

JUNE 9 1928 SHOW NUMBER 15
new parts and equipment 15 CENTS

TRADE

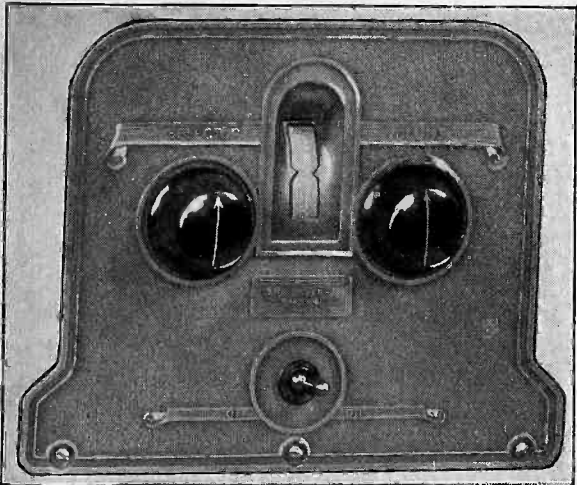
RADIO WORLD

REG. U.S. PAT. OFF.

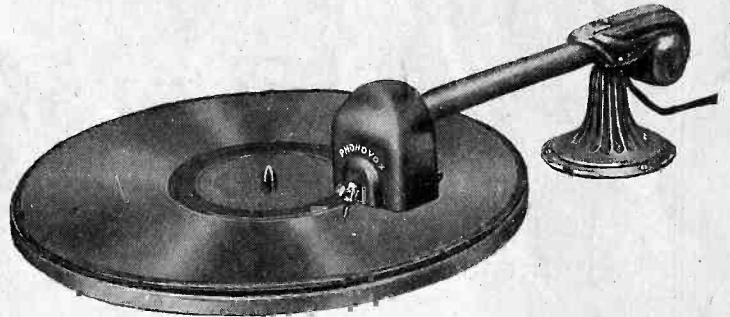
The First and Only National Radio Weekly
324th Consecutive Issue—Seventh Year

Vol-13 No-12

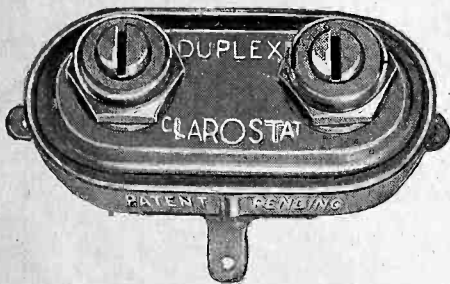
6 PAGES ABOUT NEW PARTS AND SETS!



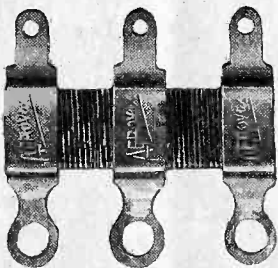
BRONZE BEAUTIES ARE THE NEW SILVER-MARSHALL ESCUTCHEONS. MODEL SM-809 IS ILLUSTRATED. SEE PAGE 5.



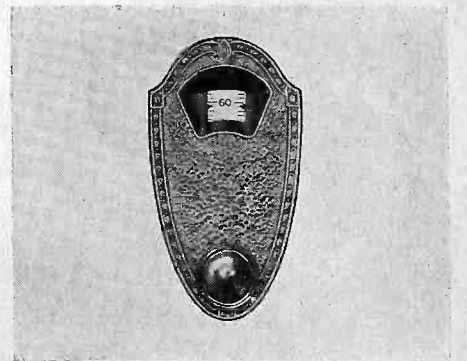
LEADERSHIP IN THE ELECTRICAL PHONOGRAPH PICKUP FIELD WAS ASSUMED LAST SEASON BY PACENT ELECTRIC CO., WHICH NOW ANNOUNCES AN IMPROVED AND FLAT-CURVE PHONOVOX IN TWO MODELS. ONE IS PROVIDED WITH COUNTER-BALANCED TONE ARM (NO. 124, ILLUSTRATED ABOVE). THE OTHER IS TO BE ATTACHED TO THE EXISTING TONE ARM OF A PHONOGRAPH (NO. 105-A, ILLUSTRATED IN NEWS ARTICLE ON PAGE 4).



