

RADIO

and **SHORT WAVE**
TREATISE

CATALOG NO.
28

1935

RADIO BARGAIN CATALOG
FOR RADIO SERVICEMEN
RADIOTRICIANS
RADIO DEALERS
AND EXPERIMENTERS



RADIO TRADING CO.
101 HUDSON ST., NEW YORK CITY



WE DO OUR PART

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Your Attention, Please!

OUR new Catalog No. 28 now comes to you completely revised, not only with comparatively lower prices, but also with a considerable array of brand-new merchandise. Catalog No. 28 also contains an instructive editorial section, which should be of lasting interest to you; since this makes it worthwhile for you to keep this cyclopedia-catalog on hand for months to come. This is the only catalog of its kind, which gives you such an immense variety of technical radio matter. For years it has been our policy, not only to give you a large editorial section, but to describe all articles and materials so minutely, that you would not have to write us for extra information.

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RADIO TRADING COMPANY, 101 Hudson St., New York, N. Y.

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We also value as our customers, many broadcast radio stations who deal with us right along.

In addition to this, we deal with a large list of Government, State and Educational Institutions, and we print herewith a list of the more prominent of such institutions.

In the list appended hereto, we have printed only the more prominent of a long list of institutions, just to give you an idea how far-reaching our service is today.

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"	" WKBV—Connersville, Ind.
"	" WKJC—Lancaster, Pa.
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RADIO SERVICE TREATISE

VOL. 4

By The Radio Engineering Staff of The
RADIO TRADING COMPANY

1935

Fundamental Principles of Radio for the Beginner

CHAPTER II—CAPACITY

FOREWORD

In the previous edition of our Radio and Short Wave Treatise (No. 26), we presented Chapter I of this series of articles. Although intended primarily for the radio beginner, it serves as a thorough review for the "ole timer." Every new edition of this book will contain a new chapter in proper sequence. It is advisable, therefore, to save the various issues as they come out. In a very short time you will have an invaluable and most practical textbook on "Fundamental Principles of Radio."

Capacity

Radio circuits are made up of certain qualities including three main items—resistances, capacities and inductances. We have considered the first of these three in the last issue of this Catalog. A complete knowledge of the action of condensers and capacity effects is essential to a complete understanding of radio circuits.

We learned in the first article of this series that the application of a potential difference (e.m.f.) to a conductor would cause a transfer or drift of electrons to take place. If the circuit formed by the conductor is continuous, the flow of electrons will continue as long as the potential difference remains. If the circuit is not continuous, but ends in two separate conductors separated from each other, a somewhat similar action takes place, but only for a short time. A general definition of a condenser might be any two conductors between which a potential difference exists, and which are separated by an insulator. The ends of two wires held apart in air really form a condenser, but it will have a very small capacity, as we shall learn later.

Let us consider the circuit shown in Fig. 1A, consisting of two sheets of metal separated by some insulating material and joined by wires to a battery, with a switch in one wire to connect the battery at will, and a current indicating meter. This meter may be a sensitive milliammeter or a galvanometer. The insulating material between the metal plates is known as the dielectric. If this material is air, then air is the dielectric; if it is mica, then mica is the dielectric, etc. The plates of a condenser act simply as storage places for the accumulations of electrons which drift through the circuit due to the potential difference; and to apply an electric force to the dielectric material.

In the previous article (see previous issue of this Catalog) we learned that all materials are composed of molecules and atoms. These atoms consist of electrons revolving about a central portion which contains protons and possibly some electrons. The motion of these electrons about the nucleus act just like minute solar systems. In addition to the atoms, we find a certain number of electrons that are not attached to any atom; these might be likened to the comets in our universe. In materials which are good conductors of electricity, a large number of these free electrons are present. These free electrons, from time to time, bump into one of the "solar systems," and usually in such cases knock one or more electrons from the regular orbit. These liberated electrons become free to wander around and they, in turn, strike other atoms and knock other electrons loose. Each of these free electrons is a small negative charge and if a sufficiently large number of them are started in motion by the application of a potential, we have an electric current flow. In some materials there are very few free electrons; the electrons being all tightly bound to their own orbits. Materials of this type are known as insulators.

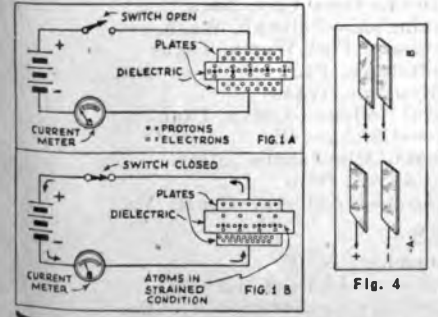
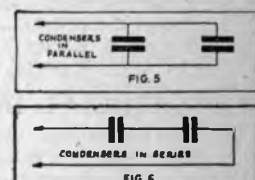
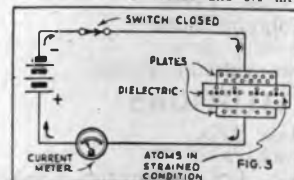
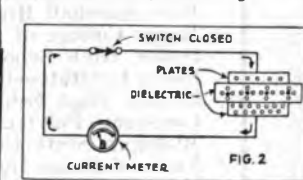


Figure 1A shows the conditions of a circuit having a condenser, where no potential difference exists, by virtue of the open switch. If the switch is closed as shown at Fig. 1B, a flow of electrons (an electric current) starts around the wire from negative to positive. A current-indicating meter in the circuit will show that a momentary current flows. The free electrons are removed from the plate marked + causing a deficiency of electrons, and hence a positive charge, and are moved to the plate marked -, causing an excess of electrons or a negative charge at this point.

This excess of electrons on the negative plate causes a charged condition to exist in the dielectric between the plates. We have learned that like charges repel each other. The excess of electrons causes a strained condition that has a tendency to force the electrons away from that side of the dielectric facing the negative plate. On the other side, the dearth of electrons causes a positive charge which attracts the electrons in the dielectric to that side. Since most of the electrons in the dielectric are bound tightly to their respective atoms, they cannot leave the dielectric material but are strained from their normal positions or orbits as shown in Fig. 1B. This operation is known as charging the condenser.

If the potential is removed and the terminals of the condenser are connected together as shown in Fig. 2, the electrons on the negative plate will rush back to the top plate to relieve the strained condition. The current meter will register another momentary current, but in the opposite direction to the current which flowed when the condenser was charged. This is called discharging the condenser.

Suppose, now, we reverse the polarity of the potential by changing the connections of the battery to the circuit. This condition is shown in Fig. 3. Current will again flow through the wire and the meter during charge and discharge, but in the reverse directions. If an alternating current were applied to the circuit instead of the battery, this action would be repeated over and over. The stream of electrons would flow into one plate and out of the other for each reversal of current. Thus in an alternating current circuit with a condenser we see that it is possible to have a flow of current without having an actual closed circuit to the terminals of the source of potential. The current does not flow through the condenser, but in and out of the metal plates through the external circuit.



Factors Governing Capacity

The ability of a condenser for storing an electrical charge is called its capacity. Since the quantity of electrons that can be stored in a condenser depends upon the difference in potential which is applied to its terminals to keep the electrons crowded into the negative plate, it is only natural that the unit of capacity should be defined in terms of voltage (potential difference). The unit of capacity is the Farad which received its name from Michael Faraday.

The Farad is a very large unit, and a condenser having a capacity this large would be very large in physical size. The condensers used in ordinary radio work have capacities in the order of millionths of a farad or microfarads (abbreviated mf.). Still a smaller unit is often used, especially in short waves—this is the micro-microfarad or millionths of a microfarad (abbreviated mmf.).

The capacity of a condenser depends on three factors: the surface area of the plates; the distance between the plates or the thickness of the dielectric between them and third the nature of the dielectric.

Suppose a potential of 1 volt were applied to a condenser, such as the one shown in Fig. 5A which we denser, will assume has a capacity of 1 mmf. This particular condenser has plates that are 1 foot square. Then, electrons can be transferred from the positive plate to the negative plate. These will distribute themselves uniformly over the surface of the negative plate and their combined charge will act on the dielectric. Now, suppose we had a condenser with plates 2 feet by 1 foot (twice the area of the first) and applied a potential of 1 volt to it. Since the electrons can now spread over a surface twice as large, twice as many electrons can be transferred from the positive plate before a sufficient charge builds up to equal the potential applied to the condenser. Thus doubling the area of the plates doubles the capacity. In many condensers, a number of plates are used, instead of only two; however, the action is the same.

If the distance between the plates is reduced, or to word it differently, if the thickness of the dielectric is reduced, the "strain" of the electrical potential is able to penetrate more deeply into the dielectric and affect a relatively greater quantity of atoms. Looking at it from yet another angle, we might say that since a greater number of dielectric atoms are now in a position to be strained, a greater quantity of electrons on one plate and a greater dearth of them on the other will be required to produce the additional strain. This in effect means the storage of a greater quantity of electrical energy—greater capacity. This effect is shown in Fig. 4A and B. The thickness of the metal plates has no effect on the capacity. The plates are ordinarily made so thin as possible to produce condensers small in size.

It has been found experimentally that by inserting different materials between plates to form condensers, that entirely different capacities result. Thus, by taking a condenser with air insulation, the capacity can be increased two or three times by slipping sheets or paraffined paper to fill the space between the plates. And by substituting mica for the waxed paper, the capacity can be increased 6 or 7 times. Thus the dielectric has a considerable effect on the capacity.

In actual practice, air is used as a dielectric for condensers where the capacity must be varied. By moving one of the plates in a parallel plane away from the other, the surface between the plates is diminished and the capacity decreases. Paraffined paper, mica, bakelite and certain liquids are used where larger capacities are needed, which do not have to be varied continually.

Condensers in Series and Parallel

When condensers are connected in parallel, as shown in Fig. 5 the effect is to increase the total surface area of the plates. The result is that the capacity is equal to the sum of the surface areas of both condensers and the capacity is also equal to the sum of the individual capacities connected in parallel. This may be stated arithmetically as follows:

$C = C1 + C2 + C3 + \text{Etc.}$
where C is the combined capacity and C1, C2, C3, etc. are the individual capacities.

An example of this will help the reader to understand the principle:—What is the total capacity of the following condensers connected in parallel—.001; .0025 and 0.1 mf.?

$C = .001 + .0025 + 0.1 = .1025 \text{ mf.}$
This fact may be used to make up condensers of odd capacities, by connecting several condensers of standard size in parallel.

When two or more condensers are connected in series as shown in Fig. 6, the effect is really to increase the thickness of the dielectric which we know decreases the capacity. Thus in Fig. 6, electrons are transferred from one outside plate through the external circuit to the other outside plate. The two center plates do not add to the capacity since the charges induced on them are electrically opposite and will naturally neutralize each other. The effect is as though the two inner plates were removed and the individual condensers replaced by a single condenser with a dielectric of the thickness of both condensers. (If the condensers are of unequal capacities, the plate area must also be considered.)

The total capacity of two or more condensers in series is found from the following expression:

$$\frac{1}{C} = \frac{1}{C1} + \frac{1}{C2} + \frac{1}{C3} + \text{etc.}$$

This may be put into a more convenient form as follows:

$$C = \frac{1}{\frac{1}{C1} + \frac{1}{C2} + \frac{1}{C3} + \text{etc.}}$$

An example of this calculation will assist the reader. What is the capacity of the following condensers connected in series? .0005; .001; .001 and .01 mf.

$$\frac{1}{C} = \frac{1}{.0005} + \frac{1}{.001} + \frac{1}{.001} + \frac{1}{.01} = .0008 \text{ mf}$$

Condensers with very thin dielectric are often connected in series for use on high voltages so that the high potential will not burn the insulation (dielectric) and thus ruin the condenser. The resultant capacity of such series combinations is less than that of the smallest condenser in the group.

The New Tubes and Their Uses

It was not long ago when the only output tubes used in radio receivers were triodes, operated in standard Class A circuits. The output of a Class A arrangement is characterized by high quality and relatively low efficiency. The pentode, while also of the Class A type, has a higher power output and sensitivity for a given plate dissipation than the triode Class A; but, unfortunately, the quality is inferior. This is inherently due to the mismatch of the plate impedance to the output load, in order to minimize distortion. Its optimum load value is critical, and the harmonics rise very rapidly with changing load. Furthermore, the predominant harmonic is the third, which, if large becomes disagreeable to the ear. Although pentodes may be connected in the push-pull arrangement, the distortion still persists, at a somewhat lower level, but this system does not eliminate the load problems; they are emphasized because while the second harmonics cancel in a push-pull arrangement, the third and higher order odd harmonics add, especially at high outputs.

Such tubes, however, found much favor among "midget" set manufacturers merely because they permitted large power outputs to be obtained with relatively small signal voltages. In the quest for additional power, Class B tubes were designed whose main purpose is to provide very high power output. The system has no improvement over the pentode with respect to quality, in fact in most applications it is worse. Due to its design complications (particularly the power park requirements) and its high cost, the system is not readily adaptable to receivers.

Thus, it is seen that when one wants quality, the triode Class A system is the best, while if one wants power output with quality as a secondary object the Class B system should be used. For a happy compromise of power, sensitivity and cost, the pentode has offered the best solution to the problem until the introduction of the new 2B6. The 2B6 consists of two triodes, and is designed to provide high output at low signal voltages in a triode Class A connection. Thus this tube, when properly used, is capable of combining the advantages of the high quality found in triode Class A systems and the high power output characteristic of Class B systems.

The schematic circuit of this tube is shown in Fig. 1. It is seen that a single heater supplies two separate cathodes, and that the output grid connects directly to the input cathode inside the tube. That triode section of the tube into which the signal is fed is called the input triode, or triode, while that section of the tube which feeds the speaker is designated as the output section. The respective elements of each section are labeled accordingly.

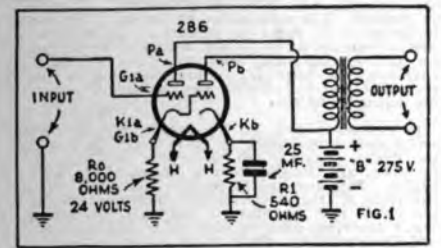


Fig. 1
A schematic circuit of the 2B6.

An examination of this circuit shows that the grid bias for the input section is secured by the voltage across Ro. Since the steady plate current of this tube is 3 ma. and its self biasing resistor has a value of 8,000 ohms, the steady D.C. bias is 24 volts. Note that this resistor has no bypass condenser across it. Furthermore, since the input grid is negative with respect to the cathode, no power is dissipated in the input grid circuit.

The output grid connects directly to the cathode as shown, and since the output cathode has a self-biasing resistor of 540 ohms, and since the steady D.C. current of the output section is 40 ma., the voltage drop across this resistor, R1 is 21.5 volts. The actual bias, with no signal at the input grid, therefore, is the difference between the across Ro and R1, + 2.5 volts. With this small positive bias the output grid takes approximately 1 ma. current. When a signal is applied to the input section of the tube, an A.C. voltage is impressed on the output grid which, of course, swings this grid alternately more positive and then negative. Since the grid is normally a few volts positive, more grid power is consumed when it goes more positive during that part of the cycle. In other words, more grid current is required. This grid power is automatically supplied by the action of the input section. The inherent compensating feature of this particular direct coupling provides the A.C. voltage across Ro without distortion, irrespective of the changing grid resistance of the output section. It is significant to note that the D.C. power taken by the entire tube with no signal is in excess of that required under maximum excitation. Therefore the tube operates under Class A condition and no complications in power park design are necessary—standard parts may be used. It should be noted that since the current from the input triode divides, part going through Ro and part going through the grid-cathode resistance of the output section, the current for determining the input grid bias should be measured between the input cathode and Ro, not between input plate and "B plus."

The resistor Ro, in addition to supplying the required grid bias for the input section, also acts as the load impedance of the input section and, therefore, cannot be shunted by capacitance. In fact, the total load impedance of the first tube is the parallel combination of Ro and the grid impedance of the output section.

A particularly significant fact is that although the input grid is biased to 24 volts, a signal of 25 volts r.m.s. is required to deliver the rated output of 4 watts. Although the peak value of the signal applied to the tube is approximately 35 volts, this grid does not draw current because of the regeneration taking place, due to the lack of bypass action across Ro.

2A7 and 6A7 Electron-Coupled Converters

These two tubes are five-grid, electron-coupled detector-oscillators designed especially to replace the more conventional oscillator and detector tubes in superheterodyne receivers. These tubes are similar in electrical characteristics, except for the filament rating; the 2A7 is rated at 2.5 volts at .8-ampere and the 6A7, 6.3 volts at .3-ampere. Combining the functions of oscillator and detector into a single tube offers several advantages; first, the translation gain—intermediate-frequency voltage divided by the R.F. signal voltage—is greater in the 2A7 and 6A7 than when separate tubes are used; second, more complete isolation between the R.F. oscillator and I.F. circuits is secured; and third, the frequency of oscillation of the oscillator is much more stable than in the more conventional arrangements. This latter is due to the fact that the frequency of oscillation is independent of the load on the oscillator portion of the tube, a characteristic which is common to all electron-coupled oscillators.

It might be well to reconstruct this tube and analyze its action. Fig. 2A shows a heater, a cathode, a grid, and a plate, similar in construction to a 27 tube, with which we are all familiar. In such a tube we know that the signal is applied between the grid and the cathode, and, furthermore, we know that the positive swings of the signal increase the plate current and the negative swings of the signal decrease the plate current. Instead of making the plate of a solid piece of metal, suppose we construct it of two rods, connected together as shown in B of Fig. 2. We know, of course, that these small rods will not collect as many electrons as would the solid plate shown in A, but we do know that this tube will function exactly as that shown in A. Our new tube may now be connected in the conventional oscillator arrangement, as shown at C of Fig. 2. So far, the only change made was in the physical construction of the plate. Suppose, we now put another grid and our old plate inside the tube, as shown at D. Our tube is now divided into two distinct parts: the triode unit shown at C, and another grid and plate. If we connect grid No. 1—shown at E in Fig. 2—to an oscillator circuit, connected as shown in 2C and grid No. 3 to a radio frequency signal, the final connection will be that shown at E. The two coils, shown to the left in this diagram, are the usual oscillator coils used in the conventional superheterodyne; and the two coils shown in the center, are the conventional first-detector R.F. coils, while the two coils at the extreme right constitute the first I.F. transformer.

Thus we see that grid No. 1 is the control grid for the oscillator while the two rods—called the anode grid—act as the plate of our simple 3-element tube, shown at B. These rods are known as grid No. 2. The third grid which we installed and which we connected to the R.F. coil is known as grid No. 4; the grids 3 and 5 merely surround this grid in order to shield from the plate and from grid No. 2. This shielding results in a high plate resistance, common to all tetrodes, giving a high gain and also preventing interaction between the signal section and the oscillator section.

We may now trace out the complete action of the

between G2 and the plate, those electrons which do not pass it are further varied in intensity because of the signal applied to grid 4. Now, grid 4 is biased exactly as an amplifier, and because of the interaction of the signal and the oscillator, only one-half of the signal causes current to flow to the actual plate. In this manner the electron stream to the plate—hence, the plate current—is varied; first, by the oscillator; and second, by the signal. Consequently, the I.F. produced is equal in frequency to the difference between the oscillator and the signal, and flows through the first I.F. transformer primary.

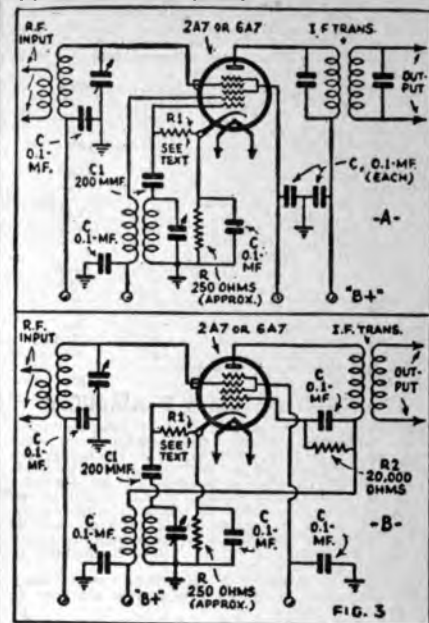


Fig. 3

Two circuits showing how the 2A7 or 6A7 tubes may be connected.

In connection with this theory, it should be pointed out that enough electrons must exist between grids 2 and 3 so that the plate current may be increased due to the positive parts of the signal even though the oscillator grid may be negative. In other words, that space in the tube between grids 2 and 3 becomes a virtual cathode for the signal portion of the tube. This idea is expressed by the sketch at F in Fig. 2. The signal grid G4, is so constructed that it has variable- μ characteristics. This condition enables the tube to be connected in the conventional A.V.C. circuits when other A.V.C.-controlled tubes are of the 5B type.

The range of control-grid bias required to control the I.F. signal should be governed by the screen grid—G3 and G5 voltage. With 100 volts on the screen grid and 3 volts on the signal grid, the range of the bias voltage may be from 3 to about 50. If the screen voltage is below 100 volts, then the maximum variation in signal grid bias must be somewhat less than 50.

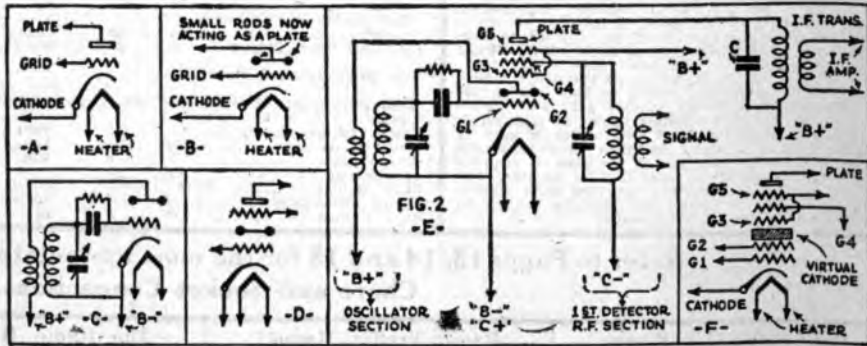


Fig. 2

A series of drawings pictorially showing the construction and operation of the 2A7 and 6A7 tubes.

electron-coupled converter. The cathode emits a copious supply of electrons which are attracted mostly by the positive potential of grid No. 2. In view of the fact that the cathode, grid 1, and grid 2, is producing oscillations, the electron stream passing through the two grids varies at the frequency of oscillation of this section of the tube. Since grid 3 is interposed

Two circuits illustrating the use of this tube are shown in Fig. 3. The circuit of A is similar to that shown in Fig. 2E. The only difference lies in the use of additional resistors and condensers. Condensers C are 0.1-mf. bypass units; resistor R is the bias resistor for the modulator section, and its value depends on the screen voltage—voltage of grids 3 and

The New Tubes and Their Uses—Continued

5. R1 should have a value between 10,000 and 25,000 ohms when the screen voltage is 50; a value between 25,000 and 50,000 ohms when the screen voltage is 75; and a value between 50,000 and 100,000 ohms when the screen voltage is 100. Resistor R2 should have a value of 20,000 ohms when the plate voltage is 250. This resistor is used to prevent the anode-grid, G2, from overheating and becoming red-hot—when the oscillations are feeble and the plate voltage is high. This circuit at B of Fig. 2 is similar to that shown at A, except that the current for both screen and the plate flow through the anode-grid coil. This system results in increased stability of output especially at the low frequency end of the scale, although both systems 1 and 2 are very stable.

The following ratings and characteristics for this tube may be considered as normal:

Plate Voltage	250 max.	Volts
Screen Voltage (Grids Nos. 3 & 5)	100 max.	Volts
Anode-Grid (Grid No. 2)	250 max.	Volts
Control-Grid (Grid No. 4)	3 min.	Volts
Total Cathode Current	14 max.	Ma.
Typical Operation:		
Heater Voltage	2.5	Volts
Plate Voltage	250	Volts
Screen Voltage (Grids Nos. 3 and 5)		
Anode-Grid (Grid No. 2)	250	Volts
Control-Grid (Grid No. 4)	3	Volts
Oscillator-Grid (Grid No. 1)	—	Volts
Resistor	50,000	Ohms
Plate Current	4.0	Ma.
Screen Current	2.0	Ma.
Anode-Grid Current	0.5	Ma.
Oscillator-Grid Current	0.5	Ma.
Plate Resistance	0.3	Megohm
Conversion Conductance	475	Micromhos
Conversion Conductance at 42.5	—	—
Grids on Grid No. 4	2	Micromhos

the 53—Twin Class B Amplifier

The 53 is a heater-cathode type of tube combining in one bulb two high-mu triodes designed for class B operation. It is intended primarily for use in the output stage of A.C. operated radio receivers. The triodes have separate external terminals for all electrodes except the cathodes and heaters, so that circuit design is similar to that of class B amplifiers utilizing individual tubes in the output stage. The 53 may be used as a class A amplifier (with triode units connected in parallel) to drive a 53 as a class B amplifier in the output stage.

The base pins of the 53 fit the standard seven-contact socket which may be installed to operate the tube in any position.

The heater is designed for A.C. operation at 2.5 volts. The cathode should preferably be connected directly to a mid-tap on the heater winding. If this practice is not followed, the heater may be biased negative with respect to the cathode by not more than 45 volts.

As a class B power amplifier, the 53 is used in circuits similar in design to those utilizing individual tubes in the output stage. It requires no grid bias, since the high-mu feature of the triode units reduces the steady plate current at zero bias to a relatively low value.

The D.C. plate current required in class B circuits fluctuates under normal operating conditions. The power supply, therefore, should have good regulation to maintain proper operating voltages regardless of the current drain. For this purpose, a suitably designed power unit should be employed. The rectifier tube should have reasonably good regulation over the operating range. In some circuit designs, a vacuum-type of rectifier tube can be used; while in others, a mercury-vapor type may be needed to provide the required regulation. As a factor in obtaining good regulation, the filter chokes and the transformer windings should have low resistance. In the design of a power supply for a class B amplifier, consideration should be given to economical distribution of losses. Also, the power supply should be designed to take care of the average power requirements with sufficient regulation to meet the peak power demands.

The grids of the 53 are alternately operated sufficiently positive to cause grid current to flow in their input circuits. This feature imposes a further requirement on the preceding amplifier stage. It must supply not only the necessary input voltage, but it must be capable of doing so under conditions where appreciable power is taken by each grid of the class B amplifier tube. The design of a class B audio amplifier with its driver stage is, therefore, somewhat more involved than for a class A system and must be checked for each change in the component parts.

In the design of class B amplifiers, the interstage transformer is the link interconnecting the driver and the class B stage. It is usually of the step-down type; that is, the primary input voltage is higher than the secondary voltage supplied to the grids of the power output tubes. Depending upon conditions, the ratio of the interstage transformer primary is one-half its secondary and may range between 2.5/1 and 5.5/1. The transformer step-down ratio is dependent on the following factors: (1) type of driver tube; (2) type of power tube; (3) load on power tube; (4) permissible distortion; (5) transformer efficiency (peak power). The primary impedance of the interstage transformer should be essentially the same as if the transformer were to be operated with no load; that is, into an open grid. Since power is transferred, the transformer should have reasonable power efficiency.

The type of driver tube chosen should be capable of handling enough power to operate the class B amplifier stage. Allowance should be made for transformer efficiency. It is most important, if low distortion is desired, that the driver tube be worked well below its class A undistorted output rating, since distortion produced by the driver stage and the power stage will be present in the output.

As a class A amplifier triode, the 53 may be employed in the driver stage of class B amplifier circuits, and thus reduce the number of tube types necessary in a receiver. When operated in this way, with a plate supply of 800 volts and corresponding grid bias, and 53 is capable of supplying a power output of upwards of 400 milliwatts. The load into which the driver works will depend largely on the design factors of the class B amplifier. In general, however, the load will be between 20,000 and 40,000 ohms. For class A amplifier triode operation of the 53, the two grids are connected together at the socket; likewise, the two plates. These connections place the two triode units in parallel. Operation of the tube is then similar to any class A power amplifier triode.

The D.C. resistance in the grid circuit of the 53 when operated as a class A amplifier may be as high as 0.5 megohm with self-bias; with fixed bias, however, the resistance should not exceed .2-megohm.

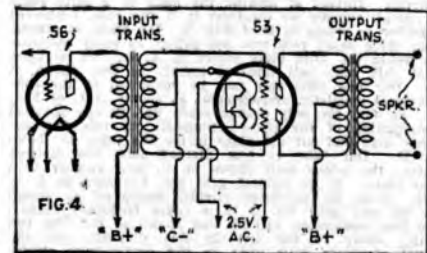


Figure 4 shows a typical circuit. The following ratings and characteristics are obtained:

Heater Voltage (A.C. or D.C.)	2.5	Volts
Heater Current	2.5	Ampere
As Class B Power Amplifier		
Plate Voltage	800 max.	Volts
Dynamic Peak Plate Current (Per plate)	125 max.	ma.
Average Plate Dissipation	10 max.	Watts
Typical Operation:		
Heater Voltage	2.5	Volts
Plate Voltage	250	300
Grid Voltage	0	0
Static Plate Current (Per plate)	14	17.5
Load Resistance (Plate-to-plate)	8,000	10,000
Nominal Power Output*	8	20
As Driver—Class A Amplifier		
(Both grids connected together at socket; likewise both plates.)		
Heater Voltage	2.5	Volts
Plate Voltage	250	294
Grid Voltage	5	6
Amplification Factor	85	85
Plate Resistance	11,300	11,000
Mutual Conductance	3,100	3,200
Plate Current	6	7

The 25Z5: New Rectifier-Doubler Tube

The 25Z5 is a full-wave high vacuum rectifier of the heater-cathode type for use in suitable circuits designed to supply D.C. power from an A.C. power source. This tube is of particular interest because of its adaptability to the design of "transformerless" receivers of either the "universal" type or the more conventional A.C. operated type. For use in the "universal" or A.C.-D.C. types of receivers, the 25Z5 may be employed as a half-wave rectifier, while in the strictly A.C. operated type, it may be used as a voltage doubler to provide about twice the D.C. output voltage obtainable from the half-wave arrangement. This two-fold application is made possible by the use of separate pin connections for each electrode—there is one cathode for each half-wave arrangement.

The heater of this tube has been designed in order to facilitate its economical operation in series with the heaters of other tubes in the radio set. The employment of a 25-volt heater in this 25Z5 permits the connection of a receiver having reduced heat dissipation in the fixed series resistor which is almost always required in a series type filament connection.

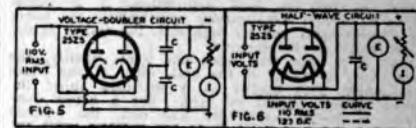


Fig. 5 and 6

The voltage-doubling property of this tube will now be considered in more detail:

In rectifying circuits using tubes, current flows between cathode and plate only during the time when the voltage on the plate is positive. Such circuits, in their simplest form, employ a single diode which rectifies the A.C. supply on alternate half-cycles. The output of a single diode consists of uni-directional pulses of current and voltage. These pulses may be smoothed by means of an A.C. supply filter. If two diodes are employed, each half-cycle of the A.C. supply may be rectified. The conventional circuit using two diodes is known as a full-wave rectifier. The features of such a rectifier in comparison with a half-wave rectifier are: approximately twice the output current with essentially the same D.C. voltage output; and more economical filtering due to the doubled frequency of the output pulsations.

In comparison with the full-wave connection, another arrangement of two diodes is of interest. In this case, two diodes, one of which is reversed with respect to the other, are connected to two condensers as shown in Fig. 5. This arrangement provides rectification of each half-cycle of the A.C. supply. Furthermore, during the period that one diode is rectifying, the condenser across the other diode is discharging through the load and the conducting diode. As a result, the voltage across the load is the sum of the D.C. output voltage of the conducting tube and the discharge voltage of the condenser. The total D.C. voltage across the load, therefore, is approximately twice the D.C. voltage obtainable from a half-wave rectifier. For this reason, this circuit is known as a voltage-doubler. Like the full-wave circuit, the doubler circuit gives an output having a ripple frequency twice that of the supply line.

In the design of a voltage doubler using this circuit, large capacitances are necessary to give good regulation of the D.C. output at higher values of load current. A point of interest to the set designer, however, is that the voltage rating of these condensers is determined not by the D.C. output voltage, but by the peak value of the A.C. supply.

Figure 6 shows the circuit diagram of the 25Z5 when used as a half-wave rectifier, the purposes for which were explained above.

The following rating and characteristics obtain: Heater voltage, 25; heater current, .3-ampere; R.M.S. plate voltage per plate, 125; D.C. load current, 100 ma.

Refer to Pages 13, 14 and 15 for the most up-to-date Tube Characteristic Chart and Socket Connections.

Riding the Air Waves by Eric Palmer, Jr. Cloth covers, size 7 1/2 x 5 1/2 ins., 328 pages. No radio amateur or "ham" can afford to be without this book, written by the author of "Around the World with 5 Writings" No. 847. \$2.00	Radio Traffic Manual by R. L. Duncan and C. E. Drew. Flexible covers, size 9 x 6 ins., 186 pages. A live wire book for all radio amateurs, including how to learn code abbreviations, international Radiograph Conventions, Radio Act of 1927, etc. \$2.00	The Radio Handbook by James A. Moyer and John F. Westral. Flexible covers, size 5 1/2 x 8 ins., 886 pages, 650 illustrations. Comprehensive data of shortwave apparatus, vacuum tubes, modern radio receivers, etc. No. 849 \$5.00	Television, Its Methods and Uses by Edgar H. Fellix. Cloth covers, size 5 1/2 x 7 1/2 ins. 272 pages, 73 illustrations. A practical complete cross-section of television today. One of the very best books on this important art in print. No. 827 \$2.50
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P. A. Systems—A New Field for the Service Man

Today, more than ever before, public address work offers money-making opportunities for wide-awake Service Men who have the gumption to go out after business. Amplifiers and accessories are available in great variety to suit numerous purposes, and their prices have reached levels that were considered impossible only a few years ago. You can quote reasonable figures for even large installations and still make a profit.

You must not expect business to fall into your lap without effort on your part. Acquaint yourself with the various public places of your city and consider them all as prospects. Even in very small towns there are many promising possibilities. As prospects for permanent indoor installations of small or large size, jot down the names and addresses of all the local establishments of the following classifications: churches, dance halls, skating rinks, lunch wagons, restaurants, schools, factories, lodge halls and auditoriums.

How to Get Business

Go after the churches first. Because of their size and architecture, their acoustics are usually poor, and many a good preacher finds himself handicapped by his inability to make his natural voice heard in the back rows and in the balcony. The use of a P. A. amplifier and a few judiciously placed loudspeakers has increased attendance at more than one house of worship.

Of course you want to make sure that any particular church would benefit by the addition of a P. A. unit. Simply attend yourself and make personal observations on the spot. This is the only way to prepare yourself for any sales campaign. In business, as in war, preliminary preparation is half the battle.

Dance halls and skating rinks, which are the main places of amusement in many towns, are "naturals" for the Service Man. Look up the places that now use only three- or four-piece bands or perhaps a radio receiver that is overloaded beyond the point of respectable quality. Talk to the owners and show how they can make their halls more attractive by playing selected, high-grade phonograph records, made by the most expensive bands in the country, instead of annoying the customer with a sour saxophone or an untuned piano.

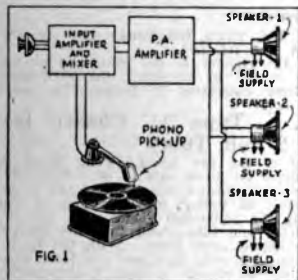


Fig. 1

Showing block layout of a typical Public Address Installation. All installations follow this layout with varying degrees of modification.

Most communities are very proud of their schools and will spend considerable money on them in preference to other municipal undertakings. Therefore by all means approach the school board and present the idea of a public address amplifier for general use throughout the school building or buildings. In many schools, a microphone is permanently located on the principal's desk, so that he can make announcements to all classes simultaneously through loudspeakers in the individual class rooms.

If the school auditorium is also the town meeting place and the center of political and social activities,

you have even a stronger argument. Always emphasize the fact that speakers, entertainers, etc. do not have to exert themselves in order to fill the hall; they merely speak or sing in their natural voices and the P. A. unit does the rest. Play up the microphone stuff. The "mike" has a magic, irresistible attraction that rarely fails to "get" people who step in front of it.

You may wonder why factories are included on the list of prospects. The answer is that they represent a veritable gold mine. While many plants are running at reduced capacity, there are plenty that are still busy, and there never has been any let up in some lines. For creating and maintaining employee morale, particularly in factories where the work is monotonous, there is nothing like a P. A. system reproducing phonograph music through a few scattered loudspeakers. Numerous companies are using this scheme and are finding it highly effective, especially if the workers are women and girls.

As in other fields of salesmanship, nothing is as effective as a demonstration. In the case of P. A. amplifiers you can "make them talk for themselves." People who have had no experience with such devices do not fully appreciate possibilities, and they must be made to talk into a mike and also hear some

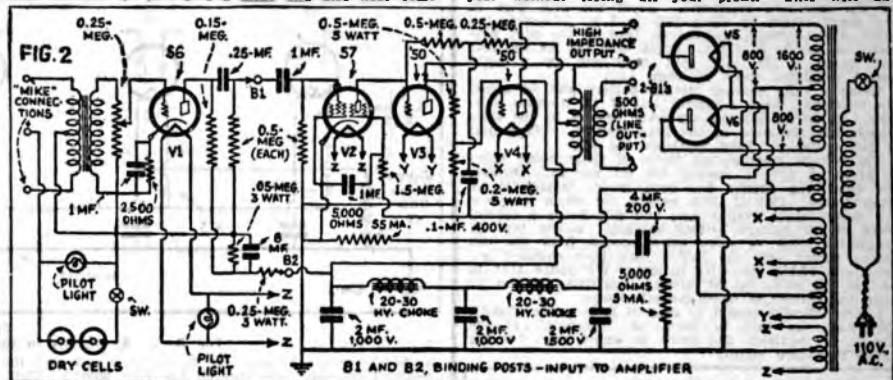
Installation Problems

Because the loudspeakers and sometimes the amplifiers themselves are used outdoors and are therefore liable to damage by the elements, the question of service and maintenance in outdoor P. A. work is of paramount importance. Exposed horns should be tilted mouth downward to prevent rain and snow from accumulating. Dynamic speakers with baffles should be carefully boxed up or protected by false tops. Connecting wires must have thoroughly waterproof insulation, and all soldered joints must be made with rosin-core solder. The humid atmosphere around swimming pools—particularly salt water pools—raises the very devil with poor connections and unprotected surfaces.

If possible, install the amplifier, the microphone and the phonograph turntable in the manager's office, where it will not be tampered with. Encourage the manager himself to make announcements via the "mike." He'll probably soon learn to like his own voice, and you'll have a strong local booster for P. A. systems.

Free Service

Since the outdoor season is comparatively short, you can offer free service on your installation the first year without losing all your profit. This will un-



real phonograph music. This means you must have an amplifier available and must be prepared to demonstrate it on the prospects' own ground or in some other easily accessible place. You must not expect a man to buy something "sight-unseen," or rather "sound-unheard." In this case, your purchase of one amplifier to start with represents your investment in a business. Once you have installed the first job you can then bring prospects around to hear it under actual working conditions, and things will be easier from then on.

Make sure the local papers know about that first installation. They are always anxious to get local news and may be able to give you extremely valuable publicity. Don't be modest; call 'em up and tell them all about it. If you don't blow your own horn no one else will.

Before you open your sales attack, you want to have a pretty good idea of what kind and size of amplifier and how many loudspeakers will meet the particular requirements. You should have on a microphone, a phonograph turntable and pickup and plenty of outside wire. This latter detail is an important one, and many a Service Man has come to grief over it because he neglected to include it in his bill of materials. By the time you get finished draping wire around corners, up poles, over roof tops and down buildings, you may need several hundred feet.

doubtedly appeal to the prospect, as he doesn't have to worry then about the apparatus, except for paying for it.

Figure 1 shows a block layout of a typical P. A. installation. As you will notice, it consists of an input from either a "mike" or a "phono pickup" into a mixing unit that serves to attenuate the current from either unit. From the attenuator or "mixer" the current is fed into the main amplifier which depends in size on the number of speakers required and the number of people to be served by the P. A. system.

For typical installations, up to 8 speakers for medium sized auditoriums, churches, dance halls, etc., an amplifier such as No. PA-1 shown on page 42 of this catalog is ideal. The circuit of an amplifier of this type is shown in Fig. 2. It will be noted that the input amplifier in this case is in a separate unit. This is not essential and in many amplifiers such as PA-1, the entire amplifier is housed in a single chassis.

In feeding from remote microphones to the amplifier or from the amplifier to remote speaker units, it may be necessary to use some means of matching the impedances of the two units. This is accomplished by the use of suitable matching transformers. The engineering staff of the RADIO TRADING CO. will be pleased to assist any Service Man in solving matching problems and in fact, any problem concerning the installation of a P. A. system.

Revamping Six-Volt Battery Sets For Two-Volt Tubes

The Service Man located in rural districts will find a profitable source of income by modernizing battery sets. There are many of these radio receivers in use which can be made to compare favorably with modern

battery receivers by inserting tubes of the new two-volt types in place of the older six volt varieties.

The changes required to successfully convert battery sets to these tubes vary with the individual make and

circuit. Two examples are given below which will explain the general procedure followed in converting practically every set. These two receivers are very popular in districts where battery operation is necessary and for this reason, the details supplied will be found of actual use in practically all makes of old battery sets.

R.C.A. — 22 Chassis

The RCA 22 is a five-tube battery set originally using two 22's and three 12A's (or two 12A's and one 713). Replacing the 22 with 22's is a comparatively simple operation in this set. The owner saves money and the Service Man paves the way for a complete change to five, two-volt tubes and a little extra revenue. With two 32's, two 30's, and one 31 in place of the original layout, the total filament drain is cut to approximately one-third of its former value. This means, not only less cost for battery charging, but, in the case of an owner located at a distance from a garage or radio service station, less inconvenience, since every battery charging operation means bother, and perhaps one or two days without reception.

Installing 2-Volt Tubes

Take out the chassis and turn it over; have the back edge toward you. Near the center of the nearer edge is a flat resistance strip (R1 in Fig. 1A). This strip is the bias resistor of 6.5 ohms for the two R. F.

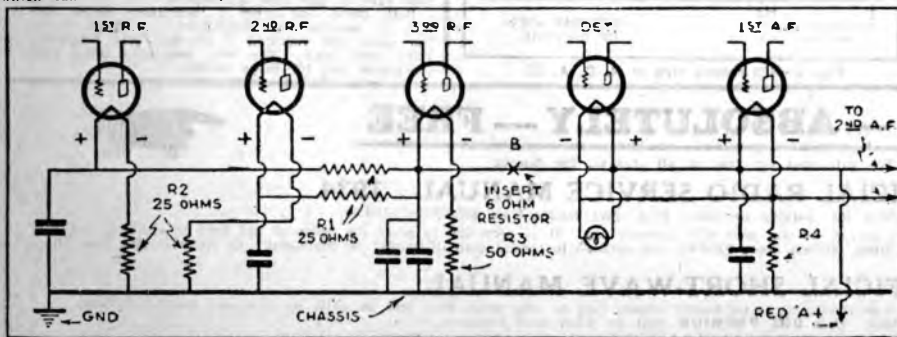


Fig. 3—Schematic Diagram of A. K. Model Q Receiver showing new resistors in place.

Revamping 6-Volt Battery Sets For 2-Volt Tubes—Continued

tubes. It is grounded at one end. Disconnect the lead at the grounded end and insert an additional resistor of 6 ohms at X1, grounding, of course, the free end. See Fig. 2. These resistors are made of nichrome wire, wound on a fibre strip; No. 28 nichrome wire has a resistivity of 4.25 ohms to the foot. Allow a few extra inches above that required, so that a lead may be added to the junction of the wire. Through one of these resistors, R3, flows the current for the power tube and the two R. F. tubes. Make sure you have the correct one by tracing the lead (black) to the filament socket of the power tube. Take a one-ohm fixed resistor and short out one-quarter of it. Insert this resistor between the end of the resistance strip and the power-tube socket (at X2). A yellow lead, A+, in the cable, is soldered to the junction of the two. Through one of these resistors, R3, flows the current for the power tube and the two R. F. tubes. 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Using a fully charged storage battery and an accurate voltmeter, make a careful test of all filament voltages. Minor adjustments are taken care of by the extra length left available in the bias resistor. (This bias is not critical.) Then rebalance the set.

The voltage amplification factor of these newer tubes is given as 440 as against 300 for the 22's. Owners, for whom the change has been made, believe it an improvement. One of these owners, for whom we made the change eight months ago, and who keeps a careful check of his storage battery charging, insists that he is getting 30% or more extra service from the one charge though only the R. F.'s have been changed and the three 12A's are still in use. We judge this to be due, possibly, to the greater sensitivity of the 32 when the battery is below normal charge.

Little difficulty should be met in making the change. The leads are easy to trace, no "wrecking" of the chassis is required, and there is ample room for the added resistance strips.

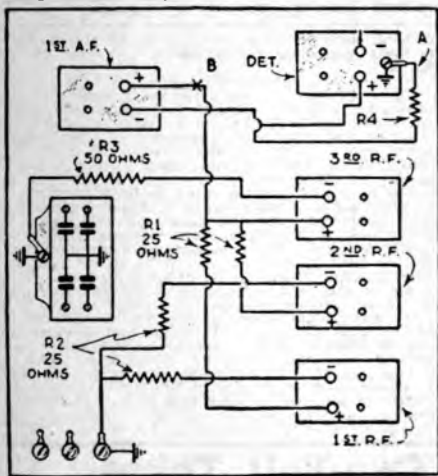


Fig. 4

Changing the Audio End of the Set

When the time comes to change the audio and detector ends, proceed as follows: remove the three-quarter ohm resistor previously inserted at X2 and replace with one of two ohms. This assumes the use of a 31 in the power stage (filament drain, .13-amp.), therefore, four ohms (very nearly) in this lead gives the required one-volt drop. (Total filament current is

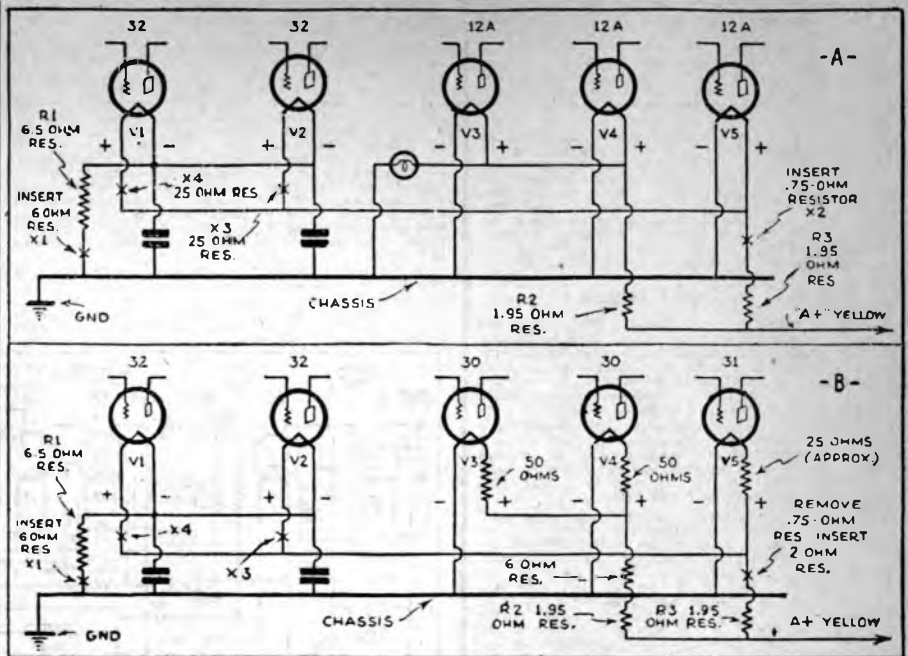


Fig. 1.

The R. C. A. Chassis in various stages of conversion

to be .13- plus .12-amp. for 32's, which will give the required one-volt drop through the four ohms.) Thus, changes in the previously added R. F. resistors are not needed. In series with the other 1.95 ohm resistance, R2, shown in Fig. 1A, add an additional six ohms. The total resistance, now eight ohms and the .12-amp. for the two 30's (detector and first audio), gives a one-volt drop. Now we need three volts drop for each of these last three tubes. Fifty-ohm grid suppressor (test them) for the plus leg of both detector and first audio tubes will supply this. For the 31, a 25-ohm resistor is a bit high, but can be "doctored" if required. As before, test everything carefully. It is not advisable to follow the original schematic and use a single resistor for two tubes; give each tube a resistor of its own, otherwise, if one blows, the other may follow suit. A diagram showing the changes to be made to alter the audio end is shown in Fig. 1B.

The owner of one of these sets complained of harshness at high volume but did not care to use the 71A with its added "B" drain. We added a .002-mf. fixed condenser in parallel with the one already across the

secondary of the first audio transformer and he was pleased. The 12A was retained.

When inserting the resistor in the plus lead of the detector tube, be careful to disconnect the pilot-lamp lead. Run a direct connection to yellow "A" plus and use a 6-volt lamp.

Changing A. K. Type "Q" Chassis for 2-Volt Tubes

The R. F. end of the two Atwater-Kent Model Q chassis can be changed for 2-volt tubes. This is a seven tube battery set originally using three 22's in the R. F. end. It is advisable to replace only the 22's in the R. F. end, leaving the audio end alone.

Remove the shields and tubes, and turn the chassis over. Remove the bottom cover plate. With the R. F. end to your left, you will note that near the front edge (away from you) of the chassis a short yellow-covered wire leading direct from the minus on the first audio to a grounded lug on the detector socket. This lead is carrying the filament current of the detector and audio tubes to ground. This lead need not be changed as the R. F. filament currents return to ground by other paths. Attached to the filament posts of the R. F. sockets will be seen the R. F. filament resistors and the R. F. bias resistors; they are long, thin, covered wires, black with white tracer. Remove them. They will be replaced by resistors (25- and 50-ohm suppressors) as indicated in Fig. 3. Break the wire connecting the first audio filament plus to the third R. F. filament plus at B (Figs. 3 and 4). Insert a six ohm resistor. This resistor will carry the current for the three R. F. tube filaments, .18-amp., and there will be a one-volt drop here. Now insert the 25- and 50-ohm suppressors as shown in Fig. 4. Note that the new resistance schematic follows the original one.

It is best to wind the six-ohm resistor inserted at B. Allow a little extra, as in the previous job. This will take care of any final adjustment.

Both these sets carry a tremendous punch and we had no trouble with oscillation. A third chassis of the same type required a 500-ohm grid suppressor in third grid lead. The sets mentioned have been in continuous use for many months.

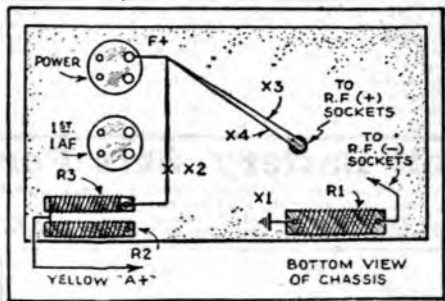


Fig. 2—Sub-chassis view of R. C. A. 22

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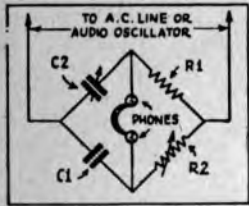
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The samples on these pages show you how to do it. Just send us a good suggestion that will be of benefit to other radio men, and if acceptable, we will publish it in our next issue.

It is not necessary to make good drawings; a rough sketch will do. Our artist will make the final drawing. Each suggestion printed here will be paid for at the rate of \$3.00 upon publication. Preference is usually given to suggestions listing parts obtainable from this catalog.

Address all suggestions to Editor, Radio Suggestions, c/o Radio Trading Company, 100 Park Place, New York.

Measuring Condensers With An A.C. Capacity Bridge



This device uses the capacity bridge principle similar to that used in laboratory test equipment. It can be made to tell the capacity of condensers, either singly or in groups connected in series or parallel.

The circuit is shown here. In order to set the bridge in operation, it must first be balanced. This is done by inserting a fixed condenser of .001 mf. as C1. Vary the resistance R2 until the hum disappears. Resistor R2 should now be left permanently in this position. For future tests, place the condenser to be checked in the place of C1 and vary C2 until the hum disappears. At this point, the dial setting will indicate the capacity of the condenser under test. If a straight line capacity condenser is used for C2, with a 0-100 degree dial, the capacity can be read direct by finding the positions of zero hum for several condensers of known capacity.

R1 is an ordinary 25 watt lamp, R2 is any suitable high variable resistance, while C2 is a good straight line capacity condenser. Good results will be obtained with the device operated from the power line as shown, but better results will be obtained by using an audio oscillator instead.

Suggested by:

E. T. FIRTH,
43 Roy Street,
Wellington South, N. Z.

Connecting Earphones to a Receiver

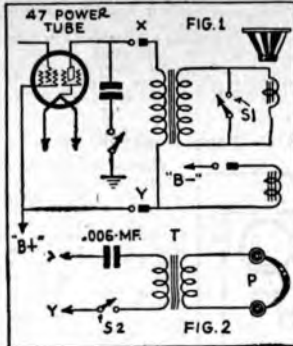


Fig. 1 gives the hookup of output of my No. 70 Phlico. The plug of the speaker cord has three points, X, Y, Z. Hook in on X and Y either by splicing into speaker cord, or by putting an adapter under the power tube. Hook a switch in at S1 to silence speaker.

Fig. 2 shows the phone hookup. The .006 mfd. condenser eliminates the hum that has made such hook-

ups unworkable. T is a 3-to-1 audio transformer; it is not essential but improves the quality and removes noise.

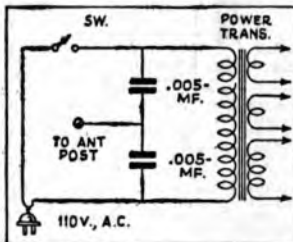
The switch S2 is necessary, if the phones ever are disconnected for other use, as the transformer will cause the loudspeaker to howl unless the phones are taking care of the output.

LIST OF PARTS USED

	Cat. No.	
1	Audio Transformer	1455 \$0.55
1	Condenser .006	NM-1284 .27
2	Toggle Switches	1601 @ .18 .36
1	Set of Headphones	1678 .30

Suggested by: T. HAROLD MACKINTOSH,
31 Henrietta St.,
Ashville, N. Car.

Improved Light-Socket Antenna



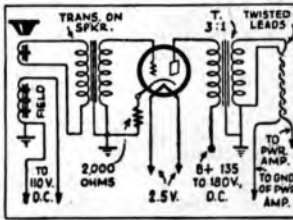
I have made many light-socket aeriels with more or less success, but here is one I have made which out-performs any I have used before.

Two mica condensers size .005 mf. are used, one in series with each side of the line. The other two leads are fastened together and go to the Antenna post on the set.

For a built-in aerial, these condensers may be mounted on the chassis and connected to the cord near the power transformer and to the Antenna post of the set, all wiring being done under the sub-panel, eliminating the necessity for an external aerial connection. By using two condensers, uniform performance is secured which ever way the plug is inserted in the socket.

Suggested by: O. R. GOLLNICK,
407 Calsonia St.,
La Crosse, Wisconsin.

A Microphone Substitute



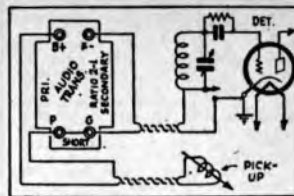
Not long ago, I wanted to do some public address work, but not having a good microphone, I devised a substitute that worked very satisfactorily. It consisted of connecting a dynamic speaker to the P.A. amplifier, as shown in the accompanying diagram.

An extra amplifier tube was connected between the microphone and the regular P.A. amplifier, as a pre-amplifier. This supplied the full amplification desired, with fine tone quality.

The parts needed are as follows: one dynamic speaker; one audio transformer 3:1 ratio; one 200 ohm resistor; one 5-prong socket; one 5B tube. All these parts will be found in this catalog.

Suggested by: ELZA RUNKLE,
5103 Wabash Street,
Kansas City, Mo.

Radio-Phonograph Reproduction



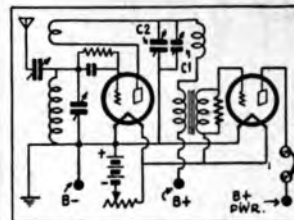
Those who are interested in phonograph amplification will find this suggestion of value. It consists of inserting a step-up transformer between the pickup and the amplifier. This increases the voltage supplied to the amplifier and the signals.

An ordinary audio transformer is used for the step-up transformer. Any good transformer, listed in this catalog may be used. Some pickup units are better adapted to this system than others. Those with a rather high impedance, which matches or is close to the primary impedance of the transformer work best.

Suggested by:

EATLE STARK,
11716 Kinsman Rd.,
Cleveland, Ohio.

Improving Regeneration in Short-Wave Sets



Many times the constructor of a short-wave receiver runs up against the problem of making the receiver oscillate over the entire scale of the tuning dial, on each plug-in coil. This is especially true in cases where a variable condenser is used to control regeneration.

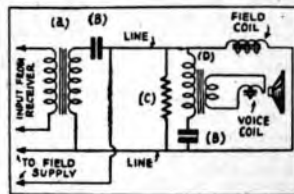
Often times, one finds that while using certain coils oscillation is "NII" on the last 10 or 15 degrees on one or both ends of the dial.

This can be corrected and the receiver made to oscillate as it should, over the entire scale, by simply bridging the regeneration control variable condenser with a trimming condenser such as No. 1742 and 1743 as listed in the catalogue. This may have to be entirely closed to make certain receivers oscillate as they should, but as it is adjustable it can be set at the desired point and left in this position. One setting is usually found that is satisfactory for all coils.

Suggested by:

J. M. TUBBS,
Amateur Operator, W-8TF,
Wallace, W. Va.

Universal Transmission Line for Remote Dynamic Speakers



Sometimes in the installation of speakers it is not practical to run four lines or a four wire cable to supply the fields and voice coils of dynamic speakers located at remote points. This difficulty may be overcome by following the circuit shown.

Both D.C. field-exciting current and A.C. signal current pass over the same line without interference. The A.C. passes through the condensers but the D.C. is retarded. The system is adaptable to all lines up to 1 miles in length; of course the line drop, resistance and impedance must be taken into consideration at such distances.

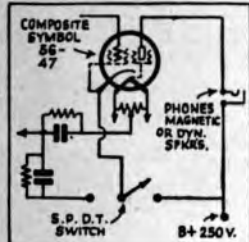
The values of the electrical components are: (A) output or tube to line transformer—line side 400 to 500 ohms; (B) 1 mf. condensers with 500 volt test; (C) resistor 50,000 ohms; (D) line to speaker transformer, 400 to 500 ohm primary—15 ohm secondary. All these parts will be found in this catalog. Other values may be substituted if necessary.

Any number of speakers may be operated at the terminus of the line providing all line to speaker transformers have the proper impedance relation. The maximum number of speakers depends upon the output of the set or amplifier.

Suggested by:

BERNARD EPHRAIM,
Box 17-160
Repress, Calif.

Improving Short-Wave Receivers



Here is a kink that will please those fans who use both the "cans" and the speaker in bringing in the elusive short-wave stations.

Using one No. 481 UY socket, it enables the operator to enjoy reception with phones, using a 5B tube, or have loud speaker operation with a 47 pentode. For phone reception a type 56 tube is inserted in the socket; the single pole, double throw switch is resistor and condenser in series in the socket.

thrown to connect the 5B bias into the circuit and the phones are plugged into the jack. (No. 201)

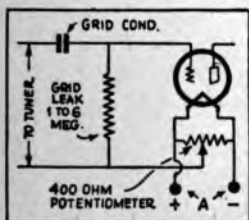
For speaker reception, a 47 pentode is placed in the socket, the switch is thrown to connect the screen grid into the circuit and the speaker is plugged into the jack. Of course, if desired, speaker operation may be accomplished with the 5B tube in the socket.

Do not operate the 47 pentode with phones plugged in, as the high plate current may injure their windings. The 47 pentode bias resistor and condenser remain in the circuit at all times as this bias circuit becomes inoperative when a cathode type tube like the 5B is inserted in the socket.

Suggested by:

CECIL A. HAASE,
421 Dale Ave.,
Roanoke, Va.

Short-Wave Detector Improvement



Recently, in trying to make my short-wave receiver regenerate more smoothly, I chanced to try the following method; with much success.

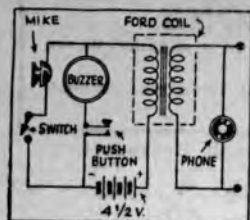
I shunted a 400 ohm potentiometer across the detector filament and connected the gridleak return directly to the arm of the potentiometer as shown in the diagram. With this system, the grid leak adjustment can be varied easily and the setting obtained and best detection.

ting found for smoothest regeneration. The grid leak may be almost any value between 1 and 6 megohms. The system is useful only for battery operated receivers—it cannot be used with sets using A.C. on the filaments.

Suggested by:

CLAUDE PRITCHARD,
Profil, Virginia.

An Experimental Telephone Circuit



This is another of the myriad uses for the old Ford spark coils. First remove the case, then carefully chip away the sealing compound until you can remove the two coils and the iron core. Do not separate them, and be careful not to cut the line wire of the secondary.

Now, mount this coil along with the other parts shown in the diagram in a suitable case, being sure to solder all connections.

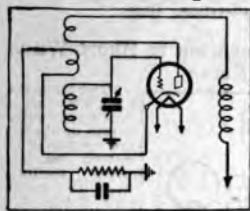
This unit can be used as an amplifier coupling unit, for P. A. work; as a code practice set; or two of them can be used to make an excellent two way telephone system. The buzzer is then used as a call signal. This telephone will give good results up to 1/2 mile.

The parts needed are as follows: One high frequency buzzer, No. R60; One 4 1/2 volt "C" battery, No. UE-3-D; One magnet microphone, No. 1655; One toggle switch, No. 1601; One head phone, No. 1847; One push button, No. 308.

Suggested by:

E. J. STEVENS, JR.
615 Melrose Street,
Kalamazoo, Mich.

Automatic Regeneration Control



Here is an idea that should be of interest to serious short wave enthusiasts. The idea is to have a "bucking" coil coupled to the regular regenerative detector coils in such a manner that its field increases as the regeneration field gets stronger. The bucking coil could be made to have the correct inductance to counteract a regeneration field with a particular value of density as to give a high order of sensitivity.

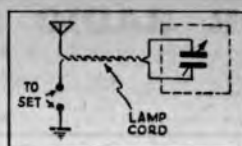
The bucking coil's field would get stronger with an increase in plate current flow and thus hold the regeneration at a constant level. With strong signals, we would have large plate current, as explained above and on weak signals with little plate current, the bucking coil would not have as large a field intensity and the regeneration would increase, thus increasing the signal strength. The only draw back would be that the bucking coil would also affect the tuning.

The latter effect could be minimized by winding the regeneration coil over the bucking coil and leave as much space as possible between the tuning and feedback coils. From experiments tried with the system, it was found that the bucking coil should have about 66 per cent of the turns on the regular plate coil, to give satisfactory action.

Suggested by:

JAMES MARTIN
20 Clark Street,
Auburn, N. Y.

A Remote Volume Control

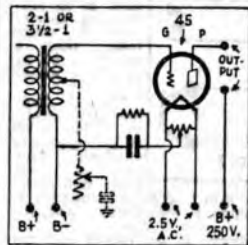


The volume of a radio set can be conveniently controlled at a distance from the set by this method.

The remote volume control consists of a 500 mmf. variable condenser mounted in a suitable box and connected between the radio and the aerial. It may be placed near the telephone, easy chair, etc., in fact, it may be placed anywhere near the aerial lead-in.

A novel use would be to connect the unit in the lead-in wire at the second floor (providing you have the whole house) so that it is not necessary to go down stairs to increase or decrease the volume of the set. Suggested by: BEISHI YASUUNAGA, Torrance, California.

A Better Tone Control



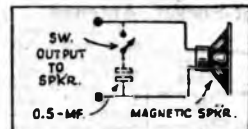
Those who have tried all types of tone controls and found them unsatisfactory, will find this one a decided improvement. Some controls will not work smoothly while others cause a booming effect.

This tone control is quite different than the rest, and will emphasize or soften any group of notes in the entire musical scale. The system is intended for amplifiers not using the push-pull system.

The second audio transformer is replaced with a push-pull input transformer. The center tap is connected to the 200,000 ohm variable resistor. This in turn is connected to a .01 mf. condenser which is grounded as shown.

I have tried this control with various power tubes, including the 12 71 and the 45 with equal success. Suggested by: HELMERS J. HUEBNER, 714 Woodland St., Houston, Texas.

Tone Control for Magnetic Speakers

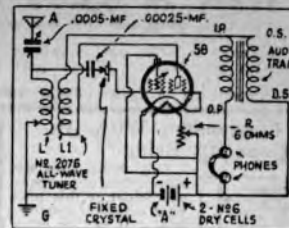


While the superior handling capacity and quality of the dynamic speaker is not denied by anyone, there are still some fans, such as myself who use the magnetic speaker for one reason or another.

The tone of a set using one of these speakers can be improved and "mellowed" by connecting a .5 mf. condenser across the output of the set to the speaker. A switch can be incorporated as shown in the diagram, to cut the condenser out when it is desired to remove it from the circuit.

By opening and closing the switch, you can have either high or low pitch response, as desired, by the use of this system. Suggested by R. YOUNG, 520 N. Hughey Street, Orlando, Fla.

An All-Wave Receiver Without "B" Power



There is an inexpensive receiver which has given me very good service. It uses one of the all-wave coils listed in the catalogue as No. 2078.

As you will notice the circuit is one of the "Unidyn" circuits which has no "B" battery. Either the 5B or 3B tube may be used, with equal results.

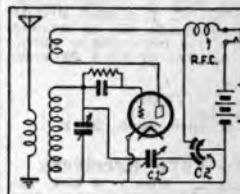
The aerial condenser which tunes the set (C1) has a capacity of 500 mmf. The grid condenser, C2 has a capacity of 250 mmf. The filament resistor has a value of 6 ohms. The crystal (Cr.) is one of the B.M.S. type. The inside and outside of the windings on the audio transformer are marked as this is important in the operation of the set.

I have had very good success with this set and I am sure that anyone who builds it will be as satisfied as I have been. The parts used are all listed in the catalog.

Suggested by:

G. P. MATHEWS,
Bloomingdale, N. J.

De-tuning in Short-Wave Receivers



In controlling the regeneration of short-wave receivers, it is usually annoying to discover that any change in the adjustment of the regeneration condenser changes the tuning, thereby necessitating a second adjustment of the tuning condenser.

I have overcome this detuning, in my set, by using the system shown. The regular regeneration condenser is replaced by two condensers. The first is a double stator condenser and the second is a variable condenser C1, of about 150 mmf. capacity.

Once the condenser C1 is adjusted, it is not necessary to change it again, unless the detector tube is changed. Condenser C2 with a capacity of about 100 mmf. on each side at full capacity reading, is varied like any regeneration condenser, and when C1 is adjusted properly, no change in the tuning will be noted when the regeneration is changed.

If a condenser was previously used in your set for regeneration control, this condenser may be employed as C1.

Suggested by:

MONT HARRIS,
3918 Illinois Street,
El Paso, Texas.

POLICE RADIO ALARM STATIONS

CGZ	Vancouver, B. C.	2452 kc.	KGFX	Denver, Colo.	2442 kc.	WKDT	Detroit, Mich.	1558 kc.
CJW	St. Johns, N. B.	2416 kc.	KGPY	Baton Rouge, La.	1574 kc.	WKDU	Cincinnati, Ohio	1706 kc.
CJZ	Verdean, Que.	2452 kc.	KGZ	Wichita, Kans.	2450 kc.	WMDZ	Indianapolis, Ind.	2442 kc.
KGHG	Las Vegas, Nev.	2474 kc.	KGZA	Fresno, Calif.	2414 kc.	WMJ	Buffalo, N. Y.	2422 kc.
KGHH	Palo Alto, Cal.	1674 kc.	KGZB	Houston, Tex.	1712 kc.	WMO	Highland Park, Mich.	2414 kc.
KGHM	Reno, Nev.	2474 kc.	KGZC	Topeka, Kans.	2422 kc.	WMP	Frammingham, Mass.	1666 kc.
KGHO	Des Moines, Iowa	1682 kc.	KGZD	San Diego, Cal.	2490 kc.	WPDA	Tulare, Cal.	2414 kc.
KGHX	Santa Ana, Cal.	2430 kc.	KGZE	San Antonio, Tex.	2482 kc.	WPDB	Chicago, Ill.	1712 kc.
KGHY	Whittier, Cal.	1712 kc.	KGZF	Chanute, Kans.	2450 kc.	WPDC	Chicago, Ill.	1712 kc.
KGHZ	Little Rock, Ark.	2406 kc.	KGZG	Des Moines, Iowa	2466 kc.	WPDD	Chicago, Ill.	1712 kc.
KGJX	Pasadena, Cal.	1712 kc.	KGZH	Klamath Falls, Ore.	2332 kc.	WPDE	Louisville, Ky.	2442 kc.
KGJL	Albuquerque, N. M.	2424 kc.	KGZI	Wichita Falls, Tex.	2458 kc.	WPDF	Flint, Mich.	2466 kc.
KGJZ	Cedar Rapids, Iowa	2466 kc.	KGZJ	Phoenix, Ariz.	2430 kc.	WPDG	Youngstown, Ohio	2458 kc.
KGPA	Seattle, Wash.	2414 kc.	KGZL	Sheveport, La.	1712 kc.	WPDH	Richmond, Ind.	2442 kc.
KGPB	Minneapolis, Minn.	2430 kc.	KGZM	El Paso, Tex.	2414 kc.	WPDI	Columbus, Ohio	2430 kc.
KGPC	St. Louis, Mo.	1706 kc.	KGZN	Tacoma, Wash.	2424 kc.	WPKD	Milwaukee, Wis.	2450 kc.
KGPD	San Francisco, Cal.	1674 kc.	KGZO	Santa Barbara, Cal.	2414 kc.	WPDL	Lansing, Mich.	2442 kc.
KGPE	Kansas City, Mo.	2422 kc.	KGZP	Coffeyville, Kans.	2450 kc.	WPDN	Dayton, Ohio	2430 kc.
KGPF	Vallejo, Cal.	2422 kc.	KGZQ	Waco, Tex.	1712 kc.	WPDN	Auburn, N. Y.	2382 kc.
KGPH	Oklahoma City, Okla.	2450 kc.	KGZR	Salem, Ore.	2442 kc.	WPDO	Akron, Ohio	2458 kc.
KGPI	Omaha, Neb.	2466 kc.	KGZS	McAlester, Okla.	2458 kc.	WPDP	Philadelphia, Pa.	2474 kc.
KGPJ	Beaumont, Tex.	1712 kc.	KGZT	Santa Cruz, Cal.	1674 kc.	WPDR	Rochester, N. Y.	2382 kc.
KGPK	Sioux City, Iowa	2466 kc.	KGZU	Lincoln, Neb.	2490 kc.	WPDS	St. Paul, Minn.	2430 kc.
KGPL	Los Angeles, Cal.	1712 kc.	KGZV	Lubbock, Tex.	2458 kc.	WPDT	Kokomo, Ind.	2490 kc.
KGPM	San Jose, Cal.	1674 kc.	KGZW	Albuquerque, N. Mex.	2414 kc.	WPDU	Pittsburgh, Pa.	1712 kc.
KGPN	Davenport, Iowa	2466 kc.	KSW	Berkeley, Cal.	1658 kc.	WPDV	Charlotte, N. C.	2458 kc.
KGPO	Tulsa, Okla.	2450 kc.	KVP	Dallas, Tex.	1712 kc.	WPDW	Washington, D. C.	2422 kc.
KGPP	Portland, Ore.	2442 kc.	VYR	Montreal, Can.	1712 kc.	WPDY	Detroit, Mich.	2414 kc.
KGQQ	Honolulu, T. H.	2450 kc.	VYW	Winnipeg, Man.	2416 kc.		Atlanta, Ga.	2414 kc.
KGPS	Rakersfield, Cal.	2414 kc.	WCK	Belle Island, Mich.	2414 kc.			
KGPW	Salt Lake City, Utah	2406 kc.	WEY	Boston, Mass.	1558 kc.			

(Continued on Page 24)

THE "RT" BEGINNER'S TRANSMITTER

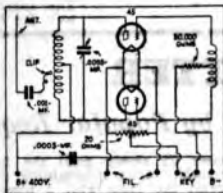
FOR THE 20, 40, 80 AND 160 METER AMATEUR BANDS

The outfit described here uses two of the type 45 tubes as oscillators. This tube was used because of its low cost and the fact that it provides practically as much output as the regular 210, at one third the cost. The transmitter is divided into two sections, namely, the radio frequency oscillator and power supply. The oscillator is mounted in bread-board fashion on a 7 by 15 inch plywood board which should be thoroughly dried and given a coat or two of shellac to prevent it from absorbing moisture in damp weather. The circuit is of the type using fixed-tuned grid and bakelite tubing with fine wire, so that their natural frequency response is near the center of each amateur band. The frequency peak of this type of coil is rather broad and for this reason the entire band can be covered with the plate circuit, without the two circuits getting out of resonance. This is a desirable feature as any part of a given band can be worked with the plate circuit being the only tuning control. To facilitate the changing of grid coils for the different bands, each coil is equipped with three small plugs that fit into corresponding jacks mounted on a strip of bakelite fastened to the baseboard.

PLATE COILS OF COPPER

Next we have the plate circuit. The plate coils for the 20, 40 and 80 meter bands are constructed of one-quarter inch copper tubing. The 160 meter coil is of a different type. This coil is made by winding No. 12 antenna wire (solid enameled) on a two and one half inch bakelite tube, four and one half inches long. Wind 25 turns on this tube very tightly, and space the turns with string of approximately the same size as the diameter of the wire. This winding is then covered with clear lacquer or some such material that is a good insulator. The other coils are spaced so that they just fit on the two stand-off insulators, which are four and one half inches apart. A 500 mmf. receiving type condenser is used to tune the plate circuit and is shunted directly across the plate coil, causing both rotor and stator to be at high R.F. (radio frequency) potential. This will cause noticeable hand capacity effects to be present when the condenser is adjusted and allowance should be made for this. Be sure to use a knob or dial that does not have its set screw exposed where the body will come in contact with it, or else a nasty burn will be the result.

From the diagram it will be seen that no grid or filament bypass condensers are used and the familiar "RF" choke is omitted from the plate circuit. No benefit was derived from their use and for that reason they were omitted. However there is no law against them; should the builder desire to incorporate them in the set, a 0.005 mfd. bypass condenser in the plate voltage supply line is all that was found beneficial.

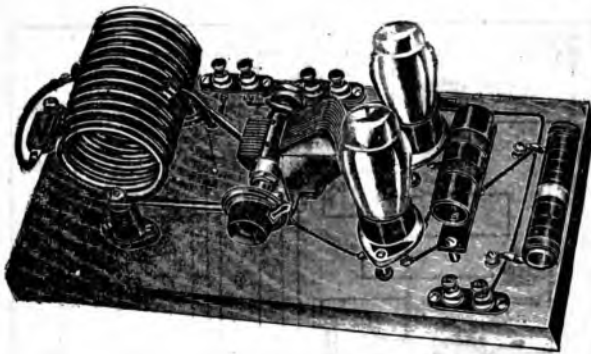


Circuit Diagram of "RT" transmitter.

This Simple but Efficient Transmitter

was designed by the engineers of the Radio Trading Company and featured in the October 1933 issue of Short Wave Craft magazine. It is recommended not only for beginners but for "ole timers" as well. In actual tests it has "worked" many Foreign and Domestic Stations in all corners of the globe. Turn to Page 51 for further information on this transmitter.

The method of coupling the antenna to the output circuit of the transmitter may cause some to wonder whether or not there is something wrong with the diagram. The transmitter was built with a pair of antenna coupling coils, one coupled to each side of the



The "RT" transmitter. Note the extreme simplicity of layout and construction.

plate tank and tuned with a variable condenser, just to see whether or not there was any difference in the output and the character of the signal. First one coil was eliminated and then both were taken out and the antenna connected directly to the plate coil with results the same in either case.

Wiring the high-frequency part of the transmitter is done with regular hook-up wire and all connections well soldered, except the two leads connecting the plate coil to the tuning condenser; these leads are made of the same size copper tubing as the coils.

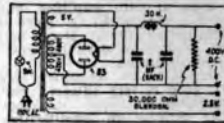
POWER SUPPLY

The power supply to operate this transmitter delivers 400 volts at 150 milli (m.a.) for the plates of the tubes and 2.5 volts for the filaments. A type 83 mercury vapor rectifier is used because of its low voltage drop, which provides very good regulation. A filter consisting of a 30 henry iron core choke with a 2 mf. condenser on either side, produces very good "D.C."

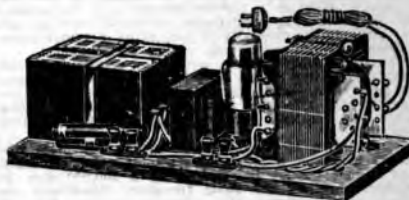
signal from the transmitter. A 30,000 ohm bleeder resistor is connected across the output of the filter to further aid in regulation, by not allowing the voltage to peak up at a very high value when there is no load on the power supply as is the case when the key is in the "off" position.

PUTTING THE TRANSMITTER ON THE AIR

Getting the transmitter on the air is no difficult task if a few pains are taken in adjustment. After all wiring has been checked carefully to make sure that no wrong connections have been made, connect the power supply to the oscillator unit and insert a 0-100 milliammeter in the positive plate voltage lead. It is best to put a resistor in series with this lead, in order to start adjustments with a reduced plate voltage, because if the plate circuit is not in resonance with the grid circuit, the



Circuit diagram for "RT" Power Pack



Power Supply of "RT" Transmitter.

plate current will be very high and probably damage the tubes or meter. Do all tuning without the antenna connected. Insert all tubes allowing them to heat up sufficiently, using the 80 meter coils as a starter, close the key and be prepared to tune the plate condenser immediately for lowest plate current as indicated by the meter. When this point has been reached, the resistor can be removed from the plate circuit, allowing full plate voltage to be applied to the tubes. The plate current should now be in the order of about 50 milliamperes with no antenna load. All that remains is to check the frequency in the monitor, attach the antenna and we are "on the air".

COIL DATA

Plate coils

Band	Turns	Diameter
160	25	see text
80	12	2 3/8 in.
40	6	2 3/8 in.
20	4	2 3/8 in.

The 80, 40 and 20 meter coils—3/4 in. copper tubing.

Grid coils

Band	Grid coils Turns	Size Wire
160	150	36 D.S.C.
80	75	36 D.S.C.
40	42	26 D.S.C.
20	14	26 D.S.C.

All grid coils wound on one-inch diameter bakelite tube with no spacing between turns.

FREE MAGAZINES FOR YOU

IN our effort to give our readers the utmost for their money, we have made arrangements with the publishers of RADIO-CRAFT and SHORT WAVE CRAFT to give you these magazines absolutely free under the following arrangement:

As you will note from an announcement of these magazines appearing in one of the last few pages of this and our regular catalog, the two magazines RADIO-CRAFT and SHORT WAVE CRAFT sell under a special offer of \$1.98 per year (Canada and foreign 40c extra).

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Be sure to read about these splendid magazines in the back pages of this and our regular catalog.

Do not fail to take advantage of this generous offer.

RADIO TRADING COMPANY, 101 HUDSON STREET, NEW YORK, N. Y.

1-TUBE TWINPLEX SHORT WAVE RECEIVER

EQUIVALENT TO A 2-TUBE RECEIVER

The average prospective constructor, becoming interested in short wave reception for the first time, prefers as simple a receiver as possible—consistent with satisfactory results. A one tube receiver is undoubtedly the ideal solution, but unfortunately such a receiver of the conventional regenerative variety will not produce sufficient volume for satisfactory headphone reception. However recent developments in tubes and circuits makes a one tube set a very practical one.

The schematic wiring diagram of such a receiver is shown in Fig. 1. The tube employed is the new 53 which really consists of two tubes in one. This tube was designed as a class B twin amplifier, but due to the comparatively large static plate current drawn, it can be readily adapted to detection and class A amplification.

As an audio frequency amplifier this tube is very effective, since its amplification factor is about 35. This permits an amplification approximating that of a pentode, without the latter's disadvantages of wiring complications and heavy plate current drain, which makes the use of an output coupling device practically a necessity, if possible damage to the headphones is to be avoided. The heater-cathode construction effectively reduces hum and obviates the necessity of employing a center-tapped resistor with its consequent wiring complications.

The use of this tube as a detector results in a substantially greater output than is possible from the usual low-mu triode, while maintaining the desirable characteristics of this type of regenerative detector; namely stable and foolproof operation and simplified construction.

Regeneration is controlled by varying the plate voltage by means of a 25,000 ohm potentiometer. Independent volume control is provided by a 200,000 ohm potentiometer across the audio frequency transformer secondary as the volume often becomes too great for comfortable headphone reception, particularly on strong amateur and 49 meter broadcasting stations.

The tuning condenser has a capacity of 140 mmf. and is employed in conjunction with a set of short wave plug-in coils.

PLATE SUPPLY FROM BATTERIES OR "B" ELIMINATOR

It will be noted that a plate potential of 180 volts is required and this may be obtained either from dry batteries or a well filtered "B" supply. The heaters require 2½ volts A.C. which may be obtained from a suitable step down transformer.

The general layout of the various parts can be noted from the illustration. It will be seen that an aluminum panel is employed in conjunction with a metal baseboard. The variable condenser along with the two potentiometers are mounted on the front panel while the remaining apparatus is mounted to the chassis.

A Reliable Short-Wave Set

is one which is GUARANTEED to give results. When a manufacturer GUARANTEES his products it must be good, otherwise his must suffer the loss of having it thrown back at him. See our guaranteed Short Wave Receivers and Transmitters in the Center Section of this Catalog.

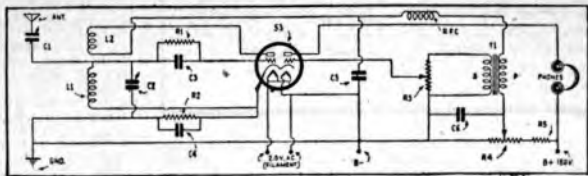
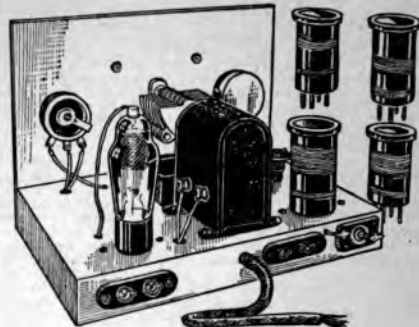


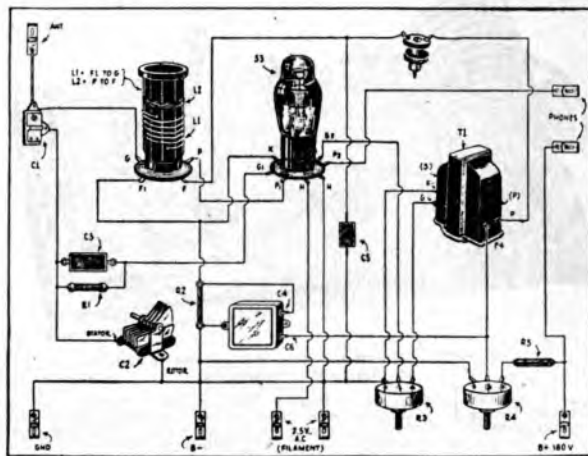
Fig. 1—Schematic Circuit of 1-Tube Twinplex



The antenna compensating condenser is a Hammarlund 32 mmf. trimming-type condenser. The adjustment of this condenser is not critical and for normal operation can be left "all in." When "dead spots" produced by antenna absorption are encountered, the condenser may be adjusted until the dead area is reduced to one or two dial divisions. As this results in decreased input it is advisable to increase this capacity when the "dead spot" area has been passed. When wiring the set it is absolutely essential to ground one of the heater lines, as shown, if satisfactory operation is to be obtained.

OPERATION AND RESULTS OBTAINED

In operation, the set is exactly the same as the conventional two tube regenerative receiver and consequently it will not be necessary to go into detail regarding same. The results obtained during a week of testing have been exceedingly good. The foreign stations received during this period include EAQ, GSB, GSA, DJC, HKD and OXY. No listening was done during the daytime which accounts for the absence of 25 meter stations. The receiver is also very satisfactory for C.W. reception.



Pictorial Diagram of Twinplex Receiver.

AMATEUR RADIO TRANSMITTER

Reprinted From Our No. 25 Radio & Short Wave Treatise by Popular Request.

A Simple Amateur Transmitter

After listening in on the short waves for several months and hearing the interesting work carried on by amateur stations, you may become interested in amateur transmission yourself. This is a very fascinating angle of short-wave work, and, despite the popular impression to the contrary, it is no more difficult or involved than receiving. A very simple but efficient transmitter can be made with fewer parts than required for the average receiver, and is actually easier to adjust than the latter.

A one-tube transmitter that you can easily assemble in a single evening is shown in Fig. 1. You probably already have many of the required parts. The circuit is the well-known Hartley hook-up arranged for series-plate feed, an arrangement that makes for simplicity in construction and stability in operation. It is designed to operate in the 1715 to 2000 kilocycle band (approximately 160 meters), as this is the best of the four amateur bands for beginners. A type 245 tube is used as the oscillator, as it is cheap and any standard receiver power pack may be employed with it for plate supply.

Fig. 1 Schematic Diagram of a one-tube short-wave Telegraph Transmitter.

to 2000 kilocycle band (approximately 160 meters), as this is the best of the four amateur bands for beginners. A type 245 tube is used as the oscillator, as it is cheap and any standard receiver power pack may be employed with it for plate supply.

The parts are laid out on a 7 x 14 inch wooden baseboard with variable condensers C2 and C1 along the left section of the front edge, and coils L2 and L1 behind them. The tube sockets, fixed condensers, etc., occupy the right end of the board. The wiring is so very simple that no special precautions need be observed except that usual ones about soldering all connections thoroughly and keeping the leads short.

The tuning coils L1 and L2 are very important and should be wound carefully. Bakelite or other good tubing 2½ inches in diameter is used. Coil L1, the oscillator coil, contains 18 turns of No. 12 enamelled wire, spaced out to occupy 2½ inches of room on a piece of tubing about 3½ inches long. It is tapped at the 8th turn. The antenna coil, L2, is about 2½ inches long and contains 12 turns of No. 12 wire. Be sure to wind both coils in the same direction. About 25 feet of wire is needed.

This transmitter will work with any ordinary single-wire aerial not less than 120 or more than 170 feet long, including the lead-in. The shape is of little importance, as long as the wire is strung free and clear and is well insulated. No complicated "feeders" or accurately measured wires are required. Make the ground connection to the usual cold water pipe.

To put the transmitter into operation, make the necessary connections to the filament and plate terminals of the power pack and to the transmitter key. Set the oscillator condenser C1 to full capacity and press the key. You can tell if the set is oscillating by touching a pencil to the stationary plates; an appreciable spark will appear at the point of contact. This circuit is of the "sure fire" type and will oscillate strongly.

If the specifications have been followed the low end of the 1715-2000 kc. band will be reached with condenser C1 nearly closed. The frequency must be checked with a frequency meter, or experimentally with the aid of another station having a calibrated receiver. To bring the antenna into resonance, simply rotate con-

denser C2 slowly until the flashlight bulb glows most brightly. After determining the best adjustment, short-circuit the lamp with a piece of jumper wire so that its resistance is removed from the circuit.

Under average conditions this little transmitter will cover about 100 miles during daylight and 500 miles or more at night. It is fine for local "rag chewing" because there is practically no skip-distance effect on the 1715 kc. range.

This transmitter has been designed for telegraph or key transmission, rather than voice, because phone transmitters are much more complicated in construction and critical in adjustment, and you must know the code anyway to obtain an amateur license. As you gain experience, you can add a power amplifier stage and modulate this for telephony. Incidentally, a practical amateur phone transmitter is fully described on page 51 of this catalog.

Amateur licenses are not difficult to secure, and can be obtained through the mail if you cannot appear personally at the office of the nearest U. S. Supervisor of Radio for an examination.

LIST OF PARTS FOR THE SIMPLE SHORT-WAVE CODE TRANSMITTER

Quantity	Description	Catalog No.	Your Price
1—C1	.0005 mf. variable condenser	ML-23	\$2.64
1—C2	.0005 mf. variable condenser	ML-23	2.64
1—C3	Polymet .005 mf. fixed mica condenser	NIC-1169	0.25
1—C4	Polymet .00025 mf. fixed mica condenser	MI-1159	0.12
1—C5	Polymet .005 mf. fixed mica condenser	NIC-1169	0.25
1—R1	Kroblak 50,000 ohm fixed resistor	3326	0.60
1—R2	Kroblak 20 ohm center tapped resistance	2296	0.30

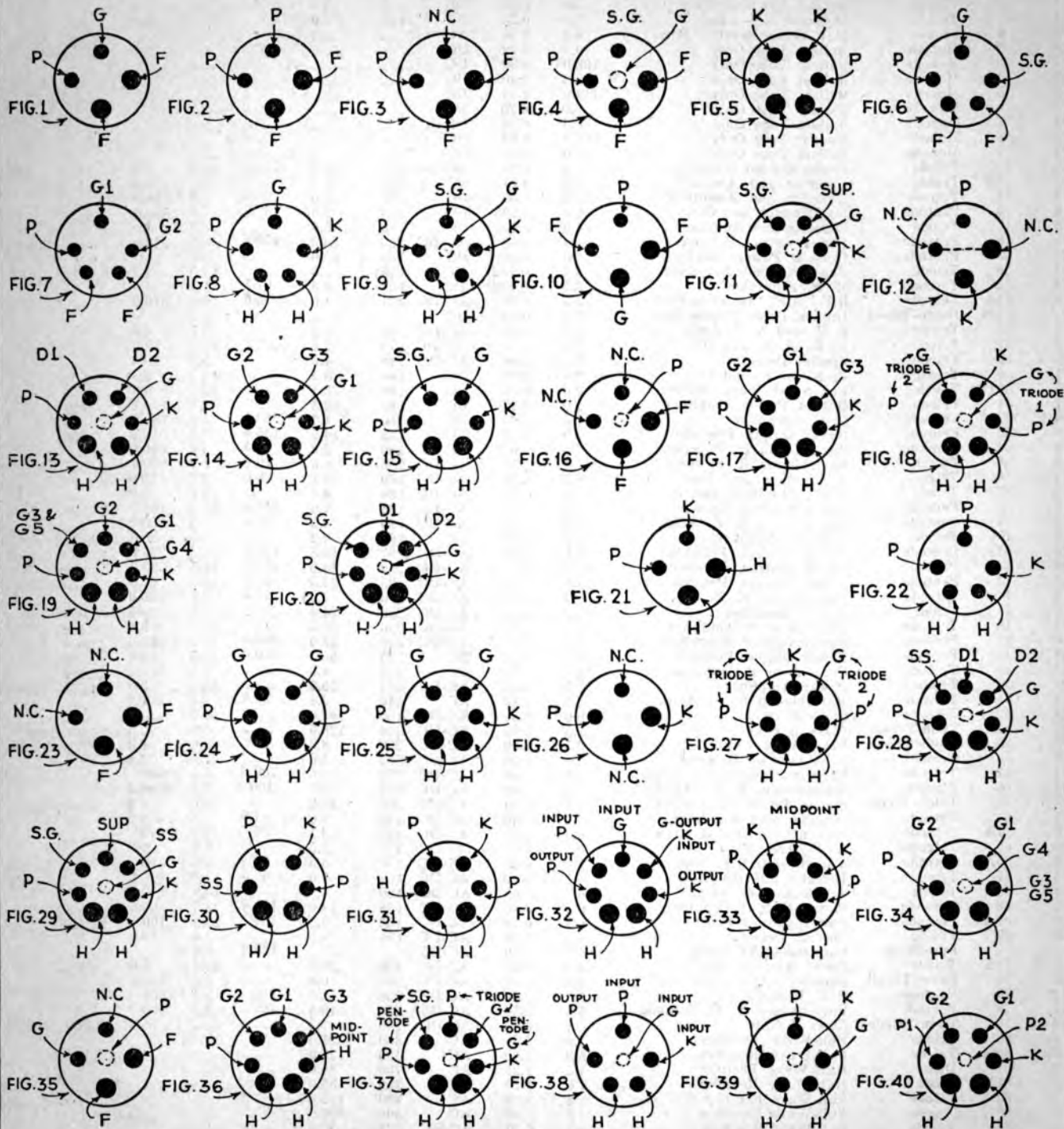
SOCKET CONNECTIONS FOR ALL TUBES

(Underside View—See Tube Chart on Next Page)

F—Filament
H—Heater
P—Plate
K—Cathode
G—Control Grid

NOTE:—On tubes having more than three grids, or where the grids are used for other than normal purposes, such grids are referred to as G-1, G-2, etc. In all such cases G-1 is the innermost grid (nearest to filament or cathode), G-2 the second nearest, etc.

SG—Screen Grid
SP—Suppressor Grid
SS—Spray Shield
D1—D2—Diode Plates
NC—No Connection



COMPLETE TUBE CHARACTERISTIC CHART

Figure Numbers Refer to Socket Connection Diagrams on Preceding Page.

See Fig.	Type No.	Element Type	Class of Use and Usual Applications	Fil. Voltg.	Fil. Cur't.	Fil. Supply	Plate Volts (Max.)	Plate Current (Max.)	Screen Volts (Max.)	Grids	Amplification Factor	Output Load (Ohms)	Power Output (Milliwatts)
1	00A	Triode	Special Detector Only	5.0	0.25	DC	45	1.5	-----	Neg.	20.0	-----	-----
1	01A	Triode	Detector and Amp.	5.0	0.25	DC	135	3.0	-----	9.0	8.0	-----	-----
21	1	Diode	Half-Wave Mercury Rec.	6.3	0.30	AC	-----	-----	-----	-----	-----	-----	-----
23	2	Monode	Ballast Tube Only	9.0	0.30	DC	-----	-----	-----	-----	-----	-----	-----
23	3	Monode	Ballast Tube Only	128.0	0.30	DC	-----	-----	-----	-----	-----	-----	-----
23	4	Monode	Ballast Tube Only	117.0	0.40	DC	-----	-----	-----	-----	-----	-----	-----
23	5	Monode	Ballast Tube Only	117.0	0.40	DC	-----	-----	-----	-----	-----	-----	-----
23	6	Monode	Ballast Tube Only	3.0	0.70	DC	-----	-----	-----	-----	-----	-----	-----
23	7	Monode	Ballast Tube Only	176.0	0.30	DC	-----	-----	-----	-----	-----	-----	-----
23	8	Monode	Ballast Tube Only	132.0	0.80	DC	-----	-----	-----	-----	-----	-----	-----
23	9	Monode	Ballast Tube Only	50.0	0.30	DC	-----	-----	-----	-----	-----	-----	-----
1	10	Triode	Power Output Amplifier	7.5	1.25	AC-DC	425	18.0	-----	35.0	8.0	10,000	1,600
1	12A	Triode	Detector and Amplifier	5.0	0.25	DC	180	6.2	-----	9.0	8.5	-----	-----
9	14	Tetrode	Detector and Amplifier	14.0	0.30	DC	250	4.0	90.0	3.0	525.0	-----	-----
9	15	Pentode	1st Detector and Osc.	2.0	0.205	DC	135	1.85	67.5	1.5	530.0	-----	-----
8	17	Triode	Detector and Amplifier	14.0	0.80	DC	180	5.0	-----	13.5	9.0	-----	-----
15	18	Pentode	Power Output Pentode	14.0	0.30	AC-DC	250	34.0	250.0	16.5	220.0	9,000	3,000
24	19	Pentode	Class B Power Amplifier	2.0	0.26	DC	135	25.0	-----	3.0	16.0	20,000	1,900
1	20	Triode	Power Output Amplifier	3.3	0.132	DC	135	6.6	-----	22.5	3.3	6,500	110
4	22	Tetrode	R. F. Amplifier	3.3	0.132	DC	135	3.3	67.5	1.5	290.0	-----	-----
9	24A	Tetrode	R.F., A.F. and Detector	2.5	1.75	AC-DC	275	4.0	90.0	3.0	615.0	-----	-----
1	25-S	Diode-Triode	Duplex Diode Triode Det.	2.0	0.20	DC	-----	-----	-----	-----	-----	-----	-----
1	26	Triode	R. F. and A. F. Amp.	1.5	1.05	AC-DC	180	6.2	-----	13.5	8.3	-----	-----
8	27	Triode	R. F., A. F. and Det.	2.5	1.75	AC-DC	250	5.2	-----	21.0	9.0	-----	-----
25	29	Triode	Special Detector	2.5	1.00	AC-DC	180	4.5	-----	3.0	30.0	-----	-----
1	30	Triode	R. F., A. F. and Det.	2.0	0.06	DC	180	3.1	-----	13.5	9.3	-----	-----
35	30(S)	Triode	For Short Wave Work	2.0	0.06	DC	180	3.1	-----	13.5	9.3	-----	-----
1	31	Triode	Output Power Amplifier	2.0	0.130	DC	180	12.3	-----	30.0	3.8	5,700	375
4	32	Tetrode	R. F. Amplifier	2.0	0.06	DC	180	1.7	67.5	3.0	780.0	-----	-----
6	33	Pentode	Power Output Pentode	2.0	0.26	DC	135	14.5	135.0	13.5	70.0	7,000	700
4	34	Pentode	Variable-mu R. F. Amp.	2.0	0.06	DC	180	2.8	67.5	3.0	620.0	-----	-----
9	35	Tetrode	Variable-mu R. F. Amp.	2.5	1.75	AC-DC	250	6.5	90.0	3.0	370.0	-----	-----
9	36	Tetrode	R. F., A. F. and Det.	6.3	0.30	AC-DC	180	3.1	90.0	3.0	370.0	-----	-----
8	37	Triode	A. F. Amplifier and Det.	6.3	0.30	AC-DC	180	4.7	-----	13.5	9.0	-----	-----
9	38	Pentode	Power Output Pentode	6.3	0.30	AC-DC	135	9.0	135.0	13.5	100.0	13,500	525
9	39	Pentode	Variable-mu R. F. Amp.	6.3	0.30	AC-DC	180	4.5	90.0	3.0	760.0	-----	-----
1	40	Triode	Voltage Amplifier	5.0	0.25	DC	180	0.2	-----	3.0	30.0	-----	-----
15	41	Pentode	Power Output Pentode	6.3	0.70	AC-DC	167	16.5	167.5	12.5	215.0	11,000	1,200
15	42	Pentode	Power Output Pentode	6.3	0.70	AC-DC	250	84.0	250.0	16.5	220.0	9,000	3,000
15	43	Pentode	Power Output Pentode	25.0	0.30	AC-DC	95	20.0	95.0	15.0	60.0	2,500	700
9	44	Tetrode	Variable-mu R. F. Det.	6.3	0.30	AC-DC	250	6.25	90.0	3.0	600.0	-----	-----
1	45	Triode	Power Amplifier	2.5	1.50	AC-DC	250	94.0	-----	48.5	3.5	3,900	1,600
7	46	Tetrode	Class A or B Amplifier	2.5	1.75	AC-DC	250	22.0	-----	31.5	5.6	6,400	1,250
6	47	Pentode	Power Output Amplifier	2.5	1.75	AC-DC	250	31.0	250.0	15.0	150.0	7,000	2,500
15	48	Pentode	Power Output Pentode	30.0	0.40	DC	125	50.0	100.0	22.5	28.0	2,000	2,500
7	49	Tetrode	Class A or B Amplifier	2.0	0.12	DC	180	4.0	-----	0.0	-----	12,000	-----
1	50	Triode	Power Amplifier	7.5	1.25	AC-DC	450	55.0	-----	80.0	3.8	4,350	4,600
9	51	Tetrode	Variable-mu R. F. Amp.	2.5	1.75	AC	250	6.3	90.0	3.0	400.0	-----	-----
14	52	Tetrode	Class B Only	6.3	0.30	AC-DC	100	42.0	-----	0.0	-----	-----	-----
27	53	Twin-Triode	Class B Only	2.5	2.00	AC-DC	300	125.0	-----	0.0	-----	10,000	10,000
13	55	Diode Triode	Det.—Amp.—AVC	2.5	1.00	AC-DC	250	8.0	-----	20.0	8.3	20,000	200
8	56	Triode	A.F., Osc. or Detector	2.5	1.00	AC-DC	250	5.0	-----	13.5	13.8	-----	-----
11	57	Tetrode	High-mu Detector or Amp.	2.5	1.00	AC-DC	250	2.0	100.0	3.0	1500	-----	-----
11	58	Pentode	Variable-mu R. F. Amplif.	2.5	1.00	AC-DC	250	8.2	100.0	2.0	1280.0	-----	-----
17	59	Triple Grid	Power Triode or Pentode	2.5	2.00	AC-DC	250	26.0	-----	28.0	6.0	5,000	1,250
9	64	Tetrode	Detector and Amplifier	6.3	0.40	AC-DC	135	3.0	67.5	1.5	370.0	-----	-----
9	64A	Tetrode	Screen Grid Det. & Amp.	6.3	0.30	AC-DC	180	3.1	90	3.0	370	-----	-----
9	65	Tetrode	A. F. Amplifier	6.3	0.40	AC-DC	135	3.5	-----	9.0	9.0	-----	-----
9	65A	Tetrode	Variable-mu R.F. Amp.	6.3	0.30	AC-DC	180	4.5	90	3.0	750	-----	-----
8	67	Triode	Detector and Amplifier	6.3	0.40	AC-DC	135	5.0	67.5	1.5	320.0	-----	-----
8	67A	Triode	Triode Det. or Amp.	6.3	0.30	AC-DC	180	4.7	-----	13.5	9.0	-----	-----
9	68	Pentode	Power Output Pentode	6.3	0.40	AC-DC	135	14.0	135.0	13.5	90.0	7,500	650
9	68A	Pentode	Power Output Pentode	6.3	0.20	AC-DC	135	9.0	135	13.5	100	13,500	525
25	69	Triode	Special Detector	6.3	0.20	AC-DC	180	4.5	-----	3.0	30.0	-----	-----
1	70	Duo-Diode	Detector—AVC Only	6.3	0.20	AC-DC	-----	-----	180.0	6.0	-----	-----	-----
1	71A	Triode	Power Amplifier Only	5.0	0.25	AC-DC	180	20.0	-----	40.5	3.0	5,350	700
13	75	Diode-Triode	Detector—AVC Only	6.3	0.30	AC-DC	250	0.8	-----	2.0	100.0	-----	-----
11	77	Pentode	R. F. Pentode	6.3	0.30	AC-DC	250	2.3	100	3.0	1500	-----	-----
11	78	Pentode	Variable-mu R. F. Pentode	6.3	0.30	AC-DC	250	10.5	100	3.0	990	-----	-----
18	79	Twin-Triode	Class B Only	6.3	0.60	AC-DC	180	7.5	-----	-----	-----	7,000	5,500
2	80	Triode	Full-Wave Rectifier	5.0	2.00	AC	350	125.0	-----	-----	-----	-----	-----
2	80M	Triode	Full-Wave Rectifier	5.0	2.00	AC	450	125.0	-----	-----	-----	-----	-----
3	81	Diode	Half-Wave Rectifier	7.5	1.25	AC	700	85.0	-----	-----	-----	-----	-----
3	81M	Diode	Half-Wave Rectifier	7.5	1.25	AC	750	85.0	-----	-----	-----	-----	-----
2	82	Triode	Full-Wave Rectifier	2.5	3.00	AC	500	125.0	-----	-----	-----	-----	-----
2	82	Triode	Full-Wave Rectifier	5.0	3.00	AC	500	250.0	-----	-----	-----	-----	-----
22	84	Triode	Full-Wave Rectifier	6.3	0.50	AC-DC	225	70.0	-----	-----	-----	-----	-----
13	85	Diode-Triode	Detector—Amplifier AVC	6.3	0.30	AC-DC	250	8.0	-----	20.0	8.3	20,000	350

COMPLETE TUBE CHARACTERISTIC CHART

Figure Numbers Refer to Socket Connection Diagrams on Page 13.

