use of glass or oil, or combinations of these two materials, has 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.

- Herefore 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.

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- **Specifications.**

- **Catalog No.**
- **K. W.**
- **Amperes**
- **Primary Voltage, 60 Cycles**
- **Secondary Voltage**
- **Size of Case**
- **Height of Transformer Posts**
- **Ships Weight With Oil**
- **Each**

- **Dubilier Mica Condensers**


- Few electrical instruments have been subjected to more severe tests since 1915 than the Dubilier Mica Condensers—the dampness of the trenches, the salt air and rough usage on the seas, dry and freezing conditions above the clouds, on airplanes. Each condenser is built up of more than a thousand units of the finest and best grades of mica films. Air, moisture and small vacuum pockets are eliminated from each section or unit. This condenser is the result of many years of experiments and practically all commercial companies.

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<td>1,000</td>
<td>21,000</td>
<td>.01</td>
<td>12</td>
</tr>
</tbody>
</table>
Transformers and Choke Coils

Thordarson Type "D" Wireless Transformer.

This design of wireless transformer has several mechanical and electrical features that are of great improvement over previous designs. All castings have been eliminated and the framework is built of formed sheet steel. The same principle as used on previous transformers has been adhered to in the magnetic circuit, namely, having an external magnetic shunt with the advantages of uniformity of field, 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, through the winding at the same rate as the intensity of the magnetic field is varied. This tongue is graduated so that the air gap can be readily 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:

<table>
<thead>
<tr>
<th>Catalog</th>
<th>K. V. A.</th>
<th>Height, Inches</th>
<th>Width, Inches</th>
<th>Length, Inches</th>
<th>Amperes</th>
<th>Weight, Pounds</th>
<th>Secondary Voltage</th>
<th>Price Each</th>
</tr>
</thead>
<tbody>
<tr>
<td>6A9376/4</td>
<td>3/4</td>
<td>9</td>
<td>5</td>
<td>9</td>
<td>10</td>
<td>28</td>
<td>10,000</td>
<td>$20.50</td>
</tr>
<tr>
<td>6A9378/4</td>
<td>3/4</td>
<td>9</td>
<td>6</td>
<td>12</td>
<td>24</td>
<td>46</td>
<td>20,000</td>
<td>$38.50</td>
</tr>
</tbody>
</table>

Acme Radio Transformers.

The uniform results obtained by using Acme transformers has established the fact that this type of transformer is best adapted for the amateur station equipped with spark valves. These transformers are designed and placed on the market after considerable experimental work to determine just what the best operating conditions should be in those amateur stations, and supplied with commercial frequencies. These transformers are designed to draw their full radio power from line, when, operating from 700 to 8000 volts peak per second and with a condenser of 0.677 MF, Lower gap space and input high voltage at 600 volts. Acme Transformers show an exceptionally high power factor, being from 5 to 85, and an adjustable load 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 1000-watt sizes are tapped to reduce the input power to one-half. Secondary terminals are mounted at top of coil and provided with safety gap. One 6A9198 Wall Cord included.

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. This transformer is built so that it can be properly varied at the voice frequencies. This transformer is suitable for this purpose: primary and secondary windings are of the same proper inductance to give the best results. Care should be observed not to overload the transformer, which may cause the working conditions to not disturb the speech. Shipping weight, 3 pounds. 6A9614-Type A Modulation Transformer, completely mounted, with engraved panel. $16.90

Choke Coils.

In order to smooth out the pulsations in the direct current supply to keep the direct current constant when modulating, and to prevent the high frequency from getting into the power transformer, it is essential that a choke coil be inserted in the direct current leads. These choke coils successfully eliminate this condition. The 6A9613-1/2 Henry Single Coil Choke Coil, 500 M.A. capacity. $5.90

Unit Line Protector.

Protects primary winding of the transformer, spark gap, motor, house wiring, etc. The distributor is correctly designed and is well constructed. Protection is obtained through use of 1000 ohms each, connected in series and bridged across the line where it is connected to the pole. The neutral between the two rods is connected to a ground terminal, affording an easy path for high frequency surges, etc. A grounded and insulated rod is also provided to take care of the current from any accidental short circuit which might result from the condensers to get into the primary circuit. Case is mahogany finish and measures 4 1/2 x 6 inches. Shipping weight, 4 pounds. 6A9681-Line Unit Protector. $4.05

Line Protector Coils.