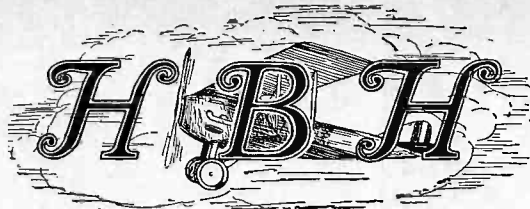
TWO ADJUSTABLE RESISTORS IN ONE CASE, EACH RESISTOR INDEPENDENTLY CONTROLLED, CONSTITUTE THE NEW DUPLEX CLAROSTAT. SERIES OR PARALLEL CONNECTION MAY BE USED. SEE ILLUSTRATED NEWS ARTICLE ON PAGE 4, ANNOUNCING AMERICAN MECHANICAL LABORATORIES' PARTS



RESISTORS FOR POWER PACK AND AC FILAMENT DIVISION ARE NEW PRODUCTS OF AEROVOX WIRELESS CORPORATION. THE CENTER-TAPPED RESISTOR IS SHOWN. FULL DETAILS OF THE AEROVOX LINE ARE GIVEN ON PAGE 8.



THE NEW NATIONAL DIAL, IN TWO MODELS, HAS LEAPED TO THE FOREFRONT OF DIAL POPULARITY. TYPE F, DRUM DIAL, IS ILLUSTRATED. THE OTHER MODEL IS TYPE E (LEFT-AND-RIGHT SCALE READING). SEE PAGE 9

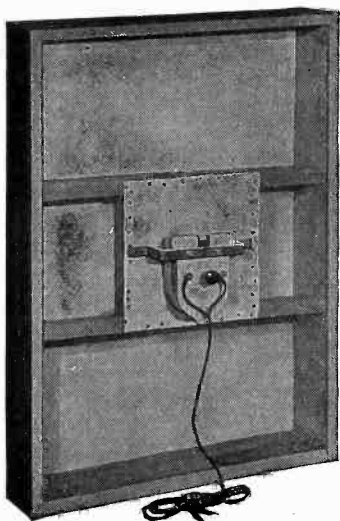


\$7.00

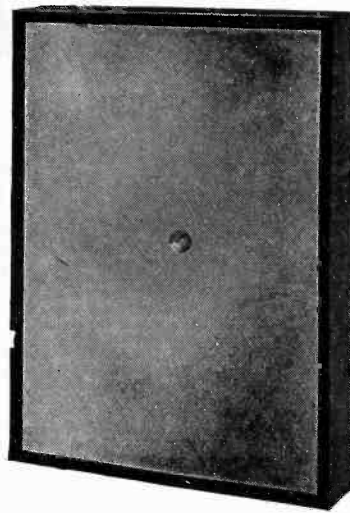
Airplane Cloth Speaker Kit

Special size 16½" x 22½", (Cat. 1086) Price, Including Unit.

Kit Consists of airplane cloth, frame, moulding, unit, stiffening fluid, apex, crossarm, bracket, long cord, apex, hardware and instruction sheet.



Rear View of the HBH Airplane Cloth Speaker
Size, 16½x22½ Inches



Front View of the HBH Airplane Cloth Speaker
Size, 16½x22½ Inches

An Opportunity is presented to you to obtain a kit of this special but attractive size, 16½x22½", because a manufacturer accumulated an extraordinarily large stock of them.

For \$1 Extra We Build It for You!

If you do not want to build the speaker yourself, at \$1 extra cost you can quickly receive the factory-built speaker in your home, all ready to play. Size 16½x22½" (Cat. 1086B)....

\$8.00

Buy a Kit and Build Speaker Yourself at These Prices

- Complete Kit, 18x24", Cat. No. 1109..... \$10
- Complete Kit, 24x36", Cat. No. 1110..... \$12
- Complete Kit, 36x36", Cat. No. 1111..... \$14

Buy a Factory - Made Speaker, Ready to Play, at These Prices

- 18x24", Cat. No. 1088..... \$11
- 24x36", Cat. No. 1090..... \$14
- 36x36", Cat. No. 1091..... \$16

CHOOSE WHAT YOU WANT, BUT SEND NO MONEY!

GUARANTY RADIO GOODS CO.,
145 West 45th Street, New York City

Ship me the following items as advertised in Radio World:

Cat. No.....Cat. No.....Cat. No.....