See Fig.	Type No.	Element Type	Class of Use and Usual Applications	Fil. Voltg.	Fil. Cur't.	Fil Supply	Plate Volts (Max.)	Plate Current (Max.)	Screen Volts (Max.)	Grid Bias Neg.	Ampli- fication Factor	Output Load (Ohms)	Power Output (Milliwatts)
11	87	Pentode	R.F. Pentode	6.3	0.40	AC-DC	-----	-----	-----	-----	-----	-----	-----
11	88	Pentode	Variable-mu R. F. Pentode	6.3	0.40	AC-DC	-----	-----	-----	-----	-----	-----	-----
14	89	Pentode	Power Pentode or Class B	6.3	0.40	AC-DC	160	17.0	-----	20.0	4.7	7,000	300
39	90	Triode	Detector—Amplifier AVC	2.5	1.00	AC	-----	-----	-----	-----	-----	-----	-----
39	92	Triode	Det.—Amp.—AVC	6.2	0.40	AC-DC	-----	-----	-----	-----	-----	-----	-----
15	95	Pentode	Power Output Pentode	2.5	1.75	AC	-----	-----	-----	-----	-----	-----	-----
22	98	Triode	Full-Wave mercury rect.	6.3	0.50	AC	225	50.0	-----	-----	-----	-----	-----
1	99	Triode	R.F., A.F. and Det.	3.3	0.06	DC	90	2.5	-----	4.5	6.6	-----	-----
34	1A6	Pentagrid	Mixer and Oscillator	2.0	0.06	DC	180	1.3	-----	3.0	-----	-----	-----
1	2A3	Triode	Class A Power Amplifier	2.5	2.50	AC-DC	250	60.0	62.5	42.0	4.2	2,500	3,500
15	2A5	Pentode	Power Output Pentode	2.5	1.75	AC-DC	250	34.0	-----	16.5	220.0	7,000	3,000
13	2A6	Diode-Triode	Diode Det., High Mu Ampl.	2.5	0.80	AC-DC	250	0.8	-----	3.0	100	-----	-----
19	2A7	Pentagrid	Mixer and Oscillator	2.5	0.80	AC-DC	250	4.0	100	3.0	-----	-----	-----
32	2B6	Triple-Twin	Double A-F Amplifier	2.5	2.25	AC-DC	250	40.0	-----	2.5	18	5,000	4,000
20	2B7	Diode-Pentode	Diode Detector, R-F Ampl.	2.5	0.80	AC-DC	250	9.0	125	3.0	730	-----	-----
22	2S	Duo-Diode	Diode Detector	2.5	1.75	AC-DC	20	11.0	-----	-----	-----	-----	-----
2	5Z3	Triode	Full-Wave Rectifier	5.0	3.00	AC	500	250.0	-----	-----	-----	-----	-----
6	6A4	Pentode	Auto-Radio Power Ampl.	6.3	0.30	AC-DC	180	22.0	180	12.0	100	8,000	1,400
19	6A7	Pentagrid	Mixer and Oscillator	6.3	0.30	AC-DC	250	4.0	100	3.0	-----	-----	-----
20	6B7	Diode-Pentode	Diode Detector, R-F Ampl.	6.3	0.30	AC-DC	250	9.0	125	3.0	730	-----	-----
11	6C6	Pentode	R-F Pentode	6.3	0.30	AC-DC	250	2.3	100	3.0	1500	-----	-----
28	6C7	Diode-Triode	Diode Detector & A-F Ampl.	6.3	0.30	AC-DC	250	5.5	-----	9.0	20	-----	-----
11	6D6	Pentode	R-F Pentode	6.3	0.30	AC-DC	250	7.5	100	3.0	1160	-----	-----
29	6D7	Pentode	R-F Pentode	6.3	0.30	AC-DC	250	2.3	100	8.0	1500	-----	-----
29	6E7	Pentode	R-F Pentode	6.3	0.30	AC-DC	250	7.5	100	3.0	1160	-----	-----
57	6F7	Triode-Pent.	Mixer and Oscillator	6.3	0.30	AC-DC	250	6.5	100	3.0	900	-----	-----
30	6Y6	Tetrode	Full-Wave Mercury Rect.	6.3	0.80	AC	-----	-----	-----	-----	-----	-----	-----
21	6Z3	Triode	Half-Wave Rectifier	6.3	0.30	AC-DC	350	50.0	-----	-----	-----	-----	-----
22	6Z4	Triode	Full-Wave Vacuum Rect.	6.3	0.60	AC	-----	-----	-----	-----	-----	-----	-----
31	6Z5	Tetrode	Full-Wave Rect.	6.3*	0.8*	AC	230	60.0	-----	-----	-----	-----	-----
36	12A5	Pentode	Pentode Power Tube	6.3*	0.6*	AC-DC	180	40.0	180	27.0	-----	4,500	2,800
33	12Z5	Tetrode	Full-Wave Rect. & Volt. Dbler.	6.3*	0.6*	AC	225	60.0	-----	-----	-----	-----	-----
5	25Z5	Double	Rectifier—Volt. Dbler.	25.0	0.30	AC-DC	125	100.0	-----	-----	-----	-----	-----
21	12Z3	Triode	Half-Wave Rectifier	12.6	0.30	AC-DC	230	60.0	-----	-----	-----	-----	-----
1	182B	Triode	Power Output Amplifier	5.0	1.25	AC	200	18.0	-----	29.0	5.0	-----	-----
1	183	Triode	Power Output Amplifier	5.0	1.25	AC	200	20.0	-----	45.0	3.0	-----	-----
8	227HM	Triode	Detector and Amplifier	2.5	1.75	AC-DC	180	-----	-----	-----	-----	-----	-----
38	291	Triple-Twin	Double A. F. Amplifiers	12.3	0.30	DC	-----	-----	-----	-----	-----	-----	1,250
38	293	Triple-Twin	Double A. F. Amplifiers	6.3	0.60	AC-DC	-----	-----	-----	-----	-----	-----	1,250
38	295	Triple-Twin	Double A. F. Amplifiers	2.5	4.00	AC-DC	-----	-----	-----	-----	-----	-----	4,500
1	401	Triode	Detector and Amplifier	3.0	1.35	AC-DC	180	6.0	-----	13.5	8.7	-----	-----
1	482A	Triode	Power Amplifier	5.0	0.80	DC	200	18.0	-----	45.0	3.0	4,500	1,760
1	482B	Triode	Power Amplifier	5.0	1.25	AC-DC	250	18.0	-----	32.5	5.0	-----	-----
1	483	Triode	A. F. Amplifier	5.0	1.35	AC	180	15.3	-----	40.5	3.3	-----	-----
1	484	Triode	Detector and Amplifier	3.0	1.50	AC	135	6.0	-----	6.0	12.5	-----	-----
1	484A	Triode	Detector and Amplifier	3.0	1.60	AC	180	6.0	-----	9.0	12.5	-----	-----
8	485	Triode	Detector and Amplifier	3.0	1.25	AC	90	5.0	-----	3.0	12.5	-----	-----
1	486	Triode	R. F. Amplifier	3.0	0.25	DC	90	3.0	-----	3.0	12.5	-----	-----
1	586	Triode	Power Output Amplifier	7.5	1.25	AC-DC	450	55.0	-----	80.0	3.8	250,000	-----
1	841	Triode	Voltage Amplifier	7.5	1.25	AC-DC	425	2.2	-----	9.0	80.0	4,350	4,600
1	864	Triode	Detector or Amplifier	1.1	0.25	DC	135	3.5	-----	9.0	8.2	-----	-----
16	866	Diode	Half-Wave Rectifier	2.5	5.00	AC	7500	600.0	-----	-----	-----	5 megs.	-----
26	868	Diode	Phototube	-----	-----	-----	90	0.02	-----	-----	-----	-----	-----
12	874	Diode	Voltage Regulator	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-----	876	Monode	Ballast Tube	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-----	886	Monode	Ballast Tube	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
22	985	Triode	Full-Wave Rectifier	5.0	0.50	AC-DC	500	-----	-----	-----	-----	-----	-----
21	AD	Triode	Half-Wave Rectifier	6.3	0.30	AC	350	50.0	-----	-----	-----	-----	-----
15	AE	Tetrode	Power Output Pentode	12.6	0.30	AC-DC	100	8.5	100	13.5	20	13,500	400
2	AF	Triode	Full-Wave Rectifier	2.5	3.00	AC	500	125.0	-----	-----	-----	-----	-----
2	AG	Triode	Full-Wave Rectifier	5.0	3.00	AC	500	250.0	-----	-----	-----	-----	-----
6	GA	Pentode	Power Output Pentode	5.0	0.25	DC	180	25.0	180.0	10.0	60.0	7,000	800
21	KR1	Triode	Half-wave mercury rect.	6.3	0.30	AC-DC	350	200.0	-----	-----	-----	-----	-----
6	KR5	Pentode	Power Output Pentode	6.3	0.30	AC-DC	165	17.0	165.0	11.0	100.0	8,000	1,200
13	KR20	Twin Grid	Special Detector and AVC	2.5	1.00	AC	250	3.5	-----	-----	14.0	100,000	-----
13	KR22	Twin Grid	Special Detector and AVC	6.3	0.40	AC-DC	250	3.5	-----	-----	14.0	100,000	-----
15	KR25	Pentode	Power Output Pentode	2.5	1.75	AC	250	34.0	250.0	16.5	220.0	9,000	3,000
6	LA	Pentode	Power Output Pentode	6.3	0.30	AC-DC	165	17.0	165.0	-----	100.0	8,000	1,200
22	P-861	Triode	Full-Wave Mercury Rect.	6.3	0.50	AC	225	50.0	-----	-----	-----	7,000	3,000
6	PZ	Pentode	Power Output Pentode	2.5	1.50	AC-DC	250	32.5	250.0	16.5	95.0	7,000	3,500
15	PZH	Pentode	Power Output Pentode	2.5	2.00	AC-DC	250	33.5	250.0	16.5	100.0	-----	-----
1	WD11	Triode	Detector and Amplifier	1.1	0.25	DC	135	3.0	-----	10.5	6.5	-----	-----
1	WD12	Triode	Detector and Amplifier	1.1	0.25	DC	135	3.0	-----	10.5	6.6	-----	-----
89	Wun.	Twin Grid	Special Detector and AVC	2.5	1.00	AC-DC	250	7.0	-----	16.5	9.26	-----	-----
25	Wun.A	Twin Grid	Special Detector and AVC.	6.3	0.40	AC-DC	250	7.0	-----	16.5	9.26	-----	-----
40	Wun.B	Twin Grid	Special Detector and AVC	2.5	1.00	AC-DC	260	-----	-----	-----	-----	-----	-----



DUAL-WAVE RECEIVER

200 TO 2000 METERS

Air King

COMPLETE with

RCA TUBES

POWERFUL-SELECTIVE

FULL-RICH-TONE

NEW TUBES

This receiver is not a midset, but a full fledged six-tube super-tuned receiver. In a medium sized table model cabinet. It incorporates the latest type triple-grid 57 and 58 tubes, which assure maximum sensitivity and selectivity under all operating conditions. The tone of this set is remarkably fine and may be controlled by the operator from high treble down to deep bass.

This new 1934 model incorporates all the new developments recently perfected. Has a wide reception range of from 200 to 2,000 meters, which makes it especially suitable for use in countries located in the Eastern Hemisphere, where programs are broadcast on two channels, viz., 200 to 550 meters, and 850 to 2000 meters.

THE CIRCUIT
Incorporates three super-tuned circuits, using 2-58's in the R.F. stages and 1-57 as power detector. The output tubes are 2-47 power pentodes. These tubes are fed into a matched FULL DYNAMIC SPEAKER, having fine reproduction characteristics. The audio channel is of the RESISTANCE-COUPLED type, thereby giving reception comparable to a marked degree, with the original rendition. THE CHASSIS IS COMPLETELY SHIELDED AND CADMIUM PLATED. Provisions are made for attaching a PHONOGRAPH PICKUP FOR ELECTRICAL RECORDING and reproduction of recorded music. A unique arrangement is employed for switching from the regular broadcast band to the long wave band.

THE CABINET
The cabinet is of beautiful, Georgian period design, made of light walnut. Measures 20" high x 16" wide x 10 1/2" deep. Has recessed center panel with full vision illuminated "ghost-light" dial. (When the set is in operation, this "ghost-light" travels across the face of the dial when tuning—the remainder of the dial being in complete shadow.) This receiver is designed for use on 110-120 volts, but may be had for any other type of current at an additional charge of \$2.00. Domestic ship. wt., 35 lbs.

No. 2500 Air-King 200 to 2,000 meter, 6 tube Receiver.
YOUR PRICE, complete with R.C.A. licensed tubes

\$37.25

NO GRIEF WITH THIS SET!

"Pandora" Crystal Set



Remember the perfect tone quality of the old-fashioned crystal receiver! It hasn't changed a bit in all these years. Radio engineers, experimenters and Service Men admit that programs received on crystal sets are more natural and clear-cut than those reproduced by the most expensive electric receivers. As a matter of fact, crystal detectors are now considered ideal for the critical requirements of broadcast and television receivers. See the write-up on "Crystal Fixed Detectors" elsewhere on this page for a more thorough discussion on the method of employing these crystal detectors in modern broadcast and television receivers.

Here is an ideal "personal" radio for every individual, especially recommended for invalids. Practically all local stations can be tuned in with surprising volume and, conditions permitting, it is even possible to "pull in" distant stations. Tuning is smooth and simple. Requires no batteries at all to operate. The only expense involved is the initial one in purchasing it. Handsomely finished in rich russet bronze. Binding posts and trimmings are nickel plated to guard against rust. Size 4 1/2" x 5 1/2". Shipping weight, 2 lbs. List Price \$1.75

No. 985 "Pandora" Crystal Set
YOUR PRICE

\$1.05

Puretone Adjustable Crystal Detector

Incorporates a sensitive, synthetic crystal, special catwhisker spring, and an ingenious Universal Joint mounting — all mounted in a compact, Bakelite case, with protective glass window. The unique mounting arrangement of the catwhisker permits resetting in a fraction of a second by the touch of a finger.



The synthetic crystal employed in this detector is extremely more sensitive than the natural Galena type, and will pass more current without burning up.

Here is an ideal unit for constructing "personal" crystal receivers which, in tone and quality, are not surpassed by even the latest 10 and 11 tube electric receivers.

No. 1656 Puretone Adjustable Crystal Detector.

YOUR PRICE

\$0.98

PURETONE SYNTHETIC CRYSTALS

These crystals are the same as those used in the Puretone Adjustable Crystal Detector listed above.

No. 1688 Puretone Synthetic Crystals.

YOUR PRICE, each

\$0.10

Works Everywhere! A.C.-D.C.: 25-60 CYCLES

5-TUBE SUPERHETERODYNE

This is

YOUR PERSONAL RADIO

SELECTIVITY!
POWER!
STONE!

Smallest Fine Radio on the Market!

This tiny radio which measures but 7 1/2" high x 10 1/2" wide and weighs but 8 lbs., is indeed the leader of all A.C.-D.C. sets, both in performance and in price. It is a 5-tube high quality receiver built around a true superheterodyne circuit. Only tubes of the very latest types are employed. This accounts for its remarkable performance which, indeed is, comparable to many 10-tube receivers. This set is really the ultimate in so-called "personal" radios. Place one in your own room or den and be independent of the regular home radio. Why wire an extension speaker into your room when with a few dollars more you can have a radio all your own?

This receiver is equipped with a real dynamic speaker and reproduces the original broadcast with amazing clearness and fidelity of tone. The set will operate on either A.C. or D.C. 25 to 60 cycles at 110 volts. Employs the very latest type tubes, namely, 1-43, 1-44, 1-77, 1-78 and a 25Z5 mercury vapor full-wave rectifier. Has a built-in aerial which entirely eliminates the nuisance of putting one up on the outside. Furthermore, a special so-called voltage-doubling tube permits the same type of performance with this receiver as is obtainable on regular 110 A.C. sets. The chassis is fully shielded and is contained in a genuine walnut two-tone cabinet of unusual design. Shipping weight, 22 lbs.

List Price \$30.00

No. 505D A.C.-D.C. 5-tube Superheterodyne Receiver.

YOUR PRICE

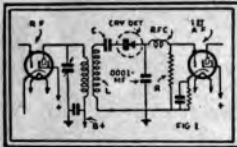
\$19.50



LICENSED BY RCA
BUILT-IN AERIAL
VOLTAGE DOUBLING
WITH RCA TUBES
LICENSED

B.M.S. Fixed Crystal Detectors

(Iron Pyrites type)



The demand for these fixed crystal detectors has actually increased despite the remarkable development of vacuum tubes. This is partly due to the fact that these crystals are now finding their way into modern television and broadcasting receivers. All experimenters remember when crystal detectors were used in the old broadcast receivers and the almost perfect quality of speech and music obtained from them. These same fine qualities of faithful reproduction have always been appreciated by radio engineers and experimenters. A crystal detector is more positive in its action than a vacuum tube detector. A vacuum tube, when operated as a detector, is not a very efficient device.

Many troubles encountered in receiver construction, such as oscillation, motor-boating, and distortion can, in many cases, be traced directly to the use of an imperfect detector tube or a tube operated from the same "B" supply as the remainder of the tubes. IT IS NOW PREFERABLE TO EMPLOY THE TUBE WHICH WOULD OTHERWISE BE THE DETECTOR AS AN ADDITIONAL STAGE OF R.F. AMPLIFICATION AND THEN EMPLOY A FIXED CRYSTAL AS A DETECTOR. Even in a regenerative set, a crystal may be used, with a separate tube for regeneration. The diagram herewith shows a simple method of coupling a crystal detector to the first stage of a resistance-coupled audio amplifier.

Aside from the above, crystal detectors may of course be employed in their conventional capacity as detectors in building up crystal receivers and particularly, for use in the well-known Gernsback Interflex and Megadyne Circuits where the crystal detector is used instead of the condenser-grid-leak method. The fixed detector illustrated herewith is a particularly sensitive detector of iron pyrites which is "permanently fixed" in the laboratory. Made to withstand high voltages. Small and compact; entirely enclosed in a bakelite housing. Shipping weight, 8 oz.

List Price \$1.00
No. 318 Fixed Crystal Detector
YOUR PRICE **\$0.54**



"Catwhisker" Springs

These springs must be used in conjunction with the open type of crystal (listed on opposite page.) Made of tempered spring metal. Packed 3 to envelope. List Price \$0.35

No. 1658 Catwhisker Contacts,
3 to Envelope **\$0.10**
YOUR PRICE _____ per envelope

Air King SUPER HET RECEIVER

5 TUBES

RCA LICENSED

This receiver is without question, the least expensive of standard super-heterodyne sets. It takes advantage of the latest type tubes in such a manner as to give ten-tube super-heterodyne performance. This is not an exaggeration but an actual fact. There is no grief with this receiver. It does everything we say it does.

10 Kilocycle Selectivity

Extremely sensitive and selective, having fully 10 kilocycle selectivity, this receiver will bring in more stations from greater distances than you have ever received before with your old radio. It is so radically priced that it can be used as a second radio in the home. We say this despite the fact that other sets are being sold on the market for as little as \$7.00. If you are to buy a so-called second home radio, why invest in a set which will last you only several months as these cheap ones no doubt will? We have a pleasant surprise in store for you when you purchase this superheterodyne. Placed side by side with your \$250 radio, you will hardly be able to distinguish the one from the other, judging by volume and tone alone.

All Modern Features

The chassis is fully shielded and designed along modern lines and is contained in a beautifully simple cabinet, measuring 16" x 12 3/4" x 9 3/4". All modern features such as TONE CONTROL, FULL DYNAMIC SPEAKER, ILLUMINATED VERNIER TUNING DIAL, etc., are included. The receiver is LICENSED UNDER R.C.A. patents and is sold complete with R.C.A. (licensed) tubes. Designed for operation on 110-120 volts, 50-60 cycles A.C. Can also be had for 220 volts A.C. operation at an additional cost of \$2. If you live in a D.C. district, we can furnish this model for D.C. operation as well.

List Price \$35.00

No. "Super. 5-456" Air King 5-tube A.C. Super-Heterodyne with R.C.A. (licensed) tubes.

YOUR PRICE _____ **\$22.75**



TONE! POWER!

10-K-C Selectivity

DYNAMIC SPEAKER

10 TUBE Performance

Air King SUPER HET RECEIVER

NEW TUBES

LICENSING SPEAKER

FULL DYNAMIC SPEAKER

TREMENDOUS POWER-TONE CONTROL PHONO PICK-UP AMAZING SELECTIVITY

R.C.A. Licensed Automatic Volume Control

The latest development, the latest refinements, the latest features are incorporated in this high quality super-heterodyne receiver. The set uses the latest type A.V.C. (automatic volume control) tube which does the work of three individual tubes. This receiver therefore is actually the equivalent of a 10-tube superheterodyne.

Full advantage is taken of the NEW TUBES which have recently made their appearance. It is these tubes alone which make possible the perfection of a midget receiver—a perfection which reigns supreme in this super-heterodyne set. The tubes used are as follows: 2-58's; 2-67's (triple-grid tubes)—2-2A5's super-power pentode and 1-80 full wave rectifier. A 3-gang condenser 7 tuned circuits, ten kilocycle separation, full dynamic speaker, full vision spotlight tuning dial, full range tone control and A.C. line noise filter are several of its many features. Provisions are made for connecting a phonograph to the radio for electrical reproduction. One has to go far to surpass the performance of this receiver. Sold with a complete set of R. C. A. licensed tubes.

The cabinet is of unusual design, made of two-tone walnut. Measures 20" high x 16" wide x 10 1/2" deep. Shp. wt., 30 lbs.

List Price \$45.00

No. "Super 7" Air King 7-tube Superheterodyne set, including tubes. **\$35.00**
YOUR PRICE _____

**Air-King
TUBES**

TRIPLE-GRID RECEIVER



**Employs 5 New Tubes—190-550 Meters
Full Dynamic Speaker—Full-Range
Tone Control**

This Receiver is "miniature" in price and size only but is **COLOSSAL IN TONE AND GENERAL PERFORMANCE**. It should not be confused with the so-called "super-midget" receivers which are at the present time flooding the market. Such receivers, despite advertising ballyhoo to the contrary, will last only several months and no longer.

The set employs five of the newest type tubes, namely, 2 tri-pole grid 58's, 1 triple grid 57, a super-power 47 pentode and the latest type 280 rectifier tube with the dome-shaped top. A full 8" dynamic reproducer which is perfectly matched to the receiver chassis, assures indiscriminate reproduction of both high and low notes.

Just what do these remarkable features mean? Interpreted in more simple terms, they mean that this powerful midget receiver offers considerably more in value and entertainment than do many more expensive receivers. They mean amazing selectivity, greater volume, finer tone, finer performance and more enjoyable reception. Interference from powerful stations, distortion of voice and music and internal set disturbances are entirely eliminated. **STATIONS WHICH YOU HAVE NEVER HEARD BEFORE ARE ADDED TO YOUR LOG BOOK.**

The chassis is solidly constructed and fully shielded, permitting no strange noises or extraneous signals but the one you desire to hear, from entering the circuit. The entire chassis is put up in an attractive, beautifully grained, two-tone cabinet. Beautiful because it is simple. No loud designs or gauzy carvings. These top style. The illustration shows the Flat top model, properly illuminated. Measures but 16" x 12 1/2" x 9 3/4" A.C. **THIS RECEIVER MAY BE HAD FOR 110** shipping weight, 20 lbs. List Price \$40.00, complete with R.C.A. licensed tubes. **\$22.60**

**Stromberg-Carlson Portable Pickup
and Turntable For P.A. Systems
and Home Recording**

Now Enjoy Phonograph Records Reproduced Electrically
Through Your Present Radio Receiver



This marvelous new instrument will double the value and pleasure of your present radio.

Takes but a second to attach. Just place the pickup on the record and hear the deep, clear, melodious strains electrically reproduced right through your own radio.

This electric victrola is powered by the famous Prime induction-type motor which is **GUARANTEED NOT TO CREATE ANY DISTURBANCES IN YOUR RADIO**. It is equipped with a genuine Stromberg-Carlson magnetic pickup—a unit which is being used throughout the world in large theatres, dance halls, etc., etc.

Furthermore, underneath the motor is mounted a special impedance-matching transformer which accurately matches the pickup unit to your radio so that there can be no possibility whatsoever of distortion.

The entire outfit is put up in a handsome leatherette-covered carrying case, measuring 16 1/2" x 11 1/2" x 8". Not only can this phono-pickup outfit be used in the home, but it is excellently suited for sound trucks, open air meetings, etc. Ship. wt., 22 lbs. List Price \$48.00

No. B7106 Stromberg-Carlson Pickup and Turntable. **\$16.95**
YOUR PRICE

TONE! POWER!

BEAUTIFUL STANTON CABINET

cabinets are available in either Gothic style or Flat Tuning is accomplished with a high ratio vernier dial. Designed for operation on 110-120 volts, 50-60 cycles VOLTS D.C. OPERATION IF SO DESIRED. Shipping No. "Atwell A.C." Air King 5-tube Mantel Receiver, **YOUR PRICE**

**Prolong the Life of Your Receiver
WITH A
Clarostat Automatic Line Voltage
Regulator**



The Clarostat Automatic Line Voltage Regulator, illustrated here, is designed for use with 110 volt socket power radio sets not equipped for line ballasts. It is made in six types of different electrical characteristics, each type being designed to meet the requirements of various classes of receivers of different watt ratings.

At 110 volts, the resistance of the unit is low and the voltage drop across it is negligible. As the line voltage increases, however, the resistance of the unit increases with a consequent increase in voltage drop across it keeping the voltage across the primary of the power transformer of the set practically constant, even though the line voltage increases up to 140 volts.

To install this type of unit, all that is necessary is to insert the usual attachment plug of the radio set into the slots provided in the top of the unit. Then insert the prongs of the unit into the slots of the usual screw type plug or convenience outlet of the electric light system.

The body dimensions of this unit are only 1 1/2 ins. in diameter and 1 1/2 ins. in length. The prongs are 3/4 in. long. Shipping weight, 10 oz.

List Price \$1.75

No.	Rating Watts	For Use with Sets Consuming
A	50	Up to 60 Watts
B	100	60 to 100 Watts
C	150	100 to 150 Watts
D	200	150 to 200 Watts
E	250	200 to 250 Watts
E*	100	60 to 100 Watts

Note*: For use with 220 volt receivers.

YOUR PRICE \$0.95

A "Replacement" Receiver

**5 Tube Super-Heterodyne Complete With R.C.A. Licensed Tubes
and Dynamic Speaker**

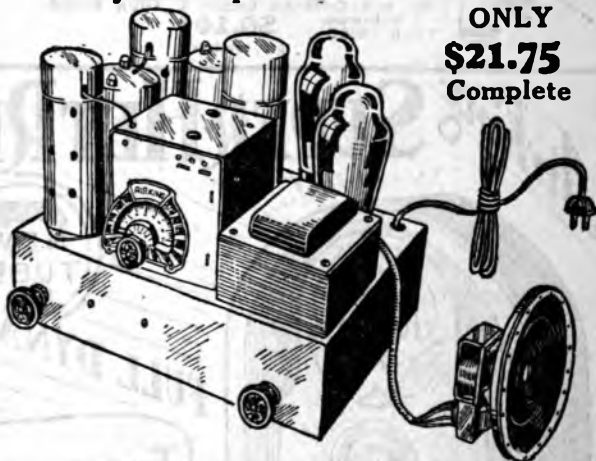
If YOU are among the many thousands of radio fans who, a few years back, bought expensive receivers in expensive cabinets ranging in price anywhere from \$200 to \$500. **HERE IS YOUR CHANCE TO REPLACE THAT OLD RECEIVER WITH A NEW UP-TO-THE-MINUTE SUPER-HETERODYNE SET AND STILL RETAIN YOUR EXPENSIVE CABINET.** This little receiver is so compact that it will FIT INTO ANY CABINET regardless of size or make. Yet, small as it is, it will equal and in many cases surpass 10 tube ultra-modern receivers. The reason, naturally, lies in its use of the very latest type tubes, namely, 2 57's, 1 58, 1 47 and 1 83.

Its high degree of sensitivity and amazing selectivity will surprise you. It receives ALL the local stations and many distant ones. The set is so sensitive that a three foot dangling wire will serve as an antenna. Of course, the longer the antenna (up to a maximum of 100 ft.), the more powerful will reception be. The chassis measures but 8 1/2" wide x 6 1/2" deep x 6 1/2" high overall.

Unlike other super-heterodyne receivers, **THIS SET WILL NOT OSCILLATE OR SQUEAL** in the least. Radical changes both in design and construction have completely eliminated these "birdies". Furthermore, due to the absence of these squeals which, technically speaking, indicates an oscillating receiver, code stations cannot be intercepted and therefore cannot interfere with broadcast programs.

All component parts are of the highest possible quality and are mounted on a totally shielded chassis. Even the bottom of this chassis has a metal plate to prevent stray signals from entering the receiver.

Tuning is accomplished by means of an illuminated "ghost-light" dial; that is, instead of the usual pointer, a thin streak of light sweeps across the face of the



**ONLY
\$21.75
Complete**

dial and illuminates only that portion of the dial which is being read at the moment. The 3 controls which are provided serve respectively as volume control, station selector and combination power switch-tone control.

YOU WILL MARVEL AT THE NATURAL LIFE-LIKE TONE ISSUING FORTH. The chassis is sold complete with a set of R.C.A. licensed tubes and matched dynamic speaker. Shipping weight, 15 pounds. No. S-5-RPL 5 Tube Super-Heterodyne Replacement Chassis complete with R.C.A. licensed Tubes and Dynamic Speaker.

YOUR PRICE \$21.75

THE TRUTH ABOUT ELIMINATION OF RADIO NOISE

IT IS EASY, IF YOU KNOW HOW, TO KEEP RADIO NOISE OUT OF YOUR SET

Inasmuch as modern sets are fully shielded, there are but two channels through which man-made static, or radio noise can enter your receiver; namely through the antenna system and through the power line.

Man-made static is created by electrical machinery and appliances such as, motors, electric fans, vacuum cleaners, oil burners, etc., etc. The nature of the noise created is two-fold being both radio frequency and an audio frequency. Most of the radio frequency energy thus created is freely radiated into the air. A small portion of it is fed into the power or electric line. All of the audio frequency energy is fed directly into the power lines. Hence, your radio receiver may pick up this energy through one or both of the channels mentioned above. Let us consider first the antenna system.

Most of the radio frequency noise is not radiated very far, hence, the antenna proper which is on the roof of the building, is almost always out of the field of such noise. The lead-in wire on the other hand, is directly in the field and hence, picks up most of it. It stands to reason therefore, that if a lead-in system could be devised which would be immune to the pick-up of such radio frequency noise, fully one half of the problem of noise pick up, would be solved.

Such a lead-in system has been devised and is sold in kit form. The Tobe Filterizer kit listed on this page is a very excellent example of such a system. High impedance lead-in lines are very sensitive to R.F. noise radiation, whereas low-impedance lines are extremely insensitive. The Tobe Filterizer kit which consists of two R.F. matched transformers connected by shielded wire, reduces the high impedance of the antenna proper to a very low impedance which is fed into the shielded lead-in wire. At the receiver, this low impedance is stepped-up

once more to the original high impedance of the antenna. Complete elimination of R.F. noise pick-up by the lead-in is thus achieved. The only other way through which noise can enter your set is the power line or electric outlet.

It is not always enough to place a so-called line filter between the radio set and the electric outlet. We must try to prevent noise from getting into the power line instead of attempting to eliminate it after it has entered. In order to prevent such noise from entering the power line it is necessary to place a line filter between each place of electrical machinery causing the disturbance and its particular electric outlet.

For light duty motors or electrical appliances, a light duty line filter is sufficient. Such light duty devices usually consist of two or more condensers placed in series across the line and grounded at their center points. For heavy duty machinery and appliances, a larger line filter is desirable. Heavy duty line filters usually consist of a combination of two or more condensers and one or two choke coils. The combination of choke coil and condenser forms an oscillatory circuit which resonates to the frequency of the disturbance, thus "absorbing" or filtering them from the line.

To sum up, therefore, if you desire absolute noise-free reception, you will need a special antenna lead-in system and as many line filters as there are electrical appliances in the house. If the line noise is not too heavy or serious, a single filter (designed specially for the purpose, No. RF-2) placed between the radio and electric outlet, may eliminate it. Otherwise, if the noise is heavy, it must be eliminated at its various sources.

Tobe Antenna Filterizer Kit



This Filter kit prevents radio noise from entering the receiver through the antenna and lead-in system. It comprises two matched R.F. Transformers, one attached directly to the aerial on the roof and the other to the receiver. A 76 ft. length of shielded transmission wire is furnished for connecting the two transformers.

The antenna transformer is provided with weather-proof insulation so that the line characteristics are not affected by atmospheric conditions. The transmission wire is small and extremely flexible for easy and inconspicuous installation. The receiver transformer is provided with spring clips so that no tools are required for connecting it to the receiver. This latter unit has both high and low impedance taps to match all types of broadcast receivers. Try each of these taps for best results.

The Tobe Antenna Filterizer Kit may be used with all broadcast receivers and may be depended upon to provide maximum relief from local man-made static which usually enters an unprotected antenna system. This kit should preferably be used in conjunction with suitable line filters for complete elimination of noise. Ship. wt., 6 lbs.

List Price \$5.45

No. 33 Tobe Antenna Filterizer Kit. **\$3.20**
YOUR PRICE

Tobe Filterette OB-110 Line Filter



This Filterette is particularly designed for application to oil burners. It is contained in a metal cut-out box 7"x6"x3 1/2". Detachable clamps are provided so that the Filterette may be mounted either on a pipe standard or against a flat surface. Filterette OB-110 is equally suitable for application to all type burners using electric ignition (Williams Oil-O-Matic, Electrol, Silent Automatic, May and others) or to burners using a universal motor for driving the blower and atomizer. Maximum

potential 110 volts A.C. or D.C. Maximum current 4 amperes. Ship. wt., 5 lbs.

List Price \$9.50

No. OB-110 Filterette Line Filter. **\$5.59**
YOUR PRICE

Tobe Filterette Junior Line Filter



A compact, easily installed Filterette for application to electrically operated household appliances. Vacuum cleaners, small hair driers, fans, cash registers and barber clippers are among the many appliances easily made interference-free by use of the Filterette Junior. Constructed in a bakelite case 1 1/2" in diameter and 2 1/2" long. Provided with a binding post to facilitate the connection of a short return wire from the Filterette to the frame of the appliance. May be used on either A.C. or D.C. Approved by Underwriters Laboratories. Maximum potential 110 volts A.C. or D.C. Ship. wt., 1/2 lb.

List Price \$2.25
No. "Filt. Jr." Filterette Junior Line Filter.

YOUR PRICE **\$1.33**

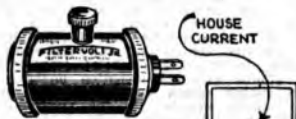
Tobe Filterette "JA" Line Filter

Designed for mounting directly on the frame of a small motor or electrical appliance. Provided with a metal bracket to allow this mounting. Contained in a bakelite tube 1 1/2" in diameter and 2" long. Three flexible leads are brought out of the Filterette. One of these connects to the frame of the appliance and the two remaining leads connect to the motor brushes. This Filterette is particularly recommended for application to appliances which are normally so used that there is slight strain on the attachment cord. Portable electric tools are the appliances most commonly requiring this Filterette. May be used on either A.C. or D.C. Maximum potential 110 volts D.C. or A.C. Ship. wt., 1 lb.

List Price \$2.25

No. "JA" Tobe Filterette Line Filter. **\$1.33**
YOUR PRICE

I.C.A. Filtevolt Jr.



The I.C.A. FILTEVOLT, JR. is the now famous Light Duty Noise Eliminator that eliminates noises caused by electric heating pads, switching on and off of lights, electric toasters, vacuum cleaners, small motors of 1/16 horsepower or less, and minor disturbances caused by electric appliances.

A small compact unit. Housing body made of black enameled metal with brass nickel plated end rings. Shipping weight, 1 lb.
No. 2239 I.C.A. Filtevolt Jr. **\$1.70**
YOUR PRICE

Tobe Filterette 110-PO Line Filter



The application of this Filterette is similar to that of the Filterette Senior, except that it is used when the interfering apparatus is connected to an ungrounded supply line or is located at a considerable distance from the entrance of a grounded neutral wiring system. Recommended for electric refrigerators, heating pads, fruit juice extractors and adding machines. Mounted in a metal case 5 1/4"x3 1/2"x4 1/2" and provided with a receptacle and attachment cord for connection to the power receptacle and appliance. A binding post is provided to allow the use of a short return wire connecting the Filterette to the frame of the interfering appliance. May be used on either A.C. or D.C. Approved by Underwriters Laboratories. Maximum potential 110 volts A.C. or D.C. Maximum current 5 amperes. Ship. wt., 4 lbs.

List Price \$10.50

No. 110-PO Tobe Filterette Line Filter. **\$6.17**
YOUR PRICE

Tobe Filterette Senior Line Filter

For application to portable electrical appliances causing a more intense type of interference than may be suppressed by the Filterette Junior. Most satisfactory for use on grounded neutral wiring systems. Contained in a cylindrical metal case 2" in diameter and 4" long. Connected between the power receptacle and the appliance by means of a standard attachment cap and receptacle. Provided with a binding post to simplify the connection of a short return wire from the Filterette to the frame of the appliance. May be used on either A.C. or D.C. Approved by Underwriters Laboratories. Maximum potential 110 volts A.C. or D.C. Maximum current, 5 amperes. Ship. wt., 1 lb.

List Price \$5.50

No. "Filt. Sr." Filterette Senior Line Filter. **\$3.23**
YOUR PRICE

Tobe Line Filterette RF-2 Line Filter

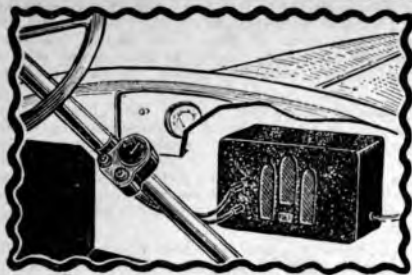


Tobe Line Filterette RF-2 is designed for use only in conjunction with the Tobe Filterizer Kit, Type 33, when it is found that noise is entering the receiver through its power line connection. Connects between the receiver and power line. Not suitable for application to electrical appliances. Ship. wt., 4 lbs.

List Price \$4.95

No. RF-2 Tobe Line Filterette. **\$2.91**
YOUR PRICE

Performance That Thrills! COMPLETE ALL-ELECTRIC AUTO RADIO



6 TUBE SUPERHETERODYNE
★ ★
AUTOMATIC VOLUME CONTROL
★ ★
ONE-HOLE MOUNTING

Eighteen Star Points of Superiority

- * Complete in One Unit
- * All-Electric—No Batteries
- * Superheterodyne Circuit
- * Single Hole Mounting
- * Dynamic Speaker
- * 3-Gang Condenser
- * 10 K.C. Selectivity
- * Utah Remote Control
- * Illuminated Dial
- * Automatic Volume Control
- * Newest Type Tubes
- * Compact
- * Completely Shielded
- * 2 Microvolt Sensitivity
- * 10-Tube Performance
- * Beautiful Crackle Finish Case
- * FREE FROM MOTOR NOISE
- * Extremely Low Cost

The New SUPER-STEINITE 6-tube all-electric superheterodyne Auto Radio is the finest example of advanced automobile radio engineering. Nothing has been overlooked to make this set the supreme auto radio value in America today.

Its circuit is entirely new and furnishes performance that is sensational in every respect. It is completely electric in operation and requires no "B" batteries or "B" eliminators. Only one hole is required for mounting as it is absolutely self-contained except for the remote control.

The SUPER-STEINITE DE LUXE set has everything necessary to make it America's greatest value—AUTOMATIC VOLUME CONTROL, built-in VIBRATOR RECTIFIER POWER SUPPLY, a 5" heavy duty DYNAMIC SPEAKER built right in the set, a 3-GANG CONDENSER, 10 K.C. SELECTIVITY, ILLUMINATED DIAL and the very latest gear-driven steering column remote control.

It produces a beautiful, clear tone with ample volume, absolutely free from motor noise. The set is completely shielded and there is no back-lash from the remote control. The 3-gang condenser and 2 microvolt sensitivity, which is flat across the entire wave band, brings in reception clearly and without a trace of interference, from the most distant stations. The performance is equal to that of a 10-tube Home radio.

Here is the ultimate in auto radio performance. To really appreciate the remarkable value in this model, it is necessary to hear it in operation. Read over its 18 star points of superiority listed above and remember—IT IS PRICED WITHIN THE REACH OF ALL. If you are a service man, it offers you your greatest opportunity for profit since the start of auto radio development.

The set is compact, easily and quickly installed. Measures, 11" x 6 1/2" x 7 1/4". Uses the very latest type of auto radio tubes: 2-6DB; 1-6A7, 1-6B7, 1-8D and 1-84. Shipping weight, 20 lbs.

No. "Super-Steinite" Steinite 6-tube Superheterodyne Auto Radio. Complete with tubes, suppressors and ignition condenser.
YOUR PRICE

\$29.95

Tube Auto Radio Filterizer



Keeps noise out of the automobile radio and boosts signal intensity. May be used with either roof aerial or under-car aerial. For use with any radio in any car. Complete kit includes one Auto Aerial Filterizer with 10 feet shielded lead-in, one ammeter or electric heater Filterette, one combination dome light or tall light Filterette and a complete set of installation instructions. Ship. wt. 8 lbs.

List Price \$4.95

No. 36 Tube Auto Radio Filterizer.
YOUR PRICE

\$2.91

Polymet Auto-Noise Eliminators

Specially designed condensers for use on automobiles carrying radios. Their function is to absorb the excess energy which causes sparking at the interrupter, and thus static in the radio. In use they are "shunted" across the contact breaker. Made to withstand all conditions of temperature and vibrations. Available in two sizes. Shipping weight, 1/4 lb.

No. C1050 Auto Condenser 0.5 Mfd; size 2 1/8" x 1 1/8" Diam.
YOUR PRICE

\$0.42

No. C1051 Auto Condenser 1.0 Mfd; size 3 1/2" x 1 1/8" Diam.
YOUR PRICE

\$0.54



Deluxe Auto Running Board Antenna



NOTE THESE FEATURES: Sturdily constructed, will not break or crush; impossible to "short" or "ground" to the metal chassis of the car; employs triple action spring suspension system; affords a permanent installation; easily installed in a few minutes by anyone; high tension non-shorting wire lead; all parts sturdily constructed and rust-proof; universally adaptable to every automobile; large copper surface, hence affords excellent reception under all conditions; special rubber splash guard furnished with each antenna; usually attached to the unders side of either running board. Shipping weight, 8 lbs.
No. 347 DeLuxe Auto Running Board Antenna
YOUR PRICE

\$1.80

Auto Roof Antenna

This Roof Antenna can be easily inserted in any automobile by opening the roof lining about a foot, inserting the aerial and running the lead wire down the corner post to the radio set. For open cars, the roof antenna can be raised and slid between the folds.

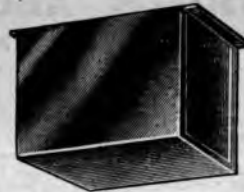
The Roof Antenna measures 13" x 33" and utilizes a fine grade of pure copper entirely encased in a specially prepared cloth. It provides ample pick up and selectivity for any automobile radio. Ship wt. 2 1/2 lbs.



No. 342 Auto Roof Antenna
YOUR PRICE

\$0.90

Auto "B" Battery Box



This neat-appearing, heavy-gauge, metal box was designed especially for housing three standard 45 volt "B" batteries for use with automobile radios. Measures 10 1/2" x 8 1/2" x 8" Provided with two convenient mounting flanges and removable metal cover.

Not only can this box be used for "B" batteries, but it is an ideal housing for a home-made automobile radio. Both speaker and chassis may be attached to the removable cover and the whole thing then easily slid out of the metal container for easy service work. Ship. wt. 8 lb.

List Price \$4.50

No. B7401 Auto "B" Battery Box.
YOUR PRICE

\$1.00

"Universal" Remote Control For Auto Radios

Absolutely No "Back Lash" Or Play



One of the salient features of this remote control unit is the total absence of "back lash". Stations can be logged with absolute fidelity on the dial of this unit. The secret of this feature is a set of matched, high ratio vernier gears as well as a specially constructed flexible drive cable. Some of its other fine features are:

LOCK SWITCH AND VOLUME CONTROL—prevent tampering with battery and enables accurate volume adjustment without affecting tone quality.

MICROMETER TUNING—accurately calibrated, illuminated scale permits hair-line adjustment through proper gear reduction.

ILLUMINATED DIAL—Indicates at a glance whether the set is on or off.

DRIVE CABLE—ingeniously designed, prevents "back lash" when tuning.

ESCUTCHEON—coin embossed, old bronze finish—blending with average car hardware and instruments.

CONTROL HOUSING—pressed steel, black Japanned, embodying exclusive engineering features.

Available in two models—Type "L" control, is a SINGLE cable drive control for tuning the variable condenser. The volume control is a part of the remote control housing, functioning as a combined lock switch and volume control. Type "R" is a DOUBLE drive cable control. One cable for the tuning condenser and the other, operated by a key, for turning the volume control, when it is an integral part of the receiver itself. Ship. wt., 2 1/2 lbs.

List Price \$6.00

No. L Single Cable Remote Control.
No. R Double Cable Remote Control.
YOUR PRICE, each

\$4.95

Lynch Automobile Spark Plug Noise Suppressors

Lynch Suppressors for Auto Radio Use are based on the famous Metallized principle which has proved its dependability where day in and day out performance is of paramount importance. These units are moisture proof, rugged and able to withstand heavy mechanical shocks. They have been subjected to exhaustive tests in the laboratories of leading manufacturers and have successfully passed examination under the most exacting conditions. These suppressors are absolutely essential to noise-free operation of automobile radio receivers. The capacity of these resistors is extremely low—less than 0.5 micro-microfarads. The resistance range is 15,000 ohms or optional.



No. 9S Spark Plug Suppressor for connection to each Spark Plug

No. DS Distributor Suppressor for connection to common cable from distributor

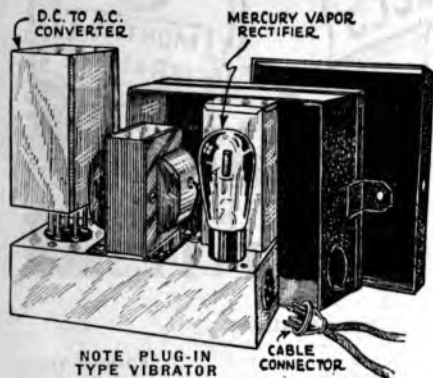
No. CS Cable Type Suppressor for connection in each cable lead from distributor
List Price \$0.60

YOUR PRICE, each

\$0.36

ELECTRIFY YOUR AUTOMOBILE RADIO!

New Design Auto "B" Eliminator PLUG-IN TYPE VIBRATOR



The most outstanding feature of this eliminator is its magnetic converter unit which changes the direct current of the storage battery to alternating current. This unit is of the FULL-WAVE VIBRATOR TYPE and is built into a SOUND-PROOF metal container, having standard tube prongs on the bottom so that the

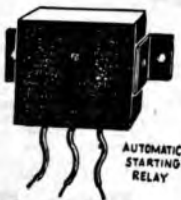
entire unit may be replaced when worn out as easily as a tube.

The only part of any vibrator-type auto "B" eliminator that wears out is the magnetic vibrator. Why discard an expensive eliminator just because a single part has become worn out? In this eliminator you merely remove this unit and replace it with another as simply and as quickly as you would an ordinary radio tube.

This new eliminator is a proven and time tested power unit which insures uniform, dependable auto radio reception. It is simplified in construction and quiet in operation. Requires no oiling or greasing whatever. Easily installed in any part of the car. Has an output of 40 MILLIAMPERES AT 180 VOLTS WITH AN INTERMEDIATE TAP OF 90 VOLTS. Furnished with a special power relay which automatically turns on the eliminator when the auto radio is turned on. Measures but 7 1/2" x 6 1/4" x 3 1/4". Shipping weight, 12 lbs.

List Price \$15.50

No. ATR-B Auto "B" Eliminator,
Including rectifier tube.
YOUR PRICE



AUTOMATIC STARTING RELAY

\$11.25

D.C. to A.C. INVERTER



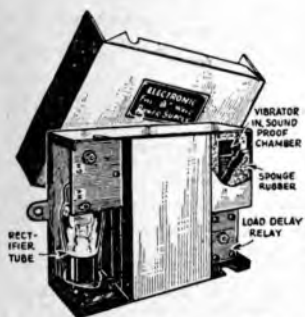
Generates 110 volts 50-60 Cycles A. C.

A simple, inexpensive device for producing standard 110 volt alternating current from 6 volt storage batteries, 32 volt farm plants and 110 volt D. C. systems. No need to purchase special appliances! The ATR D.C.-A.C. Inverter will supply 110 volt A.C. power for operating standard A.C. devices. There are no rotating parts and the only element that moves is the vibrator which plugs in just like a radio tube. The over-all dimensions of the ATR Inverter are approximately 7" x 7" x 3 1/2". Net weight, 14 lbs. Weight, packed for shipment, 15 pounds.

List Price \$18.50

Cat. No.	D. C. Input	Power Output	YOUR PRICE
6	6 Volts	50 Watts) \$10.95 EACH
32	32 Volts	100 Watts	
110	110 Volts	200 Watts	

New Electronic Full-Wave Auto "B" Eliminator



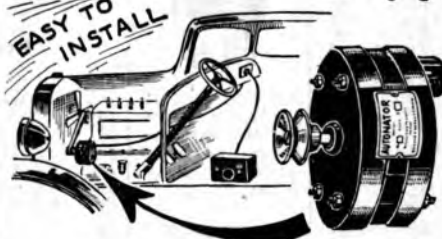
In design, as well as construction, the Electronic Full-Wave Auto "B" Eliminator is without question the most advanced unit of its kind. It has an efficiency of better than 50% — A REALIZABLE ACHIEVEMENT IN EQUIPMENT OF THIS TYPE. The full-wave vibrator itself has an individual efficiency of 70%. This means that it never fails to operate immediately, that it

never "sticks", and that the output is steady and free from radio frequency hum. THIS FEATURE ALONE IS WORTH THE PRICE OF THE ENTIRE ELIMINATOR. If you are a radio or an electrical man you will understand what a "sticking vibrator" means—how quickly it will run down a car battery. An auto "B" eliminator is no better than its vibrator. The "Electronic" embodies features never before used in any eliminator unit—it has many important and advanced points of superiority enumerated below.

SOME POINTS OF SUPERIORITY

COMPLETELY AUTOMATIC.—An automatic relay incorporated in unit turns on the Eliminator the minute the set itself is turned on. **NEW "AUTOMATIC LOAD DELAY" CIRCUIT.**—Its use gives full protection to and insures long life of the full-wave High Vacuum rectifier tube as well as the Interrupter. **HIGH EFFICIENCY.**—The new "Eliminator" has an efficiency of more than 50%—higher efficiency than any other Eliminator on the market. **NO HUM OR INTERFERENCE.**—The "Electronic" creates no radio or mechanical disturbance. **NO ROTARY PARTS.**—The design and construction of the "Electronic" are such that there are no rotary parts whatever to require even occasional attention. **ELECTRICAL SPECIFICATIONS.**—This unit furnishes 35 mls at 200 volts and draws 2.35 amps from the storage battery. **SMALL IN SIZE.**—The entire unit measures but 7 1/2" long x 6" deep x 2 1/2" high, thus easily permitting installation in any part of the automobile. Shipping weight, 7 1/2 lbs. **No. A-4 "Electronic" Full Wave "B" Eliminator.** Including tube. **\$10.15**
YOUR PRICE

NEW! THE NEW AUTONATOR



THE "AUTONATOR" 110 VOLT A.C. AUTO GENERATOR

Excellent for Public Address Systems

This device is indeed the most outstanding development in automotive electrical engineering in years. A new source of economical electric power, right in your car! **ABSOLUTELY TROUBLE-PROOF—USES NO CURRENT FROM THE AUTOMOBILE BATTERY—NO COST TO OPERATE—NO BRUSHES OR COLLECTOR RINGS—CAN'T BURN OUT FROM OVERLOAD—DELIVERS STEADY REGULATED CURRENT.**

This generator mounts directly on the motor block and is driven by the fan belt. It is in no way connected to the ignition system of the car.

Imagine all the many possibilities of this new device. It will operate your house radio, vacuum cleaner to clean the car, electric fan for summer driving, portable electric drill for odd jobs and many other appliances. It can be USED TO OPERATE 110 VOLT A.C. PUBLIC ADDRESS SYSTEMS as well as advertising neon signs. For the camp or summer bungalow it affords a complete electric lighting system and gives you the same conveniences which you have at home. The generator operates only when the motor is running. The voltage is regulated between 90 and 120 volts, depending on the speed of the motor. It has been so designed, that the voltage cannot increase beyond 120 volts, regardless of motor speed.

The new Autonator, because it develops its own alternating current independently of the ignition system, gives remarkable automobile radio reception, free from

Delivers
110 VOLTS, 60 CYCLE A.C.
IN YOUR CAR



auto ignition noises. It makes possible better tone and improved reception. **THE AUTONATOR FURNISHES THE SAME TYPE OF ELECTRIC CURRENT IN THE AUTOMOBILE AS YOU HAVE IN YOUR HOME.** This device is EXTREMELY SIMPLE TO INSTALL—a half hours work for a handy mechanic. It is furnished complete with armored cables, standard double outlet box, switch and suitable mounting brackets. Available in several different sizes, as shown below. Make sure that you choose an Autonator with the proper power rating (watts) for your particular work. Shipping weights range from 20 to 45 lbs., depending upon size.

SPECIFICATIONS

Cat. No.	Watts	Size Diam. XL.	YOUR PRICE
50 W	50	6 1/4 x 4 1/4	\$23.88
100 W	100	6 1/4 x 5	\$27.56
150 W	150	6 1/4 x 5 1/4	\$34.91
250 W	250	6 1/4 x 5 1/2	\$58.80
350 W	350	6 1/4 x 6 1/4	\$72.95
450 W	450	6 1/4 x 7	\$91.87



Neontron Radio Tubes

GREATEST VARIETY **LOWEST PRICES**

RCA LICENSED
6 MONTHS GUARANTEE
OVER 100 DIFFERENT TYPES

We present on this page the greatest variety of radio tubes ever published in any catalog—more than 100 different types. Many tubes for special purposes are listed here that cannot be found elsewhere. Neontron tubes are of first grade, R.C.A.-Licensed quality and should not be confused with any of the many independent brands which have recently appeared on the market. Neontron tubes are guaranteed for six months. Any tube that fails to make good for any reason will be replaced free of charge within 6 months, providing the filament still lights. No replacements after six months.

Free Tube Offer

With the purchase of tubes amounting to \$3.50 or more we will give—FREE OF CHARGE—a copy of the well known book "Modern Vacuum Tubes."

Specifications

Cat. No.	Type	Description	Filament Voltage	YOUR PRICE
600	2A3	Power Amp. Triode	2.5	\$1.65
601	2A5	Power Amp. Pentode	2.5	.90
602	2A6	Power Amp. Pentode	2.5	.90
603	2A7	Pentagrid converter	2.5	1.28
604	2B7	Duplex-Diode pentode	2.5	1.10
605	6A7	Pentagrid converter	4.3	1.28
606	6B7	Duplex Diode pentode	6.3	1.10
607	UX-200A	Detector amplifier	5.0	.36
608	UX-201A	Detector amplifier	7.5	1.10
609	UX-210	Power Amp. oscillator	1.1	.90
610	WD-11	Detector amplifier	1.1	.90
611	WD-12	Detector amplifier	1.1	.90
612	UX-12A	Amplifier detector 1/2 amp.	6.0	.60
613	UY-51	Super control R.F. amp.	2.5	.75
614	UX-120	Power amplifier	3.3	.60
615	UX-22	Screen Grid radio freq. amp.	3.3	1.10
616	UY-24	Screen grid R.F. amp.	2.5	.60
617	UX-26	Amplifier	1.5	.36
618	UY-27	Detector amplifier	2.5	.36
619	UX-30	Detector amplifier	2.0	.75
620	UX-31	Power amplifier	2.0	.75
621	UX-32	Screen grid R.F. amp.	2.0	.90
622	UY-33	Power amp. Pentode	2.0	1.10
623	UX-34	Super control R.F. amp. pentode	2.0	.75
624	UX-35	Super control R.F. amp.	2.5	.75
625	UY-36	Screen grid R.F. amp.	6.3	.90
626	UY-37	Detector amp.	6.3	.70
627	UY-38	Power amp. pentode	6.3	.85
628	UY-39	R.F. amp. pentode	6.3	.85
629	UX-240	Voltage amp. detector	6.0	.60
630	41	Power amp. pentode	6.3	.90
631	42	Power amp. pentode	6.3	.90
632	43	Power amp. pentode	25.0	1.28
633	44	R.F. amp. pentode	6.3	.85
634	UX-45	Power amplifier	2.5	.36
635	UY-46	Dual grid power amp.	2.5	.90
636	UY-47	Power amp. pentode	2.5	.75
637	48	Power amp. tetrode	30.0	1.65
638	49	Dual grid power amp.	2.0	.90
639	UX-50	Power amp.	7.5	1.65
640	55	Duplex diode triode	2.5	.90
641	56	Super triode amp.	2.5	.70
642	57	Triplegrid detector amp.	2.5	.90
643	58	Triplegrid R.F. amp.	2.5	.90
644	59	Triplegrid power amp.	2.5	.90
645	UX-71A	Power amp. 1/2 amp.	5.0	.45
646	75	Duplex diode triode	6.3	.90
647	77	Triplegrid detector amp.	6.3	.90
648	78	Triplegrid R.F. amp.	6.3	.90
649	79	Class B Twin amp.	6.3	1.28
650	85	Duplex diode triode	6.3	.90
651	89	Triple grid power amp.	6.3	.90
652	UV-189	Detector amp. short prongs	3.3	.60
653	UX-189	Detector amp. long prongs	3.3	.60
654	UV-189	Detector amp. standard 201A base	3.3	.60
655	UX-112	Amp. detector 1/2 amp.	5.0	.60
656	UX-171	Power amplifier 1/2 amp.	5.0	.45
657	UX-200A	Special Detector, recommended for weak signals	5.0	.75
658	UX-201B	Detector amp. low battery drainage 1/2 amp.	5.0	.90
659	UY-227A	Detector amp. (quick heater)	2.5	.75
660	UY-224A	Screen grid R.F. amp. (quick heater)	2.5	.75



Type 58 Triple Grid Superphonic tube. New dome-shaped top. Heater 2.5 volts at 1 ampere either A.C. or D.C.

LATEST TUBES

Type	YOUR PRICE
1A6	\$0.90
2B6	1.65
6A4	.90
6C8	.80
6C7	.90
6D0	.90
6D7	.90
6E7	.90
19	.90
6F7	.90
6Y5	.90
6Z3	.90
6Z4	.90
12Z3	.90

Specifications

Cat. No.	Type	Description	Filament Voltage	YOUR PRICE
661	PZ11	Power amp. pentode	2.5	.90
662	UY-257	Power amp. pentode D.C. fil.	2.5	.90
663	UX-201A	Special Radio frequency	5.0	.75
664	UX-201A	Special Audio frequency	5.0	.75
665	UX-271AC	Special platinum filament power tube	5.0	.90
666	UX-T14	Special (high mu) 201A	5.0	.90
667	UX-201A	Special switch tube double life	5.0	.90
668	UX-182	Sparton type power amp.	5.0	.90
669	UX-183	Sparton type power amp.	5.0	.90
670	UY-184	Sparton type detector amp.	3.0	.90
671	UY-485	Sparton type detector amp.	3.0	.90
672	UX-585	Sparton type power amp.	7.5	2.63
673	UY-686	Sparton type amplifier	3.0	.90
674	UX-401	Kellogg type triode	3.0	1.35
675	UX-403	Kellogg type output triode	3.0	.75
676		Ballast tube to prevent your tubes in set from blowing out		1.35
680	UX-210C	Oscillator and amplif. 15 watts	7.5	3.40

Rectifier Tubes and Charger Bulbs

Cat. No.	Type	Description	Filament Voltage	YOUR PRICE
681	2525	Rectifier doubler	25.0	\$0.90
682	1	Half wave rectifier	6.3	.90
683	523	Heavy duty full wave rectifier voltage	5.0	.85
684	UX-280	Full wave rectifier	5.0	.40
685	UX-281	Half wave rectifier	7.5	1.65
686	UX-282	Full wave mercury vapor rec.	2.5	.70
687	UX-283	Heavy duty full wave mercury vapor rec.	5.0	.90
688	UY-84	Full wave rectifier	6.3	.90
689	UX-866	Half wave mercury rec. (heavy duty)	2.5	4.13
690	UX280M	Full wave mercury vapor rectifier	5.0	1.35
691	UX-281M	Half wave mercury vapor rectifier	7.5	1.88
692	UX-871	Half wave mercury vapor rectifier	2.5	1.35
693	UX-872	7500 volts		15.00
694	UX-213	Full wave rectifier	5.0	.90
695	UX-216B	Half wave rectifier	7.5	.90
696	UX-588	Full wave mercury vapor rectifier	5.0	1.35
697		125 mil. rectifier tube 13 H. (Raytheon type)		1.73
698		6/10 amp. trickle charger bulb (Tungar type)		2.48
699		2 amp. charger bulb (old type tungar type)		2.48
700		2 amp. charger bulb (new type tungar type)		2.48
701		5 and 6 amp. charger bulb (tungar type)		4.88
702		15 amp. charger bulb (tungar type)		9.38

Television Tubes and Photo Electric Cells

Cat. No.	Description	YOUR PRICE
704	Photo electric cell from 1 1/2 to 3 1/2" (potassium type)	\$3.38
705	Photo electric cell from 3 1/2 to 6" (potassium type)	5.85
706	Photo electric cell from 1 1/2 to 3 1/2" (caesium type)	5.85
707	Photo electric cell from 3 1/2 to 4 1/2" (caesium type)	8.85
708	Grater tube size crater from .010 to .250 (cold cathode)	5.63
709	Television Neon tube 1 sq. in. cathode	2.63
710	Television Neon tube 1 1/2 sq. in. cathode	3.38
711	Television reflectron 1 sq. in. window 50-60 mils	3.38

GENUINE

GUARANTEED

Radiotron AND Cunningham TUBES

Free Tube Offer

We take pleasure in offering with a purchase of tubes amounting to \$4.50 or more from this or any other page in the catalog—FREE OF CHARGE—a copy of the well-known and up-to-date book "Modern Vacuum Tubes." This book is one of the most authoritative on the subject and will be of infinite value to its owners.



Guaranteed For Six Months

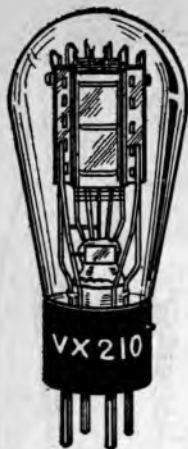
These Radiotrons and Cunningham tubes bear the double guarantee of this company and that of the manufacturer. We guarantee that they will give efficient service for six months. If they "stand up" faithfully during that period of time, there is no question but what they will perform perfectly for the remainder of their natural life. We have yet to receive our first com-

plaint from a customer who has not received satisfaction on our guarantee. We make one exception in that we cannot accept any tube whose filament has burnt out or whose glass envelope is broken. IF MANUFACTURERS CHANGE PRICES AFTER THIS BOOK GOES TO PRESS THESE PRICES WILL CHANGE ACCORDINGLY.

POWER AMPLIFIER TRIODE C-2A3 Your Price \$1.75	TWIN AMPLIFIER C-19 Your Price \$1.20	POWER AMPLIFIER PENTODE C-41 Your Price \$1.10	POWER AMPLIFIER TRIODE C-71-A Your Price \$0.70
POWER AMPLIFIER PENTODE C-2A5 Your Price \$1.10	R-F AMPLIFIER TETRODE C-22 Your Price \$1.50	POWER AMPLIFIER PENTODE C-42 Your Price \$1.20	DUPLEX-DIODE HI-MU TRIODE C-75 Your Price \$1.10
DUPLEX-DIODE HIGH-MU TRIODE C-2A6 Your Price \$1.10	R-F AMPLIFIER TETRODE C-24-A Your Price \$1.10	POWER AMPLIFIER PENTODE C-43 Your Price \$1.25	SUPER-TRIODE AMP. DETECTOR C-76 Your Price \$0.90
PENTAGRID CONVERTER C-2A7 Your Price \$1.30	AMPLIFIER TRIODE C-26 Your Price \$0.65	SUPER-CON. R-F AMP. PENTODE C-44-39 Your Price \$1.20	TRIPLE-GRID AMP. DETECTOR C-77 Your Price \$1.20
DUPLEX-DIODE PENTODE C-2B7 Your Price \$1.50	DETECTOR AMPLIFIER TRIODE C-27 Your Price \$0.70	POWER AMPLIFIER TRIODE C-45 Your Price \$0.75	TRIPLE-GRID SUPER-CON. AMP. C-78 Your Price \$1.20
FULL-WAVE RECTIFIER C-5Z3 Your Price \$1.20	DETECTOR AMPLIFIER TRIODE C-30 Your Price \$0.80	DUAL-GRID POWER AMPLIFIER C-46 Your Price \$1.20	TWIN-TRIODE AMPLIFIER C-79 Your Price \$1.30
POWER AMPLIFIER PENTODE C-6A4 Your Price \$1.40	POWER AMPLIFIER TRIODE C-31 Your Price \$0.80	POWER AMPLIFIER PENTODE C-47 Your Price \$1.30	FULL-WAVE RECTIFIER C-80 Your Price \$0.70
PENTAGRID CONVERTER C-6A7 Your Price \$1.30	R-F AMPLIFIER TETRODE C-32 Your Price \$1.40	POWER AMPLIFIER TETRODE C-48 Your Price \$3.00	HALF-WAVE RECTIFIER C-81 Your Price \$2.50
DUPLEX-DIODE PENTODE C-6B7 Your Price \$1.40	POWER AMPLIFIER PENTODE C-33 Your Price \$1.40	DUAL-GRID POWER AMPLIFIER C-49 Your Price \$1.10	FULL-WAVE RECTIFIER C-82 Your Price \$0.90
TRIODE PENTODE C-6F7 Your Price \$1.60	SUPER-CON. R-F AMP. PENTODE C-34 Your Price \$1.50	POWER AMPLIFIER TRIODE C-50 Your Price \$2.50	FULL-WAVE RECTIFIER C-83 Your Price \$1.10
HALF-WAVE RECTIFIER C-12Z3 Your Price \$1.10	SUPER-CON. R-F AMP. TETRODE C-35 Your Price \$1.10	TWIN-TRIODE AMPLIFIER C-53 Your Price \$1.35	FULL-WAVE RECTIFIER C-84 Your Price \$1.30
RECTIFIER-DOUBLER C-25Z5 Your Price \$1.60	R-F AMPLIFIER TETRODE C-36 Your Price \$1.10	DUPLEX-DIODE TRIODE C-55 Your Price \$1.10	DUPLEX DIODE TRIODE C-85 Your Price \$1.10
DETECTOR AMPLIFIER C-01A Your Price \$0.60	DETECTOR AMPLIFIER TRIODE C-37 Your Price \$0.85	SUPER-TRIODE AMP. DETECTOR C-56 Your Price \$0.75	TRIPLE-GRID POWER AMP. C-89 Your Price \$1.20
HALF-WAVE MER. VAPOR REC. C-1 Your Price \$1.30	POWER AMPLIFIER PENTODE C-38 Your Price \$1.10	TRIPLE-GRID AMP. DETECTOR C-57 Your Price \$1.10	DETECTOR AMPLIFIER TRIODE C-X199 Your Price \$1.00
HALF-WAVE RECTIFIER C-1-V Your Price \$1.00	SUPER-CON. R-F AMP. PENTODE C-39-44 Your Price \$1.20	TRIPLE-GRID SUPER-CON. AMP. C-58 Your Price \$1.10	VOLTAGE REG. C-874 Your Price \$4.90
POWER AMPLIFIER TRIODE C-10 Your Price \$2.50	VOLTAGE AMPLIFIER TRIODE C-40 Your Price \$0.80	TRIPLE-GRID POWER AMPLIFIER C-59 Your Price \$1.60	BALLAST TUBE C-876 Your Price \$6.70
DETECTOR AMPLIFIER TRIODE C-12-A Your Price \$0.90			BALLAST TUBE C-886 Your Price \$6.75

PERFECT RADIO TUBES

SOLD ONLY IN LOTS OF 12 OR MORE



ILLUSTRATIONS
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RADIO TRADING CO.

LOW PRICED TUBES. FACTS YOU SHOULD KNOW ABOUT "TUBE SECONDS"

To meet competition we list these tubes. For some time the market has been flooded with low priced tubes; the so-called "35c" tube. The intelligent radio man should know the true facts about such tubes, and govern himself accordingly.

Every reputable radio tube manufacturer, with few exceptions, rejects in the course of manufacture, a vast amount of tubes that have slight imperfections. These tubes may be 80% or 90% perfect, but they are not sufficiently perfect to pass all the different rigid meter tests, and for that reason, they are discarded and sold in the market as SECONDS. In practically all cases, such tubes are not the nationally known and advertised tubes, but are marketed under various private brand names, which names do not mean a gosh darned thing. Sometimes these "brand" names are highly euphonious and high sounding, but you will not see these brands advertised in a reputable radio magazine, nor for that matter, in any magazine.

Of course, these tubes are not junk, and they really do give surprising service in the majority of cases, but no first class radio tube manufacturer would wish to palm them off to the trade as a first grade tube. Hence, these

Cat. No.	Type	Your Price	Cat. No.	Type	Your Price
700	200A	\$.40	728	50	\$.90
701	2G1A	.38	729	551	.45
702	1	.53	730	53	.68
703	210	.80	731	55	.53
704	12'A	.38	732	56	.83
705	120	.40	733	57	.83
706	22	.75	734	58	.80
707	24	.36	735	59	.53
708	26	.30	736	71A	.38
709	27	.30	737	75	.60
710	30	.45	738	77	.60
711	31	.45	739	78	.60
712	32	.45	740	280	.38
713	33	.60	741	280M	1.05
714	34	.68	742	281	.75
715	35	.45	743	282	.53
716	36	.60	744	283	.60
717	37	.60	745	84	.60
718	38	.60	746	85	.60
719	39	.60	747	89	.60
720	40	.40	748	X100	.40
721	41	.60	749	V199	.40
722	42	.60	750	2A5	.60
723	44	.69	751	1223	.60
724	45	.38	752	2525	.60
725	46	.53	753	182B	.60
726	47	.45	754	183	.60
727	49	.60	755	586	1.65
			756	866	2.25

WHY GOOD TUBES CAN BE SOLD AT THESE PRICES

orphans of the waves are put into nice boxes and sold under various brand names. Such tubes are never accompanied by any sort of a guarantee that means anything, but are usually marketed under a "five-day guarantee," which means that if the tube blows out after five days you are stuck with it, and have no redress. This, of course, is the extreme case, because as stated before, some of these tubes do manage frequently to give a surprising performance. As a matter of fact, they do not burn out quicker than a first grade tube, but when it does happen, you have no redress. This is quite properly so, because after all, when you pay for tubes at a discount of 90% or more off the list prices, you cannot expect more.

Remember, THESE TUBES ARE NOT SECOND HAND. They haven't been used before. They are all new tubes and at the prices they are sold you really do not take a fearful chance.

We have been brutally frank with you, and have explained the situation just as it exists. We extend the usual guarantee on these tubes, that is,

USE THE TUBES FOR FIVE DAYS, AND IF THEY ARE NOT FULLY SATISFACTORY WE WILL STILL MAKE GOOD. After five days our guarantee ceases.

POLICE RADIO ALARM STATIONS

(Continued from Page 10)

WPDZ	Fort Wayne, Ind.	2490 kc.	WPFK	Hackensack, N. J.	2430 kc.
WPEA	Syracuse, N. Y.	2382 kc.	WPFL	Gary, Ind.	2470 kc.
WPEB	Grand Rapids, Mich.	2422 kc.	WPFM	Birmingham, Ala.	2382 kc.
WPEC	Memphis, Tenn.	2466 kc.	WPFN	Fairhaven, Mass.	1712 kc.
WPED	Arlington, Mass.	1712 kc.	WPFQ	Knoxville, Tenn.	2474 kc.
WPEE	New York, N. Y.	2450 kc.	WPFK	Clarksburg, W. Va.	2490 kc.
WPEF	New York, N. Y.	2450 kc.	WPFJ	Swathmore, Pa.	2474 kc.
WPEG	New York, N. Y.	2450 kc.	WPKR	Johnson City, Tenn.	2470 kc.
WPEH	Somerville, Mass.	1712 kc.	WPKS	Asheville, Md.	2458 kc.
WPEI	E. Providence, R. I.	1712 kc.	WPKU	Portland, Me.	2422 kc.
WPEK	New Orleans, La.	2430 kc.	WPKV	Pawtucket, R. I.	2466 kc.
WPEL	W. Bridgewater, Mass.	1666 kc.	WPKW	Palm Beach, Fla.	2442 kc.
WPEM	Woonsocket, R. I.	2466 kc.	WPKX	Miami, Fla.	2442 kc.
WPEP	Arlington, Mass.	1712 kc.	WPGA	Bay City, Mich.	2466 kc.
WPEQ	Saginaw, Mich.	2442 kc.	WPGB	Port Huron, Mich.	2466 kc.
WPER	Lexington, Ky.	1706 kc.	WPGC	S. Schenectady, N. Y.	1658 kc.
WPEW	Northampton, Mass.	1666 kc.	WPGD	Rockford, Ill.	2458 kc.
WPEX	Newton, Mass.	1712 kc.	WPGF	Providence, R. I.	1712 kc.
WPEY	Muskegon, Mich.	2442 kc.	WPGG	Findlay, Ohio	1682 kc.
WPF0	Highland Park, Ill.	2430 kc.	WPGH	Albany, N. Y.	2414 kc.
WPF1	Reading, Pa.	2442 kc.	WPGI	Portsmouth, Ohio	2430 kc.
WPF2	Jacksonville, Fla.	2442 kc.	WPGJ	Utica, N. Y.	2414 kc.
WPF3	Baltimore, Md.	2414 kc.	WPGK	Cranston, R. I.	2466 kc.
WPF4	Columbus, Ga.	2414 kc.	WPGL	Binghamton, N. Y.	2442 kc.
WPF5	Hammond, Ind.	1712 kc.	WPGN	South Bend, Ind.	2490 kc.

TODD 5 AMPERE "DRY" TAPERING BATTERY CHARGER



EMPLOYS 2
ELKON DRY
DISC
RECTIFIERS

Here's a charger that is absolutely dry and noiseless in operation. With the extra drain on your auto battery, due to auto-radios, cigar-lighters, fans and heaters, it soon runs down unless a suitable charger is attached at night or when you are not using your car. This charger starts off with a 5 ampere charging rate and tapers off to 3 1/2 amperes as the battery is fully charged. No liquids or bulbs to replace, absolutely dry and no attention is needed except to plug into 110 volt 50-60 cycle line. Completely enclosed in a ventilated metal case, and provided with a 5-foot heavy duty rubber covered type SJ cord, 3-foot rubber covered wire leads with giant size battery clips. For 110-120 volts, 50-60 cycle. Size 7 1/2 x 3 1/2 x 2 1/4 in. Shipping weight, 10 lbs.

Cat. No. 3000
YOUR PRICE

\$4.95

THE LATEST IMPROVED READRITE MODEL 720 ANALYZER

Flexible Point-to-Point Tester



Tests ALL Latest Type Tube Circuits

The Readrite Model 720 point-to-point tester is designed for fast, efficient service work. Requires minimum manipulation, is extremely flexible and so arranged that voltage and current can be measured in any tube circuit. Resistances, continuities and capacities are also quickly measured. Point-to-point tests are made through an 8 conductor cable and plug connected to the set socket. The tester socket terminals are arranged according to RMA standards. With this method it is not necessary to move the chassis from the cabinet to localize defects. All meter ranges are available by connecting through the single pair of jacks.

Regardless of the arrangement of the different tube elements the No. 720 will make all tests with the same ease as it does now with present tubes. When it is found advisable to increase or decrease the voltage values as applied to the tube elements, the break-in jacks are also made use of for this purpose.

Has one AC and one DC meter. Rugged, simple, speedy and accurate in use. The DC scales are 15, 150, 300 and 600 volts, 15 and 150 milliamperes. The AC scales are 10, 25, 150 and 750 volts. Scales are clearly lithographed on all metal dials. **NO MENTAL ARITHMETIC REQUIRED.** Overloading of the meter is prevented as far as possible by the single selector switch and the single pair of jacks for all meter ranges.

Has one AC and one DC meter. Rugged, simple, speedy and accurate in use. The DC scales are 15, 150, 300 and 600 volts, 15 and 150 milliamperes. The AC scales are 10, 25, 150 and 750 volts. Scales are clearly lithographed on all metal dials. **NO MENTAL ARITHMETIC REQUIRED.** Overloading of the meter is prevented as far as possible by the single selector switch and the single pair of jacks for all meter ranges.

No serviceman can afford to be without this practical, efficient, portable tester that soon pays for itself. The Model 720 tester is furnished complete with all instructions, resistance and capacity charts, cords, registration and guarantee card.

Size—10" x 3 1/4" x 8" Shipping weight—approximately 11 pounds. List Price \$25.00 **\$14.70**
 No. 720 Readrite Point-to-Point Set Analyzer. YOUR PRICE
 No. 730 Readrite Testr., same as the No. 720 but equipped with a Triplett DC voltmeter. List Price \$31.00 **\$18.23**
 YOUR PRICE

DIRECT READING TUBE TESTERS

Designed to test quickly and accurately all tubes.

These new Readrite tube testers have incorporated two instruments. One large 3 1/2" Triplett moving coil instrument with a shaded two-color scale reads directly (GOOD—POOR) the worth of a tube. The other is a Readrite A. C. meter used with rheostat for adjusting the line voltage. Cathode and grid shorts are tested with separate push buttons. These tests never fail to show the slightest short or leakage. Two selector switches are used for the different tubes and the required filament voltages.

Chart furnished. Simple and easy to use. Supplied in Oak Case with sloping panel. Approximate shipping weight 12 pounds.

List Price \$40.00 **\$23.52**
 No. 421 Counter type. YOUR PRICE

PORTABLE MODEL

Includes Oak Cover, with substantial leather handle. Has double snap fasteners on sides of case. Size 11" x 9 1/2" x 7". Shipping weight approximately 14 pounds.

List Price \$42.50 **\$24.99**
 No. 422 (as shown) Portable. YOUR PRICE



No. 422

Readrite Household Utility Tester



This instrument was designed to meet the needs of the junior electrician, handyman and experimenter. Used for servicing electrically operated refrigerators, ironing machines, water pumps, oil burners, stokers, ventilating systems, electric ranges and all other electrical household and shop appliances. Contains input and output receptacles for measuring voltage and current of appliances, etc., A.C. ammeter reading up to 20 amperes, A.C. voltmeter reading up to 300 volts and complete direct-reading ohmmeter of 0-40 and 0-10,000 ohms. This ohmmeter is excellently suited for continuity testing. The instrument is put up in a neat, professional-appearing leatherette case, measuring 10 1/2" x 13 1/2". Ship. wt., 10 lbs.

Note Detachable Cover
 List Price \$24.75
 No. 900 Readrite Household Utility Tester **\$14.55**
 YOUR PRICE

READRITE Direct Reading Ohmmeter



This instrument is a complete direct reading ohm meter mounted in a baked lacquer steel case. Accurate resistance measurements up to 10,000 ohms are possible. The instrument will also act as a 0-4.5 volt meter. Zero adjustment is obtained by shorting the two leads and adjusting the rheostat. The instrument is provided with 5 foot probe leads for continuity tests. This instrument is indispensable in service work. High resistance shorts are readily shown up with this device. A small 4.5 volt flashlight battery is self contained. Case is 4 in. in diameter. Shipping weight, 2 lbs.

No. 500 Readrite Direct Reading Ohmmeter. **\$3.82**
 YOUR PRICE

READRITE Resistance Meter

This is the same meter as is used in the No. 500 Readrite Direct Reading Ohmmeter. This is a high grade 0-4.5 volt D.C. meter with a secondary scale calibrated directly in ohms. In operation, the meter is connected in series with a 4.5 volt flashlight battery and the apparatus to be tested. Range 0-10,000 ohms. Instrument is in a flush mounting case with a black flange and nickel bezel. 4 in. diameter. Shipping Weight, 2 lbs. List Price \$2.75

No. 501 Readrite Resistance Meter only. **\$1.62**
 YOUR PRICE

No. 610 Readrite Analyzer

Tests Latest Type 6 and 7 Prong Tubes



The No. 610 contains the same equipment as No. 710. The carrying case is larger, with leatherette covering and equipped with lock. Room is provided for carrying tubes, tools and supplies. The test equipment and panel is in a removable tray in the top of the case. The tray equipment may be used separately as complete test panel for shop purposes. With each purchase the new radio publication "Radio Set Analyzers" will be given Free of charge. Read more about this offer in the description of the No. 710 Analyzer listed elsewhere. Size 14 1/2" x 7 1/2". Shipping weight, 12 lbs.

List Price \$33.00
 No. 610 Readrite Analyzers **\$19.40**
 YOUR PRICE

Readrite No. 850 Capacity Tester

A Direct Reading 0.008-10 mf. Instrument

This Capacity Tester contains one A.C. and one D.C. Meter. BOTH KINDS OF PAPER AND ELECTROLYTIC CONDENSERS MAY BE TESTED. The A.C. meter will test the capacity of paper or mica type condensers from .008 to 10 mfs. Connect to A.C. supply line of 100-135 volt., 60 cycles. A rheostat adjusts the full scale voltage to 100. A toggle switch connects meter for reading upper or lower scale. Test leads plug into jacks directly under meter for connecting to condenser. Meter reads directly in microfarads.

SPECIAL PROVISIONS FOR TESTING ELECTROLYTIC CONDENSERS

The D.C. Volt Milliammeter is used for testing and "forming" electrolytic condensers. Connector is made with the wafer adapter to the plate of a rectifier tube and the clip attached to the set chassis. The selector switch is moved to the "VOLTS" position and the meter set to 300 volts with the use of the Rheostat. The next position of the selector switch provides for forming the condenser. ELECTROLYTIC CONDENSERS WHEN NEW OR LEFT OUT OF SERVICE FOR A PERIOD OF TIME REQUIRE FROM 15-20 MINUTES CONNECTION IN CIRCUIT TO PROPERLY FORM ITS CHEMICAL DIELECTRIC FILM BEFORE TESTING. The plus (+) jack connects to the anode and the minus (-) jack to the can container of the condenser. Test one anode at a time. The "FORM" position of the selector switch connects meter for reading corresponding to 100 M.A. full scale. Condensers starting to form in excess of 100 M.A. (electrolytic condensers, both wet and dry, will pass a gradually diminishing current until fully "formed" when the current ceases entirely) are defective with a short. A good electrolytic condenser should start forming at about the "HIGH" position on the meter scale and gradually reduce as the forming continues until no further change in meter takes place. After the required time for forming has been allowed and the meter reading stops as near zero the exact M.A. reading should be taken by moving the selector switch to the MIL-AMPS position. Electrolytic condensers should show up to 2 M.A. per microfarad. Variable or fluctuating meter reading would indicate a defective condenser. Attractively put up in baked enamel steel case.

List Price \$16.50
 No. 850 Readrite Capacity Tester—less cover and handle **\$9.70**
 YOUR PRICE

List Price \$18.75
 No. 851 Readrite Capacity Tester—with cover and handle **\$11.02**
 YOUR PRICE

Gentlemen: I received my Readrite No. 700 radio set tester and after checking it over, I can say that I am well pleased with it.
 C. E. SOULIN, Columbus, Ohio.

READRITE RESISTANCE, CONTINUITY AND CAPACITY TESTER

For Set Analyzing, Resistance and Capacity Testing, Voltages, Milliamperes



The Readrite No. 1000 Resistance Continuity and Capacity Tester is one complete unit for set analyzing. The large Triplett moving coil 0-1 milliammeter-volt-ohmmeter reads up to 3 megohms, 600 D.C. volts and 300 milliamperes. The A.C. meter reads capacities .008 to 10 mfd. The selector switch makes step to step contacts through plugs and cord connections to all circuit combinations.

EASY TO OPERATE.

One cable plug in the rectifier tube socket makes possible all tests between the power supply and the tube socket in which the other cable plug is inserted. A wire clip to chassis also permits tests between the chassis and tube socket.

Simply turn the selector switch—(each position is recorded on the handy chart on the panel)—and read directly on the meter the exact condition of every part of any circuit. Check the continuity and resistance of the A.V.C., diode, resistance coupling, phase shifting, automatic noise suppression, automatic tone control, R.F., I.F., detector, oscillator, A.F., filter and similar circuits. In the same way check—filter, by-pass and coupling condensers for shorts and opens, soldered joints for resistance, book-up wires, bias resistances and bleeder resistances for shorts and opens. Check the power transformer, primary and secondary for balance. Check the line voltage. With the use of the receiving set wiring diagram the serviceman can easily and quickly locate every kind of trouble without removing the chassis from the cabinet.

The cover is removable. Battery compartment has separate panel. The No. 1000 Tester will bring your service procedure up-to-the-minute, simplifying set analysis by this latest method. Ship. wt., 18 lbs.

List Price \$50.00

No. 1000 Readrite Tester. **\$29.40**
YOUR PRICE

This tester is complete with two standard 22½ volt batteries, one small Dash light cell, cables and cords, all necessary small size adapters for the new sets, and complete simple instructions.

The No. 1000 Tester with its exclusive cable, two plugs and selector switch combination is so outstanding as to make no comparison with other continuity tester methods. Case is strong and covered with fabric.

READRITE SET ANALYZERS

Test ALL Latest Type Tube Circuits



This very popular three meter set tester is equipped with a practical selector switch for checking all parts of the tube circuits by plugging directly into the receiving set socket.

The D. C. voltmeter reads 0-20-60-300-600 volts. A. C. voltmeter 0-10-140-700 and the D. C. milliammeter 0-15-150.

Selector switch connects all the D. C. circuits to the D. C. Voltmeter. Jacks are used to make connections for individual ranges of the different meters. 4½ volt battery is furnished for continuity and resistance testing. Furnished with complete instructions and charts for capacity and resistance tests. A strong leatherette covered case with removable cover, affords ample space for the special plug, with latch for holding adapters, and other accessories required for proper operation. Shipping weight approximately 11 pounds.

List Price \$27.50

No. 710 Readrite Analyzer. **\$16.17**
YOUR PRICE

No. 712—Same as No. 710 but equipped with a Triplett D. C. Volt-Ohmmeter, 0-15-60-300-600 volts with 1000 ohms resistance per volt, and 300,000 ohms direct reading scale when used with 4½ volt battery. Shipping weight, approximately 11 pounds.

List Price \$37.00 **\$21.76**
YOUR PRICE

Supreme Model 35 Tube Tester



In speed of operation, and ACCURACY OF TEST the new Model 35 is second only to the Model 35 Tube Tester. Employs the same "Quality Test" and requires no adapters for any tube including the new A. B. C. D. E. F. G. Y. Z series, some of which are the three-beater pin types, and all types having duo-diode connections. This tester has only four

sockets—all 4-pin tubes, regardless of their individual element connections are inserted in the 4-hole socket; all 5-pin tubes in the 5-hole socket, etc.

The Model 35 has a large d'Arsonval meter, with an English-reading scale, directly classifying all tubes according to their "Bad," "Doubtful," and "Good" conditions, and an over-size transformer tapped in 8 volt steps from 98 to 125 volts for accurate line voltage adjustment. All tubes are conveniently listed on the "Operating Data" and "Tube List" chart which is mounted in the carrying case cover. Blank spaces are provided on this chart for additions of new tubes as announced, and instructions provided for the radioman to establish his own selector settings or limits, avoiding the usual delay in securing this information.

The Model 35 has a highly insulated bakelite panel beautifully lettered in silver. The entire assembly is enclosed in a handsome Quartered White Oak carrying case which includes a compartment in the back for the line voltage cord and other accessories. The Model 35 Tube Tester, affording accuracy of test, speed and simplicity of operation, and damage proof design is an absolute necessity to every dealer and service man.

This tester utilizes the new 1935 Supreme d'Arsonval fan-shaped 5-inch meter, with easily readable scales. In a sturdy bakelite moulding, providing a more consistent and lasting accuracy, and presenting a more scientific and professional appearance. Ship. wt. 20 lbs.
No. 35. Supreme Tube Tester. **\$29.95**
YOUR PRICE

READRITE COUNTER TUBE TESTERS

Test All Tubes Without Adapters, Including 25Z5-53-43-79-2B7-6B7-2A4-2A6, etc.

Dealers and servicemen use the No. 410 Tester for checking all new and old tubes used in receiving sets. Test card gives simple instructions. Anyone can operate it. A push button provides two plate current readings for determining the condition and worth of a tube. A new and outstanding feature applies the same test to rectifier as with all other types of tubes. A separate push button provides for testing both plates of double plate tubes. Has combination socket for large and small 7 prong tubes. Illuminated dial with detachable meter. The correct tube filament voltages applied are, 1½, 2, 2½, 3.3, 5, 6.3, 7.5, 14.7 and 25.

In a strong leatherette-covered case with removable cover, excellently suited to either store or portable use. Ship. wt. 10 pounds.

List Price \$27.50

No. 410 Readrite Counter Tube Tester, 60 cycle.

YOUR PRICE **\$16.17**

List Price \$40.25

No. 412 Combination Tube Tester and Short Tester, 60 cycle.

YOUR PRICE **\$23.67**

WITH TRIPLETT MOVING COIL METER

For those wanting a longer scale precision instrument, the Model 416 tester with a Triplett moving-roll meter is offered. This instrument does not have illuminated dial, but in other respects is same as No. 410.

List Price \$35.75



No. 416 Triplett meter Tube Tester, 60 cycle.

YOUR PRICE **\$21.02**

List Price \$48.50

No. 418 Combination Tube and Short Tester, 60 cycle, with moving-coil meter.

YOUR PRICE **\$28.52**

Radio Amateur's Handbook

(New Revised Edition), by A. Frederick Collins. Cloth covers, size 5½x7½ ins., 394 pages, 116 illustrations.

If you wish to become a radio amateur this book tells you how.

No. 844 **\$2.00**
PRICE

Short Waves

by C. R. Leutz and R. B. Gable. Slip Covers. Size 6x9 ins., 384 pages, 258 illustrations.

The biggest and most complete book covers every imaginable phase, including S.W. Superheterodynes.

No. 845 **\$3.00**
PRICE, prepaid

How To Pass U. S. Radio License Examinations

by R. L. Dmcan and C. E. Drew. Flexible covers, size 9½x7 ins., 170 pages, 92 illustrations, appendix.

Will help you to pass a radio license examination successfully.
No. 846—PRICE **\$2.00**

How To Build and Operate Short-Wave Receivers

by the Editors of SHORT WAVE CRAFT. Slip Paper covers, size 7½x9¾ ins., 76 pages, 250 illustrations.

No. 830 **\$0.40**
PRICE, prepaid

Acrocycle Direct Reading Oscillator
Calibrated in Kilocycles—No Charts Required



The Acrocycle oscillator is a high grade instrument which is indispensable for testing radio receivers, neutralizing, aligning tuned circuits in broadcast stations, tuned radio frequency receivers and intermediate stages of super-heterodynes. It may be used to check comparative ranges of sensitivity and selectivity.

THE ACROCYCLE OSCILLATOR IS VIRTUALLY A SMALL BROADCAST TRANSMITTER which can be adjusted accurately to any frequency or signal strength. The main difference however, is that the modulated signal is always steady. For instance if an output meter is connected to a receiver which is tuned to a broadcast station, the meter would show a fluctuating reading depending upon the pitch of the sound. With the signal generated by this oscillator however, the output meter reading would be steady because the pitch modulating the signal is always the same. This modulation is 100% and is pitched to give a sound of approximately 200 cycles.

CALIBRATED DIRECTLY IN KILOCYCLES

The scale of the Acrocycle oscillator is its most important feature. It is calibrated exactly in KILOCYCLES. There are two dial windows, one for the intermediate and the other for broadcast frequencies. The combined dials give a continuous scale of frequencies from 100 to 1500 K.C. The calibration from 100 to 200 is one K.C. per division, from 200 to 2 K.C. per division and from 400 to 1500 ten K.C. per division. All frequencies higher than 200 K.C. are indicated as harmonics. The accuracy will average within one-half division. Frequencies higher than 1500 K.C. can easily be calculated. For instance 2000 K.C. would be the 10th harmonic of 200 F. etc.

The Acrocycle oscillator is self contained and fully shielded in a steel, copper-clad casing, the outside of which is beautifully finished in CHROMIUM PLATE. It is very compact, measuring only 5 1/2" x 9 1/4" x 3". The oscillator employs a No. 30 tube and requires the following batteries for operation, one 2 1/2 volt "B" battery and two No. 2, 1 1/2 volt dry cells. The carrying case measures 10 1/2" x 6 1/4" x 4 1/2", with handsome leatherette covering. The cover is entirely removable. The oscillator is sold complete with test leads, carrying case, type 30 tube and all necessary batteries. Shipping weight, 9 lbs.

No. B Acrocycle Oscillator. **YOUR PRICE \$15.95**

No. B A.C. D.C. Acrocycle Oscillator. **YOUR PRICE \$12.50**

NEW READRITE ALL-WAVE OSCILLATORS



A complete, shielded, all-wave self modulated oscillator with proven circuit. Covers a entire broadcast and intermediate bands. The four position switch controls ranges of 110-500 K.C., 500-3000 K.C., 2000-6000 K.C. and 4000-18,000 K.C. A special hand calibrated chart gives extremely accurate readings. Complete calibration on colored graph attached to oscillator panel. The condenser shaft in Readrite oscillators is at ground potential thus eliminating leakage.

Used to align RF gang condensers, locate defective RF transformers, adjust IF transformers, check oscillator stage, compare gain in tubes and determine the sensitivity of radio receiving sets.

Furnished with batteries and one type 30 tube. Tube in special shielding, is accessible from the panel. Test lead wires and break-in adapter are supplied when out-out meter is furnished with oscillator. The instrument is extremely compact in a strong leatherette covered case with removable cover, leatherette handle and rubber feet. Full operating instructions, with connecting wires are carried in the case. Size 6 x 12 x 5". The instrument is made not only of the best of material throughout, and assembled for lasting durability, but it's beautiful and trim appearance will be the pride of every serviceman to own and use. It is one of the serviceman's most important instruments. These oscillators are furnished with or without output

READRITE COMBINATION TEST SETS
Tube Tester — Set Tester — Oscillator — All In One Case
Complete Portable Laboratories Test All the Latest Type Tubes Directly



No. 410-710
Tube Tester, Tube-Short Tester (Set Analyzer)
Note: Cover Detachable

For the first time in the history of radio, complete portable testing equipment is being sold in the low-priced meter field. Every conceivable test necessary for radio, television and general electrical work may be made with any of these two units. The 410-710 (illustrated) combines in single case, 21" x 14" x 7 1/2" the No. 410 Tube Tester and the No. 710 Set Analyzer. (Both of these instruments are described elsewhere in this catalog.) Every radio tube that has so far been brought out can easily be tested by either of these two outfits.

There used to be a time when the announcement of a new tube meant that a complete analyzer or tube tester had to be discarded. Today, however, we have the so-called Universal Tube Testing Adapter (listed elsewhere) which will take care of all the new tubes either present or future. Hence, there is no fear that any of these instruments will become antiquated or depreciate in value.



No. 578
Tube Tester, Tube-Short Tester (Set Analyzer Oscillator)

Note: Cover Detachable
The No. 578 (illustrated) combines the No. 410 Tube and Short Tester, No. 710 Set Analyzer and No. 553 Oscillator (all of which are listed elsewhere in this catalog). The oscillator and Tube Tester are on one panel and the Set Tester in a drawer underneath. Closing the case cover automatically locks this drawer in place. Size of case 22 1/2" x 8 1/2" x 8 1/2". The No. 578 is essentially the same as the No. 576 with the exception that the analyzer incorporate Triplet moving coil, 1000 ohms per volt meters. Ship. wt., 416-712 Same as above, but with moving

Cat. No.	List Price	YOUR PRICE
410-710	\$55.00	\$32.34
416-712	Same as above, but with moving coil meters. List \$72.75	\$42.78
576	85.00	\$49.98
578	Same as above, but with moving coil meters. List \$102.75	\$60.42



Do You Have Our FREE Short-Wave Book?

52 Pages 50 Hook-ups 500 Illustrations
Contains useful short-wave information, diagrams, illustrations, short-wave kinks and real live short-wave radio merchandise.

Partial List of Contents:
Getting Started in Short-Waves—Short Wave Converter Operation—Bandspreading Explained—How to Build the "19" Unimount Twinplex—How to Tune For Foreign Short-Wave Stations—How to "Bandspread" the Doerla Set—Notes On Short-Wave Operation—Complete Up-To-Date Characteristics of Transmitting Tubes, etc.

Enclose five cents coin or U. S. stamps for postage—Treatise sent by return mail. PRINT NAME AND ADDRESS CLEARLY.

Readrite No. 800 Capacity Meter
For Testing Paper and Mica Condensers

A simple but accurate instrument for determining the capacity of any condenser up to 10 mfd. An indispensable meter that should be incorporated in all radio service men's analyzers and testers.

TWO CAPACITY RANGES
The lower range measures 0.008 to 0.25 mfd. while the upper range measures 0.1 to 10 mfd. Connects to 100-130 volt 60 cycle A.C. supply line. Contains a thermostat to set full scale at 100 volts. Put up in a neat black enamel finished steel case and furnished with flexible test leads. Shipping weight, 1 lb. List Price \$8.75
No. 800 Readrite No. 800 Capacity Meter **YOUR PRICE \$5.14**



meter built in the panel. Harmonics of the broadcast frequency can be used to check short wave converters and short wave sets. A truly remarkable instrument at a remarkable price. Licensed under patents of the American Telephone and Telegraph Company. Ship. wt., 1 1/2 lbs. List Price \$35.00
No. 553 All-Wave complete with panel output meter. **YOUR PRICE \$25.87**

No. 554 All-Wave complete less panel output meter. List Price \$30.00 **YOUR PRICE \$17.64**

No. 556 All-Wave with Triplett moving coil output meter. List Price \$44.00 **YOUR PRICE \$20.58**

Readrite Resonance Tuning Meters



With present day sharp tuning receiving sets, silent tuning and automatic volume control, the resonance tuning meter has come to be one of the most important adjuncts in the design of the modern receiver. These meters are offered in a variety of styles and sizes. The best use of the tuning meter is in conjunction with automatic volume control. Usually furnished with full scale deflection 0-5, 0-7, 0-10, 0-12, 0-15 u.a. (specify which when ordering).

equipped with bracket and flash lamp at 20% additional. Escutcheon Plate 15c additional. Shipping weights, 1/2 lb. each.

No. TM-103 Has opaque dial with lighting thru window at flat side of case for lighting over the dial.

No. TM-102 Style case same as TM-103 for rear lighting thru translucent dial.

No. TM-104 Style same as TM-103 but with translucent dial and side lighting below the dial.

No. TM-106 is a needle shadow type corresponding in style to the above. The translucent dial is placed all the way to the front of the case. The meter needle shadow is clearly visible thru the dial. Lighting is thru the flat side of the case.

No. TM-107 Case is circular. May be had for rear, side or front lighting.

No. TM-108 is a small rectangular eggwise case, of the needle-shadow type, having a spring clamp for attaching to bracket. The needle shadow is clearly visible thru the translucent dial and moves in a straight line over the scale. The escutcheon opening therefore, is rectangular. This meter occupies minimum space and is a very popular model. **YOUR PRICE \$0.88**

ESCUTCHEONS furnished are of two kinds—One for the TM-108 straight scale, and one for circular dials. List \$0.30 Each **YOUR PRICE \$0.18**

Gentlemen: Congratulations on your Treatise! Great—Iuh, wouldn't take a 5 spot for it. Do not fail to send me subsequent issues of same. I have found many new radio items as well as technical information in your good mag. WALTER G. BURDINE, Hope, Indiana.

RADIO CITY MODEL 500 TEST UNIT

May Be Had Either Wired Or In Kit Form
Ultra-Modern — Up-to-the-Minute



This instrument is the most complete and up to date analyzer on the market.

THIS UNIQUE INSTRUMENT HAS NO METERS AT ALL. That, in part, is the reason why it is available at so low a figure. It makes provisions, however, through the medium of convenient pin jacks

for the purchaser to plug in his own meter, either milliammeter or volt meter, any type which he may have on hand. Why buy an expensive analyzer which contains meters when you may already have a number of useable meters in your home or laboratory?

Here are some of the high lights of this ultra-modern instrument. **EXTREMELY SIMPLE TO USE.** No complicated directions required—no plugging of connectors into jacks—all switching is entirely automatic and is accomplished with three calibrated selector switches. All sockets, terminals and circuits are clearly etched on the panel.

WILL NEVER BECOME OBSOLETE. Has additional selector points for reserve capacity—sold complete with new 4, 5, 6 and 7 prong "sure-pull-out" adapters for the special analyzer plug which it uses.

RESISTANCE—VOLTAGE SELECTORS provide complete resistance and voltage analysis between any two points on any given chassis.

CURRENT SELECTOR provides for current measurements in six different circuits for the usual current voltage analysis. Momentary contact switches protect meters from accidental contacts. Meters read only when switch buttons are pressed.

TUBE TESTING PROVISIONS. The usual tube testing features of regular analyzers are incorporated here.

When used in conjunction with The Multi-tester instrument listed at right of this page you have a most modern and up-to-date analyzing instrument which is better than **ANY OTHER INSTRUMENT** on the market **AT ANY PRICE.** Shipping weight, 12 lbs.
List Price \$25.00

No. 500 Super-Test Unit, completely wired, ready to use. **YOUR PRICE \$13.85**

No. 500A Super-Test Unit in kit form with instructions. **YOUR PRICE \$10.85**

THIS ANALYZER WILL NEVER BECOME OBSOLETE! RADIO CITY MODEL 5400 ANALYZER

If you will read the description of the Radio City No. 500 Super-Test Unit and Radio City No. 401A Multi-Tester described somewhere on this page you will understand why we say that this analyzer will never become obsolete.

This instrument consists of the No. 401A Multi-Tester and No. 500 Super-Test Unit in a single, leatherette-covered carrying case.

The Multi-Tester is really a volt—ohmmeter—milliammeter, which can never grow old. It has such a variety of scales for making the usual voltage, resistance and current tests that no matter what the latest developments in radio are, or may be, it will always be a useful instrument. The usual maze of tip jacks for gaining access to the various parts of the testing equipment is conspicuously absent in this unit. All the necessary switching from scale to scale or from voltage to current test, etc., is automatically accomplished through the use of convenient selector switches which rotate on calibrated scales. In the Super-Test unit, momentary contact switches are used to prevent meters from burning out through accidental contact.

The analyzer is furnished complete with a ten-wire cable and special plug as well as all the necessary adapters that go with it. If you desire to make a **SAFE INVESTMENT IN TEST EQUIPMENT**—equipment which will never become obsolete—which will always be serviceable despite the various trends in radio. **THIS ANALYZER IS YOUR BEST BET.** Available both wired and in kit form. Ship. wt., 10 lbs.

No. 5400 Radio City Perpetual Analyzer, completely wired ready to use. **YOUR PRICE \$29.85**



List Price \$65.00

No. 5400A Radio City Perpetual Analyzer in kit form with instructions. **YOUR PRICE \$23.85**

SUPREME 333 DE LUXE ANALYZER



The new DeLuxe series of the Model 333 Analyzer is unquestionably the finest of all instruments selling for less than \$60.00. Re-designed, improved and using Supreme's new 5" meter in a patented circuit. It is now, more than ever before, an outstanding value. On the new analyzer plug used on this tester, in addition to the "top cap" terminal, there is a "ground" clip which may be attached to any convenient part of the radio chassis. This "ground" clip is connected thru the analyzer cable to a "ground" pin jack terminal so as to enable measurements with reference to the "ground" or chassis right on the analyzer panel. This is new in tester design and is an added feature which will be found very convenient for measurements which must be made with reference to the chassis of a radio.

A self-contained flash light battery may be connected to any one of five possible grid circuits for tube testing purposes, after which the usual "grid shift" test is effected by depressing a switch button.

A rugged self-acting 4-gang, 5-position rotary switch is utilized for selectively connecting the instrument rec-

tifier and the meter as (1) a D.C. milliammeter with ranges of 0.5-25-125-250-500 milliamperes and 1.25 amperes, (2) a direct-reading paper and electrolytic capacity meter with ranges of 0.05-0.25-1.25-2.5-5.0-12.5 microfarads, (3) an A.C. voltmeter with ranges of 0.5-25-125-250-500-1,250 volts, (4) a D.C. voltmeter with ranges of 0.5-25-125-250-500-1,250 volts, and (5) an ohmmeter with ranges of 0.2,000-20,000-200,000-2,000,000 ohms. All D.C. potential measurements have a sensitivity resistance of 1,000 ohms per volt, and the new Supreme meter utilized in this tester has an accuracy tolerance of 2%.

The complete operating instructions which accompany this tester describe its many applications for practical tests, and include an outline of its use for measuring the leakage of electrolytic and paper capacitors. A preliminary testing procedure is described for conserving the busy radioman's time, and it will be found that the time saved and the better services enabled by the use of this Analyzer will soon result in dividends which make it a wise investment. The A.C. potential and capacity measuring functions of each Model 333 are calibrated for 60-cycle power supply, unless ordered for some other frequency at a slight additional cost. Ship. wt., 30 lbs.

No. 333DL Supreme DeLuxe Analyzer **YOUR PRICE \$39.95**

No. 333ST Standard Analyzer having less meter ranges **YOUR PRICE \$29.95**

Radio City Multi Testers—Volt—Ohmmeter—Milliammeter and Micromilliammeter

Moving Coil 3½ Inch Meter. 2000 ohms per volt



401AP—Portable



403

This multimeter is so designed that **GREAT FLEXIBILITY** is available for modern testing methods, with maximum economy and efficiency so that it can always be used as a multi-purpose meter regardless of what changes may take place in the future. In short, it is a **MULTI-RANGE**, combination ohmmeter, voltmeter and milliammeter all self-contained in a compact case.

FOUR VOLTMETER RANGES—Accurately measuring all resistance values from ¼ ohm up to 2,000,000 ohms. The three individual ranges are 0-2,000-20,000-200,000 ohms. The instrument is entirely complete, compact and self-contained and does not require any additional batteries.

VOLTMETER—has sensitivity of 2000 ohms per volt in every range, which insures accuracy and creates minimum distortion in high resistance circuits.

FOUR VOLTMETER RANGES—0.5, 0.50, 0.250, 0.750 volts affording optimum scales for the most desirable voltage ranges.

MILLIAMMETER—0.50 milliamperes for accurate current measurement in radio circuits. Models 401-A and 401-AP have two extra ranges of 0.5 and 0.250 ma.

MICROAMMETER—0.500 micro-amperes for measuring very small currents, etc. as in photo cell circuits, special grid currents, etc.

ACCURACY—The 3½ inch D'Arsonval moving coil type meter is guaranteed accurate within 2%. Multipliers, shunts and resistors are also highly accurate to 2%. Models 401-A and 401-AP have multipliers and shunts of 1% accuracy as well as a finely tapered zero-adjustment rheostat.

AUTOMATIC selector switch turns to any desired range and circuit. Switch positions are etched directly on panel. Tapered-Compensator for battery voltage gives smooth zero adjustment on all ohmmeter ranges. Complete in compact case with all batteries ready to use. Size 5½ x 8½ x 2½. Weight 6 lbs.