Special wire wound coils, molded in porcelain cases. 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 ground plate. Shipping weight, 4 pounds. 6A9318-Line Protector Coils. Per pair. $0.65

1/2 K.V.A. 10,000-Volt Transformer. Improved Model.

The amateur's ideal transformer. This transformer is the result of a great deal of experiment which is offering it only after it has proved to be of service. The transmitting apparatus is a high grade 1/2 K. V. A. transformer, giving a shipping weight of 10,000, for $12.75.

Winding and Construction: The dry air insulated construction has been adhered to. Primary winding is for 10000 60-cycle volts, and is wound on a masonite core and furred with 2000 Insulation. Secondary coil is mounted on upper yoke of the magnetic circuit. The transformer is protected by a red high grade material, and a safety gap. A pair of "Kickback" coils furnished with each transformer.

We include 6A9198 Station Card with each transformer.

Shipping weight, All. Height, 9 1/2 inch; length, 7 1/4 inches; width, 5 inches. Weight, 20 pounds. Shipping weight, 24,000 pounds. 6A9314-A-Meteor 1/2 K. V. A. Wireless Transformer. $12.75

W. P. Oliver Transformers.

C. W. transmission has many advantages over that of spark discharges, as with the spark discharges the energy to the antenna is continuous, and only a small amount of energy is actually radiated. In C. W. transmission the energy output only a small amount of oscillation and is at the receiving end, the ignition of the high grade coil is not affected by a continuous oscillation. The ACME C. W. POWER TRANSFORMERS are designed to operate from 100 volts 60-cycles source for the primary, and have two secondary windings of 550 volts each for the 200-watt size and 375 volts for the 75-watt size, and two tertiary windings of 12 volts each for all transformer types, to be used as filament heating and the other for power filament heating. The secondary windings are connected in series with the power rectifying tube filament. The secondary windings are connected in series with a transformer similar to the one terminal of the direct current supply. By putting a condenser of from 2 M.F. to 6 M.F. across the direct current terminals and choke coil it is easy to control the current supplied to the antenna, the frequency of which is determined by the time interval of time when no energy is being radiated. The C. W. transmission is of great advantage of C. W. transmission lies in the receiving end, the receiver receiving the available energy, as it exists at one frequency only, and being a persistent oscillator is more easily affected by a continuous oscillation. The ACME C. W. POWER TRANSFORMERS are designed to operate from 100 volts 60-cycles source for the primary, and have two secondary windings of 550 volts each for the 200-watt size and 375 volts for the 75-watt size, and two tertiary windings of 12 volts each for all transformer types, to be used as filament heating and the other for power filament heating. The secondary windings are connected in series with the power rectifying tube filament. The secondary windings are connected in series with a transformer similar to the one terminal of the direct current supply. By putting a condenser of from 2 M.F. to 6 M.F. across the direct current terminals and choke coil it is easy to control the current supplied to the antenna, the frequency of which is determined by the time interval of time when no energy is being radiated. The C. W. transmission is of great advantage of C. W. transmission lies in the receiving end, the receiver receiving the available energy, as it exists at one frequency only, and being a persistent oscillator is more easily affected by a continuous oscillation. The ACME C. W. POWER TRANSFORMERS are designed to operate from 100 volts 60-cycles source for the primary, and have two secondary windings of 550 volts each for the 200-watt size and 375 volts for the 75-watt size, and two tertiary windings of 12 volts each for all transformer types, to be used as filament heating and the other for power filament heating. The secondary windings are connected in series with the power rectifying tube filament. The secondary windings are connected in series with a transformer similar to the one terminal of the direct current supply. By putting a condenser of from 2 M.F. to 6 M.F. across the direct current terminals and choke coil it is easy to control the current supplied to the antenna, the frequency of which is determined by the time interval of time when no energy is being radiated. The C. W. transmission is of great advantage of C. W. transmission lies in the receiving end, the receiver receiving the available energy, as it exists at one frequency only, and being a persistent oscillator is more easily affected by a continuous oscillation. The ACME C. W. POWER TRANSFORMERS are designed to operate from 100 volts 60-cycles source for the primary, and have two secondary windings of 550 volts each for the 200-watt size and 375 volts for the 75-watt size, and two tertiary windings of 12 volts each for all transformer types, to be used as filament heating and the other for power filament heating. The secondary windings are connected in series with the power rectifying tube filament. The secondary windings are connected in series with a transformer similar to the one terminal of the direct current supply. By putting a condenser of from 2 M.F. to 6 M.F. across the direct current terminals and choke coil it is easy to control the current supplied to the antenna, the frequency of which is determined by the time interval of time when no energy is being radiated. The C. W. transmission is of great advantage of C. W. transmission lies in the receiving end, the receiver receiving the available energy, as it exists at one frequency only, and being a persistent oscillator is more easily affected by a continuous oscillation.
Build Your Own Radio Set and Save Money