Cat. No.....Cat. No.....Cat. No.....

for which I will pay postman advertised price plus few cents extra for postage.

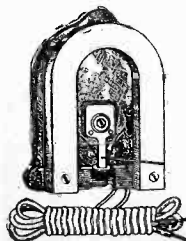
Name

Address

City State

Five-Day Money-Back Guaranty

LOUD UNIT



Powerful unit, excellent for any cone or similar type speaker, standard for HBH speaker; very loud. Cat. No. 1098, with apex, \$3.75.

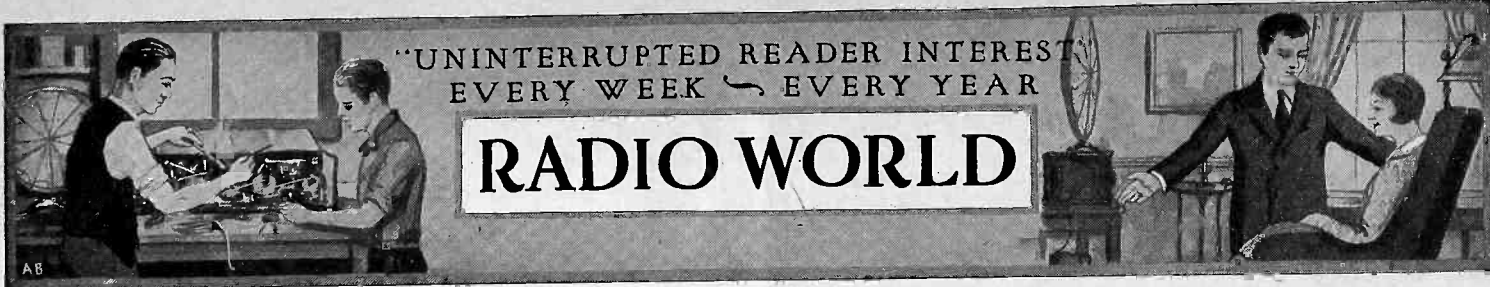
The unit is the Power-tone model, which provides high degree of volume and is very sensitive. Stands great strain. Used successfully in all radio receivers, including power pack installations up to 550 volts on the plate. Up to 135 volts DC may be passed through coils of unit without damage. For higher voltages filtered output is recommended, but unit has long stood up to 180 v. unfiltered.

Unit mounting bracket, Cat. No. 1113..... 35c. Apex. Cat. No. 1107, 25c.

GENUINE "DOPE"



Genuine HBH Stiffening Fluid, secret compound, with superlative effect on tone quality. Large sized can, enough for three coats. Cat. No. 1097, \$1.50.



JUNE 9, 1928
Vol. XIII, No. 12, Whole No. 324
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Technical Accuracy Second to None

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New York, N. Y.
(Just East of Broadway)
Phone: BRyant 0558 and 0559

The Ultimate Consumer Peeks in at Trade Show

THE fascinating array of exhibits at the Second Annual Radio Trade Show, conducted under the auspices of the Radio Manufacturers' Association, at the Hotel Stevens, Chicago, proved that manufacturers have risen to new heights of versatility and have strongly gone over to the beautiful.

It made a radioist of the constructor class suffer aches of suppressed desire to see all the tempting apparatus, particularly parts that are better, stronger, compact and handsomer this year than ever before.

The manufacturers hobnobbed with one another at the show, listened to a host's rival performances in demonstration rooms privately hired at the hotel, and expatiated on the superlative merits of their respective products.

Parts showed an abnormally heavy activity, both in the display meant for the eye and the bombast meant for the ear. Coupled was the fact that parts manufacturers reported very healthy business in early June, with grand prospects for the rest of this month, and infinitely thereafter, due to the two national conventions, one of which will nominate the next President, and also due to the sales acceleration residing in the other national pastime—baseball.

Every manufacturer in radio not in Europe at the happy moment seemed to be at the show, while it was feared for a while that the two sojourners abroad might be tempted to do an East-to-West airplane hop for some handshaking and other shaking at the world's center of radio attraction for this momentous week.

The booths were decorated and fashioned gaily or with still more expensive quietness and reserve of tone, and it was expected that before the week was out more than 30,000 persons would have been in attendance. In fact, more than that number would have, but they could not convince the boss that they were "key men" whose presence at the show was an impressive and impervious necessity. However, the bosses had no trouble in convincing themselves that they themselves were needed, and many of them carried on a lot of prestige-building conversation with competitors who were friendly enough, but never would send in an order.