No. 403 Radio City Multitester. **YOUR PRICE \$14.95**

No. 401-A Advanced Multitester. **YOUR PRICE \$18.50**

No. 401-AP Portable Advanced Multitester, complete with test leads. **YOUR PRICE \$19.85**

No. 401-AP Portable Advanced Multitester, complete with test leads. **YOUR PRICE \$19.85**

"Erdi" Copper-Oxide Meter Rectifiers

These small but highly efficient rectifiers are used extensively for converting DC meters into universal range types for measuring both direct and alternating currents. By the proper choice of multiplier resistance and shunts any good grade milliammeter may be made to accurately measure DC voltage and current values of practically all ranges; and when equipped with this copper oxide rectifier these same values and ranges of alternating current may be ascertained. The unit consists of 4 copper oxide coated discs giving full wave rectification. Operates instantaneously, no time lag between impressed voltage and resulting current. The rectifier will pass 15 mls.

No. "15-M.A." Copper Oxide Meter Rectifier. **YOUR PRICE \$2.62**

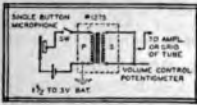


Universal Model "W" Midget Lapel Microphone

A Perfected "Watch-Model" Mike



Universal Model "W" is the smallest completely protected and workable single-button microphone manufactured. Supplied particularly for the many special uses requiring a small, very sensitive, compact microphone that can be depended upon to give full quality performance. A favorite type for use in hidden positions such as a telephone, or on the coat lapel. The accompanying diagram shows how this and other Universal Single Button Microphones may be hooked up to either amplifier or radio.



High sensitivity, light weight and compactness are the outstanding features of this model. 200 ohms. Equipped with Pure Gold Spot Center Diaphragms, completely enclosed, protecting it against injury during handling and use. 1 1/2" diameter; 3/4" thick.

List Price \$3.00

No. "W" Universal Midget Lapel Microphone

YOUR PRICE \$1.76

Amplion Transverse Current Mike

Contains No Metal Diaphragm, Carbon Button or Moving Parts

This new Microphone is known as a Transverse Current Microphone, so-called because an electric current passes transversely across the Microphone and parallel to a silken diaphragm. The silken diaphragm forms the front wall of a receptacle filled with carbon granules. The transverse current is modulated by the variations in pressure against the carbon granules caused by the vibrations of the diaphragm in harmony with sound impulses.



COMPLETELY ELIMINATES

CARBON HISS

In the conventional, or "carbon button" microphone, the electrodes vibrate with a metal diaphragm. This vibration causes the granules to slip or scrape against the surface of the electrodes, causing the objectionable carbon hiss characteristic of "carbon button" Microphones. If the electrodes are made sufficiently light to vibrate over a satisfactory range of frequencies they are not only too fragile for hard and continued usage, but the surface area is too small to permit adequate contact with the granules, resulting in heat losses, high resistance, low efficiency and carbon noise.

Excellent for studio and home recording, commercial and amateur broadcasting and public address work. Has a resistance of 500 ohms. Measures 9" long x 3/4" at its greatest width. Shipping weight, 2 lbs.

No. 2360 Amplion Transverse Current Hand Microphone

List Price \$15.00

YOUR PRICE \$4.15

READRITE MAGNETIC VANE PANEL METERS

There Is A Meter Here For Every Purpose

Readrite instruments have earned a reputation for their unusual accuracy and reliability in the inexpensive meter class. The meters listed below provide a sufficient variety for every purpose. They are available in 4 distinct types (see illustrations) viz., Model 75 projecting type, Model 65, wide flange type, Model 55, narrow flange type and Model 85 portable type (this latter type at an additional cost of 88c per meter).

All meters (except the Model 85) are of the panel mounting type and require a 2-5/64" hole. Model 55 is held in place by a clamp, back of the panel and is finished in full nickel. Model 65 has a wide flange giving the meter an overall diameter of 2-11/16" and has 3 holes for attaching to panel. Standard finish for this model is black enamel flange and nicked bezel. The projecting type, model 75, is provided with rear terminals which also serve to attach the meter to the panel. Black enamel finish is standard for this type. All A.C. meters are of the repulsion type. The D.C. meters are the polarized vein solenoid type. The A.C. voltmeters contain resistance up to 100 ohms per volt. Shlg. wt., up to 1 lb. per meter.

IMPORTANT

PLEASE BE SURE TO ORDER BY CATALOG NUMBER AND MODEL NUMBER.

ADD 88c TO THE PRICES BELOW FOR MODEL 85 PORTABLE TYPE. ALL OTHER MODELS ARE OPTIONAL AT THE GIVEN PRICES.



Model 55



Model 75



Model 85 Portable



Model 65

D. C. VOLTMETERS

Cat. No.	Range	Internal Resistance	YOUR PRICE
601	0-1 volts	30	\$0.59
603	0-3 volts	175	-.59
326	0-6 volts	550	-.59
605	0-5 volts	410	-.59
335	0-8 volts	850	-.59
310	0-10 volts	1475	-.59
316	0-15 volts	2814	-.59
333	2-0-3 volts	850	-.59
607	0-25 volts	1625	-.59
608	0-25 volts	7720	1.62
337	0-50 volts	3250	-.59
337-H	0-50 volts	15440	1.91
339	0-100 volts	6300	-.88
339-H	0-100 volts	30888	1.91
342	0-150 volts	9750	1.03
342-H	0-150 volts	46320	1.91
346-P	0-300 volts	92640	1.94
347-P	0-500 volts	154400	2.65
246-P	0-60-300 volts	92640	2.65
609	0-750 volts	231600	3.24
341	0-1-160 volts	850/16,200	1.32
746	0-20-60-300-600 volts	180,000	3.24

D.C. MILLIAMMETERS

Cat. No.	Range	Internal Resistance	YOUR PRICE
305	0-5	2160	\$1.29
311	0-10	700	1.13
315	0-15	295	1.13
325	0-25	85	-.59
350	0-50	20	-.59
390	0-100	5.5	-.59
391	0-150	3.3	-.59
392	0-200	1.9	-.59
399	0-300	.8	-.59
394	0-400	.5	-.59
385	0-20-100	175/30	1.13
402	0-15-150	305/24	1.13

D. C. AMMETERS

Cat. No.	Range	Internal Resistance	YOUR PRICE
380	0-1 amperes	_____	\$0.59
381	0-5 amperes	_____	-.59
336	0-3 amperes	_____	-.59
338	0-10 amperes	_____	-.59
101	1-0-1 amperes	_____	-.59
303	3-0-3 amperes	_____	-.59
606	6-0-6 amperes	_____	-.59
110	10-0-10 amperes	_____	-.59
220	20-0-20 amperes	_____	-.59

A. C. VOLTMETERS

Cat. No.	Range	Internal Resistance	YOUR PRICE
314	0-4 volts	_____	\$1.62
353	0-6 volts	_____	1.62
352	0-10 volts	_____	1.62
351	0-15 volts	_____	1.62
348-P	0-150 volts	_____	2.65
349-P	0-300 volts	_____	3.24
247-P	0-600 volts	_____	3.82
249	0-750 volts	_____	4.35
355-P	0-10-140 volts	_____	2.65
148	0-150 volts, plug in line type	_____	1.91

A. C. MILLIAMMETERS

Cat. No.	Range	Internal Resistance	YOUR PRICE
370	0-25 Milliamps	_____	\$1.62
371	0-50 Milliamps	_____	1.62
372	0-100 Milliamps	_____	1.62
373	0-250 Milliamps	_____	1.62
374	0-500 Milliamps	_____	1.62

A. C. AMMETERS

Cat. No.	Range	Internal Resistance	YOUR PRICE
360	0-1 amps	_____	\$1.62
381	0-3 amps	_____	1.62
362	0-5 amps	_____	1.62
363	0-10 amps	_____	1.62
364	0-50 amps	_____	1.91

Why Not Build It Yourself and Save \$4.00



New Design Up-To-The-Minute TUBE CHECKER
TEST ALL NEW TUBES

Here indeed is your opportunity to build one of the finest tube checkers ever designed—an instrument which is MODERN in every sense of the word. It will test all the latest type tubes, including those with 7 prongs DIRECTLY—without the use of a single adapter! In fact, it will test the tubes which have not yet appeared on the market—in other words, IT PROVIDES FOR THE FUTURE. Here's the information you would like to know about it.

ENGLISH READING Scale—COLORED DIAL indicates "GOOD-POOR-IT". TESTS EVERY TYPE of tube made to-day and many new ones to arrive in the future. TESTS SHORTS and LEAKAGES between ANY TWO elements. NEON LIGHT indicates leakages above 1,000,000 ohms. SEPARATE LINE VOLTAGE meter with line voltage control. INDIVIDUAL TESTS OF DIODE, triode, pentode, etc., sections of all combination type tubes—both plates of all full wave

rectifiers. PROVIDES AGAINST OBSOLESCENCE—Spare Switching capacity for three times the present number of tubes. SIMPLE TO OPERATE convenient to use. PROVES SIGNAL APPEARANCE—etched panel—leatherette case. ACCURATE D'Arsonval moving coil meter, guaranteed 2% accuracy. NO ADAPTERS of any kind necessary. ECONOMY—Costs less than other testers that do not have all these features.

No. 304 Dependable Tube Checker, Counter Model. Wired. **YOUR PRICE \$19.95**
No. 304P Portable Model, wired. **YOUR PRICE \$21.85**
No. 304K Counter Model in Kit form, with assembly instructions. **YOUR PRICE \$15.95**
No. 304KP Portable Model in Kit form, with assembly instructions. **YOUR PRICE \$17.85**

Complete Laboratory Test Prod Kit



Here is the most convenient laboratory test prod kit ever designed. All the tips are interchangeable with one another so as to engage all types of jacks, binding posts, etc. Even the clips are interchangeable and easily slipped into place.

Contains fourteen pieces, one each Nos. 25 and 30; two each Nos. 13, 24, 35, 33, 38, 42. All pieces are supplied in Red and Black for Positive and Negative respectively; except Nos. 30 and 25 which are yellow, and the clip No. 35 is highly nickled polished. Ship. wt. 1 lb.

No. 125 Test Prod Kit. **YOUR PRICE \$1.05**

NEW BEEDE 3 1/4" "MOVING-COIL" PANEL METERS PRECISION D'ARSONVAL MOVEMENT

Accuracy 2% Guaranteed

At last we have a meter which is both accurate and inexpensive. It is the so-called "happy-medium" meter for which countless service men and experimenters have been waiting. In quality and accuracy it is comparable to the most expensive type on the market, barring none. Yet production methods on these meters have been so radically improved that its cost has been considerably reduced. **HARDLY COSTS MORE THAN THE "MAGNETIC-VANE" TYPE METERS.**

The new line of Beede D'Arsonval type of moving coil meters listed below possesses two vital factors which must appeal to every user of this style of instrument.

The first and most important is quality and efficiency. The improved design of the moving-coil assembly permits a greater simplicity of construction than has heretofore been possible in the art. This results in **UNUSUAL RUGGEDNESS, HIGH ACCURACY** and freedom from interference of dust and foreign matter. The meter is **PERFECTLY BALANCED** in all positions, and the moving system is **exceptionally WELL DAMPED**. From the mounting of the **SAPPHIRE BEARING** to the construction of the magnet, the materials, workmanship and design conform to the highest quality and most improved practice. **ACCURACY IS GUARANTEED WITHIN 2%.**

Cost is the other vital factor; and Beede moving-coil meter are available at astonishingly low prices. Contrary to the present day trend, where quality is sacrificed to lower costs, Beede meters represent improved quality and design which, in turn, result in lower production costs.



D.C. MILLIAMMETERS—SINGLE RANGE

Cat. No.	Range	Divisions	List Price	YOUR PRICE
8000	0-1	50	\$6.00	\$3.92
8001	0-1.5	60	6.00	3.92
8002	0-2	40	6.00	3.92
8003	0-3	60	6.00	3.92
8004	0-5	50	4.75	3.11
8005	0-10	50	4.75	3.11
8006	0-15	60	4.75	3.11
8007	0-20	40	4.75	3.11
8008	0-25	50	4.75	3.11
8009	0-30	60	4.75	3.11
8010	0-50	50	4.75	3.11
8011	0-100	50	4.75	3.11
8012	0-150	60	4.75	3.11
8013	0-200	40	4.75	3.11
8014	0-250	40	4.75	3.11
8015	0-300	60	4.75	3.11
8016	0-500	50	4.75	3.11
8017	0-1000	40	4.75	3.11
8018	0-1000	50	4.75	3.11

D.C. AMMETERS—SINGLE RANGE

Ranges up to 50 amperes have self contained (Internal) shunts. Ranges above 50 amperes have external shunts. The shunts furnished have a drop of 50 millivolts or — 5%.

Cat. No.	Range	Divisions	List Price	YOUR PRICE
8019	0-1	50	\$4.75	\$3.11
8020	0-2	40	4.75	3.11
8021	0-5	50	4.75	3.11
8022	0-8	40	4.75	3.11
8023	0-10	50	4.75	3.11
8024	0-15	60	4.75	3.11
8025	0-20	40	4.75	3.11
8026	0-25	50	4.75	3.11
8027	0-50	50	4.75	3.11
8028	0-100	50	7.75	5.07
8029	0-150	60	7.75	5.07
8030	0-200	40	7.75	5.07
8031	0-300	60	8.25	5.39
8032	0-400	40	8.50	5.56
8033	0-500	50	9.00	5.88

D.C. VOLTMETERS—SINGLE RANGE

Cat. No.	Range	Divisions	List Price	YOUR PRICE
8034	0-1	50	\$4.75	\$3.11
8035	0-2	40	4.75	3.11
8036	0-3	60	4.75	3.11
8037	0-5	50	4.75	3.11
8038	0-8	40	4.75	3.11
8039	0-15	60	4.75	3.11
8040	0-20	40	4.75	3.11
8041	0-25	50	4.75	3.11
8042	0-50	50	4.75	3.11
8043	0-100	50	4.75	3.11
8044	0-150	60	4.75	3.11
8045	0-200	40	6.00	3.92
8046	0-250	50	6.00	3.92
8047	0-300	60	7.00	4.58
8048	0-500	50	8.00	5.22
8049	0-1000	50	12.50	8.16

VOLTMETERS—SINGLE RANGE 1000 ohms per volt

Cat. No.	Range	Divisions	List Price	YOUR PRICE
8050	0-5	50	\$7.00	\$4.58
8051	0-8	40	7.00	4.58
8052	0-10	50	7.00	4.58
8053	0-15	60	7.00	4.58
8054	0-25	50	7.00	4.58
8055	0-50	50	7.00	4.58
8056	0-75	50	7.00	4.58
8057	0-100	50	7.50	4.90
8058	0-150	60	7.50	4.90
8059	0-200	40	8.00	5.22
8060	0-250	50	8.00	5.22
8061	0-300	60	9.00	5.88
8062	0-500	50	10.00	6.54
8063	0-750	50	12.00	7.84
8064	0-1000	50	13.50	8.82

VOLTMETERS—ZERO CENTER 125 ohms per volt

Cat. No.	Range	Divisions	List Price	YOUR PRICE
8065	3-0-3	60	\$1.75	\$3.11
8066	15-0-15	60	4.75	3.11
8067	50-0-50	50	4.75	3.11
8068	150-0-150	60	4.75	3.11

AMMETERS—ZERO CENTER

Cat. No.	Range	Divisions	List Price	YOUR PRICE
8069	1-0-1	50	\$4.75	\$3.11
8070	2-0-2	40	4.75	3.11
8071	5-0-5	50	4.75	3.11
8072	10-0-10	50	4.75	3.11
8073	20-0-20	40	4.75	3.11
8074	50-0-50	50	4.75	3.11

MILLIAMMETERS—ZERO CENTER

Cat. No.	Range	Divisions	List Price	YOUR PRICE
8075	1-0-1	50	\$6.00	\$3.92
8076	10-0-10	50	4.75	3.11
8077	50-0-50	50	4.75	3.11
8078	100-0-100	50	4.75	3.11

VOLTMETERS—DOUBLE RANGE 1000 ohms per volt

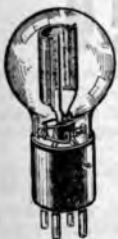
Cat. No.	Range	Divisions	List Price	YOUR PRICE
8079	0-10-100	50	\$9.50	\$6.20
8080	0-15-150	60	9.50	6.20
8081	0-50-250	50	16.00	6.54
8082	0-100-500	50	12.00	7.84
8083	0-150-750	60	14.00	9.14
8084	0-250-750	50	14.00	9.14

MILLIAMMETERS—DOUBLE RANGE

Double Range Milliammeters are self contained and have three terminal posts.

Cat. No.	Range	Divisions	List Price	YOUR PRICE
8085	0-1-10	50	\$9.00	\$5.88
8086	0-1-25	60	9.00	5.88
8087	0-5-50	50	7.75	5.07
8088	0-10-100	50	7.75	5.07
8089	0-15-150	60	7.75	5.07
8090	0-25-250	50	7.75	5.07

Caesium Photo-Electric Cells



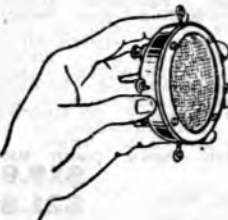
The new Photo-Cell is a recent development in its field, employing a special caesium compound as the light-sensitive element. An absolutely stable, non-microphonic unit, which will operate continuously over a long period of time without voltage adjustments of any kind.

Possesses high sensitivity, responding instantaneously to all light impulses. A decided advantage over the old potassium type cell.

Available in two different sizes. Shipping weight, 1 lb. The bases are of standard UX type.

No. 640	Caesium photo-cell, 2-1/16" diam.	\$3.75
YOUR PRICE		
No. 641	Caesium photo-cell, 2-5/16" diam.	\$4.50
YOUR PRICE		

Single Button Midget Microphone



A genuine one button microphone which has been ingeniously engineered to absolutely the smallest possible proportions commensurate with modern standards of microphone efficiency. Has a D.C. resistance of 100 ohms and responds to absolutely the same frequencies between 25 and 2500 cycles. A really remarkable range for a microphone of this type.

Ideal for home recording, broadcasting and private intercommunication systems. It will pick up speech from a distance of 25 to 75 feet, depending upon the acoustics of the room. Requires from 8 to 6 volts to energize it. Ship. wt., 1 lb. No. 1655 Miles Midget Microphone

YOUR PRICE	\$1.76
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Service Men's Trouble-Shooting Coil

Localizes All Receiver Defects



Designed for the serviceman to use in localizing R.F. troubles. The preferred use is in conjunction with an oscillator for supplying a signal to the coil which is induced into the grid of the tube when the exploring coil is placed around the tube.

The process of localizing R.F. tuner faults with the exploring coil is extremely simple and reduces time to a minimum. Trouble is traced to the part of the circuit by eliminating other parts of the circuit where it is found that the induced signal from the exploring coil is satisfactory.

In use, the exploring coil is connected to the oscillator by means of the shielded wire, using the shielding of the wire for the oscillator ground connection. Signal will be heard in the set speaker or noted on output meter.

TROUBLE SHOOTING PROCEDURE

Place exploring coil over the first R.F. tube. If no signal is noted the source of trouble is not to be found in the aerial and ground, or the secondary winding of the first R.F. transformer. Proceed to the next R.F. stage. If no signal results here the tuning trouble will not be located in the circuit preceding, or the grid circuit of the second R.F. stage.

If in the third R.F. stage a signal is noted the trouble will be found in the grid circuit of that tube, or in the plate circuit of the second R.F. tube. This procedure is followed through the different R.F. tubes until a signal localizes trouble in the grid circuit of the tube on which test is made, or in the plate circuit of preceding tube which may be a band pass. Voltage tests should be made with a set tester. Without correct voltages as determined from servicing manuals R.F. trouble cannot be overcome to give the right tuning qualities to the set.

FOR PEAKING INTERMEDIATES OF SUPERHETS

For peaking or flat topping the intermediates of super-heterodyne circuits a exploring coil may be used in the same manner as for R.F. circuits by inducing a signal into the stages preceding the tube to which the exploring coil is applied.

Both coil and connecting wire are completely shielded. A thoroughly useful and dependable device no serviceman can afford to be without. Shipping weight, 1 lb.

No. 525 Service Men's Trouble Shooting Coil.

YOUR PRICE **\$2.20**

Readrite A.C. Output Meters With Copper-Oxide Rectifier

For use with Readrite or any other type of Test Oscillators. Used for trimming condensers, checking tubes by substitution method, adjusting detector voltages and other purposes. A practical, low priced D. C. voltmeter with copper-oxide rectifier of the full wave type. Model No. 555 is same assembly as used on No. 550 oscillator. For convenience the portable instrument Model No. 575 has been designed. Tests lead are furnished with Model No. 575.



Case is baked enamel over seamless steel 4 1/2 ins. dia.

No. 555 Panel Output Meter

YOUR PRICE **\$4.26**

No. 575 Portable Output Meter

YOUR PRICE **\$4.85**

Replacement Carbon Grains for Micro- phones

200 Ohms Per Button

These carbon granules are conveniently put up in capsules so that it is a matter to re-carbon your old microphones. One capsule contains enough grains to refill one button. If you are refilling a two button microphone you will require two capsules. These capsules may be had with either 100 or 200 ohms resistance. They are put up four capsules to the bottle and are well sealed to protect them from moisture. Ship. wt., 4 oz.

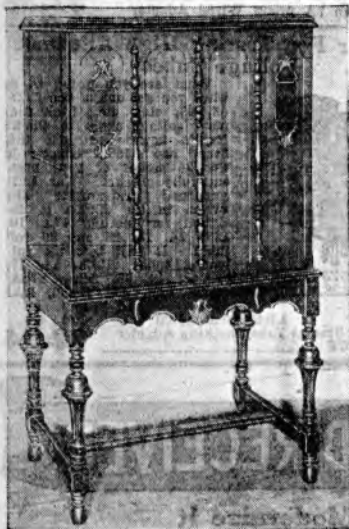
No. 1878 Carbon Grains per bottle.

YOUR PRICE **\$0.60**



FLASH! THRILLING NEWS

**TALKING MOVIES!
ELECTRIC RECORDINGS!
RADIO ENTERTAINMENT!**
All in your own home—

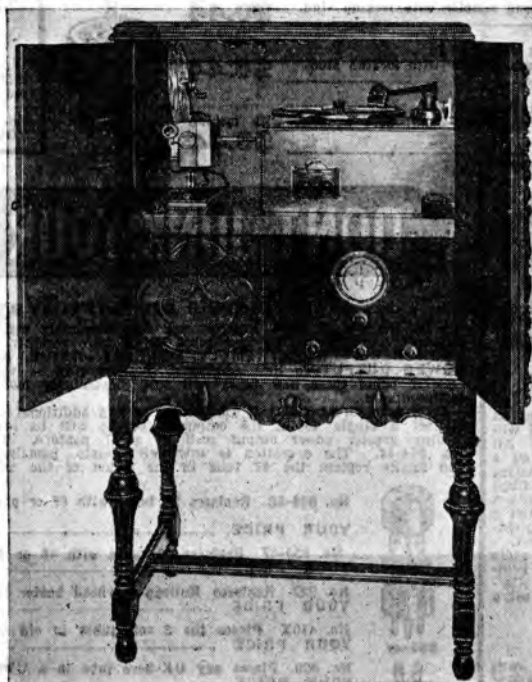


HERE AGAIN YOUR FIELD DOES NOT END. You yourself can set up a thriving business by merely renting the machine for various occasions. A most lucrative profit awaits you in this field alone. Moving picture subjects may be rented for as low as 50c a day from various film libraries located in every important city in the Union. Such film subjects are accompanied by perfectly synchronized sound-on-disc records which are included in the 50c price. A complete list of such libraries giving the names and locations, will be furnished with the purchase of each set. Furthermore if you desire to own a film and sound-on-disc set, you have the option of purchasing one of the subjects on the list given with each purchase. These subjects are not ordinarily sold but only rented. However, we have made provisions with the manufacturer to sell at least one set to each purchaser if he so desires.

\$350. of Equipment

Motor Driven Synchronized Projector — 33 $\frac{1}{3}$ and 78 R.P.M. Electric Phonograph — Modern 8-Tube Radio Set with 11" Dynamic Speaker and Tubes — Phono-Magnetic Pickup — Full-Size Walnut Cabinet.

**All \$82.95
For Complete**



FLASH! — Like a bolt from the skies comes this profit-sharing bargain! It came to us as suddenly as it comes to you. More than \$350.00 worth of entertainment equipment for only \$82.95. **THAT'S VALUE WITHOUT PRECEDENT.** Synchronized talking movies! Modern electric phonograph that plays the New half-hour playing records as well as the standard ones! — The very latest in radio receivers with dynamic audio quality obtained only with most expensive and elaborate radio equipment—all this we offer you in a single full-sized, butt-walnut cabinet for only \$82.95.

Radio Servicemen—A New Field For You

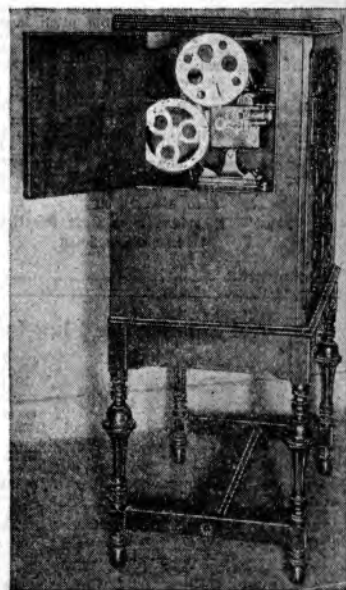
This combination talking movies—electric phonograph and radio outfit opens to you a vast new field for making far more money than you have ever made before in your radio service work. Think of the many schools, churches, auditoriums and other such places which, even in this day and age, do not boast of even such a commonplace thing as a radio; let alone modern talking movies and high quality electric recordings! Such institutions until the present time have not even had in mind the purchase of such equipment because, to them, it immediately implied an expenditure of hundreds of dollars, yet the desire to purchase such an outfit is still there; only the means is lacking. It is now possible for you to bring such a complete system within their means. So go to it! The very first demonstration will most certainly cause their interest to materialize into an order.

Nor does your new tremendous field of sales end here. You frequently make contact with people who tenaciously hold on to old, obsolete radios, people who are waiting for the opportunity to buy a radio at a bargain! Here is another vast field for sales when you explain to them that a modern combination electric phonograph, and 8 tube radio with 11" dynamic speaker and tubes alone sells for more than \$100.00, let alone the talking movies feature, their interest here too will most certainly materialize into an order.

Technical Specifications

The projector is a synchronized, motor-driven machine with a 100 watt concentrated light source. It is designed to be used with 16 millimeter films. This machine is geared by a universal-coupled shaft to the phonograph turntable so that at no time during the showing of a sound feature can the film and sound stray from synchronism. The turn-table is energized by a General Electric motor having a simple system of gear and clutch arrangements for starting either the turn-table or projector independently. Sound-on-disc and ordinary 78 R.P.M. phonograph records are electrically reproduced by the audio stages of the 8 tube T.R.F. radio receiver. The phonograph pickup is perfectly matched to the receiver so that all musical frequencies are reproduced indiscriminately. A large 11" dynamic speaker brings forth the music and voice in a most natural manner. The projector is operated through a door on the side of the cabinet. When showing sound features the speaker in the cabinet may be removed and through the medium of a long extension cord placed behind the screen for natural sound effects. The front doors of the cabinet may then be entirely closed, the projector light beam emerging through the square porthole in the front of the cabinet. A complete booklet of instructions is shipped with each outfit. Ship. wt., crated, approx. 100 lbs.

No. 339 Combination Radio, Electric Phonograph and Projector. **\$82.95**



DON'T JUNK YOUR OLD ANALYZER!

Here's How To Modernize It.

Here is an inexpensive way of bringing it right up to the minute! Contrary to popular belief, the advent of the new 7-prong tubes has NOT rendered your set analyzer obsolete. One 7-prong analyzer plug and its associated adapters will completely modernize it so that ALL CIRCUITS, including the very latest may be accurately analyzed. Here's how!

Replace your present plug and cable with the 907WLA and its associated adapters (listed directly below): viz., 974DSA, 7 to 4-prong adapter; 975DSA, 7 to 5-prong adapter; 976DSA, 7 to 6-prong adapter and 977DSA, 7 to 7-prong adapter. Then, replace your analyzer panel sockets with the new composite type sockets, Nos. 456 and 477 (listed elsewhere in this catalog). That's all there is to it! Your analyzer is then as modern as those which are now being produced by manufacturers. Simple—isn't it?

Na-Ald "Lock Feature" Small 7-Prong Analyzer Plug

The No. 907WLA is the last word in small size analyzer plugs. It enables you, with the aid of its associated adapters, to completely modernize your old set analyzer for the 7-prong tubes. The plug has a latch, actuated by a spring, which locks the associated adapters to the plug, so that the adapters cannot stick in inaccessible sockets.

List Price \$1.50
 No. 907WLA 7-Prong "Latch-Lock" Analyzer Plug. **\$0.88**
 YOUR PRICE _____

List Price \$2.50
 No. 907WLCA. Same plug as above but with five feet of 8-wire cable. The eighth wire assures adaptability to the new 7-prong tubes with caps on top.
 YOUR PRICE **\$1.47**

Associate Adapters

List Price \$0.75
 No. 974DSA A seven hole to 4-prong adapter with locking stud.
 YOUR PRICE **\$0.44**

List Price \$0.75
 No. 975DSA A seven hole to 5-prong adapter with locking stud.
 YOUR PRICE **\$0.44**

List Price \$0.75
 No. 976DSA A seven hole to 6-prong adapter with locking stud.
 YOUR PRICE **\$0.44**

List Price \$0.75
 No. 977DSA A seven hole to new 7-prong small base adapter, with locking stud.
 YOUR PRICE **\$0.44**



907WLA



974DSA



975DSA



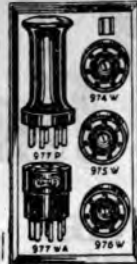
976DSA



977DSA

Economical Analyzer Adapter Kit

HERE IS THE 977P KIT for those desiring the lowest possible price. Uses the Handie Plug with the wired type "Make-Your-Own" small diameter associate adapters. No locking device is provided for attaching the adapter to the plug but the increased adapter height permits easy removal when left in set socket. Control grid stud supplied.



Now is the time to modernize all of your test equipment. Don't delay any longer. Here are kits priced to fit every serviceman. Directions and diagrams included with every outfit. Each adapter has a bi-color ring with distinctive any adapter to the analyzer plug. Kit consists of:
 977W 7-prong Plain-type Analyzer Plug
 974W 7 to 4 prong Wired Adapter
 975W 7 to 5 prong Wired Adapter
 976W 7 to 6 prong Wired Adapter
 977WA 7 to 7A prong Wired Adapter
YOUR PRICE \$1.38

Adapter For Testing High Filament Voltage Tubes



What are you going to do when you get one of the 25Z5, 43, 48, etc., etc., high filament voltage tubes to check? Here's how. Just use this brand new 950TR adapter in the 24 socket of your present tube checker. The self-contained transformer and switch in the 950TR is designed for testing ALL 10, 12.6, 14, 15, 25 and 30 volt tubes. It will test the following tubes: 12Z3, 14, 17, 18, 25Z3, 25Z5 (each plate), 43, 48, 96, 262A, 272A, A22, A26, A28, A30, A32, A40, A48, AE, HZ50, RA1 etc.

List Price \$5.00
 No. 950TR Special Tube Checking Adapter
YOUR PRICE \$2.94

DON'T JUNK YOUR OLD RECEIVER!

Here's an Easy Way to Modernize It

With the aid of these adapters you can completely modernize your receiver without so much as changing a single connection. The new tubes which have recently been placed on the market will undoubtedly MAKE YOUR RECEIVER EXTREMELY MORE SENSITIVE AND SELECTIVE, and will create a HIGHER POWER OUTPUT so that additional speakers may be employed. You will readily appreciate that a new receiver using these new tubes will cost considerably more than the few adapters necessary to bring it up-to-the-minute.

Let's take an example; if you desire to add additional speakers to your receiver, which at the present time utilizes a single 45 in the output stage, it will be necessary for you to replace the 45 with a tube affording greater power output such as a 47 pentode. The proper adapter for such a change would be the No. 954-47. The operation is extremely simple, namely, you remove the old 45 plug in the new adapter and finally replace the 47 tube in the socket of the adapter. Ship. wt., 1/4 lb. ea.

Na-Ald Simple Code Practice Set

This set is the most inexpensive code instrument on the market! Has an adjustable pitch buzzer and will operate from the smallest type flashlight battery. All metal parts are nickel plated and are mounted on a beautifully molded Makalot base. The Morse Continental Code is molded on each side of the key. Clips can be placed in the binding post to hold fountain-pen flashlight batteries. It is an excellent set for practicing code with someone else—each party having an individual code set. Will work efficiently up to 1,000 feet.

May be connected to the antenna post of your radio receiver to produce clear, loud, signals from the loud-speaker. The box in which each set is packed illustrates with diagrams many interesting ways of using this code set. Ship. wt., 1/2 lb.

No. "Shear" Na-Ald Simple Code Practice Set.
 List Price \$0.50
YOUR PRICE \$0.29

Na-Ald Short-Wave Plug-In Coils

We recommend these coils in all short-wave circuits which are critical to so-called "R.F. losses". These coils will cover the wave range of from 13 to 200 meters with a .00015 mf. condenser. Each coil has a special rim on top which serves the dual purpose of easy gripping and color coding. The color of each rim, on each coil is different so that at a glance, you can tell the wave range which each particular coil will cover. They are precision wound on low-loss Bakelite forms. Ship. wt. 1/2 lb.

List Price \$2.00
 No. 704SWS Na-Ald Short-Wave Plug-In Coils.
YOUR PRICE, per set of 4 \$1.18



965-58



954-47



927



419X



PENTODE



965GKR

No. 965-58 Replaces 24 tubes with 57 or places the 58 in a 35 or 51 socket.

YOUR PRICE \$0.29

No. 954-47 Replaces 45 tubes with 46 or 47 pentodes.

YOUR PRICE \$0.29

No. 927 Replaces Kellogg overhead heater type tubes with the 27.

YOUR PRICE \$0.44

No. 419X Places the 2 volt tubes in old UV sockets.

YOUR PRICE \$0.19

No. 999 Places any UX-base tube in a UV199 socket.

YOUR PRICE \$0.44

No. 954-401 Replaces the Kellogg 401 with the new 56. Increases volume—lowers tube replacement cost.

YOUR PRICE \$0.44

No. 964-403 Replaces the Kellogg 403 with the new 2A5 pentode. Increases volume—lowers tube replacement cost.

YOUR PRICE \$0.54

No. 974-403 Replaces the Kellogg 403 with the new 7-prong 59 pentode. Makes great improvement.

YOUR PRICE \$0.54

No. 964KSPR Replaces 45 tubes with new 6-prong 2A5 pentode. Special resistance eliminates hum.

YOUR PRICE \$0.44

No. 965GKR Replaces 47 pentodes with new 6-prong 2A5 pentode. Increases output—reduces hum.

YOUR PRICE \$0.44

No. 974GGR Replaces 45 tubes with latest 7-prong 59 pentode.

YOUR PRICE \$0.44

No. 975KSPR Replaces 47 with 59 tube.

YOUR PRICE \$0.44



975KSPR



999



419X



Adapters

New Adapters, Sockets and LABORATORY ACCESSORIES

"HUNDRED-IN-ONE" UNIVERSAL TESTING ADAPTER

Brings Up to Date All Types of Old and Antiquated Tube Testers Tests All of the New Tubes—including Small 7's



Side-view of adapter.

4-5-6 prong ones) on top, which will engage all the tubes which have ever been manufactured. The bottom of this bakelite case comprises a 5-prong plug. Convenient switch on the side of case permits the testing of both plates of full wave rectifying tubes.

This new 850XYLA Universal Tube Checking Adapter enables any standard tube checker to test the 29, '33, '36, '37, '38, '39, 41, 42, 44, 46, 47, 49, 52, 55 (Duo-diode-triode), 57, 58, 59, 61, 65, 67, 68, 69, 70, 80, 82, 83, 85 (duo-diode-triode), 88, 89, 985, 986, G-2S, G-4S, GA, LA, PA, PZ, PZH, Wunder-



Top-view showing the Tube markings.

to fuss with or lose. Has the proper resistance network to protect the sensitive diode tubes from ionization while under test, as well as the delicate instrument movements from the high current of the mercury vapor rectifier tubes.

List Price \$5.00
YOUR PRICE **\$2.94**

LABORATORY SOCKETS



494V

This new series represents the New Na-Ald Laboratory Socket. New R.M.A. standard numbering marked at all contact terminals. Has contact which stands up under all kinds of use and abuse. New convenient tilted universal terminals have solder tabs and wide bottom knurled nuts for easily binding any wire connections. All nuts have jack tops for receiving the Al-jen Expanding Pressure Plugs for conveniently changing connections. Plugs may be used even with large based tube in socket. Handy for laboratory work, experimental bread-board set-ups, etc. No holes to bore or special tools required. All holes drilled with hand drill, including those for terminal connections thru chassis.

YOUR PRICE **\$0.29** EACH

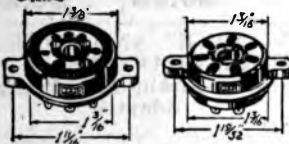
Universal-Mount Chassis Sockets



Here is a socket to replace any laminated socket that has proven defective in a set. The slotted holes in the plate plus the short screws and nuts enable you to quickly replace any laminated socket that has either 1 1/2", 1-11/16" or 1-27/32" mounting hole spacing. If surface cracks in a laminated socket have allowed current leakages that finally broke down the socket and probably caused other damage, don't replace it with the same type. Replace with this socket that has low resistance contacts, rugged construction and long surface between each contact so that no surface leakages or break-downs of any kind are possible. All sockets marked with new R. M. A. standard numbering on top and bottom of socket. A color dot identifies the heater holes.

Cat. No.	Universal-Mount Socket	YOUR PRICE
404P	4-contact	\$0.07
405P	5-contact	
406P	6-socket	
407PA	7-small	
477PA	7-7 composite	\$0.21

COMPOSITE SOCKETS



456E "E" MOUNTING 477 STD. MOUNTING



457E 567A

Saves space—fine for modernizing obsolete tube checkers and set analyzers—each socket has many different possible applications.

UX, UY and SIX Contact Composite Sockets
Filament circuits common—others independent—nine contacts.
No. 456 & No. 456E

UY and MEDIUM-7 Contact Composite Sockets
Cathode of UY independent from cathode of SEVEN—other circuits common—eight contacts—fine for testing 47 and 59 etc. pentodes. No. 457 & No. 457E.

MEDIUM SEVEN and SMALL SEVEN Contact Composite Sockets
Same seven contacts for both medium—(59) and small based—(2A7) tubes.
No. 477 & No. 477E.

UY, SIX and SMALL SEVEN Contact Composite Sockets
Filaments, cathode and plates common—No. 1 and No. 6 contacts of 6 and 7 prong tubes also common as well as No. 1 contact of UY with No. 7 contact of seven prong tubes.
No. 567A, No. 567EA

List Price on each of the above, \$0.50
YOUR PRICE, each **\$0.29**
ONLY

Shielded Plugs & Connectors



No. 824PL-4, 5, 6 or 7 Plug YOUR PRICE
No. 824FL-4,5,6 or 7 Connector **\$0.29**

Universal-Mount Molded Chassis Plugs

The slotted holes will fit any mounting distance from 1 1/2" to 1 3/4". The prongs are molded in bakelite insulation. Very handy for use on auto sets, S. W. Receivers, Amplifiers, etc. Eliminates dangling power supply cables. Plug is dead when connector is removed. Used with standard electric wall plates for finishing off appearance.



Cat. No.	YOUR PRICE
84P 4-prong Molded Chassis Plug	\$0.09
85P 5- " " " "	
87PA 7-small " " " "	

CANDELABRA Series Test Plugs



Continuity Tester plugs in any outlet A.C. or D.C. Takes candelabra based Neon or filament lamp for high or low resistance series testing. Special protective resistor permits use of low-priced Neon lamps without resistor as well as others with resistors. Also limits current so that either test lead may be safely touched to ground, even continuously. Shorts or leakages up to 1,000,000 ohms may be detected with the use of a Neon lamp. Fine for condensers, chokes, resistors, etc. Also handy for occasional household and industrial tests on appliances, cords, etc.

Na-Ald No. 160—Candelabra Series Plug without leads.	\$0.21
Na-Ald No. 161—With Na-Ald DeLuxe Test Prods.	\$0.88
Na-Ald No. 164—Circuit Tester complete with plug-in base, neon lamp, DeLuxe test prods with leads and extra points in prod handles. Boxed in durable clasp-hinge pocket carrying case.	\$1.76

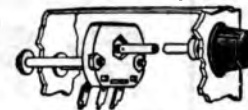


954SGL

This 954SGL adapter is used on the base of the 950XYL if your tube checker has no filament-voltage switch.

No. 954SGL
YOUR PRICE **\$0.44**

New Antenna Trimmer Assembly



ANT. TRIMMER (INSULATED SHAFT EXTENSION)

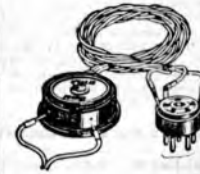
Complete assembly for placing the ant. adjustment where it belongs—on the front panel. Extra long insulated extension shaft fits adjustment screw of trimmer condenser which mounts on back of chassis near antenna binding post. Collar and knob supplied for front panel. Condenser stand-off mounted for best results. The handiest thing in short wave.
No. CTA-80 7-80 mmfd. Trimmer Kit.
YOUR PRICE, complete **\$0.44**

Na-Ald DeLuxe Molded Dials

Here are the finest looking dials which will greatly enhance the appearance of any S. W. receiver, oscillator, transmitter, frequency meter, etc. Adds distinction to all apparatus and makes it possible to tune surely, quickly and accurately. All dials supplied with 1/4" shaft hole and set screw. The five inch model, which must be seen to be appreciated, has a superior hand grip and with the vernier plate supplied can be read to 0.05 of one per cent. Ideal for precision bridges, wavemeters, frequency meters, oscillators, transmitter controls, etc. Wherever a dial reading is ever to be recorded, use the 3054VP.
YOUR PRICE

No. 3034 3" DeLuxe Dial 1/4"	\$0.21
3044 4" DeLuxe Dial 1/4"	\$0.21
3054VP 5" DeLuxe Dial with Vernier Plate	\$0.44

Speaker-Phones Switching Adapter



For use with any pentode output tube. Permits independent use of speaker or phones by flipping toggle switch, phones and adapter remaining connected. No wiring necessary. No. 855-PSC. For single 5-prong PENTODES such as 6A4, 33, 47, 257, KR-5, LA, P-5 or PZ. **\$1.47**

No. 955-PSW For push-pull 5 prong PENTODES such as above.	\$1.76
No. 966-PSC For single 6-prong PENTODES such as 2A5, 18, 41, 42, 43, 48, 95, AE, KR-25 or PA—	\$1.47
No. 966-PSW For push-pull 6-prong PENTODES such as above.	\$1.76

Base Plug Night and Pilot Light

Candelabra Base Plug takes candelabra based Neon or filament lamps. With Neon lamp tests polarity of outlet. Also useful as a handy outlet light, night lamp, pilot light, location marker, current indicator, decorative lamp, etc.
No. AID No. 163—Candelabra Base Plug
YOUR PRICE, each **\$0.15**



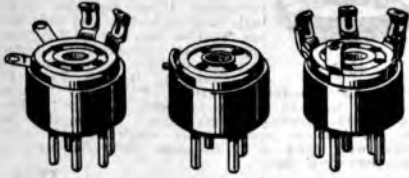


Adapters

General Purpose Adapters SOCKETS — COIL FORMS — SPEAKER PLUGS

General Purpose Adapters

Neutralizing — Oscillation Control —
Testing — Experimenting



- | | | | | |
|-----------|--|------|--------|---------------|
| No. 955GP | Description | 944H | 955PTT | YOUR PRICE |
| 944N | UX neutralizing adapter with one filament dead, for balancing oscillating receivers | | | \$0.35 |
| 955N | UY neutralizing adapter used same as above | | | \$0.35 |
| 944GP | UX adapter, makes detector circuit of any UX R.F. stage, breaking grid circuit for grid leak and condenser. Also breaks plate with phono tip terminals for head phones | | | \$0.62 |
| 955GP | UY Adapter used same as above | | | \$0.62 |
| 972 | For adapting Western Electric type 215A tubes to UX or UY sockets | | | \$0.73 |
| 973 | For adapting UY or UX tubes to Western Electric type 215A sockets | | | \$0.73 |
| 944PTT | UX Universal testing adapter with plate break. All other connections brought out to phono tip terminals | | | \$0.62 |
| 955PTT | UY Universal testing adapter used same as above | | | \$0.62 |

Shielded Microphone Cable with Armored Locking Connectors



Three stranded conductors of finest grade copper rubber insulated. Individual conductors cotton braid covered and wax impregnated. Fine flexible tinned copper shielding covered with a serviceable black soft yarn braiding to prevent shielding from catching on rugs, etc. Cable shielding is securely fastened to shielded plug presenting a most complete shielding, thus preventing any pick-up from external fields. The plug and connector are provided with locking facilities which can be instantly connected or released. Rugged connectors can be walked on, kicked and twisted without parting or showing signs of abuse. Standard UX connections used, extra prong going to shield circuit to provide positive interconnection of shielding.

- | | | |
|----------|---------------------------------------|---------------|
| Cat. No. | | |
| MCH-15 | 15 ft. Shielded Mic. Cable, Complete | \$1.47 |
| MCH-25 | 25 ft. Shielded Mic. Cable, Complete | \$2.00 |
| MCH-50 | 50 ft. Shielded Mic. Cable, Complete | \$3.35 |
| MCH-100 | 100 ft. Shielded Mic. Cable, Complete | \$6.11 |

Heavy Duty Microphone Cable

Three conductors each having 42 strands of No. 34 wire equivalent to No. 18 B. & S. gauge. Each conductor rubber insulated with a heavy duty durable rubber covering. Impervious to oil and water.

No. MC-318 Rubber Cover Microphone Cable 100 ft. **\$4.31**
YOUR PRICE

Tube Base Coil Forms

Genuine molded Bakelite, phosphor bronze prongs. UX only 1 1/8 ins. high x 1-3/16 ins. diameter. Molded Bakelite boss in center permits building all types of adapters in conjunction with our No. 423, 425 and 426 sockets listed above.

- | | | | |
|------------|-----------------------------------|------------------|---------------|
| No. 944JYM | Tube Base Coil Form | YOUR PRICE, each | \$0.15 |
| | Plain Tube Bases, Either UX or UY | YOUR PRICE, each | \$0.06 |

TUBE SOCKETS FOR ALL PURPOSES

General Purpose Sockets

Provided with knurled nut binding posts for convenient connections. Excellent for regular as well as experimental work.



Made of molded Bakelite throughout with bronze contact springs. Available for either 4, 5 or 6 prong tubes.

- | | | |
|---------|---------------|--|
| No. 481 | UX Socket | |
| 481 | UY Socket | |
| 486 | 6 prong | |
| 487 | 7 prong | |
| 487A | Small 7 | |
| Each | \$0.12 | |

UX Spring-Cushioned Sockets

Genuine molded Bakelite sockets with phosphor bronze spring contacts. Ideal for automobile and portable receivers in which the tubes are always subjected to jarring tube "howling". All sockets and jars are taken up by



Prevents All sockets and jars are taken up by

Excellent For Portable Sets the spring action of the socket, and absorbed before they reach the tube. Available only for the UX four-prong tubes. No. 481 UXS Socket

YOUR PRICE **\$0.29** each

Universal Mounting Sockets

Genuine molded Bakelite with phosphor bronze spring contacts. For mounting either above or below sub-panel. Equipped with insulated mounting flanges and holes. Ideal for building adapters. No.

- | | | |
|----------------|---------------|--|
| 424 | UX Sockets | |
| 425 | UY Sockets | |
| 436 | 6-Prong | |
| 437 | 7-Prong | |
| 437A | 7-Small | |
| YOUR PRICE ea. | \$0.15 | |
| 438 | 8-large | |
| 438A | 8-small | |
| YOUR PRICE | \$0.29 | |

Sub-Panel Sockets

Ideal where space is at a premium. Small and compact.



- | | | |
|---------|---------------|--|
| No. 422 | UX Socket | |
| 423 | UY Socket | |
| 426 | 6 Prong | |
| 427 | 7 Prong | |
| each | \$0.15 | |

Wafer Tube Sockets

Available for either 4, 5 or 6 prong tubes. Mounting 1-11/16" centers.



- | | | |
|---------|---------------|--|
| No. 474 | UX Socket | |
| 475 | UY Socket | |
| 478 | 6-Prong | |
| 477 | 7-Prong | |
| Socket | \$0.06 | |

SPEAKER ANALYZER PLUGS

"Sure Grip" Plugs



Genuine molded Bakelite with phosphor bronze prongs. Cover threads on base for easy connections.

- | | | | |
|------------|---------------|------------|---------------|
| YOUR PRICE | | YOUR PRICE | |
| Type | 987A | Type | 987A |
| 984 | 4 pins | 987A | 7 small |
| 985 | 5 pins | 988 | 8 large |
| 986 | 6 pins | 988A | 8 small |
| 987 | 7 large | | |
| | \$0.15 | | \$0.15 |
| | \$0.15 | | \$0.15 |
| | \$0.15 | | \$0.15 |
| | \$0.15 | | \$0.15 |

Flat Type Speaker Plugs



- | | | | | |
|-----|------------|------|-------------|---------------|
| 104 | 4 pin plug | 107 | 7 pin large | YOUR PRICE |
| 105 | 5 pin plug | 107A | 7 pin small | \$0.06 |
| 106 | 8 pin plug | | | each |

Female Connector Plug



Used in conjunction with our Nos. 104, 105 and 106 Flat Type Speaker Plugs to form complete connector units. 104, 105, 106 and 107 Flat Type Speaker Plugs to form complete connector units.

- | | |
|------------|---------------|
| YOUR PRICE | |
| No. 984F | 4-prong |
| 985F | 5-prong |
| 986F | 6-prong |
| 987F | 7-large |
| 987FA | 7-small |
| 988F | 8-large |
| 988FA | 8-small |
| | \$0.24 |
| | .24 |
| | .24 |
| | .24 |
| | .24 |
| | .29 |
| | .29 |

"PHONO"—"MIKE" AND TONE CONTROL ADAPTERS Phono-Pickup Five Prong Adapter



This adapter connects all types of phonograph pickups into the grid and cathode circuit of receivers employing type 227 detector tubes. May also be used for connecting microphones through a microphone transformer. Grid and cathode brought to external pin jacks.

- | | | | |
|-----------|---------|------------------|---------------|
| No. 955KT | Adapter | YOUR PRICE, each | \$0.44 |
|-----------|---------|------------------|---------------|

Universal Purpose Adapter

FOR 4 AND 5 PRONG TUBES

For connecting phonograph pickups and microphone to A.C., D.C. and battery sets. Fits either UY or UX tubes. Grid and cathode prongs brought out to tip jacks.



- | | | | |
|---------|---------|------------------|---------------|
| No. 949 | Adapter | YOUR PRICE, each | \$0.26 |
|---------|---------|------------------|---------------|

Extra Speaker—Headset & Tone Control Adapters



Sold in Pairs. Connects to plate prongs of power tubes in sets having push pull amplification. Fiber base with soldering lugs for connecting extra speakers, tone controls and head phones. Sold only in pairs.

- | | | | |
|-----------|----------|----------------------|---------------|
| No. 948SP | Adapters | YOUR PRICE, per pair | \$0.35 |
|-----------|----------|----------------------|---------------|

'82 Mercury Rectifier Testing Adapter



Tests 82 in '45 socket of any tube checker. Also tests 83, 985 and 986 tubes in '80 socket.

Toggle switch permits reading of both plates of rectifier tube.

- | | | | |
|---------|---------|------------|---------------|
| No. 982 | Adapter | YOUR PRICE | \$1.35 |
|---------|---------|------------|---------------|

Color Coded Plug-in Coil Forms



Genuine molded Bakelite with phosphor bronze contact prongs. Overall length 2-11/16 ins. 1 1/4 ins. outside diameter.

- | | | |
|------------|---------------|--|
| 704 | 4-prong | |
| 705 | 5-prong | |
| 706 | 6-prong | |
| YOUR PRICE | \$0.12 | |
| 707 | 7-large | |
| 707A | 7-small | |
| 708 | 8-prong | |
| YOUR PRICE | \$0.18 | |

G-2 Diode Tube Adapter



Tests G-2-S and G-4-S in '27 socket of any tube checker. Toggle switch permits readings of both sides of tubes. Made with proper resistances, having sufficient current-carrying capacity. No. 955G-2 Adapter

- | | |
|------------|---------------|
| YOUR PRICE | \$1.76 |
| each | |



Adapters

For Every Purpose and Use

SET ANALYZERS — NEW TUBES — TUBE CHECKERS

Na-ald "Lock Feature"

Analyzer Plug

Here is the latest, most ingenious and most practical development in the field of radio plugs and adapters—a development which is the outcome of a crying need of Service Men and experimenters. A new handle plug with an ingenious locking feature which COMPLETELY ELIMINATES THE OLD TIME-CONSUMING PROCESS OF ATTACHING ADAPTERS TO HANDLE PLUGS WITH SCREWS. Simply insert the plug into the adapter. It locks itself securely and automatically. Snap the release button in the handle of the plug and the adapter slides off; simple yet efficient. Every Service Man should equip his analyzer or test bench with this new plug. Available in the UX and UY types both with and without test cables. Cable for the UX type comprises 6 braided wires. Four wires connected to prongs, one to screen grid and sixth to center latch. The cable for UY type comprises six wires too, five to prongs and the sixth to screen grid. Shipping weight 1 lb.



No. 904L New Analyzer Plug UX Type.

\$0.88

No. 905L New Analyzer Plug UY Type.

\$0.88

No. 904LC New Analyzer Plug UX Type with 5 Ft. Cord

\$1.47

No. 905LC New Analyzer Plug UY Type with 5 Ft. Cord

\$1.47

No. 1894 Additional Cable for New Plug.

\$0.10

No. 945DS UX to UY Adapter for use with UX Type Handle Plug. Cathode Circuit Connected to Center Post

\$0.44

No. 4954DS UY to UX Adapters for use with UY Type Handle Plug

\$0.44

No. 955DK8 5 to 6 Prong Adapter for UY Analyzer Plugs—to test 57 and 58 circuits—Stud dead—Suppressor to cathode

\$0.44

No. 956D8LC 5 to 6 Prong Adapter for UY Analyzer Plugs—to test 41 and 42 circuits

\$0.62

Additional Units for Adapting any Analyzer Plug or Tube to any Style Socket

UY TO UX



Fits 5 prong tubes into 4 prong sockets. Cathode hole to heater prong.

No. 954 Adapter **\$0.35**

UX TO UY



Fits 4 prong tubes into 5 prong sockets. Cathode prong dead.

No. 945 Adapter **\$0.35**

X'99 TO V'01A



Adapts UX 199 tubes to VY 201A sockets.

No. 419X Adapter **\$0.19**

X'98 TO V'99



Adapts UX 199 long prong tubes to UY (short prong) 199 sockets.

No. 999 Adapter **\$0.44**

V'88 TO V OR X'01A



Adapts UY 199 tubes to either UY or UX 201A sockets.

No. 429 Adapter **\$0.44**

WD11 TO UV or UX



Adapts WD 11 tubes to either UY or UX sockets.

No. 988 Adapter **\$0.73**

6 Prong Adapters and Analyzer Plugs

Modernizing All Types of Tube Checkers and Set Analyzers

The new line of adapters presented herewith were designed to bring up to the minute all old type tube checkers and set analyzers which cannot at the present time test the latest type 57 and 58 triple-grid

"Lock-Feature" 6 Prong Analyzer Plug



For building new analyzers and modernizing old ones to test the latest type 57 and 58 6 prong, triple-grid tubes. Has screen-grid contact on side. May be had either with or without 7 wire cable. No. 906L Plug

YOUR PRICE **\$0.88**

No. 906LC Plug with 5 ft. cable **YOUR PRICE \$1.47**

6 to 5 Prong



For use with No. 906L 6-prong analyzer plug above. Six holes top, with center stud 5 prong bottom. All connections through Suppressor grid

contact dead. No. 965DS Adapter

YOUR PRICE **\$0.44**

6 to 4 Prong



For use with new 906L 6-prong analyzer plug. 6 hole top with center stud. 4 prong bottom. All connections through Suppressor

grid contact dead. Filament minus prong connected to cathode hole. No. 964DS Adapter

YOUR PRICE **\$0.44**

6 to 5 Prong



For use with Hickok AC-47 and Radio Products instruments. All connections through. Suppressor grid brought out to six inch lead with phone tip. Tests 57, 58, 58 tubes in '24 socket with lead inserted in cathode hole of '27 socket. Tests 41 and 42 tubes in '24 socket with 6.3 volts applied and lead-in grid hole of '27 socket. No. 965SL Adapter

YOUR PRICE **\$0.44**

6-prong tubes. Available for use with either the new style "lock-feature" or old type analyzer plugs. Service Men and experimenters should not delay in modernizing their testing equipment.

Twin Adapters for Testing 6 Prong Tubes in Tube Checkers and Set Analyzers

With these twin adapters, any style or model of set analyzer may be made to test the latest type 57 and 58 6-prong tubes. The 6-prong adapter is attached to the 5-prong analyzer plug and then inserted in the 6-hole socket of the set. The other or 5-prong adapter is inserted in the five hole socket of the analyzer and then engages the 6 prong tube which is



to be tested. Adapter with 6 hole top is connected by a wire lead to suppressor grid contact of analyzer plug. Available for use with either "Lock-Feature" or old style analyzer

plugs.

No. 965DSW Twin Adapter for "Lock-Feature" Plug

YOUR PRICE **\$1.12**

No. 965DW Twin Adapter for Old Style Analyzer Plug

YOUR PRICE **\$1.12**

6 to 5 Prong Tube Checker Adapter

For testing 57 and 58 tubes in '24 socket of old type tube checkers 5 prong bottom, six hole top. Suppressor grid contact in top connected to cathode prong of UY base.



No. 965KS Adapter

YOUR PRICE **\$0.35**

6 Prong Adapter for Supreme Analyzers

For recent models of Supreme analyzers which have extra wire in their cable connected to the center latch of "lock-feature" analyzer plugs. Five hole top, six-prong bottom, suppressor grid connected to center stud.

No. 956DS Adapter

YOUR PRICE **\$0.44**

New Adapters for Testing Pentode Tubes

The reason adapters or wiring changes are necessary to test pentode tubes is that the elements of the tube are connected to the base prongs in a way differing from standard practice. Any set analyzer or tube tester,

however, may be brought up to date by the use of the adapters presented herewith—which adapters of course automatically make the required circuit changes.

For Replacing '45's with Pentodes



4-prong bottom, 5-hole top. Current to screen circuit obtained internally from plate prong.

Used for replacing type 245 power tubes with 247 pentodes. Two adapters used for push pull circuits. No. 934KPC Adapter

YOUR PRICE **\$0.35**

Twin Adapters for Set Analyzers

With these twin adapters, all styles and models of set analyzers may be made to test any of the pentode tubes. One adapter is attached to the 5 prong analyzer plug and then inserted into the pentode tube socket of the receiver while the other is inserted

in the 5 tube socket of the analyzer and is then engaged by the pentode tube. A flexible lead connects the screen-grid prong of the first adapter to the screen-grid hole of the second.

No. 974 Twin Adapter

YOUR PRICE **\$1.12**

4 to 5 Prong—Weston Instruments



Filament and plate connections through. Grid hole connected to cathode prong. For Weston 547, 565 and 568 tube checkers and analyzer. Attaches to analyzer plug used with 954GL Adapter. No. 945GL

YOUR PRICE **\$0.44**

Tube Checker Adapter



5-prong bottom, 5-hole top. Cathode prong dead. Used for testing pentode tubes in '27 socket of all tube checkers.

No. 975 Adapter

YOUR PRICE **\$0.35**

4 to 5 Prong

Used on plugs of Supreme 90 and 1-27 series and 400-N4 series, with No. 976 Adapter in UY analyzer socket. Grid plate and heater, plus connections through. Heater minus prong connected to center stud.

No. 977 Adapter

YOUR PRICE **\$0.88**

5 to 4 Prong

For use with Weston No. 547, 565 and 566 analyzers. Placed in UY socket with No. 945GL or Analyzer plug. Plate and filament connections through. Cathode hole connected to grid prong. No. 954GL Adapter.

YOUR PRICE **\$0.44**

5 to 4 Prong Adapter



Grid, plate and heater connections through. Cathode circuit brought out for tube checkers and set analyzers. No. 954K Adapter

YOUR PRICE **\$0.44**

ADAPTERS AND SOCKETS

Radio Servicemen's Universal Adapter and Trouble Finder

10 Adapters Built into One Compact Unit



1860



1861

BREAKING OR SOLDERING A SINGLE WIRE OR REMOVING THE CHASSIS.



1862



1863

Here is a unique, ingenious unit which faithfully performs all the numerous functions of ten different adapters, giving quick access to all the radio circuits in a receiver. It opens filament circuits for neutralizing squealing sets, automatically inserts grid suppressors in grid circuits of oscillating sets thereby stabilizing them, inserts voltmeters and ammeters in any desired circuit, adapts phonograph pickups and microphones for electrical reproduction, adapts earphones and additional loud speakers to receivers already having a speaker, connects output meters to any of the audio tubes and finally provides a means of making positive electrical contact with any circuit in the receiver; all this, and you.

The secret of the manifold uses of this universal adapter lies in the manner of its construction. Here's the dope: From the illustration above it would appear that the prong receptacles and their respective prongs are directly connected right through the adapter. They are not; and that's the whole essence of the thing. Prong receptacle and prong are two completely independent units. Wire leads from each one of them, however, are brought out to external pin jacks on the periphery of the adapter and there connected by a special connecting link. The removal of any given link breaks the contact between that receptacle and its prong, thereby opening that particular circuit.

For example, if the connecting link marked "P" on the adapter, is removed, the plate circuit of the tube is opened. With the plate open it becomes a simple matter to insert a millimeter by merely making contact with the two pin jacks vacated by the connecting link. For this purpose you may use either the connecting cords shown above our Nos. 1862 and 1863 which are equipped with the special connecting link tips or else any other wire or cord which will fit the pin jacks.

To balance squealing, oscillating receivers, all that is necessary is to insert the proper adapter, either UX or UY in the R.F. sockets, remove the grid connecting links and insert the ends of flexible grid suppressors in the vacated pin jacks.

If it is desired to make an electrical contact with any of the tube circuits, the grid for instance, merely pull out the connecting link (i.e. break the circuit) of the grid prong and insert the connecting link of our No. 1863 Dual Connector Cord. This automatically completes the circuit once more, but in addition establishes an electrical connection to the grid of that tube.

Prong receptacles and prongs are made of tempered phosphor-bronze metal and are firmly set into a disc of heavy insulating fibre. The most ingenious, most efficient, most useful piece of apparatus ever developed since the advent of radio. Two models are available; a four prong UX adapter and a five prong UY adapter. Two types of connecting cords specially manufactured for these adapters are also available; single and dual connecting cords. Shipping weights of cords and adapters are 8 oz. each.

- | | | |
|--|-------------------|---------------|
| | List Price \$1.75 | |
| No. 1860 UY Universal Adapter and Trouble Finder | | \$0.95 |
| YOUR PRICE | | |
| | List Price \$1.75 | |
| No. 1861 UX Universal Adapter and Trouble Finder | | \$0.95 |
| YOUR PRICE | | |
| | List Price \$0.40 | |
| No. 1862 Single Connector Cord | | \$0.20 |
| YOUR PRICE | | |
| | List Price \$0.50 | |
| No. 1863 Dual Connector Cord | | \$0.25 |
| YOUR PRICE | | |

Polymet Phone Plugs

Polymet Phone Plugs are the leaders in their field. Made in two types, composition and Bakelite. They are the most popular and convenient plugs on the market. Automatic Action, Fool Proof, Positive Contact at all times, Polarity marked on sleeve.

List Price \$0.35

No. PP-2 Composition Plug **\$0.20**
YOUR PRICE



Belden 8 Ft. Line Cord

A heavy-duty line cord made especially for large size power amplifiers and allied equipment. Each conductor has four layers of insulation. The cable measures more than 8 feet long and terminates in a Belden soft-rubber plug which defies breakage. May be used for heavy duty electrical appliances, heaters, and all other equipment using a large amount of current. Ship. wt. 1 lb. List Price \$1.25

No. B721 Belden 8 Ft. Line Cord. **\$0.40**
YOUR PRICE



Three-Wire Microphone Cable

Measures more than 5 1/2 feet long and comprises three rubber-covered flexible conductors, terminating in standard telephone tips.

The three conductors are color-coded. Ship. wt. 1/4 lb. List Price \$0.75
No. B721B Three-Wire Microphone Cable. **\$0.10**
YOUR PRICE



REMINDER

Order Blank Complete Index
on Page 104 on Page 106

New Pentode Adapter

Replaces Type '45 Tubes with Pentodes

A new and simple device for replacing the old '45 type power tube with the latest super-power pentode. The replacement is effected without rewiring or changing any part of any circuit of the receiver or amplifier. All the necessary changes are instantly incorporated in the adapter unit itself. All that is necessary is to remove the '45 power tube, insert the adapter in the vacated socket and then place a pentode tube in the socket of the adapter. Gives added life and power to old receiver amplifiers as well as better fidelity of tone. Measures 1 1/2" x 1 1/2" diam. Shipping weight, 1/2 lb. List Price \$1.50

No. 1873 New Pentode Adapter **\$0.40**
YOUR PRICE



Heavy Duty Laboratory Testing Prods

With Needle Point Phone Tips

This new type of testing prod has long been in demand to answer the purpose of a needle point and phone tip combination. The needle point insures positive contact through insulated wire while the body of this needle point acts as a standard phone tip when used in phone tip jacks. Made to fit all standard types of tip jacks. Equipped with color-coded heavy duty flexible wire and long black and red fibre handles. Measure 5 ins. long and 1/2 in. diameter. The needle plug phone tip is made of the highest grade hard bronze. The other extremities of the wires are available with 3 different styles of connecting ends. Shipping weight, 1/2 lb.

- | No. | Type | List Price | YOUR PRICE |
|-----|--------------------------------------|------------|---------------|
| 300 | Equipped with U-shaped Terminal Lugs | \$1.50 | \$0.45 |
| 310 | Equipped with Standard Phone Tip | 1.50 | \$0.45 |
| 320 | Equipped with Spring Clip | 2.00 | \$0.60 |



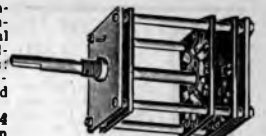
Three-Pole Ten-Point Selector Switch

This sturdily constructed switch, originally made for a special purpose, has the following characteristics: two sections of 10 contact points and a third of 6 points.

The switch has 4 positions. In position No. 1-4 points are contacted on each section. In all other positions, 5 points are contacted on two of the sections and only 8 on the third section.

This unit lends itself to a multiplicity of uses. May be used as a shorting switch, channel-selecting switch, for long and short-wave receivers, etc., etc.

Requires a single 1/4" hole for mounting. Switch measures 2 1/4" square x 3" back of-panel depth. Ship. wt. 1 lb. List Price \$3.50
No. B718 Three Pole Ten Point Rotary Selector Switch. **\$0.55**
YOUR PRICE



Five Wire Color-Coded Connecting Cable

This cable is four feet long, and contains five heavy-duty color-coded wires.

It is ideal for connecting chassis, power amplifiers to associated equipment, batteries to battery sets, etc., etc.

The tips of all wires are thoroughly tinned and solder-dipped for convenient connections. Ship. wt. 1/4 lb. List Price \$0.75

No. B722B Five Wire Color-Coded Connecting Cable. **\$0.10**
YOUR PRICE



Remote Control Cable

16 Wires—50 ft.

A cable of many uses! Ideal for remote control for radio receivers or for supplying voltages to condenser microphones in broadcast studios. May be used for supplying portable input amplifier in public address systems. This fifty foot cable has 16 wires — two of them shielded against interference. Fully color-coded and covered with high quality woven fabric. Shipping weight, 10 lbs.

List Price \$5.00
No. 1674 Remote Control Cable **\$1.75**
YOUR PRICE



I.C.A. Ear Phone Adapter

A New Ear Phone Adapter specially designed for use with the new electric sets. Can also be used with battery sets. One can now listen to DX at any time without disturbing the rest of the family. In order to put the Ear Phone Adapter in use, take out the Power Tube of set. Insert the Ear Phone Adapter in place of tube, and then insert phone tips of ear phones in specially provided connector. The volume desired, either loud or soft, can be regulated from the volume control of the set. In cases where the set has two Power Tubes in Push Pull, take out both Power Tubes, insert the adapter in either socket and operate accordingly. Finished in Black Bakelite, complete with Cord and Connector. Specify 4 or 5 prongs. Shipping weight, 1/2 lb. List Price \$1.50

No. 1696 I.C.A. Ear Phone Adapter **\$0.88**
YOUR PRICE



100 Ft. Roll Rubber Insulating Tubing

An excellent tubing for high power work. Will stand considerably higher voltage than the ordinary spaghetti. It is especially useful for covering hook-up wire (even insulated hook-up wire) at points where they pass through holes in a metal chassis.

List Price \$2.00
No. 101 Rubber Insulating Tubing. **\$0.85**
YOUR PRICE



Miles Giant Dynamic Horn Unit

Type No. M100



This unit must not be confused with other so-called Giant Units. Even a cursory comparison will bring out the marked advantages of our M100. It is in reality a GIANT, for its net weight is 21 lbs. and its net dimensions are 5 1/2" x 5 1/2" x 5 1/2". The diaphragm—the heart of the unit—is absolutely unbreakable which is an exclusive feature only found in MILES.

Designed especially for theatres, parks and all kinds of Public Address installations, indoors and outdoors. For use in conjunction with large exponential horns.

TREMENDOUS POWER OUTPUT

This Giant Dynamic Horn Unit is capable of handling any power output of 10 to 30 watts undistorted. Field supply is 1.1 amps. at 6 volts D.C. Source of supply may be either a 6 volt storage battery or a Miles Exciter No. M102 for 110 A.C. listed below. The Voice coil has an impedance of 10 ohms at 50 cycles. Special output transformers Nos. 103 and 104 are available for matching this unit to the power amplifier. (Transformer M103 for 250 power amplifiers, Transformer M104 for 245, or 210 power amplifiers.) Shipping weight, 23 lbs.

List Price \$60.00

No. 100 Miles Giant Dynamic Horn Unit **\$32.95**

YOUR PRICE

Miles Exponential Trumpets

3 1/2 Ft. Trumpet

These trumpets when used in conjunction with loud speaker or phonograph units, especially those of the magnetic motor-drive type (as our Baldwin Rival Units, make excellent directional, power speakers of exceptional tone quality. Bell 22 in. diameter, 42 in. long. Acoustically correct. Mounting rings included. Shipping weight, 8 lbs.

List Price \$20.00

No. M-3 3 1/2 Ft. Exponential Trumpet **\$11.25**

YOUR PRICE

List Price \$25.00

No. MH-3 Heat and Water-proof Model **\$13.50**

YOUR PRICE

6 FT. EXPONENTIAL TRUMPET

For indoor or outdoor application. Will carry for a distance of about 2,000 ft. Mounting rings included.

List Price \$45.00

No. M-6 6 Ft. Exponential Trumpet **\$26.46**

YOUR PRICE

List Price \$55.00

No. MH-6 Heat and Water-Proof Model **\$32.34**

YOUR PRICE

Exciter for Horn Unit

Type No. M-200

Used with above dynamic unit on 110 A.C. 50 to 60 cycles. Size 6 1/2 in. x 6 in. x 4 in. Humless! All Electric! All dry Exciter! Will not overheat! Good for 1 to 2 horn units. Shipping weight, 12 lbs.

List Price—\$20.00

No. M-102 Exciter for Giant or Junior Horn Unit **\$11.76**

YOUR PRICE

Colonial 10" Dynamic Loudspeaker

Here is a speaker made for one of the famous Colonial receivers. Has a 10 inch cone, suspended in an unusual manner. The core of the field coil is continued up in a conical shape that supports the center of the cone by means of a flexible fibre "spider." It is almost impossible to knock the voice coil out of adjustment because of this rugged mounting. Five wire, 2 ft. cable with plug attached included. This plug fits a standard socket of the UX type. The speaker is neatly aluminum finished and has a fibre ring cemented to the rim of the cone to prevent rattling.

Designed for use with two '45 tubes connected in push-pull. Field coil impedance, 9000 ohms. May be used in place of one of the filter choke coils in sets requiring this resistance; or a separate current supply, such as a transformer, an '80 tube and dry-die rectifier may be employed for A.C. operation. Overall size 10 1/2" x 10 1/2" x 8 inches. Shipping weight 7 lbs.

No. F7101 Colonial Dynamic Speaker.

\$2.80

YOUR PRICE



5-Inch Ultra-Midget Dynamic Speaker

Designed Especially for Midget AC-DC Receivers



used as a filter choke. The speaker is outside diameter, 4" across the cone, and 2 3/4" deep. Although small in size it will handle considerable power.

Inasmuch as these units have been closed out by the manufacturer, the supply is limited. Had it not been for this close-out sale, its normal price would be approximately \$3.00. Buy now while they are still available.

No. 120 5-Inch Ultra Midget Dynamic Speaker.

\$1.75

YOUR PRICE

B.B.L. 9" Cone-Magnetic Reproducer

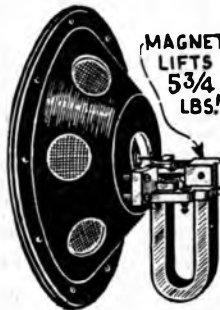
This reproducer is recommended for its enormous sensitivity. That is, where output power is limited, and maximum volume is desired. At the same time, this "balanced-armature" loud speaker handles without rattling the power output of large radio sets.

Cast aluminum frame. Laminated pole pieces. An important feature is the provision of four adjusting screws which make it convenient to compensate the armature. The cone-cup is adjustably fastened to the 9 in. Burtex acoustic-fabric cone. A special super-tungsten magnet is used. The diameter is 9 1/2 in., and the depth, 8 in. Shipping weight, 4 lbs.

No. 1509A B.B.L. Speaker. List Price, \$14.85.

\$2.65

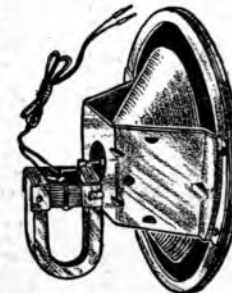
YOUR PRICE



MAGNET LIFTS 5 3/4 LBS!

Special 9" Magnetic Speaker

COMPLETE WITH CORD



A full size magnetic speaker of excellent quality. Its sensitivity is so great that it may be used with short-wave receivers. Constructed of a strong lasting magnet and perfectly balanced armature and drive-pln. Supplied complete with speaker cord.

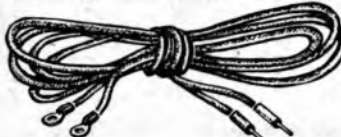
No. 336 9" Magnetic

Speaker Chassis

\$2.15

YOUR PRICE

Loud Speaker Cord



A fabric covered double conductor cord equipped with 4 oz. terminals.

lengths. Coded for polarity. Shipping weight 4 oz.

No. 1671 Loud Speaker Cord. **\$0.10**

YOUR PRICE

Eveready "Vibrating" Mending Cement



Until now radio servicemen have really been handicapped by the absence of a suitable cement to repair speaker cones, voice coil mountings and other vibrating equipment. The tendency of ordinary cement is to dry up and crack under such severe conditions. This Eveready "Vibrating" Mending Cement has been compounded, especially to fill this need.

Unexcelled for repairing rattling cones in speakers, cementing loose tube bases and caps, or any other articles in vibration. Aside from these features, it is ENTIRELY WATER-PROOF and DRIES IN A FEW MINUTES. Sold in 2 oz. glass bottles with threaded metal caps which have a spreading rod attached to them. Ship. wt., 1/2 lb.

No. 1085 Eveready "Vibrating" Mending Cement.

\$0.33

YOUR PRICE

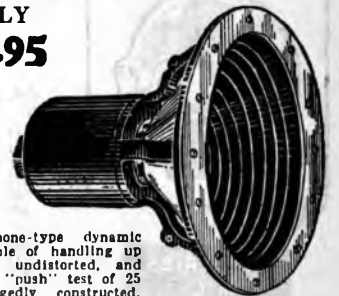
PHOTOPHONE-TYPE

Theatre Dynamic

15" Cone — 18 Watts

ONLY

\$17.95

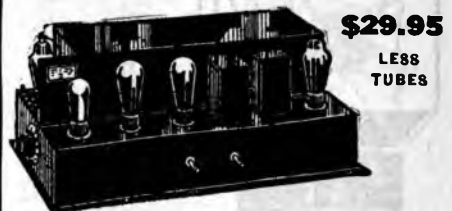


A photophone-type dynamic speaker capable of handling up to 18 watts, undistorted, and having a top "push" test of 25 watts. Ruggedly constructed with charcoal-floated, 15" corrugated cone and Grano-flex three-point outside spider. The heavy duty field alone weighs 8 1/2 lbs. The entire net weight of speaker is 35 lbs. The speaker reproduces all audio frequencies without discrimination. This is the first time that a photophone-type dynamic reproducer is being offered for less than \$45.00. Its original list was \$100.00. The speaker is available with any desired field specifications including the 6-volt type. Does not include output transformer. Shipping weight, 40 lbs.

No. L-1 Photophone-Type Dynamic Speaker **\$17.95**

YOUR PRICE

3-Stage 20-Watt Class "B" Kit



\$29.95

LESS TUBES

ACT FAST—Only 20 Kits left

Here is a splendid opportunity to buy a real, professional amplifier at a substantial saving. There are only 20 of these fine public address units available—all in kit form. Assembly, with the aid of simple instructions, is a simple matter. However, we'll build it for you, if you wish, at charge of \$8.00. You save that amount if you assemble it yourself.

Save \$8.00 Assemble It Yourself

The amplifier uses 1-57, 3-46's and an 82 rectifier. Input to grid of 57; output impedance 4000 ohms. Ship. wt., 45 lbs. For 110 volts A.C.

No. 46K Kit less tubes. **\$29.95**

YOUR PRICE

No. 46W Wired, less tubes. **\$37.95**

YOUR PRICE

Gentlemen: I want to acknowledge with thanks the receipt of all merchandise I ordered recently. I wish also to state that I have been perfectly satisfied as to the quality of the apparatus. Again thanking you for your kind service, I am
Jose G. Montellbano,
College of Engineering
University of the Philippines
Manila, P. I.

"FARADAY" NATURAL-TONE

Lowest Prices — Highest Quality A Speaker For Every Purpose

DYNAMIC SPEAKERS

Listed on this page are the most recently developed speakers on the market. Just as magnetic speakers have been superseded by the more powerful dynamic types and just as the early electric sets have given way to the present up-to-date models, so are the early type dynamic speakers being replaced by these modern "Natural Tone" units. Electrical and acoustical engineers have discovered a great many principles since the dynamic speaker first became the rage of the radio industry. All these new designs and principles have been incorporated in the new Faraday dynamic speaker.

Music and voice issuing forth from these instruments are as clear and natural as the original renditions at the studio. **A REAL PLEASANT SURPRISE AWAITS THE PURCHASER OF THESE EXCELLENT REPRODUCERS.**

THERE IS A SPEAKER LISTED HERE FOR EVERY CONCEIVABLE RADIO PURPOSE. If you do not see listed below the speaker with your particular specifications (field resistance and output transformer) choose the one nearest to it, add

35c to its price, and you will have the speaker which you want. Please make sure however, that you give us the exact specifications when ordering.

For instance, if you desire an 11" D.C. dynamic speaker having a field resistance of 2000 Ohms, and an output transformer for a single 47 tube, you would take the price of the No. 1121 (since that particular speaker approaches most closely your Ohm specifications), and add 35c to it and we will send you the speaker with your particular characteristics. For special requirements such as A.C. speakers at odd frequencies, etc., please write us for quotations. **EACH SPEAKER IS FULLY GUARANTEED AND WILL BE EXCHANGED WITHOUT QUESTION IF DEFECTIVE WHEN RECEIVED.** The complete line of reproducers listed here gives a model for every purpose, from the largest auditorium type down to the diminutive storage battery type used with automobile receivers. Each unit is ruggedly constructed of high grade material and is equipped with an output transformer. A.C. models are designed to be used with a 280 tube. This tube is not supplied at the prices listed below.

SPECIFICATIONS

Cat. No.	Type	Field Resistance	Frame Dia. Sskr. Size	Output Trans.	Cone* Dia.	Depth Overall	Pkd. Wgt. Slightly	YOUR PRICE
611	DC	1000	6 1/2"	1-247	4 1/2"	3 3/8"	3 3/8"	\$2.18
621	DC	2500	8 1/2"	1-247	4 1/2"	8 3/8"	3 3/8"	2.18
612	DC	1000	6 1/2"	1P-247	4 1/2"	4 1/2"	3 3/8"	2.18
622	DC	2500	6 1/2"	1P-247	4 1/2"	4 1/2"	3 3/8"	2.18
623	DC	2500	6 1/2"	1-245	4 1/2"	4 1/2"	3 3/8"	2.18
624	DC	2500	6 1/2"	1P-245	4 1/2"	4 1/2"	3 3/8"	2.18
811	DC	1000	8 1/2"	1-247	6"	4 1/2"	5 1/4"	3.38
821	DC	2500	8 1/2"	1-247	6"	4 1/2"	5 1/4"	3.38
812	DC	1000	8 1/2"	1P-247	6"	4 1/2"	5 1/4"	3.38
822	DC	2500	8 1/2"	1P-247	6"	4 1/2"	5 1/4"	3.38
823	DC	2500	8 1/2"	1-245	6"	4 1/2"	5 1/4"	3.38
824	DC	2500	8 1/2"	1P-245	6"	4 1/2"	5 1/4"	3.38
850	110V AC	60 cy.	8 1/2"	1P-245	6"	5 1/2"	9	6.45
855	110V AC	60 cy.	8 1/2"	1P-247	6"	5 1/2"	9	6.45
880	110V AC	25 cy.	8 1/2"	1P-245	6"	5 1/2"	9	7.65
865	110V AC	25 cy.	8 1/2"	1P-247	6"	5 1/2"	9	7.65
880	Dual DC	2500 Total	8 1/2"	1-247	6"	4 1/2"	10 1/2"	5.85
881	Dual DC	2500	8 1/2"	1P-247	6"	4 1/2"	10 1/2"	5.85
882	Dual DC	2500	8 1/2"	1-245	6"	4 1/2"	10 1/2"	5.85
883	Dual DC	2500	8 1/2"	1P-245	6"	4 1/2"	10 1/2"	5.85
680	Dual DC	2500	6 1/2"	1-247	4 1/2"	3 3/8"	7	4.50
681	Dual DC	2500	6 1/2"	1P-247	4 1/2"	3 3/8"	7	4.50
682	Dual DC	2500	6 1/2"	1-245	4 1/2"	3 3/8"	7	4.50
683	Dual DC	2500	6 1/2"	1P-245	4 1/2"	3 3/8"	7	4.50
1111	DC	1000	11"	1-247	8 1/2"	5 1/2"	6 1/2"	3.83
1121	DC	2500	11"	1-247	8 1/2"	5 1/2"	6 1/2"	3.83
1112	DC	1000	11"	1P-247	8 1/2"	5 1/2"	6 1/2"	3.83
1122	DC	2500	11"	1P-247	8 1/2"	5 1/2"	6 1/2"	3.83
1123	DC	2500	11"	1-245	8 1/2"	5 1/2"	6 1/2"	3.83
1124	DC	2500	11"	1P-245	8 1/2"	5 1/2"	6 1/2"	3.83
1150	110V AC	60 cy.	11"	1P-245	8 1/2"	6"	10	7.35
1155	110V AC	60 cy.	11"	1P-247	8 1/2"	6"	10	7.35
1160	110V AC	25 cy.	11"	1P-245	8 1/2"	6"	10	8.45
1165	110V AC	25 cy.	11"	1P-247	8 1/2"	6"	10	8.45
1180	Dual DC	2500 Total	11"	1-247	8 1/2"	5 1/2"	12 1/2"	7.15
1181	Dual DC	2500	11"	1P-247	8 1/2"	5 1/2"	12 1/2"	7.15
1182	Dual DC	2500	11"	1-245	8 1/2"	5 1/2"	12 1/2"	7.15
1183	Dual DC	2500	11"	1P-245	8 1/2"	5 1/2"	12 1/2"	7.15
1500	DC	2500	12 1/2"	1P-250	9 1/2"	9 1/2"	18	9.00
1501	AC 110	60 cy.	12 1/2"	1P-250	9 1/2"	9 1/2"	18	13.88
1502	AC 110	25 cy.	12 1/2"	1P-250	9 1/2"	9 1/2"	18	15.08
Concert	DC	2500	12 1/2"	1P-250	9 1/2"	10 1/2"	23	11.33
Con. No. 1	110V AC	60 cy.	12 1/2"	1P-250	9 1/2"	10 1/2"	23	16.35
Con. No. 7	110V AC	25 cy.	12 1/2"	1P-250	9 1/2"	10 1/2"	23	17.63
Midget Speakers for AC-DC Receivers								
7500	Auto	4 1/2"	7 1/2"	1P-38	4 1/2"	4"	5 1/4"	3.23
7501	Auto	4 1/2"	7 1/2"	1-238	4 1/2"	4"	5 1/4"	3.23
7502	Auto	4 1/2"	7 1/2"	1P-171	4 1/2"	4"	5 1/4"	3.23
7503	Auto	4 1/2"	7 1/2"	1-171	4 1/2"	4"	5 1/4"	3.23
8500	Auto	4 1/2"	8 1/2"	1P-38	6"	4 1/2"	8	3.90
8501	Auto	4 1/2"	8 1/2"	1-238	6"	4 1/2"	8	3.90
8502	Auto	4 1/2"	8 1/2"	1P-171	6"	4 1/2"	8	3.90
8503	Auto	4 1/2"	8 1/2"	1-171	6"	4 1/2"	8	3.90
Speakers for Automobile Receivers								
421	DC	2500	5"	1-247	3 1/2"	2 1/2"	2 1/2"	2.11
425	DC	2500	5"	1-243	3 1/2"	2 1/2"	2 1/2"	2.11
435	DC	3000	5"	1-243	3 1/2"	2 1/2"	2 1/2"	2.11
436	DC	3000	5"	1-238	3 1/2"	2 1/2"	2 1/2"	2.11
445	DC	4000	5"	1-243	3 1/2"	2 1/2"	2 1/2"	2.11
446	DC	4000	5"	1-238	3 1/2"	2 1/2"	2 1/2"	2.11

*Cone diameter refers to shortest distance from ridge to ridge.



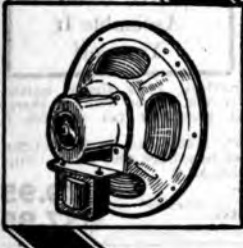
CONCERT
D.C.



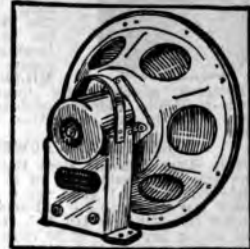
11" SERIES
A.C.



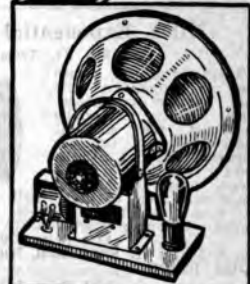
6" SERIES
D.C.



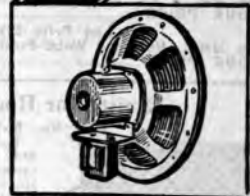
8 1/2" SERIES
D.C.



12 1/2" SERIES
D.C.



CONCERT
A.C.



11" SERIES
D.C.



11" MODEL
DUAL SPEAKERS



8 1/2" AUTO
SERIES

Be Assured that

Our Public Address Equipment Is Entirely Reliable

Every one of the public address amplifiers and associated equipment in this catalog is listed with a full set of accurate characteristics.

When we claim, for example, that an amplifier will put out 10 watts of undistorted power. **WE MEAN 10 watts.** This very same amplifier may perhaps be listed in another catalog as having a "power output of 15 watts." Such a rating, however is not of **UNDISTORTED POWER**, but rather **PEAK or DISTORTED** power output, which of course, is of no significance whatsoever for practical purposes.

Furthermore, when a rating of "gain per stage" is given, it may be entirely out of proportion to what conditions actually are. The ratings of our amplifiers are absolutely conservative and are obtained under actual working conditions. It is for this reason that we can **GUARANTEE** them to be exactly as represented.

YOU HAVE OUR WORD!

NEW!
A Remarkable Feat
5 WATTS
FROM A
D.C. AMPLIFIER



Never Before in Radio History The New 48 Tubes Make This Amplifier Possible! Will Operate 4 to 5 Full Dynamic Speakers

The power output of direct-current amplifiers in the past has been rather limited due to the fact that the highest available voltage on the plates of the tubes is 120 (except of course, in D.C. amplifiers designed to work from a 220 volt service line).

With this comparatively low voltage, it has been quite difficult in the past to design a circuit with sufficient gain per stage to assure a high degree of volume for public address work.

Now, with the advent of the new 48 tube—a tube designed especially for 110-120 volt work, an amplifier with a power output of 5 watts has been made available. The amplifier illustrated here, employs two of these new type 48 tetrode tubes in push pull arrangement. The amplifier may be entirely depended upon to give faithful service even under continuous operation.

The amplifier "picks a real wallop". You can be assured that it will fulfill your highest expectations. Three stages of amplification are employed. A type 36 tube is capacitively coupled to a 37 which in turn feeds into a pair of 48's in push pull arrangement. All component parts are mounted on a heavy metal chassis, finished in black crackle. Convenient binding posts are provided for easy connections.

SPECIFICATIONS:

Power Consumption—50 watts; Power Output, Undistorted—5 watts; Input Impedance—200,000 ohms; Output Impedance—5 and 15 to voice coils of dynamic speakers and 500 ohms to transmission line; Size—10" long x 9" wide x 8" high; Tubes—1-36, 1-37 and 2-48's; Current Supply—110-120 volts, D. C. Ship. wt., 15 lbs.

No. 755 5 Watt D.C. Amplifier.
YOUR PRICE—less tubes

List Price \$50.00

\$19.50



Will OPERATE 20 DYNAMIC SPEAKERS



28 WATT CLASS B AMPLIFIER Will Operate 20 Full-Sized Dynamic Speakers

The early class B amplifiers were famous for their inconsistency of reproduction on the higher frequencies. In other words, the high pitch of the violin, for example, or the clarinet were completely lost when amplified with a class B unit.

This difficulty, however, has been overcome in the design of this particular amplifier, through the use of a direct-coupled driver stage. Such an arrangement causes the high frequencies to be more accentuated, thereby flattening out the frequency response characteristics over the entire range of audio frequencies. It is an excellent amplifier for public address installation, in assembly halls, ball parks, airports or on a temporary basis for political meetings, carnivals, athletic meets, etc. **TWENTY FULL-SIZED DYNAMIC SPEAKERS CAN BE OPERATED** at good volume, if necessary. Under no circumstances should the average single speaker be connected to the output of this amplifier.

The circuit comprises a single type 58 tube, directly coupled to a 59, which in turn drives a pair of 59's in class "B" arrangement. A new type mercury vapor rectifier, the 83, supplies all plate current. All parts going into the construction of this heavy-duty outfit will safely stand reasonable overloads without breaking down. Furthermore, they are all mounted on an extra-heavy metal base which is beautifully finished in black crackle. All the necessary connections to the amplifier are made through convenient binding posts on the base.

SPECIFICATIONS:

Power Consumption—only 125 watts; Power Output, undistorted—28 watts; Overall Gain—80 decibels; Input Impedance—250,000 ohms; Output Impedance—4, 8, and 15 ohms for voice coils of dynamic speakers and 500 ohms for transmission line; Size—14" long x 12" wide x 10" high; Tubes—3-59's, 1-83 and 2-58; Current Supply—110-125 volts, 50-60 cycles. A.C. Shipping weight, 85 lbs.

List Price \$100.00

No. 756 28 Watt Class B Amplifier.
YOUR PRICE, less tubes

\$42.00

A REAL "Professional" JOB OPERATES 15 WATTS of POWER

OPERATES 12 DYNAMIC SPEAKERS USES-2A3's in PUSH-PULL



A distortionless Amplifier which sacrifices some of its power for tone fidelity. The advent of the new man-sized, 3 element tubes, such as the 2A3's takes us back to the tone quality obtainable before the days of the pentode and class "B" amplifiers.

This is an amplifier which gives REAL music—music which is hardly distinguishable from the original rendition. The power output is lower than some of the "A Prime" and class "B" outfits, but the relative power against distortion gives a considerably greater coverage per watt inasmuch as the distortion need not be taken into consideration in an amplifier of this type.

This amplifier is capable of serving a gathering of more than 4,000 people. The frequency response over the entire audio range is practically flat, which explains the fine tonal qualities. The circuit comprises 1—57 triple grid input tube, feeding a 59 power tube, which in turn, is coupled to the 2—2A3's in push pull. A type

5Z3 mercury-vapor rectifier supplies all plate current. All component parts are mounted on a heavy gauge metal chassis, beautifully finished in black crackle. Convenient binding posts are provided for easy connections to input and output circuits.

SPECIFICATIONS:
 Power Consumption—115 watts; Power Output—15 watts; Overall Gain—90 decibels; Input Impedance—250,000 ohms; Output Impedance—4, 8 and 15 ohms to voice coils of dynamic speakers. (May be had for other impedances at no additional cost.); Size—12" wide x 18" long x 10" high; Tubes—1-57, 1-59, 2-2A3's, 1-5Z3; Current Supply—110 - 125 volts, 50 - 60 cycles, A.C.; Shipping weight 55 lbs. List Price \$100.00

No. P-940 15 Watt 2A3 Push Pull Power Amplifier. **\$29.50**
 YOUR PRICE, less tubes

A 20-WATT BATTERY AMPLIFIER



NO EXPENSIVE TUBES
NO INSTALLATION PROBLEM
NO MOTOR GENERATOR

SPECIFICATIONS

Output—20 watts, 5% distortion—3.8% in 3rd harmonic—Gain—90.9 D.B. at 60 cycles—Input required for 20 watts output, 0.25 volt—Input impedance 100,000 ohms—Output impedance, 5—20 ohms—maximum output at 8 ohms—Filament voltage 8 volts D.C. or A.C., any frequency—Filament voltage may be varied between 5 and 7 volts without detrimental effect on tubes—Filament current, 3 amperes at 6 volts—Plate voltage—300 volts (from 180 to 300 may be used with corresponding output—voltage over 300 is not recommended.)—Six heavy duty B batteries may be used economically—Plate current—25 ma. no signal—average drain with signal 60 ma.—Tubes required: 1-236, 2-237, 4-112A.

Power amplification of a new principle now made available for automobile Public Address work—giving enormous undistorted output; ENOUGH POWER TO HANDLE 20 SPEAKERS AT SUFFICIENTLY GREAT VOLUME. The amplifier is very small and compact, measuring but 8 1/2" wide x 7" high x 12" long. The input is 100,000 ohms and the output directly to an 8 ohm voice coil. This output, however, may be modified to meet special requirements. The frequency characteristics are excellent—within 4 decibels between 60 and 8,000 cycles and 10 decibels between 40 and 10,000 cycles. Voltage input required is less than 0.2 volts for maximum undistorted power output. Gain is 100 decibels. Will operate from pick-up, microphones or radio. Excellent for Public Address work in churches, schools, theatres and all portable installations.

This amplifier weighs about 12 pounds, takes 2.9 amperes from a 6 volt storage battery, obtains sufficient plate supply from 6 heavy duty B batteries to operate for 6 months under normal usage. The filaments

may be supplied from any 6 volt source capable of furnishing 2.9 amperes. May be operated from A.C. line with an inexpensive rectifier and filter system. This amplifier lists for \$65.00 and gives an output of 18 watts with 270 volts of plate supply and 20 watts with 300 volts. The gain is sufficient that the amplifier may be used without additional amplification with two button microphones, phonograph pickup, or radio. Superlative workmanship and materials make this amplifier sturdy and reliable, capable of performing the most exacting tasks under the most trying conditions. Its simplicity, its tremendous power output, and its low cost, makes the Victory Amplifier an answer to your amplification problems. Ship. wt., 15 lbs.

List Price \$65.00
 No. D20 "Victory" 7 Tubes 20 Watt Power Amplifier for Portable Public Address Work **\$43.50**
 YOUR PRICE
 COMPLETE WITH R.C.A. LICENSED TUBES

"Esco" Rotary Converters



Changes D.C. to A.C.

These devices are a necessity in those metropolitan and suburban areas which are supplied with only direct current electricity. In order for residents of those areas to fully reap the benefits the modern, highly developed A.C. operated radio receivers, it is necessary for them to convert their direct current to alternating current. For that purpose, we have chosen and without regard for price, that machine likely to prove most efficient in operation over a long period of time.

THE "ESCO" CONVERTER UNITS ARE SPECIALLY DESIGNED FOR RADIO OPERATION; steel frame, double-wound armature, laminated steel pole-pieces, dynamic balance and perfect filtering. It is quiet and compact and may be kept in any out-of-the-way corner of clothes closet or attic. Requires practically no attention. Shipped complete with cord and plug. Furnished in sizes of from 60 to 500 watts output. Standard input voltages are 6, 12, 32, 115 and 230 volts D.C. Standard output current is 110 volts, 60 cycles A.C.

MOST POPULAR TYPES

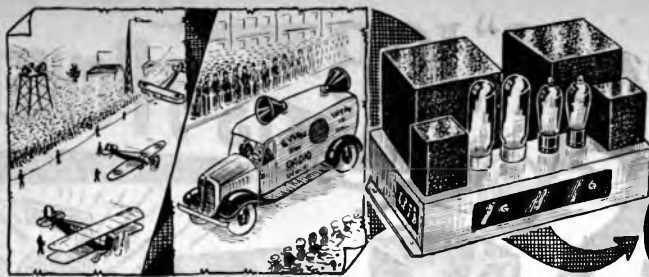
32 Volts D.C. to 110 Volts 60 Cycles A.C.		110 Volts 60 Cycles A.C.	
No.	Output Watts	Ship. Wt.	YOUR PRICE
R181	120	41 lbs.	\$49.50
R181	150	43 lbs.	58.00
R183	300	55 lbs.	80.00
LF85	500	80 lbs.	95.00

110-115 Volt D.C. to 110 Volts 60 Cycles A.C.		110 Volts 60 Cycles A.C.	
No.	Output Watts	Ship. Wt.	YOUR PRICE
R182	120	40 lbs.	42.50
R183	150	43 lbs.	58.00
R182	300	55 lbs.	80.00
R184	500	80 lbs.	100.00

220-230 Volts D.C. to 110 Volts 60 Cycles A.C.		110 Volts 60 Cycles A.C.	
No.	Output Watts	Ship. Wt.	YOUR PRICE
R182	120	89 lbs.	51.50
R183	150	43 lbs.	60.00
R182	300	55 lbs.	82.00
R184	500	70 lbs.	110.00

6 Volts D.C. to 110 Volts 60 Cycles A.C.		110 Volts 60 Cycles A.C.	
No.	Output Watts	Ship. Wt.	YOUR PRICE
R183	40	24 lbs.	65.00
RL184	150	43 lbs.	85.00

12 Volts D.C. to 110 Volts 60 Cycles A.C.		110 Volts 60 Cycles A.C.	
No.	Output Watts	Ship. Wt.	YOUR PRICE
R181	80	28 lbs.	70.00



50 WATTS of POWER for COLOSSAL GATHERINGS

USES HIGH-POWERED TRANSMITTING TUBES

A "CLASS A" AMPLIFIER USING TYPE 845 SUPER-POWER TUBES

This unit is essentially an "output" amplifier, which can be coupled to any existing public address amplifier (supplying at least 1 watt of power) in order to step up its volume to tremendous proportions.

It finds applications where exceptionally high volume is required, such as at AIRPORTS, ATHLETIC FIELDS, OUT-OF-DOOR GATHERINGS and in other places where the extraneous noise level is very high and must be overhauled by the volume of the amplifier. It is applicable to some of the largest of outdoor installations. This amplifier is composed of absolutely the finest parts and will reproduce music and speech with perfect fidelity. Its frequency response over the entire audio range is practically flat.

The circuit comprises two-type 845 transmitting tubes in a standard Class A push pull circuit. All component parts are rigidly mounted to the heavy metal

base which is beautifully finished in black crackle. All connections to the amplifier are made through conveniently mounted terminal posts on the base.

We must stress at this point that this amplifier must be operated by a "driver" amplifier of at least two stages.

SPECIFICATIONS:

Power Output—50 watts; Input Impedance—300 ohms; Output Impedance—500 ohms and 125 ohms (special impedances on order); Size—16" x 16" x 12" high; Tubes—2-845's, and 2-866's; Current Supply—120-125 volts, 50-60 cycles, A.C.; Ship. wt. 85 lbs.

List Price \$175.00

No. 9845 50 Watt "Auxiliary" Heavy-Duty Amplifier
In "Class A" Arrangement.
YOUR PRICE—less tubes

\$95.95

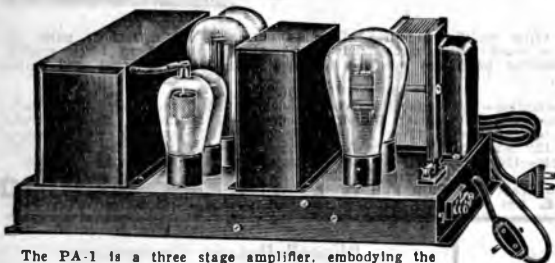
"250" PUSH PULL POWER AMPLIFIER

13.8 WATTS POWER

NO DISTORTION

LATEST TUBES

WILL OPERATE 8 DYNAMIC SPEAKERS



The PA-1 is a three stage amplifier, embodying the new 58 and 56 tubes, and push pull 250's. The extremely high gain of these new tubes, low hum level and unusually fine frequency response results in an amplifier with an undistorted power output of nearly 13 watts. Many fine P.A. installations in theatres, auditoriums, dance halls, stadiums, and other public places incorporate this fine amplifier as the fundamental amplifying unit.

One of the noteworthy features of this instrument is its extremely flat frequency response from 45 to 15,000 cycles—in other words frequency response which is flat throughout the entire range of audio sound. This results in a quality of reproduction which parallels the original rendition. Other salient features are fine voltage adjustment, protective fuse, logarithmic—tapered volume control, master feed-through switch, Balden line cord with unbreakable rubber plug. Field current is provided for the field coil of a large dynamic speaker;—or an A.C. speaker may be connected without the use of external chokes or resistors as usually required by most amplifiers which supply field current.

The amplifier is constructed on a heavy steel base, all parts being mechanically and electrically shielded. The finish throughout is smooth, black lacquer. General instructions for hooking up this amplifier are regularly furnished.

SPECIFICATIONS

TUBES—1st stage 1-58, 2nd stage 1-56, 3rd stage 2-250 push pull, rectifier 2-2N1 full wave.

INPUT—To any high impedance pickup. Coupling transformer should be used for microphone input or low impedance pickup.

OUTPUT—Low impedance output direct to standard 10 or 15 ohm voice coil. High impedance output to couple to 4000 ohm input transformer.

MAXIMUM UNDISTORTED POWER OUTPUT—13.8 watts.

INPUT SIGNAL TO OBTAIN MAX. U. P. O.—0.6 volts.

GAIN AT 1000 CYCLES—58 db.

HUM LEVEL—1/3% or 45 db. below maximum undistorted output.

SPEAKERS—Will supply up to 8 large dynamic speakers, or 25 magnetic speakers.

FIELD SUPPLY—Will furnish current to a large dynamic field of 50 ohms.

POWER CONSUMPTION—150 watts.

SIZE (overall)—17 1/4" long, 11 1/4" wide, 7 1/4" high.

SHIP. WEIGHT—42 lbs. List Price \$35.00

No. PA-1 "250" Push Pull Power Amplifier.

YOUR PRICE, less tubes **\$19.75**

COMPLETE PORTABLE PUBLIC ADDRESS SYSTEM

Comprises Microphone, Loftin-White Direct-Coupled Amplifier and Full Dynamic Speaker

\$24.95



A recently completed all-electric A.C. development incorporating all the features and advantages of the direct-coupled Loftin-White amplifier principle. THE AMPLIFIER IS A HIGH QUALITY TWO STAGE JOB HAVING SOME RADICALLY NEW IDEAS IN AUDIO FREQUENCY AMPLIFICATION and employing 1-27, 1-15 power tube and 1-80 full-wave rectifier. When used with a microphone, no additional amplification is necessary. This is due to the inherent characteristics of the Loftin-White circuit. The high impedance secondary of the "mike" transformer automatically increases the gain and compensates for the low input voltage of the microphone.

The design is adaptable to all purposes, i.e., microphone, radio and phonograph. Has an undistorted output of approximately 3.5 watts—SUFFICIENT POWER TO OPERATE FROM TWO TO THREE ADDITIONAL SPEAKERS. COMPLETE WITH R.C.A.-VICTOR "MIKE".

This high gain Portable Public Address system is sold complete with the new R.C.A. Victor Hand Microphone—a sturdily constructed unit which will withstand a lot of rough handling. This microphone was originally part of the expensive R.C.A.—Victor Radio-Phonograph—Home Recording outfit;—an extremely sensitive instrument excellently suited for Public Address work.

PUT UP IN A COMPACT, PERFECTLY BALANCED CARRYING CASE, the front of which is utilized as a baffle for the self-contained full dynamic speaker. Designed for operation on 110-20 volts, 50-60 cycle A.C. EXCELLENT FOR USE ON AUTOMOBILE ADVERTISING INSTALLATIONS.