NOTE OUR LOW PRICES ON HIGH GRADE TOOLS.

FOR RADIO BUILDERS. 85c

95 Assorted Brass Machine Screws. Well assorted flat and round head, sizes No. 6 and 8, lengths 1 1/8, 1 1/2, and 2 inches, No. 32 thread, complete with washers and nuts. If you are contemplating building a radio set this assortment is one of the first things you will need. Wt., 1 lb. 94A020

$1.95

1 Pound Assorted Wood Screws. 16c

In assorted sizes, lengths and finishes. Package contains about 200 screws. 94A271

8c Per lb. 16c

Wire Brads. 8c Per lb.

94A292—In 1-lb. pkg. State length. Length, in, 1 1/8, 1 1/2, 1 1/4, 1 3/8, 1 1/2, 1 3/4. Gauge wire, 18, 16, 14, 12, 10. Per pound: 16c 14c 12c 10c 8c 6c

Solid Steel Slide Bar Vise, With Swivel Bottom. $3.90

3-in. Jaws.

3-Strand Galvanized Wire. 85c

For fastening vise to bench, Width Shp. 1/16, 1/8, 1/4, 5/32, 3/16, 1/4. Wt. per 100' feet $ 1.00


99A5203—3/8c 5/8c 3/8c 2/10c

99A5204—3/10c 3/8c 2/10c 2/10c

THE RADIO $1.85

One filling (about 2 ounces alcohol) keeps "Screco" an all-purpose tool. Filling 1-1/4 oz., 2 oz., 3 oz. For filling, per piece. 99A3655—Per 4 oz. $ 1.85

Taper Point Soldering Coppels. 32c

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

No. 2. 99A3576—Weight, lbs. 1/16, 1/8, 1/4, 1/32, 1/16, 1/8, 1/4, 1/32, 1/16, 1/8, 1/4, 1/32. Per single iron 30c 40c 50c 70c

Two-Speed High Hand Grade Hand Drill. $ 3.80

Goodell's Two-Speed High Hand Grade Hand Drill. Takes drills up to 5/16 inch in diameter. Head is hollow, with a screw cap. Length, 14 inches. No. of pointed points included. Weight, 2 lbs. 99A5066—Per 15 lbs. $3.80

The Improved Fulton Special Ratchet Bit Brace. $2.20

10-Inch Single Point Cutting Blades. 99A5428—Sweep, 10 inches. Weight, 2 lbs. 30c 40c 50c 60c

$2.20

Bit Drill Drills. 99A5429—In set of 8, 10c 12c 14c 16c 20c 25c

These drills fit any bit brace and will drill all hard metals. Includes a 3/8 inch and 3/16 inch. Will also bore spaces such as Formica panels, Bakelite, and similar materials. Weight, 2 lbs. 30c 40c 50c 60c 70c

Inches. Per 8. 99A5060—Price includes eight drill points, plus 1/8 inch. 30c 40c 50c 60c

99A5600—In set of eight drill points to fit above drill. Sizes, 1/8 to 5/16 inch. Weight, 3 oz. Set of 8, 25c

99A5622—State size wanted.