The manufacturers had a merry time of it, from the moment the special trains pulled out of the East and the West.

Many hundreds of thousands of dollars in orders were given, but not one cent's worth of cancellations. So

happiness reigned amid the popping cohorts of radio. It was a manufacturers' festival, with plenty of eating and the like, and not an inconsiderable amount of showing. It looked somewhat like a Stock Exchange on a busy afternoon, and at times so fervid was the purchasing of goods still unmade, that one might imagine the manufacturers were merely betting, using trade acceptances for money.

Some of the manufacturers had been through a difficult season,—and not all the difficulties were technical, unless the fierce side of banking can be called technical. A few were there, too, who had failed, but some of these appeared to notice enough promising items to copy so as to keep the new wolf from the door. They went around looking for prospective creditors and some reported luck.

But most manufacturers did well last season and had every reason to look forward to striking success this season.

"This is THE year," the manufacturers told one another, as they did last year, and will next.

Some manufacturers, with a full, new line ready, exhibited largely their parts of the previous season, while others confessedly had only a little item or two that were new. Such as had little of the new and much of the old said that money is made in the parts business by building up the reputation of a given product, because it is made right originally, and needs no changing. But some iconoclasts, always in the vanguard of the new, offered as contradictory evidence a glance at their bank balance.

While it was a great time for the manufacturers, and competitors so far forgot themselves as to be cordial to one another, and while fifty-ten-and-five were the mysterious figures most often mentioned, nevertheless, it was absorbing from the televised viewpoint of the custom set builder, the home constructor, the radio dealer, the unlucky salesman and others left at home.

The manufacturers dealt with one another and with sales representatives, but two large ears hung outside the hotel and two eyes—the ears and eyes of the ultimate consumer. And for his especial benefit the following six pages contain news announcements of exhibits at the show, with a few other announcements of new things that didn't happen to get themselves into the picture at the Stevens.

Herman Bernard.

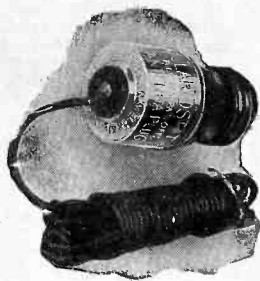
American Mechanical Labs.

The American Mechanical Laboratories, Inc., 285-7 North Sixth Street, Brooklyn, N. Y., manufacturers of the well-known Clarostat line of precision variable resistors, announced new products. The Clarostat Light Socket Antenna Plug incorporates several novel features. This device converts any electric light

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[Other Illustration on Front Cover]

Yaxley Manufacturing Co.

Among the new line of Yaxley products is a 12 conductor Cable Connector Plug especially designed for AC sets, which will meet any AC requirements. New insulated tip jacks with bakelite tops, red and black for plus and minus, for AC sets, are announced, also a complete line of junior rheostats and potentiometers with special filament switches. By the use of these switches a switching rheostat can easily be made out of any

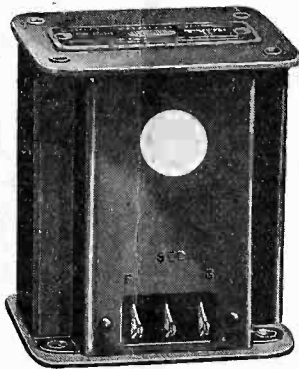
Yaxley rheostat by removing the knob and lock nut, placing the filament switch over the shaft and replacing the nut. A full line of center tapped resistances to meet all requirements is also ready, also a new 440 full Automatic Power Control Switch. This relay has many new features, among them that it is so adjusted as to automatically cut off when the battery is fully charged.

A full line of convenience outlets for AC sets as well as for DC use, is finished in fine, rich bakelite. Yaxley approved radio products include pilot light switches, panel lights, pilot switching rheostats, jacks, junior jacks, pup jacks, plugs of all kinds, nameplates, cable markers, switches of all kinds and a full line of cables and cable connector plugs. Full information on the complete line and on the new products described above may be had on application from the Yaxley Manufacturing Co., 9 South Clinton Street, Chicago.

J. H. C.

Sangamo Electric Co.