In order to do this however, it is necessary to employ a Six-Volt Rotary Converter for changing the direct current of the car storage battery to 110 volts, 60 cycles, A.C. We recommend for this purpose our "Esco"—R-181, 80 Watt Rotary Converter, listed elsewhere in this catalog. Shipping weight, 38 lbs. No. 8063 Versatile Portable Public Address System

Complete with Microphone **\$24.95**
YOUR PRICE, less tubes

"PACKARD" AUTOMATIC RECORD CHANGER

Plays 8 Records Continuously—Automatically

You can now, at practically the same cost as straight turntables, make all of your installations with the "Packard" Automatic Record Changer. The illustration at right suggest the proper method for mounting this apparatus.

The Record Changer mechanism is extremely simple and, therefore FOOL PROOF. Performs the same work as more expensive apparatus and yet requires considerably less space for mounting. The smallest space into which the "Packard" Record Changer may be installed (inside measurements) is 17 1/2" long x 5 1/2" high x 13 1/2" wide. This includes sufficient space for record tray. Overall height above base plate 3 1/2". Overall depth below base plate 3 1/4".

The "Packard" Changer is of steel construction, heavily copper-plated and finished in stately bronze. It plays eight 10" records automatically and will repeat any of these records as many times as required when properly adjusted. Will also play 12" records but only manually, not automatically. Incorporates a high-quality two-speed MOTOR FOR 78 AND 33-1/3 R.P.M. RECORDS. The electric phonograph pickup is a carefully constructed instrument, incorporating volume control and weight-pressure adjustment. This Changer is an excellent device for converting obsolescent radio phonograph combinations into modern up-to-date automatic instruments. Used extensively in theatres, res-



taurants, ballrooms, etc. Operates on 110-20 volts, 50/60 cycles, A.C. but may be had for other voltages and frequencies at a small additional cost. "Packard" Record Changer is shipped express collect, directly from the factory at Elyria, Ohio. Ship. wt., approximately 22 lbs.

List Price \$50.00

No. 8 "Packard" Automatic Record Changer.

YOUR PRICE **\$26.95**



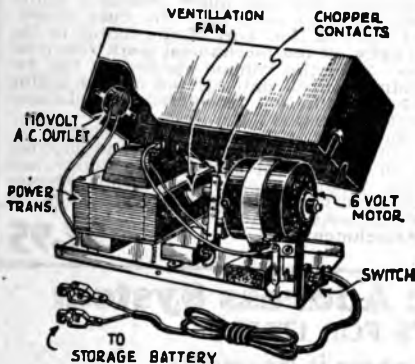
This amplifier due to its extreme compactness and hum-free operation lends itself to a variety of uses; among them being inter-office communication systems. It has sufficient power to fully energize **THREE DYNAMIC SPEAKERS**. Restaurants, offices and hotels can use this fine little outfit for paging systems. A real neat, little job which may be depended upon to give continuous, reliable service, day in and day out.

Many of our customers are utilizing this amplifier to completely electrify their present phonographs. The only additional unit required is a phonograph pickup, many of which are listed elsewhere in this catalog. The fine quality of electrical reproduction of records with such an outfit is undoubtedly worth the expense of installation.

All component parts are neatly mounted on a heavy-gauge metal chassis, beautifully finished in black crackle. Convenient terminal strips give access to both input and output circuits.

These Universal Converters Generate 110 Volts A.C. From 6 Volt Storage Batteries

Excellent for Public Address Trucks, Etc.



These units have been scientifically engineered and represent the most efficient and economical means of converting low voltage D.C. sources, such as storage batteries and the like into 110 volts, A.C. Recommended for operation of any 110 volt A.C. device, particularly sound amplifiers for trucks and for all portable uses where commercial current is not available.

Many uses, other than for operation of sound devices, will present themselves; such as Neon signs, Portable Transmitters, etc. Within their rated capacities, Universal Battery Converters will be found highly efficient in operation, well-constructed mechanically and extremely reliable. Incorporates a minimum of moving parts to wear out or require frequent adjustment. Therefore, the expense of replacing worn parts through constant use is amazingly low. These converters are shipped via express collect, directly from the factory in California.

MODEL 60-60 WATTS, operates from 6-volt storage battery and has an output of 60 watts. The battery drain is 90 watts. (6 volts at 15 amps.). Recommended for operation of 3-stage push pull power amplifiers, using 45, 36 or 47 tubes; or an amplifier requiring less energy than above plus a loud speaker field. Size 4 1/2" x 3" x 10 1/2". Ship. wt. 15 lbs.

YOUR PRICE \$19.95

MODEL 150-150 WATTS, operates from a 12-volt storage battery (two 6-volt storage batteries in series) and has an output of 150 watts. The battery drain is 216 watts (12 volts at 18 amps.) and is recommended for operation of 3-stage sound amplifiers, using push pull 250 output tubes; and in addition, will operate power speaker field. Size 6 1/2" x 6 1/2" x 22". Ship. wt. 26 lbs.

YOUR PRICE \$35.28

SPECIFICATIONS:

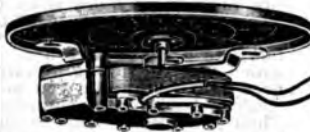
Power Consumption—60 watts.
Power Output—3 1/2 watts.
Overall Gain—90 decibels.
Input Impedance—200,000 ohms.
Output Impedance—5,000 ohms.
Size—10" long x 9" wide x 8" high.
Tubes—1 - 57, 1 - 59 and 1 - 83.
Current Supply—100 - 125 volts, 50 - 60 cycles, A.C.
Ship. wt., 18 lbs.

List Price \$30.00

No. 754 3 1/2 Watt Mighty Midget Amplifier.

YOUR PRICE, less tubes \$9.90

Allen Hough A.C. Phonograph ROTOR SYNCHRONOUS MOTOR

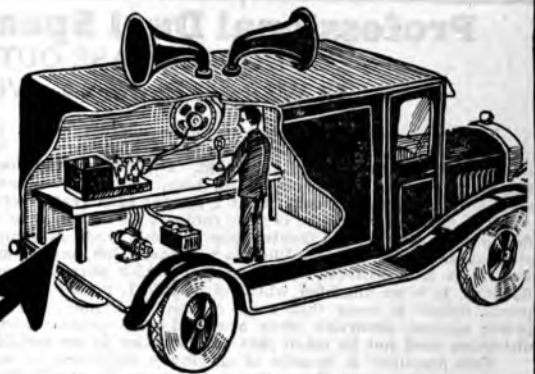


A new, all purpose A. C. silent electric synchronous phonograph motor equipped with turntable. Sturdy and compact, only 1 1/4 inches thick. Starts and stops at the mere touch of a finger. A MARVEL OF ELECTRICAL ENGINEERING. Regardless of voltage fluctuations, the turntable REVOLVES EXACTLY 80 TIMES IN ONE MINUTE. For 110 volt, 60 cycle A.C. Ship. wt., 7 lbs. Complete with fine felt turntable.

No. 2000 A. H. Phonograph Motor.

YOUR PRICE \$3.35

A 10 Watt 245 Dual Push-Pull "A Prime" Power Amplifier Recommended for Mobile Public Address Work



This amplifier is capable of covering indoor or outdoor gatherings, up to 2,500 people. When used in conjunction with a 60 watt converter, which operates from the storage battery of the car, it can very economically be used as a Mobile Public Address outfit. Employing as it does, two triple grid 57's, feeding into push pull 245's. It is capable of delivering fully 10 watts—ENOUGH TO OPERATE 8 FULL DYNAMIC SPEAKERS.

The amplifier has self-contained input and output transformers and may be used in conjunction with either single or double-button microphones, low or high impedance pickups and radio tuners. Through the use of capacity coupling between the push pull stages, the frequency characteristic is practically flat. The amplifier is equipped with a dual gain control, giving perfect attenuation. Employs either a 280 or a 523 rectifier. (Specify which when ordering.) The amplifier is a professional appearing job, being constructed on a heavy metal base, finished in black crackle.

SPECIFICATIONS:

Power Consumption—55 watts.
Power Output, Undistorted—10 watts.
Overall Gain—Over 85 decibels.
Input Impedance for 1 and 2-button microphones and low or high-impedance pickups.
Output Impedance—4, 8 and 15 ohms to voice coils of dynamic speakers.
Size—11 1/2" long x 6 1/2" wide x 7" high.
Tubes—2 - 57's, 2 - 45's, 1 - 80 or 1 - 523.
Current Supply—110-125 volts, 50-60 cycles, A.C.
Ship. wt., 35 lbs.

List Price \$45.00

No. P-939 10 Watt 245 Dual Push Pull "A Prime" Power Amplifier.
YOUR PRICE, less tubes \$17.85

GREEN FLYER TWO-SPEED PHONOGRAPH MOTOR

33-1/3 and 78 R.P.M.



A very fine and powerful motor for combination radios and phonographs, portable electric pick-up sets, portable address systems and for all other purposes where a rugged, hum-free motor is required.

These models will play the latest type long playing records as well as the standard ones. The speed is easily and smoothly controlled by a governor.

Presents **ABSOLUTE UNIFORMITY OF SPEED** under extreme voltage and frequency variations. Will not overheat in closed cases or cabinets. Has silent, spiral-cut fibre gears and long, over-size SELF LUBRICATING BEARINGS. Sold complete with 10 in. turntable, speed indicator dial, speed indicator pointer, speed change escutcheon plate, speed change pointer and mounting hardware. Shipping weight, 15 lbs.

No. 2008 Green Flyer Two-Speed Phono-Motor—60 cycles A.C. **YOUR PRICE \$11.25**

No. 2009 Green Flyer Two-Speed Phono-Motor—25 cycles A.C. **YOUR PRICE \$12.00**

Add 70c more for 12" turntable

Six Volt D.C. Phonograph Motor

Designed Especially for Portable Public Address Work

Here at last is a six volt D.C. Electric Phonograph motor for use on sound trucks and various other portable public address outfits. This unit is made by the makers of the famous Blue and Green Flyer motor; which is an assurance of its reliability under continuous operating conditions. Will play latest type 33-1/3 R.P.M. records as well as the old style 78 R.P.M. records. The change from 33-1/3 to 78 R.P.M. is easily accomplished by a convenient lever. The motor is furnished complete, mounted on a plate ready for installation. Its open construction allows perfect ventilation. Absolute uniformity of speed against voltage variation and record drag is guaranteed. Ship. wt., 15 lbs.

List Price \$25.00

No. "6-V" 6-volt D.C. Phonograph Motor. **YOUR PRICE \$17.87**

UTAH REMOTE CONTROL ATTACHMENT

COMPLETE . . . NOTHING ELSE TO BUY

In the two preceding editions of this catalog, in this very same space, we listed a Colonial Remote Control Attachment. (Now listed on page 94.) More than 800 of these units were sold and yet orders keep pouring. This is an indication of the tremendous amount of interest in remote control attachments.

And no wonder! for imagine the convenience of just sitting back in an easy chair or lying in bed and merely by turning a knob, or pressing a series of buttons, starting the radio located in a far off room or hidden away in the basement. Not only that, but selecting one of nine popular stations from a remote point. A remote control is a highly precise instrument designed to tune your radio automatically from a far-away point.

This particular remote control unit was made by the Utah Company for some of the popular receivers which sold for more than \$300.00. Yet, you or anyone else, without the use of tools can attach it to your own radio in less than a half-hour's time.

You can then hide the radio in a closet, basement, or some other out-of-the-way place and extend wires to any number of speakers strategically located in various parts of your apartment. Imagine the surprise of your friends or guests at dinner, when by merely turning a knob on a beautiful etched metal plaque, the room is gradually flooded with beautiful music or other entertaining programs. Besides being very novel it is also very practical.

RADIO SERVICE MEN & CUSTOM SET BUILDERS—HERE IS YOUR OPPORTUNITY

You need but mention the word "remote control" to your customer and immediately you command his entire interest and attention. You are able to do this because the idea to him, is new and because it immediately implies expensive equipment. However when you inform him that you can adapt his radio for remote control operation for only a few dollars more, his interest will most certainly materialize into an order. We need not give YOU any more talking points on this subject because you probably can muster up more than we.

EXTREMELY SIMPLE TO OPERATE

This instrument has no revolving motor gears or other elaborate machinery to get out of order. It comprises but one quiet induction motor which does all tuning, in either direction, automatically. In order to connect it to your radio you need but connect the shaft of the motor to the shaft of your tuning condenser. That's all the mechanical work required! Then you merely remove the wires from the volume control on the receiver and attach them to the volume control unit located on the tuning control board. — Simple! Isn't it? For different receivers slight changes in the volume control wiring may be necessary.

Any station in between any of the nine popular ones for which the remote control has been adjusted can easily be obtained by manipulating the two so-called "DX" buttons on the control board. The illustration clearly shows the simplicity of the apparatus. No instructions accompany the unit inasmuch as its simplicity is self-explanatory. Shipping weight 14 lbs. LIMITED QUANTITY—ACT FAST!

No. 338 Utah Remote Control Attachment.
YOUR PRICE, ONLY

ONLY
\$4.95
Complete



Professional Dual Speaker Portable Public Address System

A DOUBLE CASE OUTFIT WHICH QUICKLY PAYS FOR ITSELF

15 Watts of Power . . . Will Operate Ten Additional Speakers if Necessary

The most convenient form of public address outfits is the portable type. It can be picked up at a moment's notice and taken anywhere for regular or emergency use. Takes but a minute to set up and get going. Servicemen and dealers are now renting and selling amplifiers for use in schools, clubs, hotels, banquets, plays, lectures, dances, etc. Portable amplifiers are the most convenient types for such rental service.

The outfit offered here is very compact. The complete system comprises a power amplifier in one case and two theatre type dynamic speakers mounted on the two detachable halves of another case. The amplifier is a 3 stage job having an undistorted output of fully 15 watts. It is a distortionless amplifier which sacrifices some of its power for true tone fidelity. It is an amplifier which gives REAL music—music which is natural, life-like. The power output is lower than some of the "A Prime" and "Class B" units, but the relative power against distortion gives a considerably greater coverage per watt inasmuch as the distortion need not be taken into consideration in an amplifier of this type.

This amplifier is capable of serving a gathering of more than 4,000 people. The frequency response over the entire audio range is practically flat, a fact which explains its exceptional tonal qualities. The circuit comprises 7 tubes namely, 2-58's, 2-56's, 2-2A3's and 1-5Z3 mercury vapor rectifier. IT IS A TRIPLE PUSH-PULL AMPLIFIER WITH A GAIN PER STAGE OF MORE THAN 90 DECIBELS. Has an input impedance of 200 ohms and output impedances to match 125, 250 and 500 ohm lines.



Duo-Speaker Unit—Opened



Amplifier

Duo-Speaker Unit—Closed

The speaker assembly is composed of 2 theatre type dynamic speakers, assembled in a sturdy leather case which can be separated in the center and located in various positions. The speakers have an interconnecting cable and a 50 foot cable which connects with the amplifier. The case sections in which the speakers are mounted are cut on the bias so that they are self-supporting.

These units can be used with a suitable turntable and phonograph pickup for the reproduction of records or for the recording of music and voice. Can also be used in conjunction with radio tuners, motion picture projectors and for a variety of other useful purposes. Shipping weight of amplifier in carrying case 80 lbs. Shipping weight of double speaker unit in carrying case 40 lbs. List Price \$250.00.

No. P-1905 Professional Dual Speaker Portable Public Address System.

YOUR PRICE

\$89.50

Big 8-Tube Set Bargain

Complete with 11" Dynamic Speaker

FULL VISION AIRPLANE DIAL

TONE CONTROL

PHONOGRAPH JACK

Limited Supply

ONLY **15.95**

"THE GREATEST SET BUY IN AMERICA" is by all means a mild description of the value which we are offering here. This very same 8-tube receiver as recent as eight months ago, sold for more than \$95.00, yet now, because of the advent of even later type tubes, you can purchase this receiver for only a small fraction of that price. The tubes employed in this set are still comparatively new; and not only that, but all modern features such as 2A5 parallel output, tone control, phonograph attachment provisions, full dynamic speaker, etc., are incorporated.

The selectivity and sensitivity of this 8-tube receiver, due to its 4 tuned stages, are just as sharp as those of an 11-tube superheterodyne. The construction of the set is best described as "standard," for its circuit is none other than the "good old stand-by" T.R.F. type modified and improved to use these later type tubes. It incorporates 2 stages of tuned R.F. amplification, using known 58 triple grid tubes; followed by a 56 detector. From there the signal is amplified by a type 56 first audio tube, and from there still further amplified by the powerful push-pull 2A5 power output tubes. By the time the signal comes out of these tubes, it is strong enough to operate 4 or 5 dynamic speakers very easily, and many times that number magnetic speakers. A type 80 full-wave rectifier is employed. All provisions for supplying field power to the 11" genuine Oxford dynamic speaker, is incorporated.

Tuning is extremely simple and very sharp, being comparable to the tuning of a superheterodyne receiver. A new type full-vision airplane dial is employed. The three controls on the front of the chassis consist of tuning knob, tone control knob and volume control, respectively. The chassis itself is made of heavy steel, beautifully black enameled. All tuned circuits are thoroughly shielded, including the tubes and condensers. This prevents feedback whistling and howling. The use of 4 tuned circuits employing the new triple grid, screen grid tubes and high gain R.F. transformers, together with careful wiring



Not a Midget!
but a full-sized CONSOLE CHASSIS

and by-passing, results in extremely high sensitivity. Many of our satisfied customers inform us that a good variety of distant stations come in regularly like locals. And why shouldn't they, for 4 tuned stages is more than what even more recent sets are employing, and everyone knows that the more tuned stages you have, the greater is the sensitivity and particularly the selectivity of a receiver. Tone quality, too, is extremely fine and can be controlled to suit the individual, from very high treble down to deep bass.

Here is an opportunity for wide-awake servicemen to "clean up." There are not very many more of these excellent chassis available, hence "first come, first served." Judging by the rapidity with which our "Peerless" receivers sold a few months back when we had a sale on them, the supply of these considerably superior receivers will not hold out very long. The moral is, "Don't delay, order today." Overall size of chassis, 15 1/2" x 11" x 8 1/2". Shipping weight, 40 lbs.

List Price \$95.00
No. 2000N 8 Tube T.R.F. Receiver, Including Dynamic Speaker But Less Tubes. **\$15.95**
YOUR PRICE

TUBES: 3 58's, 2 56's, 2 2A5's, 1 80 — **\$5.75**

Shure Two-Button Microphone



A large sized high quality two button microphone for public address systems and amateur broadcasting. Incorporates many high quality features not available in cheaper models. New glazed carbon button discs, adjustable buttons, gold-plated diaphragm tuned and clamped by a special process. Each unit is individually assembled and tested by experts in the laboratory. Has all the new Shure features including the new "Quickway" hooks (for easy attachment of microphone springs), a screen across the face of the microphone to eliminate the need of covers. Designed along modernistic lines with bevelled edge and many other features which have made these microphones so well known for quality and performance.

Operates best at 6 to 8 mills per button. Any greater current than 12 mills will ruin the microphone. Total internal resistance 200 ohms, per button. Diameter over all 3.9/16", diameter of frame 3/4" thickness over all 1 1/4". Individually packed and including wiring diagram. Guaranteed if not abused. Shipping weight, 2 1/4 lbs.

No. 22-N Shure Two Button Microphone, Chromium Finish. **\$12.95**
YOUR PRICE

Shure Two-Button Hand Microphone

This particular microphone has been designed especially for transmission of voice. It is not recommended for music. The case of the microphone is provided with covers and screen and is highly nickel plated. The handle is finished in black rubberized japan and is designed along modernistic lines. A hook is provided on the top for suspending the microphone. The unit is especially useful for industrial and home talking picture machines, home recording, public address outfits, etc., etc. Operates best at 6 to 8 mills per button. Limit of guarantee, 12 mills per button. Total internal resistance 400 ohms or 200 ohms per button. Thickness overall 1 1/4", diameter overall 3 1/2", diameter of frame 2 1/4". Each microphone packed individually with wiring diagram and instructions. Finished in nickel. Shipping weight, 1 1/4 lbs.

No. 11-N Shure Two Button Hand Microphone. **\$7.95**
YOUR PRICE

Lifetime Double Button Mike



A high quality instrument designed for speech and music. Gold spotted duralium diaphragm. Ruggedly constructed of brass, heavily chromium plated. Requires 6 to 8 mills for operation. Ship. wt., 2 lbs.

List Price \$14.00
No. 8 Lifetime 2 Button Microphone **\$3.95**
YOUR PRICE

Universal Pre-Grooved Recording Disc

For Home Recording

A well-made disc which incorporates all the latest improvements of both sound and acoustical engineering. Universal pre-grooved, aluminum discs assure greater volume, brilliancy and durability. Discs are double-faced, permitting recording on both sides. Available in three sizes—6 in., 8 in., and 10 in. diameter.



Records may be made with ordinary blunt home-recording needles and played back with wood or three needles. To secure best results, a suitable weight, depending upon the power of the turn-table, must be applied to the top of the pickup while recording. Also furnished ungrooved at the same prices.

No.	Size	List Price	YOUR PRICE
"REM"	6 inches	\$0.50	\$0.28
"REMET"	8 inches	.75	\$0.44
"REMEX"	10 inches	1.00	\$0.50

Gentlemen:

Received the pickup in first-class condition. Very well pleased with it. Will give you more orders in the future. Will appreciate it if you will send your catalogs regularly. I also appreciate the effort you put forth in securing the articles I ordered.
John H. Jackson,
1619 Chestnut St.
Augusta, Ga.

THE "RADIO MODULATOR" PUBLIC ADDRESS CONVERTER

Converts Every Radio Set Into A Public Address System

Here is the most radical, the most revolutionary device in the public address field. It will take any 110 volt AC or DC radio and convert it into a full fledged public address system. It is actually a miniature transmitting station connected directly to your radio. Not only can it be used as an emergency public address outfit for professional work but also for home entertainment. It is the ideal method of reproducing one's own voice or music through a radio receiver. Neither the voice or music is distorted, nor does it sound "tinny". In fact the tone and fidelity of reproduction is indistinguishable from that received over the air.

The "Radio Modulator" is very easily and SAFELY connected to ANY radio set. Only four operations are necessary, namely: (1) plug the Radio Modulator in the AC or DC line. (2) Disconnect the aerial wire from the set and in its place connect one wire from the "Radio Modulator". (3) Connect the other wire to the ground post. (4) Set the tuning control of the radio at about the middle of the dial. The entire system is now ready for operation.

IT IS NOT NECESSARY TO USE PLUG-IN ADAPTERS. REMOVE ANY TUBES OR TAMPER WITH THE RADIO CHASSIS IN ANY WAY. TWO CONNECTIONS TO THE AERIAL AND GROUND POSTS OF THE RADIO RECEIVER IS ALL THAT IS NECESSARY.

THE "RADIO MODULATOR" IS NOT A TOY. It is a REAL professional outfit which may be used in professional set ups. When used in conjunction with any good AC or DC operated radio, it is the equivalent of any public address system designed particularly for public address work. The power output of the combination of the "Radio Modulator" and radio receiver depends entirely upon the power output of the



receiver with which it is being employed. Many radio sets have fine quality and plenty of power, so that when the Radio Modulator is used with them an excellent public address system is the result.

TECHNICAL DESCRIPTION
Those who are technically inclined will be interested in knowing how the Modulator works. It employs a highly developed modulated oscillator circuit, designed by microphone experts. The sounds picked up by the microphone modulate the entire radio set from the antenna post to the loud speaker. No part of the radio is omitted from this hook-up; radio frequency, detector and audio stages are all utilized. The Radio Modulator operates from any 110 volt AC or DC light socket. All the component parts are contained in a grained walnut cabinet which will enhance the appearance of any room or radio cabinet. The entire "Radio Modulator" consists of the modulator, 2 button microphone, stand, 3 tubes and 50 feet of microphone cable. Ship. wt., 25 lbs.

List Price \$33.50
No. 99 "Radio Modulator" Public Address Converter. **\$21.95**
YOUR PRICE

Universal Microphones and Pre-Amplifiers

Model "K" Desk Type Stand



Model "K" is 5 inches in diameter and is used for mounting Model "A" or Model "BB" microphones on 4 points of suspension, using 8 springs—the ideal way to suspend a microphone. The base is set in a moulded rubber ring forming a cushion against vibration and preventing damage to polished surfaces.

The entire unit is beautifully plated in deep maroon statuary bronze. Provided with a finger ring for carrying. Cable passes through the hollow base. This stand is also available with attractive covers as illustrated. Desirable protection from the curious is secured by employing the beautifully turned and screened covers. The covers are sprung into position, eliminating rattle mechanisms which are liable to rattle. Make a substantial and businesslike appearance. Measures 8 ins. high and sold complete with 8 suspension springs. Shipping weight of stand alone—3 1/2 lbs., stand with covers—4 1/2 lbs.

No. "KIND" Model "K" Desk Stand Less Covers **YOUR PRICE** \$2.35

No. "KINDNESS" Model "K" Desk Stand With Covers. **YOUR PRICE** \$4.53

Universal "BB" Two-Button "Mike"

The masterpiece in two-button microphone construction Model "BB" is nearly twice as heavy as any other microphone in its class. Built to half-line precision. An idea of the ruggedness can be obtained by the fact that Model "BB" is 3 ins. in diameter by 2 ins. thick.

It is built especially for voice-pickup, public address work and for amateur radio casters, experimenters, halls, ballrooms, speaker wagons, etc. Made in beautifully finished, highly polished chrome-plate.

Model "BB" has extra heavy 24-Kt. pure Gold-Spot Centered, Durallum diaphragm. Has a frequency range of from 70 to well over 4,000 cycles; 200 ohms per button. Shipping weight, 2 lbs.

No. "BET" Universal "BB" Two-Button Microphone. **YOUR PRICE** \$14.70

Universal Two-Button Midget "Mike"

A REAL Instrument



In appearance and operation, this sensitive instrument is essentially similar to its larger and more expensive brethren. Its reduced size, however, makes it much sturdier and more convenient for use in Portable Public Address and other outfits. Is of the standard 200 ohms per button. Has non-breakable duraluminum diaphragm which is gold-plated where it makes contact with the microphone buttons. Non-corrosive—scientifically damped

—no hiss level—laboratory tested. Its fidelity in reproducing voice and music frequencies with truly natural tone will surprise you. Can be mounted in any type of microphone stand. Measures 2 1/2 ins. in diameter x 1 in. thick. Furnished in non-tarnishing, non-corroding chromium plate. Shipping weight, 1 1/2 lbs.

No. "X" Universal Two-Button Midget Microphone. **YOUR PRICE** \$5.88

Universal Model X Pre-amplifier

For 2-Button Microphones

An extremely compact and efficient unit designed to "boost" the weak microphonic currents to proportions which will correctly match the input stages of all type amplifiers. May be used with either one or two button microphones. This pre-amplifier unit provides a "booster" circuit with transformer, variable volume control and battery receptacle and switch, all contained in a neat compact case, finished in russet leatherette lacquer and complete with 4 rubber feet in the base. The volume control potentiometer is across the secondary of the transformer and incorporates a switch which turns the battery off when not in use. All connections are plainly marked. Measures 3x3 1/2 ins. Shipping weight, 3 1/2 lbs.

No. "X" Universal Model X Pre-amplifier. **YOUR PRICE** \$4.12



Build Your Own Microphones!

Latest Types - - - Just Released

Bruno Ribbon-Type Velocity Microphone

Available Either in Kit Form Or Assembled



Here indeed is the ULTIMATE in microphones. May be subjected to all extremes of weather or submerged in water and still it will perform perfectly. Responds uniformly to a frequency range of from 30 to 14,000 cycles. IT IS FREE FROM RESONANT PEAKS. It will not pick up extraneous noise or cause feed back due to its highly directional quality. In other words it is the "PERFECT MICROPHONE".

altitude or humidity. Its construction is so rugged that if handled roughly or even if dropped there is no danger of major injury. This fine instrument is available either in kit form or completely wired ready to use. All component parts are finely machined and accurately matched so that they can be assembled in less than one hour's time. Complete instructions and amplifier diagram furnished FREE with each instrument.

IT IS IMPORTANT TO NOTE that the usual microphone transformer will not match this ribbon microphone. Therefore we are listing below a number of specially constructed transformer designed to be used with this fine precision instrument:

AR-1 Bruno Ribbon Microphone Kit	\$10.00	\$5.88
AR-2 Bruno Ribbon Microphone, assembled ready to use	20.00	11.76
RL Transformer, Mike Ribbon to line	7.50	4.41
LG Transformer, Line to Grid	7.50	4.41
RG Transformer, Mike Ribbon to Grid	7.50	4.41

BUILD YOUR OWN CONDENSER MICROPHONE!

A Real Professional Unit

Anyone with a ny knowledge at all of radio is aware of the advantage of the condenser microphone over the carbon mike. No hiss — no noise. Everything is natural, life-like.

The Bruno condenser microphone is a full fledged professional instrument which is daily replacing the now antiquated carbon microphone. It is made with microscopic precision and tested over the entire audible range of frequencies. Just listen to a Bruno! It is clear pitched, free from hisses and other interferences; no distortion, no frequency cut-off.



EASY TO ASSEMBLE

Anyone at all can assemble this condenser microphone kit in less than an hour. The parts are simple and easily handled. All the parts are carefully made and machined so accurately that they fit perfectly in assembly. Once assembled, the microphone is fully enclosed and, therefore, free from dust, dirt, and climatic conditions. This microphone may be had fully assembled, ready to use at the additional price shown below. A complete and detailed diagram as well as a full set of instructions for assembling the microphone and for building its associated amplifier circuit is furnished FREE with each outfit. Ship. wt., 4 lbs.

List Price \$5.00
No. 1617 Bruno Condenser Microphone Kit. **YOUR PRICE** \$2.94

List Price \$10.00
No. 1618 Bruno Condenser Microphone Assembled Ready to Use. **YOUR PRICE** \$5.88

Universal Single Button "Handi-Mike"



A sturdily constructed, remarkably sensitive hand microphone for use where quality reproduction of all speech frequencies is essential. Intended for voice only. This microphone is standard equipment on many of the more expensive home recording and public combination outfits. Finished in gunmetal and equipped with an "on/off" toggle switch, 15-foot cord, and metal eye at the extreme top for hanging while in or out of use.

The unit itself is scientifically constructed with gold-plated button and mounted in sound damping resilient felt. The entire assembly is the result of exhaustive study and tests to produce the most efficient general utility microphone on the market. Packed in individual boxes. Measures 2 1/2 ins. across the head and 6 ins. long. Complete instructions for hooking up are included with each unit. Shipping weight, 2 lbs.

No. "Hander" Universal Single Button "Handi-Mike" **YOUR PRICE** \$5.88

Universal Double Button "Handi-Mike"

A highly damped, exceptionally clear hand microphone for many uses; ideal where clarity of reproduction plus general adaptability and portability are prime requisites. This assembly is outstanding because of its superior reproduction qualities. The general make-up of this unit is in all respects similar to our "Single Button Handi-Mike" except of course that a three conductor cord is used and the switch breaks the circuit in the center conductor. This microphone is 200 ohms per button and is furnished with a six foot silk braid covered cable. Finished in attractive statuary bronze. Individually boxed. Shipping weight, 2 lbs.

No. "Handex" Universal Double Button "Handi-Mike" **YOUR PRICE** \$8.82

Universal "Mike" Tone Control

A "Voice To Mike" Adapter

Here is a device which actually adapts Carl-pitched voices to particular microphones—a new accessory that means much added value. The tone control is used across the buttons of any microphone to change the tone to fit adverse conditions. Shril, high pitched voices may be toned down to normal, and gruff, deep voices may be tuned to more pleasing positions in the voice frequencies.

The tone control also permits an adjustment in public address and loudspeaker installations to eliminate the "feed back" resonance or ringing echo, following the pronunciation of certain words. It provides a flexible, adjustable element against these drawbacks when working in a building having bad acoustics. Size 2 1/2 ins. x 2 1/2 ins. x 4 1/2 ins. Net weight, 1 lb. Shipping weight, 1 1/2 lbs.

No. "Toner" Universal "Mike" Tone Control. **YOUR PRICE** \$4.70



Universal "Baby Mike"

A Real Microphone

"Baby Mike" is a genuine single button carbon microphone of 200 ohms resistance. Mounted in a die cast mounting 3 1/2 inches high—a replica of the regular broadcast models. It may be connected to amplifiers or direct to almost any set on the market, the manner of connection depends upon the circuit and tube in set. A detailed instruction sheet accompanies each "Baby Mike," fully describing its construction, giving also several methods of general adaptation. An endless amount of home entertainment is afforded by the use of the "Baby Mike." The natural tone quality obtainable by a microphone of this size is really surprising.

A feature of "Baby Mike" is the circuit adjusting screw on top of the case for leaving circuit "open" or "closed" when mike is not being used. Another feature is the cushioning of the diaphragm to prevent excessive "feed back" from speaker. Complete with prong adapter, 25 ft. cord and detailed instruction sheet. Shipping weight, 1 1/2 lbs.

No. "Bam" Universal "Baby Mike" **YOUR PRICE** \$2.55





The GLOBE TROTTER



Excellent for Home Broadcasting

These professional-looking microphones, despite their extremely low prices, are REAL instruments. For actual tonal reproduction and fine workmanship, they have yet to be surpassed by any microphone in their class.

There is no end to the amount of amusement made possible by connecting these instruments to the house radio and reproducing one's voice through the loudspeaker. Complete instructions for connecting them to ANY TYPE OF RECEIVER are furnished with each unit. Installation is extremely simple. Finished in chrome, nickel and provided with long connecting cord and lugs. Available in two models, viz., the desk type and the ring type. Both models incorporate convenient toggle switch for switching from radio to microphone. Ship. wt. 2 lbs.

Model 100 Desk Type Globe Trotter.
YOUR PRICE \$0.79

Model 150 Ring Type Globe Trotter, complete with Stand and Suspension Springs.
YOUR PRICE \$1.18

UPCO PROFESSIONAL PHONOGRAPH PICK-UPS

Upco Pick-Ups are known the world over for their true tone fidelity. They are being used everywhere for professional work: in theatres, dance halls, public addresses, work, etc., etc. These pick-ups are available with various impedances from 3 to 10,000 ohms. Please be sure to specify the impedance of pick-up you desire when ordering.

Model 25 Phonograph Pick-Up



ONLY
\$6.53

MODEL
 25

The arm of this Pick-Up is perfectly balanced and is adjustable to any weight on the record. Every moving part is on ball-bearing suspension. Will play with 78 or 33-1/3 r.p.m. records. Furnished complete with volume control built into the base. The pick-up head employs a special English Cobalt magnet and special solid-steel pole pieces and armature. Shipping weight, 5 lbs.

LIST PRICE \$17.50
No. 25 "Upco" Professional Phonograph Pick-Up with volume control.
YOUR PRICE \$6.53
No. 25A Pick-Up without volume control.
YOUR PRICE \$5.75

Model "E" Phonograph Pick-Up



No. E "Upco" Pick-Up, same as Model 25 above, but does not have balancing weight on end, complete with volume control.
YOUR PRICE \$5.95
 No. "B" Pick-Up, same as No. "E" above, but with detachable Pick-Up head, complete with volume control.
MODEL E
YOUR PRICE \$7.33

No. "Symphony" New Symphony Model with long arm to accommodate 16" broadcast records; detachable head and with Volume Control.
YOUR PRICE \$11.25

Model "A" Chromatic



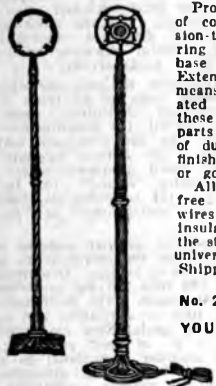
ONLY
\$5.95
 Fine chromatic unit with built-in volume control. Used extensively in theatres, public address systems and portable amplifier units. A good value at full list price of \$11.50. Ship. wt., 5 lbs.
No. "A" Upco Chromatic Pick-Up.
YOUR PRICE \$5.95

Carbon Microphone Buttons

These buttons are used in conjunction with the carbon microphone diaphragms listed elsewhere on this page, for amplifiers and phone instruments for the deaf. Carbon grains or carbon balls are placed in the circular depressions. Diaphragm and button must be about 1/16 in. apart for best results. Diameter of button 3/4 in.; thickness 3/16 in.; center hole 1/8 in.
No. 1876 Carbon Microphone Buttons
YOUR PRICE \$0.20

Gentlemen: I received my first order of parts from your firm: THEY WERE ALL O. K. Your catalog is certainly a complete one. A. N. Brink, New York.

Adjustable Floor Stands



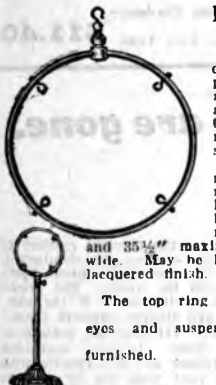
Properly balanced floor stands of conventional size for suspension-type microphones. The top ring is 8 1/2" inside diameter, base 8 1/2". Smooth in operation. Extends to about 5 1/2 ft. by means of a positive, easily-operated clamp lock. Hundreds of these stands are in use in all parts of the world. Constructed of durable metal and beautifully finished in either lacquered brown or gold color.

All stems are bored to permit free passage of the microphone wires which reappear through an insulated aperture in the base of the stand. Available in either the universal or modernistic designs. Shipping weight, 15 lbs.

LIST PRICE \$15.00
No. 2353 Universal Floor Stand
YOUR PRICE \$4.50

LIST PRICE \$20.00
No. 2354 Modernistic Floor Stand
YOUR PRICE \$6.75

Banquet Microphone Stands



Half-height stands for use on tables, at banquets, desks, pulpits, etc. Specially suitable for amateur and studio announcer's use. Top ring 8 1/2" inside diameter furnished with four eyes for suspension springs.

Available in two models, rigid and adjustable. The rigid type measures 15 1/2" high and is 8 1/2" wide at the base. Adjustable stand measures 23 1/2" minimum and 35 1/2" maximum height. Base is 8 1/2" wide. May be had in either brown or gold lacquered finish.

The top ring alone with the four spring eyes and suspension hook can be readily furnished.

No.	Style	Shpg. Wt.	List Price	YOUR PRICE
2350	Fixed Banquet	5 1/2 lbs.	\$8.50	\$2.75
2351	Adjustable Banquet	6 lbs.	10.00	\$4.00
2352	Top Ring only	3 lbs.	4.00	\$1.47

Carbon Microphone Diaphragms

These diaphragms are used in the construction of microphones for hearing instruments for the deaf. They should be used in conjunction with the carbon buttons and carbon grains or balls listed elsewhere on this page. Experimenters should keep a number of these diaphragms on hand for their own personal experimental circuits. Measure 2 1/2 in. diameter and 0.018 in. thick.
No. 1877 Carbon Microphone Diaphragms
YOUR PRICE, each \$0.25



Portable Microphone and Pre-Amplifier



This compact, highly efficient unit consists of a single button carbon microphone of the mid-gate type, described elsewhere on this page, microphone input transformer, potentiometer, battery compartment and batteries and "on-off" toggle switch—all these compactly installed in a neat metal cabinet attractively finished, black enamel stucco. LIST THE UNIT FOR PUBLIC ADDRESS, PAGING AND

HOME RECORDING SYSTEMS. Will match the input impedance of all type amplifiers and radio receivers. Easily used with the latter by connecting the two terminals, with a flexible double wire lead across the grid and cathode of the detector irrespective of type of tube used. This device is excellently suited for inter-communication and private detective systems. Full instructions accompanies each unit. Complete with batteries. Shipping weight, 4 lbs.
No. 1654 Portable Microphone and Pre-Amplifier Unit.
YOUR PRICE \$7.15

"Faraday" Sr. Microphone Impedance-Matching Input Stage For Two Button Microphones Complete with "Gain" Control

An extremely compact, efficient unit designed to "boost" the weak microphonic currents to proportions which will correctly match the input stages of all type amplifiers. May be used with either one or two button microphones. This pre-amplifier unit provides "booster" circuit with transformer, variable "gain" control, battery receptacle and a switch—all contained in a neat, compact, metal case, finished in brown crackle. The "gain" control potentiometer is across the secondary of the transformer and incorporates a switch which turns the battery off when not in use. Ship. wt. 3 1/2 lbs.

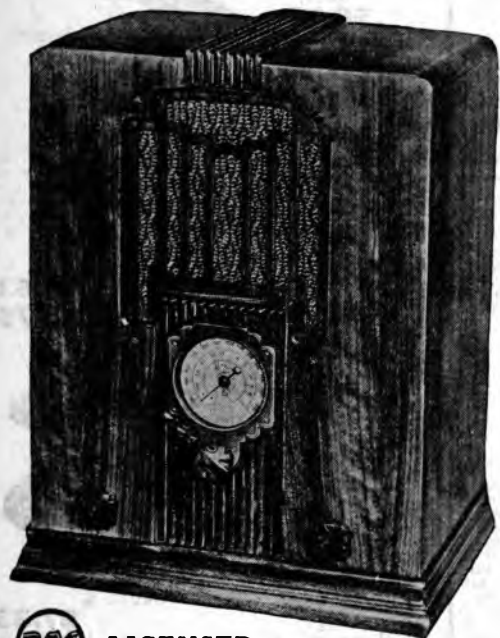


LIST PRICE \$6.00
No. 1561 Sr. Microphone Impedance-Matching Input Stage
YOUR PRICE \$4.41

LIST PRICE \$5.00
No. 1562 Jr. Microphone Impedance-Matching Input Stage for one-button microphones
YOUR PRICE \$3.81

The World ATLAS

FOREIGN RECEPTION GUARANTEED



RCA LICENSED

Foreign—South America
Short-Wave and Regular
Broadcast Reception

- 15 to 55 and 170 to 555 Meters
- Universal 110 V., A.C.—D.C.
- Latest 6-Tube Superheterodyne
- Airplane 2-Scale Dial
- Automatic Volume Control
- Complete with Raytheon Tubes
- Built-In Efficient Antenna
- Full-Sized Dynamic Speaker

Latest Tubes: 1-6A7, 1-75, 2-78, 1-25Z5 and
1-43 Cabinet—2 Tone Butt-Walnut.

No. 335 World Atlas Receiver
YOUR PRICE **\$29.95**

NO GRIEF WITH THIS SET

TOBE— Condenser Analyzer

\$11.40



Here is a new instrument for radio service work. The Tobe condenser analyzer is a scientifically designed electrical testing instrument developed especially for quick and practical condenser analysis in the field of radio service.

The Tobe condenser analyzer performs these much needed tests on all types of condensers including: electrothtic, paper dielectric, mica and oil: (1) Measures condenser "quality" by the resistance and leakage methods. (2) Detects intermittent open and closed condenser connections. (3) Indicates "opens." (4) Indicates "shorts." (5) Identifies all types of condensers as "satisfactory" or "replace."

The Tobe condenser analyzer contains a built-in power supply for operation on a 110 volt, 60 cycle A.C. supply. Operating voltages up to 700 volts DC are available at the output terminals. The instrument uses one 01-A tube as a rectifier and is equipped with one special Neon glow tube indicator and 6 ft. of cord and plug. The condenser analyzer is enclosed in a heavy metal case finished in attractive black Damascus wrinkle. Measurements 3 3/4" x 4 1/2" x 7 1/2". Shipping weight, 8 lbs.

No. A-354 Tobe Condenser
Analyzer
YOUR PRICE, Less Tube **\$11.40**

The Last Roundup *No more when these are gone.*

GREATEST SET BUY IN AMERICA!

**Rush Your
Order**



\$10.95
LESS TUBES

Famous Wright-De Coster 2-Volt Battery Set

If there ever was a greater value than this one offered before, we have yet to see it. The Wright-DeCoster VII receiver, in its prime, several years back sold for \$300.00, and tens of thousands of them were sold, yet now you can buy this same set unused and in factory sealed cartons for only a fraction of that price, to be exact \$10.95. Why, the parts alone in this receiver, if taken out and sold separately would net you more than \$25.00; to say nothing of the beautiful cabinet. The dual scale, genuine Jewell meter alone, today, sells for more than \$5.00.

But aside from all this, the set itself affords remarkable performance. The selectivity and sensitivity, due to its 4-tuned stages are just as sharp as a modern super-heterodyne receiver. The circuit is of the tuned radio frequency type designed originally for 6-UX-199's and 1-UX-120, however, 2-VOLT OPERATION MAY BE OBTAINED WITHOUT ANY CHANGE IN THE CIRCUIT BY MERELY INTERCHANGING THE '99 TUBES WITH 30'S AND THE UX-120 WITH A 31. The use of the 2-volt tubes steps up the overall gain and volume of the set enormously. The circuit comprises 3 stages of R.F. amplification, one detector and 3 stages of audio amplification. It tunes in, and completely separates, stations of the same approximate wave-lengths with facility—a quality so necessary to the enjoyment of the present day radio with its ever increasing number of broadcast stations of very similar wave-lengths.

Furthermore, the range of this receiver is so great that it will bring in the most distant station. We do not hesitate a moment in recommending it, especially to suburbanites and others living in rural districts. It is an ideal farm set where electricity is not avail-

able. The set is designed for the greatest comfort of the operator. All unnecessary controls are eliminated. The tuning dials may be illuminated for night operation by turning a switch on the panel. The Jewell meter on the panel affords an indication of the voltage on the tube filaments and thereby protects them.

THE WRIGHT-DECOSTER VII does not radiate or cause interference of any kind. It gives maximum efficiency on all broadcast ranges and will operate with any length of aerial. If used with the 89 and 20 tubes, 4 volts of "A" current, 135 volts of "B", 22 1/2 volts of "C" are required. If used with 30 and 31 tubes only 3 volts of "A", (2 No. 6 dry cells arranged in series), 135 volts of "B" and 18 1/2 volts of "C" are required.

The cabinet, made of black walnut with satin finish is of a very beautiful design. The dial readings are directly in front of the operator's eyes and fine tuning is obtained by thumb action. The receiver can be used with any good magnetic speaker or even with a permanent magnet dynamic speaker if one is handy. The set measures 24" long x 15" wide x 12" high. Shipping weight 45 lbs.

No. 3000 Wright DeCoster VII Battery
Receiver.
YOUR PRICE, Less Tubes **\$10.95**
Set of 6—230 and 1—231 guaranteed Neontron RCA
licensed tubes **\$5.25**

**NOT MANY SETS LEFT. ONCE SOLD NO MORE
WILL BE HAD. WE BOUGHT THE ENTIRE
SUPPLY FROM MANUFACTURER. NO ONE ELSE
HAS THESE FINE SETS.**

7-Pole Double-Throw Rotary Switch

There are any number of purposes for which a switch of this type can be used. Contains seven individual decks, each having five contacts, one for the rotor and four for external connections. This switch is of the shorting type, the rotor making contact with two points at a given position. It is an ideal switch for use in changing wave bands on short wave receivers. Designed for single hole mounting. Measures 2 1/2" in diameter over all x 4 1/2" back-of-panel depth. Ship. wt., 1/4 lb.



No. 2243 Best 7-Pole Double Throw Sectional Rotary Switch
YOUR PRICE \$0.75

Stoppani Jewelled Compass



A genuine Belgian Stoppani Compass; solid bronze, Parkized; graduated in 1/10; Ruby Jewelled. Has surveyor's elevated sights; set screw in corner to hold needle rigid when not in use. Said to have cost U. S. Government \$29.00. Sportsmen can never hope to equal this wonderful value. Very highly calibrated for direction and extremely accurate. Size: 3 1/4 x 3" in mahogany case.

LENDS SELF TO MANY RADIO USES

The Stoppani Compass, being a precision instrument, lends itself admirably for use in the Radio experimenters test laboratory. It affords an ideal means of determining the polarity of magnets, electro magnets and solenoids carrying current. Since the compass needle is itself a magnet having a North-Seeking (really the South) and South-Seeking (really the North) pole; and since as we all know, like poles repel each other and unlike poles attract each other, it is but necessary to bring the compass in the vicinity of the magnet under test. The North pole of the compass needle will then point to the North pole of the magnet under test or the South pole of the needle will point to the South pole of the magnet depending of course, upon their relative positions.

MAY BE USED AS A GALVANOMETER

Because of its uniform magnetic properties, high sensitivity, and delicate frictionless bearings the Stoppani compass may be utilized to advantage as a galvanometer for detecting electric currents in experimental or conventional radio circuits. The compass is easily and readily converted into said galvanometer by merely winding several turns of ordinary radio wire completely around the face of the compass; leaving small spaces between turns to observe the movements of the needle. The ends of the wire are connected with a test leads to be inserted in series in circuits under test. A deflection of the compass needle in either direction indicates the presence of an electric current. Incidentally the intensity of the current may be closely approximated since the force with which the needle grazes is proportional to the strength of the current.

Excellent for the automobilist, camper, tourist, Radio service man, experimenter, etc., and will make a good item for you to sell at a nice profit.
No. 1637 Stoppani Compass.
YOUR PRICE \$3.75

Improved Neutralizing and Compensating Tools



The main purpose of this handy set of tools is to accurately adjust trimmer or neutralizing condensers without being hindered by troublesome body capacity. The highly sensitive modern receivers of today are so critically balanced that the comparatively minute capacity of .00001 mf. is sufficient to cause them to squeal and oscillate. Now when you take into consideration the fact that body capacity which always results through the use of ordinary screw drivers and wrenches) is at times twice and even thrice this value, you immediately realize how essential these tools really are.

This set of improved tools consists of a small, special screw driver, a 1/4" nut wrench and a key slot all on one piece of insulated tubing. This unit screws into a second unit which is again equipped with a 5/16" nut wrench and a holding clip. Measures 0" long by 7/10" in diameter. Ship. wt., 8 oz.

No. 1880 Improved Neutralizing and Compensating Tools
YOUR PRICE \$0.75

Acme "Feather-Weight" Headphones

An exceptionally efficient, small, low priced head set for amateurs, experimenters and for all other uses where a high grade, light-weight, comfortable head set is required. The complete head set weighs but 5 ounces. Magnets made of high-grade chrome steel. Standard 2,000 ohms per phone. Excellent for use on short wave. Shipping weight, 1 1/4 lbs.



No. 1679-A Acme "Feather-Weight" Headphones.
YOUR PRICE \$1.05

Genuine Brandes Matched Headset



An accurately matched set of headphones, each unit consisting of high-flux magnets surrounded by field windings of 2000 ohms resistance. Ruggedly constructed of light weight metal and highly polished imitation Bakelite ear cups. Can be worn for hours at a time without fatigue. Excellently suited for DX work. Complete with 6 ft. cord. Shipping weight 2 lbs.

No.	Type	Price	YOUR PRICE
1678	Brandes Matched Headset	\$0.50	\$1.35
1845	Cannonball Dixie Headset	2.25	1.10
1846	Master Cannonball Headset	3.50	1.50
1847	Single Dixie with Cord	1.25	.80
1848	Single Dixie with Cord and Headband	1.50	.75

Little Gem Midget Cone Speaker



Primarily designed to be used as an advertising novelty and as a decorative addition to a regular speaker; this Little Gem works surprisingly well for one of its size. Has all the features of regular cone speakers: adjustability of armature, flexibility of paper cone and universality of mounting bracket. Measures barely five inches in diameter and 1 1/4 inches in depth. A beautifully antique-finished cone ornament to have around. It will afford you a considerable source of amusement and satisfaction. Shipping weight, 2 lb. List Price \$2.00

No. 1552 Little Gem Midget Cone Speaker.
YOUR PRICE \$0.85

Nathaniel Baldwin Units



This is the world famous standard for use with horn type speakers or phonograph sound chambers. All units completely enclosed in metallic shell. No better units made. Shipping weight, 1 lb. Overall dimensions, 3x3x2".

No. 1521 Baldwin H-I Unit. List Price \$5.00.
YOUR PRICE \$0.50
No. 1523 Baldwin Standard Unit. List Price \$6.00.
YOUR PRICE \$0.45
No. 1524 Standard Phono-Speaker Unit with felt bottomed metal base.
YOUR PRICE \$0.75

Hammarlund Isolantite Coil Forms For Ultra Short Waves



These forms are designed for maximum efficiency at ultra high frequencies, or within the 28 to 56 megacycle band. Being made of Isolantite, and having correct form factor, high frequency resistance is at a maximum and absolute stability is achieved. The number and location of holes facilitates securing the exact inductance desired and permits of almost any conceivable type of experimental winding.

Form is 1 1/4" in diameter and 2" long exclusive of prongs. Made only in five prong type to fit standard sockets. Ship. wt., 1 oz. No. CF-5-M New Hammarlund Isolantite Coil Forms for Ultra Short Waves.
YOUR PRICE \$0.51

Television Lenses for Scanning Discs

The latest in television scanning systems are lens discs. These discs make possible projection of television images on a screen very much the same as moving pictures are projected.



They are of the plano-convex type and measure 13/16 in diameter x 5/32 in thick.

No. 3935 Television Lenses for Scanning Discs
YOUR PRICE, each \$0.12

In lots of 25, each 9c

Miles Connectophones

An Inter-Communication System



No. 401 Professional Connectophones
No. 400 Portable Connectophones

Convenient—Saves Time, Money, Labor—Simple to Use—Easy to Install—Low in Price—First Cost is Last Cost—100% Portable—Use It Anywhere, Move It at Will—Talk with 1 or 100 People at One Time—Messages Cannot be Overheard or Interrupted—No Switchboard or Operator.

Just pick up the microphone and speak instantly to the person or persons you want. Miles CONNECTOPHONES operate as simply as that. Yet they are the result of years of laboratory work; a triumph of modern radio engineering. Miles CONNECTOPHONES are precision instruments; built to give years of service. Housed in a useful case, CONNECTOPHONES are in keeping with the most luxurious office. Compact, convenient. Intercommunication convenience at an amazingly low cost.

CONFIDENTIAL COMMUNICATION

So sensitive are microphone and receiver that you can be heard clearly and distinctly by the person with whom you are communicating, yet be entirely inaudible to one a few feet from you. CONNECTOPHONE messages are private. For the reception room to announce visitors; for the filing department to request material; for the shipping room; for executive communication; for dictating; for speaking to your secretary while in conference; for closer contact with every department of your business use Miles CONNECTOPHONES.

You don't even have to talk directly into the microphone. Your voice is picked up clearly and distinctly even though you are several feet from the CONNECTOPHONE! The microphone can be worn on your coat while in your hand, or used from a stand. CONNECTOPHONES are flexible—designed to meet your needs.

These CONNECTOPHONES are available in two different models, viz., Portable Connectophone and Professional Connectophone, both illustrated above. The Portable Connectophone outfit comprises lapel microphone, matched earphone, battery, on-off switch and cable. Sold complete in hinged cover box. The Professional Connectophone outfit comprises microphone in neat desk or wall cabinet, earphone, batteries, switch and necessary push button for signalling various departments. Ship. wt., 8 lbs.
No. 400 Portable Connectophone **\$5.15**
YOUR PRICE
No. 401 Professional Connectophone **\$6.50**
YOUR PRICE

SHORT WAVE SECTION

"R. T." AMATEUR C.W. PUSH-PULL TRANSMITTER

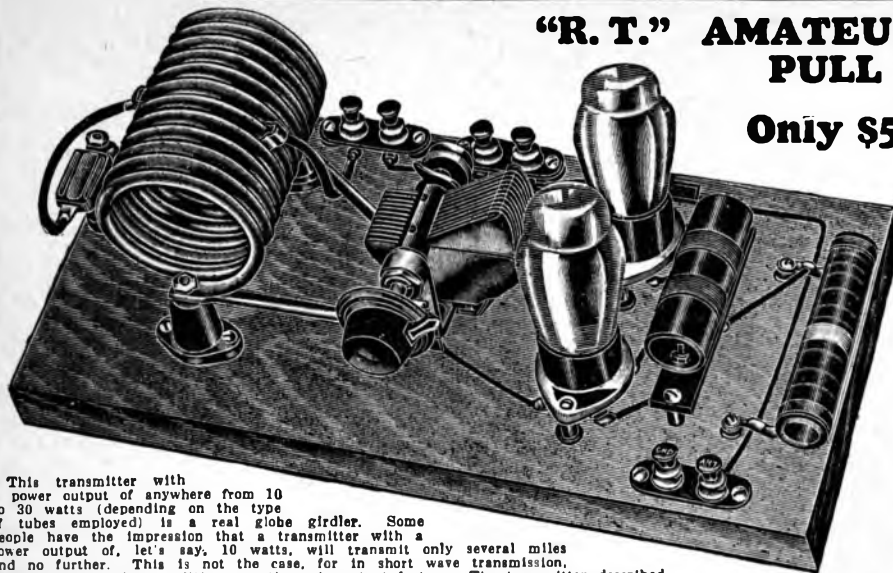
Only \$5.95 *Featured in Short Wave Craft Magazine Oct. 1933*

15 to 30 WATTS

ALL AMATEUR BANDS

A REAL GLOBE GIRDLER

It's Fool Proof—Because It's Simple



This transmitter with a power output of anywhere from 10 to 30 watts (depending on the type of tubes employed) is a real globe girder. Some people have the impression that a transmitter with a power output of, let's say, 10 watts, will transmit only several miles and no further. This is not the case, for in short wave transmission, location and weather conditions constitute important factors. The transmitter herewith has actually "worked" amateurs in the far corners of the earth. A LOW POWER TRANSMITTER IN A GOOD LOCATION IS, PRACTICALLY SPEAKING, MORE "POWERFUL" THAN A HIGH POWER TRANSMITTER IN A POOR LOCATION.

The transmitter illustrated, is essentially a low powered, low cost, outfit for the beginner. It is not, however, confined to the beginner. Many dyed-in-the-wool amateurs have one or more of these transmitters handy as auxiliaries. Two type 45 tubes are used as oscillators. These tubes are used because of their low cost and because, in actual operation, they have practically the same output as the type 210 tubes, at one-third their cost. The circuit is of the type using fixed-tuned grid, tuned plate. All grid coils are wound on one inch bakelite tubing with fine wire so that their natural frequency response is near the center of each amateur band. The frequency peaks of these coils are rather broad which means that THE ENTIRE BAND OF ANY GIVEN COIL CAN BE COVERED WITH THE PLATE CIRCUIT, WITHOUT THE TWO CIRCUITS GETTING OUT OF RESONANCE. These grid coils are of the 3-prong plug-in type. The plate coils are of copper tubing and are mounted on stand-off insulators. They are easily interchangeable for the various bands.

described
A LOW
"POWER"
MORE "POWER"
"POWER"

POWER SUPPLY

The power supply to operate this transmitter delivers 400 volts at 150 milliamperes for the plates of the tubes and 2.5 volts for the filaments. A type 83 mercury vapor rectifier is used because of its low voltage drop which permits excellent regulation. The filter consists of a 30 Henry iron-core choke with two 2 mf. 1000 volts condenser on either side. A suitable size bleeder resistor is connected across the output filter to further aid in regulation by suppressing the high voltage peaks when there is no load on the power pack as is the case when the key is in the "off" position. Ship. wt., 8 lbs., for transmitter and 18 lbs. for power pack.

No. 2121 "R.T." Push-Pull Transmitter, complete with 80 meter coils, but less tubes. **\$5.95**

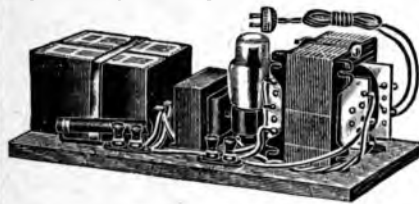
YOUR PRICE
No. 2122 Power Pack for R.T. Transmitter, less tube. **\$8.50**

YOUR PRICE
No. 2123-A Plug-In Coils for 20 Meter Band. **\$1.80**

YOUR PRICE
No. 2123-B Plug-In Coils for 40 Meter Band. **\$1.80**

YOUR PRICE
No. 2123-C Plug-In Coils for 160 Meter Band. **\$1.80**

YOUR PRICE



Heavy-Duty Power Pack

The construction of this transmitter is the simplest ever devised. From the diagram printed in the editorial section of this catalog it can be seen that no grid or filament by-pass condensers are used and that the usual R.F. choke has been omitted from the plate circuit. No benefit was derived from their employment and hence they were not used. The method of coupling the antenna to the output circuit is unique, and is a desirable feature. The antenna suggested for use with this transmitter is the single-wire-feed Hertz. THE TRANSMITTER IS SUPPLIED WITH A SET OF 80 METER COILS. Coil sets to cover the other amateurs can be had at the additional prices shown below.

A Versatile One Tube "Push-Pull" Ten Meter Transmitter

Will Serve Any Number of Useful Purposes

Paradoxical as it may sound, this ten meter transmitter EMPLOYS A SINGLE TUBE IN PUSH-PULL ARRANGEMENT. Heretofore the word "push-pull" automatically implied the use of two tubes, yet here we are with a one tube push-pull transmitter.

It is the advent of the new type 53 tube, which makes this feat possible. This tube is actually "TWO" tubes, in one glass envelope. It was designed primarily as a class "B" twin amplifier. So versatile is this new tube that not only can it be used for power amplification, but for detection and amplification as well. In fact we list in this very catalog a so called "One-tube Twinplex" receiver which is a ONE TUBE "TWO TUBE" SHORT WAVE RECEIVER. This single 53 tube is made to detect as well as amplify short wave signals.

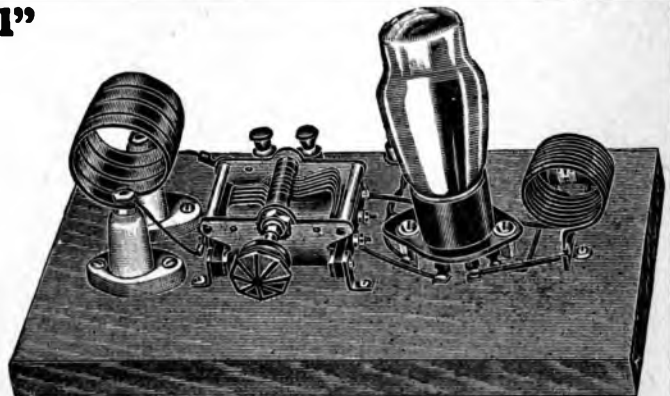
The ultra short wave bands starting from ten meters and down are now buzzing with activity. It was not so long ago that experts considered this extreme high frequency channel impractical, yet, it will not be long before many commercial stations including television stations will be using these channels regularly. The radio fraternity thanks to the short wave amateur, is rapidly unearthing the secrets of successful ultra short wave transmission and reception.

This transmitter is not a high power job, for high power is not necessary on ultra short wave work. When properly coupled to a suitable antenna system such as a single-wire-fed Hertz or the familiar "Zeppelin" antenna, it will, under favorable conditions, girdle the globe. The circuit is of the fixed-tuned grid, tuned plate type and utilizes a solenoid of solid copper ribbon as the plate coil. All component parts are of the highest possible quality, since R.F. losses in ultra short wave work are fatal.

EXCELLENT FOR PHONE WORK

A SINGLE BUTTON MICROPHONE CAN BE INSERTED IN SERIES WITH THE GRID RETURN LEAD (USING NO TRANSFORMER,) OBTAINING FROM 50 TO 75% MODULATION.

There are any number of uses to which a compact unit of this type may be placed. For instance it can be used as a master oscillator for multi-stage high



frequency transmitters OR two such units may be connected together to produce a complete master oscillator—R.F. amplifier transmitter. Neutralizing condensers must be added when used as an R.F. amplifier. The transmitter requires 2½ volts either A.C. or D.C. for the filament of the 53 tube and anywhere from 180 to 350 volts "B" supply. A key circuit is in the cathode lead. The transmitter on its neat bread-board measures 11" long x 6¼" wide x 8" high overall. Furnished complete with a set of 10 meter coils. Shipping-weight, 8 pounds.

No. 10-M Versatile 10 Meter Transmitter Less Tube. **\$4.50**

YOUR PRICE

We Have Been For Years Headquarters For Short-Wave Receivers

RECEIVERS WHICH WORK WHEN YOU WANT THEM TO WORK

Every Set Guaranteed To Perform Exactly As Represented

Listed in this section is a collection of some of the finest and most fool-proof short-wave receivers ever made. They are fool-proof because they are simple.

All the receivers are built around the old reliable regenerative principle which assures an almost unlimited amount of amplification.

THEY EMPLOY A MINIMUM NUMBER OF PARTS TO MAKE THEIR RESPECTIVE CIRCUITS OPERATIVE—WITH ALL FANCY EMBELLISHMENTS USUALLY FOUND ON "EXPENSIVE" SETS, ELIMINATED.

If properly adjusted and carefully tuned, they WILL BRING IN MOST ANYTHING ON SHORT WAVES WORTH HEARING, not only in this country, but ANYWHERE.

All the battery sets employ the new low-current-drain two-volt tubes, which, when used in conjunction with No. 6 dry cells, will permit those cells to last for months, even with frequent use.

The A.C. receivers, aside from employing the latest type special-purpose tubes, incorporate highly specialized power packs, designed particularly for use with short-wave apparatus. This assures almost complete elimination of parasitic noises which usually mar short-wave reception with A.C. equipment.

There has been a great deal of skepticism on the part of the public regarding the performance of short-wave equipment. This skepticism is, of course, justifiable to a certain extent. Many short-wave receivers have been manufactured in the past; some good, some bad. The so-called "bad" ones usually performed excellently under the manufacturer's laboratory conditions while being tested but very often failed to function at all in the home of the purchaser.

We, however, have eliminated this difficulty by testing all our receivers UNDER ACTUAL WORKING CONDITIONS—rather than under laboratory conditions.

All the receivers listed in this section are engineered by our own staff of competent short-wave experts. That is the reason why we can actually guarantee excellent performance!

ONLY FIRST-CLASS PARTS ARE USED THROUGHOUT

We realize that a short-wave receiver is no better than its cheapest component part just as a chain is no stronger than its weakest link.

We have, therefore, spared neither expense nor time in collecting the correct parts for each particular set.

It may be possible for you to buy similar receivers elsewhere at a lower price; but unless you, too, wish to join the ranks of the skeptical short-wave fans, you will insist on sets incorporating only first-grade parts.

The Doerle short-wave receivers listed elsewhere in this section, are proof of the quality and performance of the short-wave sets which we manufacture. We have, without exaggeration, sold thousands of these sets—and they are still going strong!

FREE BOOK OFFER

WITH THE PURCHASE of any short-wave receiver listed in this section, we will give FREE OF CHARGE—a copy of either "How To Become An Amateur Radio Operator" or "How To Build and Operate Short-wave Receivers."

The former book covers literally everything on the subject of preparation for obtaining an amateur license. All explanations are presented in a clear and lucid manner that will be of great value to all prospective amateurs. It covers lessons on learning code, rules and regulations governing transmission, theory and operation of transmitters and associated equipment, etc., etc.

The other book is the best and most up to date on the subject. It contains a wealth of material on the building and operation, not only of typical short-wave receivers, but short-wave converters as well. If you are at all interested in short waves, you will not wish to do without this book.

A TWO-TUBE BATTERY RECEIVER FOR SHORT-WAVE BEGINNERS

Range 15 to 200 Meters

We have received many requests from our customers and friends who are starting in the field of short waves, to sell a receiver which is built around a simple, yet fool-proof design, and one which does not have a maze of complicated controls for tuning.

The set described herewith complies with those requests. It incorporates a straight-forward, regenerative circuit, incorporating but one tuning control and one regeneration control.

It is a set which is so simple in construction and operation that it cannot be anything else but fool-proof!

The circuit employs one regenerative type 30 detector followed by a single stage of A.F. amplification using another 30 tube. Under actual test the set has brought in a great many foreign programs, both speech and code.

Only high-grade parts have been used throughout its construction. This is essential to the satisfactory performance of any short-wave set. All component parts with the exception of the tuning and regeneration control condensers are mounted on an aluminum sub-chassis; these condensers being mounted on the aluminum front panel.

HAND CAPACITY EFFECTS HAVE BEEN ENTIRELY ELIMINATED, thereby making possible the accurate logging of all stations.

The panel measures 10 1/2" long x 7" wide; the base is 8" deep. Aerial, ground and phone connections are made to convenient binding posts. Battery connections are made through the medium of a convenient color-coded cable. The receiver is sold with a complete set of 4 low-loss plug-in coils having a range of from 15 to 200 meters. Ship. wt. 7 lbs.

List Price \$27.00

No. B7351 Beginner's Two-Tube Short-Wave Battery Receiver.

YOUR PRICE

No. B7352 Complete accessories for the above receiver, including two—6 months' guaranteed Neotron 230 tubes; one pair of Brandes earphones; two—No. 6 dry cells; two—standard 45 volt "B" batteries. Ship. wt., 22 lbs.

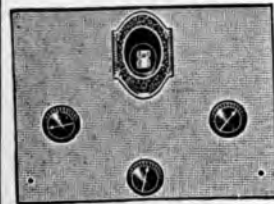
YOUR PRICE

\$11.50

\$6.25



Rear View



Front View

SIX PRONG PLUG-IN SHORT-WAVE COILS

Range 15-200 Meters

The set consists of four plug-in coils, each having THREE separate windings. Each winding is connected to a separate pair of base prongs thereby allowing great flexibility of application. The secondary winding is intended for tuning with a short wave tuning condenser, preferably of .00014 mf. (140 mmf.). The primary is wound between turns of the secondary for efficient close coupling.

The complete isolation of all windings permits the use of these coils in circuits requiring only a primary and secondary, or a tickler and secondary such as the Doerle Short-Wave sets and many others. All secondary windings are space-wound and all forms are of low loss construction. When used with a .00014 mf. condenser, coils will tune over short wave bands as follows:—Blue rim coils, 15 to 25 meter; Red rim, 25 to 50 meters; Yellow rim, 50 to 100 meters; Green rim, 100 to 200 meters. Ship. wt. 1 lb.

No. 706 SWS Six Prong Plug-in S.W. Coils.

YOUR PRICE—per set



List Price \$3.50
\$1.85

Special Short-Wave R.F. Choke

This R.F. choke is made especially for short-wave receivers. Wound on a special low-loss Bakelite form and requires but one screw for mounting. Incidentally, the metal mounting screw is never in the magnetic field of the choke inasmuch as the mounting hole is at a safe distance below the end of the winding. Ship. wt. 4 oz.

No. B7359 Short-Wave R.F. Choke
List Price \$1.25

YOUR PRICE

\$0.20

"FARADAY" THREE-TUBE SHORT-WAVE BATTERY RECEIVER

Range 15 to 200 Meters



Stations thousands of miles away are well within the range of this receiver. All local stations as well as many distant ones will be heard on the loudspeaker. The chassis is housed in a handsome black, crackle-finish, metal cabinet, having a full-vision vernier dial and three control knobs which are viz., tuning, regeneration control, and filament control.

Takes but a few minutes to connect this receiver without even the use of tools. A 7-wire color-coded Belden fused battery cable is used for making the few simple connections.

The circuit itself is of the regenerative type, featuring simplicity of tuning while retaining the advantage of radio frequency amplification ahead of the regenerative detector. The R.F. amplifier tube is a type 34 screen-grid tube, assuring extremely high gain.

Regeneration is easily and smoothly controlled by means of a variable condenser in the detector plate circuit.

The other tubes required are two 30's, one detector, and the other an A.F. amplifier. Batteries required for operation are two No. 6 dry cells and three 45 volt "B" batteries.

The receiver is sold complete with two sets (4 coils to a set) of low-loss short-wave plug-in coils. Cabinet dimensions with cover closed are 11" x 6 1/2" x 8". Ship. wt. 10 1/2 lbs.

No. B7353 Faraday Three-Tube Short-Wave Battery Set.

YOUR PRICE

No. B7354 Complete set of accessories for above set including two-6 months' guaranteed Neotron 230 tubes; one Neotron type 34 tube; one pair of Brandes earphones; two-No. 6 dry cells; three-standard 45 volt "B" batteries.

YOUR PRICE

\$13.45

\$7.15

FOOL-PROOF SHORT-WAVE RECEIVERS

FARADAY FIVE-TUBE A.C. SHORT-WAVE RECEIVER

A Most Modern and Up-to-date Short-wave Set
Will Operate Three Full Dynamic Speakers

Only
\$25.95



Short-wave sets costing fifty dollars or more can hardly do more than what this excellent set will do. It is, without reservation, one of the finest A.C. short-wave jobs on the market. What with its high selectivity, its maximum degree of sensitivity and absolute noise-free A.C. operation, it is hard to find a set in its class which will even approach it.

Along with the improvement of alternating-current tubes has grown an increasing demand for short-wave receivers which need not depend upon batteries for power. This set is an outstanding example of this class of receivers.

All the latest type special-purpose tubes are employed in its circuit. The new type 58 triple grid tubes with their extremely low inter-electrode capacity as well as the special 59 triple grid power amplifier are used to full advantage.

The heart of the circuit is the regenerative detector which, aside from resulting in extremely high selectivity, has the added advantage of tuning by the carrier "whistle" method.

Another distinct feature of this set is the untuned antenna circuit which eliminates the necessity of adjusting an antenna trimming condenser each time a new plug-in coil is used.

The tubes employed are two—58's, one—56, one—59, and one—280. The first tube is a radio-frequency amplifier with an untuned input but with a tuned output. This R.F. stage is then fed into a regenerative detector which in turn is resistance-coupled to the 56 first A.F. stage, and finally to the 59 triple grid power amplifier in a "class A series" pentode connection.

Approximately **THREE WATTS OF POWER** are available for operating one to three full dynamic speakers or as many as six magnetic speakers.

An earphone jack is provided in the plate circuit of the first A.F. tube for earphone operation.

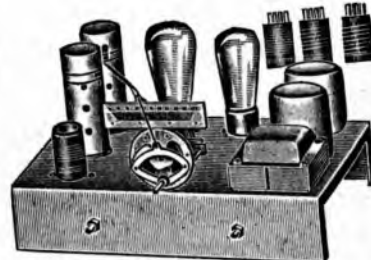
Both chassis and special noise-free power pack are mounted in a single, handsome, black crackle-finished case with illuminated vernier dial. Measures 15 1/2 x 8 x 8 1/2 inches. Ship. wt. 20 lbs.

List Price \$49.50

No. B7357 Faraday Five-Tube A.C. Short-Wave Receiver.
YOUR PRICE less tubes **\$25.95**

FARADAY FOUR-TUBE LOUDSPEAKER A.C. SHORT-WAVE RECEIVER

For 110 volts, 50-60 cycles A.C. Operation
Range 15 to 200 Meters
Employs Latest Type Tubes



Before the advent of the new tubes, we had the so-called general-purpose tubes. In other words, a given tube could be used for R.F., detector or A.F. work. This, of course, introduced considerable loss inasmuch as the tube was not exactly fitted for any specific purpose. With the new specialized tubes, however, circuits can be designed to accurately match or suit particular tubes. This, in effect is what has been accomplished with this set.

Four tubes are employed: one—58, one—56, one—47 and one—80. Everyone of these tubes is made to serve a particular function in the set. This accounts for the fact that the receiver is extremely sensitive.

We do not believe that there is another A.C. short-wave receiver in its class which can outperform it or come near its record of performance.

The circuit consists of a regenerative "weak-signal" detector, employing the type 58 triple-grid tube as a grid-leak detector. The output of this tube is resistance-coupled to the first audio frequency amplifier, type 56. This triode, in turn, is again resistance-coupled to the 47 pentode output tube.

The use of resistance coupling throughout preserves the quality of the original signal without any discrimination towards any particular frequency.

Furthermore, there is **NO DISTORTION** when the regeneration control is advanced towards the point of oscillation.

This receiver is so sensitive that it requires but a short length of antenna to make it operative. All the component parts have been carefully selected, even to the special set of four low-loss Octocoll plug-in coils. The power pack is so designed that it cannot create any disturbing radio noises which are so inherent in cheaper type A.C. short-wave receivers.

The entire chassis including power pack is mounted in a handsome, black, crackle-finished metal case with an illuminated vernier tuning dial in the center. The illustration above shows merely the chassis, for it was only at the last moment that we found we could include the handsome metal cabinet for the same price. The case measures 3 1/2" x 8" x 8 1/2". Ship. wt. 20 lbs.

List Price \$40.00

No. B7358 Faraday Four-Tube Loudspeaker A.C. Receiver.
YOUR PRICE less tubes **\$20.95**

TWO-TUBE "PLANET-THRILLER" SHORT-WAVE RECEIVER

Range 15 to 200 Meters

Here is a compact, little set which under the proper operating conditions, is a "real thriller." It will bring in practically everything worth listening to on short waves.

Two—type 30 tubes are used, one being a regenerative detector and the other a first audio frequency amplifier. Transformer-coupling of the detector to the output tube is used to obtain the maximum possible amplification. Regeneration is easily and smoothly controlled with a 50,000 ohm potentiometer arranged in such a way as to keep the plate voltage substantially constant even while the resistance in the tickler circuit is being varied.

The necessary batteries required for operation are two—No. 6 Dry Cells in series and two—standard 45 volt "B" batteries. All the component parts are mounted on the metal sub-chassis panel which **ENTIRELY DOES AWAY WITH HAND CAPACITY.** Stations once logged on the dial will always be found at the same setting at any other time in the future.

Two sets of double binding posts are provided for aerial, ground and earphone connections. All other battery connections are made through a color-coded cable. The panel measures 9" long x 5" wide; the base is 6" deep. The receiver is sold complete with one set of low-loss short-wave plug-in coils. Ship. wt. 8 1/2 lbs.

List Price \$18.50

No. B7355 Two-Tube "Planet-Thriller."
YOUR PRICE less tubes **\$8.15**

No. B7356 Complete accessories for above receiver including two—3months' guaranteed Neontren 230 tubes, one pair of Brandes earphones, two—No. 6 Dry Cells; two—standard 45 volt "B" batteries.
YOUR PRICE **\$6.25**



Front View



Rear View

FARADAY THREE-TUBE A.C. SHORT-WAVE RECEIVER

For 110 Volts, 50-60 Cycle A.C. Operation
Range 15 to 200 Meters

For an A.C. short-wave receiver, this wonderful set is unsurpassed. The usual trouble occasioned with short-wave sets operated from A.C. was the excessive noise and hum which originated in the power pack.

These disturbances have all been eliminated so that now hum-free signals may be received which are comparable in every respect to signals intercepted by battery receivers.

Only three tubes are used; one of which is a type 80 rectifier. The new Triple Grid 58 tube is employed as a regenerative detector and the type 56 as a power tube.

The amplification obtained from these new tubes and the regeneration produced is more than sufficient for extra loud earphone volume. In fact, many local stations and even a few distant stations may be obtained on the loudspeaker.

Four plug-in coils are used to cover the wave length band of from 15 to 200 meters.

In ordinary regenerative short-wave circuits using the old type tubes, the quality of the signal is slightly impaired as the regeneration control is advanced towards the point of oscillation. In this receiver, however, the quality does not suffer inasmuch as the high voltage-amplification factor of the type 58 Triple Grid tube makes it unnecessary to advance the regeneration control to the very limit of non-oscillation. This is quite an important advantage and should not be overlooked. This means a considerably larger amount of undistorted volume than is obtainable with a battery receiver of the same number of tubes.

The chassis is housed in a handsome black, crackle-finish case with illuminated vernier tuning dial. The case measures 11" x 6 1/2" x 7". Ship. wt. 11 lbs.

List Price \$27.50

No. B7350 Faraday Three-Tube A.C. Short-Wave Receiver.
YOUR PRICE less tubes **\$15.95**

RIDE THE LO-WAVES with the



OFFICIAL DOERLE WORLD RECEIVERS

Two Tube 12,500 Mile Doerle Receiver



Rear View

**\$9.90 ABSOLUTELY
FOOL-PROOF !**

Short-wave sets have come and gone but never have there been produced short-wave receivers which have taken the whole country by storm as have the DOERLE RECEIVERS.

Mr. Doerle described his first receiver, the now famous 2-TUBE 12,500 MILE RECEIVER in the December January issue of SHORT WAVE CRAFT. If you are a reader of this magazine, you have undoubtedly been surprised at the great number of fan letters published in SHORT WAVE CRAFT, praising this receiver to the skies, and for a good reason.

It is a low-priced receiver, yet pulls in short-wave stations from all over the world, REGULARLY, in practically ANY LOCATION, not only in this country, but ANYWHERE.

If all commercial short-wave receivers were built along the same lines as these Doerle sets, a good deal of the skepticism on the part of the public concerning such equipment, would be eradicated.

Thousands of experimenters have built their own and have obtained MIRACULOUS RESULTS as hundreds of glowing testimonial letters (several of which are printed on this page) from radio fans testify.

Recently, Mr. Doerle brought out another receiver, THE 3-TUBE SIGNAL GRIPPER, which has already started to make history. There is no question but what this 3-tube job will also make its triumphant tour all over the world.

IMPROVED CIRCUIT AND DESIGN

Despite the remarkable performance of these two receivers, our technical staff felt that they could obtain even better results by making slight modifications of the circuit. This is especially true of the 3-Tube Signal Gripper. The first type 30 R.F. tube in this set was replaced by a type 34 which is a special purpose, screen-grid R.F. pentode amplifier. Furthermore, we have done away with the wooden base, and in its place are supplying a completely drilled and punched metal chassis which helps to do away with inter-coupling effects. About 16 or 18 inches of wiring has also been eliminated, thereby assuring the shortest possible connections between the component parts. This has increased the sensitivity and selectivity of these receivers considerably; yet despite these changes, we have not increased the price of these instruments to you.

In the course of a year, we received many requests for these receivers, but did not undertake to build them or even supply them in kit form until we were absolutely sure that we could obtain the correct parts essential to perfect operation.

By special arrangement with the publishers of SHORT WAVE CRAFT, we have been given the exclusive right to manufacture and sell these Official Doerle Receivers, so that now all short-wave enthusiasts who have ever wished to own either of these fine sets, can buy them without the slightest doubt in their minds but what they WILL PERFORM 100%. This means that all the usual "bugs" have been ironed out by us in such a way that you may order any receiver with full confidence that in practically every location, anywhere, "they will do their stuff."

ONLY FIRST CLASS PARTS USED

It may be possible to buy the parts of the completed sets at a lower price. We admit this at once. But if you will look over our parts list, you will find that only first class material is used. We have done away with all losses. There is no "hand capacity." IN THESE TWO SETS ONLY THE BEST CONDENSERS—AND THAT MEANS HAMMARLUND—ARE USED. The sets could be produced for a considerably less amount if we used cheaper condensers.

(Continued on top of extreme right column)

TWO TUBE 12,500 MILE SHORT-WAVE RECEIVER

Every 2-tube receiver, whether assembled and wired or in kit form contains the following parts:

HERE IS WHAT YOU GET: 1—Panel, drilled; 1—Base, completely drilled and punched; 2—Hammarlund .00014 mf. condensers; 1—Flament rheostat with switch; 2—Kurz Kasch vernier dial; 1—Bakelite Knob; 1—Audio Transformer; 1—Special R.F. choke; 1—.0001 mf. fixed condenser; 1—5 meg. grid-leak; 2—Set of double binding posts; 1—color-coded battery cable; 1—Coil Socket; 2—Type 30 tube sockets; 1—Equalizer (antenna) condenser; 1—Roll hookup wire; 1—Set of 4 plug-in coils, 15 to 200 meters, and assorted hardware. No. 2140 Two Tube 12,500 Mile Doerle Short-Wave Receiver, completely wired and tested as per above specifications. Shipping weight 5 lbs.

YOUR PRICE

\$9.90

No. 2141 Two Tube 12,500 Mile Doerle Short-Wave Receiver Kit, with all parts as specified above, but not wired, with blueprint connections and instructions for operation. Shipping weight, 5 lbs.

YOUR PRICE

\$8.70

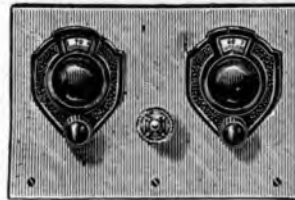
No. 2142—Complete set of accessories, including the following: 2 six months guaranteed Neontron type No. 230 tubes; one set of standard Matched Headphones; 2 No. 6 standard dry cells; 2 standard 46-volt "B" batteries. Shipping weight 22 lbs.

YOUR PRICE

\$5.45



WORLD W



Front View of 2-tube Doerle

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If You Are Skeptical

Some List!
Have just completed your Doerle two-tuber. I received the following on the loudspeaker: XDA, LQA, GMB, VESDR, VESGW, KKO, WIXAZ, W2XAF, W3XAL, W3XAU, W8XK, W8XAL, W9XF, W9XAA, Bermuda, Honolulu, Budapest, Hungary, and "hams" in 38 states.

Maurice Kraay, R.F.D. 1, Hammond, Ind.

Today is my third day for working the Doerle set, and to date I have received over fifty stations. Some of the more distant ones I shall list. From my home in Maplewood, N. J., I received the following: WVB, Atlanta, Ga.; WOK, Ohio; W8BHM, Ft. Wayne, Ind.; W8AYS, Elgin, Ill.; W8BKK, Girard, Ohio; and best of all, XDA, Mexico; PZA, Surinam, South America; TIB, Cartago, Costa Rica; G2WM, Leicester, England. I have also received stations WDC and PIQ, which I have not found listed in the call book.

Jack Prior, 9 Mosswood Terrace, Maplewood, N. J.
A Doerle Enthusiast
I have just completed my two-tube Doerle, and it surely is a great receiver! It works fine on all the wavebands. Nobody could wish for any better job than this one. I can get W8XK and W9XAA to work on the loudspeaker at night, and the code stations come in with a wallop behind them.
Samuel E. Smith, Lock Box 241, Graving, Mich.

FREE Short-

In order that our short-wave may better understand the phenomenon more acquainted with various offerings—FREE OF CHARGE wave receiver, the choice of one viz., How To Build and Operate To Become An Amateur Radio.

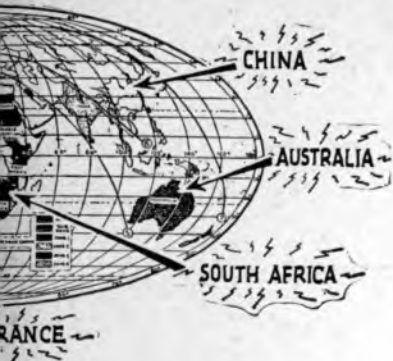
The one book is a comprehensive the most prominent short-wave a period of two years. The other going manner, the ways and transmitting license. Furthermore ernal amateur transmissions, e

Both are generously illustrated. Be sure to mention, when or which book you desire. Order illustration.



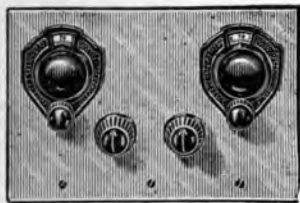
Book No. 1

WORLD WIDE RECEIVERS



DOE D-X

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Front View of 3-tube Doerle

Read These Letters

France, Spain, etc., on Loudspeaker hooked up my two tube Doerle Kit and I received France, Rome, Spain, Germany and England the loudspeaker as well as over 100 amateur stations.

I am very pleased with the receiver and would part with it for anything. I have listened to my factory built short-wave receivers, but believe me, my DOERLE is the set for me.

Arthur W. Smith, Springfield, Mass.

Regular Foreign Reception

A few days ago, I purchased one of your TWO TUBE DOERLE WORLD WIDE SHORT WAVE RECEIVERS. I just want to tell you that this does all you claim. In the short time I have the set, I have brought in stations in England, France, Spain and South America. Daventry, England, and Nauem, Germany can be picked up with very strong volume. THE DOERLE IS THE BEST SET.

Arthur C. Gluck, Brooklyn, New York.

Thrilled By Doerle Performance

I am very much pleased with the DOERLE S.W. I received; the local amateur stations come loud and clear. The first foreign station I received was DJA, Zeessen, Germany. I certainly enjoyed this station with a thrill. Yours for success.

Randolph Gray, Quincy, Mass.

Have BOOKS

who purchase these receivers of short-waves, and become operators, we are each purchase of a short-wave excellent short-wave books: "Short-Wave Receivers and How to Operate Them" and a thorough compilation of short-wave circuits published during the past year, in a most thorough manner, explaining all the rules gov-



Book No. 2

erning photographs and diagrams. Each set of your Doerle Receiver just comes with a Book Number under each

READ THIS—

We are the ONLY Company authorized to manufacture and sell these Official Doerle Short-Wave Receivers. We, therefore, feel obligated to caution you against the purchase of so-called "Doerle" Receivers or receivers merely designated as "12,500 MILE SHORT-WAVE SET," "THREE TUBE SIGNAL GRIPPER" or any other names which were originally associated with the Official Doerle Circuit. These sets are sold at lower prices, because they contain inferior parts.

Improved 3-Tube Doerle Signal Gripper

ABSOLUTELY RELIABLE ! \$12.85

We refrained from doing so because then we could not maintain our GUARANTEE OF PERFORMANCE. And this goes for everything else in the sets. They are low in price, yet the quality is excellent considering the low price. Thus, for instance we are using Kurz-Kasch dials because we found them excellent for their purpose, and as everyone knows, they are real first class verniers. The sub-chassis is made of cadmium-plated metal and is completely drilled and punched.

The metal panels on which the variable condensers mount are cadmium-plated. These panels do away with hand capacity. The plug-in coils are of Bakelite, wound with enamel wire for low losses. In short, despite the exceedingly low price of these sets, we give you quality. Bakelite sockets only are used. Even the aerial condensers are of the Micamold Equalizing type. We have even included long, color-coded battery cable for easy connections, rheostats with "off" positions and binding strips of Bakelite to keep down losses.

In short, realizing that successful short-wave operation depends mainly upon the quality of the component parts, we have stopped at nothing to supply the best.

ONLY BY MAKING THESE SETS IN QUANTITIES CAN WE AFFORD TO SELL THEM AT THE EXTREMELY LOW PRICES QUOTED.

Note the testimonials printed on this page. They will give you an idea what can be expected from these great sets.



Rear View

HOW DO THE TWO SETS DIFFER?

The TWO TUBE 12,500 MILE SHORT-WAVE SET is intended to be used, with headphones, although it is bringing in right along, stations on the loudspeaker. We, however, do not make such a claim. For instance, stations 5,000 and 10,000 miles away come in only on headphones. This set uses two 230 two-volt battery type tubes.

The Improved THREE TUBE SIGNAL GRIPPER, as its name indicates, is a three tube set. It uses a type 34 screen grid R.F. amplifier followed by a Type 30 regenerative detector and finally a type 30 A.F. Amplifier. It is a great deal more powerful than the smaller set and will bring in stations from great distances on the loudspeaker. A good magnetic loudspeaker should be used. Thus, for instance, stations from all over the country come in on the loudspeaker, but, of course, stations 12,000 miles distant require the use of earphones.

The price of the two sets include all necessary plug-in coils. Both sets are operated from ordinary dry cells. The "B" battery supply can be either 90 volts or 135 volts for the THREE TUBE SIGNAL GRIPPER. For the TWO TUBE SET, 90 volts is sufficient.

Both sets tune exceedingly easy, and oscillation is always under full control of the operator. The vernier dials are accurate so that the stations can be logged and found in their allotted positions every time you use the set.

OUR OWN TESTS

Every one of these Doerle Receivers without exception is tested in our laboratory under actual operating conditions. The map illustrated above shows only a few of the countries received during these tests.

We refrain from giving you the astonishing list of stations which we, ourselves, have logged because we do not wish to let our enthusiasm run away with us, and because you might wax skeptical over these actual results. We would much rather have you and our many other short-wave fans talk about the results.

Incidentally, we have yet to receive a single complaint on these sets although without exaggeration, we have sold many hundreds of them.

IMPROVED THREE TUBE SIGNAL GRIPPER

Every 3-tube receiver, whether assembled and wired or in kit form contains the following parts:

HERE IS WHAT YOU GET: 1-Panel drilled; 1-Base, completely drilled and punched; 3-Hammerlund .00014 mf. condensers; 1-Flament rheostat with switch; 2-Kurz Kasch vernier dials; 2-Bakelite Knobs; 1-Audio Transformer; 1-Special R.F. choke; 1-.0001 mf. fixed condenser; 1-.01 mf. mica condenser; 1-.01 mf. tubular condenser; 1-5 meg. grid-leak; 2-Sets of double binding posts; 1-Color-coded battery cable; 2-Coil Sockets; 2-Type 30 tube sockets; 1-Type 34 tube socket; 1-Screen-grid clip; 1-Equalizer (antenna) condenser; 1-Roll hookup wire; 2-Sets of plug-in coils, 15 to 200 meters (4 per set), and assorted hardware. Shipping weight 7 lbs.

No. 2143 Improved THREE TUBE DOERLE SET, completely wired, ready to use. **\$12.85**

YOUR PRICE No. 2144 Improved THREE TUBE DOERLE SET IN KIT FORM with all parts as specified above, but not wired—with blueprint connections and instructions for operation. Shipping weight 7 lbs. **\$11.50**

YOUR PRICE No. 2145 Complete set of accessories, including the following: 2 six months guaranteed Neontron type 230 tubes, one type 34; one set of standard headphones; 2 No. 6 standard dry cells; 3 standard 45-volt "B" batteries, 1 B.B.L. 9-inch Cone Magneto loudspeaker. Shipping weight 32 lbs. **\$11.50**

YOUR PRICE

\$11.50

*Skeptical
of
Short Waves?
we
actually
Guarantee Results*

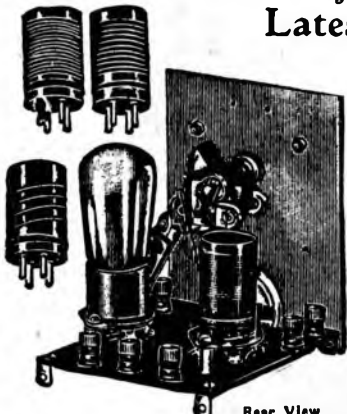


BUY FROM SHORT

These Are Fool-Proof Short-Wave Sets— READ WHY WE CAN GUARANTEE RESULTS

When a manufacturer offers such a wide guarantee—a guarantee which is almost unconditional—he must have a lot of confidence in his products. We have that faith in our short-wave receivers, because they are fool-proof. They are fool-proof because they are simple. EACH RECEIVER EMPLOYS A MINIMUM NUMBER OF PARTS TO MAKE ITS RESPECTIVE CIRCUIT OPERATIVE. ALL FANCY EMBELLISHMENTS USUALLY FOUND ON "EXPENSIVE" SETS HAVE BEEN ELIMINATED. If properly adjusted they will bring in most anything on short waves worth hearing, not only in this country, but anywhere.

The Oscillodyne I-Tube Wonder Set Latest Short-Wave Development! This Is The Ideal Beginner's Set



Rear View
Absolutely Fool-Proof

If you have never used a short-wave set before, this is the one with which to start! If, on the other hand, you are a hard-boiled short-wave fan, and are aware of the shortcomings of the average short-wave set, the Oscillodyne is the set which will instill in you with new confidence. It is a set which will convince you that foreign stations CAN be tuned in whenever they are on the air, weather conditions permitting.

We have acquired the sole right from the publishers of Short Wave Craft to MANUFACTURE EXCLUSIVELY the Official Oscillodyne I Tube Set, as described in the April 1933 issue. Here is what the editor of Short Wave Craft says in this issue:

A Really New Circuit

We are pleased to present to our readers an entirely new development in radio circuits. Under the name of the "Oscillodyne," Mr. J. A. Worcester, Jr. has developed a fundamentally new circuit. This circuit, which is of the regenerative variety, acts like a super-regenerative set, although it does not belong in this class. Its sensitivity is tremendous.

The editor, in his home on Riverside Drive, New York City, in a steel apartment building, was able to listen to amateurs in the midwest, using no aerial and no ground. With the ground alone, a number of Canadian stations were brought in, and with a short aerial of 40 feet, many foreign stations were easily pulled in.

THE OSCILLODYNE RECEIVERS

HOW IT WORKS!

I have constructed the OSCILLODYNE RECEIVER (and boy! how it works!)

The first day without any trouble I received Spain, England, France, and other foreign countries. Amateurs! why I never knew there were that many until now. With the one tube Oscillodyne, I bring in more stations on one plug-in coil than with a set of coils on different short-wave sets.

IF ANY ONE IS TRYING HIS LUCK ON SHORT-WAVE SETS, IT WILL BE WORTH WHILE TO CONSTRUCT THE ONE TUBE OSCILLODYNE.

PAUL KORNEKE, JR. N. S. Pittsburgh, Pa.

MANY FOREIGN STATIONS

Gentlemen:

Received your letter telling me how to get my one-tube OSCILLODYNE in condition. I went about it just as you directed. I disconnected my ground and plugged in the smallest coil, and I brought in my first foreign, EAQ Madrid.

In the past two days I brought in the following foreign stations: IZRO, DJC (this with such volume that I was able to plug in the loudspeaker) and a French station which I was unable to identify, but I believe it to be FYA Pontoise, and also another German station which I have not been able to identify as yet.

On Wednesday EAQ was weak and noisy and DJC was loud and clear, but on Thursday the conditions were reversed. I have received many United States stations, such as W9XAA, W9XF, W8XK, W2XE, etc., etc.

In Short Wave Craft, this set was called a WONDER SET, and I certainly agree.

C. W. KNIERIM, Hollis, L. I., New York.

THE DOERLE RECEIVERS

DELIGHTED!

Gentlemen:

I set the set to working just as soon as received and I am more than delighted with it. I have heard stations in England, Germany, Spain, Italy and Canada today and the set works fine.

I have a friend who told me if my set worked all right, he thought he would order one just like it. You will probably hear from him in a few days as he is coming over to hear my set and I am sure he will order one just like it.

HOWARD A. PAGE, Buckroo Beach, Va.

WELL SATISFIED

I am very well satisfied with the TWO TUBE S.W. SET. It does all that you claim it will.

JAMES V. FAUCETT, Bath, New York.

FOREIGN STATIONS GALORE

Gentlemen:

It may interest you to know that yesterday, March 29th at 12.45 P.S.T., I heard CFH at Rio de Janeiro. They came in at 10220 Kcs. and the announcing voice was as clear and strong as on an ordinary telephone.

I am using just 45 volts for both detector and audio stage on the plate. What it would do on 90 volts on the auto I do not venture to say.

At the moment 10:35 P.S.T., I am listening to phone from Japan to Hawaii. No station identification however. Around 16,030 K.C.S. KKD—Kauhuku Hawaii just identified his station.

HARRY V. DAVIS, Pentleton, B.C., Canada.

This set, as we sell it, may be had either completely wired, or in kit form. There is absolutely nothing to go wrong with the OSCILLODYNE. Simple directions and blueprints show you how to build the set, (if you bought it in kit form), and how to operate it for best results. THE SET MAY BE USED EITHER ON A.C. OR WITH BATTERIES. If A.C. is employed, a type 227 tube is used in conjunction with a suitable A.C. power pack, such as the one listed on the opposite page. 2½ volts will be required for the filament of the tube, and 90 volts for the plate. If batteries are employed, a 237 tube should be used in conjunction with either a storage battery or four—No. 6 dry cells and two—45 volt B batteries.

The set is exactly as illustrated here, size of aluminum panel is 6" high by 4½" wide, base 5½" long by 4½" wide. Ship. wt., 3 lbs.

No. 2146. Official One-Tube Wonder Set, completely wired and tested as per above specifications. YOUR PRICE **\$7.20**

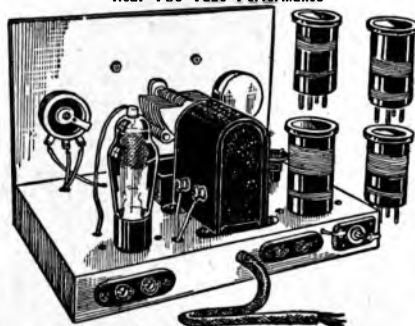
No. 2147. Official One-Tube Wonder Set, but not wired, with blueprint connections and instructions for operation, complete shipping weight 3 lbs. YOUR PRICE **\$6.35**

No. 2148. COMPLETE ACCESSORIES, including the following: one 6 month guaranteed Neutron No. 237 tubes; one set of standard matched headphones; four No. 6 Standard dry cells; two standard 45-volt "B" batteries, complete shipping weight, 22 lbs. YOUR PRICE **\$5.50**



Front View

The Twinplex One Tube "Double-Action" Receiver Featured in SHORT WAVE CRAFT MAGAZINE October 1933 Real Two Tube Performance



It may seem paradoxical when we say that this 1 tube receiver is a 2 tube set, but actually that is so. The type 53 tube employed is the latest to be placed on the market. It contains in one glass envelope, TWO ENTIRELY INDEPENDENT RADIO TUBES which have only their cathodes in common. Hence this receiver is a REAL 2 tube set.

The most popular type of short wave receiver from the constructors standpoint, is the 2 tube affair consisting of a regenerative detector and one stage of audio

amplification. This "2 tube" Twinplex can now be constructed for the same money required to build a 1 tube receiver.

The receiver is UNIVERSAL in operation, that is it may be operated either with batteries or an A.C. 110-volt power pack. A plate potential of 180 volts is required. The heaters require 2½ volts either A.C. or D.C.

Only high grade parts such as Hammarlund Condensers, etc., are used in the construction of this set. All component parts are mounted on a cadmium-plated metal chassis, measuring 6x9x0½ ins. This set is available in two forms namely, completely wired ready to use, and in kit form. A complete set of instructions and blue-prints are furnished with each set.

No. 2115 Twinplex 1 Tube Short Wave Receiver Wired, but less tubes and accessories. Ship. wt. 9 lbs. YOUR PRICE **\$9.50**

No. 2116 Twinplex 1 Tube Short Wave Receiver in Kit Form including Instructions. Ship. wt., 10 lbs. YOUR PRICE **\$8.50**

YOUR PRICE **\$8.50**

No. 2117 ACCESSORIES ONLY—FOR A.C. OPERATION—Including 1 special Hum-Free A.C. Power pack, 1-50 Rectifier tube, 1-53 Tube and one set of matched head-phones. Ship. wt. 10 lbs. YOUR PRICE **\$10.35**

No. 2118 ACCESSORIES ONLY — FOR BATTERY OPERATION—Including 1-53 Tube, 3-45 volt B Batteries, 4 No. 6 Dry Cells (arranged in series—parallel) and 1 set of matched head-phones. Ship. wt., 15 lb. YOUR PRICE **\$6.25**

YOUR PRICE **\$6.25**

WAVE HEADQUARTERS



Sets Which Work At Your Command

And Now! *The Electrified* Official Doerle

ONLY
\$15.20

2 and 3-Tube Receivers

Operate Either On A.C. or Batteries

On pages B-8 and B-9 of this section are described the famous OFFICIAL DOERLE SHORT-WAVE RECEIVERS which have taken the entire country by storm. So far and so wide have their fame spread that now the entire realm of short-wave enthusiasts marvel at their outstanding performance. Read what your own fellow short-wave fans say about these sets—some of their letters are printed on the above-mentioned pages and others on the page opposite.

NOW WE ASK YOU—If these original Doerle sets, which are based around the 2-volt battery tubes, perform in such a remarkable manner—what results can be expected after these sets have been COMPLETELY ELECTRIFIED AND MODERNIZED TO USE THE VERY LATEST A.C. TRIPLE-GRID HIGH-GAIN TUBES?—THE ANSWER IS IN OUR NEW ELECTRIFIED 2 AND 3 TUBE OFFICIAL DOERLE RECEIVERS.

And are they POWERFUL—BOY! The 2-tube receiver brings in stations—REGULARLY—and loud enough to operate a loudspeaker. Practically all local stations and many favorably-located foreign ones are thus received. This set uses 1-57 tube as detector and 1-56 as the audio amplifier tube. It is known as the 2-TUBE 12,500 MILE DOERLE RECEIVER.

The 3-tube receiver brings in stations—REGULARLY—and loud enough to operate a loudspeaker. Practically all local stations and many favorably-located foreign ones are thus received. This set uses 1-57 tube as detector and 1-56 as the audio amplifier tube. It is known as the 3-TUBE 12,500 MILE DOERLE RECEIVER.



Rear View of 3-tube Electrified Signal Gripper.

The 3-tube receiver, known as the DOERLE SIGNAL GRIPPER, employs 1-57 as detector and 1-56 as the audio amplifier tube. The antenna (trimming condenser in this model has been eliminated through the use of INDUCTIVE COUPLING. This feature does away with the necessity of continually adjusting this antenna condenser for the different wavelengths. Two sets of plug-in coils are employed: one set being of the 6-prong type and the other the standard 4-prong type. THE COILS WITH THE SIX PRONGS HAVE THREE SEPARATE WINDINGS, which means that the R.F. tube is inductively coupled to the detector, thereby doing away with the coupling condenser which, if even slightly defective, will cause considerable noise and distortion. This 3-tube receiver will receive ALL local short-wave stations and a considerable number of foreign ones on the loudspeaker—REGULARLY—NIGHT AFTER NIGHT—whenever they are on the air. In other words, no matter how weak a signal may be, if it has sufficient power to reach your antenna, it will be intercepted and reproduced with loudspeaker volume by this receiver.

By special arrangements with the publishers of Short Wave Craft, we have been given the exclusive right to manufacture and sell the Electrified Official Doerle Receivers—to them, if you have wished to own any of these fine sets, you may buy them without the slightest doubt in your mind but what they will perform 100%. This means that all usual "bugs" have been ironed out by us in such a way that in practically any location, not only in this country, but anywhere, they will "do their stuff."

Only First-Class Parts Are Used

We fully appreciate that it is possible for you to buy the parts or the completed sets at a lower price elsewhere, but unless you, too, wish to join the ranks of skeptical short-wave fans, you will insist upon receivers employing only the best parts. For you must not forget that in short waves, it takes as little as a poorly made socket or improper layout of wiring to render a set inoperative. We have done away with all usual "losses" which are incidental to the use of poor components. In these receivers, only the best tuning condensers—and that means Hammarlund—are used. We, too, could have employed cheaper parts, but we refrained from doing so because then, we COULD NOT GUARANTEE RESULTS.



Front View of 3-tube Doerle Signal Gripper.

Special Short-Wave Hum-Free A.C. Power Pack

Designed Especially For The Doerle Receivers

Everyone knows that an A.C. short-wave set is no better than the power pack which supplies its power! A power supply for short-wave work, must be constructed with extreme care. It must be absolutely free from hum or other disturbances caused by insufficient filtering, poor wiring, or faulty equipment.