Rose Head Countersink Bits. 32c

In inches. Weight, 3 ounces. 99A5840—Per piece 32c

Fulton Nail Cutter Saw. $1.90

Made of special saw steel, filed and tempered by a process which makes it exceedingly hard, but very tough. Can be filed when dull, but does not require setting. Made in two lengths, 18 inch blade. Weight, 1 lb. per pound. 99A5057

Extension Hack Saw Frame. 55c

Fulton Tungsten Hack Saw Blades. 4.95

A-MACH SAW BLADES

9A5018—Length, in. 8 9 10 11 Per dozen. 10c 12c 14c 16c

9A5447 80c 95c $ 1.05 $ 1.15

Assembled Sandpaper. 12 Sheets.

99A6270—12 sheets

Kauriled Center Punch. 14c

Diameter, 1/16, Weight, 2 oz. 99A5734 $ 2.40

ALL WEIGHTS AND MEASUREMENTS GIVEN ON THIS PAGE ARE APPROXIMATE AND MAY VARY A TRifle.
Attractive Signs Needed in Every Radio Station

Indicating arrow is used extensively by radio clubs, universities, at electrical shows, etc. Background is red, indicating arrow and "Radio Station" in white. Size, 10 x 6 inches. DON'T HIDE YOUR STATION—POINT THE WAY. Shipping weight, 4 oz.

6A9199 .......................... 9c

“Zone of Quiet” bright red. “Radio Receiving Station” and fork lighting in black. Background is white, cardboard, size 8 x 10 inches. Very effective and used extensively by all classes of stations. Shipping weight, 5 ounces.

6A9197 .......................... 9c

Wireless Code Chart

This Chart has the Continental Wireless Code, with instruction for learning, all printed on one side. Size of chart, 4½ x 7½ inches. Printed on cardboard. Shipping weight, 3 ounces.

6A9398—Wireless Code Chart .......................... 5c

“CUL 73” Post Cards

Ready to Mail—No Stamp Required.

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

6A9193

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

Radio Map of the United States

A Complete List of Commercial and Radio Phone Stations.

Every amateur station should contain an official radio map. These maps are attractively finished in black, with the station letters in red and the districts in blue. The map itself measures 19 x 27 inches, and shows the location of all stations. A complete list of stations in alphabetical order by cities and by call letters is also given. Because of our large sales you can always be confident that you will not receive an old edition. New editions are released every several months. The map shows the location of all Government, commercial and broadcasting stations, amateur districts and the standard divisions of time; also contains new radio regulations, foreign call letters and other information valuable to the radio operator. Shipping weight, 5 ounces.

6A9203 .......................... 16c
A Book of the Newest and Most Interesting Branch of Radio Communication.

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

It is very complete, practically all the subject matter of radio telephony being covered in detail, Shipping weight 4 lbs. $1.65

**6A9342—Radio Telephony**

How to Pass U. S. Government Wireless License Examinations

Contains 124 Government Examination Questions Answered for Elementary Students in Wireless Telegraphy. It is useful and is valuable to all students who are preparing for commercial operator. The book is divided into parts.

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

**Part Three—Storage Batteries and the Auxiliary Set.** Defines specific gravity of a cell, capacity of cell, normal rate of discharge of a battery; contains a complete circuit diagram for a modern auxiliary set, a simple diagram of the action of the set.
Study These Symbols Carefully

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

- **Antenna or Aerial**
- **Ground**
- **Wires Connected**
- **Crossed Wires Not Connected**
- **Fixed Resistance**
- **Variable Resistance**
- **Head Phones**
- **Vacuum Tube**
- **Crystal Detector**
- **Fixed Condenser**
- **Variable Condenser**
- **Battery**
- **Voltmeter**
- **Ammeter**
- **Fixed Inductance (Air Core Coil)**
- **Variable Inductance (Air Core Coil)**
- **Fixed Coupling of Coils (Fixed Inductive Coupling)**
- **Variable Coupling of Coils**
- **Variometer (Variable Inductance)**
- **Transformer**
- **Iron Core Inductance (or Reactance Coil)**
- **Direct Current Dynamo**
- **Alternating Current Generator**
Hook Ups

Tuning Coil Crystal Receiving Circuit.
The following list of parts make this Hook Up:
A — Aerial Connection.
G — Ground Connection.
   See Aerial and Ground Outfits listed on page 31.
B — Double Slide Tuning Coil 6A9246. Page 16.
C1 — Phone Condenser 6A9264. Page 21.
D — Crystal Detector 6A9297. Page 15.
P — Head Phones. Listed on page 17.