In addition to its line of condensers, the Sangamo Electric Company, Springfield, Ill., offers a new line of audio frequency transformers to meet every need for quality reproduction. The transformers give faithful reproduction over the useful audio frequency range. They are well made. Each



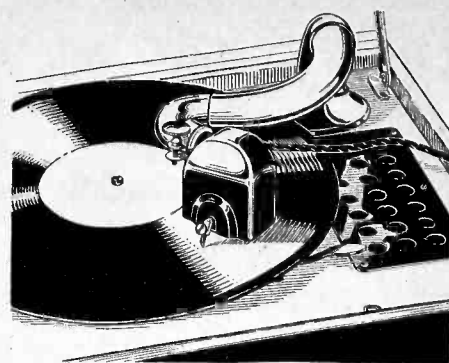
transformer is tested at the equivalent of 1,000 volts direct current between primary and secondary and ground. Uniformity of product is also assured by other exacting tests. There are types to meet every need. Type B, Input, is 4.5 to 1 ratio, designated by mural blue spot; type C-171 output, for 171 tubes, designated by leaf green spot; type D-210 output for 210 type tubes, designated by lake blue spot, also for 112 type tubes. The type E output impedance is of 30 henrys inductance and is marked by a mandarin red spot. The type F plate impedance is 200 henrys inductance and is designated by the orange spot. Sangamo engineers are working on several new products that will be ready shortly and which will match up to the regular Sangamo high standards of construction and operation. Information on these and on the above may be had on application to the Company, address above, or to Rossiter & Co., 136 Liberty Street, New York City.—J. H. C.

R.C.A. Personnel Changes

J. L. Ray, general sales manager of the Radio Corporation of America, announced the following changes:

Quinton Adams, formerly manager Radiola Division, becomes manager of a new major sales division to be known as the Engineering Products Division, which will handle the sale of broadcasting stations, the sale of special apparatus and various sales contracts of the Radio Corporation. E. A. Nicholas, formerly district sales manager at New York, becomes manager Radiola Division. A. R. Beyer, formerly assistant district sales manager, Chicago, becomes district sales manager at New York. D. A. Lewis becomes assistant district sales manager at Chicago.

Pacent Electric Co.



NEW MODEL PACENT PHONOVOX, (ELECTRIC PICKUP) FOR ATTACHMENT TO EXISTING TONE ARM.

When the Pacent Electric Co., 91 Seventh Avenue, New York City, brought out the Phonovox, an electric pickup of phonograph recordings, enabling amplification through the audio channel of your set and final reproduction through your speaker, the service took the country by storm. Now the Pacent Co. has an improved pickup, in two de luxe models—No. 124 complete with counter-balanced tone arm, list price, \$13.50, and No. 105-A, without tone arm, list price, \$10.50.

The pick-up itself is even more sensitive than its predecessor and shows a relatively flat characteristic curve. Nine months of expert research were devoted to the perfection of the de luxe models, and they bid fair to outrank all others on the market.

One of the special features is the external location of the chuck, so that a fibre needle may be used or an optional steel needle. The needle scratch almost disappears when a fibre needle is used, and volume remains ample.

The counter-balanced tone arm improves quality and preserves record life, since the needle does not "engrave" the record.

Each de luxe model Phonovox is provided with special AC and DC adapters with each outfit. It is not necessary to remove the detector tube to work the new Phonovox.

Louis G. Pacent, president, and J. J. Ryan, treasurer, confidently expect the de luxe models to become the market leaders in that line.

As usual, the Pacent Company has a fine and variegated line, including a new Super-Audioformer of superb tone quality, sockets, speakers, a speaker unit cleverly designed by Mr. Pacent, and a power amplifier and B supply. For further information, address Louis G. Pacent, president, Pacent Electric Co., 91 Seventh Avenue, New York City, and mention RADIO WORLD.

[Other Illustration on Front Cover.]

Arcturus Radio Co.

An AC screen grid tube has just been placed on the market by the Arcturus Radio Company. AC tube manufacturers of Newark, N. J.



In the Arcturus AC screen grid tube there is one more element than in the standard tube. The filament draws a current of 0.35 ampere and its normal operating potential is 15.0 volts. The additional element, i.e., the screen grid, is a combination grid interposed between the usual plate and control grid and a fine mesh arrangement completely enclosing the whole tube structure, thus introducing a completely shielded tube.