This unit has a two-section filter circuit, employing two—36 Henry chokes and a tremendous amount of capacity. This assures PURE D.C. with practically no ripple at all.

The power pack supplies 250 volts at 50 mills for the plates of the tubes, 22½ volts for the screens and 2½ volts at 5 amperes for the filaments. These various voltages are obtained from convenient binding posts on the side of the pack. Furthermore, provisions are made for energizing the field of a dynamic speaker. Any speaker having a field resistance of from 1500 to 2500 ohms may be thus energized. All the component parts of this pack are built into a sturdy, metal base which is black, crackle finished. The power transformer and one of the chokes are the



only units which are mounted on top of the chassis. The pack employs a type-280 full-wave rectifier which is sold complete with four feet of connecting cord, terminating in a special Belden soft rubber plug. Measures 7½" long x 4" wide x 4½" high overall. Sold complete with 280 tube. Ship. wt., 10 lbs. No. 2149 Special Short-Wave Hum-Free A.C. Power Pack, including 280 tube. **\$7.25**

YOUR PRICE



Rear View of 2-tube Electrified 12,500 Mile Receiver.

ONLY \$10.45

Our Own Tests

Every one of these Doerle receivers, without exception, is tested in our laboratory UNDER ACTUAL OPERATING CONDITIONS. During the course of our tests, we have logged a great many foreign stations, but we refrain from giving you this astonishing list for fear of inviting skepticism. We would much rather have you and our many other short-wave fans talk about the results yourselves. EACH RECEIVER IS ACCOMPANIED BY SCHEMATIC AND WIRING DIAGRAMS AS WELL AS A PAMPHLET OF COMPLETE AND DETAILED INSTRUCTIONS.

May Be Used With Batteries Too!

The circuits of these receivers are so designed that without any change in wiring they may be used in conjunction with either a power pack or batteries. The only requirement is a change of tubes. In the 2-tube receiver, the 57 tube is replaced with a 77 and the 56 with a 37. In the 3-tube receiver, the 58 is replaced with a 78, the 57 with a 77 and the 56 with a 37. The color code of the power cable in either case is the same with the exception of the filament wires. For A.C. operation, 2½ volts must be supplied to these wires whereas 6 volts are required for battery operation. CAUTION—If you have an A.C. power pack of your own which you intend using with these Electrified Doerle Receivers, we must caution you to make certain that it is as noiseless and hum-free as possible, otherwise you will find that the reception of foreign stations will be impossible.

Please Note

The tubes specified below are Neontron or Triad—both guaranteed for 6 months.

Specifications

- No. 2174 Electrified 2 Tube 12,500 Mile Doerle Receiver, completely wired and tested, less tubes. Ship. wt., 5 lbs. **\$10.45**
YOUR PRICE
- No. 2175 Electrified 2 Tube 12,500 Mile Doerle Receiver in kit form, less tubes, but including blueprints and instructions. Ship. wt., 5 lbs. **\$9.25**
YOUR PRICE
- No. 2176 Complete set of tubes for above; either one—57 and one—56 for A.C. operation, or one—77 and one—37 for battery operation. **\$1.80**
YOUR PRICE
- No. 2177 Electrified 3 Tube Doerle Signal Gripper, completely wired and tested; less tubes. Ship. wt., 7 lbs. **\$15.20**
YOUR PRICE
- No. 2178 Electrified 3 Tube Doerle Signal Gripper in kit form, including blueprints and instructions; less tubes. Ship. wt., 7 lbs. **\$13.75**
YOUR PRICE
- No. 2179 Complete set of tubes; either one—58, one—57 and one—56 for A.C. operation or one—78, one—77 and one—37 for battery operation. **\$2.55**
YOUR PRICE

\$2.55

FREE Short Wave BOOKS

Your Choice

of either one of the books illustrated herewith—FREE OF CHARGE—with the purchase of any of the short-wave receivers listed in this short-wave section.



Book No. 866

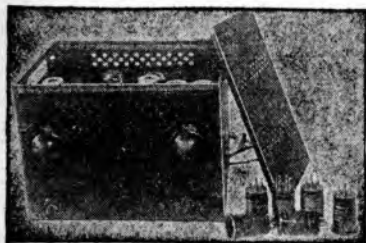


Book No. 830

Book No. 866 explains in a most thorough-going manner the ways and means of obtaining an amateur transmitting license. Furthermore, all government rules regulating amateur transmission are reviewed. Book No. 830 is a comprehensive and thorough compilation of the most prominent short-wave receiver circuits published during a period of two years. Build up your radio library with one of these books!

OFFICIAL DOERLE WORLD-WIDE Receivers

Presenting the Advanced Doerles!—



**THE NEW
Advanced
"DOERLE
A. C. Five"
15 to 200 Meters**
Nothing Else
to Purchase
\$26.95

With Built-in Dynamic Speaker

Well, you Doerle Enthusiasts, isn't this what you've been waiting for? A powerful 5-tube Doerle Receiver, complete with its hum free power supply and dynamic speaker; all mounted on a single chassis and contained in a beautiful, black, crystalline-finished metal cabinet! Two tuned stages, two A.F. stages with powerful 2A5 output and perfectly matched dynamic speaker; all contribute to the enormous power and superlative performance of this "top notch" of the Doerle line.

During its initial test, in one sitting, this receiver pulled in on its loud speaker, at good room volume, the following envious log: DJD, DJC, and DJA, Germany; JIAA, Japan; GSD and GSC, England; CIRX, CIBO, and VEGGW, Canada; EAQ, Spain; H3ARF Bogota, Colombia; XDA, Mexico; FYA, France; WOO and WEF, testing with the Byrd Expedition and a whole flock of amateurs in practically every radio district of the United States. After that we could no longer keep our eyes open, so we "signed off" to bed.

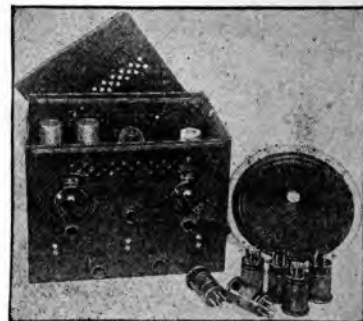
The receiver employs a 58 as RF amplifier, a 57 as detector, a 56 as first audio amplifier, a 2A5 as power output tube and an 80 as full-wave rectifier. The antenna is coupled inductively to the first tuned circuit through the medium of the three-winding, 6-prong plug-in coils used in the first IF stage. This effectively eliminates the bothersome antenna trimming condenser. Provisions are made for plugging in earphones. The entire set measures, 11 1/2" wide x 8 1/2" deep x 8 1/2" high. Ship. wt. 19 lbs.

No. 226 The Official "Doerle A.C. Five," self powered, ready to use, complete with tubes, 2 sets of plug-in coils and dynamic speaker, as illustrated. **YOUR PRICE \$26.95**

- Dynamic Speaker
- 8 Plug-in Coils
- 15 to 200 Meters
- 2 Tuned Circuits

Nothing Else to Buy **\$23.25**

**New
"DOERLE
A. C. Four"**

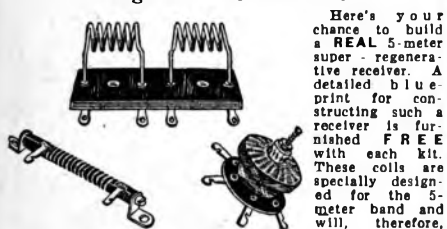


And here's the "understudy" of the DOERLE A.C. FIVE described at the left. This DOERLE A.C. FOUR is, in practically every respect, the same as the Five-Tube Set except that it has one A.F. stage less and uses an external dynamic speaker. Most of the short-wave stations will come in with good volume on the loud speaker. The more distant ones, however, will have to be tuned in with earphones, for which a jack is provided. Its two tuned circuits, together with its single A.F. stage and perfectly matched dynamic speaker, all contribute to the exceptional performance of this receiver.

If you are a regular short-wave fan, you probably know about the world-famous DOERLE 3-TUBE A.C. SIGNAL GRIPPER; about its fine performance and about the many thousands of unsolicited testimonials lauding it to the skies. Well, this DOERLE A.C. FOUR is that same receiver, with its special hum-free power supply mounted on the same chassis and all housed in a beautiful, black, crystalline-finished metal cabinet.

The receiver employs a 58 as R.F. amplifier, a 57 as detector, a 56 as first audio and output tube and an 80 as full wave rectifier. The antenna is inductively coupled to the first tuned circuit through the medium of the three-winding, 6 prong plug-in coils used in the first R.F. stage. This effectively eliminates the bothersome antenna trimming condenser. The dynamic speaker connects to the set through a convenient plug and socket arrangement. Provisions are also made for plugging in earphones. The entire set measures, 11 1/2" wide x 8 1/2" deep x 8 1/2" high. Ship. wt., 19 lbs. No. 227 The Official "Doerle A.C. Four," self-powered, ready to use, complete with tubes, 2 sets of plug-in coils and dynamic speaker, as **\$23.25** illustrated. **YOUR PRICE**

Gen-Win 5-Meter Super-Regenerative Coil Kit



Here's your chance to build a REAL 5-meter super-regenerative receiver. A detailed blueprint for constructing such a receiver is furnished FREE with each kit. These coils are specially designed for the 5-meter band and will, therefore, produce surprisingly good results. A large percentage of amateur and practically all television transmissions are now being broadcast over the extremely high frequency (low wave length) ranges. High frequency transmission channels will in our opinion be the ultimate wave length band over which all regular television transmissions will take place. Already there are quite a number of television stations and thousands of amateur stations broadcasting regularly in these ultra-low waves.

The Gen-Win 5 meter coil kit consists of double tuning coil, special radio frequency choke coil, and special oscillator coil.

Shipping weight, 1 lb.
List Price \$4.50
No. 555 Gen-Win 5 Meter Coil Kit. **\$2.70**
YOUR PRICE

Best Sectional Rotary Switches



Are ruggedly and accurately constructed to give exacting service. They may be furnished with any number of sections with either non-shorting or shorting make contacts; also any combination of these contacts with as many as 9 contacts to each section. All current-carrying parts are well insulated with Bakelite from the shaft, mounting bushing and each other. Made for mounting on any thickness panel and for switching any number of circuits desired. May be used as inductance switches, selector switches; speaker relay switches, and for many other purposes.

ELIMINATES SHORT WAVE PLUG-IN COILS

One of these switches (the 4 or 5 polar non-shorting type with as many contacts as there are short-wave coils) when properly connected will entirely eliminate the necessity and bother of plugging in different coils for different wavelength bands. Merely mount the coils permanently on the chassis, connect the circuit leads to the moving switch arms and the coil leads to their respective contacts, when at a turn of the single knob the various wavelength coils may be switched in and out of the circuit at will. Convenient, compact, efficient.

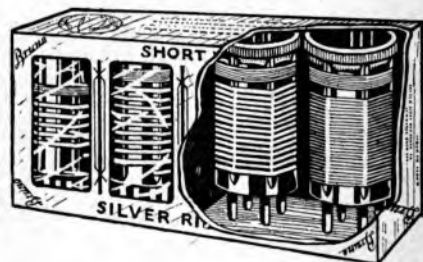
Switches may be constructed according to your own specifications for switching as many as 600 circuits.

MOST POPULAR SIZES				YOUR PRICE
No.	No. of Poles	Type*	No. of Contacts	List Price
1984	1	N.S.	4	\$0.85
1965	1	N.S.	9	1.10
1988	1	S	4	.85
1987	1	S	9	1.10
1968	2	N.S.	4	1.45
1969	2	N.S.	9	1.95
1970	2	S	4	1.45
1971	2	S	9	1.95
1972	3	N.S.	4	2.30
1973	3	S	4	2.30

*Note: N.S.—Non-Shorting; S—Shorting.

Bruno Ribbon-Wound Short Wave Plug-In Coils

Range 15 to 200 Meters



The latest development in the short wave field! In place of ordinary magnet wire these coils use a special uncovered ribbon wire which reduces the distributed capacity, thereby increasing the effective inductance in the tuned circuits.

All coils are wound on an octagonal-shaped, ribbed form which assures low loss performance. Designed to tune with a .00014 mf. condenser. Ship. wt., 3 lbs.

List Price \$5.00

No. B-SWC Bruno Ribbon-wound Short Wave Plug-In Coils. **\$2.94**
YOUR PRICE, per set

Gentlemen:

Your 3 Tube Doerle battery set sure brings in the distant stations. I have only had it a month and have already tuned in: several of the English stations, FYA, DJB, 12RO, EAQ, CNR, HC2RL, HJ1AB, HC1DR, VE9AP, YV3BC, VE9HX, W3XAL, W9XF, W9XAL, W9XAA and WOA. Not so bad, eh?

Thomas P. Jordan, 1523 N. Main Ave., Scranton, Pa.

**SEE PAGE 96 FOR OTHER
SHORT WAVE KITS**

All-Wave Coil Kit

Range 25 to 550 Meters



FREE
PLANS
WITH
KIT



A newly developed all-wave coil kit comprising a 3 circuit tuner and an R.F. coil, both having tapped secondaries, which permits you to enjoy **SHORT WAVE AND BROADCAST PROGRAMS**. By means of a simple shorting-switch arrangement, a portion of the secondary coils may be cut out of the circuit thereby making it resonant to the higher frequencies i.e. lower wave lengths.

Wound on sturdy Bakelite forms provided with suitable soldering lugs. The tickler on the tuner revolves smoothly on its own Bakelite form, at a predetermined distance from the secondary, thereby permitting very fine regeneration control. Kit may be had for use with either .00035 or .0005 mf. condenser. Specify which when ordering. Our No. 1970 Best Sectional Rotary Switch is excellently suited for use with this kit. Either of these units may be bought separately. Blueprint furnished free. Shlp. wt., 2 lbs.

No. 2075 All-Wave Coil Kit **YOUR PRICE \$1.50**
No. 2076 All-Wave 3 Circuit Tuner **YOUR PRICE \$0.90**
No. 2077 All-Wave R.F. Coil **YOUR PRICE \$0.75**

Hammarlund Heavy Duty Transmitting R.F. Choke



This choke is ideal for use in the plate circuits of high power transmitting tubes where the continuous plate current does not exceed 500 milliamperes. For intermittent operation this value may be exceeded by at least 50%. Although the self-inductance of this choke is 5.3 millihenries, its distributed capacity has been held to the extremely low value of 1.5 micro-microfarads. Thus it is **SUITABLE FOR USE IN TRANSMITTERS OPERATING IN ANY OF THE SHORT WAVE BANDS.**

Mounting brackets are secured to the Isolantite core with short machine screws and are insulated from the choke terminals. The mounting brackets may be removed and the choke mounted on a metal base or panel by means of a single machine screw. Overall size (without brackets) 1-5/16" diameter by 2 3/4" long. D.C. resistance, 12 ohms.

No. CH-500 Heavy Duty R.F. Choke **YOUR PRICE \$1.35**

Hammarlund Isolantite R.F. Chokes

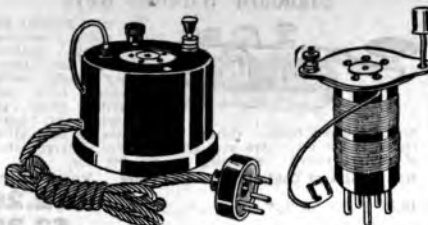
This low-loss radio frequency choke is designed particularly for short wave and ultra short wave receivers and transmitters, but its efficiency actually extends well above the regular broadcast band. Its compactness permits mounting in isolated positions well removed from stray R.F. fields. Its load characteristics make it specially suited as a grid choke for multi-stage transmitters.

Both standard leads and terminals are provided to permit the choke being either base mounted or suspended in the circuit wiring. No metal screw passes through the choke to increase losses and disturbed capacity. The choke measures 1 1/2" x 3/4", has an inductance of 8 millihenries, a D.C. resistance of 70 ohms, a distributed capacity of 3 mmf., and a current carrying capacity of 125 milliamperes.

Code SH-8 Shlp. wt., 4 oz. **YOUR PRICE \$0.66**



GEN-WIN POLICE AND SHORT WAVE ADAPTERS



Types 204 & 205

Types 200 & 201

At last some one has come through with a **Police Adapter** that actually works when you want it to work! Not only will these units intercept police messages but they actually bring in short wave phone and code stations as well. The three types listed below make these adapters applicable to all types of receivers whether A.C., D.C. or battery operated. Imagine receiving first-hand information on underworld activities and their suppression by the police. **NOT ONLY ARE THESE POLICE SIGNALS HEARD FROM YOUR IMMEDIATE VICINITY BUT FROM STATIONS HUNDREDS OF MILES DISTANT.** These signals are the most thrilling and most interesting yet made available by the wonders of radio today. These Gen-Win

Police and Short Wave Adapters are guaranteed to give you complete satisfaction. They are made in three different types, depending upon the type of detector tube employed in your receiver. Any of these types can be easily installed in a few minutes. No technical knowledge whatsoever is required. Merely remove the detector tube from your set, insert the special plug furnished with each adapter, replace the tube in the socket of the adapter and bring the antenna lead to the antenna post of the adapter. That is all. The socket type adapter listed below plugs directly into the socket of the detector tube. The external type is housed in a beautiful antique bronze finished copper casing with felt bottom. Shipping weight of external type, 2 lbs.; socket type, 1 lb.

SOCKET TYPE			
No.	Det. Tube	List Price	YOUR PRICE
200	227	\$2.50	\$1.39
201	224	2.50	\$1.39
EXTERNAL TYPE			
202	227	3.50	\$2.05
203	224	3.50	\$2.05
EXTERNAL TYPE WITH OSCILLATION CONTROL			
204	227	5.00	\$2.75
205	224	5.00	\$2.75

Around-the-World Short-Wave Set



NOT a
Converter

A perfect radio short-wave receiver for use between 15 and 200 meters. To be put into operation, connect antenna, ground, 45 volt "B" and 2 volt "A" dry cells, and headphones to the posts provided, plug in a type 30 tube, and tune in! The 230 tube was chosen because of its extremely low current consumption and economy of operation. An ingenious circuit makes possible a 4-coil single-winding plug-in design. Provides for a maximum amount of grid-plate feed back which is easily and smoothly controlled by a small variable condenser. A very stable arrangement insuring comparatively great volume.

This little instrument has the same sensitivity as many big, shielded short-wave receivers costing ten times as much. A power amplifier may be added for any degree of volume. Complete with 4 plug-in coils. Fine Wood Cabinet, Bakelite Panel. Has fine vernier dial for precision tuning. Never has a first class short-wave set sold for so little money. This short-wave set measures 5 1/2" x 7 1/4" in. high over all. Shipping weight, 3 lbs.

No. 1666 Around-the-World S. W. Set. **YOUR PRICE (Less tube) \$6.25**

New Hammarlund Isolantite Short Wave Coil Forms



These new coil forms answer the demand for a winding form meeting the many exacting requirements of efficient reception at very high frequencies. The material used extruded Isolantite (Low Permeability Material) which closely approximates the qualities of fused quartz. Lowest losses and absolute stability assure maximum sensitivity and selectivity.

Equipped with black enameled wooden handle. Surface of form is "non-skid", eliminating troubles encountered in winding on slippery surfaces. Abundance of wire terminal holes makes drilling unnecessary. Form is 1 1/2 in. in diameter and 2 1/2 in. long, exclusive of knob and prongs. Made in four, five and six prong types to fit standard sockets. Shipping weight 1/2 lb.

List Price \$1.00 **YOUR PRICE \$0.58**

No. CF-4 Four Prong Coil Forms
No. CF-5 Five Prong Coil Forms
No. CF-6 Six Prong Coil Forms

New Hammarlund Isolantite Sockets

Low loss sockets are just as important as low loss coils or low loss condensers. In these new sockets, Hammarlund has combined low cost with low loss, making improved short wave reception available to everyone.

Made of Isolantite (low permeability material) for lowest losses and highest surface resistivity. Glazed top and sides, rust proof slide tripping contacts. Sub-panel or base mounting. Four, five and six prong types. 2 1/4 ins. long x 1 1/4 ins. wide, standard 1-27/32 ins. mounting centers. Mounting spacers and washers backed with each socket.

Hammarlund Isolantite Sockets and Coil Forms provide a short wave combination guaranteeing maximum sensitivity and selectivity. Shipping weight, 4 oz.

No. S-4 (four prong) Sockets **YOUR PRICE \$0.36**
No. S-5 (five prong) Sockets
No. S-6 (six prong) Sockets
No. S-7 (seven prong) Sockets

Hammarlund High Impedance R.F. Choke Coils

85 and 250 Milli-Henries—60 ma.
Standard in the Industry for Years



A special process of helical winding and impregnating, enables the forming of a very large inductance with very low distributed capacity. Have no natural resonance period within broadcast band. Their unusually low distributed capacity makes them exceptionally effective in short-wave work.

Ideally suited for detector plate circuits, B-1 and grid return leads and for R.F. filtering in general. Current carrying capacity of both sizes is 60 milliamperes. Shipping weight, 4 oz.

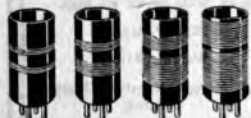
List Price \$2.00
No. RFC-85—Inductance 85 millihenries, capacity 3 mmf., D.C. resistance 215 ohms. **YOUR PRICE \$1.18**

List Price \$2.25
No. RFC-250—Inductance 250 millihenries, capacity 2 mmf., D.C. resistance 420 ohms. **YOUR PRICE \$1.32**

Gen-Win Short Wave Plug-In Coils

Tuning Range 16 to 225 Meters

LITZ-WIRE WOUND



COIL IS WOUND ON A DIFFERENT COLORED FORM FOR QUICK IDENTIFICATION OF THE DIFFERENT WAVELENGTH RANGES. The design of the secondary winding is such that maximum clarity and selectivity are easily achieved. The tickler wind-

ings are properly related to the secondaries thus affording smooth regeneration over the entire range. **RECEIVERS AND CONVERTERS EMPLOYING THESE COILS WILL NOT "PPOP" IN AND OUT OF OSCILLATION** or produce any other disturbing effects. Designed to tune with either a .00014 or .00015 mf. variable condenser. **LITZ WIRE USED THROUGHOUT.** Blueprints of Short Wave Receiver using these coils included. Shipping weight, 1 1/2 lbs.

List Price \$3.75
No. 404 Gen-Win Short Wave Plug-In Coils Employing Litz Wire **YOUR PRICE \$2.25**
No. 404E Gen-Win Short Wave Plug-In Coils Employing Enamelled Wire **YOUR PRICE \$1.50**

TELEGRAPH KEYS AND PRACTICE SETS

Junior Key



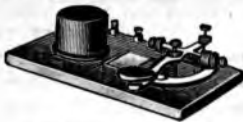
with two brass binding No. 112-K Junior Key
YOUR PRICE

A low-power sending key constructed on a heavy black enamel base. Has coin silver contacts and nickel plated lever. Key is set on a laquered mahogany base board provided posts. Shipping weight, 2 lbs.

\$1.32

Code Practice Set

A simple wireless code practice set for beginners. Just the instrument to get started with. Equipped with a high buzzer which emits a note exactly similar to real wireless signals. Requires only a 3 volt battery for operation. The code is printed on a little brass plate fastened to the base. Key is made of solid brass and is mounted on a beautifully finished base board together with the buzzer and three brass binding posts for battery and ear phone connections. Shipping weight, 2 lb.



No. R-68 Signal Practice Set
YOUR PRICE

\$2.00

Bud Aerial Filter



A highly successful aerial device. It absorbs and thus destroys signals of interfering stations, adding real selectivity and better sensitivity to your set. As the illustration shows, it "filters" out the disturbing signals picked up by the aerial. Every set owner will want one. Housed in a beautiful Brown Bakelite Case. Ship. wt. 1 lb.

No. 217 Aerial Filter
YOUR PRICE

\$1.02

Legless Key

Polished and laquered brass base, nickel plated lever, coin silver contacts. Has also make and break switch. This type of key is used exclusively by Western Union.



No. M-100 Legless Key
YOUR PRICE

\$1.76

Standard Wireless Keys



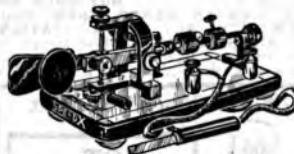
cast laquered brass. Contact points are of coin silver and will not arc. Are available in three different sizes of contact points. Shipping weight 1 1/2 lbs.

No.	Size of Contacts	List Price	YOUR PRICE
R62	3/16"	\$3.85	\$2.26
R63	1/4"	4.00	\$2.35
R64	3/8"	4.25	\$2.50

The most popular key for radio amateur transmitting stations. Designed for larger capacity radio work. The arm, base, and supporting posts are constructed of heavy duty brass. Contact points are of coin silver and will not arc. Are available in three different sizes of contact points. Shipping weight 1 1/2 lbs.

Speed-X Automatic Telegraph Key

Saves Time, Labor and Fatigue
Unconditionally Guaranteed



these new keys, saving themselves time, labor and energy. It is absolutely the simplest thing in the world to operate once you become accustomed to it. A slight pressure of the key to one side produces a series of dots until released. Repeating the operation in the other direction produces dashes.

NOTE THESE EXCEPTIONAL FEATURES: Fully adjustable—can be slowed down to 8 words per minute or geared to as high a rate of speed as desired; standard construction throughout; precision adjustments at all pivot points; contacts 1/2" diameter—made of coin silver; heavy, sturdy construction throughout—will hold adjustment at all speeds; base of bright black enamel—all nickel parts highly polished. **EVERY SPEED-X KEY IS MANUFACTURED TO THE HIGHEST STANDARD OF QUALITY AND IS UNCONDITIONALLY GUARANTEED.** List Price \$12.50 No. 100 "HI-SPEED" Speed-X Telegraph Key.

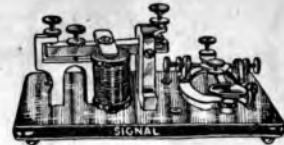
YOUR PRICE

Here is one of the finest automatic keys ever made. Fully adjustable to give delicate balance, hence plenty of "p.e.p." and "life". Experienced amateurs throughout the world are using

the most popular key for radio amateur transmitting stations. Designed for larger capacity radio work. The arm, base, and supporting posts are constructed of heavy duty brass. Contact points are of coin silver and will not arc. Are available in three different sizes of contact points. Shipping weight 1 1/2 lbs.

\$9.35

Signal Learner Set



bridge is brass and sounding bar is aluminum. Key and switch levers are nickel plated. No. M-110 4 Ohm. Learner Set.
YOUR PRICE

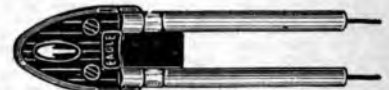
On City, private and short line learners will find this instrument easy to handle and having a clear, distinct tone. Bar frame and key base are black enamel. The sounder and key are mounted on a mahogany finished wood base.

\$2.94

No. M-111 20 Ohm. Learner Set.
YOUR PRICE

\$3.23

Detecto-Light



A neon test lamp for testing fuses, ignition, polarity in D.C. circuits, etc. and for indicating A.C. and D.C. currents. With a little practice one can differentiate between sixty and 25 cycle A.C. with the use of this little pocket test lamp, 6" long. Well made. Shipping weight, 1/2 lb. List Price \$2.00
YOUR PRICE

\$0.98

Thirteen Switch-Button Control Bar



These convenient control units were originally designed as part of equipment for Colonial remote control equipment. They find various applications, however, for controlling inter-office communication systems, annunciator outfits, buzzing systems, etc. Consists of 13 push-button switches mounted on a handsome bronze escutcheon plaque which in turn is imbedded in a walnut base. On top of the plaque is located a green pilot light indicator. This unit is

sold complete with 14 ft., 17 wire cable terminating in a special polarized multi-plug.

No. B4443 Thirteen Switch Button Control Bar.
YOUR PRICE

List Price \$9.50
\$2.63

VIS-O-GLOW LIGHTNING ARRESTER

A Genuine Fire-Hazard Eliminator

At last, we have a lightning arrester which actually "arrests" this fire hazard. Notwithstanding the Underwriter's requiring radio arresters to function at 500 volts and less, the average commercial radio arrester barely meets these requirements. In VIS-O-GLOW, by reason of a NEON TUBE, we are able to obtain a sensitiveness far greater than any other radio protector. In fact, so sensitive is this arrester that the slightest induction is readily shunted to ground. With the



approach of every
YOUR PRICE

lightning storm, the VIS-O-GLOW arrester will by its neon glow, indicate its presence. At the same time it will eliminate the fire hazard to the radio set because this current which lights up the arrester is diverted harmlessly away to ground. With any other type of arrester at least part of this current would enter into the delicate wiring of the set and subject it to damaging effects. Ship. wt. 1 lb. No. 218 Vis-O-Glow Lightning Arrester
YOUR PRICE

\$0.59

S. Gernsback's RADIO ENCYCLOPEDIA Second Edition. Contents Entirely New!

THIS book is the Latest Edition of the Famous First Radio Encyclopedia by S. Gernsback, the first book of its kind ever published in America.

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YOU

It gives you an explanation of every word used in radio. These explanations—rather definitions—are not brief outline information like those of an ordinary dictionary, but they give in fullest detail, and at considerable

length, the meaning and application of every word, phrase, general and special term used in the science of radio. They are written in plain, everyday English, easily understood by anyone.

Practically every definition in the book is illustrated by drawings, photographs, diagrams, or charts. All you need to do is to look up as you would in a dictionary, the word or phrase about which you are seeking information. Furthermore, each page is key-indexed, for greater convenience and speed in locating any definition. All the Subject-Matter is Arranged in Alphabetical Order.

This greatly enlarged Second Edition Radio Encyclopedia is an absolute necessity to every one interested in Radio. It answers all radio questions, increases your knowledge, and saves your time. It covers every known radio problem, and is a goldmine of practical information for every radio man.



List Price \$3.95
No. 814

S. Gernsback's
ENCYCLOPEDIA

YOUR PRICE \$3.10

Here are the HIGH SPOTS

- 2,201 Radio Definitions
- 1,253 Technical Illustrations
- 34 Tables and Charts
- 24 Pages of Appendix
- Size of Book:
- 9 in. wide by 12 in. high
- 352 PAGES
- Weight, 3 lbs.

Red Morocco-Keratol Flexible Binding

Printed on strong ledger paper
Loose-Leaf Arrangement

GEN-WIN COIL KIT COMBINATIONS



Listed below is a whole series of coil kits for constructing every conceivable radio circuit. Each coil embodies latest developments in coil design and construction. Every kit is FURNISHED WITH A DETAILED DIAGRAM showing you how to construct that particular set. All circuits employ the latest type tubes and are indeed up-to-the-minute. Super-heterodyne, T.R.F.'s, A.C.-D.C. sets, etc., are all listed below. Ship. wts., vary from 1/2 to 1 1/2 lbs.

Kit No. 1

Four tube—T.R.F. circuit using 2-gang .00035 Mfd. condenser. Kit contains: 1 high gain Antenna coil, 1 high gain Interstage coil, 1 Radio Frequency choke coil.

YOUR PRICE \$1.19

Kit No. 2

Six Tube—T.R.F. circuit using 3-gang .00035 Mfd. condenser. Kit contains: 1 high gain Antenna coil, 2 high gain Interstage coils, 1 Radio Frequency choke coil.

YOUR PRICE \$1.79

Kit No. 3

Four Tube—Superhet. automobile receiver using 2 gang .00035 Mfd. tracking condenser (with a 456 KC cut plate section). Kit contains 1 high gain Antenna coil, 1 Composite Unit, 1 Single tuned I.F. Transformer.

YOUR PRICE \$2.65

Kit No. 4

Five Tube—Superhet circuit using 3-gang .00035 Mfd. tuning condenser (all sections alike). Kit contains 1 Preselector coil, 1 Composite Unit, 1 Single tuned I.F. Transformer.

YOUR PRICE \$2.95

Kit No. 5

Six Tube—Superhet circuit using 3-gang .00035 Mfd. tuning condenser (all sections alike). Kit contains: 1 high gain Antenna coil, 1 high gain Interstage coil, 1 Composite Unit, 1 Single tuned I.F. Transformer.

YOUR PRICE \$3.25

Kit No. 6

Seven Tube—Superhet circuit using 3 gang .00035 Mfd. tuning condenser (all sections alike). Kit contains: 1 Antenna coil, 1 Interstage coil, 1 Oscillator (3 winding) coil, 2 double tuned I.F. Transformers, 1 R.F. choke coil.

YOUR PRICE \$3.85

Kit No. 7

Nine Tube—superhet circuit using 4-gang .00035 Mfd. tuning condenser (all sections alike). Kit contains: 1 Preselector coil, 1 Translator coil, 3 double tuned 175 kc. I.F. transformers.

YOUR PRICE \$4.95

Kit No. 8

Ten-Tube—Superhet circuit using 4 gang .00035 Mfd. tuning condenser (all sections alike). Kit contains: 1 Band Pass and Antenna coil, 1 Detector and Oscillator coil, 3 double tuned 175 Kc. I.F. Transformers, 1 Radio frequency choke coil.

YOUR PRICE \$5.95

Kit No. 9

Four Tube AC-DC tuned radio frequency miniature sets. Kit contains: 1 high gain antenna coil, 1 high gain interstage coil.

YOUR PRICE \$0.95

Kit No. 10

Five Tube—456 K.C. for AC-DC Superheterodyne miniature set using 2 gang .00035 Mfd. tuning condenser (with a 456 K.C. cut plate section). Kit contains: 1 High gain Antenna coil, 1 Composite Unit, 1 single tuned I.F. Transformer.

YOUR PRICE \$2.65

Kit No. 11

Five Tube 465 Kc. superheterodyne for AC-DC miniature set. Using 2 gang .00035 Mfd. tuning condenser (all sections alike). Kit contains: 1 High gain Antenna coil, 1 Composite Unit, 1 single tuned I.F. Transformer.

YOUR PRICE \$2.55

Kit No. 12

Five Tube 456 K.C. Superheterodyne for AC-DC Miniature Midget Set using 2 gang .00035 Mfd. tuning condenser (with a 456 K.C. cut plate section). Kit contains: - Translator Coil, 1 Double tuned I.F. Transformer, 1 Single Tuned I.F. Transformer.

YOUR PRICE \$2.49

BUILD YOUR OWN AUTOMOBILE RECEIVER!

Gen-Win Four Tube Super-Het. Coil Kit for Automobile Receivers



You can probably save yourself quite a bit of money by building your own automobile radio receiver. With this coil kit as a start, and with the wiring diagram furnished FREE with each kit you can construct a modern, up-to-the-minute receiver based on a super sensitive, super-heterodyne circuit employing the latest type tubes. Although this receiver uses but four tubes it has the performance and volume of a 7 or 8 tube super-heterodyne. The use of the new tubes makes this achievement possible for each of the tubes is made to serve two or three functions. The type 78 tube for instance, acts both as an oscillator and first detector. The other tubes employed are another 78 as I.F. # 77 as second detector and a #1 as a power output tube.

Through the use of 456 kilocycles in the intermediate frequency stage, exceptional selectivity is achieved. The tuning condenser should be a 2 gang job of .00035 Mf. capacity and should have a 456 Kc. cut-plate section.

Uniform oscillator output and high gain in the I.F. stage is procured through carefully designed coils. With the use of these small coils it is possible to build this receiver in the small space measuring less than 6" cube—which is an ideal size for an automobile receiver. The kit consists of a high gain antenna coil, a composite oscillator and first I.F. coil and a single-tuned I.F. transformer in which only the secondary is tuned. These coils may be bought separately if so desired. Shipping weight, per coil, 4 oz.

No. 381 GEN-WIN 4 Tube Super-het Coil Kit. **\$2.65**

YOUR PRICE

GenWin "Figure 8" Lemnis Coil Kit

Designed For Screen-Grid Receivers



Probably the only reason why these coils have not been adopted universally by manufacturers is their high cost of production. Great strides have been made in the design of efficient coils in the last few years but these Lemnis "figure 8" coils reach the pinnacle of perfection.

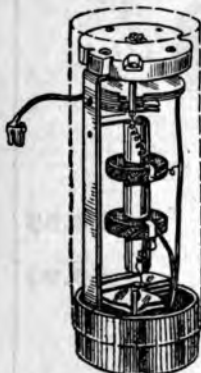
HERE ARE SOME OF THE ADVANTAGES OF THESE COILS: One—Wound with an elongated reverse curve of the "figure 8" type. This form confines the electro magnetic field and neutralizes the tendency toward oscillation. The extraordinary length of the curve reduces the resistance otherwise encountered in small diameter coils. Two—Lemnis Coils have no "peak". They afford high, uniform amplification on all wave lengths in the broadcast band. They do not cause distortion. Three—Lemnis Coils amplify only what is received from the preceding stage. Their non-pick-up qualities reduces the annoyance of static and other interference. Four—They are kept free from dust by means of sealed bakelite cases, thus retaining their full efficiency always. Study these essential features, they are quite important. If you have an old radio which is not performing satisfactorily, revamp it to use these new type Lemnis coils. You will be surprised at the results obtained. A detailed schematic diagram showing how to construct a 5-tube screen-grid receiver with these coils is furnished FREE with each kit. The coils are designed to be used in conjunction with a .00035 mf. ganged variable condenser. Measures 4 1/4" by 1 1/2" by 3/8".

List Price \$12.00

No. 304 Lemnis Coil Kit. **\$2.25**

YOUR PRICE

Hammarlund "Air Tuned" Intermediate Transformers



These new precision I.F. transformers are of the tuned primary, tuned secondary type with both plate and grid coils of Litz wire. They are tuned to resonance by means of air dielectric variable condensers of special design. Each R.F. transformer provides a gain in excess of 200 per stage. The use of air condensers eliminates the variations in gain and selectivity inherent in I.F. transformers using compression type mica condensers. Even when such condensers are built on Isolantite bases and the highest grade mica is used, variations in temperature and relative humidity cause changes in both capacity and power factor, sufficient to render them unfit for use as precision equipment.

Tapped units are available for tubes requiring split input circuits such as Wunderlich tubes 55's, 75's, 85's, 2AG's, etc. The shield can measures 2-3/32" diameter by 5" high and mounts by two screws through the bottom of the shield. Shipping weight, one pound.

No.	Type	
ATT-175	175 K.C. I.F. Transformer	YOUR PRICE \$2.65
ATT-465	465 K.C. I.F. Transformer	
ATT-525	525 K.C. I.F. Transformer	
ATT-175-CT	Center-Tapped 175 K.C.	
ATT-465-CT	Center-Tapped 465 K.C.	
ATT-525-CT	Center-Tapped 525 K.C.	

Peerless Screen Grid R.F. Coils



A set of four R.F. matched tuning coils of superlative excellence for use in Peerless receivers or in constructional work. An ideal transformer for use with the screen grid or new variable mu tube. Has two primary windings so designed as to increase sensitivity at low frequency end of tuning range. For use with .00035 tuning condensers. Four coils to the set. Complete with mounting bracket. Shipping weight, 1/2 lb. Each Coil, 1 1/4" x 3".

No. 1667 Peerless R.F. Tuning Coils. (Set of 4) **YOUR PRICE \$0.60**

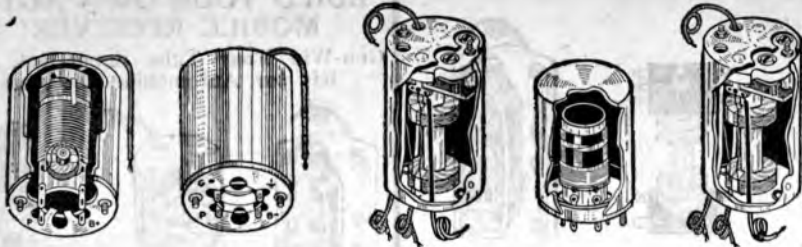
Hammarlund Triple-Grid Tube Shields

For Latest Type 56, 57 and 58 Tubes. The complete isolation afforded by this shield permits full use of the enormous amplification possibilities of the new "50 series" tubes, such as 56's and 57's.

A special drawn-in neck completes the shielding between grid and plate and a removable top is used to entirely shield the control grid cap. Body, cap and base are all made of heavy aluminum and designed for maximum cooling. These tubes may also be used for the small automobile type tubes such as the '36, '37, '38, etc. Measures 4 1/4" high by 1 1/2" diameter.

No. TS-50 Triple-Grid Tube Shield **YOUR PRICE \$0.24**

GEN-WIN 7-TUBE SUPER-HETERODYNE COIL KIT



A 7-tube super-heterodyne coil kit of excellent design and outstanding performance. Designed to tune with a 3 gang .00035 mfd. Variable Condenser. Kit consists of 1 Shielded antenna coil; 1 Shielded high-gain capacity coupled interstage coil; 1 Shielded oscillator coil; 2 double tuned I.F. transformers of 175 K.C.

A detailed diagram, furnished FREE with each kit, will show you how to build an ultra-modern 7 tube super-heterodyne receiver with these coils.

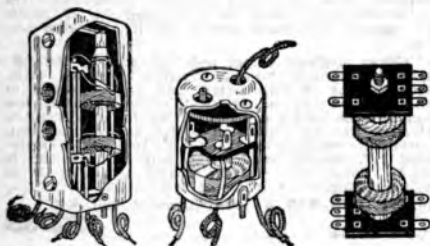
One of the features of this circuit is that it uses the 55 Diode Triode which serves three distinct purposes, namely, diode detector, voltage amplifier and automatic volume control. The antenna stage employs a 58 tube. The oscillator coil uses a 56 tube (excellent for that purpose). The Power Amplifier uses the new 59 tube which has recently made its appearance,

and which supercedes the 47 pentode. The 59 being a Cathode type tube, prevents the A.C. hum in the filament circuit from mixing with the radio signal.

The GEN-WIN 7-tube Super-Het coil kit, when used in conjunction with fairly good parts and carefully constructed, will result in this circuit giving sensitivity of better than 10 Microvolts per meter and selectivity that meets all requirements. The total audio voltage gain of this receiver is over ninety times. Due to the special construction of the coils the signal level and sensitivity is practically uniform over the entire broadcast band. We highly recommend the building of this receiver for dependable, long distance and consistent cross-country reception.

No. 107 GEN-WIN 7-tube super-heterodyne Coil Kit. **YOUR PRICE \$4.20**

Gen-Win 5 Tube AC-DC Super-Het Coil Kit



This kit of small, up-to-date coils has been especially designed for the new AC-DC super-heterodyne midjet receivers which have recently made their appearance on the market. A wiring diagram which is supplied FREE shows you how to construct a sensitive and highly selective 5-tube super-heterodyne receiver.

The circuit incorporates the latest 6.3 volt tubes, and uses a special coil in conjunction with a 78 tube as combined first detector and oscillator in an **AUTO-DYNE CIRCUIT**. The use of this special coil assures a constant oscillator output throughout the entire tuning scale thereby resulting in uniform sensitivity and selectivity. The first I.F. stage consists of a single tuned, closely coupled transformer which feeds into a type 77 tube. The close coupling of this coil still further **INCREASES THE GAIN** and **DECREASES** to an absolute minimum the "losses" which usually manifest themselves in the ordinary I.F. transformer. The fine quality and performance of this receiver is assured through the use of the type 77 tube as a power detector. The output tube is the new type 43.

These coils are designed to be tuned with a two gang .00035 Mf. condenser having a 456 kilocycle cut-plate tracking section. The kit consists of one special coil (combination detector and oscillator), one double-tuned I.F. transformer, 456 K.C. measuring 1 1/2" square by 3/8" high; and one single-tuned I.F. transformer measuring 1 1/2" in diameter by 1 1/4" high. Ship. wt., 2 lb.

List Price \$4.15

No. 390 GEN-WIN 5 Tube AC DC Super-Het Coil Kit. **YOUR PRICE \$2.49**

Gen-Win R.F. Filter Chokes

For Type 82 Mercury-Vapor Rectifiers

These heavy duty filter chokes are positively essential in circuits employing the mercury-vapor rectifier tube type 82. The choke consists of 2 coils, each of which should be connected in series with each plate of the tube. When the mercury in the rectifier tube is vaporized it becomes ionized and creates miniature radio frequency discharges which cause disturbances in the receiver. These chokes will entirely eliminate such disturbances by smothering them out. The coils are approximately 2 millihenries each and will stand at least 250 Mils. They are wound with double silk covered wire and are thoroughly impregnated for high voltages.

List Price \$1.50

No. 615 R.F. Filter Chokes for 82 Rectifiers. **YOUR PRICE \$0.95**

Gen-Win 4 Tube AC-DC Midjet Litz Wire—Bank-wound Coil Kit

For use with 2-gang .00035 M.F. condenser

The new AC-DC receivers, which have recently flooded the market, are extremely simple to build. These coils are the very ones used in a large percentage of these receivers. The kit consists of 2 very efficient high gain coils, the secondaries of which are bank-wound with genuine Litz wire. Extremely small and compact, these coils will fit anywhere on the chassis. It is advisable when constructing such a receiver, to mount one coil above the base and the other beneath. If this is impossible and both coils

have to be placed either above or below the base, they should be mounted at right angles to each other. A 2-gang .00085 Mf. condenser is required to tune these coils. Shipping weight, 1/4 pound.

No. 1184-3 Four Tube AC-DC Midjet Coil Kit. **YOUR PRICE \$0.95**

Gen-Win Shielded R.F. Chokes

These R.F. choke coils are indeed the ultimate in radio frequency choke construction. Because of the peculiar arrangement of the windings, known as three pie windings, there is an absolute minimum amount of distributed capacity per unit of inductance. The illustration here, clearly shows the unique manner in which this choke is wound. It is being adapted very rapidly by manufacturers and research laboratories as standard choke equipment.

The entire unit is housed and shielded in a small aluminum can with terminals protruding conveniently from the sides. Suitable provisions are made for mounting the chokes. These chokes are made in a variety of sizes for all circuit requirements. Ship. wt., 6 oz.

Cat. No.	Description	YOUR PRICE
610	1 Millihenry (for short wave sets)	\$.80
611	4.25 Millihenry (gen. purpose short wave choke)	.85
612	8.8 Millihenry (screen-grid tube circuits)	.90
613	18 Millihenry (for plate circuits of second detector in 175 KC super-het circuits)	.95
614	27.5 Millihenry (for detector plate in T.R.F. circuits)	1.05
615	50 Millihenry (for special purposes)	1.15
616	85 Millihenry (general purpose broadcast receiver choke)	1.25

85 Millihenry Choke Coil

This choke coil is recommended for short-wave work inasmuch as its distributed capacity is extremely low. Its natural period of resonance does not fall within the broadcast band—this being a highly desirable feature in as much as it does not introduce "cut-off" disturbances. Consists of 1800 turn of helically

wound enameled wire. Measures 1 1/4" in diameter x 3/8" thick. Ship. wt. 4 ozs. No. 1681 85 Millihenry Choke Coil. **YOUR PRICE \$0.12**

Gen-Win "Mighty Midget" T.R.F. Coils

Shielded—High Gain



These tiny T.R.F. coils incorporate the most modern advancements in radio frequency coil construction. Although extremely small, physically, they are "big" in performance. If you are planning to build a new midjet or automobile receiver using the very latest tubes we highly recommend these T.R.F. coils. They are small, precision-built and afford the highest possible gain between stages.

The primary windings of these coils are virtually R.F. choke coils which accurately match the plate impedance of the tubes with which they are to be used, thus assuring maximum amplification per tube. Furthermore these primary windings are capacitively coupled to the secondaries—a feature which makes possible uniform amplification on all wave lengths. The coils are designed to be used with a ganged tuning condenser of .00035 mf. per section. Their range is from 200 to 500 meters. Physical dimensions 1 1/4" in diameter by 1 1/4" high. All coil connections are clearly marked on the bakelite base. They may be had in kits of either three or four or individually as listed below. Shipping weight, 3 oz. per coil.

Cat. No.	Description	YOUR PRICE
350-A	Mighty Midget Antenna Coil	\$.51
350-R	Mighty Midget R.F. Coil	.50
350-K	Kit of 3 coils, 1 Antenna 2 R.F. Coils	1.50
350-F	Kit of 4 coils, 1 Antenna 3 R.F. Coils	2.00

Gen-Win Precision Lattice Wound R.F. Choke Coils

Gen-Win choke coils are undoubtedly among the finest in the industry. They are precision wound with the best grade of material thoroughly impregnated by the new electrical-oven heat process. Ship. wt., 4 oz.

Cat. No.	Description	YOUR PRICE
600	1 Millihenry (for short wave sets)	\$0.40
601	4.25 Millihenries (general purpose short wave choke)	.48
602	8.8 Millihenries (for screen grid tube circuits)	.55
603	18 Millihenries (for plate circuits of second detectors in 175 K.C. superhet circuits)	.60
604	27.5 Millihenries (for detector plate in T.R.F. circuits)	.70
605	85 Millihenries (general purpose broadcast receiver choke)	.80

Genwin Self Supporting Coils

These coils cover the band from 200 to 585 meters when used with .0005 condensers. They are ideal for use in the Browning-Drake, Universal and similar circuits calling for regeneration in the detector stage. Wound on circular forms with cellulose binder leaving no dielectric within the field of the coil. These may be used to advantage in the construction of battery operated and portable receivers requiring a high sensitivity with few tubes. Both coils have handy soldering lugs. Shipping weight, 1 lb.

No. 1682 Genwin Two Circuit Antenna Coil. **YOUR PRICE \$0.55**

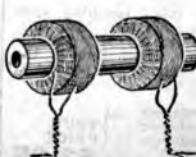
Overall size, 2 1/2 x 2 1/2 x 2 3/4"

No. 1683 Genwin Detector and Ticker Coil—Three Circuit. **YOUR PRICE \$0.95**

Overall size, 3 1/2 x 2 3/4 x 3 1/2"

175 KC I. F. Transformer

Mounted on Isolantite Tubing



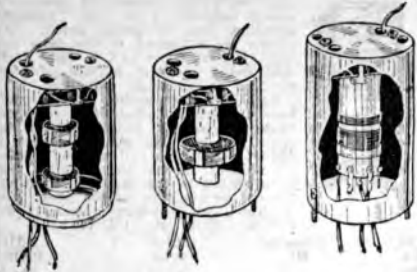
Employed in all majestic superheterodyne receivers. The Isolantite core prevents high frequency losses thereby improving sensitivity and selectivity considerably. May be used for R.F. choke work by connecting the two coils. Ship. wt. 8 oz.

No. 1675 175 KC I.F. Transformer. **YOUR PRICE \$0.20**

GEN-WIN RADIO FREQUENCY COILS

Gen-Win Complete 5 Tube Super-Het. Coil Kit

For Constructing Superheterodyne Receivers

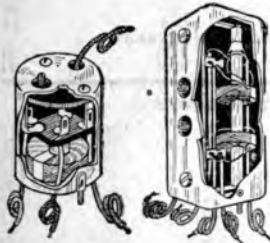


These coils in conjunction with a 3-gang .00035 mf. tuning condenser, small power transformer, a few condensers and resistors, will permit the construction of a five-tube superheterodyne receiver with extremely high sensitivity, selectivity and DX range—a receiver equivalent to and perhaps even better than many of the 10-tube superheterodyne receivers on the market today. BRINGS IN DISTANT STATIONS AS CLEAR AND AS NATURAL AS THOUGH THEY WERE AROUND THE CORNER. No experience or technical knowledge whatsoever is required to build or operate it. Can be easily constructed in an hour's time. These coils are assembled in three small metal shield cases which are of a compact and neat design. Constructed of the finest materials available. They follow a coil design which is quite radical from all previous principles of coil construction. NO DOUBLE SPOT TUNING OR SQUEALING—10 KILOCYCLE SELECTIVITY—DESIGNED FOR THE LATEST TYPE VARIABLE-MU AND PENTODE TUBES. Comprises three shielded coils:—one combination pre-selector and detector coil, one combination oscillator and first I.F. transformer (175 K.C.) and one second I.F. transformer (175 K.C.). Sold complete with full descriptive and constructional data as well as excellent wiring diagram. Dimensions: 2 x 2 3/4 ins., 2 x 3 1/4 ins., x 2 x 2 3/4 ins. respectively. Shipping weight, 4 lbs.

No. 103 Gen-Win Complete 5-tube Super-het Coil Kit
YOUR PRICE **\$3.90**

Gen-Win "Mighty Midget" I.F. Transformers

Both Double Tuned and Single Tuned



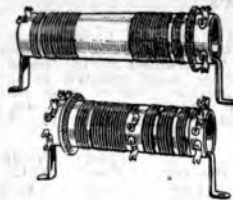
Although extremely small in size, they will far surpass, in actual performance, the old-fashioned 1 1/2 inch sized I.F. transformers. If it is your intention to build a small, compact super-heterodyne especially of the automobile type, then you have no choice in picking your I.F. transformer. You will have to purchase one of these small units. Consider what a saving in space it would mean to you. Single tuned units are only 1 1/2" in diameter by 1 1/2" high—hardly larger than a good sized walnut.

The coils are lattice wound with silk covered wire. The padding condensers are of the new low-loss type. Adjustment of these condensers is made on top of the aluminum shield case. All transformers are accurately packed at the factory and are therefore easily adjusted in your set. They are available for either 175 kc. or 465 kc. as well as with center-tapped secondaries for use with the new Wunderlich and type 55 tubes. Furthermore they may be had with only the secondary windings tuned or with both windings tuned. Shipping weight, 3 oz. each.

Cat. No.	Frequency	Description	YOUR PRICE
360	175 kc.	Standard, single-tuned	\$.90
360-CT	175 kc.	Secondary center-tapped, single-tuned	1.10
370	465 kc.	Standard, single-tuned	.90
370-CT	465 kc.	Secondary center-tapped, single-tuned	1.10
380	175 kc.	Standard, double-tuned	1.15
380-CT	175 kc.	Secondary center-tapped, double-tuned	1.35
390	465 kc.	Standard, double-tuned	1.15
390-CT	465 kc.	Secondary center-tapped, double-tuned	1.35

Band-Pass Superhet. Coil Set

For Constructing Extremely Sensitive Superheterodyne Receivers



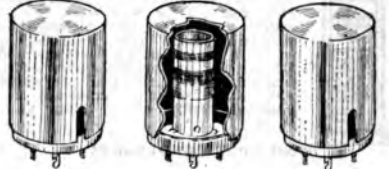
One of the finest superheterodyne receivers can be easily and quickly be constructed with this set of accurately matched coils—a super-het so sensitive and selective that it will cover the entire country at any hour of the day. SPECIAL FEATURE OF THESE COILS IS THE TAPPED OSCILLATOR COIL WHICH REMOVES ALL SEQUENCE OF IMAGE

FREQUENCIES AND HARMONICS. Comprises one pre-selector coil, one antenna coil and one detector-oscillator combination coil. Another feature is the 10 kilocycle bandpass coil combination which they possess. When used with a four gang .00035 mf. variable condenser, they will cover the entire broadcast range in a most efficient manner—forming a perfect selectivity curve. When used in conjunction with the Gen-Win No. 101 I. F. transformers, for 175 K.C., one of the finest and most advanced superheterodyne receivers may be constructed. We recommend this coil set to the most exacting radio fan and experimenter, with the guaranty that extreme sensitivity, perfect selectivity, unlimited pickup range, noiseless operation, perfect tonal quality, tremendous gain per stage without R.F. distortion which is incidental to side band cutting, will be characteristics of a superheterodyne constructed around them. Complete schematic diagram for constructing a superheterodyne receiver included with each kit. Shipping weight, 2 lbs.

No. 100 Gen-Win Band-Pass Superheterodyne Coil Set
YOUR PRICE **\$2.25**

Shielded Radio Frequency Coils FOR SCREEN-GRID AND VARIABLE-MU TUBES

Accurately Matched to Within 1/10 of 1%



These coils are ideal for building selective tuned radio frequency receivers employing the latest type screen-grid and multi-mu tubes. They are precision made, both electrically and mechanically. The primary windings are of silk covered wire wound over the secondaries in proper inductive relationship. Terminal lugs protrude about 3/8 inch beneath the mounting base, making for swift and convenient sub-panel wiring. Also protruding from the base are two screws 1 1/16 inches apart for mounting purposes. The aluminum shield covers are 2 inches in diameter and 2 1/2 inches long. These coils are accurately matched to tune with .00035 mf. variable condensers. Wavelength range 200—585 meters. Coils may be bought either singly or in matched sets of 3 or 4. Ship. wt., per coil, 8 oz.

No.	Description	YOUR PRICE
310A	Antenna Coil	\$.38
310R	Radio Frequency Coil	.38
310K	Three Coil Kit—1 Ant. Coil and 2 R.F. Coils	1.10
310F	Four Coil Kit—1 Ant. Coil and 3 R.F. Coils	1.50

Gen-Win Full Size I.F. Transformers

If you are planning to build a full-size superheterodyne receiver (not the midget type) or if you are planning to convert your old T.R.F. into a super-het., we recommend that you use these full-sized high gain intermediate frequency transformers. The primary and secondary windings are properly coupled to insure maximum gain, and consequently, uniform volume on all wave lengths. The coils are lattice-wound with silk-covered enameled wire. The padding condensers are assembled on genuine Isolantite forms to eliminate all possible I.F. losses. These units are easily packed under all circuit conditions. They are available for both 175 kc. and 465 kc. and may also be had with center tapped secondary windings for use with the Wunderlich or type 55 tubes. Shipping weight, 3/4 pound each. Dimensions 2-3/32" in diameter x 2 3/4" high.

Cat. No.	Frequency	Description	YOUR PRICE
101	175 kc.	Standard	\$1.20
101-CT	175 kc.	Secondary center-tapped	1.30
102	465 kc.	Standard	1.25
102-CT	465 kc.	Secondary center-tapped	1.35

Gen-Win Shielded High Gain R.F. Coil Kit

Automobile and Portable Receivers

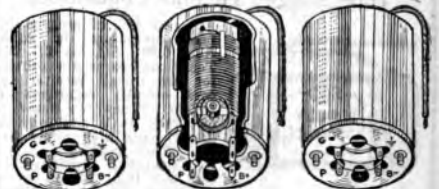


These coils are the latest and most advanced—being especially for automobile and portable receivers. They are exceptionally small and compact in size measuring but 2 1/2 ins. wide by 2 ins. high. The secondary windings are bank-wound making them capable of extreme selectivity and sensitivity and high gain per stage. This latter feature is highly desirable in automobile receivers where space is at a premium, making it possible to eliminate one or two stages of r.f. without sacrificing selectivity to any appreciable amount. Designed for use with a .00035 mf. variable condenser. Wavelength range 200—585 meters. Coils may be bought either singly or in accurately matched sets of 3 or 4. Shipping weight per coil, 8 oz.

No.	Description	YOUR PRICE
312A	Antenna Coil	\$.50
312R	Radio Frequency Coil	.50
312K	3 coil kit—1 Ant. coil—2 R.F. coils	1.50
312F	4 coil kit—1 Ant. coil—3 R.F. coils	2.00

Gen-Win Shielded Radio Frequency Coil

For Screen-Grid and Variable-Mu Tubes



ACCURATELY MATCHED TO WITHIN 1/10th OF 1%, these coils are ideal for building selective, tuned-radio-frequency receivers employing the latest type screen-grid and multi-mu tubes—they are precision built, both electrically and mechanically. These coils have a high impedance (choke coil) primary winding which accurately matches the plate of the tube with which it is being used, thereby securing maximum amplification per stage. This choke coil primary is capacitively coupled to the secondary winding producing a flat amplification curve. This means that stations on the lower wave lengths will come in with the same degree of volume, intensity and selectivity as those on the higher wave lengths. These coils are designed to tune with a .00035 mf. variable condenser gang. They may be bought either singly or in matched sets of three or four. Furthermore if so specified any of these coils may be tapped so that short wave reception from 80 to 200 meters may be obtained. Shipping weight, 3/4 pound each.

No.	Description	YOUR PRICE
330-A	Antenna Coil	\$.55
330-R	R. F. Coil	.55
330-K	Three coil kit (1 Antenna 2 R.F. coils)	1.65
330-F	Four coil Kit (1 Antenna 3 R.F. coils)	2.20
340-A	Antenna coil tapped at 80 Meters	.65
340-R	R.F. coil tapped at 80 Meters	.65
340-K	3 Coil Kit tapped at 80 Meters	1.95
340-F	4 Coil Kit tapped at 80 Meters	2.60

Gen-Win Shielded Oscillator Coils

175 KC. and 465 KC.



These coils are not of the miniature type but are full-sized, made for full-sized receivers. It is of the three winding type, namely, cathode pick-up winding, tickler winding and secondary winding. Superheterodyne circuits these days are employing this type of oscillator coupling for three reasons; which are EASE OF ADJUSTMENT, EXTREME STABILITY AND FREEDOM FROM HARMONICS. The coil is fully shielded in an aluminum measuring 2 1/2" in diameter by 2 3/4" high and having mounting screws 1-27/32" between centers. The terminal lugs protruding from the base. Available for 175 kc., 175 kc., and 465 kc. Ship. wt., 1/2 lb. each.

No.	Description	YOUR PRICE
406	Gen-Win 175 kc. Oscillator Coil	\$.48
407	Gen-Win 175 kc. Oscillator Coil	.48
408	Gen-Win 465 kc. Oscillator Coil	.48



PAPER AND ELECTROLYTIC CONDENSERS

Tobe Dry Electrolytic Condensers In Metal Containers



638



618

or inverted mounting. Tobe Dry Electrolytic condensers are designed for operation at a maximum D.C. voltage

For replacement in receiver power packs originally employing wet or dry electrolytic condensers. Available in all popular capacity groupings for either upright or inverted mounting. The single microfarad unit is provided with a stud and nut for inverted mounting in a 7/8" mounting hole and has mounting lugs firmly attached to the base to facilitate upright mounting. These lugs will fit mounting holes on 1 1/4" to 2" centers. The multiple section condensers are provided with adjustable ring clamps, making possible either upright

of 500 volts. The single 8 mf. unit is entirely insulated from its metal container and is provided with insulated flexible leads. The multiple section condensers are constructed with the metal container as the negative terminal of all sections. All of these condensers have flexible leads and are supplied in cylindrical aluminum containers 4" high. Ship. wt., 1/2 to 4 lbs.

No.	Mf.	Diameter	List Price	YOUR PRICE
611	1	1 1/2"	\$0.75	\$0.44
612	2	1 1/2"	.75	.44
614	4	1 1/2"	.85	.50
616	6	1 1/2"	1.00	.59
618	8	1 1/2"	1.05	.62
610	10	1 3/4"	1.25	.74
6112	12	1 3/4"	1.40	.82
624	4-4	1 3/4"	1.30	.76
6048	4-8	2 1/4"	1.45	.85
60515	5-15	2 3/8"	2.30	1.35
628	8-8	2 1/4"	1.80	1.06
60816	8-16	2 1/4"	2.35	1.38
638	8-8-8	3"	2.70	1.59
648	8-8-8-8	3"	3.60	2.12
9918	9-9-18	3 1/2"	3.75	2.21
991818	9-9-18-18	3 1/2"	5.25	3.09

Tobe Dry Electrolytic Multiple Sections



These condensers are supplied in rectangular metal containers for installation where the cylindrical containers cannot conveniently be used. Capacity groupings are as shown below. All groups are contained in the same size can 4 1/2" x 2" x 1 1/2". Six inch, color coded, insulated flexible leads are provided to facilitate connection.

Each condenser section in the multiple section dry electrolytic condenser blocks is entirely independent of the other sections. The metal container is INSULATED from all of the condenser sections so that the container may be grounded to the chassis without affecting the operation of the power pack in which the condenser block is installed. Ship. wt., 1 1/2 to 3 lbs.

Cat. No.	Capacity Mf.	List Price	YOUR PRICE
724	4-4	\$2.70	\$1.59
7046	4-6	2.00	1.71
7048	4-8	2.95	1.73
726	6-6	3.20	1.88
7068	6-8	3.25	1.91
728	8-8	3.25	1.91
734	4-4-4	3.05	2.32

Tobe Midget Tubular Condensers



A new line of compact by-pass condensers in values from 0.001 Mf. to 0.1 Mf. These condensers are suitable for use in all receiver by-pass circuits regardless of voltage. They are rated at 600 volts D.C. and have an exceptionally high safety factor. They require no special mounting provisions as they are light enough to be supported by their tinned leads. All capacities 1 1/2" x 3/8" x 1/2" with 1 1/2" D.C. Ship wt. 2 oz. ea.

Cat. No.	Capacity Mfd.	List Price	YOUR PRICE
M-1000	.001	\$0.18	\$0.11
M-2000	.002	.18	.11
M-4000	.004	.18	.11
M-5000	.005	.18	.11
M-6000	.006	.18	.11
M-8000	.008	.18	.11
M-10,000	.01	.18	.11
M-20,000	.02	.20	.12
M-40,000	.04	.22	.13
M-50,000	.05	.22	.13
M-60,000	.06	.24	.14

Tobe Dry Electrolytic Condensers In Cardboard Cartons



These condensers are available in convenient sizes for replacement in all types of radio receivers. The mounting of these condensers is greatly facilitated by the provision of punched extensions on both ends of the cartons. This type of mounting makes it possible to fasten the condenser to the chassis without resort to clamps or metal bands. The Type 511 and 512 condensers have mounting holes with clearance for 8-32 screws on 2 1/2" centers. All other dry electrolytics in cardboard cartons have mounting holes for 8-32 screws on 4 1/2" centers. Type 511 and 512 are available with soldering terminals only. All other are available with either soldering terminals or 4" insulated flexible leads. Ship. wt., 1/4 lb. ea.

Cat. No.	Mfd.	List Price	YOUR PRICE
511	1	\$0.55	\$0.32
512	2	.65	.38
514	4	.75	.42
516	6	.90	.55
518	8	.95	.56
5110	10	1.15	.68

5112	12	1.30	.76
524	4-4	1.20	.71
5048	4-8	1.35	.79
528	8-8	1.50	.88
534	4-4-4	1.80	1.06
538	8-8-8	2.20	1.29

350 VOLT CONDENSERS			
314	4	.70	.41
316	6	.85	.50
318	8	.90	.53
324	4-4	1.15	.68
3048	4-8	1.30	.76

250 VOLT CONDENSERS			
212	2	.55	.32
214	4	.65	.38
216	6	.75	.42
218	8	.80	.47
2110	10	.85	.50
224	4-4	1.00	.59
2046	4-6	1.10	.65
2048	4-8	1.15	.68
20420	4-20	1.45	.85
226	6-6	1.15	.68
2068	6-8	1.20	.71
20612	6-12	1.30	.76
228	8-8	1.30	.76
228-S	8-8	1.30	.76
20816	8-16	1.50	.88

150 VOLT CONDENSERS			
128-N	8-8	1.20	.71
128-P	8-8	1.20	.71

Tobe Auto Ignition Condenser

Especially designed for connection to the ignition coil or generator of an automobile ignition system to suppress radio interference. Contained in a metal tube and provided with one-hole mounting bracket. Ship. wt., 1/2 lb.



Cat. No.	Size	List Price	YOUR PRICE
AP-100	1 mf.	\$0.80	\$0.47
AP-50	1/2 mf.	.60	.35

Equalizing Condensers



A sturdy, accurate, neutralizing, balancing or trimming condenser. Very small and compact. For use in balancing multiple-tuned circuits or equalizing condensers

Cat. No.	Capacity Mf.	Min.	Max.	YOUR PRICE
588	75	100	350	\$0.35
590	75	100	350	.38

Polymet Midget By-Pass Condensers

These neat-appearing compact units are available in two sizes, viz. 1 mf. and .2 mf. Measure but 1 1/2" high x 1 1/2" wide x 7/16" deep. Equipped with two long leads for convenient connections. Ideal for use in midget receivers. Ship. wt., 1/4 lb. ea.



No. B7038	Polymet .1 mf. By-Pass Condenser.	\$0.16
No. B7039	Polymet .2 mf. By-Pass Condenser.	\$0.20

Surge-Proof Guaranteed



These condensers are especially designed for use in bypass circuits where an extremely compact condenser is required. Prices, sizes and working voltages are shown below. Ship. wt., 4 oz. ea.

Cat. No.	Mf.	Volts	List Price	YOUR PRICE
T-505	5	50	\$0.50	\$0.29
T-5010	10	50	.65	.38
T-5025	25	50	.80	.47

Tobe Tubular Dry Electrolytic Condensers

T-5050	50	50	1.30	.76
T-305	5	30	.50	.29
T-3010	10	30	.50	.29
T-3025	25	30	.65	.38
T-3050	50	30	.95	.56
T-30100	100	30	1.15	.68
T-325	5-5	30	.65	.38
T-511	1	500	.55	.32
T-512	2	500	.65	.38
T-311	1	350	.55	.32
T-312	2	350	.60	.31
T-211	1	250	.50	.29
T-212	2	250	.55	.32
T-214	4	250	.65	.38
T-1752	2	175	.50	.29
T-1755	5	175	.65	.38
T-17510	10	175	.75	.42
T-115	5	125	.55	.32
T-1110	10	125	.70	.41
T-1125	25	125	.95	.56

Tung-Sol Multi-Section By-Pass Condenser



This compact, shielded by-pass condenser contains 4-.25 sections, and 2-.1 sections. It is compact and will easily fit into all types of midget receivers and power amplifiers. Six color-coded wires indicate the various capacities which are as follows: 2 yellow wires—1 mf. each, 3 blue wires and 1 red wire—.25 mf. each. Suitable mounting flanges are provided on the shield can. Measures 1 1/2" x 2" x 1 1/2". Ship. wt. 1 lb. No. B7036 Tung-Sol Multi-Section By-Pass Condenser. **\$0.40**

Sprague Triple 0.1 Mf. Condensers

The set builder will find these small condenser blocks indispensable because of their space-saving qualities. The metal case in which the capacities are housed is only 3/4 x 1 1/2 inches, yet it includes three 0.1 mf. by-pass condensers. In Pentode and Variable Mu receivers, one of these condenser blocks will be sufficient to bypass the plate grid and cathode circuits. Three soldering lugs project from one end, one for each condenser, and a red wire wired to all three serves as a common grounding connection. A machine screw projecting from the bottom provides a means of mounting the can to a baseboard or sub-panel. Ship. wt. 1/4 lb. No. F7012 Sprague 3 Section By-Pass Condensers. List Price \$1.50 **\$0.23**

Polymet Electrolytic—Paper—Mica Condensers

Polymet Pe-tite Tubular Paper Condensers

Non-Inductive



These units are the very latest type cartridge condensers on the market. They are of the "rolled-in" edge type which prevents the pig tails from being pulled loose. Although moderately priced these Pe-tite condensers are absolutely reliable. They are one of the most convenient forms of paper condensers and are used in practically all modern receivers. In actual operation they are just as much "shielded" as condensers in metal cans;—for when the "outside foil" end of these condensers (plainly marked on each unit) is grounded, the condensers become thoroughly shielded. Shipping weights vary from 2 to 8 oz. according to size.

Cat. No.	Cap. Mf.	Volt- age	List Price	YOUR PRICE
C-658	.01	200	\$0.30	\$0.15
C-659	.025	200	.25	.12
C-660	.05	200	.25	.12
C-662	.1	200	.25	.12
C-665	.25	200	.30	.15
C-667	.5	200	.40	.20
C-685	.01	400	.30	.15
C-686	.02	400	.30	.15
C-687	.05	400	.35	.17
C-688	.1	400	.40	.20
C-689	.25	400	.50	.25
C-690	.5	400	.60	.30
C-691	.001	600	.25	.12
C-692	.002	600	.25	.12
C-651	.006	600	.30	.15
C-693	.01	600	.35	.17
C-694	.02	600	.35	.17
C-695	.05	600	.40	.20
C-697	.1	600	.50	.25
C-698	.25	600	.60	.30
C-652	.05-.05	200	.55	.27
C-653	.1-.1	200	.80	.30
C-654	.25-.25	200	1.70	.35
C-655	.05-.05	400	.75	.37
C-656	.1-.1	400	.80	.40

Polymet "Postage Stamp" Mica Condensers



These are the new type mica condensers designed for service in all types of receivers. They are especially suitable in midget receivers where space is at a premium. These compact units measure but 3 3/4" square by 1/4" THIN A POSTAGE STAMP. They use the popular form of pig tail mountings. Mica condensers should be used exclusively in all short wave receivers as well as for coupling work. All condensers listed below are of uniform size despite the differences in capacity. Ship. wt., 4 oz. each.

Cat. No.	Cap. Mf.	List Price	YOUR PRICE
MI 1149	.000005	\$0.35	\$0.17
MI 1150	.00001	.35	.17
MI 1151	.00002	.30	.15
MI 1154	.00005	.30	.15
MI 1156	.0001	.25	.12
MI 1159	.00025	.25	.12
MI 1162	.0005	.30	.15
MI 1164	.00075	.30	.15
MI 1165	.001	.35	.17
MI 1166	.0015	.35	.17
MI 1167	.002	.35	.17
MI 1168	.003	.40	.20
MI 1169	.004	.45	.22

Polymet Dry Electrolytics For A.C.-D.C. Receivers

In Cardboard Containers



These units were especially designed for the midget A.C. D.C. receivers. They are of the low voltage high capacity type and will withstand considerable heat. Small A.C. D.C. receivers give off a tremendous amount of heat which, in a very short time ruins electrolytic condensers not designed for that type of service. Both single and dual units are listed below. All dual units have common negative terminals. Ship. wts. 1 to 3 lbs.

Cat. No.	Cap. Mf.	Volt- age	List Price	YOUR PRICE
DC 201	4-4	150	\$1.25	\$0.63
DC 202	8-8	150	2.00	.98
DC 203	16-8	150	2.35	1.15
DC 204	24-12	150	3.00	1.47
DC 205	4	150	.75	.37
DC 206	8	150	1.00	.49
DC 207	16	150	1.75	.85
DC 208	5-5	25	.90	.44
DC 209	10-10	25	1.00	.49
DC 210	5	25	.60	.30
DC 211	10	25	.70	.34

Polymet 500 Volt Dry Electrolytics

In Cardboard Containers



A popular type of electrolytic condenser rated at 500 volts working voltage. Provided with long, color-coded flexible leads for easy connections. The dual units listed below have three leads, one of which serves as common negative. Shipping weights vary from one to three pounds according to size.

Cat. No.	Cap. Mf.	List Price	YOUR PRICE
DR 252	2	\$0.90	\$0.44
DR 254	4	1.10	.49
DR 256	6	1.10	.54
DR 258	8	1.25	.62
DR 260	10	1.50	.74
DR 444	4-4	2.25	1.11
DR 448	4-8	2.35	1.16
DR 488	8-8	2.60	1.28

Polymet 500 Volt Dry Electrolytics

In Round Aluminum Cans These units are of the inverted mounting type for concealed sub-chassis wiring. Provided with two color-coded leads for easy connections. The dual units listed below have common negative terminals. Each unit is rated at 500 volts working voltage. Shipping weights one to three pounds according to size.

Cat. No.	Cap. Mf.	List Price	YOUR PRICE
DR 284	4	\$1.50	\$0.74
DR 286	6	1.75	.86
DR 288	8	2.00	.98
DR 300	4-4	2.50	1.23
DR 302	4-8	2.80	1.38

DO YOU WANT TO KNOW—

- * about the new tubes and their uses?
- * the theory of Condenser (capacity) Action?
- * how to make money in Public Address Work?
- * the characteristics of all types of tubes?
- * how to construct a Short Wave Transmitter and Receiver?

—then read the editorial section of this catalog. It is a veritable gold mine of information.

"Surge-Proof" Uncased Repair Condensers

Compact Repair Condensers



Designed for repairing all types of receiver power packs. Provide maximum capacity and safety factor in minimum space. For use when lack of spare forbids the use of the larger "SURGPROOF" units. Insulated, tinned, flexible leads for easy installation. Available in the sizes and ratings listed below. Shipping weight, 1/4 lb. each.

Cat. No.	Mf.	Size	List Price	YOUR PRICE
S-4010	0.1	3/4 x 1 1/2"	\$0.45	\$0.26
S-4025	0.25	1 x 1 1/2"	.55	.32
S-4050	0.5	1 1/2 x 1 1/2"	.65	.37
S-441	1.0	2 x 1 1/2 x 1 1/2"	.90	.53
S-442	2.0	3/4 x 2 1/2"	1.50	.88

Cat. No.	Mf.	Size	List Price	YOUR PRICE
S-6010	0.1	1 1/2 x 1 1/2"	.50	.29
S-6025	0.25	1 1/2 x 1 1/2"	.65	.37
S-6050	0.5	1 1/2 x 1 1/2"	.85	.50
S-661	1.0	2 1/2 x 1 1/2 x 1 1/2"	1.25	.73
S-662	2.0	3 1/2 x 2 1/2 x 1 1/2"	1.70	1.00

Cat. No.	Mf.	Size	List Price	YOUR PRICE
S-8010	0.1	1 1/2 x 1 1/2 x 1 1/2"	.65	.37
S-8025	0.25	1 1/2 x 1 1/2 x 1 1/2"	.85	.50
S-8050	0.5	1 1/2 x 1 1/2 x 1 1/2"	1.10	.65
S-881	1.0	4 1/2 x 2 1/2 x 1 1/2"	1.60	.95
S-882	2.0	4 1/2 x 2 1/2 x 1 1/2"	2.25	1.02

Cat. No.	Mf.	Size	List Price	YOUR PRICE
S-1210	0.1	1 1/2 x 1 1/2 x 1 1/2"	.85	.50
S-1250	0.5	4 1/2 x 2 1/2 x 1 1/2"	1.75	1.03
S-1201	1.0	4 1/2 x 2 1/2 x 1 1/2"	2.85	1.71

R.T.C. Uncased Condensers



special tests. Furnished with 8-inch lengths of tinned wire.

Cat. No.	Mf. Capacity	Your Price	In Dozen Lots
1702	1/2	\$0.22	\$2.50
1703	1	.24	2.65
1704	2	.35	4.00
1705	4	.55	6.35

Cat. No.	Mf. Capacity	Your Price	In Dozen Lots
1706	1	\$0.30	\$3.40
1707	2	.47	5.35
1708	4	.75	8.50

Cat. No.	Mf. Capacity	Your Price	In Dozen Lots
1709	1	\$0.47	\$5.35
1710	2	.75	8.50
1711	4	1.00	11.35

R.C.A. Uncased Condensers

600 volts working voltage



Excellent units for replacement work in condenser packs where one or more sections have become "shorted" or broken down. Why replace the entire power pack when one or perhaps two of these units will do the trick? Each condenser is shielded in weather-proof cellophane. Ship. wt., 1/4 lb. ea.

No. 1766 Uncased Condenser 1 mf. 600 volts	\$0.16
YOUR PRICE	
No. 1767 Uncased Condenser 2 mf. 600 volts	\$0.30
YOUR PRICE	
No. 1768 Uncased Condenser 4 mf. 600 volts	\$0.40
YOUR PRICE	

"RTC" Encased, High-Voltage "Puncture Proof" Filter Condenser Units



These are similar to our regular RTC condensers, except that they are encased in a special impregnated fiber board case, which comes in various attractive colors. Instead of the loose wires, we provide long soldering lugs. This makes a very neat and compact unit, highly recommended by all service men who have tried them.

All RTC units come with a one full year free replacement guarantee. These condensers are scientifically designed, built and rated to operate safely at their rated working voltages. The safety factor is in excess of that required to withstand both their R.M.A. and N.E.M.A. retest requirements. These condensers are scientifically impregnated by means of a new vacuum process. The special impregnation compound used has a high melting point of 175 degrees Fahrenheit, protecting condenser against heat developed in modern amplifier units. Old type paraffin condensers still used and sold by many firms have approximately 130 degrees Fahrenheit melting point. All dielectric material used in these condensers is pure 100 per cent. linen paper, free from acid, alkali, bleaching material and impurities. Only the best aluminum foil is used in their manufacture.

Cat. No.	Mf. Capacity	Your Price	In Dozen Lots
450 VOLTS			
3703	1	30c	\$3.42
3704	2	40c	4.56
3705	4	70c	7.98
600 VOLTS			
3706	1	35c	3.95
3707	2	45c	5.10
3708	4	80c	9.10

Shipping weight approx. 1/4 lb. per M.F.

Flechthem Superior Paper Dielectric Condensers

Flechthem Non-Inductive Transmitting Condensers

For High Tension Work—1000 to 3000 Volts D.C.



Where a transmitting condenser is called upon to perform under conditions of continuous duty and strain, as in the case of many broadcast and commercial stations as well as amateur stations.

Flechthem Non-Inductive Transmitting Condensers will be found to work silently and dependably, playing their role without danger or trouble in the high voltage filter circuits.

THESE CONDENSERS ARE ALL CONSERVATIVELY RATED FOR CONTINUOUS DUTY, D.C. (direct current motor-generator) and r.m.s. (r.m.s. (root means square, rectified alternating current).

High grade porcelain stand-off insulators are used throughout to protect the scientifically designed terminals thereby eliminating all possibility of either arcing or leakage. All transmitting condensers are encased in strong, metal, weatherproof containers which protect them from heat and mechanical damage. The guaranty of the Flechthem name, together with that of our own, is your assurance that you cannot find better condenser anywhere at any price. Shipping weights vary from 2 to 11 lbs. according to size.

Type TC—1,000 v. d.c.—750 v. r.a.s., r.m.s.					
Cat. No.	Cap. Mf.	Size in Inches		List Price	YOUR PRICE
TC-100	1.0	1 1/2"	1 1/2"	\$3.50	\$1.89
TC-200	2.0	4 1/2"	3 1/2"	5.50	2.97
TC-400	4.0	4 1/2"	3 1/2"	9.57	5.27
Type T—1,500 v. d.c.—1,000 v. r.a.s., r.m.s.					
T-100	1.0	3 1/2"	3 1/2"	4.50	2.43
T-200	2.0	3 1/2"	3 1/2"	7.50	4.05
T-400	4.0	3 1/2"	3 1/2"	13.00	7.02
Type TH—2,000 v. d.c.—1,600 v. r.a.s., r.m.s.					
TH-100	1.0	6 1/2"	3 1/2"	8.50	4.59
TH-200	2.0	6 1/2"	3 1/2"	13.00	7.02
TH-400	4.0	6 1/2"	3 1/2"	22.00	11.28

Heavy Duty Filter Condensers

Rated at 1000 Volts D.C. Extremely Light and Compact



These condensers represent the highest perfection in the art of making comparatively high voltage condensers for heavy duty amplifiers. Every unit in this series is conservatively rated at 1,000 volts, continuous D.C. operation and 660 volts A.C. r.m.s. THEY HAVE A HIGH INSULATION RESISTANCE OF OVER 1,000 MEGOHMS PER MICROFARAD, extremely low power factor and non-inductive windings. Capacity tolerance 5% plus or minus. Flash breakdown rating of 3,400 volts D.C. These extremely efficient units are ideally suited for laboratory and experimental work. Shipping weights vary from 1/2 to 5 lbs.

Cat. No.	Cap. Mf.	Size in Inches		List Price	YOUR PRICE
HSM-5	.05	2 1/2"	1-3/16"	\$1.25	\$0.68
HSM-10	.1	2 1/2"	1-3/16"	1.35	.73
HSM-25	.25	2 1/2"	1-3/16"	1.50	.81
HSM-50	.5	2 1/2"	1-3/16"	1.65	.89
HSM-100	1.0	2 1/2"	1-3/16"	2.25	1.22
HSM-200	2.0	2 1/2"	2 1/2"	3.50	1.89
HSM-201	2.0	2 1/2"	1 1/2"	3.50	1.89
HSM-400	4.0	4 1/2"	2 1/2"	5.60	3.03
HSM-401	4.0	4 1/2"	2 1/2"	5.60	3.03

Flechthem Shielded By-Pass and Filter Condensers

Rated at 200 to 400 Volts D.C.



These condensers are enclosed in inverted drawn-metal shells provided with integral mounting feet and convenient soldering lugs. The importance of proper bypassing and filtering in radio receivers and amplifiers has resulted in the use of a large number of this type of condensers. Service Men everywhere should be prepared to replace defective units with Flechthem condensers in order to eliminate all further condenser troubles. These units are especially designed for by-passing, filtering and coupling work and provide minimum impedance at radio and audio frequencies. The 200 volt condensers are recommended for by-pass work while the 400 volt units are usually reserved for filtering. Ship. weights vary from 1/2 to 8 oz.

Type GB—200 v. d.c.—120 v. a.s., r.m.s.					
Cat. No.	Cap. Mf.	Size in Inches		List Price	YOUR PRICE
GB-100	1.0	3/4"	2 1/4"	.75	.41
GB-200	2.0	1 1/4"	2 1/4"	1.20	.65
GB-400	4.0	1-13/16"	2 1/4"	2.30	1.24
Type GF—400 v. d.c.—220 v. a.s., r.m.s.					
GF-10	.1	3/4"	1 1/4"	.50	.27
GF-25	.25	3/4"	1 1/4"	.80	.32
GF-50	.5	3/4"	1 1/4"	.75	.41
GF-100	1.0	3/4"	1 1/4"	1.00	.54
GF-200	2.0	1 1/4"	2 1/4"	1.50	.81
GF-400	4.0	1-13/16"	2 1/4"	2.85	1.49
GF-11	1-1-3/4"	3 1/4"	1 1/4"	.80	.43
GF-255	25-25	3 1/4"	1 1/4"	.85	.35
GF-55	5-5	2 1/4"	1 1/4"	1.00	.54
GF-111	1-1-1/4"	3 1/4"	1 1/4"	.85	.46

Flechthem "Puncture-Proof" Filter Condenser Units

Non Inductive—Rated at 600 Volts D.C.



We recommend that Service Men and radioticians keep on hand a number of such units of various capacities to meet all emergency cases for replacement condensers. These condensers are without doubt, the neatest, smallest and most efficient ever made. They are wound non-inductively, impregnated in a special non-bygrosopic compound, and finally enclosed in a final shell of wax paper wrapping. This construction renders these condensers absolutely moisture and weather proof. Equipped with 8" lengths of tinned wire leads which are guaranteed not to pull out. If you are looking for a thoroughly dependable, unceasing condenser to employ in your repair work, we unconditionally recommend these units as the finest obtainable. Shipping weights vary from 1/2 to 12 oz.

Type NU—600 v. d.c.—440 v. a.s., r.m.s.					
Cat. No.	Cap. Mf.	Size in Inches		List Price	YOUR PRICE
NU-10	.1	2"	1-1/16"	\$0.45	\$0.24
NU-25	.25	2"	1-1/16"	.55	.30
NU-50	.5	2"	1-1/16"	.85	.35
NU-100	1.0	2"	1-1/16"	.95	.51
NU-200	2.0	2"	1-1/16"	1.40	.70
NU-400	4.0	2"	1-13/16"	2.60	1.40



Midget Bypass Condensers

These beautifully made, highly efficient midget condensers are the most versatile, handiest and most economical units available, especially for work on midget receivers where space is at a premium. They are being employed universally for by-passing, coupling, grid-blocking, compensating, neutralizing and many other purposes. Most economical units available; tinuous D.C. working voltage. Shipping weight, 1/2 oz.

Type M—500 v. d.c.—250 v. a.s., r.m.s.					
Cat. No.	Cap. Mf.	Size in Inches		List Price	YOUR PRICE
M-A	.001	1 1/4"	1-15/16"	\$0.40	\$0.22
M-B	.002	1 1/4"	1-15/16"	.40	.22
M-C	.0025	1 1/4"	1-15/16"	.40	.22
M-D	.005	1 1/4"	1-15/16"	.40	.22
M-E	.001	1 1/4"	1-15/16"	.45	.24
M-F	.002	1 1/4"	1-15/16"	.45	.24
M-G	.004	1 1/4"	1-15/16"	.45	.24
M-H	.005	1 1/4"	1-15/16"	.50	.27
M-I	.006	1 1/4"	1-15/16"	.60	.32
M-K	.01	1 1/4"	1-15/16"	.85	.35
M-L	.02	1 1/4"	1-15/16"	.70	.38
M-M	.05	1 1/4"	1-15/16"	.85	.46

Zenith Replacement Condenser Block

Part No. PL-1145
10 1/2 Mf.

Consists of six sections, each represented by a color-coded flexible lead and distributed as follows: black lead, common; yellow, 2 mf. at 800 volts; brown, 1 mf. at 800 volts; green, 3 mf. at 600 volts; blue, 3 mf. at 400 volts; red, 1 mf. at 200 volts. The condenser block also contains one separate condenser, terminating in two white leads and having a capacity of .25 mf. at 400 volts.

This condenser block will fulfill the requirements of all power packs for receivers and amplifiers. Put up in a strong, black enameled metal case and provided with suitable mounting lugs. Overall dimensions 9 1/2" long x 5 1/2" high x 2 1/4" wide. Ship. wt. 10 lbs. No. B7016 Zenith Replacement Condenser Block—

YOUR PRICE **\$2.50**

1/2 Mf. Transmitting Condenser

Working Voltage 1,000 Volts D.C.

This unit is thoroughly impregnated in moisture-proof sealing compound, and will, therefore, retain its rated capacity under all operating conditions.

Conservatively rated at 1,000 volts, D.C. Excellent for use as a replacement unit in transmitters, high-powered sound equipment. Measures 5 1/2" long x 2" wide x 3/4" deep. Ship. wt., 1 lb. List Price \$1.25

No. B7019 1/2 Mf. Transmitting Condenser. YOUR PRICE **\$0.20**



BUD PRECISION TUNING CONDENSERS

BUD PRECISION TUNING CONDENSERS are actually precision built and are so rugged and compact that they will fit any space into which a variable condenser is required. Because of the mechanical construction of these condensers, the electrical characteristics are constant and do not vary, as in some cases where end play and lateral play of the rotor sections are found to exist. Constancy of electrical value is attained through the carefully designed one piece frame and the use of a special brass shaft housed in a ball-bearing race.

BUD PRECISION TUNING CONDENSERS are made in single and ganged sections in various capacities for Broadcast TIF and Superhet receivers and also for short wave receivers and experimental work.

Cat. No.	Min. Cap. Per Section	Max. Cap. Per Section	SINGLE GANG	
			YOUR PRICE	YOUR PRICE
1047	5 mmfd.	50 mmfd.	\$0.68	
1048	7 mmfd.	100 mmfd.	\$0.68	
968	8 mmfd.	150 mmfd.	\$0.74	
1043	17 mmfd.	350 mmfd.	\$0.88	
Cat. No.	Min. Cap. Per Section	Max. Cap. Per Section	TWO GANG	
			YOUR PRICE	YOUR PRICE
971	8	150 mmfd.	\$1.23	
969	17	350 mmfd.	\$1.32	
Cat. No.	Min. Cap. Per Section	Max. Cap. Per Section	THREE GANG	
			YOUR PRICE	YOUR PRICE
970	17	350 mmfd.	\$1.82	
973	8	150 mmfd.	\$1.79	



Super Heterodyne Tuning Condensers

One section is designed to track with an intermediate frequency of 175 kilocycles. The other two sections having a maximum capacity of 350 mmfd. per section. No. 972 YOUR PRICE **\$1.82**

No. 964 350 mmfd. per section with 465 kilocycles tracking section. YOUR PRICE **\$1.82**

One section is designed to track with an intermediate frequency of 175 kilocycles. The other three sections having a maximum capacity of 350 mmfd. per section. No. 858 YOUR PRICE **\$2.50**

No. 857 350 mmfd. per section with 465 kilocycles tracking section. YOUR PRICE **\$2.50**

HAMMARLUND VARIABLE CONDENSERS

Band-Spread Condensers



These condensers are designed for use as "band spread" tuning condensers for short wave receivers and for use in amateur band frequency meters. The "tank" section can be set and locked at any desired capacity permitting the tuning section to spread narrow frequency ranges over the entire dial, regardless of the hand or the coils used. Ship. wt., 2 lbs.

No.	Tank Capacity	Tuning Capacity	YOUR PRICE
MC-120-B	100 mmf.	20 mmf.	\$1.76
MC-150-B	100 mmf.	50 mmf.	\$1.90
MC-175-B	100 mmf.	75 mmf.	\$2.06

Double-Spaced Midget Condensers

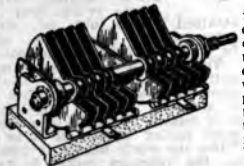


Wide spacing, special bearings and Isolantite make these condensers particularly SUITABLE FOR ULTRA SHORT WAVE RECEIVERS AND TRANSMITTERS. Air gap between plates is .0715".

Their small size adapts them to the compact types of transmitters now so much in vogue. For tuning amplifier stages in crystal controlled transmitters and for neutralizers up to 210's and 50 watters. Ship. wt., 2 lbs.

No.	Maximum	Minimum	YOUR PRICE
MC-35X	35 mmf.	6 mmf.	\$1.35
MC-50X	50 mmf.	7 mmf.	\$1.65

Double-Spaced Dual Midget Condensers



AN IDEAL CONDENSER FOR COMPACT 5 METER TRANSMITTERS USING TUBES UP TO 245's OR 210's IN PUSH-PULL.

Actual air-gap between adjacent rotor and stator plates is .0715". Capacity per section, 33 mmf. max., 6 mmf. min. Ship. wt., 1 1/2 lbs.

No. MCD-35X Double-spaced Dual Midget Condenser
YOUR PRICE \$2.10

Hammarlund "Midline" Condensers

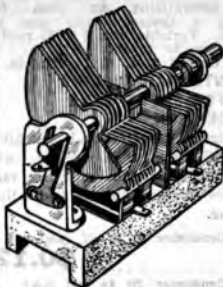


Years of leadership attest the remarkable engineering perfection of "Midline" Condensers. Special shaped brass plates, full floating rotor, removable shaft, perfect bearings and contact, rib-reinforced aluminum alloy frame. "Parmica" low loss insulation.

Dual condensers to special order, also condensers with Straight-Frequency-Line plates, condensers of special capacities and condensers with double spaced or extra heavy plates. Ship. wt., 2 lbs.

No.	Maximum Capacity	YOUR PRICE
ML-23	.0005 mf.	\$2.64
ML-17	.00035 mf.	\$2.48
ML-11	.00025 mf.	\$2.25

Hammarlund Dual Midget Condensers



Like Hammarlund Single Midget Condensers, these new duals incorporate in their design every requirement of a high quality small size two-gang condenser. Their rigidity, low losses and careful construction provide for great electrical and mechanical efficiency in all types of short wave receivers employing two-gang tuning condensers.

The entire condenser is BUILT ON A STRONG ISOLANTITE BASE. Including a shield plate between the stators. Other specifications are the same as for the single midget condensers described on the opposite page. Made for single hole panel mounting. Overall length behind panel is 3 3/4". Stock sizes are listed below. Ship. wt., 2 lbs.

No.	YOUR PRICE
MCD-140M (140 mmf. capacity per section)	\$2.40
MCD-100M (100 mmf. capacity per section)	\$2.10

Improved Hammarlund Midget Condensers

"Midline" and Straight Line Capacity Types
The marked efficiency of Hammarlund Condensers at ultra high frequencies is attested by their dominant position in amateur and experimental fields and their use by the more prominent manufacturers of short wave receivers, television equipment and high frequency apparatus in general.

In such work, with frequencies running up to 50 and 60 megacycles, unusual electrical efficiency is demanded. Every feature of Hammarlund Condensers is designed to meet these strict demands.

General Specifications:—Plates are .0225" brass with .0245" airgap between plates. Shafts are 1/8" diameter and extend 5/16" beyond the rear frame to facilitate ganging. Standard condensers include stops and are made of increase capacity by clockwise rotation. Individually tested for breakdown on 500 volts A.C. and packed with 1 1/2" bakelite knob. Quality fully guaranteed. Ship. wt. 3/4 lb.

REGULAR STOCK SIZES

Cat. No.	No. of Plates	MID.		Back of Panel Size	List Price	Your Price
		Cap.	Max.			
MC-325-M	43	320	2 3/32"	\$3.50	\$2.10	
MC-250-M	34	260	2 3/8"	3.00	1.80	
MC-200-M	27	200	"	2.75	1.65	
MC-140-M	19	140	1 19/32"	2.50	1.50	
MC-100-M	14	100	1 13/32"	2.25	1.35	
MC-100-S	14	100	1 13/32"	2.25	1.35	
MC-75M	11	80	1 7/32"	2.00	1.20	
MC-75-S	11	80	1 7/32"	2.00	1.20	
MC-50-S	7	50	1 7/32"	1.60	.96	
MC-35-S	5	35	1 7/32"	1.50	.90	
MC-20-S	3	20	1 7/32"	1.40	.84	

"M"=Midline Plates. "S"=Semi-Circular Plates

New Hammarlund Midget Trimming Condensers



These midget trimmers are used principally in automobile, AC/DC and other compact types of chassis for purposes of I.F. tuning and the padding or trimming of oscillator and other circuits. Best quality mica and low loss bakelite provide for high efficiency. Adjusting screws are conveniently slotted at both ends.

Standard capacities are listed below. Single units are 1-3/16" in diameter with 4/32" tapped mounting holes on 15/16" centers and fit in 1 1/4" diameter round cans. Dual units measure 1 1/4" x 2 1/4" with 4/32" tapped mounting holes on 1-25/32" centers and fit in the new type square I.F. transformer caps designed for slide mounting tuning condensers. Ship. wt., 1/2 lb.

SINGLE CONDENSERS

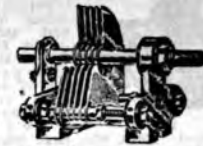
Cat. No.	Type	List Price	YOUR PRICE
BBT-70	25-70 mmf. Trimming Cond.	\$0.40	\$0.24
BBT-140	70-140 mmf. Trimming Cond.	.50	.29
BBT-220	140-220 mmf. Trimming Cond.	.60	.35

DUAL CONDENSERS

BBT-70-D	25-70 mmf. Trimming Cond.	.70	.41
BBT-140-D	70-140 mmf. Trimming Cond.	.80	.47
BBT-220-D	140-220 mmf. Trimming Cond.	.80	.53

S.L.W. Midget Variable Condensers

For Ultra Short Wave Work



These condensers were designed to meet the difficult requirements of Ultra High Frequency Service. They embody a number of unusual refinements—such as—Insulux Insulation properly placed to reduce dielectric losses to an absolute minimum, constant impedance, dual pig-tail rotor connections and thick non-resonant brass plates to prevent microphone feedback caused by acoustic vibration. Both rotor and stator plates are completely insulated from the frame, thus entirely eliminating the possibility of shorted turn effect or changes in reactance due to loose contact of shaft when the rotor plates are turned.

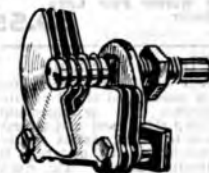
All models are furnished with the shaft extending through the rear bearing for ganging purposes. The frame of the condenser is constructed with a slotted keyway, which facilitates mounting two or more condensers as a unit, through the use of a bar of any length which can be slipped and fastened in the keyway. Therefore, the sections may be spaced at any distance and at all times maintain perfect alignment. Ship. wt., 1 lb.

Cat. No.	Cap. Mmf.	Air Gap	Plates	List Price	YOUR PRICE
100	20	.026	5	\$1.25	\$0.73
101	50	.026	11	1.50	.89
102	75	.026	15	1.75	1.03
103	100	.026	20	2.00	1.18
104	150	.026	25	2.25	1.33
105	200	.0175	27	2.50	1.50
106	250	.0175	32	2.75	1.62

Standard Shaft Length 1 1/4"

Midget Variable Condensers

Rugged—Dependable—Accurate



These variable condensers are used extensively for vernier tuning, compensating, building test oscillators, laboratory equipment and for a host of other purposes. THEY ARE EXCELLENTLY SUITED FOR SHORT WAVE WORK, where they are usually employed in the antenna circuit making the short-wave receiver highly selective and sensitive and bringing in DX STATIONS never before received.

When used for controlling regeneration in short-wave receivers, they afford a smooth unfalling control—a highly desirable feature. The plates are rigidly maintained in their respective slots to insure against mechanical vibration at the extremely high frequencies. Designed for one hole mounting. Individually boxed. Shipping weight, 1 lb.

No.	Plates	Capacities Max.	Capacities Min.	List Price Less Knob	YOUR PRICE
2192	3	15 mmf.	3 mmf.	\$0.50	\$0.36
2193	5	30 mmf.	4 mmf.	.60	\$0.38
2194	7	40 mmf.	5 mmf.	.60	\$0.42
2195	11	60 mmf.	6 mmf.	.70	\$0.45
2196	15	100 mmf.	7 mmf.	.80	\$0.47

Amco Siamese Tuning Condensers

An accurately aligned 2-gang condenser which embodies all the fine principles of construction and operation of Amco low-loss products. Designed for panel mounting. Measures 3 3/4" long x 1 1/4" wide x 3 3/4" back-of-panel depth.



Its straight line-frequency characteristics make it especially suitable for use in calibrated instruments, such as wattmeters, beat-frequency oscillators, etc., etc. Each section has a maximum capacity of .00035 mf. Ship. wt., 2 lb. List Price \$3.75. No. B7040 Amco Siamese Tuning Condensers.

YOUR PRICE \$0.70

Hammarlund Flexible Couplings



This coupling saves time, money and temper for radio constructors as it permits operation of any number of variable units in tandem without requiring exact shaft alignment. The sides of the coupling are insulated from each other, allowing instruments in gang to be operated as independent electrical units. Made of tough bakelized canvas, with brass bushings and hardened set-screws. Shipping weight 4 oz. List Price \$0.60.

No. FC-3 Hammarlund Flexible Couplings (for 1/4 in. shafts)
YOUR PRICE \$0.36

"Zenith" Four Gang Die Cast Condenser



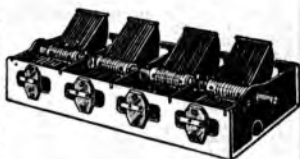
This is a sturdy die cast condenser for use in the construction of all radio receivers where

.00035 mfd. units are prescribed. Built with large space between elements and with electrostatic shielding. Mechanical construction is such that the condenser plates cannot possibly get out of alignment. Each plate is made a full 1/16th of an inch thick to avoid the warping found in instruments of less sturdy nature. Shipping weight, 8 lbs.

No. 1750 "Zenith" Four Gang Die Cast Condenser
YOUR PRICE \$1.00

Stewart Warner Four Gang .00035 Mfd. S.L.F. Condenser

A sturdy condenser unit for use with all circuits requiring a four gang tuning condenser. Straight Line Frequency Characteristics for ease in tuning. Shaft 3/8 in. in diameter for strength. These



condensers are made from the finest brass stock with positive contact adjustable bearings. One of the finest condensers made. Equipped with trimmer condensers, one for each section. Perfectly aligned throughout entire tuning range. The very finest condenser made. Shipping Weight, 8 lbs. Overall Size, 7 3/4 x 2 1/2 x 4 in. No. 1752 Stewart Warner Four Gang Condenser

YOUR PRICE \$0.55

Bradley Brass-Plated Variable Condenser



These units are probably the finest constructed of all variable condensers. It is thoroughly shielded throughout and is brass plated to guard against weather corrosion. It will maintain its calibration always. The spaces between plates are extra large so that it may be used for low power transmitting work. Available in the following capacities, .0005, .00025, .00035 and .001. Many service men use these units for making oscillators which must be accurately calibrated. It mounts on a front panel with two screws and has 3/4" shaft. Measures 3 3/4" wide by 1 1/2" high by 1 1/2" deep overall. Ship. wt. 2 lbs.

No. 103 Bradley Brass Plated Variable Condenser
YOUR PRICE, each \$0.50

Hammarlund Compensating Condenser



These are the standard Hammarlund compensating or trimmer condensers for use in ganging circuits or neutralizing. An item for which a thousand uses may be found. Variable from 2 to 35 mmfd. and from 20 to 100 mmf.

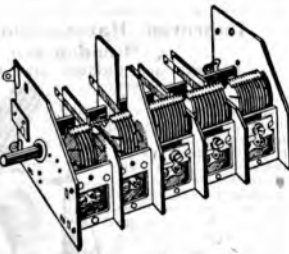
Shipping weight, 1 oz. Overall size, 1/4 x 1 1/2 x 1/4 in.
AN IDEAL ANTENNA-COUPLING CONDENSER FOR SHORT-WAVE RECEPTION

Makes the receiver highly selective and sensitive, bringing in DX STATIONS never before received. Adjustment of center screw provides smooth noise-free variation of capacity. May be attached directly to binding post of socket or condenser.

No. 1742 Compensating Condenser 2 to 32 mmf.
YOUR PRICE \$0.12
No. 1743 Compensating Condenser 20 to 100 mmf.
YOUR PRICE \$0.30

5-Gang All-Wave Variable Condenser

This condenser was originally designed for a full-fledged all-wave receiver. It consists of three sections of standard .00035 mfd. capacity to cover the regular broadcast range and two sections of .00014 mf. to cover the short wave bands.



JUST STOP TO CONSIDER THE POSSIBILITIES OF SUCH AN INSTRUMENT. Ten and eleven tube all-wave super-heterodyne receivers can easily be constructed around it. Special experimental circuits may be tried out with it. In building all-wave sets around this unit, it is possible to have two separate receivers built on the same chassis—one for regular broadcast reception and the other for short waves, yet each is independent of the other.

This condenser is of the ball-bearing type and each section is fully shielded from the other. All rotors are grounded to the shaft. The three broadcast sections each have trimmers. The unit measures 6 1/2" long x 3 1/2" wide x 4 1/2" high. The shaft is 3/8" in diameter. Circuit connections to the rotors are made through special friction springs, thereby eliminating the usual radio interference when the rotors are tuned. Provisions are made for mounting the condenser in every conceivable way. Ship. wt., 3 lbs.

List Price \$7.00
No. 1782 5 Gang All Wave Variable Condenser.
YOUR PRICE \$1.50

Kurz-Kasch Vernier Dial



The dial attaches to the shaft of the instrument to be tuned by the famous Kurz-Kasch Split Bushing method. Friction action employed—with a spring ever ready to compensate for wear. Vernier ratio 14 to 1.