Loose Coupler Coil Crystal Receiving Circuit.
The following list of parts make this Hook Up:
A — Aerial Connection.
G — Ground Connection.
   See Aerial and Ground Outfits listed on page 31.
B — Loose Coupler Coil 6A9333 or 6A9259\frac{1}{4}. Page 16.
C1 — Phone Condenser 6A9264. Page 21.
C3 — Variable Condenser 6A9297. See page 15.
P — Head Phones. Listed on page 17.

Loose Coupler Coil Crystal Receiving Circuit.
Using a variable condenser shunted across secondary winding of loose coupler coil. The following list of parts make this Hook Up:
A — Aerial Connection.
G — Ground Connection.
   See Aerial and Ground Outfits listed on page 31.
B — Loose Coupler Coil 6A9333 or 6A9259\frac{1}{4}. Page 16.
C1 — Phone Condenser 6A9264. Page 21.
P — Head Phones. Listed on page 17.
Hook Ups

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

A - Aerial
   Connection See Aerial and Ground, Outfits listed on page 31.
G - Ground
   Connection
B - Loose Coupler Coil 6A9333 or 6A9259, Page 16.
C - Grid Condenser 6A9660, Page 21.
C1 - Phone Condenser 6A9264, Page 21.
C2 - Variable Condenser 6A9298, Page 21.
C3 - Variable Condenser 6A9299, Page 21.
H - "A" Battery. See 6-Volt Storage Batteries listed on page 35.
K - "B" Battery (30-60 volts). Page 34.
L - Grid Leak 6A9659, Page 21.
P - Head Phones. Page 17.
T - Detector Tube 6A9650, Page 18.

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

A - Aerial
   Connection See Aerial and Ground, Outfits listed on page 31.
G - Ground
   Connection
C - Grid Condenser 6A9660, Page 21.
C1 - Phone Condenser 6A9264, Page 21.
C2 - Variable Condenser 6A9298, Page 21.
C3 - Variable Condenser 6A9299, Page 21.
H - "A" Battery. See 6-Volt Storage Batteries listed on page 35.
K - "B" Battery (22½ volts). Page 34.
L - Grid Leak 6A9659, Page 21.
P - Head Phones. Page 17.
T - Detector Tube 6A9650, Page 18.
Hook Ups

A Regenerative Receiving Circuit With Two Stages of Amplification.

Receiving Circuit With Three Stages Radio Frequency Amplification, Detector and One-Stage Audio Frequency Amplification.

Code Transmitting Circuit.

The following list of parts make this Hook Up:

A — Aerial Connection. See Aerial and Ground Outfits listed on page 31.
B — Vario Coupler 6A9685 or 6A9784. Page 20.
C — Phone Condenser 6A9264. Page 21.
H — "A" Battery. See 6-Volt Storage Batteries listed on page 35.
I — B" Battery (90-112 volts). Page 34.
P — Head Phones. Page 17.
R1 — Rheostat. Page 19.
T1 — Detector Tube 6A9650. Page 18.
VI — Grid Variometer 6A9684 or 6A9781. Page 20.
V2 — Plate Variometer 6A9664 or 6A9781. Page 20.