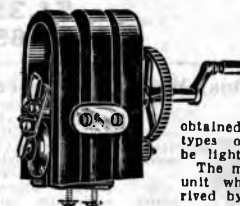
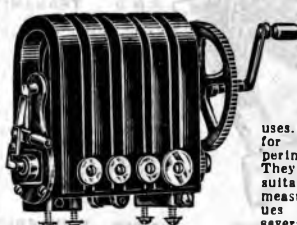
Excellent For Short Waves

Short wave stations tune in very sharply and unless a high ratio vernier dial is used to rotate the tuning condensers, may be entirely passed by unnoticed. With the Kurz-Kasch Vernier Dial, the calibrated scale revolves once, thus insuring extremely fine tuning results. Available in 3" and 4" sizes (specify which).

The outside of the dial is handsomely chased in a very decorative effect. Shipping weight, 1 lb.

List Price \$2.00
No. 1580 Kurz-Kasch Vernier Dial
YOUR PRICE \$0.39

Telephone Magneto Generators



Although these units were designed originally to be used in conjunction with telephone equipment, they have a considerable number of other uses. They may be used for laboratory or experimental purposes. They are particularly suitable for use in measuring resistor values in the region of several megohms since the output peak voltage is in the neighborhood of several hundred volts. Then again by connecting the output to 2 electrodes and carefully rotating the armature, excellent therapeutic results may be obtained.

Neon tubes and other types of gas filled tubes may be lighted by these magnetos. The magneto is a self-contained unit wherein the energy is derived by rotating an armature in a magnetic field of permanent magnets. This armature is rotated by means of a crank handle and a set of gears having a ratio of 5 to 1. This means that every time the crank handle is turned one complete revolution, the armature makes 5 complete revolutions. In this way the armature may be made to revolve at very high speeds, thus producing high frequency alternating current in the output. These particular magnetos, under no load, produce high voltages, which, under load, rapidly fall down to from 6 to 8 volts. The magneto is excellently suited for ringing bells at remote points. The armature is automatically disconnected from the circuit by means of a thrust contact, when the magneto stops revolving.

These magnetos are actually generators, differing therefrom only in the type of field excitation used. The generator, as we know it today, has a field coil which requires current for excitation. These magnetos employ permanent magnets instead. **BY FEEDING ALTERNATING CURRENT THROUGH THE ARMATURE AND REMOVING THE RATIO GEARS, THE MAGNETO BECOMES A MOTOR.** There are hundreds upon hundreds of uses and experiments which may be performed with these little units. These magnetos are available with 3, 4, and 5 permanent magnets as listed below. Shipping weights vary from 8 to 14 lbs. according to size.

No. HC-3 Holtzer-Cabot 3 Bar Magneto. **\$1.00**
YOUR PRICE
No. SC-4 Stromberg-Carlson 4 Bar Magneto. **\$1.50**
YOUR PRICE
No. HC-5 Holtzer Cabot 3 Bar Magneto. **\$2.50**
YOUR PRICE

PLEASE NOTE

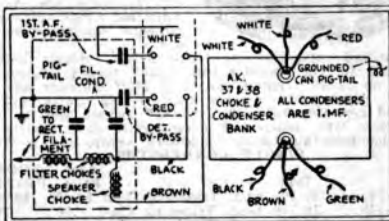
Free premiums and Special Offers of any kind do not apply to Readrite, or Supreme Merchandise.

Gentlemen:
Your mailing appeals to me over those I have received. You appear to know the problems of servicing and the parts needed and give much valuable data.
H. M. Turner, 2050 McTavish St., Regina, Sask. Canada.

Atwater-Kent 37-38 Filter Choke and Condenser Block



power pack for a receiver using a type '71A output tube you will need only a rectifier tube socket, a voltage divider, a power transformer, and this complete filter block; containing as it does the full complement of filter and by-pass units. It is of special interest that the filter chokes used in this pack have very high inductance. Consequently, to obtain a hum-free output it is not necessary to use higher value filter condensers than the two 450-volt, working potential, 1. mf. condensers supplied. The by-pass condensers also are 1. mf., but 300 volts working potential. The color code is as follows: Red lead, detector "B" by-pass; green, to rectifier filament; black, to "B" plus of R.F. tubes; brown, to plate of power tube; two white leads, first A.F. "B" plus by-pass, the second or return white lead connecting to the center tap on the first A.F. filament resistor. Dimensions, 3 1/4 x 4 1/2 x 5 in. Shipping weight, 8 lbs.

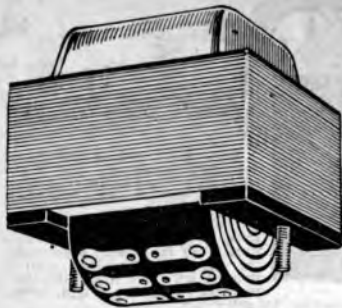


List Price, \$7.50
No. 1800-283 A. K. 37-38 Condenser Choke. **\$1.85**
YOUR PRICE

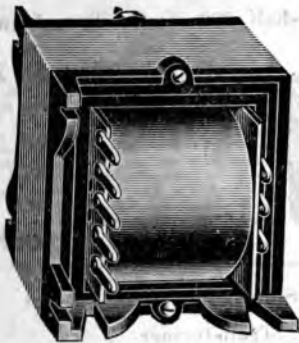
Contains two filter chokes, a speaker output choke, two high-voltage filter condensers, a detector by-pass condenser, and an R.F.-A.F. by-pass condenser, each connecting lead being identified by colors. The metal case is the low-voltage side of the condensers, and is to be grounded. A flexible lead soldered to the can is ready for you. Rubber grommets protect the pigtail leads where they pass through the shield can. May be used as replacement in standard receivers of the '26's, '27's, '71A' type. To make up a compact and efficient

Franklin Audio and Power Transformers

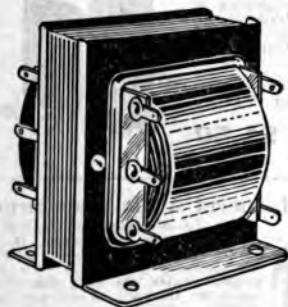
ALL TYPES — CLASS A and B



Style B



Style D



Style C



Style A

Power Transformers

Cat. No.	Style	Plate Voltage	Filament Voltages	Dimensions L x W x H	YOUR PRICE
101-C	Cased A	350-350	5 V. 3 A.	3 3/4 3 4 1/2	\$3.94 \$3.57
101-U	Unc. D	120 M.A.	2 1/2 V. 3 A. C.T. 2 1/2 V. 15 A. C.T.		
104-C	Cased A	400-400	5 V. 3 A.	3 3/4 4 1/2 4 1/2	4.32 3.94
104-U	Unc. D	120 M.A.	2 1/2 V. 3 A. C.T. 2 1/2 V. 15 A. C.T.		
105	D	350-350 120 M.A.	5 V. 3 A. C.T. 3 V. 3 A. C.T.	3 3/4 3 4 1/2	3.75
250-C	Cased A	575-575	7 1/2 V. 3 A.	3 3/4 4 1/2 4 1/2	4.50 4.12
250-U	Unc. D	120 M.A.	7 1/2 V. 3 A. C.T. 2 1/2 V. 12 A. C.T.		
305-H	B	350-350 90 M.A.	5 V. 3 A. 2 1/2 V. 3 A.	3 3/4 4 2 1/4	4.09
171	C	285-285 60 M.A.	5 V. 3 A. 5 V. 1/2 A. C.T.	3 3/4 3 3/4 4	2.82
171-A	C	300-300 60 M.A.	2 1/2 V. 12 A. C.T. 5 V. 1/2 A. C.T.	3 3/4 3 3/4 4	2.82
171-B	C	300-300 60 M.A.	1 1/2 V. 9 A. C.T. 2 1/2 V. 3 A. C.T.	3 3/4 3 3/4 4	3.00
501	C	325-325 60 M.A.	5 V. 3 A. 2 1/2 V. 2 A.	3 3 3 3/4	2.34
502	C	325-325 60 M.A.	2 1/2 V. 10 A. C.T. 2 1/2 V. 3 A.	3 3 3 3/4	1.77
507	B	330-330 60 M.A.	5 V. 3 A. 6.3 V. 4 A.	3 3/4 2 1/2 2	1.77
508	B	330-330 50 M.A.	5 V. 3 A. 2 1/2 V. 7 A. C.T.	3 3/4 2 1/2 2	1.69
509	B	330-330 60 M.A.	5 V. 3 A. 2 1/2 V. 10 A. C.T.	3 3/4 2 1/2 2	1.77

§-Cased.

1=Un-cased.

Class B Power Transformers

Cat. No.	Style	Plate Voltage	Filament Voltages	Dimensions L x W x H	YOUR PRICE
182	D	350-350 200 M.A.	5 V. 3 A. 2 1/2 V. 3 A.	3 3/4 3 4 1/2	4.95
282	D	450-450 200 M.A.	5 V. 3 A. 2 1/2 V. 3 A.	3 3/4 5 1/2 4 1/2	5.53
290	D	375-375 120 M.A.	5 V. 3 A. 2 1/2 V. 10 A. C.T.	3 3/4 3 4 1/2	5.25
291	P	425-425 100 M.A.	6.3 V. 3 A. C.T. 5 V. 3 A. C.T.	3 3/4 3 3/4 4 1/2	5.44

Nos. 182 and 282 for 46 tubes. No. 290 for 2A3 tube. No. 291 for 53 tube.

Transmitting Plate Transformers

Cat. No.	Style	Plate Voltage	Filament Voltage	Dimensions L x W x H	YOUR PRICE
TP-1	*	1500-CT-1500 1000-CT-1000	5 V. 3 A.	6 1/2 5 1/2 6 1/2	\$11.25
TP-2	*	2000-CT-2000 1500-CT-1500	5 V. 3 A.	7 1/2 5 1/2 6 1/2	15.85
TP-3	*	750-CT-750 @ 300 ma.	7 1/2 V. 3 A. 7 1/2 V. 3 A.	6 1/2 5 1/2 6 1/2	7.32
TP-5	*	2500-CT-2500 1500-CT-1500	5 V. 3 A.	7 1/2 5 1/2 6 1/2	17.82
TP-6	*	400-CT-400 @ 100 ma.	7 1/2 V. 3 A. 7 1/2 V. 3 A.	6 1/2 5 1/2 6 1/2	5.63
TP-7	*	500-CT-500	5 V. 3 A.	6 1/2 5 1/2 6 1/2	5.63
TP-8	*	750-CT-750	7 1/2 V. 3 A.	6 1/2 5 1/2 6 1/2	6.57

* Spare does not permit us to illustrate these transformers. Only cased units. Ship wts. from 10 to 30 lbs.

Filament Transformers

Cat. No.	Style	Plate Voltage	Filament Voltage	Dimensions L x W x H	YOUR PRICE
515	C		2 1/2 V. 12 A. C.T.	3 2 1/2 3 3/4	1.20
516	C		2 1/2 V. 12 A. C.T. 2 1/2 V. 3 A. C.T.	3 2 1/2 3 3/4	1.41
517	C		5 V. 3 A. 6.3 V. 5 A.	3 2 1/2 3 3/4	1.20
518	C		5 V. 3 A. 7 1/2 V. 3 A. C.T.	3 2 1/2 3 3/4	1.20
519	F		5 V. 3 A. 2 1/2 V. 5 A.	2 1/2 1 1/2 2 1/4	.94
514	F		7 1/2 V. 3 A.	2 1/2 1 1/2 2 1/4	.94

Transmitting Filament Transformers

Cat. No.	Style	Plate Voltage	Filament Voltage	Dimensions L x W x H	YOUR PRICE
TF-10	*		7 1/2 V. 3 A. C.T. 7 1/2 V. 3 A. C.T.	4 1/2 4 1/2 4 1/2	\$4.32
TF-20	*		10 V. 7 A. C.T.		4.32
TF-30	*		12 V. 7 A. C.T.		4.32
TF-40	*		2 1/2 V. 12 A. C.T.		4.32
TF-50	*		5 V. 20 A. C.T.		6.57

* Not illustrated, cased units in heavy cast metal case. Ship. wts. from 9 to 20 lbs.

Audio Transformers



Style F

Cat. No. YOUR PRICE

STANDARD

1102	1 plate to 1 grid-3 to 1 ratio	\$0.97
1103	1 plate to 2 grids-3 to 1 ratio	.97
1104	2 plates to 2 grids-3 to 1 ratio	.97
801	Single 45 to 8-15 ohms	.94
802	P. P. 47's to 8-15 ohms	.94
803	P. P. 47's to 8-15 ohms	.94
804	Single 47 to 8-15 ohms	.94
805	P. P. 47's to 500 ohms	1.20
806	P. P. 47's to 2000 ohms	1.20
807	Universal Output	1.12

Prim. for 12A-31-33 45-47-71A-89
Single or push pull
Sec. 1-3.5-8-15 ohms
2000 ohms

520-B	Single button to grid	1.12
521-B	Double button to grid	1.32
522-B	Double button to 500 ohm line	1.12
523-B	Prim. 400 ohms C. T.	1.32
524-B	500 ohm Prim.	1.32
525-B	500 ohm Prim. to grid	1.59

Above uncased with push back leads
Size 2 1/2 x 1 1/2 x 2 in.
Weight 7/8 lb.

AUDITORIUM TYPE

450	General purpose, 3 to 1 Ratio	\$3.37
	Sec. in two isolated halves	
451	Push Pull interstage, 1 1/2 to 1 Ratio	3.66
	Both Prim. and Sec. in two isolated sections	
454	Primary for single or push pull 45's or 50's	3.19
	Sec. 10-20-40 ohms	
455	Single or push pull 47's to 10-20-40 ohms	3.00
458	500 or 3000 ohms to grid	3.57

MICROPHONE

521	Primary 200 ohms per button	\$3.46
	Sec. order of 400,000 ohms	
520	Primary 200 ohms single button to grid	2.34
523	Matching 500 ohms C. T. to 400 ohms	2.62
524	Matching 500 ohms to 500 ohms	3.00
526	Matching 500 ohms to 4-8-15 ohms	3.57

Above fully cased.
Size 2 1/2 x 2 1/2 x 3 1/2 in.
Weight 3 lbs.

UNIVERSAL AUDIO

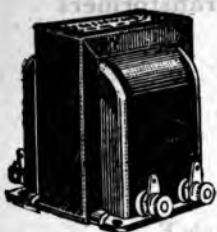
1100	1 Plate to 1 Grid, 3 to 1 Ratio	\$1.03
1101	1 Plate to 2 Grids, 3 to 1 Ratio	1.03

Size 2 1/2 x 2-5/16 x 1 1/2 in.
Weight, 7/8 lb.

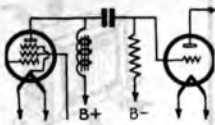
CLASS A and B UNITS

Amplifier Components

560	Single 46 to 46's Class B	\$1.59
561	38's Class B to 5000 ohms	1.59
562	46's Class B to 4-8-15 ohms	1.59
563	46's Class B to 500 ohm line	1.59
564	79 Input Class B	1.32
565	79's Class B to 4000 ohms	1.50
566	79's Class B to 4-8-15 ohms	1.50
567	89 Input Class B	1.59
568	89's Class B to 4000 ohms	1.59
569	89's Class B to 4-8-15 ohms	1.59
570	Single 59 to 53's Class B	1.20
571	53's Class B to 4000 ohms	1.32
572	53's Class B to 500 ohms	1.20
573	53's Class B to 4-8-15 ohms	1.20
574	2A3 Plates to 4000 ohms	2.07
575	2A3 Plates to 500 ohms	2.07
576	2A3 Plates to 4-8-15 ohms	2.07



IMPEDANCE COUPLING CHOKE COIL



The diagram clearly indicates the proper use of this unit. Impedance-condenser coupling is a very desirable arrangement inasmuch as frequency discrimination is considerably less than with straight transformer coupling. This particular unit was designed for screen grid tubes. Shipping weight, 4 lbs.
No. 2926-A Impedance Coupling Choke Coil
YOUR PRICE \$0.75

Filament Transformer

Has two independent filament windings namely, 2 volts center tapped, 10 amperes; 3 volts center tapped 4 amperes. Designed for use on 110-20 volts 50-60 cycle A.C. Shipping weight, 7 lbs.
No. T-2508 Filament Transformer
YOUR PRICE \$1.25



1 to 1 Ratio Audio Output Transformer

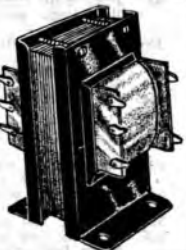
This genuine Thordarson unit was designed to couple magnetic speakers to the output of receivers which ordinarily draw too much current for the speaker winding to carry. Protects the speaker against burn out. Shipping weight, 4 lbs.
No. 1032 Audio Output Transformer
YOUR PRICE \$0.70



Filament Transformer

5 Volts Center Tapped at 1 Ampere. 1 1/2 Volts at 8 Amperes. 2 1/2 Volts Center Tapped at 4 Amperes. Designed for 110-20 volts, 50-60 cycle operation. Shipping weight, 4 lbs.

No. T-2467-A Filament Transformer
YOUR PRICE \$1.50



Raytheon "B" and Filament Transformer

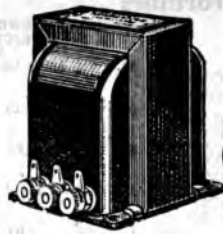
Has three windings; 620 volts center tapped, 40 mls; 5 volts at 1/2 ampere; 2 volts center tapped, 5 amperes. Shipping weight, 8 lbs.
No. T-1929 Raytheon "B" and Filament Transformer
YOUR PRICE \$1.25



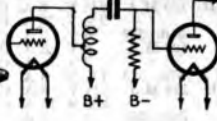
45 Watt Step-Down Transformer

This unit will step-down 110-20 volts to 20 and 24 volts. It is ideal for use as a bell ringing transformer or for running toy electric trains. Shipping wt., 9 lbs.

No. 4022 45 Watt Step-Down Transformer
YOUR PRICE \$2.85



AUTO-FORMER For Impedance-Capacity Coupling



The diagram shows the proper use of this high quality Thordarson unit. Has a D.C. resistance of 2000 ohms. Shipping weight, 4 lbs.
No. R-190 Auto-Former
YOUR PRICE \$0.75

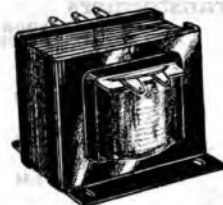
15 Volt Filament Transformer—3 Amps.

This sturdily constructed unit is designed for 110-20 volts 50-60 cycle operation and will deliver 3 amperes of current steadily at 15 volts. Shipping weight, 6 lbs.
No. 2610 15 Volt Filament Transformer
YOUR PRICE \$1.35



Phono-Coupling Transformer

This transformer was designed specifically for coupling any 2000 or 5000 ohm magnetic pickup to the grid of the first tube of any amplifier or audio channel of a radio receiver. It also has its use as a standard 3 to 1 ratio audio transformer. Shipping weight, 4 lbs.
No. T-3089 Phono-Coupling Trans.
YOUR PRICE \$1.35



Raytheon Plate Supply Transformer

110-20 volts 50-60 cycle A.C. to 235 or 300 volts secondary at 60 mls. Designed for use with Raytheon type BH rectifiers. Shipping weight, 6 lbs.
No. 1605 Raytheon Plate Supply Transformer
YOUR PRICE \$0.75



Power Transformer For SW Converters

Using type 27 tubes as rectifiers.
 Has three windings; 200 volts at 25 mls, 1 1/2 volts at 2 amperes, 2 1/2 volts at 4 amperes. Shipping wt., 5 lbs.
No. T-4975 Power Transformer For Short-Wave Converters
YOUR PRICE \$0.75

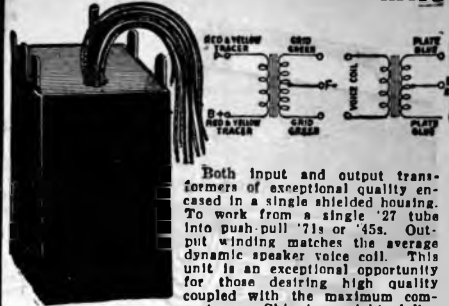


Universal Plate Supply Transformer

Has two secondaries, 180 volts at 80 mls; 125 volts tapped at 75-85 and 110 volts. This winding will carry 80 mls. Shipping weight, 9 lbs.
No. T-2277 Universal Plate Supply Transformer
YOUR PRICE \$1.25



R.C.A. Push-Pull Transformers



Both input and output transformers of exceptional quality encased in a single shielded housing. To work from a single 27 tube into push-pull '71s or '45s. Output winding matches the average dynamic speaker voice coil. This unit is an exceptional opportunity for those desiring high quality coupled with the maximum compactness. Shipping weight, 4 lbs.

Overall Dimensions, 5 1/4 x 3 1/4 x 2 1/4".
No. 1440 R.C.A. Input-Output Transformer Unit.
YOUR PRICE \$1.45

Silver-Marshall 220 Audio Transformer

Ratio 3 to 1
 Provides substantially straight amplification from 30 to 5000 cycles. After 5000 cycles the amplification falls off rapidly to compensate against static, regeneration squeals and noise level beyond the musical range. The turns ratio 3:1. For both first and second audio stage operation with all standard tubes. Completely shielded in case 4 x 3 1/4 x 8 1/4 inches. Shipping weight 6 lbs. List Price \$8.00
No. F7055 Silver-Marshall Audio Transformer.
YOUR PRICE \$0.70



Patent Shielded Push-Pull Input Transformer

A sturdily constructed unit designed for high precision work. Measures 3 1/2" high x 2 1/2" wide x 2 1/2" deep. Fully shielded in a black enameled metal case from the bottom of which protrude 5 highly insulated flexible leads. Will work into push-pull grids of practically all tubes. Ship. wt., 2 lbs.

No. 1682 Patent Shielded Push-Pull Input Transformer.
YOUR PRICE \$1.50



T.C.A. Replacement Audio Transformer

This T.C.A. (Transformer Corp. of America) audio transformer is one of the finest ever made. Employs special heavy gauge iron core laminations which are more than three times the thickness of ordinary laminations. This assures high efficiency in operation. Has a ratio of approximately 5 to 1. Measures overall—2" high x 2 1/4" wide x 1 1/4" deep.

Provided with four long, flexible leads for convenient connections. The unit is semi-shielded by a wide metal strap which also provides for convenient mounting. Ship. wt., 3 lb.

List Price \$4.50
No. B7082 T.C.A. Replacement Audio Transformer.
YOUR PRICE \$0.50



Pilot Double 30 Henry Filter Choke

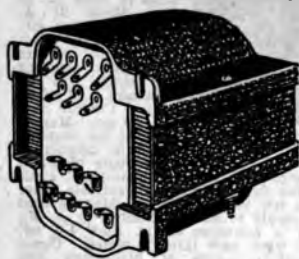
D.C. Resistance 500 Ohms Per Choke
 Every one is familiar with the quality of Pilot products. They are made to give reliable service for a lifetime. Two 30 henry filter chokes, each capable of carrying as much as 60 mls are contained in a neat crackle finished metal, case, measuring 5 1/4 ins. high by 4 1/4 ins. wide by 2 1/4 ins. deep. Three taps, brought out to a bakelite strip. Shipping weight 10 lbs.

No. P-388 Pilot Double 30 Henry Choke Unit.
YOUR PRICE \$1.75

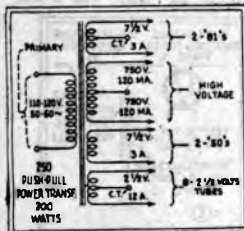


Franklin 250 Push-Pull A.C. Power Transformer

200 Watts
EXCELLENT FOR TRANSMITTERS AND HIGH POWER APPARATUS



This large power transformer is designed to supply the current for 2-50's in push-pull, 2-81 rectifiers and 6 to 8-27's, 24's, or any other combination of eight 2½-volt tubes. Provides for full-wave rectification of "B" and "C" voltages. The high voltage secondary provides the high potential of 1500



volts; more than sufficient to operate two 250's at their most efficient in their most efficient point insuring ample power for amateur transmitters, amplifiers and other power equipment. Thus, it becomes possible to build up a real power amplifier for exceptionally good audio quality reproduction at a very high volume level. (The undistorted power output rating of type 50 tubes in push-pull at the

voltages obtainable from this power transformer is approximately 12 watts.) No expensive line ballast is required since the primary is already wired for 110-120 volts, 50-60 cycles. An ordinary voltage regulator of suitable wattage will tend to maintain an even voltage quite effectively. This is just the power transformer for building up theatre "talkie," outdoor public address, and large auditorium amplifiers. Has enough power to operate 6-8 dynamic speakers. Entirely shielded in metal case with insulated terminal strip at the bottom for sub-chassis wiring. Rating 250 watts. Dimensions, 4¼x4¼x4¼ ins. high. Weight, 10 lbs. For 110-120 volts, 50-60 cycles.

List Price \$20.00

No. 1434 Franklin 250 Push-Pull Power Transformer.

\$4.95

YOUR PRICE

R. C. A. — VICTOR Replacement Power Transformer

For Radiola 80-82-86 Series



A sturdily constructed power transformer put up in a heavy metal shield case with convenient mounting flanges. Designed for concealed sub-chassis wiring.

Its universal characteristics makes it suitable for replacement work in the following receivers: Radiola 80-82-86; Victor 35-39-57; General Electric 31-51-71; Westinghouse WB 5-6 and 7; Graybar 700-770 and 800.

Will handle the following tubes, four—224's two—227's, two—245's and one—280. Ship. wt. 8 lbs.

List Price \$15.00

No. 1088C R.C.A.—Victor Replacement Power Transformer.

\$1.75

YOUR PRICE

Pilot Audio Transformers

Pilot audio transformers are classed among those which are so precisely engineered, as not to cut off at the higher frequencies and cause distortion. It is a unit to be recommended for all types of high quality work where tone quality is one of the prime requisites. Not only may it be used as an audio transformer but as an impedance matching or coupling choke by using either one of the 2 windings according to particular requirements. The entire unit measures 2½ ins. high by 2½ ins. wide by 3 ins. deep overall. Shipping weight 2 lbs.



No. P-413 Pilot Audio Transformer

Ratio 3½ to 1

No. P-412 Pilot Audio Transformer

Ratio 2½ to 1

No. P-418 Pilot Audio Transformer

Ratio 1 to 1. Used For Coupling Magnetic Speakers to Receivers.

YOUR PRICE

\$0.80

each

Radiart Step-Down Transformer

220 to 110 Volts at 50 60 Cycles



A fully shielded, ruggedly constructed stepdown transformer for use in conjunction with A.C. radio receivers, amplifiers, public address systems, and other radio and electrical apparatus rated at 110 volts 50-60 cycle where only 220 volts are available. Enables Canadians, Suburbanites and foreign radio enthusiasts restricted until now to reap the full benefits of the latest 110 volt A.C. radio developments. Accurately constructed with the proper turns ratio and fully shielded in beautiful black-enamel case.

May Be Used as Step-Up Transformer Too

By reversing the transformer, i.e., by using the secondary as the primary and the primary as the secondary, it is possible to step up 110 volts at 50-60 cycles to 220 volts. It should be understood, however, that when used this way the transformer should not be subjected to as heavy a load as it would ordinarily stand when used to step down voltages. Sold complete with polarized bakelite outlet receptacle, 6 ft. heavy duty electric cable and two piece male-female plug. Guaranteed to give perfect results. Available in two sizes 75 and 150 watts. Shipping weight 7 lbs.

No. 1477 Radiart 75 W. Step-Down Transformer.

YOUR PRICE **\$2.95**

No. 1478 Radiart 150 W. Step-Down

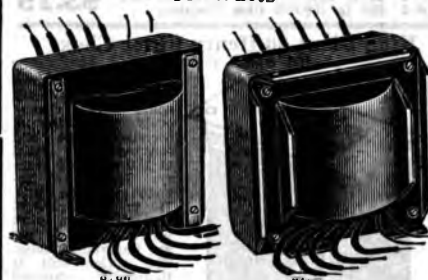
List Price \$10.00

YOUR PRICE **\$3.65**

Amrad "245" Power Transformer

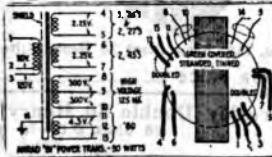
For "Bel Canto Model 81" Receiver

90 Watts



A big, husky, power transformer of excellent design, particularly recommended to those technicians constructing or re-building radio sets where a case or cover of finished appearance is not a requisite, is Amrad Part No. 8188, a unit designed for the well-known "Bel Canto Model 81" series of radio sets.

When anyone speaks of a "standard screen-grid radio set," it is almost certain that the reference is a receiver having three stages of R.F. amplification, using



type 24 screen-grid tubes; a detector, using a type 27 tube; a first stage of A.F., using a type 27 tube; and an output stage using two type 45 tubes in push-pull. (The high voltage D.C. being obtained from a type 80 rectifier.) It is just this combination for which this Amrad power transformer is designed.

An electro-static shield (one of the flexible-wire leads) is situated between the primary and the secondaries. It is effective in preventing an objectionable "light-line antenna" action. This effect is manifest, in sets having power transformers not equipped with the shield, as clicks, fading, weak signals, or interference between stations; conditions well recognized by prominent engineers.

Available in two mountings: special, as "Model 81" replacement; and standard, for all other uses. For 110-120 volts, 50-60 cycles. Both measure, overall, 3¼x3¼x4½ ins. high. Shipping weight, 10 lbs.

No. 8188 Amrad Power Transformer.

YOUR PRICE **\$3.30**

No. 8188 General Power Transformer.

YOUR PRICE **\$2.25**

Jefferson Power Pack—Choke Unit

For '26, '27, '71A and '80 Tubes



This unit consists of a standard Jefferson Power transformer and a 30 henry 500 ohm filter choke. Both are mounted in a sturdy, compact, metal case, equipped with convenient terminal strips and mounting flanges. JUST THE THING TO CONVERT OLD TYPE BATTERY SETS INTO MODERN ALL-ELECTRIC AC RECEIVERS. The power transformer will safely handle 5-226's, 2-227's, 2-171A's and an 80 rectifier. The filter choke is of standard design and has sufficient DC resistance to cut down the high voltage to the requisite 180 volts for the plates of the 171A power tubes. The only additional parts necessary to construct a complete power pack for AC receivers, power amplifiers or public address systems are a filter condenser bank and a voltage divider.

The transformer is designed for 110-120 volts 50-60 cycle operation, and has the following specifications: 5 volts at 2 amps, 5 volts C.T. at 0.5 amps, 1½ volts at 5.25 amps, 2½ volts C.T. at 3.5 amps, and 500 volts C.T. at 60 mills. Complete instructions for hooking up and wiring are supplied with each unit. Ship. wt. 10 lbs.

No. F1499 Jefferson Power Pack—Choke Unit **\$2.45**

YOUR PRICE

Philco Replacement Filter Chokes



Housed in attractive black metal cases, with contacts projecting through the bottom for concealed sub-panel wiring.

Has a resistance of 1500 ohms and inductance of 30 henries. An excellent replacement unit for Service Men. Useful in many ways both for set construction and repair work. Measures 2¼ x 2¼ x 3¼ inches. Shipping weight 3 lbs. List Price \$3.50

No. F7070 Philco Replacement Choke **\$0.38**

YOUR PRICE

Genuine Kolster Power Transformer

Original Kolster Units—Not Substitutes

These transformers may be used either for replacement work in the models listed below or else, for constructional uses wherever their specifications fit in. Sturdily constructed and made of extra heavy wire. Equipped with a generous supply of iron core laminations to insure cool performance under heavy loads. All leads from the coils are brought out to soldering lugs on a bakelite strip at the bottom of the transformer. This arrangement is quite convenient for sub-chassis wiring.

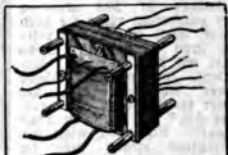
Ship. wt., 12 lbs.

No.	Set	List Price	YOUR PRICE
3478	K20	\$10.00	\$4.50
5517	B15, 16; K43, K48	10.50	4.70
4204	K24	11.00	5.40
4372	K23	11.00	6.00
2699	GH or K5	11.00	8.00
5412	K44	12.00	6.75
5572	K45	14.00	7.50

Crosley Power Transformer

For 26-27-71-A Tubes

This heavy duty power transformer was designed for Crosley No. 104 power pack used in conjunction with the Crosley No. 602 band box receiver. It has sufficient capacity to take care of four 228's, one or two 227's, two 71-A's in a Raytheon type BH rectifier tube. The high voltage secondary winding supplies 250 volts each side of the center tapped at 60 mills. It is an exceptionally large transformer with an unusual amount of silicon steel core laminations which assures cool operation under heavy loads. The transformer should be used on 110 to 125 volts, 60 cycles A. C. Eight corner posts make provisions for mounting the transformer on either side. The job measures 4¼x3¼x4¾ overall. Ship. wt. 12 lbs.



No. 1480 Crosley Power Transformer.

YOUR PRICE **\$1.10**

Dumont Superior Built "B" Eliminator



A sturdily constructed "B" eliminator employing ample filtration for the reduction of hum. Uses one "90" type tube for full wave rectification. Provides "B" power for receivers employing "71A" tubes in push-pull. A "B" eliminator for the Service Man at an unheard of price. Provided with long connecting cord and ON-OFF snap switch, but no rectifier tube which must be bought separately. Shipping weight, 9 lbs. Overall dimensions 4x2x10".

List Price \$25.00
No. 1646 Dumont Superior Built "B" Eliminator
YOUR PRICE \$7.50

Peerless Push-Pull Output Transformer

For Push Pull 245 Tubes
 Although designed primarily to work with 245 tubes in push pull arrangement, this high quality transformer will match perfectly the output of a single 247. When used in the latter capacity, the center tap of the primary is not used. Sturdily constructed on a heavy metal core. The secondary is designed to feed into any 8 to 12 ohm dynamic voice coil. Provided with convenient mounting brackets. Ship. wt., 6 lbs.

List Price \$6.00
No. B1459 Peerless Push Pull Output Transformer
YOUR PRICE \$0.75

Majestic 70-90 Push Pull Output Transformer

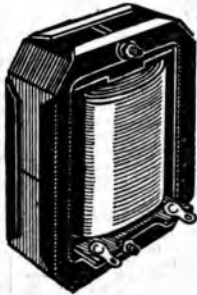
Designed originally for use in Majestic models 70 and 90, this shielded, sturdily constructed output transformer can be used in any circuit employing push pull 71, 45 and 80 power tubes.
 The secondary winding will feed into any type of dynamic speaker voice coil with an impedance of from 4 to 24 ohms. May also be used as an output transformer for a single 47 pentode by disregarding the center tap of the primary.

The entire unit is put up in a compact, metal can, measuring 3 1/2" x 2 1/4" x 2 1/4". Six flexible leads are provided for convenient connections; three for the primary, two for the secondary, and the remaining lead to ground. Ship. wt., 5 lb.

List Price \$7.00
No. B7078 Majestic 70-90 Push Pull Output Transformer
YOUR PRICE \$0.50

Peerless 30 Henry Power Choke

A heavy duty power choke which will handle 150 mils without even getting warm. Designed especially for the old time large Peerless sets which drew a tremendous amount of current. Has a resistance of 500 ohms—a very convenient value for high power work where the voltage drop through the choke must not be too great. Excellent for public address power amplifiers and low power transmitters. It measures 3 1/2" by 2 1/4" by 3 1/4" overall. Equipped with two convenient strong lugs for easy connections. Shipping weight, 10 lbs.



No. 118 Peerless 30 Henry Power Choke
YOUR PRICE \$0.80

Thordarson 30 Henry Choke 90 Mils

A sturdily constructed choke for high quality public address amplifiers and other audio equipment. Measures 2 1/2" wide x 2 1/4" x 3 1/4" high. Has convenient mounting brackets. D.C. resistance 600 ohms capacity 90 mils. Shipping weight, 5 lbs.

No. 340 Thordarson 30 Henry Choke
YOUR PRICE \$0.60

Heavy Duty Compression Type Variable Resistors



Type CSP

ing in a 1/2 in. or 9/16 in. hole and is long enough to permit mounting on a panel 5/16 in. thick. Because of the high wattage dissipation, however, it is desirable to mount the units away from the panel to permit maximum ventilation. These units are therefore provided with a special mounting bracket which sets the unit 1 1/2 in. back from the panel, making the distance between the panel and the rear of the unit (terminals included) 3 1/2 in.

The Type CSP-1 Filament Range Super-power Clarostat has a resistance range of from 1/4 to 10 ohms and is especially suited for speed control of variable speed motors up to 1/4 H.P. where a comparatively small variation of speed is required and where voltage does not exceed 200 volts.

The Type CSP-2 Low Range Super-power Clarostat has a resistance range of 25 to 500 ohms. Designed for use as a motor speed control for motors up to 1/4 H.P. where a fairly wide range of speed adjustment is required and where voltage does not exceed 300 volts. CSP-1 1/4 to 10 Ohm Variable Resistor.

The CSP-3 Universal Range Super-power Clarostat has a resistance range of from 200 to 100,000 ohms. Ideally suited for heavy duty volume control applications, plate voltage control, and as a variable grid-leak in fairly high power amateur transmitters. Can be used in all circuits where the voltage does not exceed 500 volts. Shipping weight, 8 lbs.

CSP-1 1/4 to 10 Ohm Variable Resistor. YOUR PRICE \$3.15
CSP-2 25 to 500 Ohm Variable Resistor.
CSP-3 200 to 100,000 Ohm Resistor.

King Giant 30 Henry Filter Choke



No. 104 King Giant 30 Henry Filter Choke.
YOUR PRICE \$0.55

Crosley Double 30 Henry Filter Choke



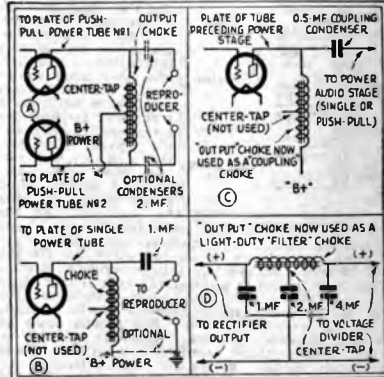
No. 104 King Giant 30 Henry Filter Choke.
YOUR PRICE \$0.55

No. 150 Crosley 30 Henry Double Filter Choke.
YOUR PRICE \$0.75

Earl Output Choke



Center-tapped. May be connected push-pull, using 71A power tubes, with speaker wire from plate to grid (as in Earl Model 21 A. C.); or in plate circuit of single power tube, with speaker connected shunting the choke (as in Freshman Model 121). Current rating, 30 ma. May be used when by-passed by a condenser of at least 1.0 m.f. capacity. Enameled wire, each layer insulated. Comes with mounting brackets. Core of high-grade iron laminations. Dimensions, 3x3x3 in. Ship. wt., 3 lbs.



No. 1407 Earl Choke.
YOUR PRICE \$0.75

Thordarson 3 to 1 Ratio Audio Transformer

A genuine Thordarson product, sturdily constructed. Has an extremely high degree of efficiency. May be used in all circuits where an interstage coupling transformer is needed. So compactly is it made that it may be used to advantage in midget receivers. The unit is totally shielded in a black enameled metal can and has 4 long soldering terminals protruding from the bottom for concealed sub-chassis wiring. Two flanges on either side of the case permits easy mounting. Shipping weight, 2 lbs.

No. M-31 Thordarson 3 to 1 Ratio Audio Transformer.
YOUR PRICE \$0.50

MIDGET POWER TRANSFORMERS

For 4, 5, 6, 7 and 8 Tube Sets



No. 341 4 to 5-tube Power Transformer having 1-2 1/2 volt, 1-5 volt and one high voltage center-tapped winding.
YOUR PRICE \$1.10

No. 342 6-Tube Power Transformer having 2-1/2 volt, 1-5 volt and one high voltage center-tapped winding.
YOUR PRICE \$1.25

No. 343 7 to 8-Tube Power Transformer having 2-1/2 volt, 1-5 volt and one high voltage center-tapped winding.
YOUR PRICE \$1.50

All these transformers are designed for 110-120 volts, 50-60 cycle A.C. operation. In this group of transformer you will find just the right one to fill your needs whether they are for replacement or construction. Each unit is thoroughly guaranteed to work satisfactorily.

Replacement Audio Transformer

This transformer is for replacement in the Ware receivers or in any other sets employing this type of mounting. 3 1/2 to 1 ratio. Shipping weight, 1 lb. List Price \$1.00

No. 1475 Replacement Audio Transformer.

YOUR PRICE \$0.40



Fada Replacement Audio Transformer

This high quality audio transformer may be used for replacement in all FADA receivers or in other sets where a small but efficient transformer is required. Mounted in shielded case with soldering lugs for easy connection. Ratio 3 1/2 to 1. Shipping weight, 2 lbs.

List Price \$3.00

No. 1476 FADA Replacement Transformer

YOUR PRICE \$0.45



Erla A. F. Transformer

This Erla product may be used for general service replacement in all radio receivers. With mounting feet and four binding posts at top for connections. Shipping weight, 1 1/2 lb. Overall size, 1 1/2 x 2 1/2 x 2 1/2.

No. 1424 Erla A.F. Transformer.

YOUR PRICE \$0.75



Kolster Cylindrical Audio Transformer

This transformer may be used for replacement in those Kolster receivers employing the cylindrical type of transformer shield. They may be used as interstage transformers for replacement purposes in any receiver requiring a high quality device. Overall size 2 1/2 x 3 1/2 x 1 1/2 long. Shipping weight 2 1/2 lbs.

List Price \$4.00

No. 1445 Kolster Cylindrical Audio Transformer

YOUR PRICE \$0.65



Liberty Bell Ringing Transformer

110 V.A.C. to 8 Volts



Specially manufactured for energizing door bells, buzzers, etc. Aside from its conventional use, however, the ingenious radiotician, serviceman or experimenter can adapt this unit to a variety of radio uses.

MULTIPLICITY OF RADIO USES
Can be used as a microphone input transformer by using the low voltage winding as the primary. With the proper resistance in series it will easily light one of almost any type of radio tubes. Using this transformer (which incidentally is

a featherweight compared to most filament transformers) as the "A" supply; one can readily build a portable one tube short wave or broadcast receiver. The transformer weighs less than even one ordinary dry "A" cell.

Ruggedly constructed of the finest material available, with heavy iron core laminations to reduce eddy current losses to a minimum. Equipped with two heavily insulated leads for the 110 volt A.C. line and two binding posts for the 8 volt A.C. secondary winding. Put up in an enameled metal shield case. Shipping weight, 1 lb.

List Price \$1.75

No. 1470 Bell Ringing Transformer

YOUR PRICE \$0.60

Pilot Filament Transformer

Supplies 1 1/2, 2 1/2 and 5 Volts

This is the filament transformer which was so popular two years ago when thousands of battery sets were being converted to the early electric models. It used to sell for as high as \$12.00. Now you can have it for only a fraction of that amount. This sturdily constructed transformer is capable of supplying 2 1/2 volts at 5 amperes center tapped, 1 1/2 volts at 4.2 amperes center tapped, and 5 volts at 8 amperes center tapped.

The entire transformer is encased in a black crackle finished metal can, measuring 5 1/2 ins. high by 4 ins. wide by 3 ins. deep. Shipping weight 8 lbs.

No. P-386 Pilot Filament Transformer

YOUR PRICE \$2.25



Thordarson 30 Henry Choke

A 30 Henry choke for use in coupling output tubes to magnetic speakers or in small "B" eliminators or midjet receivers as a filter choke. Complete with mounting brackets and provided with soldering lugs for connection. A general purpose replacement choke for any receiver where a 30 Henry choke is required. Shipping weight, 1 lb. Overall size, 2 1/2 x 2 1/2 x 3 1/2 in.

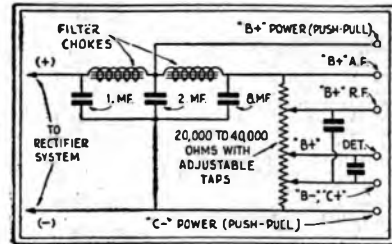
No. 1442 Thordarson Choke.

YOUR PRICE \$0.65



Earl 30 Henry Double-Choke

Power pack filter choke. Two enameled-wire windings on a "B" shaped iron core. Use in packs for single and double "1A" output tube receivers. Very compact. Fine for jobs where space is at a premium. Maximum current, series connected, 45 ma.; if parallel connected, 90 ma. Suitable for filtering the supply to a photoelectric pre-amplifier, a small microphone or phonograph pick-up amplifier, or a single-stage power amplifier using a single "10" or "45". Adjustable air-gap. Dimensions, 2 1/2 x 2 1/2 x 1 1/2 in. Shipping weight, 3 lbs.



List Price, \$6.50

No. 1406 Earl Double Choke.

YOUR PRICE \$1.00

Earl 30 Henry Filter Chokes

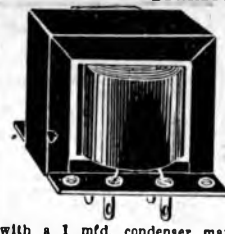
A neat filter choke of small dimensions. May be used in all "B" supply units up to 250 volts where the current does not exceed approximately 30 m. a. Laminated iron core having air gap. Impregnated with a protection against atmospheric action. Equipped with pig-tail leads one of which is tinned for identification. Two strap irons hold laminations in place and provide two mounting feet. Shipping weight, 1 lb. Overall size, 1 1/2 x 3 x 3 in. high.

No. 1443 Earl 30 Henry Filter

Choke. **YOUR PRICE \$0.60**



Kolster High Inductance Audio Transformer



This is an unshielded transformer having a high primary inductance for working from a "bias" detector into the first A.F. stage. It is excellent for use in any receiver using this type of detection, where a high inductance winding is necessary for good quality. Kolster part No. 1837B.

Either the primary or secondary of this unit when used in conjunction with a 1 mfd. condenser may be employed as an output filter system which improves the tonal qualities of any receiver or amplifier and which protects the loud speaker from the injurious direct plate current. Shipping weight, 3 lbs.

List Price \$4.00

No. 1439 Kolster High Inductance Audio Transformer

YOUR PRICE \$0.75

RCA 15 Henry Filter Chokes

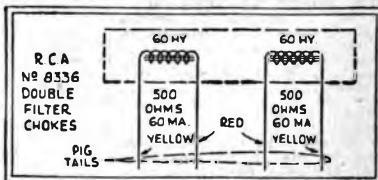
These filter chokes have an inductance of 15 hy. by 40 M.A. and have a D.C. resistance of 500 ohms. Two of these chokes connected in series give a total inductance of 30 hy. They may be used to effect an inexpensive replacement in most "B" eliminators or electric sets. Shipping weight, 2 lbs.

No. 1417 RCA 15 Henry Filter Choke.

YOUR PRICE \$0.25



R.C.A. Double Filter Choke No. 8336



This heavy-duty, extremely strong, double filter choke can be used for all types of filter circuits, experimental work, power amplifiers, receivers, eliminators, power packs, converted sets, etc. Known as R.C.A. replacement part for all Radiola models, particularly Nos. 33, 51, 17 and 18. Each choke is designed for 1,000 volts, D.C. resistance, 500 ohms. Connected in parallel, these double filter chokes have a capacity of 15 Henries at 160 Mills; connected in series, 60 Henries at 80 Mills. Fully shielded in heavy metal case with special insulating compound. Size, 5 1/2 x 3 1/2 x 2 1/2. Shipping weight, 6 lbs.

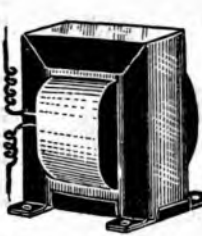
List Price, \$10.05.

No. 8336 RCA Choke. **YOUR PRICE \$0.60**



Kolster Heavy Duty Filter Choke

30 Henries—110 Mills



Manufactured by the Kolster Co. for their 210 and 250 push-pull receivers. Will safely handle 110 mills plus an overload of 15%. Replacement for Kolster models 20, 21, 22, 23 and for Columbia models C-1, 2, 3 and 4. Standard 30 Henry filter choke with a D.C. resistance of 500 ohms. Sturdily constructed and provided with excellent mounting facilities. Measures 3" x 2 1/2" x 1 1/2". Shipping weight, 3 lbs.

List Price \$2.75

No. 1488 Kolster Heavy Duty Filter Choke

YOUR PRICE \$0.75

IDEAL REPLACEMENT VOLUME CONTROLS

For All Popular Make Receivers



These Volume Controls are ideal for replacement in nearly every type of receiver or for new set construction. They can be used either as rheostats or potentiometers. The Ideal Volume Controls are small in size and smooth in operation both electrically and mechanically. The shafts are insulated from any of the electrical circuits within the controls. All Ideal Volume Controls are equipped with three terminals. They are absolutely noiseless due to the racking principle employed a contact is indirectly made along surface of resistance. The Ideal Volume Controls are so constructed that any plain type volume control can be instantly changed to switch type

by removing the cover and substituting an Ideal No. 1815 Switch-cover plate. This eliminates the necessity of handling duplicate stocks of volume controls and it is a money saving idea as well as a convenience to the dealer and service man.

Dimensions of Single Replacement Control Body
 Diameter 1 1/2 in.
 Depth 27/32 in. Without Switch
 Depth 1-5/32 in. With Switch

Dimension of Dual Replacement Control Body
 Diameter 1 1/2 in.
 Depth 1 in. Without Switch
 Depth 1-5/16 in. With Switch

GS=Grounded Shaft IS=Insulated Shaft.
 DC=Dual Control. T=Taper.

List Price \$0.16
No. 1815 Switch Coverplate. YOUR PRICE \$0.24

Set Model	Catalog Number	YOUR PRICE
A.C. DAYTON CO. XL5, XL10, XL20, XL25	IS-10-T	\$0.48
A/CME ELEC & MFG CO. SG-88, DC-14, DC-21, DC-31	IS-5M	.48
ADVANCE ELECTRIC CO. Paik 77, 88, 89	IS-2M	.48
ALL-AMBR. MOHAWK CO. BT	DC-15-50	.72
R-6, S-7, S-8	IS-10M-T	.48
Model 90, Model "J", Model "J" with Pentode, Lyric, "J", "H", 96, 90, C6, 70, 73, 75, H Lyric	IS-15M-T	.48
Model D, A	IS-15M-T	.48
Chassis 11D, 9D, 29D, 34D, 19H, 29H, 34H	DC-7500-10	.72
AMER. BOSCH MAGNETO CO. 46 DC, 27 Ambrola, 18 Ambrola, 35, Crusers, 57, 87, 86, 76, 76L, 46DC	IS-10-T	.48
48AC, 54DC	DC-10-5	.72
Model 57, Model 20 Super Het.	IS-15M-T	.48
Model 73, 74	IS-3M-T	.48
62DC, 58, 44	IS-4M	.48
ANDREA, F. A. D. 1653AB	IS-4M	.48
SF-50/80, 408B, 180, 192A, 192S, SF-501, 80A, 192-B3, 460A, 480A, 22, 825, 192A, Spec. 475A, SF46, 75	IS-10-T	.48
16, 17, 32, 16Z, 32Z, 18DC	IS-15M-T	.48
35, 35Z	IS-3M	.48
KW Chassis used in 48, 49 receivers (Neon Tube Control) KO, KOC Chassis used in 51, 53, 57 receivers	IS-7500-T	.48
Model 45 (KU), Model 51, 53, 57 (KOC)	IS-5M-T	.48
472UA, CA, SF, 45/75, 4572, 10, 11, 31, 10Z, 11Z, 30Z, 31Z, 50, 70, 71, 72	GS-25M	.48
75, 77	IS-25M	.48
RA Chassis used in 74, 76, 83, 87, 88, 89	IS-30M-T	.48
(Neon Tube Control)		
ATWATER KENT 55, 55C, 60, 60C, 61, 61C, 66	IS-5M-T	.48
84-84-F Late	IS-30M-T	.48
87	IS-4M	.48
84, 84F, 86, 86F	IS-600	.48
AUTOMATIC RADIO CO., INC. Model No. P-224 Tom Thumb	IS-25M	.48
Midget		
Model No. 44, V45, V46, C45, P-46	IS-5M	.48
AUDIOLA RADIO CO. 6 tube, 5 tube, 527, 627, 6T, 8T	IS-10-T	.48
GT, 31, Pent. Jr., 7T-Super Pent. 4T, 31, 13T5, Jr., 6T31, 6T, Jr., 6T, Jr. No. 2, 7T, 1389, 10T, 6T, 45	IS-10M-T	.48
8T-Super Pentode, 9T Super Pentode, 31, 31 Super, 4T, 31, RF, 6T Jr. No. 1, No. 2, B-T5, 10-T-Super, 9-T-45 Super, 3 type	IS-15M-T	.48
60C	IS-3M	.48
30B, 7330	IS-3M	.48
889	IS-800	.48
BALKEIT RADIO CO. Models L-7, LC-7	IS-10M-T	.48
B-7, B-9, F-C, Model "E"	IS-15M-T	.48
BREMER TULLY MFG. CO. Model 8-12 Counterphase (Battery)	IS-10-T	.48
7-70, 7-71, 8-20, 8-21	IS-15M-T	.48
S-81, 8-82, Model 83, (25 cycle)	IS-3M	.48
81, 82	IS-30M-T	.48
BROWNING DRAKE CORP. 34, 36, 38	IS-15M-T	.48
69	IS-10M	.48
BRUNSWICK, BALKE, COLLENDER CO. 10	IS-5M	.48
R-1	IS-5M-T	.48
31	IS-25M-T	.48
10	IS-43M	.48

NOTE: These Volume Controls have advanced 25% in price. YOUR PRICE is 25% above these prices.

BUCKINGHAM RADIO CORP. 80, 80B	IS-15M-T	.48
BUSH & LANE PIANO CO. Model 12-Screen Grid	IS-10M	.48
12, 10	IS-10M-T	.48
CANADIAN MARCONI CO. XX	IS-800	.48
XV, XVI, XVIII, XVII	IS-15M-T	.48
All Tuner, Detector and Amplifier		
Units XIV	IS-10-T	.48
21	IS-5M	.48
XII, Thermionic	IS-2M	.48
CANADIAN WESTINGHOUSE CO. Six Tube AC 1928	IS-15M-T	.48
W-55	IS-10-T	.48
COLONIAL RADIO CORP. 44, 50, 46	IS-15M-T	.48
16-6, 16-5, 17-5, 20-21	IS-10-T	.48
47, 48	IS-10M-T	.48
COLUMBIA PHONOGRAPH CO. 32, 34	IS-10M-T	.48
C-31, C-32, C-25-31, CC-25-33, 31	IS-4M	.48
33		
COLUMBIA RADIO CORP. SG-8	IS-15M-T	.48
CROSLEY RADIO CORP. 120, 53, 54, 57, 58, 55, 56	IS-15M-T	.48
XJ, 3R3, 4-29, 6-60, 6-65, RFL, 90, 401, 401A	IS-10-T	.48
155, 124	IS-10M-T	.48
122, 50	IS-5M-T	.48
30S, 31S, 33S, 31S	IS-30M-T	.48
AC-7	IS-800	.48
Buddy, Chum	IS-400	.48
DeFOREST CROSLEY, Ltd. Type 402, 403, 705, 707, 740B	IS-800	.48
762	IS-15M-T	.48
741, 742, 743	IS-400	.48
DeWALD RADIO CO. AC 145, AC 245, AC 547A	IS-15M-T	.48
AC 437M	IS-25M-T	.48
AC 724	IS-10M-T	.48
ECHOPHONE RADIO MFG. CO. S-3, S-8 Improved, S-4, S-5, F, 40	IS-15M-T	.48
Ebette, 60, 80, 90	IS-15M-T	.48
ELECTRICAL RESEARCH LABS. 224 AC	IS-50M	.48
335	IS-5M	.48
250, 336, R2, R3	IS-10M-T	.48
224-B	IS-5M-T	.48
EMERSON RADIO & PHONOGRAPH Series 65	IS-800	.48
FEDERAL RADIO CORP. B, C, D, 59, 102, A, 10	IS-10-T	.48
FEDERATED PURCHASER 1-07, 2, Acratone Model 2, Acratone Model 5	IS-15M-T	.48
FREED EISEMAN RADIO CORP. NR-80, 57, 70, NR-30, DC, AC	IS-15M-T	.48
NR 7, 8, 10, 12, 20, 40, FE 15, NR 800, 77	IS-10-T	.48
GENERAL ELECTRIC CO. H-71, H-51, H-31	IS-4M	.48
Model T-12-D	IS-15M-T	.48
GENERAL MOTORS RADIO CORP. Model 218, 217, 219, 250, Superhet.	IS-10M-T	.48
Day Fan No. 8AC, 5003, 5091, 5077, 5080, 252, 253, 254, 255, 256, 257, 258, 251, 82A, 82B, 218, 217, 219, 250	IS-15M-T	.48
Model A, 120A	IS-25-25	.48
Six Junior, 6-81, 6, 6B, 5050, 85	IS-10-T	.48
GILFILLAN BROTHERS 10, 60, 33, 100, 105, 106	IS-15M-T	.48
GREBE & CO., A. H. AC6, AC7, 428, H84	IS-15M-T	.48

Set Model	Catalog Number	YOUR PRICE
A111	IS-1M	.48
SK-4 AC	IS-3M	.48
SF-5 DC	IS-5M	.48
GILGIBBY GRUNOW MAJESTIC Majestic 30 Chassis	DC-550-1	.72
Majestic 50 Chassis	DC-645-10	.72
130-A	IS-1M	.48
70, 70B, 120, 121	IS-15M-T	.48
15, 15B, 25, 150	IS-10M-T	.48
GULBRANSEN CO. Early Nine in Line, 7 tube Champlion Jr. 734	IS-15M-T	.48
HAMMARLUND ROBERTS, INC. HI-Q 29, Master, HI-Q 30 AC, HI-Q 31 AC	IS-50M	.48
HI-Q, 5 tube and 6 tube	IS-10-T	.48
HI-Q 32	IS-10M-T	.48
HI-Q 29 Jr. and AC	IS-15M-T	.48
HIGH FREQUENCY LABS. Isotone Masterstone	IS-50M	.48
HORN RADIO CO. 49, 79, 99, 109, 15	IS-15M-T	.48
HOWARD RADIO CO. Type O, H Super Heterodyne, Midget 3GR	IS-15M-T	.48
Model H Super, S.O.T.	IS-5M-T	.48
7 Battery	IS-10-T	.48
JACKSON BELL 60, 84, 87, 88, 89A	IS-15M-T	.48
INSULINE CORP. OF AMERICA Broadcast and Long Wave	IS-2M	.48
KENNEDY CORP., COLIN B. 44, 48	IS-10M-T	.48
24	IS-20	.48
26	DC-15-50	.72
20, Short Wave Unit for 826, 30, 32	IS-50M	.48
5, 6, 7, 15, 16, 20, 30, 220, 281	IS-10-T	.48
42, 50, 52	IS-15M-T	.48
KOLSTER RADIO CORP. K-20, 22, 25, 27, 37, 21, 23, K-42, B-10, 15, 16, K-70, K-72, K-80, K-82, K-90, K-92	IS-15M-T	.48
22, 25, 27, 37, 6J, 6K, 6R, 8A	IS-10-T	.48
K-45	IS-50M	.48
K-60, K-62	IS-5M	.48
LANG RADIO CO. BD-5, BD-6-P, HA-5-P	IS-3M	.48
MD 7, MA 7, SA 7, SA 8	IS-10M-T	.48
HA-5-AC, BD 6-DC, Model 70	IS-15M-T	.48
M-7-AC	IS-50M	.48
MISSION BELL Midget	IS-15M-T	.48
MASTER RADIO CORP. Music Master Petite	IS-15M-T	.48
MONTGOMERY WARD & CO. 3035, 3037, 3065, 3067, 1522, 1562... 20W, 62-520, Model 49, 26P, 261X Cavalier, Commander		
26W Chassis, 27W Chassis	IS-15M-T	.48
Commander Cavalier	IS-10M-T	.48
Commodore & Sovereign	IS-3M	.48
62, 1040	IS-600	.48
Fantasy & Solo	IS-12M-T	.48
181, 187	IS-5M-T	.48
Granier	IS-15M-T	.48
MURDOCK CO., W. J. 5 tube, 7 tube	IS-10-T	.48
NATIONAL CARBON CO. 34	IS-800	.48
NATIONAL CO., INC. MB 30, Auto Receiver	IS-50M	.48
MB	IS-10M	.48
NATIONAL TRANSFORMER CO. Midget 6	IS-15M-T	.48
OPERADIO CORP. 1926	IS-10-T	.48
OZARKA, INC. 91	IS-5M	.48
92-AC	IS-15M	.48
90, 89-AC	IS-15M-T	.48
PHILA. STORAGE BATTERY CO. (Phlico) 82, 5, 86, 87, 511, 521, 531, 541, 551, 561, 571, 581	GS-15M	.48
78	IS-200-5	.48
20, 20A, 70, 70A, 270, 270A	DC-285-5	.72
50, 50A	DC-1800-5	.72
90, 90A	DC-225-5	.72
PIERCE AIRO, INC. AC-14, 45, 534-5, AC-547, AC-646-7, 734, AC-746-7M	IS-15M-T	.48
RCA VICTOR CO. Model 33A	IS-100	.48
RE-39, 35, 57	DC-1-50	.72
RE-29, R-32, RE-45, RE-52, RE-75	DC-4-4	.72
SEARS ROEBUCK & CO. F. FF. G. H. K	IS-15M-T	.48
SILVER MARSHALL 37, 38, 39	IS-15M-T	.48
SC-2	IS-200	.48
Model 36A, 710, 740, 624, 36A	IS-5M	.48
Bears Midget, SMD 1 Super	IS-10M-T	.48
C Super (Tone Control)	IS-25M	.48
H 718, "J", "Q"	IS-4M	.48
620, 630, 635, 644	IS-10-T	.48
Model "A", Model "F", "D", "E", 726, C Super	IS-5M	.48
712, 722-30, 30B, 80B, 75-B-90, H, Model "B"	IS-10M	.48

(Continued top of next page)

IDEAL REPLACEMENT VOLUME CONTROLS—Continued

SIMPLEX RADIO CO.	
Model K, Model D	IS-15M-T
Model G	DC-15-500
Model H, Model F	IS-50M
SPARKS WITHINGTON CO.	
Spartan 41	IS-30M-T
49, 5-26, 5-15, 39, 6-26, 6-15	IS-10-T
STANDARD RADIO CO.	
AC-29	IS-15M-T
STEINITE	
261, 262, 22, 28, Models 423, (Model 23 Chassis), Models 421, 425	
(Model 21 Chassis), 203, 600, 605, 630, 635, 642, 643, (Model 22 Chassis)	IS-15M-T
70, 80, 95	IS-10M-T
700, 701, (Model 28 Chassis), Models 700, 705, 706, 725, 642B, (Model 26 Chassis)	IS-4M
STEWART-WARNER CORP.	
300, 305, 310, 315, 320, 325, 340, 345, 350, 355, 360, 383, 890, 500, 520, 525	IS-10-T
Models 102A, B, E, R101A, R101B	IS-15M-T
Models 950, AC, R-100A, R-100B	IS-32M
STORY & CLARK RADIO	
38, 43, 51	IS-15M-T

STROMBERG-CARLSON	
TEL. MFG. CO.	
1A, 1B, 501, 502, 601, 602, 633, 634, 523, 524	
10, 11, 12, 14, 19, 20, 25, 26	IS-10-T
	IS-1M
STUDEBAKER LABS.	
31, 42	IS-15M-T
TRANSFORMER CORP. OF AMERICA	
Clarion 90, Model 94, 92	IS-400
Clarion 51, 53, 55, Jr. 60, 25, 60	IS-50M
Model 40	IS-33M
Model 61, 70	IS-15M-T
TRAVELEX MFG. CO.	
6, 7, AC, SGDX, K, Travellette	IS-15M-T
8 Super	IS-600
UNITED AIR CLEANER CORP.	
7 tube Super	IS-600
110 Super, 108-B, 99	IS-10M-T
Series K-70	IS-5M-T
Courier 65	IS-800
106B, 440, 10B, 668C, 866, 104	IS-15M-T
UNITED REPRODUCERS	
Courier 65	IS-800
Series K-70	IS-5M-T
U. S. RADIO & TELEVISION CORP.	
Apex 31, 32, Gloriette Late 27, 26, 29, 32, Apex 40, Hatt Gloriette 20, No. 26, Late 27, DC	

Model 33, Model 30 Auto	IS-10M-T
Gloriette Early 27	IS-1M
Gloriette 28, No. 28, 29, 32, Apex 28 (Early and Late)	IS-400
Case 80, Apex 36, 37, Apex 50, 60, Model 90, Model 93	IS-15M-T
WARE MFG. CORP.	
Model SB-45	IS-15M-T
Model S1 Superhet	IS-400
Bantam Chassis Type B1 and B2	IS-1M
WELLS-GARDNER & CO.	
Arcadia 72, Model 80A	IS-15M-T
C, CG	IS-2M
WHOLESALE RADIO SERVICE, INC.	
Pre-Selector AC 524, Duo Symphonic 1930, Duo Symphonic Jr., 1931, Series 10, Mighty Atom	IS-15M-T
WILCOX LABS.	
Model Six	IS-600
ZANEY GILL	
Model 54	IS-15M-T
ZENITH RADIO CORP.	
5 tube Zenette	IS-15M-T
602, 813, 622, 642, 872, Hyper-Merton: 82, 89, 822, 892, 10, 11, 12, 112, 122	IS-50M
5 tube Zenette with Pentode	IS-10M-T

"ACCURACY" Center Tapped Resistances

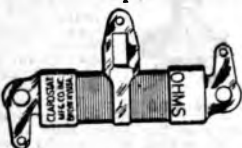


These resistors are wound on drefproof base and are precision wound. No shorts. Permanent resistance under all circumstances. The superior resistance at a reasonable price. Available in following sizes. Ship. wt. 4 oz.

No.	Size	YOUR PRICE
W-1891	15 ohms total	\$0.12
W-1894	30 ohms total	
W-1896	50 ohms total	
W-1898	100 ohms total	

Clarostat Fixed Center Tap Resistors

Center tap resistors for use in A.C. filament circuits. Obtainable in all resistance values from 6 to 500 ohms. Shipping weight, ¼ lb.



List Price \$.50

No. 2298 Clarostat Fixed Center Tap Resistance

YOUR PRICE **\$0.30** each

Wire Wound Strip Resistors



Ideal resistors for grid biasing, grid suppressing and any other light duty purpose. Made of high grade resistance wire wound on insulating fibre and covered with protective paper which is color-coded. Have provisions for mounting in every conceivable position. Available in four different sizes. Shipping weight, 3 oz.

List Price, \$0.20

No.	Color	Ohms
3688	Red	1800
3689	Green	1000
3690	Deep Blue	700
3691	Light Blue	1400

YOUR PRICE **\$0.05** each

Yaxley 15,000 Ohm Wire Wound Potentiometer

Provisions for A.C. Switch

Genuine Yaxley volume control as used on Colonial and other standard receivers. A sturdily constructed unit which can be used in a thousand and one different ways by Service Men, radio enthusiasts and radio experimenters. Has provisions for mounting an A.C. switch so that both volume control and switch may be operated simultaneously. Measures 1 ½ in. diameter x ¾ in. thick. Has ¼ in. shaft and ¾ in. shank. Shipping weight, 8 oz.



List Price \$0.75

No. 1625 Yaxley 15,000 Ohm Volume Control. YOUR PRICE **\$0.40**

Centralab Twin Potentiometer

Two standard potentiometers, one of 10,000 ohms and one of 250,000 ohms, each with three tabs for soldering connections. The two potentiometers are electrically isolated, yet both are controlled at the same time by the single, ¼-in. phosphor-bronze shaft; which is 1 ¼ in. long. This Blamese resistor unit will mount on panels ¾ in. thick. The black moulded case protecting the resistance elements is in two sections and measures 1 in. x 2 ¼ in. in diameter. Shaft is flattened so that the set-screws of any standard knob will maintain an indicator line on the knob at the same



relative position at all times. May be connected as a volume control, selectivity control, sensitivity control, or tone quality; and in any one of a number of different places in standard circuits. A very handy unit for the Serviceman to have as it may be set for any one of a number of different values, and left in position, as an emergency repair until a fixed unit of correct value can be substituted. A useful item around the laboratory. Shipping weight, ¼ lb.

List Price, \$3.50. No. 1600 Centralab Twin Pot. YOUR PRICE **\$0.30**

Stromberg Carlson Bakelite Rheostat

A sturdy rheostat for battery type receivers or for general use around the service shop or laboratory. Requires three holes for mounting. Furnishes without control knob in the following values: 20, 80 or 350 ohms. Shipping weight, 3 oz. Overall Size, 1 ½ x 2 ¼ x 2 ¼ in.



No. 2240 Stromberg Carlson Bakelite Rheostat. YOUR PRICE **\$0.20**

Pacent Hum Control

A 20 ohm center-tapping resistance for use in A.C. filament circuits. May also be used in all circuits where a 20 ohm potentiometer or rheostat is needed. Shipping weight, ½ lb.



List Price \$1.50

No. 1603 Pacent Hum Control. YOUR PRICE **\$0.10**

Clarostat Hum-Dinger

A strip resistor with an ingenious movable center contact. Single hole mounting with screw driver adjustment. An improved center tapping resistance for obtaining an accurate hum balance in A.C. receivers. May be used wherever a resistance requiring occasional adjustment is needed. Supplied in all resistances from 6 to 400 ohms. State resistance wanted. Shipping weight, 2 oz.



List Price \$.75. No. 2285 Clarostat Hum-Dinger. YOUR PRICE **\$0.45**

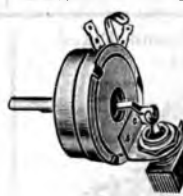
Faraday Type "F" Double Button Microphone



Here is the largest value ever offered in commercial type microphones! extremely large, two-button microphone, ruggedly constructed and designed especially for broadcast purposes. It has the remarkable frequency coverage of from 80 to over 5,000 cycles adequate for all speech and music reproduction. This

highly desired frequency response characteristic is due to the use of a new design, of stretched cushion diaphragm, made of special heat-treated duralium. Has pure gold center contacts on buttons and diaphragm. May be had with either 100 or 200 ohms per button. The microphone is finished in beautiful polished chrome and compares excellently with professional and more expensive microphones. Net weight, 1 ¼ lbs. Ship. wt., 2 ¼ lbs. No. "F" Faraday Double Button Microphone. YOUR PRICE **\$4.50**

Carter 20,000 Ohm Volume Control With Power Switch Attached



This fine wire-wound unit may be used for either replacement or constructional work in its range of 20,000 ohms makes it suitable for a large variety of purposes. May be used either as a potentiometer or a rheostat. A convenient power switch attached to the back of the unit is operated by the same shaft. Has a ¼" mounting shank and ¼" shaft. Measures 1 ¾" diam. Ship. wt. ¼ lb. List Price \$1.85

No. B7156 Carter 20,000 Ohm Volume Control With Power Switch Attached. YOUR PRICE **\$0.40**

Centralab 500,000 Ohm Potentiometer with Switch

This unit is of the graphite type which means that its resistance varies smoothly with the turning of the shaft. There is no danger whatever of wires loosening or sparks jumping from wire to wire. The case is made of moulded bakelite with an A.C. power switch attached to the back. The entire unit mounts through a single ¾" hole and has ¼" shaft. Shipping weight, ¼ lb.



No. 1683 Centralab 500,000 Ohm Potentiometer with Switch. YOUR PRICE **\$0.40**

Gentlemen:

I have received your catalog and I am of the opinion that it is the most useful which has even been published. We prize our copy very highly.

J. C. Dodge, 841 S. 37th St., So., Portland, Ore.

"ATTACH-A-SWITCH" VOLUME CONTROLS

Single and Dual Types Wire Wound



Control Without Switch



Control With Switch

These new style volume controls may be had either with or without power switches. They are designed so that the usual rack dust cover may be removed and a switch cover plate slipped on in its place. All controls are supplied with 7/16" bushing and 1 1/4" shaft from end of bushing. All single controls are equipped with a stud to take our switch. Shafts on all controls have a flat side to the end of the bushing.

NOTE: Your Price is 25% Above these prices

Switch Coverplate Cat. No.	Resistance (ohms)	List Price	YOUR PRICE
IS-10-T	10	\$0.80	\$0.47
IS-20	20	.80	.47
IS-100	100	.80	.47
IS-200	200	.80	.47
IS-300	300	.80	.47
IS-400	400	.80	.47
IS-600	600	.80	.47
IS-800	800	.80	.47
IS-1M	1,000	.80	.47
IS-1500	1,500	.80	.47
IS-2M	2,000	.80	.47
IS-3M	3,000	.80	.47
IS-4M	4,000	.80	.47
IS-5M	5,000	.80	.47
IS-5M-T	5,000	.80	.47
IS-7500-T	7,500	.80	.47

IS-10M	10,000	.80	.47
IS-10M-T	10,000	.80	.47
IS-12M-T	12,000	.80	.47
GS-15M	15,000	.80	.47
IS-15M-T	15,000	.80	.47
IS-25M-T	25,000	.80	.47
IS-25M	25,000	.80	.47
GS-25M	25,000	.80	.47
IS-30M-T	30,000	.80	.47
IS-32M	32,000	.80	.47
IS-50M	50,000	.80	.47
IS-75M	75,000	.80	.47
IS-100M	100,000	.80	.47
IS-250M	250,000	.80	.47
IS-500M	500,000	.80	.47

Dual Volume Controls

DC-15-50	15,000	1.20	.71
DC-1-50	50,000	1.20	.71
DC 4-4	1,000	1.20	.71
DC 7500-10	7,500	1.20	.71
DC 550-1	550	1.20	.71
DC 645-10	1,000	1.20	.71
DC 645-10	645	1.20	.71
DC 25-25	10,000	1.20	.71
DC 15-500	25,000	1.20	.71
DC 285-5	25,000	1.20	.71
DC 285-5	15,000	1.20	.71
DC 1800-5	5,000	1.20	.71
DC 1800-5	1,800	1.20	.71
DC 225-5	5,000	1.20	.71
DC 225-5	225	1.20	.71
DC 10-5	5,000	1.20	.71
DC 10-5	10,000	1.20	.71
DC 10-5	5,000	1.20	.71
No. 1815 Switch Coverplate			.24

Clarostat Strip Resistors



Resistance strips with patented soldering lugs are obtainable in the following values for use as biasing resistances, grid suppressors, etc. Be sure to state resistance wanted.

No.	Resistance	List Price	YOUR PRICE
2287A	1 to 75 ohms	\$0.15	\$0.10
2287B	100 to 500 ohms	0.25	\$0.15
2287C	600 to 900 ohms	0.30	\$0.18

Polymer Flexible Wire Wound Resistors

We carry in stock 14 sizes which have been found to be the ones required most frequently.

Catalog Number	Resistance Ohms	Rating, Watts	List Price	YOUR PRICE
W-1851	10	.3	\$0.25	\$0.12
W-1853	25	.3	.25	.12
W-1855	50	.3	.25	.12
W-1858	100	.3	.25	.12
W-1860	250	.3	.25	.12
W-1862	500	.3	.25	.12
W-1864	750	.5	.25	.12
W-1866	1000	.5	.25	.12
W-1868	1500	.6	.30	.15
W-1870	2000	.75	.30	.15
W-1872	2500	1.	.30	.15
W-1874	3000	1.	.35	.17
W-1876	4000	1.3	.35	.17
W-1880	5000	1.3	.35	.17

Type CGL—100,000 ohms, 2 watts



Type CGL

The Type CGL Grid Leak Clarostat with its perfect, stepless control from 1/10th megohm (100,000 ohms) up to 10 megohms provides an ideal unit for use wherever a small, efficient variable resistor of comparatively low power rating and high resistance is required. It can be used in all circuits where the voltage is not likely to exceed 100 volts.

Specially suited for use as a variable gridleak in which capacity it provides an efficient means of adjusting the detector circuit in any design of sensitivity desired. May also be used as the grid coupling resistor in resistance-impedance coupled amplifiers. The resistance value remains constant indefinitely at any setting.

Projects only 1 in. overall back of panel. Diameter of case is 1 1/4 in. It mounts on a panel with a single 3/8 in. or 7/16 in. hole. Mounting bushing is long enough to permit mounting on 1/2 in. panel. Special Clarostat Mounting Bracket is supplied with this model for use in mounting on baseboard or on experimental layouts where no panel is used. Shipping weight, 6 oz. No. CGL 100,000 Ohm Variable Resistor. **YOUR PRICE \$0.90**

Type CS—5,000,000 ohms, 20 watts



Type CS

The Type CS Universal Range Standard Clarostat is a general purpose variable resistor which is very well suited for use in "B" and "C" eliminators to obtain exact adjustment of voltages. May also be used as a volume, regeneration and oscillation control and as a variable grid leak in low power amateur transmitters. Rated at 20 watts at any or all resistance settings within its range of practically zero to 5,000,000 ohms (5 megohms).

This Clarostat can be used in any circuit where the maximum voltage in the circuit will never exceed 250 volts.

Projects 1 1/2 ins. overall behind the panel. Diameter of the casing is 1 1/4 in. Can be mounted on a panel with a single 3/8 in. or 7/16 in. hole. The mounting bushing is long enough to permit mounting on panels up to 1/2 in. in thickness. Shipping weight, 8 oz.

No. CS 5,000,000 Ohm Variable Resistor. **\$1.13**
YOUR PRICE

Light Duty Compression Type Variable Resistors



Type LDC

The Type LDC Light Duty Volume Control Clarostat is designed primarily for use as a Volume and Tone Control variable resistance but can be used in any other application where a light duty unit having a maximum rating of 7 watts and a resistance range of from practically zero up to 500,000 ohms is required. Can be used in any circuit where the voltage does not exceed a maximum value of 250 volts.

The stepless, noiseless and constant resistance variation characteristics of the larger units are all incorporated in this unit, making it especially suited for all uses where smooth variation of resistance is required. Projects 1 in. overall behind the panel on which it is mounted. Diameter of the casing is 1 1/4 in. Can be mounted on a panel with a single 3/8 in. or 7/16 in. hole. The mounting bushing is long enough to permit mounting on panels up to 1/2 in. in thickness. Shipping weight, 6 oz.

No. LDC 500,000 Ohm Variable Resistor **\$0.90**
YOUR PRICE

Servicemen's Wire Wound Fixed Resistor Kit



These resistors are new and radically different from other resistors, both in construction, accuracy and maintenance of calibration. They are "ARMORED" in the strictest sense of the word. A heavy steel covering around the wire element protects it indefinitely and prolongs its life. A RESISTOR OF THIS TYPE MAY BE USED OVER AND OVER AGAIN, FROM SET TO SET, WITHOUT LOSING ITS CALIBRATION OR WEARING OUT.

The kit consists of 24 resistors, only 4 of which are duplicated. In other words there are more than 20 different values. Manufacturers and custom set builders are rapidly becoming aware of the fact that these resistors defy adverse conditions. They will stand a considerable overload without breaking down. The center-tapped units are 1 1/2 watts, all others are 2 1/2 watts.

CONTENTS OF KIT

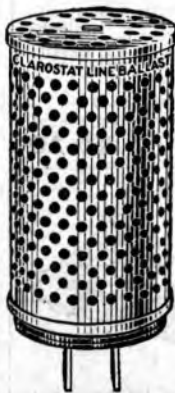
The kit contains one each of the following values: 20 ohms C.T., 40 C.T., 60 C.T., 50 ohms, 100, 150, 250, 300, 400, 600, 1250, 1500, 2000, 2500, and 3000; and two each of the following 200 ohms, 500, 750 and 1000. Shipping weight, 3 lbs. No. "MU-KIT"—Servicemen's Wire Wound Fixed Resistor Kit. **YOUR PRICE \$2.24**

Replacement Line Ballasts



Completely Eliminates Voltage Surges, Assuring Even Volume At All Times

Certain receivers are designed to operate with primary inputs of 85 volts for purposes of voltage regulation. In normal receivers with 110 volt primaries, use the Clarostat automatic line voltage regulator. In those receivers intended for use with line ballasts, use the Clarostat Ballasts listed below.



The Clarostat Line Ballast illustrated here is available in a wide variety of types to meet the requirements of standard receivers. These receivers have been designed to include a Line Ballast. The receivers listed are provided with sockets into which the Clarostat Ballasts can be inserted. These ballasts will maintain the normal voltage across the primary of the power transformer of these sets within the allowable limits for efficient operation in spite of line voltage fluctuations over a range of from 95 to 135 volts. The body dimensions of these units are 1 1/4 in. in diameter and 3 1/2 in. in length. Two type 2200 Clarostats connected in series may be substituted in place of a 11V-876 Ballast Tube, in receivers designed for use with that tube. Shipping weight, 1 lb.

Replacement For	Ballast Type No.	Receiver Amp.	Volt. Drop
Belmont	2518	1.25	30
Bremner Tully	2169	.84	28
Brunswick	2179	1.28	40
Clifton	2408	1.10	27
Grebe	6412	1.10	31
Grebe	6420	1.10	38
Grebe	6310	1.10	16
Grebe	0500	1.00	13
Grebe	0608	.75	12
Grebe	0710	1.75	24
HFL	2179	1.28	38
HIQ 30	2179	1.28	40
HIQ 31	2408	1.10	27
Kennedy	6412	1.10	31
Kylelectron	6310	1.30	32
Larkin	2314	1.18	22
Larkin	6412	1.18	38
Majestic 70	1516	.89	30
Majestic 72	1508	1.36	30
Majestic 80	1012	2.05	30
Majestic 90	1210	1.55	30
Nathaniel Baldwin	2516	.95	35
Peerless	6310	1.30	32
Piercon	2500	1.03	28
Scorton	2179	1.28	40
Silver	2179	1.28	40
Simplex	2516	.95	35
Sonora	2179	1.28	40
Sonora	4210	1.55	30
Starck Piano	2518	1.25	30
Stewart Warner			
Model 900-61816	5001	1.12	30
Model 950-62152	5002	1.25	30
Model R100-66756	5003	1.22	30
United Reproducer	6310	1.30	32

YOUR PRICE **\$1.50**

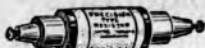
"PRECISION" WIRE WOUND METER MULTIPLIERS AND SHUNT RESISTORS

Tolerance—1% Plus or Minus

The importance of quality in a wire wound resistor employed in conjunction with a meter either as a shunt or multiplier is readily appreciated by anyone who is at all interested in radio. These resistors are usually used in conjunction with other apparatus which cost considerably more than they. Yet, if these comparatively inexpensive resistors should break down, the apparatus becomes inoperative and at times seriously damaged.

Many Service Men and experimenters are beginning to realize that **CHEAP RESISTORS IN THE LONG RUN ARE THE MOST COSTLY.** The standard tolerance of these "Precision" Resistors is 1% plus or minus.

PRELIMINARY AND FINAL CHECKS ARE MADE ON WHEATSTONE BRIDGES USING THE MIRROR-REFLECTING TYPE OF GALVANOMETER. We, therefore, unhesitatingly recommend the use of these precise units in any apparatus where accuracy and dependability are important factors. These units may also be employed in Television amplifier circuits, photocell circuits, sound-head amplifiers, tape "A" and "H" pads, attenuators, etc. They are guaranteed to be noiseless, accurate and above all dependable.



Types A-B-C



Type D-F

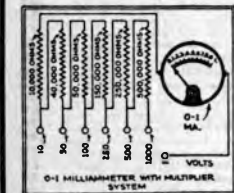
TYPE MAX. LENGTH MAX. DIAMETER	RESISTANCE		
	Type A 1 Watt Your Price	Type B 2 Watt Your Price	Type C 5 Watt Your Price
1 to 25	.08	.12	.15
26 to 3000	.73	.82	1.55
3001 to 20000	.85	.91	1.82
20001 to 50000	.91	1.10	1.20
50001 to 70000	1.10	1.43	2.84
70001 to 150000	1.23	1.68	3.36
150001 to 250000	1.51		4.10
250001 to 500000	2.07		6.04
500001 to 750000	2.97		8.93
Over 1 Meg. to 2 Meg.	4.40		13.19
Over 2 Meg. to 2.5 Meg.			15.53
Over 2.5 Meg. to 5 Meg.			21.56

Note: The universal mounting features of resistors may be mounted on grid lead clips, fuse clips or with pigtails.

TYPE D — 1/2 WATT	TYPE F — 1 WATT
D MAX. LENGTH MAX. DIAMETER	F MAX. LENGTH MAX. DIAMETER
3/8"	3/4"
5/8"	5/8"

RESISTANCE	Your Price	RESISTANCE	Your Price
50 to 1000	\$0.47	1 to 50	\$0.69
1001 to 4000	.53	.56 51 to 1000	.52
4001 to 7000	.56	.60 1001 to 4000	.60
7001 to 10000	.60	.69 4001 to 8000	.69
10001 to 40000	.65	.97 8001 to 30000	.97
40001 to 70000	.73	1.10 30001 to 70000	1.10
70001 to 100000	1.10	.95 70001 to 150000	1.16
100001 to 150000	1.08	1.34 150001 to 250000	1.34
150001 to 250000	1.08	1.55 250001 to 400000	1.55
250001 to 500000	1.62		

Note: These resistors may be mounted either by their pigtails or by a 6/32 screw through the center.



MAKE ACCURATE METER MULTIPLIERS

Low range milliammeters with scale readings of 0-1 ma can readily be converted, through the use of these resistors, to multi-range high resistance voltmeters as suggested by the diagram. When used as multipliers, the Precision resistors provide a very economical

method of obtaining a wide range of voltages with only one instrument, conserving space and maintaining unusual accuracy. A microammeter or milliammeter of good quality employing the Precision resistors as multipliers will provide more accurate voltage readings than a number of ordinary inexpensive meters of various ranges.

When deciding the proper resistance value to employ as a multiplier, Ohm's Law must be taken into consideration.

LYNCH METALLIZED RESISTORS

Guaranteed to Maintain their Ohmage

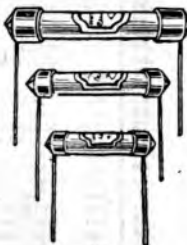
LYNCH METALLIZED DYNOHMIC RESISTORS are the result of extensive research both in the laboratory and in the field. The resistance element is BASED ON THE FAMOUS METALLIZED PRINCIPLE which has proved its superiority where accuracy and uniformity are of paramount importance. This Metallized resistance element is produced under laboratory conditions which provide a continuous and careful check for ACCURACY THROUGHOUT THE ENTIRE LENGTH OF THE RESISTANCE element in making. Subsequent tests include "fishing" at double the rated wattage of the unit and additional tests for accuracy before shipment.

IT IS A LONG ESTABLISHED FACT THAT METALLIZED RESISTORS ARE FAR MORE ACCURATE AND DEPENDABLE THAN CARBON RESISTORS. The only objection to the use of metallized resistors in place of carbon resistors in the past has been their comparatively high price. Now, however this deterrent has been completely eliminated; PRICES HAVE BEEN CUT TO THE SAME LEVEL AS THOSE OF CARBON RESISTORS.

The special ceramic casing of Lynch Resistors is of sturdy construction and maximum heat dissipation.

Many advances have been made in the design of resistance units since their earliest use, but a most outstanding improvement is the molded end-cap which is a feature of LYNCH RESISTORS.

TINNED COPPER PIGTAILS, ARE



MOLDED INTO THE CAPS, and are not soldered or strapped thereto. By this method a clean, sure 100% contact between resistance element, cap and pigtail is made certain. Available in 1/2, 1, 2, and 3 watt.

MOST POPULAR SIZES

Ohms	Ohms	Ohms	Ohms	Ohms
500	8,000	60,000	500,000	5 meg
750	9,000	75,000	750,000	6 meg
1,000	10,000	90,000	1 meg	7 meg
2,000	12,000	100,000	1 1/2 meg	8 meg
3,000	15,000	125,000	2 meg	9 meg
4,000	20,000	150,000	2 1/2 meg	10 meg
5,000	30,000	200,000	3 meg	
6,000	40,000	250,000	3.5 meg	
7,000	50,000	300,000	4 meg	

The 1/2 watt size may be had in from 500 ohms to 5 megohms; the 1 watt size, 500 ohms to 10 megohms; 2 watt size, 250 ohms to 250,000 ohms; and the 3 watt size from 500 ohms to 250,000 ohms. Values of resistors not listed above may be had on request.

No. 3905 Lynch 1/2 Watt Resistors	\$0.18
YOUR PRICE	
No. 3906 Lynch 1 Watt Resistors	\$0.18
YOUR PRICE	
No. 3907 Lynch 2 Watt Resistors	\$0.24
YOUR PRICE	
No. 3908 Lynch 3 Watt Resistors	\$0.30
YOUR PRICE	

7000 Ohm—20 Watt Wire Wound Enameled Resistor



These vitreous-enameled resistors are guaranteed to maintain their rated value of 7,000 ohms at 10 watts under all normal operating conditions. May be used in any circuit where a high-grade, reliable resistance unit is desired. Ship. wt. 6 oz.

No. 2279 7000 Ohm—20 Watt Wire Wound Resistor.
YOUR PRICE **\$0.20**

R.C.A. Voltage Divider Strip



A wire wound strip resistor comprising 490, 1900 and 1600 ohm units. Used in Radiolas 18, 33 and 51.

R.C.A. Part No. 2242. Shipping weight, 3 oz.
Overall size, 4 1/2 x 1 1/2". List Price, \$2.95
No. 2277 RCA Strip Voltage Divider.
YOUR PRICE **\$0.30**

Lynch Service Men's Special Handipak Resistor Kit

10 Ass'd Metallized Units
Either in 1 or 2 Watt Ratings



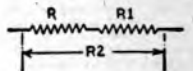
The LYNCH HANDIPAK Resistor Assortment solves the problem of economical yet efficient stocking of resistance units for replacement service. Each HANDIPAK contains 10 Assorted One or Two Watt Resistors of the Metallized Type, and ranges most frequently required—thus making it possible for the Service Man to effect repairs without loss of time to himself or objectionable delays to his customer. Of course, ten resistors cannot cover every contingency which may arise and there will be occasions when a resistance value other than one contained in the HANDIPAK will be desired for a particular purpose. By using two or more resistors in series or in parallel, however, the efficient Service Man or experimenter can obtain an infinite variety of resistance ranges. The following formulas permit an accurate calculation of the resultant resistance value of two or more given resistors in either series or parallel arrangement.

FORMULA "A"

Combining two resistors in series. The formula to use for this method is $R + R_1 = R_2$. When it equals the resistance value of one resistor and R_1 equals the resistance value of the second resistor and R_2 is the resistance value required to properly repair the receiver.

For instance, if you need a 1500 ohm resistance value, you can obtain from the LYNCH HANDIPAK No. 1, the resistance value of 500 ohms, combine it in

series with one of 1000 ohms, also in the kit, and the total will be the required 1500 ohms. Or if the necessary resistor is 30,000 ohms, combine a 20,000 and 10,000 ohm resistor (both in your kit) and obtain the desired value.



Showing proper circuit diagram for combining two resistors in series.

FORMULA "B"

Combining two resistors in parallel. The formula to use for this method is

$$\frac{1}{R} + \frac{1}{R_1} = \frac{1}{R_2}$$

When R equals the resistance value of one resistor and R_1 equals the resistance value of the second resistor and R_2 is the resistance value required to properly repair the receiver.

You may obtain an odd resistance value, for example 3333 ohms, by combining a 5000 ohm No. 3908 Lynch 1 Watt Handipak
YOUR PRICE **\$1.55**
No. 3910 Lynch 2 Watt Handipak
YOUR PRICE **\$2.20**

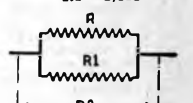
resistor and 10,000 ohm resistor in parallel.

$$\frac{1}{5000} + \frac{1}{10,000} = \frac{1}{R_2}$$

$$2R_2 + R_2 = 10,000 \text{ ohms}$$

$$3R_2 = 10,000$$

$$R_2 = 3,333 \text{ ohms}$$



Showing proper circuit diagram for combining two resistors in parallel.

I.C.A. Selectone



Table Model Tone Control

The I.C.A. Selectone is a portable tone control of superior quality which enables one to choose and regulate the tone quality of a receiver desired most. By a turn of the knob you may emphasize either the high TREBLE of the violin or the low BASS of the drum. Choose that tone which is most agreeable to your ear.

REMEDIES "TINNY" SPEAKERS

Selectone will take the "tin" out of any reproducer, by simply by pushing the frequently which causes it. It will also match the characteristics of a receiver and speaker to the acoustics of the room in which they are used. The Selectone helps materially in reducing crackling noises and other interference due to electrical apparatus in the vicinity.

The Selectone is finished in rich brown with a beautiful knob to push. The housing is made of cast metal and is properly weighted. Can be attached by any one in a few minutes without the use of tools. Shipping weight, 2 lbs.

No. 2241 I.C.A. Table Model Selectone
YOUR PRICE **\$1.18**

Ex-Stat Pocket Resistor Kit

For the 100% Service Man
Closed View of Small Kit



Open View of Large Kit

A pocket kit for service men which meets the demands of the majority of cases. A study of resistor replacement problems has shown that 24 fixed resistance values ranging from 100 ohms to 2 megohms will meet 85% of all service needs. These resistances are of the type used as original equipment in 72% of the broadcast receivers now being manufactured and are color-coded in accordance with the RMA specifications. A chart inside the hinged cover of the metal carrying case makes selection of the desired value easy. Plumbers have long been famed for "forgetfulness". The Radio Service man need no longer be placed in the same category as the owner of this pocket resistance kit need never return to the shop for the correct replacement unit. Values range from 100 ohms to 500,000 ohms. Also 1 and 2 megohm. Shipping weight, 2 lbs. List Price \$5.50

No. 2220 Ex-stat Pocket Resistance Kit.

\$2.88

YOUR PRICE

STANDARD R.M.A. CARBON REPLACEMENT RESISTORS FOR OWNERS OF EX-STAT RESISTOR KITS



We can supply you with replacement Ex-Stat resistors in any of the values contained in your kit. Sold in minimum lots of 3 resistors at one time and in any assorted values you desire. Ship. wt., 4 oz.

No. 2223 Ex-Stat Replacement Resistors
YOUR PRICE, per resistor

\$0.12

"Precision" Midget Wire-Wound Resistors

5 Watts — 10 Watts



Designed especially for midget, portable and auto receivers where space is at a premium. These pigmy resistors possess the same fine characteristics of construction, precision and operation as the larger "Precision" resistors listed elsewhere. Their power rating does not indicate their maximum capacity but rather the amount of watts which can be dissipated without the units even getting warm. Will safely stand up under an overload of 10%.

Heartily recommended as replacements for all carbon resistors. Compact, accurate, dependable. The 5 watt sizes measure 1 1/2" long x 3/8" wide while the 10 watt sizes measure 2" long x 1/2" wide. Ship. wt., 4 oz.

Resistance	Type BP—5 Watts YOUR PRICE	Type VP—10 Watts YOUR PRICE
10 to 4,000	.26	.35
4,001 to 20,000	.30	.39
20,001 to 50,000	.34	.42
50,001 to 70,000	.36	.45
70,001 to 100,000		.52

Kroblak Wire-Wound Enamelled Resistors



Kroblak resistors should not be confused with ordinary wire-wound resistors for they are far superior in principle, design, accuracy and workmanship. The resistance wire, porcelain form and protective coating are so manufactured as to have closely related coefficients of expansion thereby insuring them against cracking the injury when in operation. Ship. wt., 1 lb.

REGULAR STOCK SIZES			35 Watts			50 Watts			75 Watts		
No.	Ohms	PRICE	No.	Ohms	PRICE	No.	Ohms	PRICE	No.	Ohms	PRICE
3300	100	\$0.30	3327	\$0.40	3354	\$0.50					
3301	200	.30	3328	.40	3355	.50					
3302	250	.30	3329	.40	3356	.50					
3303	300	.30	3330	.40	3357	.50					
3304	400	.30	3331	.40	3358	.50					
3305	500	.30	3332	.40	3359	.50					
3306	750	.30	3333	.40	3360	.50					
3307	850	.38	3334	.58	3361	.65					
3308	1,000	.38	3335	.58	3362	.65					
3309	1,250	.38	3336	.58	3363	.65					
3310	1,500	.38	3337	.58	3364	.65					
3311	2,000	.38	3338	.58	3365	.65					
3312	2,500	.38	3339	.58	3366	.65					
3313	3,000	.38	3340	.58	3367	.65					
3314	4,000	.38	3341	.58	3368	.65					
3315	5,000	.38	3342	.58	3369	.65					
3316	6,000	.38	3343	.58	3370	.65					
3317	7,000	.38	3344	.58	3371	.65					
3318	8,000	.38	3345	.58	3372	.65					
3319	8,500	.38	3346	.58	3373	.65					
3320	10,000	.38	3347	.58	3374	.65					
3321	12,500	.42	3348	.70	3375	.85					
3322	15,000	.42	3349	.70	3376	.85					
3323	20,000	.42	3350	.70	3377	.85					
3324	30,000	.45	3351	.85	3378	1.00					
3325	40,000	.45	3352	.85	3379	1.00					
3326	50,000	.60	3353	.85	3380	1.10					

If you do not see the value of resistance for your particular need in the above list, write for our prices on special resistors; made to order on short notice.

Kroblak Midget Resistors



Designed especially for midget, space is at a premium. These pigmy resistors possess the same fine characteristics of construction, precision and operation as the larger Kroblak resistors listed elsewhere. Their power rating does not indicate their maximum capacity but rather the amount of watts which can be dissipated without the units even getting warm. Will safely stand up under an overload of 10%.

Heartily recommended as replacements for all carbon resistors. Compact, accurate, dependable. Resistors up to 15,000 ohms measure 1" long x 9/16" diameter. Resistances up to 25,000 ohms measure 1 1/2" x 9/16". Shipping wt., 7/8 lb.

No.	Ohms	No.	Ohms	No.	Ohms
3381	1	3390	25	3398	750
3382	2	3391	25	3399	850
3383	2.5	3392	25	3400	1000
3384	3	3393	25	3401	1250
3385	5	3394	100	3402	2000
3386	7.5	3395	200	3403	2500
3387	10	3396	300	3404	3000
3388	15	3397	500	3405	4000
				3406	5000
				3407	6000
				3408	7000
				3409	7500
				3410	8000
				3411	8000
				3412	10000
				3413	10000
				3414	15000
				3415	20000
				3416	25000

We can furnish any size resistor up to 25,000 ohms not listed above. List Price \$0.95
Kroblak Midget Resistors, Your Price, ea. **\$0.20**
No. 3416 of 12 assorted resistors. **\$2.25**
YOUR CHOICE

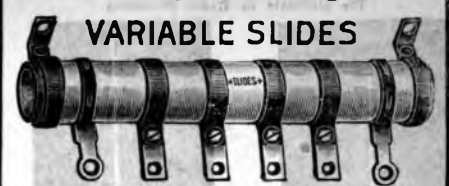
Variable Grid Leaks

1/4 TO 20 MEGOHMS



A perfectly graduated grid leak that may be smoothly varied from 1/4 to 20 megohms. Increases the selectivity and sensitivity of any receiver by permitting critical detector grid biasing to be unaffected by heat or cold and maintains accuracy of range and consistency of resistance. Ideal for resistance-coupled amplifiers, televisions and receivers where the tolerance of resistors is critical. Fits any standard mounting. Shipping weight, 4 oz.
No. 3500 Variable Grid Leaks **\$0.28**
YOUR PRICE

"Rite-Ohm" Adjustable Voltage Divider



This excellent variable wire wound adjustable resistor has been designed for extra heavy duty. It can be used in any radio power operated set, "B" eliminators, power packs, amplifiers, etc. It is especially useful in all radio set replacement work. Used in converting battery sets into power sets.

The correct voltage is obtained by loosening screws of sliders and by moving the latter into the correct position. The screws are then tightened and the work is done. Voltage cannot vary due to the peculiar construction of the resistor and contact sliders.

We recommend them especially for Freshman or Earl Sets. Shipping weight, 1/2 lb. List price, \$1.50.

No. 2275 Divider (4 1/2" long)	10,000 Ohms, 3 slides	\$0.68
No. 2276 Divider (5 1/4" long)	25,000 Ohms, 4 slides	\$0.75

"Precision" Wire-Wound Enamelled Resistors



"Precision" resistors should not be confused with ordinary wire-wound resistors for they are far superior in principle, design, accuracy and workmanship. The resistance wire, porcelain form and protective coating are so manufactured as to have closely related coefficients of expansion thereby insuring them against cracking and injury when in operation. The inherent resistivity of the resistance wire is such that its ohmage remains practically constant under all operating conditions. Ship. wt., 1 lb.

No.	Watt Rating	Resistance Ohms	YOUR PRICE
V 20	20	10 to 10000	\$0.41
		10001 to 25000	.48
V 30	30	10 to 10000	.64
		10001 to 25000	.52
V 40	40	10 to 10000	.60
		10001 to 25000	.69
V 50	50	10 to 10000	.77
		10001 to 25000	.58
V 75	75	10 to 10000	.65
		10001 to 25000	.74
V 100	100	10 to 10000	.83
		10001 to 25000	.91
V 150	150	10 to 10000	1.10
		10001 to 25000	1.34
V 200	200	10 to 10000	1.73
		10001 to 25000	1.38
V 300	300	10 to 10000	1.55
		10001 to 25000	1.75
V 400	400	10 to 10000	2.18
		10001 to 25000	1.43
V 500	500	10 to 10000	1.73
		10001 to 25000	1.84

Voltage Divider Assortment

These voltage dividers have never been used in any set whatsoever. You will find in this kit a voltage divider for practically every purpose. These units have been thrown on the market by manufacturers who have discontinued certain of their models. Among them you will find units for the following sets: Koister, Peerless, Edison, Columbia, Brunswick, Zenith, Majestic, Spartan, R.C.A., Philco, Steinlite and many others. These resistors vary from 2 to 7 taps and from 2 ohms up to 30,000 ohms, as well as from 5 watts to 100 watts. Despite the low price at which we are selling these units, we can guarantee each and every one of them to be perfect in all respects. Each resistor will be different. No two will be alike in a kit. There are 12 voltage dividers per kit. Shipping weight, 4 lbs.

No. 7160 Voltage Divider Assortment. **\$1.50**
YOUR PRICE

Morris Umbrella Antennas

The Ultimate in Radio Reception



2151



2152

It is a well established physical fact that in order to absorb a maximum amount of energy from passing electro-magnetic radio waves, a conductor (aerial) must be absolutely perpendicular i.e. at right angles to them. The smaller the angle of incidence with respect to the wave front i.e. the further the antenna is brought away from the perpendicular, the smaller is the amount of current induced in it.

The nearest approach to the ideal vertical antenna are the Morris Umbrella Aerials as illustrated above. These consist of either a single mast or a tower, supported by four well insulated guy wires which constitute the antennas.

INCREASES SELECTIVITY—SENSITIVITY—RANGE
Antennas such as these are absolutely non-directional. Improve reception, increase selectivity, treble distance range and reduce static interference. Easily and quickly mounted in a minimum of space. Constructed of the finest material available in two different types.

No. 2151 MORRIS UMBRELLA MAST, complete with wires, insulators, roof bracket for pipe, etc., approximately 6 ft. high; mast is adjustable. Shipping weight, 6 lbs.

YOUR PRICE List Price \$3.00 **\$1.92**

No. 2152 MORRIS UMBRELLA TOWER, complete with tower, extension pipe, insulators, pick-up wires and lead-in wires. Can be extended any length by adding section of 1/4" pipe. Shipped in collapsible form. Shipping weight, 7 lbs.

YOUR PRICE List Price \$4.00 **\$2.65**



Copper Aerial Wire

100 Ft. Coils

Seven stranded, highly tensile copper antenna wire. Manufactured to withstand safely all conditions of antenna strain. Sold only in 100 ft. rolls. Shipping wt. 2 1/2 lbs.

No.	Description	List Price	YOUR PRICE
1950	7/25, 7 strand, bare	\$0.35	\$0.20
1951	7/24, 7 strand, bare	.45	\$0.30
1952	7/22, 7 strand, bare	.55	\$0.38
1953	7/22, 7 strand, enameled	.60	\$0.42
1954	7/22, 7 strand, tinned	.60	\$0.42

Window Lead-in Strip



A soft copper lead in strip, heavily insulated with flexible weatherproof sleeving. Easily bent into any size or shape window sash. Will not interfere with the closing of windows. Equipped with two Fahnestock binding posts for making easy connections. Absolutely essential for noise-free reception. Shipping wt., 2 oz.

No.	Size	List Price	YOUR PRICE
2153	12"x3/4"	\$0.25	\$0.04
2154	15"x3/4"	.30	\$0.06

Standard Aerial Kit



A complete antenna kit packed in a strong two piece box. Contains the following items: 50 ft. solid copper, rubber covered lead in wire; 100 ft. 7 strand copper antenna wire; 2 Porcelain Nail Knobs; 2 Porcelain Insulators; 1 Lightning Arrester; 1 9-inch copper ground clamp; 1 12-inch window strip lead-in. Shipping weight, 3 lbs.

List Price \$1.00
No. 1633 Aerial Kit
YOUR PRICE **\$0.65**

Indoor Aerial Ribbon



Superior Grade
We do not sell a second, and cheaper grade.

A woven metallic tape for stringing behind picture moulding or under rugs in making indoor installations. A boon to the service man who has to make indoor antenna installations. In 100 ft. rolls.

Shipping weight, 1 lb. List Price, \$1.00.
No. 1632 Indoor Aerial Ribbon.
YOUR PRICE **\$0.33**

Dumont Socketenna



This device is equipped for either plug or screw connection to the electric light line and has two receptacles for the radio receiver and such other equipment as must be connected to the line. Utilizes the radio frequency energy picked up in the power supply line and does away with the usual outside antenna. Does away with a portion of the static interference so annoying in some localities. May be used on A.C. or D.C. circuits. Shipping weight, 1/2 lb.

List Price \$1.25

No. 1647 Dumont Socketenna
YOUR PRICE **\$0.69**

Hook-Up Wire



Hook-up wire of the same kind that is used in all manufactured receivers. Push-Back feature eliminates the necessity for stripping and definitely speeds up work in wiring receivers or amplifiers. Core of No. 18 tinned copper wire for easy soldering covered with two layers of impregnated fabric which will not unravel. Shipping weight, 1 lb.