The following list of parts make this Hook Up:

A — Aerial Connection. See Aerial and Ground Outfits listed on page 31.
H — "A" Battery. See 6-Volt Storage Batteries listed on page 35.
K — "B" Battery (120-200 volts). Page 34.
P — Head Phones. Page 17.
R1 — Rheostat. Page 19.
<table>
<thead>
<tr>
<th><strong>Order under one name</strong></th>
<th><strong>Change of address</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>If possible, have all the members of the family order under one name—the name of the head of the family. This name should always be written plainly and always the same way. For example: If the name of the head of the family is J. P. Thompson, sign the two initials and the name every time. Don't sign the order simply J. Thompson. If you have no middle name, please write the first name in full. For example: John Thompson, not merely J. Thompson. When we receive all orders from the same family under one and the same name, the keeping of our records is simpler and prevents mistakes and delays.</td>
<td>If you change your postoffice address, street address, rural route, or box number, please let us know at once. In notifying us be sure to give your old address as well as your new one. This will enable us to send catalogs or letters to the correct address and thus avoid inconvenience to you.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Order blanks</strong></th>
<th><strong>Transportation charges</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Order blanks are enclosed in this catalog. Additional blanks, if wanted, will be sent upon request. If at any time you have no order blanks, write your order on any paper.</td>
<td>All transportation charges are to be paid by the customer.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Write in any language</strong></th>
<th><strong>Freight is the cheapest</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>We can read it. We receive orders in all languages: all are handled with the same promptness.</td>
<td>Parcel post and express rates are low, but the cheapest way of shipping is by freight. The biggest savings are made by our customers who plan their purchases in advance. Instead of having small orders shipped to them by express or parcel post, they figure out all the supplies they will need for two or three months and order them all at once, shipped by freight. In this way they make a considerable additional saving on the larger order.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Necessary information</strong></th>
<th><strong>Factory shipments</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Give name and number of article in catalog; also size and color where necessary. It is also advisable to check your order carefully to see that the necessary information is correctly stated before enclosing your order in the envelope.</td>
<td>In order to make our prices as low as we do we find it necessary to ship many of the heavy, bulky articles we sell direct from the various factories where they are made, or from a warehouse, thus saving our customers freight and cartage to our store, double handling and other expenses. The descriptions tell you when goods are shipped from factory or warehouse. By far the greater part of our merchandise is shipped direct from our store.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>How to send money</strong></th>
<th><strong>When you don’t tell us how to ship</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>We require cash with order. You are perfectly safe in sending cash with order, for our guarantee protects you. If you are not satisfied with the goods you receive we will exchange them for other goods you want, or return your money, together with all transportation charges you paid. You can send the money to us in any of the following ways:</td>
<td>In this case we will consider that you have left it to our judgment and we will ship your goods the way it will cost you the least.</td>
</tr>
</tbody>
</table>

1—Postoffice money order.  
2—Express money order.  
3—Bank draft.  
4—Cash by registered mail.  
5—Your personal check.  

When goods are to be shipped by parcel post, be sure to include additional money to pay for postage.  
If you live on a rural route you can give the letter containing your order and money to your carrier and he will buy a money order for you at the postoffice and enclose it in the envelope with your order and mail it to us.  
If you order goods sent by freight or express be sure to give your shipping point if it is different from your postoffice.
Your postmaster will tell you the parcel post zone in which your postoffice is located, measuring from our store.

All merchandise shipped by mail takes parcel post rates. Packages up to 4 ounces in weight are carried at the rate of 1 cent an ounce, regardless of distance. Packages over 4 ounces are charged for at the rate per pound according to the distance, which is measured by the Government zone system, each zone covering a certain number of miles from point of shipment.

Weights and rates are shown in the table below. Packages carried by parcel post are handled just like any other mail matter. They are delivered to your box by your rural mail carrier if you live on a rural route, or forwarded to your local post office in the city where there is carrier service, or delivered to your local post office if you live where there is no carrier service.

Cans or bottles, or primed cylinders or shells, or other explosives, inflammable articles and poisons cannot be shipped by parcel post, nor articles measuring more than 7 feet in length and girth combined.

### RATE TABLE FOR PARCEL POST SHIPMENTS

<table>
<thead>
<tr>
<th>LOCAL ZONE</th>
<th>ZONE 1</th>
<th>OVER 65</th>
<th>OVER 58</th>
<th>OVER 55</th>
<th>OVER 51</th>
<th>OVER 47</th>
<th>OVER 44</th>
<th>OVER 42</th>
<th>OVER 39</th>
<th>OVER 36</th>
<th>OVER 32</th>
<th>OVER 29</th>
<th>OVER 25</th>
<th>OVER 21</th>
<th>OVER 18</th>
<th>OVER 15</th>
<th>OVER 12</th>
<th>OVER 9</th>
<th>OVER 6</th>
<th>OVER 3</th>
<th>OVER 1</th>
<th>OVER 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight of Package</td>
<td>5 oz</td>
<td>6 oz</td>
<td>7 oz</td>
<td>8 oz</td>
<td>9 oz</td>
<td>10 oz</td>
<td>11 oz</td>
<td>12 oz</td>
<td>13 oz</td>
<td>14 oz</td>
<td>15 oz</td>
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<td>21 oz</td>
<td>22 oz</td>
<td>23 oz</td>
<td>24 oz</td>
<td>25 oz</td>
<td></td>
</tr>
<tr>
<td>Charges Required</td>
<td>$0.09</td>
<td>$0.08</td>
<td>$0.07</td>
<td>$0.06</td>
<td>$0.05</td>
<td>$0.04</td>
<td>$0.03</td>
<td>$0.02</td>
<td>$0.01</td>
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<td>$0.01</td>
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</tr>
</tbody>
</table>

### Books

**Books post rates apply to books as follows:** All books, up to and including 8 ounces in weight, will be carried at the rate of 1 cent for 2 ounces in any part of the United States, regardless of distance. Packages over 8 ounces in weight will take the regular parcel post rates according to weight and zone.

### How to Return Goods to Us by Parcel Post

1. **Prepare the Package:**
   - Sort the goods into parcels.
   - Each parcel should not exceed 9 pounds in weight and 3 feet in length and girth combined.
   - All articles must be securely packed.
   - Label each parcel "For Parcel Post" and include your name, address, and our store number.

2. **Prepay Transportation Charges:**
   - When goods are shipped by parcel post, you are responsible for paying the transportation charges.
   - The transportation charges are based on the weight of the package and the distance it travels.

3. **Packaging Requirements:**
   - Use strong, sturdy boxes or crates.
   - Securely tape all flaps.
   - Include a packing slip with your name, address, and store number.

### About Transportation Charges

When goods are shipped by parcel post, you are responsible for paying the transportation charges. These charges are based on the weight of the package and the distance it travels. It is important to pack securely to ensure the goods arrive in good condition.

---

**SEARS, ROEBUCK AND CO.**

549
Sent Postpaid

Every HUNTER, FISHERMAN, CAMPER, ATHLETE and LOVER OF SPORTS should have a copy of this catalog.


Remember, there is a big line from which you can make your selection. You will find good quality and you have our guarantee of satisfaction. Send today for your copy of the SPORTING GOODS CATALOG L568RA. Sent postpaid on request.

SEARS, ROEBUCK AND CO.
To ACCOMMODATE the many people who desire to purchase a complete radio receiving set without going into the technical construction, we have tested many sets and have decided that this Audiotron Detector and Two-Stage Amplifier Set would give the best results. When hooked up properly you can receive stations from 800 to 1,000 miles. It is easy to operate and the tone produced is clear and sharp. With the instructions furnished this set can be easily put together. The set includes everything necessary for building antenna, ground and a complete receiving and tuning set with a loud speaker.

Below is a list of parts included with this set:

One 6A9652 Detector Panel, two 6A9571 Amplifier Panels, one 6A9786 Vario-coupler Panel, one 6A9783 Variometer Panel, one 6A9792 Variable Condenser, one 6A9650 Detector Tube, two 6A9651 Amplifier Tubes, one 6A9521 Storage Battery, one 6A9600 "B" Battery (22½ volts), two 6A9601 "B" Batteries (2½ volts), one 6A9603 Head Set, one 6A9435 Aerial and Ground Outfit and one 6A9779 Magnavox. Shipping weight, 152 pounds.

$135.00

SEARS, ROEBUCK AND CO., CHICAGO-PHILADELPHIA.