No. 1660 Hook-Up Wire, 25 foot coil. **\$0.17**
YOUR PRICE
No. 1661 Hook-Up Wire, 50 foot coil. **\$0.33**
YOUR PRICE

Rubber-Covered Hook-Up Wire

For ordinary and high voltage work. Stranded copper wire (tinned for easy soldering) covered with flexible rubber insulation which will not become brittle and crack under any conditions of surrounding heat or weather. Recommended for 250, pentode and transmitter construction and repair work. Shipping weight, 1 1/2 lbs.

List Price \$1.50

No. 1663 Rubber-Covered Hook-Up Wire 25 ft. Coil. **\$0.18**
YOUR PRICE List Price \$1.00
No. 1664 Rubber-Covered Hook-Up Wire 50 ft. Coil. **\$0.35**
YOUR PRICE

Pipe Ground Clamp



This clamp is, without reservation, the truly ultimate in ground clamps. The most handy, most efficient, most popular and most easily-mounted ground clamp that has ever been produced. Affords a solid, positive electrical connection right through paint, dust, oil or grit. Is provided with a screw binding post for making easy connections. Shipping weight, 4 oz.

List Price \$0.10

No. 2161 Pipe Ground Clamps **\$0.06**
YOUR PRICE 10 for \$0.55

I.C.A. Insultenna-Aerial Eliminator

NO MORE OUTDOOR AERIAL



Here is an amazing development, the result of painstaking and indefatigable engineering research, which completely eliminates the necessity for either outdoor or indoor antennas. The principle of the Insultenna is as unique and novel as it is radical. Hidden inside its neat, compact case is a new type filtered aerial wire and several condensers all of which give it the capacity of 75 feet of ordinary antenna wire. Here is an item which every serviceman should carry in his kit and demonstrate to his clients. It requires no sales ability or explanations. Merely hook it up and it's sold. No more hazardous adventures on the roof, installing aerials, no more blowing down or snapped antennas; install an Insultenna and then forget about it. It requires no attention or servicing.

NOT A LIGHT-SOCKET ANTENNA

Insultenna is not a light-socket antenna and has no connection whatsoever with the electric light current line, hence eliminating any possibility of A. C. hum. It is quite free from interference and man-made static; a 100% efficient, fool-proof, modern aerial substitute. Small (5"x2 1/2"x1"), neat, compact. Shipping weight, 2 lbs.

List Price \$2.50

No. 2150 I.C.A. Insultenna **\$1.47**
YOUR PRICE

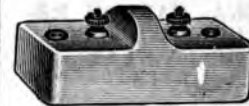
Aerial Insulators



Made of extremely tensile porcelain composite. Will not snap under any conditions of antenna strain. Sheds water easily, and therefore will not short antenna to ground in rainy weather. Sold only in lots of 10. Shipping weight, 3 lbs. for 10.

No.	Description	List Price per 10	YOUR PRICE per 10
2155	Porcelain Insulators 2 1/2"	\$0.50	\$0.19
2156	Glass Insulators 3 1/2"	.65	\$0.35
2157	Nailit Knobs Insulators	.40	\$0.15

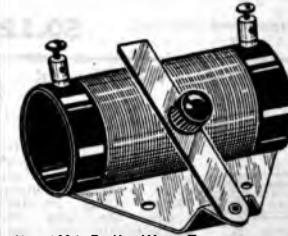
Approved Lightning Arrester



An accurately built, highly efficient lightning arrester, permanent and reliable. Will not high grade heat-resisting enameled porcelain cast. Equipped with antenna ground binding posts and two mounting holes. Approved by Underwriters Laboratories. Each arrester is individually boxed. Shipping weight, 1 lb.

List Price \$0.25
No. 2159 Approved Lightning Arrester **\$0.06**
YOUR PRICE 12 for \$0.65

Radio Klear-Tuner



A simple but effective wave trap for minimizing interference and noise. Consists of a fixed condenser together with an inductance in series varied by means of a slider. A readily saleable article for the service man in congested districts.

Shipping Weight, 1 lb.

List Price \$1.00
No. 1634 Radio Klear-Tuner. **\$0.60**
YOUR PRICE

Porcelain Screw Eyes



For insulating or "standing off" lead-in wires, antennas, communication wires, etc., from buildings, trees, and other grounded objects. Helps eliminate static and other objectionable noises. Sold only in 25 lots. Shipping weight, 4 lbs.

No.	Description	List Price per 25	YOUR PRICE per 25
2162	Screw Eyes, porcelain 3"	\$0.95	\$0.68
2163	Screw Eyes, porcelain 6"	1.20	\$0.90

Replacement Drum Dial Cables and Belts

**Made of Phos-
phor-Bronze
Alloy Throughout**

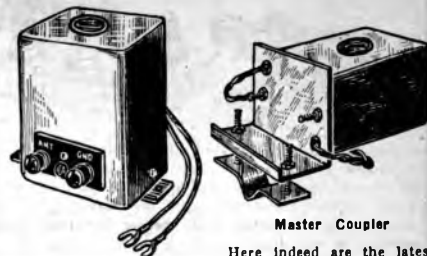


**Bands, Belts and
Cords for All
Popular Make Sets**

These cables, bands and cords are made the exact duplicate of the original supplied with the set even to the quality of the wire cable or eyelet.

Cat. No.	Make of Set	Model	Description	YOUR PRICE
2080	Atwater Kent	55	Belts: Set of 2 Left and Right	.18
2082	Atwater Kent	35, 37	Belts: Set of 2 Left and Right	.20
2083	Atwater Kent	44	Belts: Set of 3 Left and Right	.47
2084	Atwater Kent	60, 61	Belts: Set of 3 Left and Right	.37
2085	Amrad	84	Drive Cable	.18
2086	Bosch	48A	Drive Cable	.20
2087	Bosch	58A	Drive Cable	.20
2088	Bosch	58, 60	Drive Cable	.20
2089	Bosch	28	Drive Cable	.20
2090	Balkett	All Nos.	Drive Cable	.23
3150	Bremer Tully	14, 21, 31	Cord and Lugs	.13
3151	Brunswick	14, 21, 31	Cord and Lugs	.13
3152	Colonial	31, 32	Belt, Spring, Screw and Bolt	.28
3153	Colonial	33, 34, 35, 37	Drive Cables: Set of 2	.40
3154	Columbia	All Nos.	Drive Cable 2 and Springs	.40
3155	Crosley	40s, 60s, 804	Drive Cable	.25
3156	Crosley	601, 602, 607	Belt, Spring, Screw, Bolt	.25
3157	Edison	All Nos.	Drive Cable	.35
3158	Edison	All Nos.	Drive Cable	.30
3159	Eveready	All Nos.	Drive Cable	.20
3160	Freed Hiseman	All Nos.	Drive Cable	.35
3162	Freshman	NR 60	Belt	.25
3163	General Motors	All Nos.	Drive Cable	.35
3164	Grebe	SK 4	Cord and Beads on ends, Springs	.20
3165	Isolster	K 45	Heavy Cord and Beads on ends	.25
3166	Kolster	43, 44	Drive Cable, Special heavy	.40
3167	Kellogg	All Nos.	Set of 2 and Springs	.40
3168	Majestic No. 1	70, 71, 73	Exact Cables as Original	.23
3170	Majestic No. 2	70, 71, 72	Drive Cable Knitted	.23
3171	Majestic	52, 60	Linen Cord	.15
3171	Peerless	All Nos.	Drive Cable	.25
3172	Philco	All Nos.	Drive Cable	.36
3173	R.C.A.	16, 17, 18	Drive Cable	.23
3174	R.C.A.	46, 47	Drive Cable	.23
3175	R.C.A.	16, 17, 18, 33	Linen Cord	.15
3176	R.C.A.	64, 67	Very heavy, complete with conn.	.60
3177	Spartan	All Nos.	Drive Cable	.25
3178	Sonora	All Nos.	Drive Cable	.30
3179	Steinlte	All Nos.	Drive Cable	.25
3180	Temple	All Nos.	2 Drive Cables and Springs	.40

NEW! NEW! NEW! Master and Multiple Antenna Couplers



Here indeed are the latest and most unique units in the radio field today. The multiple antenna coupler permits the use of many radio receivers from one antenna. It allows sharp tuning and acts as a band-pass filter and antenna filter. All foreign noises are effectively eliminated from the antenna circuit. These units provide an excellent means of obtaining added income for Service Men and dealers. Thousands of hotels and apartment houses have been needing just these devices. Instead of having a maze of unsightly antenna wires strung across the roof, it is now possible to erect merely one efficient antenna which when used in conjunction with the Master Antenna Coupler will supply music and programs for all apartments and tenants.

Radio dealers, furthermore, can use these couplers to advance their own establishments, enabling them thereby to demonstrate various sets without encountering the usual noises when employing one aerial for a number of sets. The Master Antenna unit couples the aerial to the radio by means of condensers and chokes, tuning the antenna circuit to a frequency above the broadcasting range. It can easily operate up to 20 radio receivers from one aerial when used in conjunction with the Multiple Antenna Coupler.

The Multiple Antenna Coupler is placed at the radio set while the Master Antenna Coupler is attached to the outside aerial on the roof thereby coupling it to the various radio sets in the building. These items are big sellers and alert distributors. Service Men and dealers can add considerably to their profits by merchandising them. Each unit is individually boxed and is accompanied by complete instructions and diagrams for installing. Ship. wt., 6 lbs. each.

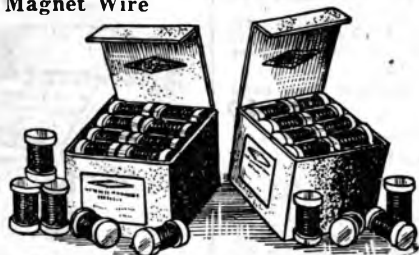
List Price \$2.50
YOUR PRICE \$1.47

List Price \$5.00
YOUR PRICE \$2.85

Coil and Magnet Wire

In 1/4, 1/2 and 1 lb. Spools
Standard size wire for home construction of radio frequency, broadcast, and short wave coils. Universally used for making experimental relays, electro-magnets, special coils for experimental circuits, low current signaling systems, and for materializing personal ideas.

SPECIFICATIONS
Made from the best grade copper wire and insulated with the finest materials obtainable. Each spool contains a single length of wire neatly wound and suitably labeled.



FOR
**SHORT WAVE
AND
TRANSMITTING
EQUIPMENT**

SEE
PAGES
51 to 60
inclusive

B&S Gauge	Cat. No.	SINGLE COTTON COVERED		PLAIN ENAMELED		SINGLE SILK COVERED (GREEN)		DOUBLE SILK COVERED (GREEN)				
		1/2 Lb. Spools YOUR PRICE	1/2 Lb. Spools YOUR PRICE	1/2 Lb. Spools YOUR PRICE	1/2 Lb. Spools YOUR PRICE	1/2 Lb. Spools YOUR PRICE	1/2 Lb. Spools YOUR PRICE	1/2 Lb. Spools YOUR PRICE	1/2 Lb. Spools YOUR PRICE			
14	2014	\$0.17	\$0.30	2714	\$0.56	30	4022	.21	4122	.38	4222	.66
16	2016	.18	.35	2716	.82	32	4024	.23	4124	.39	4224	.69
18	2018	.20	.38	2718	.68	34	4026	.27	4126	.48	4226	.87
20	2020	.21	.39	2720	.78	36	4028	.29	4128	.51	4228	.92
22	2022	.22	.44	2722	.90	14	4030	.30	4130	.57	4230	1.05
24	2024	.27	.50	2724	.90	14	4032	.35	4132	.62	4232	1.16
26	2026	.33	.62	2726	1.11	16	4034	.39	4134	.71	4234	1.34
28	2028	.38	.71	2728	1.25	18	4036	.45	4136	.84	4236	1.58
30	2030	.45	.81	2730	1.55	20	4114	.27	4516	.53	4616	.93
32	2032	.54	.99	2732	1.79	22	4116	.27	4518	.57	4618	1.02
34	2034	.71	1.40	2734	2.45	24	4118	.29	4520	.62	4620	1.08
36	2036	1.07	2.00	2736	3.68	26	4120	.32	4522	.69	4622	1.22
14	2014	.21	.36	3214	.68	30	4124	.33	4524	.81	4624	1.46
16	2016	.21	.38	3216	.69	32	4126	.35	4526	.89	4626	1.65
18	2018	.23	.42	3218	.72	34	4128	.38	4528	1.16	4628	2.16
20	2020	.26	.47	3220	.80	36	4130	.40	4530	1.35	4630	2.55
22	2022	.29	.53	3222	.92	14	4132	.42	4532	1.76	4632	3.27
24	2024	.33	.63	3224	1.10	14	4134	.44	4534	2.19	4634	4.17
26	2026	.39	.75	3226	1.34	16	4136	.47	4536	2.69	4636	5.15
28	2028	.47	.92	3228	1.56	18	4138	.50	4538	3.27	4638	6.21
30	2030	.56	1.08	3230	1.86	20	4140	.53	4540	3.92	4640	7.52
32	2032	.69	1.34	3232	2.55	22	4142	.57	4542	4.66	4642	8.93
34	2034	1.01	1.89	3234	3.59	24	4144	.60	4544	5.52	4644	10.61
36	2036	1.38	2.61	3236	4.92	26	4146	.64	4546	6.50	4646	12.58
14	4014	.18	.33	4214	.57	30	4148	.67	4548	7.61	4648	14.76
16	4016	.18	.35	4216	.59	32	4150	.70	4550	8.85	4650	17.28
18	4018	.20	.35	4218	.60	34	4152	.73	4552	10.23	4652	20.19
20	4020	.20	.36	4220	.63	36	4154	.76	4554	11.76	4654	23.54

Four-in-One Screw Driver

This handy tool will engage practically every size of screw from the smallest on a fine watch up to the largest encountered in radio service work. Yet, versatile as this unit is in use, it occupies even less space than an ordinary sized screw driver. Comprises 4 high-grade steel screw drivers each a bit larger than the other which "telescope" into one another when not in use, thereby saving considerable space in the radio Service Man's, experimenter's, or mechanic's tool kit. The Four-in-One consists of a large screw driver, 8 ins. long with a metal shield protecting the blade. The handle of this large screw driver contains the three smaller ones which measure 3 1/2 ins., 2 1/2 ins., and 1 1/2 ins. long respectively; each beautifully Nickel Plated and knurled to assure a firm grip. A finely Nickel Plated ball cap fits over the back end of the large screw driver, completing a practical and most useful tool. Shipping weight, 1 lb.

List Price \$0.75
YOUR PRICE \$0.50

Han-D Hammer and Screw Driver Combination Tool

Recognized as the Cleverest and Most Practical
Combination Tool Ever Produced

This sturdily constructed steel hammer has three screw drivers tucked away in its handle. These screw drivers are of the same general construction and uses as the No. 82 Four-in-One Screw Driver Set; will engage a large variety of screw sizes. The Service Man, experimenter and mechanic will welcome this new addition to his tool kit as a handy, economical and space-saving unit. The head of the hammer is made of high-grade steel and the handle of heavy brass. The screw drivers measure 5 1/2 ins., 2 1/2 ins., and 1 1/2 ins. long respectively.

List Price \$2.00
YOUR PRICE \$0.93

PORCELAIN BASE KNIFE SWITCHES

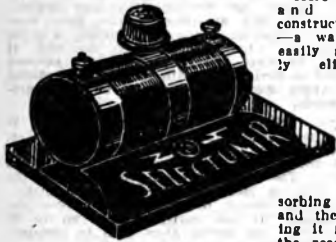


Fine quality porcelain base knife switches with highly tempered non-corrosive spring contacts. Under side of base is properly grooved to permit the passage of wires without interfering with the mounting of the switch. Do not confuse with cheaper and lower grade switches of this type. Shipping weight, 1/2 lb.

No.	Type	List Price	YOUR PRICE
2050	S.P.S.T.	\$0.30	\$0.10
2051	S.P.D.T.	.40	\$0.14
2052	D.P.S.T.	.50	\$0.18
2053	D.P.D.T.	.60	\$0.22

I.C.A. Selectuner

Station Selector and Static Reducer Cuts Through Locals for DX Reception



Here is a unique and scientifically constructed device—a wave trap—that easily and effectively eliminates all traces of interference. Tunes accurately to the wave length of the interfering station, completely absorbing its energy and thereby preventing it from reaching the receiver.

Selectuner separates stations over entire wave band on any type of receiver and cuts through the locals and enhances the quality of reception. Installed without the use of tools and does not require any circuit changes. Made of genuine Bakelite handsomely finished in gold and black. Small and compact. Can be installed in any convenient place. Shipping weight, 3/4 lb.

List Price \$1.50

No. 1885 I.C.A. Selectuner **YOUR PRICE \$0.88**

Ground Clamp



A soft, copper ribbon ground clamp, equipped with Fahnestock binding post for making easy connections. Is of the adjustable type and will fit practically any house pipe.

Provides good, clean electrical contact. Shipping weight, 2 oz.

List Price \$0.10

No. 2158 Ground Clamp **YOUR PRICE \$0.04**

"Super" Aerial Eliminator



This aerial eliminator equals and in some cases actually surpasses ordinary outdoor antenna installations. No current whatsoever is required for its operation. This is not merely another socket antenna but rather a specially designed unit which has an actual capacity of the average outdoor 75 ft. antenna strung at a height of 50 feet. Increases sensitivity and fidelity of reception on both local and long distance stations. **ABSOLUTELY GUARANTEED TO PRODUCE EXCELLENT RESULTS.** Completely does away with the outdoor aerial and its attendant lightning dangers, unsightly poles, guy wires, mutilation of

woodwork when bringing in lead-in wires, etc. The "Super" Aerial Eliminator is easily installed by anyone without tools in a minute's time, and is fully concealed within the set. Full instructions for installing furnished with each set. Measures 3 1/2 in. x 2 in. diam. Shipping weight, 1 1/2 lbs.

List Price \$3.00

No. 1887 "Super" Aerial Eliminator **YOUR PRICE \$0.79**

Pearl-Top Push Button Switches

Excellent suited for bell circuits, test panels, analyzers, etc. All metal parts nickel plated to guard against rust. Measures 1/4 in. diameter. Contact blades made of tempered spring metal, assuring foot-pedal action at all times.

No. 306 Pearl Push Button Switches **YOUR PRICE, each \$0.18**

Two-Conductor Tinned Electric Cable



No. 1985 Two-Conductor Tinned Electric Cable **YOUR PRICE, per 25 feet \$0.75**

Heavy Duty Twelve-Conductor Power Cable



This power cable was designed originally to connect A.C. receivers to their power packs.

The early A.C. receivers employed separate power packs, placed at a distance in order to minimize radio noises. This cable was the connecting link between power pack and receiver. Incorporates, in addition to other wires, three sets of twisted heavy-duty wire for carrying large filament currents. One pair of twisted wires in particular, will carry more than 15 amperes. The other wires are for various "B" and "C" voltages.

All wires are color-coded for easy identification. The cable is ideal for connecting heavy duty power amplifiers to associated equipment, etc. Ship. wt. 2 lbs. List Price \$2.50

No. B7220 Heavy Duty Twelve-Conductor Power Cable. **YOUR PRICE \$0.40**

Fuse and Panel Clips



The fuse clips are made of highly tempered phosphor-bronze alloy and will not tarnish or corrode under any circumstances. Aside from their conventional use as fuse mounts, they are admirably suited for and will tenaciously engage all grid leak type resistors. Most service men and experimenters prefer this type of resistor mounting to that of the pigtail type since they make a neat, professional-like appearance.

The panel clips are made of tempered spring metal and are a bit smaller than the fuse mounts. In actual use, however, they serve the same purposes as the fuse clips. Shipping weight, 4 oz. Sold in envelopes of 12 or larger quantities.

No.	Type	Envelope of 12 YOUR PRICE
2062	Fuse Clips	\$0.24
2063	Panel Clips	\$0.10

REMINDER

Complete Index on Page 106

Rush Order Blank on Page 104

Celotex Baffle Boards

For All Dynamic and Magnetic Reproducers



Radiotricians, experimenters and fans! Here is a sure cure for speaker distortion. Distortion is caused by the "mixing" or "beating" of the two trains of oscillation which are set up by the reciprocal motion of the speaker cone.

EXCELLENT SOUND INSULATOR
"Insulate" these two sets of vibrations from each other and you automatically cure your speaker troubles. Celotex is the finest, least expensive sound insulator ever developed—guaranteed to be sound proof.

Fit a celotex baffle board into your speaker cabinet—set the cone of the speaker firmly against the edge of the board. The rich, mellow music—deep, soothing speech will flow from your speaker. You will be amazed.

No.	Size	List Price	YOUR PRICE
1584	12 x 12"	\$0.60	\$0.30
1585	18 x 18"	1.40	\$0.80
1586	24 x 24"	2.40	\$1.40
1 1/2" thick—weight 1 lb. to sq. ft.			
No.	Size	List Price	YOUR PRICE
1592	12 x 12"	\$0.50	\$0.28
1593	18 x 18"	1.00	\$0.60
1594	24 x 24"	2.00	\$1.20

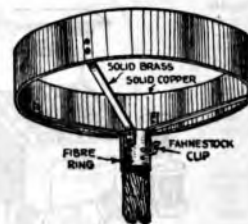
All above sizes are with 7/8" holes. Special sizes cut to order at 60c per square foot.

To compute the shipping weight of the various sizes proceed as follows: Convert the dimensions given above, which are in inches, to feet; multiply them together and then since 1 square foot weighs 1 lb. you automatically have your weight of the baffle board. To this weight add 1 lb. for packing material; this final result is your shipping weight.

For example 12" x 12" of a 1 1/2" thick baffle board is equivalent to 1' x 1' or 1 square foot, which weighs 1 lb. To this add 1 lb. for shipping material and you have the shipping weight of 2 lbs.

Order by catalog number and size of baffle board.

R.T.C. Non-Directional Antenna



An excellent circular antenna for short wave, broadcast and television reception. Incorporates 135 square inches of solid sheet copper. Approaches the ultimate in neat, compact, easily installed antenna systems. **RECEIVES ALL WAVE LENGTHS UNDER ALL CONDITIONS FROM ALL DIRECTIONS.** Affords clearer radio reception from greater distances with remarkable vol-

ume. Provided with insulated mounting ring for attaching to flag pole or any other type pole of either wood or iron. The lead-in wire is connected to the antenna through the medium of a Fahnestock phosphor-bronze spring clip, affording perfect electrical contact. Measures 14" in diameter and 8 1/2" deep. Shipping weight, 2 lbs. List Price \$3.50

No. 2170 R.T.C. Non-Directional Antenna **YOUR PRICE \$0.98**

Litz Wire for High Frequency Work

For Short Wave Work



It is generally understood that high frequency currents travel along the surface of a conductor. It is therefore, better to use stranded wire (which offers considerably more surface than solid wire) for all RF and antenna circuits. Litz wire has been universally accepted as the best type adaptable to short wave work. This wire consists of 7 strands, each of which is individually enameled to prevent losses. We unhesitatingly recommend it for the construction of short-

wave as well as broadcast RF coils. Sold only in 100 ft. rolls. Ship. wt., 8 oz. No. 1669 100 Ft. Roll of Litz Wire **YOUR PRICE \$0.30**

Lynch Noise-Reducing Antenna Equipment

Transposition Blocks

It may be safely said that nine-tenths of all noise reproduced by a radio is picked up by the antenna system. A recent intensive study of the causes of antenna noise has brought the discovery that the antenna lead-in wire was alone responsible for practically all noise picked up.

By transposing the lead-in wire, however, all extraneous noise was immediately eliminated. (See the front part of a detachable section of this catalog for a detailed discussion on the method of antenna noise elimination.)

The mechanical design of these transposition blocks reduces electrical losses in the antenna circuit to an absolute minimum and offsets the ravages of weather and moisture, thus assuring the greatest possible signal strength.

Greatest attention has been given to the design to enable the transposition blocks to be placed in service with the least possible effort but with the greatest amount of security. Although extremely light, they are exceedingly durable and tensile. Sold in kits of 10 blocks. One kit is sufficient for a lead-in of 11 1/2 feet long; 2 kits for lead-in of 23 feet for 36 1/2 feet long; 4 kits for 48 1/2 feet long; 5 kits for 64 1/2 feet long, etc. Shipping weight, 3 lbs.

List Price \$2.75 per kit.
No. 2165 Kit of 10 Transposition Blocks
YOUR PRICE \$1.65

Lynch Cage-Aerial Spreaders

Where the cage type aerial is to be used, in order to take advantage of its great pickup qualities and non-directional properties, the new Lynch cage-aerial spreaders are highly desirable.

They are made of a new low-loss insulation material called **Lynchite**. Cage-aerial systems are widely employed by many large radio broadcast transmitting companies. Such antenna systems are in regular use in connection with international broadcasts which are picked up on short waves and re-broadcast over the regular networks.

These improved spreaders now available to the broadcast listener, the short wave and television experimenter and the amateur for the first time. May be used advantageously in amateur transmitting systems. Sold only in kits of 10 spreaders. Ship. wt. 2 lbs.

List Price \$2.75 per kit.
No. 2166 Kit of 10 Cage-Aerial Spreaders
YOUR PRICE \$1.65

Lynch "U. S. Navy Standard" Antenna Insulators

There is, next to the reduction of the interference which is usually picked up by the lead-in wire, one other serious drawback encountered with ordinary receivers. It is the loss in the antenna circuit, resulting from the electrical "leakage" across the antenna insulators.

These Lynch insulators are made of the new **Lynchite** material which has an extremely high tensile strength and low high frequency "leakage" losses. Insulators of this type are in constant use in the Navy Short Wave Experimental Laboratory as well as in many of the most important commercial services of the world. Sold only in kits of 8. Shipping weight, 2 lbs.

List Price \$2.00
No. 2167 Kit of 8 Lynch Insulators
YOUR PRICE \$1.20

Lynch "Commercial" Antenna Insulators

For installations which do not require the tensile strength of the Lynch "U. S. Navy Standard" Antenna Insulators, Lynch "Commercial" type insulators are ideal. They are made of a high grade moulded and milled vulcanite. These insulators have a highly polished surface, which resists the accumulation and absorption of moisture, they are designed as to assume a position perpendicular to the earth and high frequency losses are reduced to a marked degree. Sold only in kits of 8. Shipping weight, 2 lbs.

List Price \$1.25 per kit
No. 2168 Lynch "Commercial" Antenna Insulators
YOUR PRICE \$0.75

Gentlemen: Allow me to compliment you on your method of depicting diagrams in your catalog under the heading **Radio Service Treatise**. It is indeed a privilege and a pleasure to look over the different hook-ups, etc. Let me congratulate you for being a pioneer in diagrams. Your radio technical editor who is so on hand for those splendid diagrams is a thoroughly trained radio man.

L. H. MARSHALL, Stamford, Conn.

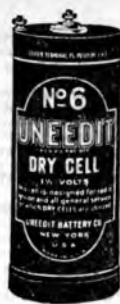
UNEEDIT DRY-CELL BATTERIES



UV-30F



UV-3-D



No. 6

For All Types of "A"—"B"—"C" Work
Uneedit batteries are made of the highest grade ingredients under careful and scientific supervision. The chemical formula employed in constructing these batteries is such that the operating life imparted to them is far beyond that of most batteries on the market. The standard, 45 volt battery is usually employed on receivers using from 1 to 4 tubes. The standard 45 volt heavy duty battery is employed with receivers and amplifiers using more than 4 tubes. The small 22 1/2 volt battery is excellently suited as a "B" supply for portable receivers and amplifiers. It may also be employed as "C" potential for power tubes. We recommend that these batteries be shipped via express collect rather than parcel post due to their weight. The No. 6 dry cell is of course a general purpose unit for radio and all other types of service.

STANDARD STOCK SIZES		YOUR PRICE
Cat. No.	Description	
UV-30-D	Standard 45 Volt "B" Battery	9 3/4 lbs. \$0.98
UV-30-F	Heavy Duty 45 Volt "B" Battery	13 1/2 lbs. \$1.44
UH-3-D	4 1/2 Volt "C" Battery	1 lb. \$0.40
	No. 6 Dry Cell	2 lbs. \$0.30
UH-15-B	22 1/2 Volt "B" & "C" Battery	1 lb. \$0.80

Lynch "All-Wave" Antenna Coupler

While it is possible to secure more satisfactory results by the application of the transposed lead-in, alone, over the usual ground and aerial system, the best results are obtained when there is no connection between the receiver itself and the regular ground. The best way to accomplish this result is to have a winding which is connected with the two leads of the transposed lead-in system and placed in inductive relation to the first tuned circuit in the receiver. There are many receivers, in which this connection cannot be made without considerable trouble. The two leads of the antenna system, itself, should be balanced. In the Lynch "All-Wave" antenna Coupler, all these functions are brought about automatically. It enables us to secure the best possible results from the various noise-reducing antenna systems without regard to the wave length on which we desire to receive. Shipping weight, 1 lb.

List Price \$1.75
No. 2169 Lynch "All-Wave" Antenna Coupler.
YOUR PRICE \$1.05

A NEW INVENTION

Neon Automobile Ignition Pilot

Locates Ignition Troubles Instantly From Driver's Seat

If your automobile engine fails to start, this pilot lamp which easily attaches to dashboard, will tell you instantly whether or not it is your ignition system which is causing the trouble.

It is not necessary to raise the hood and crawl around looking for trouble if your ignition coil is burned out, or your battery fails, or you are out of gas, — without getting out of the driver's seat, you may have the whole story before you!

ADDS SAFETY TO FREE WHEELING

Many people object to free wheeling because of the danger of discovering too late that the motor has gone dead while coasting. This neon ignition pilot is the only practical telltale of this condition.

If you have a radio in your car and the ignition system affects your reception, it may be improved by bypassing this interference through the neon ignition pilot.

This simple, but effective unit, cannot cause the slightest trouble or shocks because there is absolutely NO CONNECTION to any live operating part of any electrical circuit in the car. It operates entirely—through induction—on the waste current escaping through the insulation from your ignition system. May be used on all types of cars, trucks, buses, motor boats, etc.

The neon ignition pilot is installed in a few minutes without the use of tools. Easily understood direction on how to install as well as other information on its many uses accompany each unit.
List Price \$1.70

No. 2542 Neon Automobile Ignition Pilot.
YOUR PRICE \$1.25
DEALER'S PRICE—In lots of 6 or more; each \$0.98

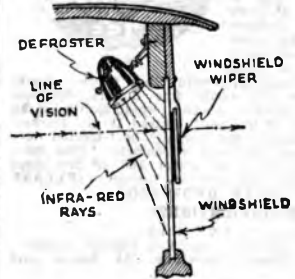
Auto-Windshield Defroster

Generates Infra-Red Heat Rays FOR USE ON ALL TYPES OF CARS



Here is a device without which no autist should drive his car in the winter time. It is a cleverly constructed unit which operates on the same scientific principles as the numerous health-ray machines used in hospitals, health resorts, etc. The infra-red rays generated by this instrument have the property of passing through air and glass without radiating heat. As soon as they strike an obstruction, however, such as steel, snow, etc., they immediately produce sufficient heat, to melt the snow on the outside and defrost the windshield on the inside, thereby insuring perfect vision for the driver at all times. This operation is practically instantaneous—just as quiet as a light beam and equally as safe. There is nothing in this device to get out of order. Once installed, no further trouble or adjustment is required. There are no moving parts to get out of order.

Defroster in Action.



X-section showing method of mounting.

NO DRAIN ON THE BATTERY
This defroster uses about the same amount of current as a set of headlamps—no more. Only one connection is required to install it—a wire leading to the generator. Such a connection permits the device to be **USED ONLY WHEN THE ENGINE IS IN OPERATION**. Since this is true, under no circumstances can it act as a load upon the battery inasmuch as the latter is always being charged by the generator while the engine is running. The Defroster cannot be seen from the outside of the car. By mounting it on the header bar inside the car above the windshield, it is entirely out of vision of the driver.

IMPORTANT
Do not confuse this device with any other "defrosting" mechanism, such as a heater or lamp for the purpose of clearing the windshield. This Defroster utilizes principally the invisible infra-red rays and will therefore, not crack or discolor the glass under any conditions.

List Price \$2.50
No. 2541, Auto-Windshield Defroster.
YOUR PRICE \$1.25
DEALER'S PRICE—In lots of 6 or more, Each \$0.80

F & H

NEW CAPACITY AERIAL ELIMINATOR



Completely Eliminates Aerial—Fully Concealed Within Receiver
Completely Eliminates Aerial—Fully Concealed Within Receiver

Produces results equal to regular 75 ft. aerial 50 ft. high. Each instrument factory tested on actual 1127 mile reception. Chosen by U. S. Government Navy Hospital for their numerous bed-side installations. Attached by anyone in a moment's time. Radio can then be moved from place to place as easily as a piece of furniture. Adapted for AC Sets only.

Nationally Advertised List Price \$1

No. 344 **YOUR PRICE \$0.60**

An attractive Colored Counter Display furnished with each order for a carton of Six. Per Carton of Six **\$3.60**

Faraday Type "BF" Double Button Microphone

Here is a REAL microphone available at the price of a toy model. It is the largest and heaviest microphone in its class. Uses a separate bridge, holding the front button, which in other microphones, is used only in the more expensive types. Has a frequency response of from 70 to over 3,800 cycles—sufficient coverage for voice and semi-professional music recording. It is excellent for use on sound trucks and with other public address outfits. Low price and really fine quality, together with professional appearance and workmanship make this microphone one of the most desired in the market. The diaphragm is made from specially heat-treated duralium with 24 Karat gold center contacts. This microphone can be furnished for either 100 or 200 ohms per button and either sensitive or damped. (PLEASE SPECIFY WHICH WHEN ORDERING.)



SPECIFICATIONS:

Size—3 1/4" diameter x 1 1/4" thick.
 Bridge—Separate casting, beautiful Chrome finish.
 Diaphragm—Heat-treated duralium, 24 Karat gold contacts.
 Frequency—70 to over 3,800 cycles.
 Weight—net 1 1/2 lbs.; packed 2 lbs.
 List Price \$12.00

No. "BF" Double Button Microphone. **YOUR PRICE \$4.50**

Faraday Professional Two-Button Microphone



This microphone was designed especially for broadcast purposes and has a fine frequency response of from 50 to 6,000 cycles. Furthermore, the microphone has been so designed that its natural period of resonance is well outside its frequency response range. This characteristic is extremely important and should not be taken lightly. A microphone whose natural period of resonance falls within its frequency response range will tend to accentuate certain frequencies more than others, thereby introducing distortion.

Size—3 1/4" diameter x 2 1/4" thick.
 Damping—Accomplished by airlocked chamber.
 Finish—Either chromium or gold. (SPECIFY WHICH WHEN ORDERING.)
 Diaphragm—.00175" thick, stretched, 24 Karat gold contacts.
 Frequency Response—50 to 6,000 cycles with less than 2 decibels variation.
 Current—5 to 15 MA. per button.

No. "G" Faraday Professional Two-Button Microphone. **YOUR PRICE \$11.25**

"Faraday" Radio Storage Batteries

Guaranteed For 12 Months

"Faraday" storage batteries are undoubtedly the finest, most stable and most enduring "A" supply for battery receivers. Will easily outlast other batteries of similar rating on the market. Equipped with heavy lead plates, separated by selected cedar spaces thereby assuring maximum power and reliability under all operating conditions. WILL SAFELY WITHSTAND TEMPORARY HEAVY OVERLOADS WITHOUT PERCEPTIBLE INJURY. "Faraday" Radio "A" Batteries are available in high grade composition containers in four popular sizes. Equipped with ball handles and rubber terminal nuts, one of which is colored red (positive pole -) for indicating polarity. THESE BATTERIES ARE CONSERVATIVELY RATED AND WILL MAINTAIN THEIR CHARGE MUCH LONGER THAN OTHER BATTERIES. "Charge



140-180 Amp.



85-100 Amp.

leakage" has been reduced to an absolute minimum. When not used, these batteries will maintain their charge over long period.

NOTE. While we list these batteries as Radio "A" batteries, it is of course understood that they can be used for automobile work—there is no difference in the two types.

LOW SHIPPING EXPENSE

For your convenience, we have arranged with the manufacturer to ship these batteries from any of the 23 shipping points; the one closest to you. This arrangement, aside from enabling us to handle all or-

ders promptly and properly, constitutes a considerable saving in transportation cost for our customers. Our batteries are shipped at the prices quoted below from any one of our network of shipping points listed here-with:

Atlanta, Ga. Cleveland, Ohio
 Baltimore, Md. Buffalo, N. Y.
 Boston, Mass. Dallas, Texas
 Chicago Heights, Ill. Denver, Colo.
 Cincinnati, Ohio Detroit, Mich.
 Houston, Tex.

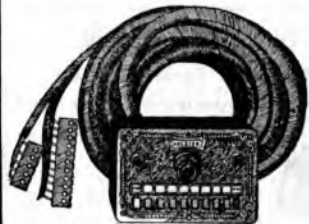
Los Angeles, Cal. Pittsburgh, Pa.
 New York City, N. Y. St. Louis, Mo.
 Oakland, Cal. St. Paul, Minn.
 Kansas City, Mo. Seattle, Wash.
 Portland, Ore. Spokane, Wash.
 Philadelphia, Pa.

ALL BATTERIES LISTED

No.	Capacity Amp. Hours	Ship. Wt.	List Price	YOUR PRICE
613 YF	85-100	45 lbs.	\$8.50	\$5.39
613 RF	100-120	49 lbs.	9.50	\$6.21

No.	Capacity Amp. Hours	Ship. Wt.	List Price	YOUR PRICE
615 RF	120-140	55 lbs.	\$11.75	\$7.55
617 RF	140-180	64 lbs.	13.50	\$8.45

Kolster Remote Control Cable and Box



This equipment was originally designed for one of the Kolster receivers operated by remote control. This unit is not a complete remote control outfit in itself. We do not sell it as a remote control outfit, for, to operate a radio by remote control you would need besides this a set of relays, induction motors and other miscellaneous apparatus. This control box however, and its 50 ft. of 16 wire cable can be used for a large variety of other purposes. For instance, it can be placed on the desk of an executive and used as a calling system or it may be used as an annunciator system in hotels, restaurants, etc. It has ten push buttons, so that ten different stations or signals may be called.

Amateurs will recognize in this apparatus a remote control which can easily be wired to start or stop their transmitters, high frequency alternators, short wave receivers and other apparatus at a distance. The box itself is made of heavy cast metal, beautifully finished in gun-metal. It contains ten push buttons, a power rheostat and two pilot lights (one green and one red). A handsome eutecticon plate is provided for each button so that particular signals and calls may be logged. There is hardly a limit to the uses to which this fine instrument can be placed. Ship. wt., 10 lbs.
 No. 7240 Kolster Remote Control. **YOUR PRICE \$3.00**

Famous Gen-Win Tone Controls

Both Panel and Table Models



A scientifically designed instrument which by the mere turning of a knob will effectively control the tone of a radio receiver from the very highest treble down to the lowest bass notes. For instance, when dancing, the low frequency tempo notes may be easily emphasized by turning the knob "deep" thus making it a simple matter to keep in step with the music. Gen-Win Tone Controls are accurately calibrated so that any group of notes in the entire musical range may be either emphasized or softened at the will of the operator.

THERE IS ABSOLUTELY NOTHING IN THESE TONE CONTROLS TO GET OUT OF ORDER. Adaptable to all types of receivers both battery and A.C. Takes only a few seconds to install—requires no tools. The table model unit is assembled in a beautiful antique-bronze finish, copper case with felt bottom and genuine bakelite walnut knob. Extra long adapter cords and wafer adapters are included. Set complete with calibrated tone control dial. The panel mount model is, in operation, similar to the table model and is also furnished with a calibrated tone control dial. Shipping weight, 1 lb.

No. 500 Table Model Tone Control **YOUR PRICE \$1.20**
 No. 501 Panel Mount Tone Control **YOUR PRICE \$0.90**

Signal High Frequency Buzzer

This type buzzer is the same as used on our No. 2377 Signal Practice Set. Has a standard resistance of 2 ohms. The frequency of the buzz emitted is adjustable. Furnished in black, crystallized lacquer finish, metal case. The ingenious experimenter will find a large variety of uses for this clever little instrument. Shipping weight, 8 oz.



List Price \$1.25
 No. R60 Signal High Frequency Buzzer **YOUR PRICE \$0.75**

Edwards High Frequency Buzzer

An excellent high frequency buzzer which can be employed in the construction of numerous radio testing devices. Capacitance Bridges, Ganging Oscillators, Neutralizing Oscillators, etc., to name but a few. Will operate on a single dry cell or on a 6 volt storage battery. Easily adjusted to give a pure high pitched note of excellent characteristics for use with radio circuits. Entirely nickel plated and polished. Shipping weight, 3 oz. Overall size, 2 1/2 x 2 1/4 x 3/4". List Price, \$2.50.



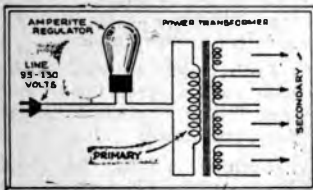
No. 1670 High Frequency Buzzer. **YOUR PRICE \$0.85**

Amperite Voltage Regulator

Automatically Stabilizes Fluctuating Voltages

No radio set, operating on the house electric current can perform at its best without provision for automatic regulation of line voltage fluctuations.

To make the reason for this clear let us compare, for example, your house lighting current supply with your water supply. You know that when a great deal of water is being drawn from one faucet the pressure in the main supply pipes is reduced to such an extent that less, or perhaps no water can be obtained from other faucets. Just so with your electric current supply and radio when electrical apparatus are used. Voltage is reduced and the quality is poorer because the tubes are not working at their correct voltage.



Now reverse the picture and see what happens when these various electrical devices are shut off. There is a resulting rush of current far beyond the needs of your

radio. The tubes and power units in your receiver are overloaded. They may even blow out from the sudden strain. In any event, the quality of reception is spoiled.

AMPERITE is a special tube containing a resistance element, which accurately and instantaneously responds to line voltage fluctuations and permits only the proper amount of current to pass. It has a base with two prongs which instantly fit into a standard radio tube socket. Connect the socket in series with the primary of the power transformer, insert the Amperite regulator, and the job is done.

CHOOSING THE PROPER AMPERITE

The AMPERITE for any 110 volt AC set can be determined approximately from the following chart.

Cat. No.	No. of tubes in set	Use
5-A-5	4-5	5-A-5
7-A-5	6-7	7-A-5
9-A-5	8, 9-10	9-A-5
11-A-5	11-12	11-A-5

For Sets Using '50 Tubes

13-A-5	7-11 (1-50)	13-A-5
20-A-5	7-11 (2-50)	20-A-5
20-A-5	110 V DC Sets	20-A-5

Following Sets Take Special Amperites

9-20	Brunswick 16, 21, 31	9-20
11-20	Hamm, Roberts HI Q-30	11-20
80	Majestic 90, 91, 92	80
70	Majestic 70, 71, 72	70

50-A Amperite for all Automobile Sets 50A

All Special Amperites in stock Shipping weight, 1 lb.

List Price \$3.00

Amperite Voltage Regulator all types, state which

YOUR PRICE **\$1.25**

No. 3491 Amperite Mounting Socket. YOUR PRICE **\$0.15**

YOUR PRICE

Radio and Automobile Fuses

These fuses are supplied in the following ampere sizes 1, 2, 3, and 4 amperes for radio fuses and 5, 10, 15 and 20 ampere sizes for automobile fuses. Each particular size is put up five to a lithographed tin box and cannot be sold in quantities of less than five per size. All fuses will fit a standard fuse clip of both radio and automobile fuse mountings. Be sure to mention the size when ordering. Ship. wt., 4 oz. per box.



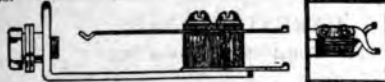
No. 3027 1, 2, 3, and 4 Amperes Radio fuses per box of 5. YOUR PRICE **\$0.25**

No. 3028 5, 10, 15 and 20 Amperes Automobile Fuses per box of 5. YOUR PRICE **\$0.18**

YOUR PRICE

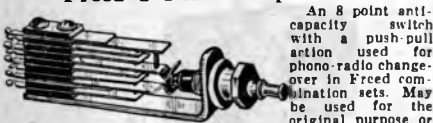
Fan Tail Circuit Jacks

These convenient jacks are used in large numbers nowadays as additional speaker outlets, phonograph pickup connection, television neon tube connections and for special circuits. They undoubtedly constitute the most convenient and most positive method of securing good electrical contact. The tails of each jack are spread out fan-wise both for the sake of easy soldering as well as to insure against accidental short circuits.



201 SINGLE OPEN CIRCUIT 19c

Freed 8 Point Snap Switch



An 8 point anti-capacity switch with a push-pull action for phono-radio changeover in Freed combination sets. May be used for the original purpose or in many circuits of differing character as for example in meter switching circuits for set testers. Shipping weight, 2 oz. Overall Size, 1 1/4 x 1 1/2 x 3/4". No. 1644 Freed 8 Point Snap Switch. YOUR PRICE **\$0.20**

Yaxley Three-Way Selector Switch

A well constructed unit with perfect electrical contacts. May be used for a variety of purposes such as a tone control, meter-shunt switches, etc. Measures 1 1/2" in diameter and requires a single 3/8" hole for mounting. Has a 1/4" diameter shaft. Shipping weight, 1/2 lb. No. 1629. Yaxley 3-Way Selector Switch. YOUR PRICE **\$0.20**



Amperite Self-Adjusting Battery Rheostats



These rheostat units when placed in series with battery type radio tubes will automatically regulate the voltage applied to same and keep it just at the right potential. There is an Amperite self-adjusting rheostat available for every tube. In ordering, be sure to mention the tube for which you desire the rheostat. Ship. wt., 6 oz.

List Price \$1.10

No. 3492 Amperite Self-Adjusting Battery Rheostats YOUR PRICE **\$0.64**

YOUR PRICE

H and H Rotary Snap Switch

A 3 amp., 250 volt A.C. power switch with a rotary snap-action control. Has an extra long shank that will engage practically all radio panels. A ruggedly built, completely shielded, dependable switch that will make and break any circuit using up to 3 amps. without sparking. Approved by Underwriters' Laboratories. Shipping weight, 4 oz.

List Price \$0.50

No. 1960 H and H Rotary Snap Switch YOUR PRICE **\$0.22**

YOUR PRICE

Cutler-Hammer D.P.S.T. Rotary Snap Switch

This ruggedly constructed, double pole, single throw rotary snap switch which does away with unsightly knife switches is particularly adapted for use as a "phono-radio" switch. Rated at one ampere, 250 volts or three amperes at 125 volts; it is especially suitable for use on transmitter panels, for laboratory equipment, service instruments, radio receivers, etc. Contacts are made of phosphor-bronze spring metal, assuring firm and positive electrical contact at all times. Approved by Underwriters' Laboratories. Has 1/2" in shank, 1 1/2" in. long. Body of switch is 1 in. deep, 1 1/2" ins. long and 3/4" in wide. Shipping weight, 4 oz.

List Price \$0.75

No. 1602 D.P.S.T. Rotary Snap Switch YOUR PRICE **\$0.35**

YOUR PRICE

Pilot Lights

Made with either 2.5 or 6 v. filament. Specify which when ordering. Shipping wt., 1/2 lb. Only sold in 10 lot.

List Price \$4.00

No. 1851 Pilot Lamp YOUR PRICE **\$0.40** for 10

YOUR PRICE

Radiola "25" and "28" Catacombs



These "catacombs, the "hearts" of these well-made sets, are replacements for defective units. Thus, the wide-awake Service Man can, in about 10 minutes, make a very nice profit by repairing these Radiola superheterodynes. In addition, these foundation units are used to construct portable receivers (for service work, camping, etc.) short-wave sets, automobile radio sets, interference detectors, demonstration sets, phonograph-radio combinations, built-in sets, and comparison or stand-by shop receivers. Much data on these models has appeared in the following issues of RADIO-CRAFT: April, 1930, containing the "25" circuit; June, 1930, the AR-812 "Semi-Portable" circuit; May, 1931, the "28" circuit; November, 1930, "Radiola '28' at 80 Meters"; May, 1931, "Operating the '28' with 2-Volt Tubes"; August, 1931, "Modernizing the '812' and '25'".

These catacombs are completely wired. Each assembly is provided with pigtail leads. The "25" uses six Type UX-199 tubes; and the "28", seven UX-199's and a Type UX-120. Hundreds of thousands of these Radiola catacombs have been sold in Brunswick, Radiola, and Victor phonograph-radio and radio sets. Many of them, now out of service, require only the replacement of the catacomb to put the set into use once more; this is the most simple manner of effecting a repair necessitated by burnt-out A.F. or I.F. transformers, circuit oscillation, broken leads, shorted by-pass condensers, open grid lead, and other shorts or opens in this assembly. In favorable localities, these sets will do wonders when properly equipped with the new 2-volt general-purpose, screen-grid, and pentode tubes. Shipping weight is 6 lbs.

List Price of No. 25 and No. 28 is \$68.00.

No. 9041 Radiola 25 Catacomb. YOUR PRICE **\$3.35**

No. 9042 Radiola 28 Catacomb. YOUR PRICE **\$3.85**

YOUR PRICE

Cutler-Hammer Toggle Switch

This switch carrying the famous "C-H" trade-mark is of the "long neck" type and may be used to break circuit, carrying 3 amps. at 25 V. (or 1 amp. at 250 V.). Its black oxidized finish blends with nearly every kind of finish, whether wood or metal. Just the thing for use on transmitter panels, laboratory equipment, service instruments, home-built radio sets, public address power amplifier racks, and wherever a positive off-on switch of toggle type is required. Lugs for soldered connections are provided. Will fit on panels 3/4 in. thick. Moving parts encased in moulded bakelite shell. Passed by Underwriters' Laboratories. Body of switch is only 1/2 in. deep; length 1 1/4 in. width, 3/4 in. Every Serviceman should carry at least one. Shipping weight, 4 oz.

List Price \$0.75

No. 1801 Cutler-Hammer Switch. YOUR PRICE **\$0.18**

YOUR PRICE

C & H Single-Pole Double-Throw Toggle Switch

A 1 amp.—250 volt or 3 amp.—125 volt single pole double-throw toggle switch for use in various parts of radio and electrical circuits. Has an unusually long shank measuring 3/4". Requires a single 3/4" hole for mounting and is provided with three flexible leads for convenient connections. Ship. wt., 4 oz.

No. 1628 C & H Single Pole Double Throw Toggle Switch. YOUR PRICE **\$0.25**

YOUR PRICE

Anti-Capacity Switch

This is a positive contact switching device which exhibits many advantages over the usual type of anti-capacity switch. Equivalent to a four pole double throw switch, it may be wired for various combinations. Excellent for use as a Phono-Radio changeover switch or in the construction of test equipment. Switches of this type are becoming harder and harder to obtain. Has definite "off" position at center with all contacts open. Nickel plated parts with real bakelite insulation. Shipping weight, 1/2 lb. Overall dimensions, 2 1/2 x 1 1/2".

List Price \$2.50

No. 1827 Anti-Capacity Switch YOUR PRICE **\$1.15**

YOUR PRICE

Official Radio Service Kit.

Originated and Guaranteed by
RADIO TRADING CO.

IMPORTANT

Several months ago we sent out a questionnaire to 2,000 radio service men and asked them what their ideas were on a radio service kit. 865 answered us, and their ideas are now embodied in the Official Radio Service Kit which we herewith present to you.

This kit is a marvel in compactness, a marvel in price, a marvel in time saving. For the first time you are offered a comprehensive kit that contains EVERYTHING that the service man requires in making calls.

ARE YOU A 50 PER CENT SERVICE MAN?

Too often so-called service men go on a job with an analyzer and a pair of pliers. Nine times out of ten they have to run back to the shop to get tools, and thus their usefulness is cut down, as a rule, 50% and over. Why not take along, on every job, a complete, neat-appearing service kit that looks just as business-like as your analyzer?

When you call upon a prospect and you arrive with this fine-looking kit, your prospect knows that you mean business. It gives you a professional appearance that every service man requires more than anything else today.

AND YOU CAN COMMAND MORE MONEY ON YOUR SERVICE CALLS WITH THIS KIT

because the prospect will look upon you as a professional, and not as a tinkerer.

When you visit a medical specialist today, you are impressed by his instruments for which you pay. An ordinary doctor commands no such fees. It should be clear to you that if you are a professional, you can get professional prices today too. Even in the face of the "50c-A-Service-Call" chain organizations that have come into being recently. That is why this marvelous kit will pay for itself inside of three months or less.

Herewith, are the Official Radio Service Kit specifications: Size, small and compact, not larger than a good analyzer; 17 in. long, 6 1/2 in. wide and 10 in. high.

Construction, wood veneer throughout, entirely covered with black leatherette, all nickel trimmings, giving outfit a beautiful professional appearance.

There are two trays which lift out. See list of items in center column.

WHAT THEY SAY

Gentlemen—

The Service Kit has arrived and I AM WELL PLEASED WITH IT. The Kit contains practically everything a service man would require.

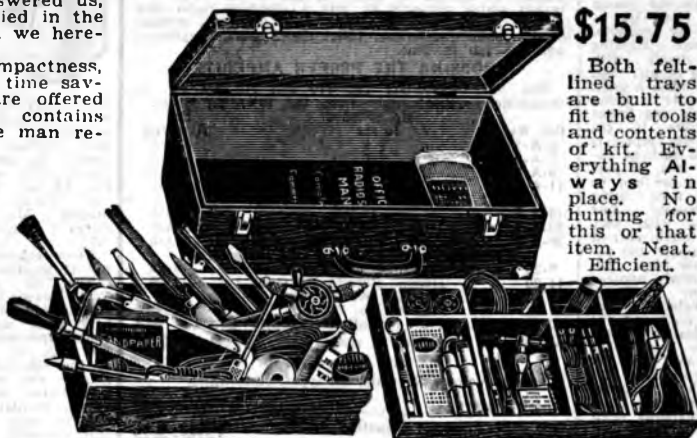
Looking forward to further dealings with your concern and trusting that future service will be as excellent as the value I have received from you in this Service Kit. I remain,

O. H. Schussler
North Warren, Pa.

Dear Sir—

Today I received the Official Radio Service Kit WITH WHICH I AM VERY PLEASED, because it contains everything what there is in need for a service man. I will do my best to sell a few kits, because I know IT IS WORTH THE MONEY I PAID FOR IT.

Gottfried Hartman
Ann Arbor, Mich.



\$15.75

Both felt-lined trays are built to fit the tools and contents of kit. Everything Always in place. No hunting for this or that item. Neat. Efficient.

TOP TRAY CONTAINS:

- 1 Pen Flashlight, complete with magnifying dentist's mirror (to look underneath chassis, etc.).
- 1 Automatic alcohol blow torch.
- 1 Box containing 300 assorted screws, nuts, washers, lugs, etc.
- 1 Nickel Bicycle wrench
- 1 Tap holder with one 6/32 tap and one 8-32 tap.
- 1 Set of Test prods with 6 ft. cord.
- 1 Telephone type pliers.
- 1 Diagonal pliers.
- 1 Insulated (5,000 volt insulated handle) heavy pliers.
- 1 Electrician's knife.
- 1 Set of 8 drill points.
- 10 Ft. of Phosphor bronze drum dial cable.
- 1 Neutralizing socket.
- 1 Pack extra size condenser cleaners.
- 3 Small screw drivers.

LOWER TRAY CONTAINS:

- 1 Electric soldering iron, with 1 extra tip.
- 1 Large and 1 Medium imported screw drivers.
- 2 Small files with handles.
- 1 Large file with handle.
- 1 1/4 in. Star drill, 11 1/2 in. long.
- 1 Electrician's metal hammer.
- 1 Hand drill, 1/4 in. chuck, 10 in. long.
- 1 Hack saw and blade.
- 1 Package Sand papers and emery papers.
- 1 Roll 50 ft. solid push back wire.
- 1 Can genuine Kester radio solder.
- 1/4 lb. of 3/4 in. electrician's tape.
- 1 Bottle Furniture polish.
- 1 Package Furniture cheese-cloth.
- 1 Bottle Nujol (for lubricating purposes).
- 1 Tube special cement (to mend cones, etc.).
- 1 Socket tool to straighten socket prongs.

FREE!

With Every Radio Service Kit



We take pleasure in offering with the purchase of every complete Official Radio Service Kit — ABSOLUTELY FREE OF CHARGE — ONE OF THE RADIO PUBLICATIONS OF THE "RADIO CRAFT" LIBRARY — BOOK No. 5. This book is one of the most important of its kind ever issued. To many it may mean the turning over of a new leaf in their life, entrance into a new and profitable profession. This book answers such questions as: DO YOU KNOW HOW TO GET STARTED IN THE RADIO SERVICE BUSINESS? Do you know how to "sell" your services to the community? How would you go about picking a location for your service business? What do you know about building your own service equipment? Do you know the purpose of the various parts in a radio set? These are only a few of the many intimate questions which this instructive book will answer in a most thorough-going and convincing manner. For that reason, we do not hesitate to state that this book "HOW TO BECOME A RADIO SERVICE MAN" is the most outstanding ever published.

No. 1000—Official Radio Service Kit.
YOUR PRICE _____

Only
15.75

CARRYING CASE

For Official Radio Service Kit

We are prepared to furnish you with the Official Radio Service Case only, without contents, as described above, just the case and the two empty trays, size 17 in. long 6 1/2 in. wide and 10 in. high.

This case is made entirely of light veneered wood, nickel trimmings, covered entirely with leatherette, inside of case covered in blue felt.



View of kit, closed

See illustration above for open view of kit.

No. 1001—Official Radio Service Carrying Case only.

This case is just the thing to build in a radio set, as a portable.

Service men who wish to build their own analyzers will find this case just the one they have been looking for. There is room enough for the analyzer as well as tools.

Net weight, 4 lbs. Shipping weight, 5 lbs.

YOUR PRICE \$4.50

PARTS OF THE OFFICIAL RADIO SERVICE KIT — ALL ARTICLES CAN BE BOUGHT SEPARATELY

No. 1085 PEN FLASHLIGHT with batteries for trouble shooting in dark recesses of radio chassis and cabinets.

YOUR PRICE _____ List Price \$1.25 **\$0.35**

No. K1005 DENTIST'S MAGNIFYING MIRROR with clip for attaching to the Pen Flashlight. Enables one to look under inaccessible radio chassis and around corners.

YOUR PRICE _____ List Price \$0.75 **\$0.25**

No. K1006 AUTOMATIC BLOW TORCH for heavy duty soldering and many other purposes (e.g.) melting impregnating compound in power repair work, etc.

YOUR PRICE _____ List Price \$1.50 **\$0.75**

No. K1007 **GENEROUS SCREW ASSORTMENT** every size screw nut, washer, insulating washers, lock-washers, etc. ever used in radio work.
List Price \$1.25 **\$0.28**

YOUR PRICE

No. K1008 **BICYCLE WRENCH** a sturdy monkey wrench that will engage every type nut encountered in radio work.
List Price \$0.35 **\$0.20**

YOUR PRICE

No. K1009 **TAP WRENCH** handy tool made of die-cast steel with oil-tempered jaws that will engage any size tap up to 1/4 inch.
List Price \$0.50 **\$0.20**

YOUR PRICE

No. K1010 **6/32" TAP BIT** for use with tap wrench above.
List Price \$0.45 **\$0.15**

YOUR PRICE

No. K1011 **8/32" TAP BIT** for use with tap wrench above.
List Price \$0.45 **\$0.15**

YOUR PRICE

No. 1626 **TEST LEADS** our catalogue No. 1826 listed elsewhere. Five foot flexible, coded leads—labeled—handled, solderless tips.
List Price \$1.00 **\$0.25**

YOUR PRICE

No. K1012 **TELEPHONE PLIERS** 5 1/2" long. Made of fine carbon steel. Has long tapered nose and wire cutting edges. Serves a variety of radio repair purposes.
List Price \$1.25 **\$0.39**

YOUR PRICE

No. K1013 **DIAGONAL PLIERS** 5 1/2" long. Made of fine carbon steel. Will cut both fine and heavy wire.
List Price \$1.50 **\$0.39**

YOUR PRICE

No. K1014 **INSULATED PLIERS**, handles are insulated to withstand 5000 volts. Constructed of carbon steel with heavy gripping jaws and wire cutter.
List Price \$1.75 **\$0.58**

YOUR PRICE

No. K1015 **ELECTRICIAN'S KNIFE** sturdily built, steel bladed knife with a multiplicity of uses. Wire stripper and cutter, wood and fibre cutter, screw-driver, etc. A real handy tool to have around.
List Price \$1.25 **\$0.50**

YOUR PRICE

No. K1016 **SET OF 8 DRILL POINTS** contains all the popular sized drills used in radio construction and repair work. Made of highly-tempered carbon steel.
List Price \$0.50 **\$0.20**

YOUR PRICE

No. K1017-18 **NEUTRALIZING ADAPTERS** listed elsewhere. For balancing oscillating receivers, etc. Set of two, U.X. and U.Y.
List Price \$1.00 ea. **\$1.18**

YOUR PRICE

No. K1019 **CONDENSER CLEANERS** for getting the dust and grit from between the plates of variable condensers.
Package contains 25 cleaners.
List Price \$0.25 **\$0.12**

YOUR PRICE

No. K1020 **10" SCREW DRIVER**, heavy steel screw driver ruggedly constructed of one piece throughout. Handle comfortably rounded with hard wood.
List Price \$0.50 **\$0.25**

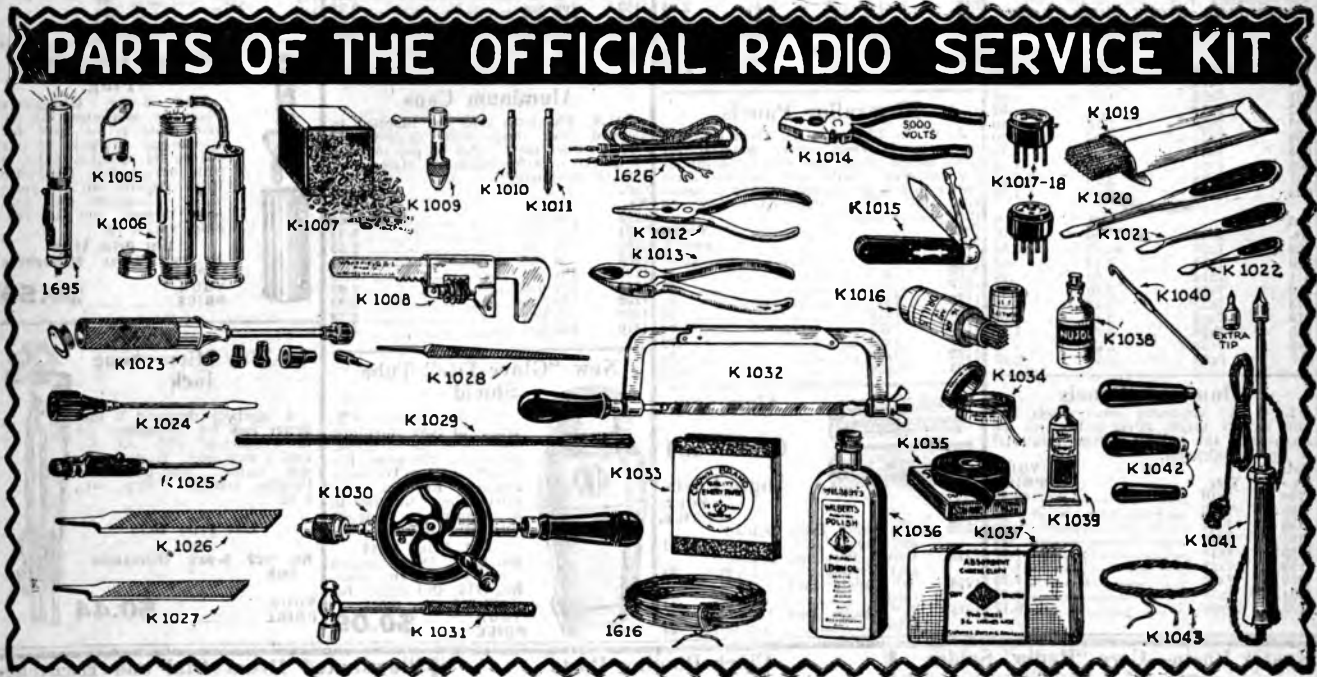
YOUR PRICE

No. K1021 **6" SCREW DRIVER**, same as above but of medium size and duty.
List Price \$0.35 **\$0.15**

YOUR PRICE

No. K1022 **4" SCREW DRIVER**, same as above but of small size and light duty.
List Price \$0.25 **\$0.10**

YOUR PRICE



No. K1023 **SOCKET WRENCH KIT**, complete set of socket wrenches made of high grade steel with case-hardened sockets. Will fit all size nuts.
List Price \$1.25 **\$0.45**

YOUR PRICE

No. K1024 **LARGE THIN SCREW DRIVER** for light duty work. Made especially for set screws of dials and knobs.
List Price \$0.15 **\$0.08**

YOUR PRICE

No. K1025 **POCKET SCREW DRIVER** for use on set screws and other light duty work. Provided with a pen clip.
List Price \$0.20 **\$0.12**

YOUR PRICE

No. K1026 **LARGE FILE**, 7" bastard file constructed of highly tempered steel for use on either metal or wood.
List Price \$0.50 **\$0.20**

YOUR PRICE

No. K1027 **MEDIUM FILE**, same as above except smaller.
List Price \$0.45 **\$0.15**

YOUR PRICE

No. K1028 **HALF-ROUND FILE**, 4" half round bastard file constructed of same material as above.
List Price \$0.40 **\$0.10**

YOUR PRICE

No. K1029 **1/4" STAR DRILL** an 8" drill for hammering or drilling 1/4" holes in brick or stone.
List Price \$0.50 **\$0.26**

YOUR PRICE

No. K1030 **HAND DRILL**, 10" long all-steel drill that will engage all size bits up to 3/4" diameter. Collapsible model. Can be taken apart and reset.
List Price \$1.50 **\$0.75**

YOUR PRICE

No. K1031 **METAL HAMMER**, all steel, ball top hammer for all purposes. Takes nails without denting.
List Price \$0.50 **\$0.20**

YOUR PRICE

No. K1032 **HACK SAW** complete with saw blade. An all-steel, well made tool with sure-grip wooden handle. Adjustable frame.
List Price \$0.75 **\$0.23**

YOUR PRICE

No. K1033 **SAND PAPER**, medium sized sand paper firmly embedded in tough cloth material. For cleaning radio chassis and other work.
List Price \$0.25 **\$0.10**

YOUR PRICE

No. 1616 **HOOK-UP WIRE**, roll of 50 feet push-back wire for radio construction and repair purposes.
List Price \$0.50 **\$0.33**

YOUR PRICE

No. K1034 **FLUX-CORE SOLDER** listed elsewhere. Requires no acids or resins, merely heat.
\$0.18

YOUR PRICE

No. K1035 **FRICTION TAPE**, a 1/4 lb. roll best electric friction tape for insulating exposed or spliced wires and for many other purposes.
List Price \$0.25 **\$0.12**

YOUR PRICE

No. K1038 **FURNITURE POLISH**, 8 oz. bottle lemon oil-furniture polish for touching up scratches or other accidental abuses to furniture while on servicing jobs.
List Price \$0.35 **\$0.15**

YOUR PRICE

No. K1037 **WASTE CLOTH**, package cheese cloth as waste in conjunction with the furniture polish above and for many other purposes.
List Price \$0.20 **\$0.15**

YOUR PRICE

No. K1038 **RADIO LUBRICANT**, bottle of special Nujol lubricating oil for lubricating radio parts.
List Price \$0.15 **\$0.10**

YOUR PRICE

No. K1039 **MENDING CEMENT**, an approved cement for mending speaker cones, chipped furniture, etc.
List Price \$0.50 **\$0.15**

YOUR PRICE

No. K1040 **SOCKET TOOL**, a heavy-tipped crochet needle adapted to radio use. Handy for bending socket springs into shape.
List Price \$0.25 **\$0.15**

YOUR PRICE

No. K1041 **SOLDERING IRON** sturdily constructed, quick heating iron with heat insulated wooden handle. Complete with heat resisting cord, two-piece plug and extra soldering tip.
List Price \$1.50 **\$0.85**

YOUR PRICE

No. 1001 **CARRYING CASE** listed elsewhere. Sturdily built with two removable trays.
List Price \$8.00 **\$4.50**

YOUR PRICE

No. K1042 **FILE HANDLES**, set of 3 handles to be used in conjunction with the 3 files above or with any similar tool.
List Price \$0.95 **\$0.15**

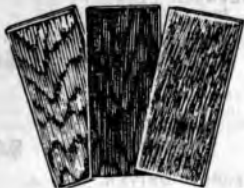
YOUR PRICE

No. K1043 **DRUM DIAL CABLE**, roll of 10 feet phosphor bronze cable; extremely strong and tensile.
List Price \$0.95 **\$0.20**

YOUR PRICE

I.C.A. EQUIPMENT FOR THE CONSTRUCTOR

"Insuline" Radio Panels



A Superior Hard Rubber Material in Black and Mahogany Finishes "Insuline" is a selected hard rubber material famous for its lustrous finish. Possesses high dielectric qualities. Is moisture proof. Immune from surface leakage and drills easily with ordinary tools without chipping or cracking. Two finishes—Black and Mahogany. Ship. wt. approximately 4 oz. per square inch.

STANDARD STOCK SIZES 3/16" THICK

Black Finish		YOUR PRICE
Cat. No.	Size	
800	7x10	\$0.95
801	7x12	1.17
802	7x14	1.40
803	7x18	1.75
804	7x21	2.04
805	7x24	2.30
806	7x26	2.55
807	7x28	2.75
808	7x30	3.00

Mahogany		YOUR PRICE
Cat. No.	Size	
809	7x10	\$1.15
810	7x12	1.40
811	7x14	1.60
812	7x18	2.10
813	7x21	2.45
814	7x24	2.75
815	7x26	3.00
816	7x28	3.25
817	7x30	3.50

Aluminum Panels

I. C. A. Aluminum panel sheets and cans have a bright silver finish and are supplied in the following sizes. Material of No. 16 thickness.

Cat. No.	Size	YOUR PRICE
1194	7x10	\$0.56
1195	7x12	.68
1196	7x14	.79
1197	7x16	.91
1198	7x18	1.03
1199	7x21	1.18
1200	7x24	1.30
1201	7x26	1.59
1202	24x36	6.17

Bakelite Radio Panels

These genuine Bakelite panels have excellent insulating properties and are therefore recommended for all types of commercial and experimental work requiring low dielectric losses.

STANDARD STOCK SIZES 1/8" Thick

Black, Mahogany or Walnut		YOUR PRICE
Cat. No.	Size	
332	7x10x3/8"	\$1.09
333	7x12x3/8"	1.31
334	7x14x3/8"	1.53
335	7x18x3/8"	1.96
336	7x21x3/8"	2.29
337	7x24x3/8"	2.62
338	7x26x3/8"	2.89
339	7x28x3/8"	3.06
340	7x30x3/8"	3.28
341	7x31x3/8"	3.93
342	7x19x3/16"	1.61
343	7x12x3/16"	1.96
344	7x14x3/16"	2.30
345	7x18x3/16"	2.95
346	7x21x3/16"	3.45
347	7x24x3/16"	3.94
348	7x26x3/16"	4.26
349	7x28x3/16"	4.60
350	7x30x3/16"	4.92
351	7x36x3/16"	5.90

Electralloy Panels

I. C. A. Electralloy is a non-corrosive non-magnetic sheet metal material for radio panels, radio cans and radio shielding purposes. Drills and machines much easier than other metals. Finished in beautiful dull silver. Supplied in No. 16 thickness as follows:

Cat. No.	Size	YOUR PRICE
1175	7x10	\$0.35
1176	7x12	.41
1177	7x14	.47
1178	7x16	.53
1179	7x18	.59
1180	7x21	.71
1181	7x24	.78
1182	7x30	1.00
1193	36x36	5.29

Aluminum

Corner and Angle Posts



Cat. No.	Description	YOUR PRICE
1212	6" Corner Posts Drilled and Tapped each	\$0.21
1213	Corner Posts not Drilled and Tapped per ft.	.24
1214	1/2" Angle Post 1/16" thick per foot	.21
1215	3/8" Angle Post 1/16" thick per foot	.24

Electralloy Cans



Electralloy cans are supplied in various sizes in knocked down form with drilled and tapped corner posts for quick assembly in the following sizes:

Cat. No.	Size	YOUR PRICE
1184	8x 8x6	\$2.06
1185	6x 6x6	1.95
1186	9x 5x6	1.76
1187	5x 5x6	1.62
1188	4x 5x6	1.41
1189	10x 8x6	2.35
1190	14x 7x6	2.65
1191	12x10x6	2.94
1192	18x 9x6	4.12
1193	12x 6x6	2.06

Aluminum Cans

I. C. A. Aluminum cans are drilled and knocked down form with drilled and tapped corner posts. Can be put together by anyone in a few minutes. Material of No. 16 thickness.

Cat. No.	Size	YOUR PRICE
2203	8x 8x6	\$2.65
2204	6x 6x6	2.35
2205	9x 5x6	2.06
2206	5x 5x6	1.91
2207	10x 8x6	3.09
2211	12x 6x6	2.65
2208	14x 7x6	3.23
2209	12x10x6	3.88
2210	18x 9x6	5.15

New "Glove-Tite" Tube Shield



Provides highest efficiency in tube shielding. Fits tight as a glove, preventing vibration. Especially adapted for noisy receivers. Replaces spray shield tubes. Installed in a moment. Complete with all hardware.

Cat. No.	Description	YOUR PRICE
1178	Dome shaped for 58-57-58, etc. tubes.	\$0.14
1179	Old shaped for 224-227, etc. tubes.	\$0.09

Genuine Bakelite Coil Tubing

These bakelite tubes possess high dielectric qualities, are moisture proof and are immune from surface leakage. They afford the lowest possible dielectric losses commensurate with sturdy mechanical construction. Wall thickness is 1/16". Finished in polished black.



Cat. No.	Outside Diam.	YOUR PRICE per ft.
147	1"	\$0.42
148	1 1/4"	.47
149	1 1/2"	.51
150	1 3/4"	.55
151	2"	.58
152	2 1/4"	.65
153	2 1/2"	.71
154	2 3/4"	.75
155	3"	.76
156	3 1/4"	.82
157	3 1/2"	.85
158	3 3/4"	.88
159	4"	.94

3-Way Microphone Plug



This 3-way Microphone Plug has connections for 3-wire cable to be used for microphone work. It is molded of genuine bakelite with brass parts. Bakelite Hood threads on to brass base. Microphone cord projects through hole in top. Ship. wt., 4 oz.

List Price \$1.00
No. 1901 3-way Microphone Plug.
YOUR PRICE **\$0.59**

3-Way Microphone Jack



A specially designed 3 conductor jack for microphone use in conjunction with our No. 1901 3 way plug. High insulation factor. Standard size. Positive contact. Ship. wt., 4 oz.

List Price \$0.75
No. 1902 3-way Microphone Jack.
YOUR PRICE **\$0.44**

Kester Rosin—Core "Radio" Solder



A self fluxing wire solder for radio and electrical soldering work. Requires only heat to use. A highly approved and popular solder that contains the only non-corrosive, non-conductive flux-rosin in its best and most active form.

Used extensively in the electrical and radio fields. Has the approval of leading engineers everywhere. The standard size, No. 5, is about 3/32 inch diameter and runs approximately 50 ft. to the pound. Sold in two sizes:— in small sizes in put up in attractive metal boxes (which incidental may be used for



keeping screws, lugs, etc. when empty) and in one pound spools. Every electrical and radio supply dealer should carry a reasonable stock of Kester Rosin—Core Solder to supply the present great demand for a genuine "easy-to-use" solder.
No. K1034 Kester-Solder Coil in Metal Box Present Market Price **\$0.18**
No. 1054 Display Carton (10 coils in Metal Boxes) Kester Solder Present Market Price **\$1.70**
No. 1055 One pound spools of Kester Solder Present Market Price **\$0.58**

Cinch Binding Posts

Push-Button Type



Here indeed are the most ingenious—most time saving binding posts ever manufactured. Merely press the buttons and insert any size wire from No. 12 way down to the very thinnest. Have 1-11/16 in. standard mounting centers; bakelite plate 1/16 in. thick, and marked "Ant" and "Gnd". All metal parts are made of brass and are plated with quick-solder-taking compound. Neat and decorative—enhances the appearance of any receiver. Available either singly or in sets of two, mounted as illustrated.

Cat. No.	Description	YOUR PRICE
1853	Cinch Binding Posts, Mounted	\$0.12
1855	Binding Posts Only.	\$0.06

Self-Tapping Screw Assortment



Here is a very handy assortment of the most popular size screws, which cut their own threads as they are forced through a drilled hole. Ideal for general purpose work inasmuch as they do not require a nut. Sold 24 to the box, in assorted sizes and lengths.

No. 12 Self-Tapping Screw Assortment. YOUR PRICE, per box **\$0.28**

Illuminated Drum Dial and Escutcheon

Here is an attractive drum dial that you will be proud to add to your new set. It has a bronze escutcheon plate that will catch your eye immediately. And it is so arranged that a dial light can be added by merely pushing it into the provided holder. The mechanism is of the worm drive type using a flexible phosphor-bronze cable that will outlast the receiver by years. Condensers with 1/4 in. shafts can be mounted on both sides of the drum so that any layout of parts can be used. The drum is 4 inches in diameter.

The supply of these dials is very limited, hence act quickly if you want to get one. Shipping weight 2 lbs. No. F710 Drum Dial. YOUR PRICE **\$0.55**



Full-Vision Dial Set

Differs from all other types of illuminated dials in that the pointer itself sweeps across the face of the walnut-colored celluloid scale which remains stationary. Has universal mounting provisions and will engage both 3/8" and 1/2" shafts. Comes complete with Escutcheon plate and pilot light socket. Shipping weight, 1 lb. List Price \$3.50

No. 1684 Full Vision Dial Set. YOUR PRICE **\$1.05**



Radio Carrying Cases



The cases here shown are a new development. They are made in metal throughout with baked olive green enamel finish. These cases are beautifully and strongly made, and will give you a professional appearance. Lock and slide locks are Cadmium Plated.

Smaller illustration shows dimensions and closed view of the cases. As you open the cover, two trays automatically fold out in position, as shown. As you tilt the cover back, the trays fold automatically into the case. The trays are provided with a number of compartments for tools and all other radio appliances that you may wish to carry. The large box accommodates about eight radio tubes in the bottom compartment. The smaller case accommodates about four tubes.

Cases are strong and rugged, and when closed, nothing can spill. They are marvels of ingenuity, and will pay for themselves many times over.

Large size measures 21 1/2" long, 7 1/4" high and 7" wide. Net weight 8 lbs. Shipping weight 10 lbs.

List Price \$8.50

No. B-21 Carrying Case. **YOUR PRICE \$2.75**

Easy Soldering Phone Tips



Here is a neat time-saving phone tip that requires but one drop of solder to be attached. Merely insert bared wire and drop solder in the side hole; a clean business-like, and permanent job. Can be used on all ear phones, loud speakers, battery cables, etc. Made of polished non-corrosive metal. Will fit all standard tip jacks and plugs. Shipping weight, 1/4 lb.

List Price \$0.25 per envelope of 10

No. 1587 Easy Soldering Phone Tips **YOUR PRICE, per envelope \$0.10**
12 for **\$1.00**

Plain Soldering Phone Tips



These Phone Tips are mostly used on cords and special leads. They are packed 14 tips to an envelope which is sufficient quantity for the average experimenter.

No. 2888 **YOUR PRICE, per envelope \$0.10**

Phone Tip Jacks



A reliable tip jack with a heavily constructed contact spring, designed to hold the phone tip firmly and insure a good electrical contact. Will take any standard type phone tip or No. 14 gauge wire. Lends dignity to any test bench or panel, amplifier, transmitter or receiver. Neat, compact, efficient. Come two to a card. Shipping weight, 1/4 lb.

List Price \$0.13 per card

No. 1598 Phone Tip Jacks **YOUR PRICE, per card \$0.06**
12 for \$0.80

Battery Clips



Sure-grip battery clips with non-corrosive properly tensioned set springs. Ideal for battery cables, test cords, test panel leads, as screen-grid caps, transmitting coil caps and for many other purposes. The handiest, most useful clips ever manufactured. Are available in two sizes, medium and large. Shipping weight, 2 oz.

No.	Description	List Price	YOUR PRICE
2060	Battery Clips medium size	\$0.15	\$0.06
2061	Battery Clips large size	.25	\$0.10

"Handy-Man" Carrying Case

For the Radio Service Man



An all-steel carrying case that all but says, "Here it is." Contains one sturdily built removable tray with sufficient compartments to accommodate all the screws, lugs, drills, resistors, condensers and other necessary paraphernalia of the service man. The main box will easily house a complete servicing tool kit including large drill and soldering iron. The Handy-Man carrying case will save you time and money by keeping your tools where you can find them and by keeping them in good condition. Neither heat nor moisture can penetrate the case. Built of steel throughout with olive green baked enamel finish. Main and side locks are cadmium plated. A neat, compact, business-like carrying case. Measures 14"x6 1/2"x6 1/4". Shipping weight, 9 lbs.

List Price \$2.00

No. S-14 Handy-Man Carrying Case. **YOUR PRICE \$1.05**

Hexagon Nuts, Knurled Nuts and Washers



No.	Size	Quantity	per envelope
2850	6/32x1/4"	20 Hexagon nuts	per envelope
2851	8/32x1/4"	20 Hexagon nuts	per envelope
2852	6/32x5/16"	15 Hexagon nuts	per envelope
2853	8/32x5/16"	15 Hexagon nuts	per envelope
2854	6/32x3/8"	6 Knurled nuts	per envelope
2855	No. 6 Washers	20 Washers	per envelope
2856	No. 8 Washers	20 Washers	per envelope

Packed in brown kraft envelopes with illustrations of the products on the front side; also the quantity. Shipping weight, 3/4 lb.

List Price \$0.15 per envelope

YOUR PRICE, per envelope \$0.06
12 envelopes for **\$0.68**

Brass and Copper Tinned Terminal Lugs



Essential for clean, solid electrical contacts. Take solder easily. Note: Lug No. 3 requires no solder. Merely insert wire in slotted groove and clamp shut with pliers.

Put up 24 to an envelope. Use lug and catalog numbers when ordering. Shipping weight, 1/4 lb.

List Price \$0.15 per envelope

No.	Terminal Lugs	No.	per envelope
2871	Terminal Lugs	No. 1	per envelope
2872	Terminal Lugs	No. 2	per envelope
2873	Terminal Lugs	No. 3	per envelope
2874	Terminal Lugs	No. 4	per envelope
2075	Terminal Lugs	No. 5	per envelope

12 envelopes for **\$0.55**

Aluminum Sub-Panel Brackets

Made of Non-Magnetic Aluminum



These sub-panel brackets are designed to accommodate bypass condensers, sockets, wiring, etc., beneath the sub-panel. Brackets will even accommodate R.F. transformers and their shields. Brackets are constructed of light, durable, non-magnetic aluminum and are perforated, and machine drilled ready for use. Shipping weight, 1 lb.

No.	Size	List Price	YOUR PRICE
2877	2 1/2 x 6 1/2"	\$0.40	\$0.27
2878	1 x 8 1/2"	.40	\$0.27
2879	2 x 9"	.60	\$0.41
2881	2 x 11"	.80	\$0.54

Morris Universal Coil Winder

Winds All Type Coils



A practical, ruggedly constructed coil-winding machine that will wind all the various typed R.F. Coils used in radio construction and repair work; honey comb, spider web, solenoid, double layer coils, etc.; all of different widths and diameters. A practical and satisfactory machine for the radio service man, experimenter and custom set builder. Coils can be made as neat and as accurate as though they were factory built. Sold complete with all necessary accessories and special recorder with adjustable pointer for counting the number of turns of wire. Suitable for most factory production jobs, etc. Shipping weight, 4 lbs.

List Price \$2.50

No. 1051 Morris Universal Coil Winder. **YOUR PRICE \$4.35**

Service Men's Screw Assortment

Biggest Value Ever Offered



A generous screw assortment comprising several hundred sized machine screws, nuts, insulating washers both bakelite and fiber, set screws, mica washers, special screws with both round and flat heads,—in short, every conceivable piece of hardware ever used in radio construction and repair work. It is the answer to a Service Man's or Experimenter's prayers. Fully one pound of useful hardware, a great asset to every service kit. Shipping weight, 1 1/4 lbs.

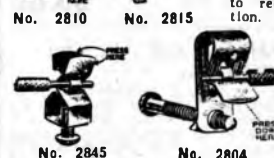
List Price \$0.75

No. K1007 Service Men's Screw Assortment **YOUR PRICE \$0.28**

Fahnestock Spring Binding Posts



A favorite with all experimenters. Absolute contact at all times—simply press down prong, insert wire and the connection is made. Too well known to require much description. All finished in phosphor bronze nickel-plated. Only sold in dozen lots.



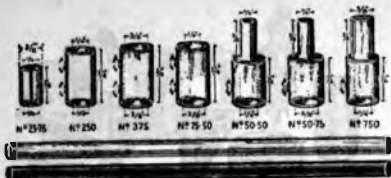
No. 2810. Takes No. 14 B. and S. wire. Width 5/16", length 3/4", screw hole clears 6/32 screw.
No. 2804. Takes No. 16 B. and S. wire; has lug to which wire can be soldered. Width 7/32, length 3/4".
PER DOZEN \$0.18

No. 2809C. Takes No. 10 B. and S. wire. Length overall 1", width 3/8", screw hole threaded for 8/32 screw.
PER DOZEN \$0.20

PER DOZEN \$0.35
No. 2804. Takes No. 10 wire. Length overall 1" width 3/8" screw hole threaded for 8/32 screw.

PER DOZEN \$0.28
DOUBLE CONNECTOR
No. 2809C. Takes No. 10 B. and S. wire. Length overall 1 1/2", width 3/8", screw hole passes 8/32 screw. Extra long size—not to be confused with much shorter "similar" connectors.
PER DOZEN \$0.35

Condenser Shaft Couplings & Adapters and Brass and Fibre Condenser Shafts



These Shaft Couplings are just the thing for connecting variable condensers, switches and rheostats in various arrangements; reducing larger shafts to smaller ones; for fitting tuning dials, etc. All the dimensions of the bushings, couplings, shaft extenders and reducers are illustrated. They are made of brass and have a bright finish. The brass shafting is used for extension purposes or replacements. The fibre shafting is used for insulating variable condensers, etc.

No. 25-75 3/8" long 1/4" hole I.D. * 3/8" O.D. Dial Bushing
YOUR PRICE, each \$0.15

No. 250 3/4" long 1/4" hole I.D. 1/2" O.D. Coupling.
YOUR PRICE, each \$0.15

No. 375 3/4" long 3/8" hole I.D. 9/16" O.D. Coupling.
YOUR PRICE, each \$0.15

No. 75-60 3/4" long 3/8" hole I.D. 9/16" O.D. Coupling.
YOUR PRICE, each \$0.15

No. 50-50 1 1/8" long 1/4" hole I.D. 1/2" O.D. Reducer.
YOUR PRICE, each \$0.15

No. 50-75 1 1/8" long 3/8" hole I.D. 9/16" O.D. Reducer.
YOUR PRICE, each \$0.15

No. 750 1 1/8" long 1/4" hole I.D. 1/2" O.D. Reducer.
YOUR PRICE, each \$0.15

No. 8250 6" long 1/4" diameter Brass Shafting.
YOUR PRICE, each \$0.15

No. 12250 12" long 1/4" diameter Brass Shafting.
YOUR PRICE, each \$0.15

No. 637 6" long 1/4" diameter Fibre Shafting.
YOUR PRICE, each \$0.20

No. 1237 12" long 1/4" diameter Fibre Shafting.
YOUR PRICE, each \$0.20

* I.D. = Inside diameter. ** O.D. = Outside diameter.

Test Leads with "Alligator" Clips

These leads are made of flexible wire and are equipped with special Alligator clips at each end. The wires are color-coded for easy identification. Ideal for laboratory and experimental purposes. Does away completely with the necessity for soldering in experimental circuits. Available in four sizes, as listed below.

No. 400 12" Test Leads & Clips.
YOUR PRICE, pair \$0.30

No. 420 24" Test Leads & Clips.
YOUR PRICE, pair \$0.40

No. 430 36" Test Leads & Clips.
YOUR PRICE, pair \$0.50

No. 440 48" Test Leads & Clips.
YOUR PRICE, pair \$0.60

I.C.A. Neutralizing and Aligning Tool Kit



The new I. C. A. Service Men's Neutralizing and Aligning Tool Kit has been prepared to include every possible combination of convenient tools which a service man MUST HAVE in order to make adjustments on all types of modern radio receivers.

The Kit consists of twelve separate and distinct parts, some of which can be employed for several operations. These units telescope into each other, forming four separate tools when assembled. An attractive black leatherette vest pocket carrying case holds them all conveniently.

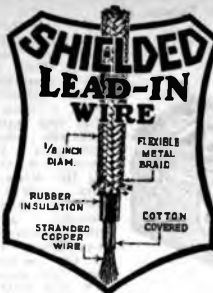
The four different sections constitute the following:

1. Alligator side wrench; 6" insulated screw driver with metal nib; metal 5/16" nut wrench and metal 1/2" nut wrench.
2. 3/4" square nut insulated wrench, 1/2" hexagon metal side wrench and 2 1/2" insulated screw driver with metal nib.
3. 3/4" hexagon slotted insulated wrench; metal screw driver; insulated nut wrench; 5" insulated screw driver with metal nib.
4. 6" insulated screw driver.

List Price \$4.00
YOUR PRICE \$2.35

No. 998 I.C.A. Neutralizing Tool Kit, complete with carrying case.
YOUR PRICE \$2.35

Eliminates Noise and Cross-Talk



Service men throughout the world are beginning to realize the importance as well as the advantages obtained through the use of a shielded lead-in wire from antenna to radio receiver. More than 75 per cent of the complaints of "noisy" and "unselective" receivers may be eliminated by merely replacing the old unshielded wire that leads from the aerial on the roof to the radio set with this new type of wire. Not only does it help to clear radio noises but to a certain extent, it makes the receiver more selective due to the capacity effect between the wire core and the metal shield. Easily installed. The wire core is connected between aerial on the roof and antenna post on receiver. The outer shield is connected to ground. Every service man should carry at least one spare roll of this wire in his service kit. We feel quite confident that we will be thanked by many for this suggestion. Sold in 50 and 100 ft. rolls, ready cut.

No. 1665, 50 ft. Roll Shielded Lead-in Wire **\$0.45**
 No. 1668 100 ft. Roll Shielded Lead-in Wire **\$0.85**

Special Tapered Terminal Lugs



These lugs are wide, at their mouths and gradually taper down in the back. The advantage of this type of construction is that one set of such lugs will fit many size screws, up to a No. 10. Ideal for connections for various size screws. Have barrel shaped ends which will engage any of the plug-in prongs listed elsewhere on this page. A bridge, located inside these barrels, makes for easy soldering. Measures 1/2" wide x 1/4" long. Sold only in lots of one dozen.

No. 16 Special Tapered Terminal Lugs.
YOUR PRICE, per dozen \$0.12

New Hammarlund Screen-Grid Tube Shields



The new Hammarlund Screen Grid Tube Shield is designed with special cutouts for maximum cooling of the tube by up-drafts of air and at the same time provides the full extent of shielding required for most efficient operation. Aluminum shell and has large hole at the top for access to control grid of tube. Designed for use with subpanel sockets.

Mounting screws and control grid connector packed with each shield. Shipping weight, 6 oz.
 List Price \$0.40

No. T8-35 New Hammarlund Screen-Grid Tube Shields
YOUR PRICE \$0.24

Wood Tuning Knobs



Carved wooden Knobs for use on radio receiver tuning controls. Carved in tasteful designs and finished in dark oak. Complete with set screw. These knobs are obtainable singly or in sets of three.

No. 1635 Wood Knobs
YOUR PRICE \$0.15 ea.

No. 1636 Wood Knobs
SET OF THREE \$0.40

Sealing Compound



Service filling, sealing and insulating compound. Can be used for condenser dipping transformer sealing or any service need that requires a compound that flows easily at normal heat. All repaired condenser blocks should be covered with this pitch which protects them from moisture. Just place the pail on an electric or gas stove and it is ready to pour. This item is indispensable to the service man, and will pay for itself in no time. Put up in two sizes. Shipping weights 8 1/2 lbs. and 1 lb. respectively.

No. Size List Price
 1691 1 gallon can \$2.00
 1692 1 quart can .50
YOUR PRICE \$0.95 \$0.40

Professional Test Prods with Interchangeable Tip Ends



This new type of test prod is in large demand due to its serviceability and special features, such as the interchangeable tip end and long testing prod handle. Spring prongs located at the flexible end of the test prods allow you to change from spade lugs, to phone tips, or Alligator Spring Clips. A tight and sturdy connection is the result at all times. The handles are 6" long and only 1/4" in diameter. This type of handle is ideal for getting into tight places between transformers, condensers, etc. The new type needle-point phone tip is used for piercing through insulated wire. These points will also engage standard phone tip jacks. Equipped with five feet of black and red flexible wire. Each set comes complete with two Alligator Clips, two Needle-Point Phone Tips, and two special tapered lugs. These lugs will fit all types of screws up to a No. 10 in diameter. Packed one complete set with all attachments in individual, attractive boxes. Ship. wt. 1 lb.

No. 500 Professional Test Prods with Interchangeable Tip Ends.
YOUR PRICE, per set \$0.88

Drum Dial Cable



Most of the modern radio receivers which employ single dial control utilize drum dial cable for "gauging" the individual tuning condenser units. Very often these cords break; and while this condition is merely a mechanical difficulty it nevertheless renders the receiver inoperative or at least makes it impossible to tune in different stations. Service Men and dealers ought not at any time be without a supply of drum dial cables for making such emergency repairs. These cables are available in two different types, viz., 42 strand phosphor bronze twisted and 18 strand phosphor bronze braided. Available in 100 and 50 foot spools as well as in loose footage.

No.	42 Strand Phosphor Bronze Cable Ft. Per Spool	YOUR PRICE
3181	100	\$3.80
3182	50	\$2.20
3183	Sold loose per ft.	\$0.05 per ft.
18 Strand Braided Phosphor Bronze Cable		
3184	100	\$1.30
3185	50	\$0.80
3186	Sold loose per ft.	\$0.03 per ft.

The Service Man's Insulated Washer Assortment



This fine assortment will prove to be indispensable to the service man. It contains every conceivable washer and bushing for insulating purposes. Hard fibre, bakelite and hard rubber are some of the insulating materials used in constructing these washers. Many asbestos and rubber washers are also included. Each box contains a generous supply. Place one of these assortments in your service kit; it will last a long while. If bought separately these various washers would cost you approximately \$1.50. Take advantage of this offer now, while it lasts.

No. 110 Service Man's Insulated Washer Assortment.
YOUR PRICE \$0.35

"Alligator" Testing Clips



These clips, as their name indicates are long and thin—ideal for getting into tight places. Constructed with a strong, metal spring to assure positive contact. Have a round barrel on one end, designed to engage any one of the plug-in prongs, listed elsewhere on this page. However, for easy soldering, a special bridge is provided inside this barrel which firmly clamps the wire before the solder is applied. Ideal for making convenient test leads—indispensable to a test laboratory. Measures only 1/4" wide and 2" long.

No. 45AT "Alligator" Test Clips.
YOUR PRICE, each \$0.05

"Jifty-Tite" Screw-Holding Screw Driver

Senior Model—Built for Service

Here is an important addition to every mechanic's and Service Man's tool kit—a tool which enables one to do quickly many tasks which were heretofore extremely difficult or impossible.

"Jifty-Tite" is NON-MAGNETIC and will firmly hold screws of any material, such as brass, copper, aluminum, wood, rubber, fibre, etc., by their slots, a most important feature. Its generous-sized enameled hardwood hexagon handle gives a powerful grip for the heaviest kind of work. Measures 9 1/2 ins. long with 5/16 in. wide blade; a size which experience has shown meets all ordinary needs. MECHANICALLY SIMPLE. The operating principle of the "Jifty-Tite" Screw-Holding Screw Driver is extremely simple. THERE ARE ONLY TWO MOVING PARTS—the gripping lever which moves in and out of a slot cut in the blade, and the knurled slide which operates this gripping lever. A simple quick movement of the knurled slide up or down with the finger is all that is required to grip and release the screw.

Ship. wt., 1 lb. List Price \$2.00

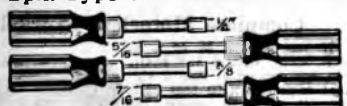
No. 1067 Jifty-Tite Screw-Holding Screw Driver. **YOUR PRICE \$0.98**

Junior Model

"Jifty-Tite" Junior is especially built for those dinky little screws in typewriters, radios, sewing machines, electric devices, etc.; in fact, for any use where it is difficult, and often impossible, to insert and remove a screw with an ordinary screw-driver. The handle is of knurled bakelite with a shock-proof test of 10,000 volts. The heat-treated and tempered blade with its powerful gripping lever insures long service. Size 8 1/2 ins. long over all, 4/16 in. diameter shank, 3/16 in. width blade. Shipping weight, 1/2 lb. List Price \$2.00

No. 1068 "Jifty-Tite" Junior Screw-Holding Screw Driver. **YOUR PRICE \$0.98**

Spin Type Socket Wrenches



These hollow shank socket wrenches permit the removal of nuts from long, projecting screws. Will take long screws, any size up to No. 10 diameter. Furnished with ribbed, wooden handles. Shank is cadmium plated and will not rust. Available in two lengths, viz., the length for general use and the 9" length for use where the ordinary socket wrench will not reach. One set of four wrenches consist of the following sizes: 1/4", 5/16", 3/8" and 7/16". No. 50123 Set of 4—8" Long Spin Type Wrenches.

YOUR PRICE \$0.42

WHEN BOUGHT INDIVIDUALLY

No. 50 6" Long, 1/4" size Wrench. **YOUR PRICE \$0.12**
 No. 51 6" Long, 5/16" size Wrench.
 No. 52 6" Long, 3/8" size Wrench.
 No. 53 6" Long, 7/16" size Wrench.
 No. 54587 Set of 4—9" Long, Spin Type Wrenches.

YOUR PRICE \$0.65

WHEN BOUGHT INDIVIDUALLY

No. 54 9" Long, 1/4" size Wrench. **YOUR PRICE \$0.18**
 No. 55 9" Long, 5/16" size Wrench.
 No. 56 9" Long, 3/8" size Wrench.
 No. 57 9" Long, 7/16" size Wrench.

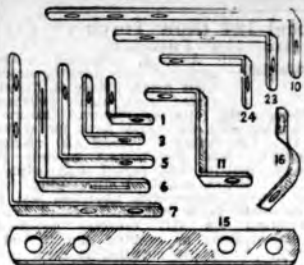
50 Watt Soldering Iron



This soldering iron is exceptionally suited for radio work, inasmuch as it has a long finely tapered tip. It is a quick heating iron which rises rapidly to the proper temperature and then remains there until the current is shut off. Constructed of heavy metal with removable copper tip and cool, wooden handle. Sold complete with asbestos-covered heat resisting cord and plug. Shipping weight, 3 pounds.

No. 106 Heavy Duty Soldering Iron. **YOUR PRICE \$0.95**

ANGLES AND BRACKETS BRASS NICKEL PLATED



These Angles and Brackets are used by radio experimenters and Service Men in a variety of places. Their uses are numerous. A complete set of at least two or more should be owned by every radio experimenter and Service Man. They are available in the following sizes:

No.	Size	YOUR PRICE	No.	Size	YOUR PRICE
1	1/2"x1/2"	4 for 5c	10	1/2"x2 1/4"	2 for 7c
3	3/4"x3/4"	2 for 5c	11	1/2"x3/4"x1/2"	2 for 5c
5	1"x1"	2 for 7c	16	3/4"x1 1/4"	4 for 5c
6	1 1/4"x1 1/4"	2 for 7c	17	3/4"x1 1/2"	2 for 7c
7	1 1/2"x1 1/2"	2 for 10c	23	3/4"x1 1/2"	2 for 7c
20	2"x2"	5c each	24	1/2"x3/4"	4 for 7c
			18	Strip 3"	2 for 7c

Transformer Brackets for Audio and Power Also Chokes



These brackets are manufactured of brass and are neatly nickel plated. They are available in the following sizes as illustrated. Dimensions from center to center of the hole are as per illustration. Sold only in sets of four or more of each size.

No.	YOUR PRICE
18	\$0.05
25	\$0.08
26	\$0.12

Solderless Phone Tips

These Solderless Phone Tips are ideal for all temporary connections such as aerial, ground, speaker, etc. No. 2885. **YOUR PRICE, each \$0.05**
 50c dozen \$4.00 per 100

Machine Screws in Packages

These machine screws are packed 10 screws to an envelope and are available in round, flat, or oval head. When ordering, mention head and length desired. Available in the following sizes:

No.	Machine Screws
2830	3/8"x8/32 Machine Screws
2831	1/2"x8/32 Machine Screws
2832	5/8"x8/32 Machine Screws
2833	3/4"x8/32 Machine Screws
2834	1"x8/32 Machine Screws

YOUR PRICE, per envelope \$0.06

Wood Screws in Packages

These wood screws are packed 10 screws to an envelope and are available in round, flat, or oval head. When ordering, kindly mention head and length desired. Available in the following sizes:

No.	Wood Screws
28	3/4"x No. 4 Wood Screws
21, d	1/2"x No. 5 Wood Screws
2837	3/4"x No. 5 Wood Screws
2838	1"x No. 6 Wood Screws

YOUR PRICE, per envelope \$0.06

Test Leads



3 1/2 foot flexible leads equipped with test probes color-coded for polarity. This is one piece of equipment which no service man can afford to be without. The tips are made of non-corrosive metal and are inserted for special purposes without much bother or waste of time. Insulated grips made of high quality fibre protect operator from shock when making measurements in high voltage circuits. May be had with either lugs, phone tips or spring clips. Shipping weight, 1/2 lb.

No.	Type	YOUR PRICE
1826	Test Leads with Lugs	\$0.25
1728	Test Leads with Tips	\$0.25
1727	Test Leads with Clips	\$0.35

Screen-Grid Caps



Screen-Grid Caps where special length wires are required or for replacement purposes. They are manufactured of spring brass and are tinned for easy soldering.

No. 1672. **YOUR PRICE, each \$0.02**
 6 for 10c

Buddy "Rosette" Panel Decorations

For Covering Undesired Holes in Panels and Cabinets Decorative—Inexpensive

Did you ever spend \$2.00 or \$3.00 for a new front panel when installing a new chassis in an old cabinet just because a small 1/2 in. hole insisted upon being there it was? Our BUDDY ROSETTES will cover up that hole to make it look as if it were made in the factory. Can also be used to liven up some large blank spaces. You can be your own artist in placing them where they will do most good.

Come in mahogany, walnut, antique gold (18 karats) and antique silver. (Specify which when ordering.) **ORDER A FEW TODAY; MUST BE SEEN TO BE APPRECIATED.**

No.	Diameter	YOUR PRICE
2091	1/4"	\$0.12
2092	1/2"	\$0.16
2093	1"	\$0.20
2094	1 1/2" (oval)	\$0.20

Handy Scratch Remover

Touches Up Furniture Like New



It is really important that Service Men carry with them the necessary equipment for touching up furniture in the event that they accidentally scratch either the radio cabinet on which they are working or some other close by piece of furniture. Many a fine-paying job has been lost through some such carelessness which could not be rectified. The Handy Scratch Remover, illustrated herewith, removes scratches and all other scars so completely that it is hard to tell whether the furniture had even been scratched at all. The Handy Scratch Remover is packed in a permanent case which is easily carried in the vest pocket or tool kit. **ALWAYS READY TO USE and SUITABLE FOR ANY TYPE OF FINISH.** With reasonable care, the Handy Scratch Remover should last for years.

No. 4440 Handy Scratch Remover. **YOUR PRICE \$0.35**
 Display Carton of 1 dozen **\$3.60**

Gentlemen:

I have obtained such splendid results from your Air King Superheterodyne Short Wave Converter that I have recommended it to all radio owners I know. You will soon hear from them. **FEDERICO ACEVEDO VAZQUEZ, Santurce, Porto Rico.**

Service Men's Complete Workshop Outfit

A Factory in Itself



A complete workshop outfit that performs all the operations of several different machines combined. It grinds, cuts, polishes, buffs and drills. No service man's or experimenter's laboratory is really complete without it.

COMPRISES 9 HIGH-GRADE UNITS

The outfit consists essentially of 9 high grade, well manufactured parts.

MAIN STEM AND CHUCK made as carefully as highest priced machine. Complete with 9/32" drill. SAW TABLE AND GUIDE are accurately constructed and clamp on to the main stem thereby making a complete cut off saw. ROUND LEATHER BELT of best grade leather, 5 feet long with connecting clip. BUFFING WHEEL 3" laminated cotton lead center. POLISHING COMPOUND for use in conjunction with buffing wheel. COMPASS SAWS is 4" in diameter and is made of best high-carbon steel. WIRE-SCRATCH BUFFER 4" steel-wire wheel. GRINDING WHEEL of fine grade emery, 4 inches in diameter. DRILL SET consists of 9 high grade hardened steel drills for 1/16 to 3/16 inch holes. All that is necessary to complete the outfit is small motor. A 1/4 H.P. motor would be sufficient. Shipping weight, 12 lbs.

List Price \$9.00

No. 600C Service Men's complete Workshop Outfit.

YOUR PRICE **\$3.38**

Service Bench Grinder

High Ratio Gears

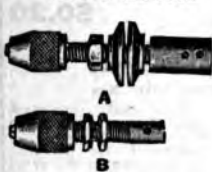
A ruggedly constructed bench grinder with high ratio all-steel gears carefully machine cut and properly meshed. Has a dirt-proof gear case with extra long bearings which assures gears being in alignment and wheel running true. Complete with 4 inch fine abrasive wheel and adjustable tool rest. Clamps on any table or bench. Shipping weight, 8 lbs. List Price \$3.00.



No. 530 Service Bench Grinder.

YOUR PRICE **\$1.25**

Motor Arbors



These arbors fit directly onto the shaft of any small motor in place of the pulley. Each is equipped with flange and locking nut to hold grinding wheels, circular saws, buffing wheels, polishing wheels, etc., and with chuck having 3 hardened jaws capable of engaging all sized drills up to 9/32 inch. Make veritable machine shops out of motors. Shipping weight 4 lbs.

No.	Bore	List Price
490	5/16"	\$1.50
490A	3/8"	1.50
495	1/2"	1.35
495A	5/16"	1.35

"Shake-Proof" Lock Washer Kit

For the first time on the radio market we have a complete lock washer kit—EXACTLY 22 DIFFERENT SIZES. All contained in a strong partitioned box. Every conceivable size of lock washer used for radio and electrical work and many large sizes for automobile and allied work are included. These lock washers are of the twisted teeth type—a type which holds its spring action for a long time. THESE LOCK WASHERS WILL NOT RUST. Every mechanic knows the convenience of having the proper size lock washer around the shop or garage at the proper time. Buy a kit now, you never know when you will have to use it. Shipping weight 3 lbs.



No. 2278 Shake Proof Lock Washer Kit
YOUR PRICE **\$1.95**

Automatic Alcohol Blow Torches

Pressure Barrel—No Mouth Blowing

Model 124 Blow Torch

Flame 1400° Fahrenheit



A new, improved model with a self blowing-strong blast flame. Made of nickel-plated brass, highly polished. Presents the following improved features: Cleaning wire with each torch for orifice (A). Two spring U clamps (B) riveted together, hold the barrels securely in proper position and permit easy adjustment. Heavy machined filler plug (C) on pressure barrel with machined seat guaranteed to be leak-proof. Solid brass machined top (D) prevents loosening from breaking or bending and is leak-proof. Screw cap supplied to cover orifice and secured by strong safety chain.

Measures 5 1/2" x 1 1/4" over all. Shipping weight, 1 lb.
No. 1060 Model 124 Blow Torch
YOUR PRICE **\$0.75**

Model 675 Blow Torch

Heavy Duty—4 Inch Flame



New, heavy duty automatic torch with 4 inch, intense yellow flame of more than 2000° Fahrenheit. Has a separate lamp flame for priming—which takes only about a minute. Aside from the air already under pressure in the barrel, additional air is mixed with the alcohol vapors through the perforated flame nozzle, thereby forming an extremely combustible mixture. Used for soldering extra large joints or connections and for smelting soft metals. Shipping weight, 1 lb.

List Price \$2.00
No. 1061 Model 675 Blow Torch
YOUR PRICE **\$1.15**

Model 200 Blowtorch

This model is one of the latest to be designed. Incorporates an entirely new burner which prevents spitting or leaking. Produces an extra long strong blast of more than 2,000° Fahr.—enough heat to easily melt copper. The entire unit is made of heavy-gauge brass, nickel-plated. A gauge cup prevents dripping over the boiling over. The torch will burn for approximately TWO HOURS with each filling. It is easily started and entirely automatic. A wooden handle, advantageously placed, provides for comfortable operation. The torch will operate in any position. Measures 7" x 4 1/2" x 1 1/2" overall. Ship. wt., 1 1/2 lbs.



No. 200 Blowtorch.
YOUR PRICE **\$2.17**

Model 350 Blowtorch



This torch is an especially heavy-duty model, enclosed in a heavy-duty brass case, shaped cas.ng. and equipped with a special priming chamber and wick for starting the burner. When the torch is primed, it will automatically and continuously blow a strong intense blast by itself—a blast which EXCEEDS 2,000° FAHR. The special pressure chamber holds approximately one half pint of alcohol fuel. The torch is equipped with a special combustion burner which can be removed by screwing off the goose neck so that the little hole in the nozzle will be exposed for cleaning with the fine cleaning wire which is furnished. Ship. wt., 1 1/2 lbs.

No. 350 Blowtorch.
YOUR PRICE **\$2.52**

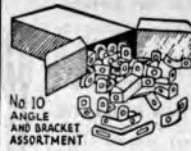
Model 300 Blowtorch



This blowtorch presents the following features: 1. Made with a protective brass case, each barrel having its own housing. 2. When burner is attached, it will properly operate out-of-doors. 3. Will work in any position, either right-side-up or up-side-down. 4. Will operate fully an hour and a half with each filling. 5. Combines all the desirable features of the one barrel and two barrel torches. 6. Produces a strong, steady pointed blast. 7. Constructed of brass throughout, nickel-plated. 8. Packed individually in attractive carton. Ship. wt. 1 1/2 lbs.

No. 300 Blowtorch.
YOUR PRICE **\$2.17**

Radio Angle and Bracket Assortment



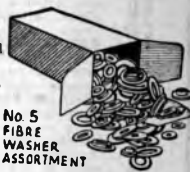
An ideal bracket assortment for the average set builder. It contains 28 pieces of various size angles and brackets. None better for the price. Every Service Man should have them.

No. 2858

YOUR PRICE **\$0.25**
each box

Fibre Washer Assortment

This is an ideal fibre washer assortment. It contains a number of sizes for insulating parts on metal panels. There are a number of rubber grommets included in this assortment of various sizes.



No. 2857

YOUR PRICE **\$0.25**
each

Workshop Utility Set



This outfit comprises one complete grinder with arbor and chuck attached, emery stone, circular saw, heavy cloth buffer and wire-scratch wheel. The duties it can perform are exactly similar to those of the 400 Utility Set, listed elsewhere on this page with the exception that all work must be done by hand. This equipment cannot be attached to a motor. It constitutes a complete workshop outfit for the amateur experimenter, electrician, handyman, etc. Ship. wt., 12 lbs.

No. 535C Motorless Workshop
YOUR PRICE **\$2.20**

Complete Motorless Workshop

If you have a 3/4 or a 1/4 H.P. motor with a 1/2" shaft, you can convert it into a veritable workshop with this utility set. It will enable you to drill holes up to 9/32" grind steel, buff, saw and wire scratch. Consists of 1 1/2" motor arbor with chuck, 1-4" size emery stone, 1-4" heavy cloth buffer, 1-4" circular saw and 1-4" wire-scratch wheel.



Increases the utility of your motor a hundred-fold and makes work around the home and shop infinitely easier—a real labor-saving device. Ship. wt., 8 lb.
No. 400 Workshop Utility Set
YOUR PRICE **\$1.85**

Sturdy Bench Vise



Anyone at all mechanically minded appreciates the necessity and usefulness of a vise. It is indeed a labor-saving device. Has perfectly milled jaws. Available in two models—one having a 2 1/2" extensible jaw and the other a 3 1/4" extensible jaw. Ship. wt. of former, 4 1/2 lbs.; ship. wt. of latter, 8 1/2 lbs.

No. 250 Vise with 2 1/2" Extensible Jaw
YOUR PRICE **\$0.90**
No. 521 Vise with 3 1/4" Extensible Jaw
YOUR PRICE **\$1.50**

Screen Grid Caps with Soldered Lead

These Screen-Grid Caps have a soldered lead of approximately 8 ins. in length as most sets require 8 in. leads for their screen-grid cap connections. The lead is heavily insulated and ideal for replacement.



No. 1653
YOUR PRICE, each **\$0.04**

ELECTRICAL SPECIALTIES

"Under-the-Rug" Cord Set



A specially manufactured, extremely thin, two-conductor cord, designed as an extension cord to run under the parlor or living-room rug for energizing floor lamps, radios, etc., in far corners of the room. Lies flush with the floor and is not noticeable through the rug, which there were nothing under it. Ideal for extension systems where it is necessary to tack the cord on the wall. Gives a neat, professional-like appearance. Sold in complete sets consisting of special rat two-conductor cord, Bakelite cube tap and Bakelite wall outlet. Both tap and wall outlet match the color of the cord. Packed one set to a box. Shipping weight, 4 lbs.

No. Size List Price YOUR PRICE
3003 12 ft. length \$1.50 **\$1.13**
3004 15 ft. length 1.65 **\$1.28**

Feed-Thru Bakelite Switch

A general utility toggle switch, made of genuine moulded Bakelite. Ideal for use on soldering irons, eliminators, power packs, receivers and all electrical appliances which do not already have built in on-off switches. Neatly engages all standard electrical feed cords. Shipping weight, 1/2 lb.



List Price \$0.35
No. 3009 Feed Thru Bakelite Switch **\$0.20**
YOUR PRICE

Bakelite Handle Plug

A genuine Bakelite male plug with a sure-grip handle feature. Contact prongs are made of highly tempered, non-corrosive brass which insures perfect electrical contact. Shipping weight, 1/4 lb.

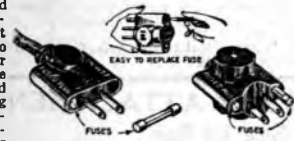


List Price \$0.20
No. 3011 Bakelite Handle Plug **\$0.06**
YOUR PRICE

Box of 10 — \$0.65

Elmenco Fused Plugs

The new Elmenco Fused Plug is the simplest and most effective means so far developed for minimizing the inconvenience and danger resulting from short circuits and overloads which occur in all manner of electrical appliances and their connecting cords.



Elmenco Fused Plugs are equipped with two standard glass fuses of the automobile or radio type. When electrical faults occur in appliances, which are protected by Elmenco Fused Plugs, a fuse in the plug will blow instead of the inconveniently located branch circuit fuse or perhaps the main service fuse which, is even more inaccessible. The trouble is thereby localized to the appliance or appliances connected to one convenience outlet.

It is a simple matter to replace a blown fuse. You simply remove the old cartridge, slip in another and presto!—you have light once more. Available in two styles, viz., a three-way cube tap and a one-way cord plug.

No. 3024 Elmenco Three Way Fused Cube Tap **\$0.18**
YOUR PRICE, each
No. 3025 Elmenco Fused Cord Plug **\$0.18**
YOUR PRICE, each

FREE REPLACEMENT FUSES

With the purchase of 12 or more of any of the above fused plugs, five replacement cartridge fuses will be given free. These fuses are available in ampere ratings of from 6 to 10 amps., as well as 15 amps. (SPECIFY WHICH WHEN ORDERING.) They may also be bought separately if desired. Put up four fuses to an attractive metal box.

No. 3026 Replacement Cartridge Fuses, per box of four. **\$0.10**
YOUR PRICE

Bakelite Current Tap



A useful combination of electric taps which makes it possible to light an electric light bulb and make two external plug connections, all at the same time and from the same socket. Made of one piece genuine Bakelite construction and provided with a standard Edison screw base. Shipping weight, 1 lb.

List Price \$0.25

No. 3013 Bakelite Current Tap **\$0.16**
YOUR PRICE

Cube Tap Cord Set

Here is a very convenient device for supplying current to one or more lamps, radio sets, ornament light, etc., without the bother of splicing wires, or attaching additional outlets to the walls. Comes complete with 6 ft. 2/18 silk parallel cord with inner braid, approved by Underwriters, and two piece male female connection plug. Cube tap is made of moulded Bakelite and will engage any standard male plug. Shipping weight, 1/2 lb.



List Price \$0.75

No. 3014 Triple Outlet Cube Tap **\$0.26**
YOUR PRICE

Electric Cube Tap

A convenient three-way electric light outlet consisting of highly tempered contact springs firmly embedded in a genuine Bakelite housing. Will engage any standard female plug or wall receptacle. Shipping weight, 4 oz.



List Price \$0.15 ea.

No. 3015 Electric Cube Tap **\$0.08**
YOUR PRICE

12 for \$0.68

Heater Switch Plug

Heavy duty, heat-resisting heater plug with built-in on-off switch conveniently located. Made of durable moulded imitation Bakelite. Complete with cord-protecting spring. Shipping weight, 1 lb.

List Price \$0.35

No. 3016 Heater Switch Plug **\$0.19**
YOUR PRICE

Box of 10 — \$2.00



Heater Plug



Heavy duty, heat-resisting plug, made of moulded imitation Bakelite. Contact jacks are of the highly tempered spring-action type which insure positive electrical contact. Complete with cord-protecting spring. Shipping weight, 1 lb.

List Price \$0.15

No. 3017 Heater Plug **\$0.08**
YOUR PRICE

Box of 10 — \$0.75

Switch Plug and Cord Set

Six feet of asbestos covered, heat resisting, high current, electric cord with shut-off switch built into the attachment plug which is of armoured Bakelite. Complete with two piece male-female connection plug. Shipping weight 1/2 lb.

List Price, \$0.75

No. 3018 Switch Plug and **\$0.32**
Cord Set YOUR PRICE

12 for \$3.60



Heater Cord Set

Six feet of asbestos covered, heat resisting electric cord with polished, imitation Bakelite attachment plug and two piece male and female connection plug. The ingenious serviceman will find many other uses for this quality heater cord set other than for its application to electrical appliances; it can be used for example, for supplying current to dynamic speaker field coils and for many other purposes. Shipping weight 1/2 lb.

List Price \$0.60
No. 3019 Heater Cord Set **\$0.25**
YOUR PRICE



Brand New! Radio Mirror Penlite



Latest and Cleverest Tool for Radio Servicemen. The only device that enables you to LOOK AROUND CORNERS or UNDERNEATH inaccessible spots. Your vision is ONLY in a straight line, but

with the Mirror-Penlite you can look around a 45 degree angle. You can now look under the whole chassis and see every nut, every wire, every socket, behind condensers, transformers, etc. This is made possible by the powerful pocket flashlight to which is attached a GENUINE DENTAL MAGNIFYING MIRROR. Mirror clips on or off so flashlight can be used alone if desired. The cleverest device yet. Complete with battery and bulb. Shipping weight, 6 ozs.

List Price \$2.50

No. 1695 Mirror-Penlite with Battery and Mirror. **\$0.55**
YOUR PRICE

Bakelite Electric Wall Outlet

A handsome, well-made, genuine brown Bakelite electric wall outlet. Excellent for use as speaker outlets where several speakers are used simultaneously in different rooms. Easily attached with one wood screw. Shipping weight, 1/4 lb.



List Price \$0.20
No. 3021 Bakelite Electric Wall Outlet **\$0.11**
YOUR PRICE

Carton of 20 — \$1.85

Porcelain Double-Outlet

A popular, two-way electric tap made of high grade porcelain, properly grooved at the bottom to permit free passage of wires. Mounts to wall with single wood screw. Shipping weight, 1/4 lb.



List Price \$0.25

No. 3022 Porcelain Double-Outlet **\$0.15**
YOUR PRICE

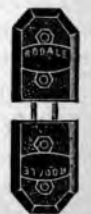
Midget Cord Connector

A well-built, flat-terminal cord connector for light duty work. Recommended for light motors, machines, testing instruments such as tube checkers, electric oscillators, portable electric sets, etc. Made of imitation dull-finished Bakelite with countersunk bolts and nuts. Shipping weight 4 oz.

List Price \$0.30

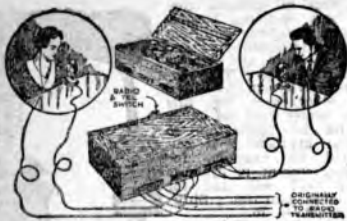
No. 3010 Midget Cord Connector **\$0.18**
YOUR PRICE

Box of 10 \$1.65



U. S. SIGNAL CORPS INTERPHONE SYSTEM

Easily Adaptable to Home Use



This unit self-explanatory. The case measures 10 1/4 ins. long by 6 1/4 ins. wide by 2 1/2 ins. deep. Any type of microphone and earphone will work with this unit. The telephone box may be bought either separately or complete with two microphones and two head sets as illustrated herewith.

B-7270 Airplane Type Telephone System Less Microphones, Head Sets and Batteries. **\$1.15**
YOUR PRICE

B-7271 Airplane Type Telephone System Complete with Microphones and Head Sets but less Batteries. **\$3.60**
YOUR PRICE

Cigar Lighter Unit



Shipping weight, 4 oz.

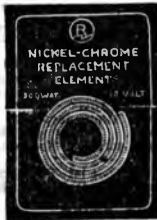
List Price \$3.30.

No. 1980 Cigar Lighter Unit. **\$0.12**
YOUR PRICE

Nichrome Heater-Wire

600 Watts.

A replacement unit for all electrical appliances using nichrome or other resistance wire as the heating element. Service men can earn extra money by making incidental repairs on electric stoves, toasters and other heating appliances while working on a job. May also be used as regular resistance wire in radio and allied circuits. Will safely dissipate a tremendous amount of heat. Keep several units on hand in case of emergency. Put up one element to a card. Shipping weight, 1/2 lb.



List Price \$2.25

No. 1981 Nichrome Heater Wire. **\$0.12**
YOUR PRICE, per card

Socket Type Flasher



An ingenious device that makes and breaks electrical circuits regularly and automatically. Remote electric bulb from any socket. Insert the flasher in its place and then rescrew the bulb in the flasher receptacle. In a few seconds the bulb starts to flash, on and off at regular intervals. Ideal for flashing Christmas tree lights, display lights and electrical signs. Shipping weight, 1/2 lb.

No.	Type	List Price	YOUR PRICE
3001	110 volts	\$0.25	\$0.12
3002	120 volts	.40	\$0.16

Flat Iron Replacement Elements

Made of flat genuine nichrome resistance wire. Will fit over 90% of all flat irons on the market, including Hot Point, Sunbeam, G.E., etc. Available for either three or six pound irons.

No. E-76 6 lb. Flat Iron Element **\$0.22**
YOUR PRICE

Nickel Plated Hot Plate Stove



A sturdily built, heavy duty electric hot plate which lends itself readily to a variety of uses. Do not compare with cheaper grade enamel style. Made of heavy steel with genuine nichrome wire element embedded in high-grade porcelain tracks. Service men find these electric stoves quite useful for melting pitch and other impregnating materials, softening hard rubber products for mending purposes and for many other uses. Hot plates are 8 1/4" in diameter and 4 1/4" high. For 110-115 volts A.C. or D.C. Shipping weight, 3 lbs.

List Price \$3.50

No. 1978 Nickel Plated Hot Plate Stove. **\$0.98**
YOUR PRICE

One-Piece Attachment Plug

Male and female plugs combined in one unit. Will safely handle 660 watts without heating. Engages all standard Edison screw type receptacles and sockets. Shipping weight 1/4 lb.

List Price \$0.25

No. 3012 One-Piece Attachment Plug. **\$0.10**
YOUR PRICE



G. E. Remindo Switch-Buzzer

Works in series with 110 volt. A.C. line



An ingenious device, which when placed in series with any electrical instrument or equipment working directly from the 110 volt. A.C. line will emit a low, pleasant buzz, while the switch is "on". Intended mainly for the purpose which its name "Remindo" suggests; that is, to remind one that some particular instrument or apparatus is still in operation. Recommended for soldering irons, etc. The ingenious service man or experimenter will find many other uses for this little unit. The buzzer and rotary switch are mounted on a porcelain base and are fully shielded with nickel-plated metal jackets. Measures 3 1/4" x 2 1/4" x 1 1/4". Shipping weight, 1 lb.

No. 2070 G.E. Remindo Switch-Buzzer **\$0.60**
YOUR PRICE

Twin Flasher

Works on the same principle as the socket Type Flasher with the exception that it engages two male plugs simultaneously. Made of genuine moulded Bakelite with two protruding prongs which fit all standard type female receptacles.



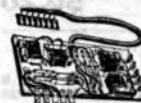
Shipping weight, 1/2 lb.

List Price \$0.40

No. 3000 Twin Flasher **\$0.21**
YOUR PRICE

Kolster Remote Control Quadruple Relay

Applicable to Myriads of Interesting Experiments



An unusually fine bargain for the man interested in controlling radio or electrical apparatus from distant points. The arrangement of parts permits a wide variation of "operate" and "release" currents and a sufficient number of contacts are provided to meet most circuit conditions. The relays will operate with an applied potential of as little as 3 volts; although voltages as high as 30 volts may be applied without injury to the instrument.

This remote control consists of two sets of locking relays, with four electromagnets, each provided with laminated cores and sturdily copper-plated armatures. A current applied to the "set" relay locks the armature and contacts in one position and a current applied to the "release" relay returns the circuit to its original condition. One of these relay devices is employed in our very plant for starting and stopping an A.C. generator and controlling the field current of a remote dynamic speaker.

The relays are mounted on a bakelite panel 4 x 7 1/2 inches and a four foot 7 wire cable is included. Shipping weight 1 1/4 lbs. List Price \$18.00

No. F7211 Kolster Remote Control Unit. **\$1.50**
YOUR PRICE

COLONIAL REMOTE CONTROL ATTACHMENT

Complete—Nothing Else To Buy

This remote control outfit was used on one of the Colonial Remote Control receivers which sold for more the \$300.00; yet you or anyone at all handy with tools can attach it to your own radio. You can then hide the radio either in the closet, basement, or some other out-of-the-way place and extend wires to any number of speakers strategically located in various parts of your apartment.

The outfit comprises two small motors (one for turning the tuning condenser and the other for turning the volume control), a 10-position commutator switch for selecting 10 different stations, a step-down transformer for energizing the motors and a 19 button control board (10 buttons for the 10 stations, two buttons for increasing or decreasing the volume and one button for silent tuning). A pilot light in this control board indicates when the receiver is operating.

If the shafts of the tuning condenser and volume control of your present receiver can be extended so that the commutator switch section and one of the motor gears can be slipped over the tuning condenser shaft and the other motor gear on the volume control shaft then you can easily adopt this outfit to your receiver DIRECTLY, without any further changes. With some sets it may be necessary to remove the volume control entirely from the chassis and mount it directly on the gear of the volume control motor. Custom set builders need have no headaches about this remote control, inasmuch as they can design the physical layouts of their sets to conform with this equipment. The illustration clearly shows all component parts of this complete remote control system. Shipping weight, 13 lbs.



No. 1788 Colonial Complete Remote Control Outfit.

YOUR PRICE, Only

\$4.50

NATIONALLY KNOWN VACUUM CLEANERS

AT PRICES NEVER OFFERED BEFORE

FULLY GUARANTEED

These machines are so thoroughly inspected, and rebuilt at the factory that we unhesitatingly place upon them an

UNCONDITIONAL 6 MONTHS GUARANTEE

Should they prove defective during that period of time we shall cheerfully repair or if necessary, even replace them without extra charge.

When a machine, a typewriter (for instance, which has an intricate maze of moving parts) is renovated in such a way as to have ALL MOVING PARTS REPLACED WITH NEW ONES it will naturally, and actually perform as smoothly and as easily as though it were new; for, practically speaking, IT IS A NEW MACHINE. The metal castings and other rigid parts need not be replaced since they are merely supporting structures which never "age" or wear. These "new" machines are resold to the public at a tremendously large saving. All this is true, and even more so, with vacuum cleaners which have considerably less moving parts than a typewriter.

BRAND NEW PARTS

Our vacuum cleaners are thoroughly and carefully remanufactured. All component parts, no matter how slightly worn, are replaced with new ones; we supply new bags, cords, brushes, handles and other parts. Even the chassis itself is replated and polished. We carry 9 different models in stock.

No. 1991 WESTERN-ELECTRIC—Gear Shift in housing gives either straight suction or suction with motor-driven brush. Pistol grip handle. Switch in handle. Black enamel steel housing, 13 inch polished aluminum nozzle. Shipping weight, 17 lbs.

List Price \$37.50.

YOUR PRICE

\$14.25

No. 1992 UNIVERSAL—Straight suction. No brush. Pistol grip handle. Switch in handle. Polished aluminum housing, 13 inch nozzle. Shipping weight, 20 lbs. List Price \$59.50.

YOUR PRICE

\$12.75



\$12.75 \$14.25

No. 1993 HAMILTON-BEACH—Motor Driven Brush. Pistol grip handle. Switch in handle. Polished aluminum housing, 12 inch nozzle. Shipping weight, 20 lbs. List Price \$39.50.

YOUR PRICE

\$12.75

No. 1994 EUREKA—Straight suction. Fixed brush. Pistol grip handle. Switch in handle. Polished aluminum housing, 13 inch nozzle. Shipping weight, 20 lbs. List Price \$32.50.

YOUR PRICE

\$14.25

No. 1995 HOOVER—Motor driven brush. Foot control switch. Black enameled steel motor housing, 13 inch nozzle. Shipping weight, 24 lbs. List Price \$63.50.

YOUR PRICE

\$14.25

No. 1996 PREMIER DUPLEX—Motor driven brush. Pistol grip handle. Switch trigger in handle. Polished aluminum housing, 13 inch nozzle. Shipping weight, 20 lbs. List Price \$60.00.

YOUR PRICE

\$18.50

No. 1997—BEE-VAC—Straight suction. Fixed brush. Pistol grip handle. Switch in handle. Polished aluminum housing, 12 inch nozzle. Shipping weight, 17 lbs. List Price \$39.50.

YOUR PRICE

\$9.75

No. 1998 PREMIER—Straight suction. Fixed brush. Pistol grip handle. Switch in handle. Polished aluminum housing, 13 inch nozzle. Shipping weight, 17 lbs. List Price \$40.00.

YOUR PRICE

\$11.75

No. 1999 ROYAL—Straight suction. Fixed brush. Pistol grip handle. Switch in handle. Polished aluminum housing, 14 inch nozzle. Shipping weight, 18 lbs. List Price \$55.00.

YOUR PRICE

\$12.75

Attachment accessories comprising suction coupling unit, extension rod, extra long suction hose, upholstery nozzle, upholstery brush, and radiator nozzle may be had at an additional cost of \$5.00.

NEW!

G-M Photo-Electric Relay Switch

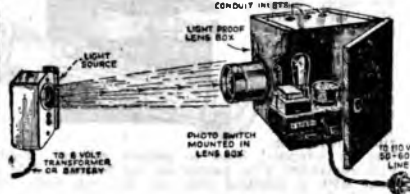
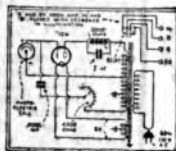
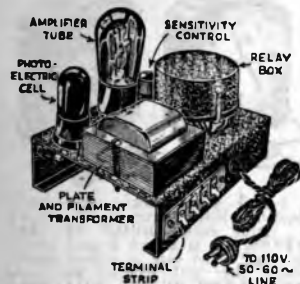
NEW!

The Ideal Photoelectric Relay for Experimental Work and Commercial Applications

FOOL PROOF OPERATION — RAPID-FIRE ACTION

The G-M Photo-Switch is an electro-magnetic switch which is operated through the medium of a beam of light. It is a REAL photo-electric relay, the first fool-proof device of its kind ever manufactured. Every part in the photo-switch has been individually designed to function at its maximum efficiency when operating in unison with the other component parts of the unit.

Just think of the many interesting, unusual and profitable things you can do with this photo-switch. One radio amateur uses the photo-switch to send his call letters, another automatically turns on his garage lights, photoelectrically when he enters his driveway; a third man uses the photo-switch to warn him of approaching intruders.



Opening garage doors

EVERY PHOTO-SWITCH COMES WITH FULL INSTRUCTIONS. LIST OF PARTS, CIRCUIT DIAGRAMS AND SUGGESTIONS FOR USE.

The G-M photo switch comes equipped with the Visi-tron type B photoelectric cells.

In order to more fully concentrate the beam of light from the light source, a SPECIAL LENS BOX was manufactured which focuses the light beam directly upon the window of the photoelectric cell.

The entire photo switch mounts inside this box in such a way as to have the window of the photoelectric cell placed squarely in back of the lens hood. This arrangement is particularly applicable to commercial installations. The photoelectric switch requires one 112A amplifier tube. All of these units may be bought separately — as desired.



Counting patrons as they file into theatre

Photo-Switch without Lens-Box

Schematic Circuit of Switch

Typical Set-Up of Photo-Switch in Lens-Box

Service Men and Experimenters—A Vast Profitable Field For You

On the practical side, consider the tremendous commercial possibilities of the Photo-Switch. Radio at one time offered the same opportunities. Just recall the amateur radio fans who not only received employment from the new radio industry but turned it into a lucrative profession.

While the development of the radio art was limited only to the radio industry, the applications of photo-electricity are universal. The use of photoelectric cells is still in its infancy. To the man who is interested in earning money through his technical knowledge and skill the photo switch opens up many channels. Stores, apartment buildings, service stations, restaurants, public buildings—ALL are logical prospects for the Photo-Switch. How many progressive up-to-date stores are there in your city or neighborhood? Ask them how valuable their display windows are to them. Then ask if they will be interested in increasing their value. The answer to this question is of course—yes. You can then point out to them the advantage of leaving their windows dimly lighted (or not lighted at all—at night) until a pedestrian approaches and then have it automatically flooded with light. The attraction value of the sudden illumination is tremendous—people simply MUST look! It's natural for them to do so!

Applications of the Photo-Switch

1. Opening garage doors.
2. Automatically sending and repeating amateur call letters.
3. Street light control; traffic control; electric sign control.
4. Opening and closing doors in restaurants, warehouses, etc.
5. Fire alarms; burglar alarms.
6. Protection against trespassing.
7. Detection of noxious fumes.
8. Automatic control of illumination in schools, offices, stores, etc.
9. Photoelectric engraving.
10. Counting and sorting devices for production work.
11. Controlling the level of liquids in tanks, or grain and coal in bins and shipholds.
12. Turning lights on at dusk or off at dawn. And an untold number of other uses.

No. 1222B — Photo-Switch, fully assembled and wired but less 112A tube.

YOUR PRICE

\$19.36

No. 1227A — Six Volt Light Source. Overall dimensions 4 1/2" high x 3" wide x 5 1/4" deep. YOUR PRICE

YOUR PRICE

\$5.43

No. 27-3A — Lens Box for 1222B. Size of Box 8" cube.

YOUR PRICE

\$8.10

FEDERAL SHORT WAVE KITS



15 TO 550 METERS
CONSISTANT EUROPEAN
RECEPTION

Easy-To-Build Kits for
Short-Wave Beginners

This new line of Federal kits feature the ultimate in the field of Short Wave Radio Reception.

They are equipped with an all broadcast type vernier dial, complete set of 5 coils ranging from 15 to 550 meters, chassis of heavy steel with black crackle finish as well as panel; silver contact regeneration control for smooth action; complete blueprints and instructions, all necessary wire-screws and parts.

Federal 1-One Tube Battery Kit — A battery operated short wave receiver which covers from 15 to 550 meters. Police signals, amateurs, foreigners, transatlantic phone stations. Uses 1-230 tube, 2-1½ volt dry cells and 1-45 volt "B" battery. Shp. wt. 5 lbs. List Price \$12.00.

No. K100.
YOUR PRICE \$6.00

Federal 2-Tube Battery Kit—Similar to the one tube, only here we can actually operate a loud speaker on some stations because of the addition of another 230 tube which makes the signal much louder. Uses 1-230 detector and 1-230 as first audio, 2-1½ volt dry cells, 2-45 volt "B" batteries. Shpg. wt. 6 lbs. List Price \$14.25.

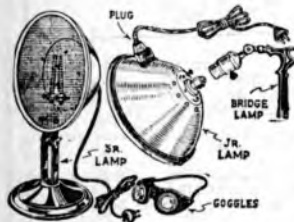
No. K101.
YOUR PRICE \$7.12

Federal 2-Tube A.C. D.C. Kit — The latest in efficient small sets.—Same layout as the battery sets but with no necessity for either A or B batteries. Simply plugs into the A.C. or D.C. line. Uses the latest type dual 6F7 tube as detector and one stage of audio and 1-37 as rectifier. Foreign reception is most consistent with this set. Shpg. wt. 6 lbs. List Price \$16.50.

No. K102.
YOUR PRICE \$8.23

Ultra-Violet Sunshine at the Lowest Price in the World

Expensive Sun Lamps Can Do No More



These full-strength therapeutic health lamps, radiate not only ultra-violet rays, but infra-red as well. Consider what this means—the infra-red or heat rays first open the pores of the skin, thereby paving the way for the ultra-violet rays to enter and deliver

their full benefits without any hindrance. **THIS IS EXACTLY WHAT MORE EXPENSIVE SUN LAMPS DO**—so why pay more. In fact, some of these expensive lamps do not even have the infra-red radiators, but only the ultra-violet.

These lamps are constructed in such a simple manner that nothing can possibly go wrong with them. There is no complicated mechanism whatever to get out of order. Available in two models; viz., the SUN-MITE JR., or screw-in type, which utilizes an ordinary floor or table lamp for support, and the SUN-MITE SR, which has a base of its own. Both types use 8 mm. carbons and operate on 110-120 volts, either A.C. or D.C. The SUN-MIT JR. measures 8¼" high x 6½" wide x 5" deep. An ordinary appliance cord set may be used for current supply. The SUN-MITE SR measures 15" high overall x 8¼" wide x 6" deep. Both models are furnished complete with carbons and goggles. The Jr. model is less cord; the Sr. model includes cord. Shp. wt., 3 lbs. each.

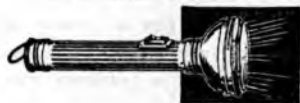
No. 1983 SUN-MITE JR. Sun Lamps. **\$1.65**
YOUR PRICE
No. 1984 SUN-MITE SR. Sun Lamps. **\$2.25**
YOUR PRICE

Special Focusing Spotlight

The same finger which operates the switch on this flashlight may also adjust the focusing range. This is its special feature. Beautifully finished in highly polished, ribbed chromium. Has an octagonal head to prevent rolling. Equipped with convenient ring hanger on the bottom. Sold complete with 2 standard cells and 2.5 volt bulb. Shp. wt., 1 lb.

No. 200 Special Focusing Spotlight. **\$0.62**
YOUR PRICE

Powerful Focusing Searchlight



The flashlight listed herewith are made of the finest material available, and will give maximum life under ordinary operating conditions. The No. 500 uses 5 regular dry cell units in conjunction with a six-volt bulb and throws a brilliant 1800 ft. beam. The No. 526 uses 3 regular cells in conjunction with a 3.5 volt bulb and throws a 1500 ft. beam. Both are finished in highly polished, ribbed nickel and have special lockswitch contacts. A convenient ring hanger on the bottom of each flashlight provides for carrying on one's belt or on wall. Both flashlights are furnished complete with cells. Shp. wt., approximately 3 lbs.

No. 500 1800 Ft. Beam Flashlight, complete with cells. **\$1.30**
YOUR PRICE
No. 526 1500 Ft. Beam Flashlight, complete with cells. **\$0.93**
YOUR PRICE

"Measured-Time" Electric Time Switch

A Veritable Electrical Robot



"Measured Time" is an instrument of wide and varied service. Although primarily a precision electric clock, on a predetermined minute it gives a clear-toned signal indicating that the cooking is ready or that the toast is just starting to burn. There are indeed innumerable uses to which this precision timekeeper may be placed. These "Measured Time" clocks were developed and precision-built to meet the requirements of scientific laboratories, hospitals, schoolrooms and home kitchens. All over the nation they are standing watch over various processes where the slightest lapse in time means ruination of something or other. Any one of the thousands of uses will tell you of the host of duties these instruments perform day in and day out with accurate, dependable precision.

The signal which "Measured Time" emits may be adjusted as to pitch and duration. A specially calibrated dial on the front of the clock permits pre-setting of the signal gong to any predetermined minute. Has guaranteed precision movement. "Measured Time" simply won't let you forget. It will help you get that job done on time. This instrument is housed in a beautiful and sturdily constructed moulded case and may be had with either black, smooth ivory or beautiful onyx finish.

This clock is available in a spring-powered model as well. This model is just as accurate as the electric one and is guaranteed against poor workmanship for a period of two years. Shipping weight, 6 lbs.

List Price \$9.50
No. 1689 "Measured Time" Electric Clock. **\$9.50**
YOUR PRICE

List Price \$4.95
No. 1647 "Measured Time" Spring-Powered Clock. **\$4.95**
YOUR PRICE

"Paris" Electric Alarm Clock

Manufactured by the Hammond Clock Company

Here is a genuine Hammond manufactured electric clock made to the exacting specifications of the more expensive Hammond models. The price being so extremely low there is no longer any reason why anyone should consider buying the old-fashioned ticking alarm clocks. This model will deliver synchronous electric accuracy not possible with the ordinary spring clock. **BUILT TO LAST MANY, MANY YEARS.** It is indeed a good investment at twice its price. The case is walnut colored Bakelite with a large, clear dial, trimmed with brass finished Bezel. **THE ALARM BUZZER WILL RING FOR 45 MINUTES, STEADILY**—unless it is turned off by means of a control switch in back of the clock. Quantity production alone makes it possible to offer this amazing value. Each clock is individually packed in a beautiful gift box. Size 3¾" wide x 4¼" high. Diameter of dial, 3". Shp. wt., 2 lbs.



No. 1688 Paris (Hammond) Electric Alarm Clock. **\$2.75**
YOUR PRICE

New Lantern Flashlight

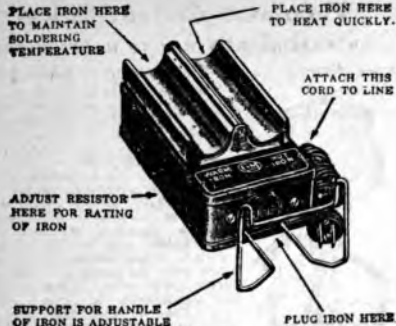


Requires 2 standard cells and ordinary bulb to operate. Throws a strong, steady beam of light. Has device for fastening to bicycle, hanging on wall, or coat-button. Excellent for use as an emergency light on automobiles. Small, compact, and well built. Shp. wt., 1½ lbs.

No. 1000 New Lantern Flashlight.

\$0.43
YOUR PRICE

Electric Soldering Iron Stand for Perfect Heat Control



Soldering troubles arise primarily from irons becoming overheated, while tinning. This new and ingenious device completely eliminates these troubles, thereby increasing the life of the iron indefinitely.

The illustration shown herewith speaks for itself. The use of this stand reduces power consumption by 30 to 40 per cent; eliminates the necessity for frequent cleaning of tip; prevents overheating and pitting of copper tip; keeps the iron tinned for weeks at a time and unquestionably improves soldering connections. The stand is complete in every respect—ready for immediate use. Will accommodate practically all types and sizes of irons. Completely eliminates the fire hazard. Ship. wt., 4 lbs.

No. 3520 Electric Soldering Iron Stand. **\$3.96**
YOUR PRICE

"Eagle" Sun Bowl Glow Heater

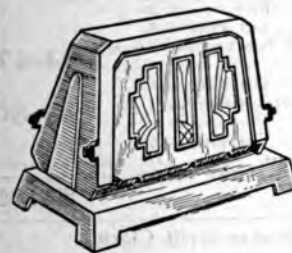


No home, office or laboratory should be without one of these useful heaters. Heavy coppered bowl, highly polished and lacquered. Heavy ornamental, cast-iron base prevents heater from tipping over. Removable copper-plated, lacquered guard for easy cleaning. Adjustable pivot enables user to focus heat at any desirable angle. Base and back finished in rich, antique bronze. Sold complete with cord and glowcoil element. Designed for 110-120 volts, either A.C. or D.C. May also be had for 32, 220, 240 and 250 volts at an additional cost of 20c.

No. 500 "Eagle" Sun Bowl Glow Heater **\$2.40**
YOUR PRICE

New Modernistic Electric Toaster

Toasts Both Sides



This smartly designed toaster includes all modern improvements such as mica element, special cold-rolled steel, copper flashed and heavy chrome or nickel plated. The toaster is beautifully designed along modernistic and futuristic lines. By merely turning the sides the toast is automatically flipped over from one side to the other.

Here indeed is a toaster for which the public has been waiting for a long time. It is beautifully designed and low priced.

HERE ARE SOME OF ITS SPECIFICATIONS. Mica element, Underwriter's approved heater cord, terminal connections, standard plug cap with disc, coil fibre handles and fibre insulation bushing in base, steel terminal guard. Measures 7 1/2" by 6 3/4" by 5 1/2". Each toaster is individually packed. May be had either nickel or chrome plated, please specify which when ordering. Shipping weight, 2 1/2 lbs.

No. A-825-N Nickel Plated Modernistic Toaster. **\$1.35**
YOUR PRICE

No. A-825-C Chrome Plated Modernistic Toaster. **\$1.50**
YOUR PRICE

"E-Z Kleen" Electric Toaster

Toasts Both Sides



A toaster has always been an article that was hard to keep clean due to the inaccessibility of its various parts. The construction of this toaster however, is such that by the mere pressure on a lever the entire top lifts up, exposing every part that requires cleaning. It is as easy as wiping off a shelf.

This new model turns the toast mechanically with the opening and closing of the side doors. The unit is thoroughly constructed of the finest component parts. A heavy duty mica element is used.



Contains a special heavy duty mica element. Underwriter's approved heater cord, standard plug cap with disc, large fibre insulating feet, etc. Measures 8" by 7" by 5 1/2". Shipping wt., 2 3/4 lbs.

List Price \$3.00
No. 840 Nickel Plated "E-Z KLEEN" Toaster, wood handles. **\$1.72**
YOUR PRICE

REMINDER

USE RUSH ORDER BLANK ON PAGE 104.

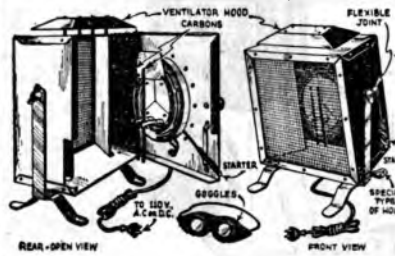
Replacement Cone Glowcoils

Genuine nichrome replacement elements for electric bowl heaters, porcelain supporting structure with standard Edison screw base. Shipping weight, 1/2 lb.

List Price \$0.35
No. 3902 Replacement Glow Coils. **\$0.21**
YOUR PRICE

Genuine Ultra-Violet Sunshine Lamp

New 1934 Model
Guaranteed For One Year
A \$100.00 Lamp For \$40.05



This health-ray lamp is a remarkable bargain. Users of this lamp receive the same benefits which are derived from lamps which cost from \$100.00 to \$150.00. They are equivalent in strength to the machines which are used in many large hospitals. IT IS REALLY TWO LAMPS IN ONE. Not only does it produce ultra-violet rays, those invigorating rays which destroy germ life and stimulate glandular functioning, but an especially designed generator produces AT THE SAME TIME THE WARM INFRARED RAYS which stimulate circulation, soothe, comfort and penetrate deeply into the living body tissues—healing and preventing illness.

A few minutes in the morning or evening with this lamp will keep you physically fit. The lamp is rated at 1,000 watts and is designed to operate from 110-120 volt source, either A.C. or D.C. May be used with either 6, 7 or 8 mm. carbons. The resistance coil (infra-red radiator) is of the very best nickel chrome wire and operates with a wide margin of safety. Complete instructions for the care and operation of this machine are included with each unit. Every lamp is sold complete with goggles, carbons, and guarantee registration card.

This lamp is available in both a table and floor model as illustrated above.

List Price \$4.50
No. 15T Table Model Health-Ray Lamp. **\$3.60**
YOUR PRICE

List Price \$7.00
No. 15F Floor Model Health-Ray Lamp. **\$5.60**
YOUR PRICE

New "Hospital-Type" Sun Lamp

Generates Both Ultra-Violet and Infra-Red Rays



This oversized sun ray lamp does more than what the ordinary lamp will do. It produces not only ultra-violet rays but infra-red as well. These latter rays are heat rays which open the pores of the body, thereby preparing an easy path for the ultra violet rays (which are the true health-giving rays), to enter and be most effective. The only difference between this and \$100.00 lamps lies in its construction. But so far as the benefits derived are concerned, there is no difference whatsoever.

A lamp of this type is simply constructed but will last for many many years. The only parts that require attention are the carbon elements which necessarily wear out even in more expensive lamps. Provisions are made to easily replace these carbons when burnt out.

It is an easy matter to operate this machine. You merely plug in the line cord which is furnished and bring the two carbon pole pieces together by means of an external bakelite knob. Then merely releasing the knob, immediately starts the lamp. The heat rays are produced by a special wire element in the rear of the lamp.

In operation it is normal for the carbons to flake off at the tips. A screen cover is provided to prevent these carbon flakes from leaving the lamp reflector. The machine is mounted on a heavy cast metal base and operates on swivel points so that it may be used in any position desired. Sold complete with a set of carbons, goggles and line cord. Ship. wt., 10 lbs.

No. 1956 New "Hospital-Type" Sun Lamp. **\$3.38**
YOUR PRICE

New Infra-Red Hair Dryer and Health Lamp



Here is a practical lamp at a practical price—an Infra-Red lamp of ample size to be highly efficient both as a body stimulator and as a hair dryer. It is an indispensable item around sick rooms, hospitals or traveling camps. Used extensively in treating colds and similar ailments and for making salve and ointment applications more effective. It is simply but sturdily constructed and has a special handle which permits it to be used either as a hand machine or, through the use of a special base which is furnished with it, as a table lamp.

SPECIFICATIONS. Has a highly finished and adjustable 7 1/2" reflector, coiled Chromel element for 110 to 120 volt—450 watts. Sold complete with Underwriter's approved cord and black enameled hand-died stand. Measures 7 1/2" by 4 1/2" by 14". Packed individually. Ship. wt., 2 1/2 lbs.

List Price \$3.00
No. 300 Infra-Red Health Lamp. **\$1.50**
YOUR PRICE

THE CLOK-TROLA RADIO SWITCH

An Electrical Robot

Of all electrical time switches ever devised, this Clok-Trola is the most ingenious and most foolproof yet!

While primarily, an electric clock in a beautiful walnut-finish bakelite case, it will do many things in addition to giving you the correct time. It keeps perfect time and is well worth the price as a clock alone. Furthermore, it acts as a sentinel to start or stop your radio at any desired time. **YOU MAY SET THE CLOCK FOR AN ENTIRE DAY'S PROGRAM AND THEN FORGET ENTIRELY ABOUT IT.** The clock will then turn on and off the stations which you have preselected, all at the proper time. For instance—stock reports 6 A.M. till 6:20., cooking lessons from 10 A.M. to 10:40 A.M.; noon program from 12 to 1 P.M.; something else at 3 P.M. and so on round the clock. Your radio turns on and off automatically.

THE CLOK-TROLA IS A DEPENDABLE SERVANT The Clok-Trola may be used to automatically control any electrical device. It will turn on or shut off a furnace, refrigerator, percolator, or bottle warmer at any desired hour with equal dependability. Just connect Clok-Trola to any electric heating device—set the time wanted and, lo and behold, it's done. The bed-warmer pad can also be regulated to just the temperature desired. The Clok-Trola is really an electrical memory which never fails to turn on the radio or any other electrical device at exactly the right moment and never forgets to turn it off when the program is concluded.

ITS USES ARE INNUMERABLE

There are so many little jobs this device can perform. It is impossible to list them all. It allows the radio to be used as an alarm clock in the morning or as a musical sleep inducer at night. It obviates the nuisance of listening to a poor program for fear of missing the desirable program following. In a business office, the Clok-Trola may be used to turn on a radio automatically for market reports and news broadcasts and shut it off when they are over.



Do you ever feel uneasy about the house being dark, and a temptation to a burglar when you go visiting? Why not connect a lamp stand to Clok-Trola, set it for the time you wish the light to come on, and the time to go off, and you need to have no more worries over a dark house. In fact, it can be set for one night, or for every night until you return home. This little robot not only saves many steps, but will also relieve you of many worries.

HOW THE CLOK-TROLA OPERATES

It is equipped with 36 small keys set in a circle around the dial at 20-minute intervals. These keys control an automatic electric switch. The operation is very simple. The clock is plugged into an electric socket in the ordinary way. A radio or any electrical device is plugged into the receptacle on the back of the clock.

To set the Clok-Trola for automatic operation of the radio at any particular time, the key opposite that time is turned. One key operates the radio from the time chosen until 20 minutes after the time. Any number of keys may be turned simultaneously. Thus, to set the Clok-Trola for operating the radio from 8 to 9 the 8:00, 8:20 and 8:40 keys are turned. When 8 o'clock arrives the radio will turn on and at 9 o'clock it will turn off.

SPECIFICATIONS: A small switch on the base allows the automatic control to be cut out at any time. **CASE—**Of beautiful walnut finished bakelite moulded in a handsome shape. **MOTOR—**High Grade electric motor assuring long trouble free service and accurate time-keeping. **DIAL—**Fine silver finish with 3 1/2 inch concave lens. Full sweep second hand and large easily seen hour markings. Ship. wt., 5 lbs.

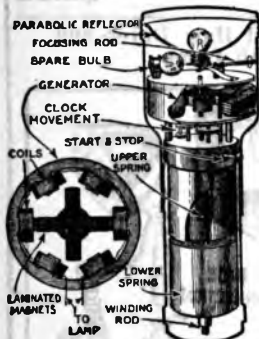
DIMENSIONS—The Clok-Trola stands 7 inches high by 7 1/2 inches wide.

No. "M" Clok-Trola Radio Switch **\$7.50**

YOUR PRICE

NEW! NEW! NEW! Batteryless Dynamo Flashlight

A Power Plant in a Flashlight



Here is the most ingenious electrical device ever manufactured. It is a complete electric generating plant condensed into the confines of an ordinary flashlight holder. Requires no batteries of any kind; needs no adjustments whatsoever; not affected by any weather conditions; always ready to make its own light; a most useful and indispensable companion for a lifetime. Long service does not hurt it.

IN FACT, THE MORE IT IS USED, THE MORE EFFICIENT IT BECOMES.

The material and workmanship are the very best obtainable.

GUARANTEE

X-Section View of Dynamo Flashlight

AGAINST MECHANICAL AND MATERIAL DEFECTS FOR A PERIOD OF ONE YEAR. Can be kept running indefinitely and will give a strong dependable light for as long as it is necessary by merely turning the handle occasionally. The motor generator equipment is operated by a double-deck spring which is wound by twisting the handle. Pressing the button sets the motor in motion and operates a wonderful, small and compact dynamo which produces the current for a 2 1/2 volt light. There is absolutely nothing whatsoever to get out of order and nothing to deteriorate. A small adjustment is provided in the head of the flashlight to focus the beam of light. Should the bulb, by any chance, burn out, a spare one is cleverly tucked away beneath the deflector for just such an emergency. Put up in a neat baked-enamel case which will resist rust and corrosion. Measures 3 1/2 in. long x 3 in. across the head. Shipping weight, 7 lbs.

List Price \$10.00

No. 4401 Batteryless Dynamo Flashlight. **\$7.00**

YOUR PRICE

"Housephone" Telephone Set



These telephones are not toys but honest-to-goodness phone equipment which compares excellently with standard telephones. They will operate efficiently up to 250 feet with three No. 6 dry cells. For each additional 300 feet an extra dry cell must be added.



NO TECHNICAL KNOWLEDGE WHAT-EVER IS REQUIRED TO INSTALL THEM. Not connected in any way with any power line. The telephones are well made, attractively finished, and individually boxed. Each telephone incorporates an extremely sensitive microphone and equally sensitive ear piece.

40 feet of 3-conductor wire is furnished free with each set. Each telephone is finished in beautiful olive-green enamel and contains a red push-button switch for signalling the other end of the line. The entire outfit presents a dignified, professional appearance when mounted on the wall. Ship. wt., 7 lbs.

List Price \$6.00

No. 4441 "Housephone" Telephone Set. **\$5.25**

YOUR PRICE

Gentlemen:

I have received the automobile set and eliminator, and now have them mounted in my car. **THE RECEPTION IS PERFECT.**

ALTON FISCHER,
Dallas, Texas.

Gentlemen:

"I am very pleased with my Short Wave Set. Already I have picked up Police Calls and have received W3XAL in New Jersey and KDKA in Pittsburgh.

I am entirely satisfied with my set and think it is a cheap one at the price I paid."

RAYMOND MILLARD,
Washington, D. C.

NEW! NEW! NEW!

Vaculator Coffee Brewer

AN AMAZING NEW WAY TO MAKE COFFEE

Saves Money! Gives Finer Flavor! Non-Injurious!



The outstanding and most popular beverage everywhere is a cup of coffee. Its method of preparation, however, is very often a case of "hit or miss"—guess work!

When coffee is boiled the old-fashioned way, the boiling process is invariably overdone. Not only is the rich flavor of the coffee boiled away, but the excess heat precipitates a chemical reaction which forms tannic acid and an excess of caffeine. These two compounds combined give the coffee a bitter, puckering taste, which aside from being disagreeable is quite harmful.

This is also true of coffee prepared in a metallic percolator.

THE VACULATOR brews coffee in a manner which is superior to any other known method or principle. This is due to the fact that the coffee is brewed at a controlled temperature of approximately 180°F to 200°F. Coffee contains approximately 90 per cent fibre and 10 per cent aromatic oils. These aromatic oils are the substances which impart the pleasing flavor to coffee. Now, when the coffee is boiled at a temperature of 212°F (the boiling point of water) or higher, these aromatic oils are volatilized and driven off and at the same time the caffeine and (very undesirable) is extracted from the coffee bean and left in the solution.

With the **VACULATOR**, however, the temperature of the coffee is controlled **BELOW THE BOILING POINT** thereby permitting the valuable oils to remain in the coffee. This method of making coffee is, therefore, aside from being highly efficient, quite economical inasmuch as none of the ingredients are boiled off. These ingredients are a saving of one half cent on each cup of coffee made by the **VACULATOR**. All the glassware is made of Pyrex glass which will not crack upon sudden heating. Metal trimmings are chromium plated and will not tarnish.

EASY TO OPERATE

You place enough water, (either hot or cold) which give you the desired amount of coffee, in the bottom vessel. In the top vessel you place the coffee grounds. When the water in the bottom is heated, a steam pressure is created which gradually forces the water up a funnel-like tube into the upper vessel. When all the water in the bottom has been forced to the top (where the coffee brewing actually takes place), the heat is removed. As soon as this is done, the sudden decrease in temperature creates a vacuum in the lower section of the **VACULATOR**. ("Vaculator" is derived from the two words vacuum and percolator), which sucks down the coffee solution through a filter in the neck of the upper chamber. This upper chamber is then removed and the coffee served from the lower vessel (called a "Decanter"). A handle is provided for this purpose. Full instructions for using the **VACULATOR** accompanies each unit. Available in two sizes, the one with a capacity of 7 cups (32 liquid ounces and another with a capacity of 10 cups or 42 liquid ounces). These **VACULATORS** may be used either on a gas flame or with an electric-heating unit. Ship. wt., 12 lbs.

List Price \$3.95

No. "Fireside" 7 Cup Vaculator Brewer **\$4.47**

YOUR PRICE

List Price \$6.75

No. V 10 Cup Vaculator Brewer **\$4.80**

YOUR PRICE

List Price \$2.50

No. EHSW Electric Burner. For above Vaculators, 660 Watts, 110 Volts, complete with plug and cord. **\$1.95**

YOUR PRICE

Speaker Grill Cloth

Exceptionally well woven metallic fabric cloth 10" square for gracing speaker grill openings of both regular and midget type consoles and cabinets. Once set in place it will neither sag nor stretch but will retain its same fine appearance throughout the life of the console. An attractive, futuristic design is permanently woven into the fabric with silver-colored silk thread.



No. 1569 Speaker Grill Cloth. **\$0.20**

YOUR PRICE

LATEST NOVELTIES AND INVENTIONS

NEW! NEW! NEW!

Six-in-One Fuse Plugs

The Fuse With Six Lives



Every unit is actually the equivalent of 6 house fuses—yet is no larger than the ordinary fuse. Convenient, safe, always ready to use in an emergency. Has six times the life of an ordinary fuse.

Fuses blow out at most unexpected moments—it happens to everyone. Guests may be visiting. There may be a party or a gathering—perhaps a sick person relying upon electricity! Suddenly—no light—no power—and worse yet—no fuses!

Avoid those unfortunate, embarrassing moments by having Six-in-One Fuses in the fuse box. The fuse of the room is suddenly thrown into darkness, take hold of the little knob, turn it once—and click—a turn to the right brings back the light!—and power.

CONVENIENT—SAFE—ECONOMICAL. This amazing device is worth its weight in gold. Saves time, trouble and temper. By comparison it costs less than six ordinary fuses.

EXTRA MONEY FOR THE SERVICE MAN
While awake Service Men will fully realize the potentialities of this new and truly ingenious device as a medium for earning extra money incidental to their regular service work. Six-in-One Fuses are sturdily and scientifically constructed of improved materials and are guaranteed to perform perfectly under all weather conditions. **APPROVED BY UNDERWRITERS LABORATORIES.** Available in 15 amp.—125 volt sizes for ordinary household use and 30 amp.—125 volt sizes for heavy duty work. Fit all standard fuse sockets. Sold only in lots of four or more. Shipping weight, 12 oz. per four units. List Price \$0.25 ea.
No. 3023 Six-in-One Fuse Plugs.
YOUR PRICE, each \$0.15
12 for \$1.65

Golf Caddy Cigar Lighter

Entirely Automatic—Never Misses



A modern, ornamental cigar lighter made of the most durable material and construction. The lighting mechanism is guaranteed to be absolutely fool-proof, employing hard steel against flint at the striking point. Merely press the handle of the golf bag and up flies the top of the bag revealing a cheerful flame, ready to serve.

Made for a lifetime of unflinching service; nothing but the flint to wear out. Incorporates a large, practically airtight fuel chamber which reduces fuel evaporation to an absolute minimum—one good filling will last for weeks.

Here indeed is the most practical and most beautiful ornament ever created. A remarkable life-like reproduction of a golf caddy in burnished chrome finish. It is not necessary to lift the entire statue when using. The golf bag is so designed that it easily slips off its concentric base and is as easily put back. Measures 9 1/4 ins. high. Shipping wt. 7 lbs.

List Price \$6.00.

No. 4403 Golf Caddy Lighter.
YOUR PRICE \$4.10

Gentlemen:
I received the order O.K.
I am very much satisfied with the material you handle and which you sent me in my recent order.
D. E. ROBY, Moorecraft, Wyoming.

NEW! NEW! NEW!

Electric Writing Pencil



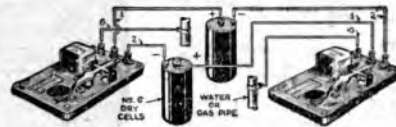
And now write by electricity! Imagine engraving your name or initials in silver or gold on practically any material. As easy and as simple as writing with an ordinary pencil. The writing or lettering you do with the new Electric Pencil is impressed with heat right into the leather paper or other material, and therefore, does not smudge or rub off as is the case with other methods of writing or printing. The imprint is clean and sharp. Lines may be thin or broad, just as desired. Will "write" on practically all material; wood, paper, leather, cellophane, etc.

Using the Electric Pencil is the simplest thing in the world. Merely attach the cord to any light socket, AC or DC, lay a piece of gold foil (furnished with the pencil) on the greeting card or other object, and write or print exactly as you would if tracing a drawing with carbon paper.

The heating element is an improved design which automatically controls the temperature. **THERE IS NO DANGER OF BURNING OR OVERHEATING.** It is light, and well balanced in the hand. You can safely grasp the pencil to within a short distance of the point. This makes for easy, natural and smooth writing. Sold complete with a 3 1/2 ins. x 100 ins. roll of gold foil. Additional rolls may be had for 25c each. Shipping weight, 2 lbs.

No. 4407 Electric Writing Pencil
YOUR PRICE \$1.75

Signal Twin Wireless Practice Set



Here is a practical, instructive and scientific device that every modern boy, man and prospective radio "bug" should have! The set operates efficiently up to 1,000 feet on any standard dry cell battery. Will operate greater distance however, provided a sufficient number of batteries are added. **EACH INSTRUMENT IS A COMPLETE SENDING AND RECEIVING UNIT,** equipped with a key, buzzer and code plate mounted on a metal base. Rubber feet on the base protects table tops. Full instructions for connecting and operating are included with each set. The buzzer on each key is accurately set at the factory to oscillate at very high frequency—one which closely imitates the actual pitch of the signal received through the air. One of these sets is actually used in our very offices for inter-office communication. Attractively enameled in maroon with gold trimmings. Each set is individually boxed. Furnished with 75 feet of wire.

List Price \$3.00

No. R-70. Signal Twin Wireless Practice Set.
YOUR PRICE \$2.03

"Vogue" Thermometer

Easy Reading Thermometer

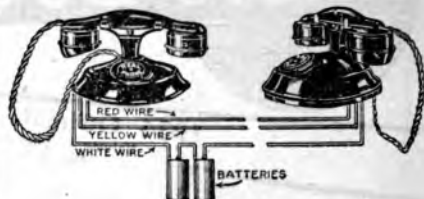


A new type of thermometer unsurpassed for beauty, utility and remarkable performance. Thermostatically controlled and more accurate than the average room thermometer. Requires no adjusting what soever. Makes a fitting necessity for the home or office as well as serving a highly utilitarian purpose. The case is made of porcelain with a new kind of durable finish in two-tone color design. One of its outstanding features is its beautifully silvered dial with large black numerals which are easily read from a great distance. The dial and pointer are protected from injury and dust by a frontal glass pane. Measures 5 1/2 ins. long at the base, 3 1/4 ins. high and 1 1/2 ins. wide. Shipping weight, 3 lbs.

No. 4404 "Vogue" Thermometer
YOUR PRICE \$0.98

"Real Phone" Inter-Communication Telephones

French Style Phones—Work with Dry Cell Batteries



These telephones are the result of 37 years of manufacturing and specializing in telephone engineering and are fully guaranteed for one year against electrical or mechanical defects. They afford the easiest, simplest and most inexpensive means of communication between two neighboring points. **WILL OPERATE EFFICIENTLY UP TO 4500 FEET. NO TECHNICAL KNOWLEDGE WHATSOEVER IS REQUIRED TO INSTALL THEM. NOT CONNECTED IN ANY WAY TO ANY POWER LINES. OPERATE FROM TWO DRY CELL BATTERIES.** These dry cells will last from 8 to 10 months with average use. The phones are compact and good-looking—French de k-type style—available in either ivory, green or black. Incorporate extremely sensitive microphones and receivers which will maintain the efficiency over long periods. These telephones are shipped directly from the factory which is centrally located in Chicago to insure prompt and proper deliveries and avoid excessive shipping charges. Packed in strong, attractively-labeled carton with 35 feet of 3 wire cable. Complete instructions for installing and operating included with each set. Shipping weight, 8 lbs.

No. 4411 "Real Phone" Inter-Communication Telephones.
YOUR PRICE, per set (less batteries) \$3.95

"Eho" Midget Box Camera

Picture Size 1 1/2 ins. x 1 1/4 ins.

Here, indeed, is the smallest box camera ever made commensurate with faithful photography under even adverse conditions. Measures but 2 1/4 ins. square. The "Eho" is very economical to operate. Takes 16 pictures on vest pocket size film which are obtainable everywhere as a standard size. **MANIPULATION IS SO SIMPLE THAT A CHILD CAN EASILY LEARN TO TAKE PICTURES IN A VERY SHORT TIME.** The "Eho" is a dependable, well constructed instrument, equipped with an exceptionally fine double lens which is very much superior to, and faster than the single lens usually supplied with ordinary box cameras—in fact so much so that **ADVERSE WEATHER CONDITIONS NEED NO LONGER PRESENT AN INSURMOUNTABLE DETERMINANT TO THE PHOTOGRAPHER.** The "Eho" is a beautifully made instrument covered with leatherette with bright metal trimmings. Provided with two exceptionally clear rangefinders for snapping pictures either in vertical or horizontal positions. Will make either snap-shots or time exposures. Produces clear cut negatives capable of enlargement without apparent loss of detail. Shipping weight, 1 lb. Uses standard film V12—1 1/2 x 2 1/4 ins.
No. 182 "Eho" Midget Box Camera
YOUR PRICE \$3.42

"Ray-Bud" Combination Ash Tray and Easy-Reading Thermometer

Here is something that every man (and many women) will want! Something entirely new—decorative—useful. A combination ash tray and easy-reading thermometer. The case is made of cast metal with stately bronze finish. The thermometer is thermo-statically controlled and is more accurate than the average room thermometer. Requires no adjusting whatsoever. One of its outstanding features is its beautifully silvered dial with large black numerals which are easily read from a great distance. Both dial and hand are protected by glass. Entire bottom covered with felt. Packed in attractive gift box.



No. 4412 "Ray-Bud" Combination Ash Tray and Easy-Reading Thermometer
YOUR PRICE \$1.35

RADIO BOOKS that are ESSENTIAL

1934 Official Radio Service Manual

Volume I, 1934 Edition
Size 9 x 12 Inches
Over 400 Pages
Flexible, Looseleaf Leatherette Binder
Over 2000 Illustrations

Edited by HUGO GERNSBACK
BOOK IS SENT COMPLETE—NO SUPPLEMENTS
The GERNSBACK Manuals have been constantly used in reference work by leading radio set manufacturers, mail-order houses, jobbers, dealers and, most extensively, by Service Men, for whom these books are invaluable.

Diagrams and service notes, more complete than ever before in any MANUAL showing parts layouts, positions of trimmers, neutralizers, etc.; Voltage readings for practically all sets, as an aid in checking tubes and wiring; All values of intermediate-frequency transformers used in superheterodynes, with the manufacturers' own suggestions as to correct balancing; Detailed trouble-shooting suggestions and procedure as outlined by the manufacturers' own engineers—in other words, authentic "dope" right from headquarters; Values of all parts indicated directly on all diagrams. **THERE ARE POSITIVELY NO DIAGRAMS FOR WHICH PARTS VALUES CANNOT BE OBTAINED.**

Special sections for reference to A.C.-D.C. cigar box midgets; automobile radio; public-address amplifiers; tube data, covering both the old and new types; complete compilation of test equipment, analyzers, etc.; Complete list of Special section devoted to test equipment, analyzers, etc.; Free Question and Answer Service, the same as in our last two Manuals. Absolutely no duplication of any diagrams; nothing that appears in any of the previous Manuals will appear in the 1934 MANUAL. This we unconditionally guarantee.

List Price \$3.50

\$3.00

No. G-867 New 1934 Official Radio Service Manual, Vol. I.
YOUR PRICE



New 1933 Official Auto-Radio Service Manual



Volume I 1932-1933
Over 500 Illustrations
Flexible, Looseleaf Leatherette Binder
Edited by HUGO GERNSBACK
COMPLETE IN EVERY WAY—
NO SUPPLEMENTS

Every man connected in any way with the booming auto radio business needs a copy of this book immediately. It is devoted exclusively to auto-radio service "dope." In complete, understandable form. THE OFFICIAL AUTO-RADIO SERVICE MANUAL contains schematic diagrams, chassis layouts, mounting instructions, and trouble-shooting hints on all 1933 and many older model auto radio receivers. This Manual contains a "gold-mine" of information.

LIST OF MANUFACTURERS

Below will be found a list of manufacturers whose auto-radios have been included in the Official Auto-Radio Service Manual. It is the only complete book published which contains information on the sets now in use. Of course some of the older models are included.

The auto-radios made by—Atwater Kent Mfg. Co., Autocrat Radio Co., Automatic Radio Mfg. Co., Chevrolet Motor Co., Crosley Radio Corp., Delco Appliance Corp., Fada Radio & Electric Corp., Ford-Majestic, Franklin Radio Corp., Galvin Mfg. Corp., General Electric Co., General Motors Corp., Grigsby-Grunow Co., Chas. Hoodwin Co., Montgomery Ward Co., National Co., Inc., Philco Radio & Television Corp., Pierce-Arrow, Inc., Premier Electric Co., RCA-Victor Co., Inc., Sentinal Radio Corp., Sparks-Withington, Inc., Stewart Radio & Television Co., United American Bosch Corp., United Motors Service, U. S. Radio & Television Corp., Wells-Gardner Co., and Zenith Radio Corp.

List Price \$2.50
No. G-868 1933 Official Auto-Radio Service Manual.
YOUR PRICE **\$2.00**

1933 Official Radio Service Manual

Volume III, 1932-1933
Size 9 x 12 Inches
700 Pages
Flexible, Looseleaf Leatherette Binder
2,000 Illustrations

Edited by HUGO GERNSBACK
COMPLETE IN EVERY WAY—REQUIRES NO SUPPLEMENTS
In the previous Volumes 1931 and 1932, the major part of the book was devoted to circuit diagrams of commercial sets. Many readers have written to the publishers that they wished the book is taken up with information which has never before been shown in ANY book of this kind published up to now.

PARTIAL LIST OF CONTENTS
Complete operating notes, and hints from actual experience with radio receivers in the field; Complete pictorial views of hundreds of commercial receivers with additional schematic diagrams. Location of parts on the chassis and where important adjustments must be made are shown. This section alone is worth a book: Values of all intermediate frequencies used in long- and short-wave receivers, short-wave adapters for superheterodynes, and a complete section of valuable service data on superheterodynes; Latest information on combination long- and short-wave receivers for all new and converters. How to tune and service instruments; Tube-chart information on all new and construct and use modern servicing instruments; Tube-chart information on all new and old tubes; Money-making suggestions with practical data on the operation of every kind of on interference elimination, with practical data on the operation of every kind of installation and servicing; Various radio tubes of every kind in up-to-date Service Men; Complete technical data in meters of every kind; constant use by up-to-date Service Men; Complete index and cross-index.
Shipping weight, 5 lbs.

List Price \$5.00

\$4.00

No. G-847 YOUR PRICE



1932 Official Radio Service Manual

Volume II, 1931-1932
Size 9 x 12 Inches
Over 1,000 Pages
Flexible, Looseleaf Leatherette Binder
2,000 Illustrations

BOOK IS SENT COMPLETE WITH SUPPLEMENTS
The 1932 Manual crammed full of information you are looking for. A large percentage of the Manual gives you brand new information which has never appeared in print before, and cannot be found anywhere. There are over 250 pages of instructive reading matter with special diagrams illustrating the text, as enumerated below.

And when we say, on the cover of the Manual, "Complete," we mean it.

PARTIAL LIST OF CONTENTS

A step-by-step analysis of a typical radio receiver which has all the features and all possible combinations of modern radio practice; A complete Manual on the operation of all types of vacuum tube test meters and analyzers now on the market; A discussion of the operating voltages for various types of tubes, and what occurs when they are under or overloaded, is given; An exhaustive resume on the operation of the new Pentode and Variable Mu tubes, as used in the latest receivers; A complete explanation and discussion of the superheterodyne and its inherent peculiarities, with detailed instruction on the alignment of the oscillator and intermediate-frequency circuits. Complete trouble-hunting information on the superheterodynes; Operation of the various test meters and analyzers now on the market; A complete section on the construction of serviceable testing equipment; tube voltmeters, output meters, oscillators, aligning tools, etc.; An especially large section devoted to the Midget receiver. This chapter contains problems on how to service them most economically—time-saving short-cuts—where to look first for trouble; and, of course, a sub-section devoted to schematic diagrams of the most important Midget sets on the market now; Practically all of the schematic diagrams and hook-ups are now augmented by full color codings, and by the inclusion of the complete scale and coding arrangements of the individual parts, according to RMA specifications; Complete service manual on the commercial aircraft equipment now being supplied for use on commercial airways; All available new data on the commercial short-wave receivers and converters including hook-ups, diagrams, and servicing data on such receivers and converters; A complete and exhaustive chapter featuring circuits and service data on the more important public-address systems, and on talking motion-picture equipment; etc., etc.

Shipping weight, 5 lbs.
List Price \$5.00
No. G-842 New 1932 Official Radio Service Manual.
YOUR PRICE **\$4.00**



1931 Official Radio Service Manual

Volume I, 1931 and previous years
650 Pages
Over 1000 Illustrations
Flexible, Looseleaf Leatherette Binder
Size 9 x 12 Inches

Edited by HUGO GERNSBACK

BOOK IS SENT COMPLETE WITH SUPPLEMENTS

Prepared Especially for the Radio Service Man

The 1931 OFFICIAL RADIO SERVICE MANUAL is a veritable encyclopedia of service information—worth several times its price. It is invaluable not only for the Service Man, but for everyone interested in radio.

There has been collected for this manual wiring diagram and data of nearly every commercial set of which there is any available record, manufactured since 1927, and many earlier ones.

List Price \$3.50

No. G-1640 Official Radio Manual.
YOUR PRICE

\$4.50



to SERVICE MEN, DEALERS and EXPERIMENTERS!

1935 OFFICIAL RADIO SERVICE MANUAL

1,000 pages—3,000 illustrations. Flexible loose-leaf covers. Size 9 x 12 inches—yet only 1/4" thick.

Over 1,000 pages crammed full of diagrams and essential information of manufactured receivers. This Volume No. 5 starts where Volume No. 4 left off—nothing has been omitted, and none of the circuits published have appeared in previous volumes of the OFFICIAL RADIO SERVICE MANUALS.

Many circuits of old sets not previously available are included. All the latest receivers are included—all-wave sets, short-wave sets, automobile sets, midjet and cigar-box sets, etc., as well as P.A. amplifiers and equipment and commercial testing and servicing instruments.

The cumulative index is even more complete than before; including cross-references to sets sold under different trade names and type numbers that are identical with circuits printed in this or previous volumes. The index is COMPLETE, containing everything published in each one of the five manuals.

Volume 5 includes resistance data; socket layouts; I.F. data; alignment data; voltage data; color codes of wiring, cables, etc.; and the purpose of each tube in each set is clearly indicated on the diagram, wherever this information can possibly be obtained.

Tube data on the latest tubes and all previous types will be included to facilitate servicing all sets.

Free question and answer service—as included in our last three Manuals. Handy flexible leatherette cover for easy handling and reference.

No. G-346. YOUR PRICE **\$5.86**



Official Refrigeration Service Manual

Volume 1, 1933 Edition Over 450 Pages
Size 9 x 12 inches Over 2,000 Diagrams
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Edited by HUGO GERNSBACK

BOOK IS SENT COMPLETE WITH 96 PAGE SUPPLEMENT

The OFFICIAL REFRIGERATION SERVICE MANUAL has been edited by L. W. Wright, who is an expert and a leading refrigeration authority. He is a member of the American Society of Mechanical Engineers, American Society of Refrigeration Engineers, The National Association of Practical Engineers, etc.

In this Refrigeration Manual every page is profusely illustrated; every refrigerator part is carefully explained; diagrams of every known machine are furnished; special care is given to the servicing end. The tools needed are illustrated and explained; there are trouble shooting charts and other service data.

Here are some of the important chapters: Introduction to the Refrigeration Servicing Business; History of Refrigeration; Fundamentals of Refrigeration; Description of All Known Types of Refrigeration; Service Tools and Shop Equipment; Motors, Trouble Shooting, Unit Parts, Valves and Automatic Equipment; Makes and Specification of Units; Manufacturers of Cabinets, Refrigerants and Automatic Equipment; and Many other important chapters. List Price \$5.00

No. G-843 Official Refrigeration Service Manual. YOUR PRICE **\$3.75**

Official Air Conditioning Manual

352 Pages Over 600 Illustrations
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In this Air Conditioning Service Manual nearly every page is illustrated; every modern installation and individual part carefully explained; diagrams furnished of all known equipment; special care given to the servicing and installation end. CONTENTS IN BRIEF: History of Air Conditioning; Fundamental Laws; Methods of Refrigeration; Ejector System of Refrigeration; Compression System of Refrigeration; Refrigerants; Lubricating Oils; Liquid Throttle Devices; Servicing Expansion and Float Valves; Servicing Refrigerating Systems; Control Devices; Thermodynamics of Air Conditioning; Weather in the United States; The Field of Air Conditioning; Insulating Materials; Heat Transmission Through Walls; Complete Air Conditioning Systems; Estimating Requirements for the Home, Small Store, Restaurant; Layout of Duct Systems; Starting Up a System; Operating and Servicing Air Conditioning Systems; Air Filtration, Ventilating and Noise Eliminating Devices.

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In this country there are over ten million electrically operated receivers that could be modernized—by placing in them new tube types, new speaker equipment and other modern improvements. This business of improving old sets can go to the experimenters and Service Men if they will quickly jump into action.

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POINT-TO-POINT RESISTANCE MEASUREMENTS

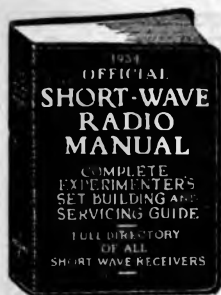
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By CLIFFORD E. DENTON

Of the difficult problems which Service Men face today when repairing receivers, the greatest is that of replacing proper resistance values in sets. This task becomes even more difficult when the values of resistors are unknown. In this book radio men will find the information needed to quickly place a receiver in normal operating condition. Sufficient space has been devoted to the elementary problems and the theory of electricity.

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Here Are Books for SHORT WAVE FANS!



1934 Official Short-Wave Radio Manual
 Volume I, 1934 Edition Over 200 Pages Flexible, Looseleaf Leatherette Binder
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BOOK IS SENT COMPLETE—NO SUPPLEMENTS
 We are pleased and proud to announce the greatest and most complete work on **SHORT WAVES** which has ever appeared in print. There has been a big boom in short waves during the past two years in spite of the depression. Tremendous progress has been made, yet up to now there has not been an adequate book depicting ALL the progress that has been made.

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1. **THE LARGEST SECTION**, featuring the most important short-wave receivers and how to build them. **EVER ASSEMBLED BETWEEN TWO COVERS.**
2. Short wave amateur transmitters in all their phases.
3. A complete Ultra Short Wave section featuring construction of 1, 5, 5 and 10 meter receivers.
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13. A section on amateur 'phone transmitters and how to build them.
14. A Short Wave Physics section on theoretical Short Wave data for the advanced experimenter, as well as student.

No. G-871 New 1934 Official Short-Wave Radio Manual. **\$2.00**
 YOUR PRICE

A Veritable Encyclopedia for the Short Wave Fan

The Short Wave Beginner's Book

40 Pages Over 75 Illustrations
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Here is a book that will solve your problems if you are new to the short wave game. It contains everything that you wish to know in connection with short waves, leading you in easy stages from the simplest fundamentals to the present stage of the art in short waves as it is known today. It is the only low-priced reference book on short waves for the beginner, whether he be a short wave enthusiast, short wave listener or short wave amateur.

The book is profusely illustrated with all sorts of illustrations, explanations and everything worthwhile knowing about short waves in this interesting and growing field.

Contents in Brief

Getting Started in Short Waves—Short Hand Symbols of Radio—Short Wave Coils and Aerials—Reducing Man-Made Static—Beginner's Short Wave Set—Increasing Volume by Adding Amplifier to One Tube Set—Tuning Short Wave Sets—Regeneration Control—Audio Amplifiers for SW sets—Coupling Speaker to Set—Learning Code—Wave Length and Kilocycle Chart—Wiring Chart—Kinks in Short Wave Construction. List Price 25c.
 No. G-872 The Short Wave Beginner's Book.
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10 Most Popular Short-Wave Receivers

How To Make and Work Them
 40 Pages Over 75 Illustrations
 Size 7 x 10 inches Stiff, Flexible Covers

This new volume is a revelation to all those who wish to build their own short wave receivers. The editors of **SHORT WAVE CRAFT** have selected ten outstanding short wave receivers and these are described in the volume. Everything worth while about every one of the ten receivers is described in the text. Each receiver is fully illustrated and each receiver has a complete layout, pictorial representation, photographs of the set complete, hookup and all worth while specifications. Everything from the simplest one tube set to a 5 tube TRF receiver is presented. Complete lists of parts are given to make each set as complete as it is humanly possible to do.

Contents in Brief

3 R.F. Pentode SW receiver having two stages of TRF—2 Tube receiver that reaches 12,500 mile mark—My DeLuxe SW receiver—Binnewag 2-tube 12,000 mile DX receiver—'Brief Case' SW receiver—Denton 2-tube All Wave receiver—Denton "Stand-By"—The "Stand-By" Electrified—Short Wave Megadyne—Coat Pocket SW receiver—SW Pentode—My Idea of a good SW receiver—A Good "One-Tube." List Price 25c.
 No. G-873 Ten Most Popular Short Wave Receivers. How to Make and Work Them.
YOUR PRICE \$0.25



Short Wave Coil Book

16 Pages
 32 illus.
 Size 7x10 in.
 Stiff, Flexible Covers



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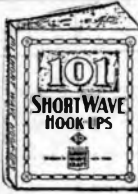
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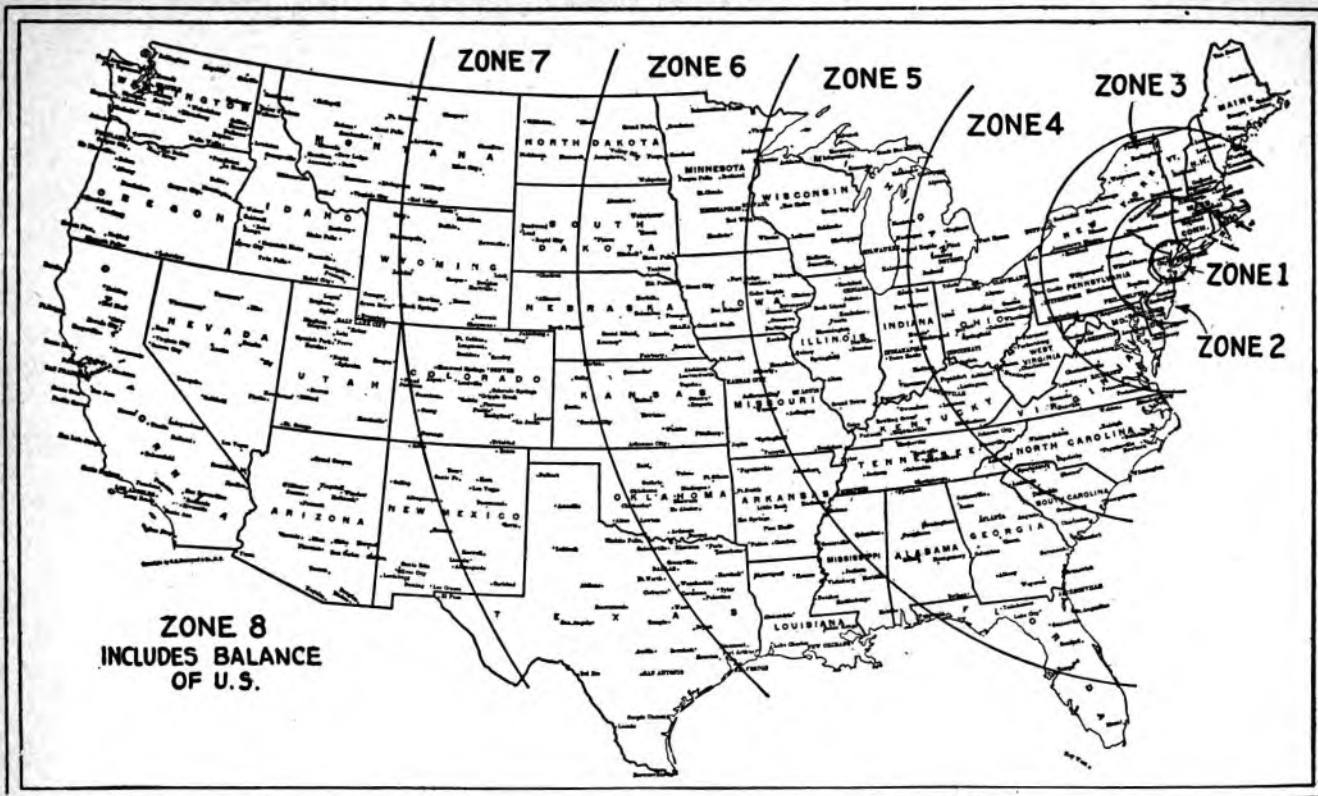
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INDEX

<p>A</p> <p>A.C., D.C. Receivers 16</p> <p>Adapters, All Types 32, 33, 34, 35, 36</p> <p>Adapters, Condenser Shaft 36</p> <p>Adapters, Earphone 36</p> <p>Adapters, Trouble Shooting 36</p> <p>All Wave Antenna Coupler 83</p> <p>All Wave Variable Condensers 88</p> <p>Aluminum Cans 88</p> <p>All Wave Coil Kits 59</p> <p>Aluminum Corner Posts 88</p> <p>Aluminum Panels 88</p> <p>Amplifiers, All Types, 40, 41, 42, 43, 44</p> <p>Amateur Transmitters 51</p> <p>Amperite Voltage Regulators 85</p> <p>Analysts 25, 26, 27, 28, 48</p> <p>Antennae, Auto 20</p> <p>Angle Brackets 91</p> <p>Angle Bracket Kit 92</p> <p>Antenna Case Spreaders 83</p> <p>Antenna Coupler, All Wave 83</p> <p>Antenna Eliminators 80, 82</p> <p>Antenna Couplers 81</p> <p>Antenna-Ground Wall Plates 60</p> <p>Antenna, Indoor Ribbon 80</p> <p>Antenna Insulators 80, 83</p> <p>Antenna Kits 80</p> <p>Antenna, Noise Free 19</p> <p>Antenna, Non-Directional 82</p> <p>Antenna Wave Trap 60, 80, 82</p> <p>Antennae, Tower 80</p> <p>Antenna Transposition Blocks 83</p> <p>Antenna Trim Condensers 53, 61, 68</p> <p>Antennae, Umbrella 80</p> <p>Antenna Wire 80</p> <p>Anti-Capacity Switches 85</p> <p>Arbors, Motor 92</p> <p>Audio Transformers 60, 70, 71, 72</p> <p>Auto Antennae 20</p> <p>Auto B Battery Box 20</p> <p>Automatic Blow Torches 92</p> <p>Automatic Record Changer 92</p> <p>Auto "B" Eliminators 21</p> <p>Auto Elec. Relay Switch 95</p> <p>Automobile Fuses 85</p> <p>Auto Generators, 110 Volt A.C., 21, 41</p> <p>Auto Ignition Condensers 20, 61</p> <p>Automobile Ignition Pilot 83</p> <p>Auto Noise Filterizer 20</p> <p>Auto Noise Suppressors 20</p> <p>Automobile P.A. Amplifier 43</p> <p>Automobile Receivers 20</p> <p>Automobile R.F. Coil Kit 61</p> <p>Auto Remote Control 20</p> <p>Automobile Windshield Defroster 83</p>	<p>Condensers, Mica 65</p> <p>Condensers, Paper 64, 65</p> <p>Condenser Shaft Couplings 80, 87</p> <p>Condensers, Transmitting 86</p> <p>Condensers, Trimming 67, 68</p> <p>Condensers, Tubular 64, 65</p> <p>Condensers, Unencased Repair 86</p> <p>Condensers, Variable 65, 67, 68</p> <p>Connectophones, Interoffice 49</p> <p>Converters, Battery to 110 V. A.C. 43</p> <p>Converters, Police 59</p> <p>Converters, Public Address 45</p> <p>Converters, Short Wave 59</p> <p>Cord Connectors 93</p> <p>Couplings, Condenser Shaft 93</p> <p>Cube Taps, Electric 93</p> <p>Current Tap, Bakelite 93</p> <p>Crystal Detectors 16, 17</p> <p>Crystal Receivers 16</p> <p>D</p> <p>Defroster, Auto Windshield 83</p> <p>Detect Light 80</p> <p>Dials, Drum 88</p> <p>Dials, Full Vision 88</p> <p>Dials, Kurz Kasch 88</p> <p>Drum Dial Cables 88</p> <p>Drum Dials 81</p> <p>Dual Speaker Amplifier, Port. 44, 108</p> <p>Dual Wave Receiver 48</p> <p>Dynamic Horn Units 37</p> <p>Dynamic Speakers 37, 38</p> <p>Dynamo Flash Lights 98</p> <p>E</p> <p>Earphones 49</p> <p>Elec. Cigar Lighter 94</p> <p>Electric Clocks 96</p> <p>Elec. Coffee Variators 98</p> <p>Electric Cube Taps 93</p> <p>Elec. Flashers 93</p> <p>Electric Specialties, 93, 94, 96, 97, 98, 99</p> <p>Elec. Stove 94</p> <p>Elec. Sun Bowl Heaters 97</p> <p>Electric Line Plugs 93, 94</p> <p>Elec. Time Switches 96, 98</p> <p>Elec. Toasters 97</p> <p>Electric Wall Outlets 93</p> <p>Elec. Writing Pencil 99</p> <p>Electrolytic Condensers 64, 65</p> <p>Eliminators, Antenna 80, 82</p> <p>Eliminators, Auto "B" 21</p> <p>Eliminators, "B" 72</p> <p>Exhiler, Speaker Field 72</p> <p>Exponential Horns 37</p> <p>F</p> <p>Fahnestock Clips 89</p> <p>Filament Transformers 89</p> <p>Filament Transformers, Transmitting 89</p> <p>Filterizer, Auto 20</p> <p>Filter Chokes 71, 72, 73</p> <p>Filters, Line Noise 19</p> <p>Five-Meter Coil Kit 58</p> <p>Flash Lights, Battery 96</p> <p>Flash Lights, Dynamo 96</p> <p>Flexible Resistors 76</p> <p>Fuses, Auto & Radio 85</p> <p>Fuse Clips 82</p> <p>Fused Plugs 93</p> <p>Fuses, Six-in-one 93</p> <p>G</p> <p>Grid Leaks, Variable 79</p> <p>Grill Cloth Speaker 98</p> <p>Grinder, Bench 93</p> <p>Ground Clamps 80, 82</p> <p>H</p> <p>Hammers, Combination Tool 81</p> <p>Hardware, Radio 88, 89, 90, 91, 92</p> <p>Headsets, Earphone 40</p> <p>Heater Cord Sets 93</p> <p>Heaters, Elec. Sun Bowl 97</p> <p>Hater Plugs 93</p> <p>Heater Wire, Nichrome 94</p> <p>High Frequency Buzzers 84</p> <p>Hook-up Wire 80</p> <p>Horns, Exponential 37</p> <p>Horn Units, Dynamic 37</p> <p>Hot Plate Stove, Electric 94</p> <p>I</p> <p>I.F. Transformers 61, 63</p> <p>Ignition Pilot, Auto 83</p> <p>Indoor Ribbon Antenna 80</p> <p>Insulators, Antenna 80, 83</p> <p>Inverters, D.C. to A.C. 21</p> <p>J</p> <p>Jacks, Circuit 38</p> <p>Jacks, Phone Tips 30</p> <p>K</p> <p>Keys, Telegraph 40</p> <p>Kits, A.C., D.C. Coil 61, 62</p> <p>Kits, All Wave Coil 59</p> <p>Kits, Angle & Bracket 92</p> <p>Kits, Antenna 80</p> <p>Kits, Auto Coil 80</p> <p>Kits, Carbon Resistor 79</p> <p>Kits, Insulated Washer 90</p> <p>Kits, Metallized Resistor 77</p> <p>Kits, Microphone 46</p> <p>Kits, Official Radio Tool 88, 87</p> <p>Kits, R.F. Coil 61, 62, 63</p> <p>Kits, Short Wave Coil 54, 55, 56, 57, 58, 59</p> <p>Kits, Short Wave Rec. 54, 55, 56, 57, 58, 59</p> <p>Kits, Superheterodyne Coil 61, 62, 63</p> <p>Kits, Voltage Divider 83</p> <p>Knife Switches 83</p> <p>Knobs, Tuning 90</p>	<p>L</p> <p>Lead-in Strip, Window 80</p> <p>Lightning Arresters 60, 80</p> <p>Line Ballasts 76</p> <p>Line Cord & Plug 36</p> <p>Line Filters 19</p> <p>Line Noise Eliminators 85</p> <p>Line Voltage Regulators, Amperite 85</p> <p>Line Voltage Regulators 18</p> <p>Litz Wire 82</p> <p>Lock Washers 92</p> <p>M</p> <p>Magnet Wire 81</p> <p>Magnetic Speakers 37, 38</p> <p>Magnetic Speaker Units 49</p> <p>Metallized Resistors 77</p> <p>Meters, Moving Coil Panel 30</p> <p>Meter Multipliers, Shunts 77</p> <p>Meters, Panel 27, 29, 30</p> <p>Meter Rectifier 65</p> <p>Mica Condensers 28</p> <p>Microphones 29, 30, 45, 46, 47, 48, 49, 81, 94</p> <p>Microphone Buttons 47</p> <p>Microphone Cable 34, 36</p> <p>Microphone Kits 46</p> <p>Microphone Pre-Amplifiers 46, 47</p> <p>Microphone 3 Way Jack 88</p> <p>Microphone 3 Way Plug 88</p> <p>Microphone Stands 46, 47</p> <p>Microphone Transformers 69</p> <p>Midget I.F. Transformers 63</p> <p>Midget Receivers 16, 17, 10, 108</p> <p>Midget R.F. Coils 62</p> <p>Midget Variable Condensers 67</p> <p>Mikro Pen-Lite 93</p> <p>Mike Tone Controls 46</p> <p>Motor Machine, Sound 92</p> <p>Motor Arbors 92</p> <p>N</p> <p>Neutralizing Tools 49, 90</p> <p>Nichrome Wire 94</p> <p>Noise Eliminators 19, 20</p> <p>Non Directional Antenna 82</p> <p>O</p> <p>Ohmmeters 25, 26, 28, 30</p> <p>Oscillators 27</p> <p>Oscillators, Short Wave Receiver 56</p> <p>Output Chokes 42</p> <p>Output Transformers 69, 70, 72, 73</p> <p>P</p> <p>Panel Meters 27, 29, 30</p> <p>Panels, Rubber, Bakelite, Aluminum, 88</p> <p>Paper Condensers 64, 65, 66</p> <p>Pen Flash Light 93</p> <p>Phono Motors 47</p> <p>Phono Pick Ups 47</p> <p>Phono Turn-Table & Pick-up Compl. 18</p> <p>Phone Tips 89</p> <p>Phone Tips, Solderless 91</p> <p>Photo Electric Cells 22, 30</p> <p>Pick Ups, Phono 47</p> <p>Pilot Lamps 93</p> <p>Plug-In Coils, Short Wave, 32, 58, 59, 108</p> <p>Plugs, Electric Line 93, 94</p> <p>Plugs, Fused 93</p> <p>Plugs, Heater 93</p> <p>Plugs, Speaker 96</p> <p>Police Converters 59</p> <p>Power Packs for Short Waves 72</p> <p>Power Transformers 69, 70, 71, 72</p> <p>Power Transformers, Repl. 50</p> <p>Pre-Amplifiers, Microphone 46, 47</p> <p>Precision Resistors 77, 79</p> <p>P. A. Amplifiers 40, 41, 42, 43, 44</p> <p>Public Address Converters 45</p> <p>R</p> <p>Radio Carrying Cases 86, 89</p> <p>Radio Encyclopedia 60</p> <p>Radio Fuses 85</p> <p>Radio Hardware 88, 89, 90, 91, 92</p> <p>Radio Publications 8, 54, 55, 57, 60, 86, 100, 101, 102, 103</p> <p>Radio Remote Control 44</p> <p>Radio Tool Kits 86, 89</p> <p>Radio Tools 86, 87, 91, 92</p> <p>Radiola Catacombs, Repl. 85</p> <p>Receivers, A.C., D.C. 16</p> <p>Receivers, Automobile 20</p> <p>Receiver Chassis 18, 45</p> <p>Receivers, Crystal 16, 48</p> <p>Receivers, Short Wave 16, 17, 18, 108</p> <p>Receivers, Short Wave 52, 53, 54, 55, 56, 57, 58, 59</p> <p>Receivers, Superhets 18, 17, 18, 20, 108</p> <p>Receivers, 2-Volt Battery 48, 108</p> <p>Record Changer, Automatic 42</p> <p>Recording Discs 94</p> <p>R.F. Chokes, Transmitting 59</p> <p>R.F. Coil Kits 61, 62, 63</p> <p>Regulators Line Voltage 18</p> <p>Relays, Remote Control 94</p> <p>Remote Control, Auto 20</p> <p>Remote Control Cable 36</p> <p>Remote Control Cable & Box 84</p> <p>Remote Control Outfit 44, 84</p> <p>Remote Control Relays 94</p> <p>Repl. Condenser Blocks 50, 68</p> <p>Repl. Drum Dial Cables 81</p> <p>Repl. Flat Iron Elements 94</p>	<p>Repl. Line Ballasts 76</p> <p>Repl. Power Transformers 80</p> <p>Repl. Radio Catacombs 85</p> <p>Repl. Voltage Dividers 78</p> <p>Repl. Volume Controls 74, 75</p> <p>Resistors, all types 75, 76, 77, 78, 79</p> <p>Resonance Meters 27</p> <p>Rheostats, Power 83</p> <p>Rotary Sectional Switches 75</p> <p>Rotary Snap Switches 82</p> <p>Rubber Panels 88</p> <p>S</p> <p>Screw Assortment 89</p> <p>Screw Removers 91</p> <p>Scratch Grid Caps 91</p> <p>Scraper Drivers 87, 91</p> <p>Screw Drivers, Four-in-One 81</p> <p>Screws, Machine & Wood 90</p> <p>Sealing Compound 90</p> <p>Shafts, Brass and Fibre 80</p> <p>Shielded Lead-In Wire 58</p> <p>Short Wave Coil Kits 58</p> <p>Short Wave Condensers, Variable 59</p> <p>Short Wave Converters 59</p> <p>Short Wave Plug-In Coils, 6 Prong 52</p> <p>Short Wave Plug-In Coils, Standard 32, 58, 59</p> <p>Short Wave Power Pack 57</p> <p>Short Wave Receivers 52, 53, 54, 55, 56, 57, 58, 59, 90</p> <p>Short Wave R.F. Chokes 52, 59, 62</p> <p>Socketenna 80</p> <p>Sockets, Isolantite 59</p> <p>Sockets, Tube 33, 34, 59</p> <p>Socket Wrenches 91</p> <p>Soldering Iron 91</p> <p>Soldering Iron Stands 93</p> <p>Soldering Lugs 89</p> <p>Solder, Radio 38</p> <p>Solderless Phone Tips 91</p> <p>Sound Movie Machine 31</p> <p>Spaghetti, Rubber 36</p> <p>Speaker Baffle Boards 82</p> <p>Speaker Cords 37</p> <p>Speakers, Dynamic 37, 38</p> <p>Speaker Field Exciter 37</p> <p>Speaker, Grill Cloth 98</p> <p>Speakers, Magnetic 37, 39</p> <p>Speaker Mending Cement 37</p> <p>Speaker Units, Magnetic 49</p> <p>Step-down Transformers 74</p> <p>Storage Batteries 81</p> <p>Stoppant Compass 49</p> <p>Sun Lamps 98, 97</p> <p>Superheterodyne Coil Kits 61, 62, 63</p> <p>Suppressors, Auto Noise 20</p> <p>Switches, All Types 36, 49, 58, 82, 85, 93</p> <p>Switch Buzzer 94</p> <p>Switches, Elec. Time Relay 98, 98</p> <p>Switch, Photo Elec. Relay 95</p> <p>T</p> <p>Telegraph Keys 60</p> <p>Telephone Equipment 94, 98, 99</p> <p>Telephone Magnets 68</p> <p>Television Lenses 49</p> <p>Ten-Meter Transmitters 51</p> <p>Testing Equip. 25, 26, 27, 28, 29, 30</p> <p>Test Leads 29, 33, 38, 90, 91</p> <p>Thermometers 99</p> <p>Three Circuit Tuners 59, 62</p> <p>Toasters, Elec. 97</p> <p>Tone Controls, Microphone 46</p> <p>Tone Controls 71, 84</p> <p>Tools, Neutralizing 86, 87, 91, 92</p> <p>Tools, Radio 86, 87, 91, 92</p> <p>Transformers, Audio 69, 70, 71, 72</p> <p>Transformers, Bell Ringing 73</p> <p>Transformers, Class "B" Audio 69</p> <p>Transformers, I.F. 61, 63</p> <p>Transformers, Output Class "B" 69</p> <p>Transformers, Output 69, 70, 72, 73</p> <p>Transformers, Step-down 71</p> <p>Transformers, Power 69, 70, 71, 72</p> <p>Transmitters, Short Wave 61</p> <p>Tubes 22, 38, 24</p> <p>Tube Shields 24, 88, 90</p> <p>Tube Testers 25, 26, 27</p> <p>Tubing, Bakelite 88</p> <p>Tuning Knobs 90</p> <p>U</p> <p>Ultra Violet Lamps 94, 97</p> <p>Uncased Repair Condensers 63, 66</p> <p>Universal Clarostats 78</p> <p>V</p> <p>Vacuators, Elec. Coffee 98</p> <p>Vacuum Cleaners 95</p> <p>Velocity (Ribbon) Mikes 46</p> <p>Vise, Bench 92</p> <p>Voltage Dividers, Variable 79</p> <p>Voltage Divider Kits 79</p> <p>Voltage Dividers, Repl. 78</p> <p>Volume Controls 75, 76</p> <p>Volume Controls, Repl. 74, 75</p> <p>W</p> <p>Wave Trap, Antenna 60, 80, 82</p> <p>Window Lead-In Strip 80</p> <p>Wire, Hook-up 80</p> <p>Wire, Litz 83</p> <p>Wire, Magnet 81</p> <p>Wire, Shielded Lead-In 81</p> <p>Wire, Two Conductor Tinselad 82</p> <p>Wire Wound Resistors 75, 76, 77, 78</p> <p>Work-Shop Outfit 91</p> <p>Wrenches, Socket 91</p>
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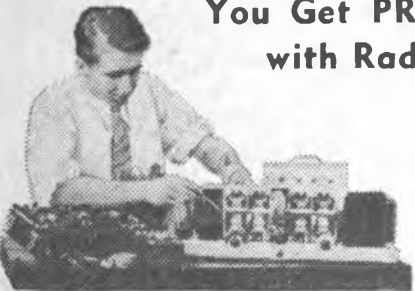
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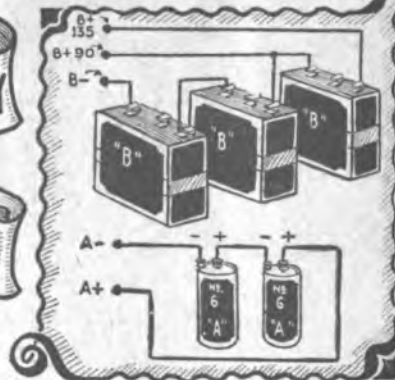
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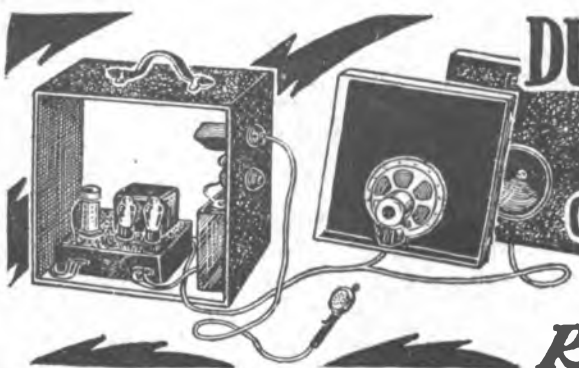
The wonderful sensitivity and selectivity of this receiver enables it to master great distances and bring in stations from far off metropolitan districts. The large speaker produces a full, rich tone equal to that of the most powerful electrically-operated receivers. Its sensitivity curve is flat across the entire dial range thereby assuring ample volume and clear tone on all stations. Requires 3—45 volt B batteries and 2—No. 6 dry cells for operation. In place of the two No. 6 dry cells, the new type 2-volt air cell may be used.

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The entire chassis is fully shielded and constructed along modern lines. It fits snugly into an attractively designed, two-tone walnut cabinet which measures 13 $\frac{1}{2}$ " high by 12" wide by 6" deep. The set employs 1—30, 1—32, 1—33 and 2—34 tubes. Sold complete with set of genuine R.C.A. licensed tubes.

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These outfits, being primarily for portable work, is comparatively light and extremely compact. Yet despite these desirable features, they are capable of delivering **FULLY 4 AND 10 WATTS OF UNDISTORTED POWER—ENOUGH TO OPERATE 4 AND 10 FULL DYNAMIC SPEAKERS** at good volume.

These complete portable systems can be carried around and set up in short order for outdoor meetings, political and business rallies, lectures, etc., etc. The 4 watt job is a high-quality 2-stage job, having some radically new ideas in audio frequency amplification. It comprises a specially designed circuit, giving exceptionally high gain with excellent tone quality, and is **REMARKABLY FREE FROM A.C. HUM.** A **COMPLETE MICROPHONE INPUT CIRCUIT INCLUDING MICROPHONE BATTERY AND TRANSFORMER** IS INCORPORATED in the amplifier. The 10 watt job employs 2-58's, 2-59's and a 5Z3 rectifier.

The design of all models is adaptable to all purposes, viz., microphone, radio, phonograph, recording, etc. A convenient terminal strip as well as a volume control, mounted on the outside of the case, permits easy attachment and control of the microphones. Either a single or a double button microphone may be employed.

Their circuits make use of the latest type power amplifier tubes; viz., 57, 58 and 59's. The two sides of the case are easily detached and act as baffles for the 2 dynamic speakers, which are mounted on them. These detachable sides

are made in such a manner that they will stand upright without any further support. All connections, however, are to the amplifier.

In order to operate these outfits, it is merely necessary to plug the line cord into any 110-125 volt, 50-60 cycle A.C. line and plug in the microphone. This is the entire setting up process. Simple, isn't it?

AVAILABLE IN FOUR MODELS

This same amplifier may be had in four separate models (as listed below), viz., a 4 watt outfit, employing only one dynamic speaker on a single removable side-panel; a 10 WATT dual speaker portable public address system, using 2-58's, 2-59's, and 1-5Z3's, and a 10 watt single speaker P.A. system.

SPECIFICATIONS:

- No. P853C 4 Watt Dual Speaker P.A. system, using 1-57, 1-59 and 1-5Z3. Overall Gain—80 DB. Shipping weight, 40 lbs. **\$37.50**
 YOUR PRICE—less tubes
- No. P853B 4 Watt Single Speaker P.A. system, same specifications as above. Shipping weight, 35 lbs. **\$33.50**
 YOUR PRICE—less tubes
- No. P853 10 Watt Dual Speaker P.A. system, using 2-58's and 2-59's in "A" Prime" arrangement and 1-5Z3. Overall Gain—80 DB. Shipping weight, 55 lbs. **\$43.50**
 YOUR PRICE—less tubes
- No. P853A 10 Watt Single Speaker P.A. system, same specifications as above. Shipping weight, 50 lbs. **\$39.50**
 YOUR PRICE—less tubes

RADIO TRADING COMPANY, 101 HUDSON STREET, NEW YORK, N. Y.