A new five prong base replacement tube for use in receivers requiring a —27 type heater tube, has been developed by the company. Quick heating (between six and twelve seconds), superior sensitivity and a life comparable with that of the best DC tubes are points stressed.

Silver-Marshall, Inc.

Silver-Marshall, Inc., of 846 West Jackson Boulevard, Chicago, announced an extensive line of new products, all exhibited at the show, and all demonstrating advanced design and skillful technique. The line is resourceful and versatile, covering virtually every need of the custom set builder and home constructor, and offering attractive advantages also to manufacturers and commercial institutions outside of the radio manufacturing field.

An outstanding reservoir power unit, in two models, is one of the special features. The models are obtainable wired or in kit form. Model 670-B has fixed voltage taps for 22, 90, 135 and 180 volts, with one variable three-voltage tap for 22-90 volts. The maximum current drain is 60 milliamperes at these voltages. The 280 rectifier tube is used. The S-M 670-B lists at \$33 in kit form and \$36 wired.

The other model, 670-ABC, has the same foundation as the 670-B, but is additionally provided with a built-in filament transformer, from which taps are brought out to posts for 1.5 volts (up to 4 amperes current capacity), 2.25 volts (up to 3.5 amperes) and 5 volts (.5 ampere). Thus up to five —26 tubes, two —27 tubes and two 112A or —71A tubes may be fed from this filament AC heating source. The 670-ABC lists at \$35.50 in kit form and \$38.50 built-up.

New Drum Dial

A drum dial is another new S-M product. It is controlled by a knob, with which is connected a friction drive upon the etched brass drum. Both right and left-hand models are provided (S-M 806-R and S-M 806-L) for 180 degree rotation, 0 to 100. The drum dial is \$2.50 list, while a bronze window is 50 cents extra.

Recognizing the rising demand for great beauty in front panel appearance, combined with simplicity of operation, Silver-Marshall has brought out one of the handsomest escutcheons yet to appear. It is in two models, S-M 808 for single tuning control and S-M 809 for double tuning control. The plates are provided with windows. (The double model is illustrated on the front cover.) The escutcheon plates are bronze, beautiful to behold and easy to mount. The single model lists at \$2.25 and the double one at \$2.75.

These escutcheons are intended for use specially with another new product of this enterprising concern—a steel cabinet, No. 700, providing the latest in cabinet design for custom set builders and home constructors.

Has Own Cabinet

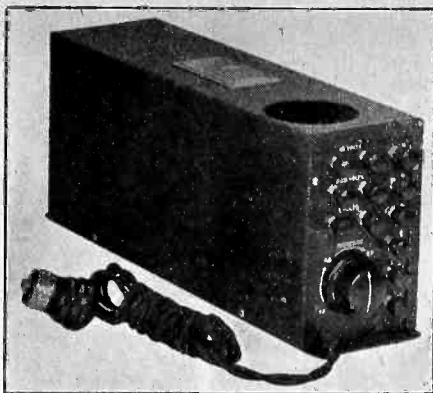
This steel cabinet is included in the new Screen Grid Six Kit, (No. 710 kit, list price about \$70, including cabinet). The circuit consists of three stages of screen grid TRF, detector and two-stage audio amplifier. Great distance, enormous volume, superb tone are outstanding advantages cited.

An AC model screen grid receiver is the S-M "Coast to Coast," kit No. 740, using one stage of screen grid RF, a 227 detector, a screen grid first audio stage and a power tube output—total only four tubes. The list price of the kit is about \$45, less cabinet and power supply. Cabinet and chassis cost \$8.50 extra. In conjunction with the S-M 670 ABC Power Supply and S-M 700 cabinet and chassis, a complete AC operated receiver is constructable for about \$89.

A high mu audio transformer is used in the AC Coast to Coast receiver, and this transformer is another new part. It is No. 223.

New Audio Transformers

Two new large-sized audio transformers, which will not be ready for distribution before June 25, are the 225 (first stage) and 226 (second stage). These



THE S-M 670-ABC POWER SUPPLY

list at \$9 each and are pronounced by those who have heard and analyzed them as "wonderful." The curve is reported as most excellent. In fact, so sure is Silver-Marshall of the predominance of these particular transformers that they staged comparative tests for the benefit of all-comers in Room 435-A in the Stevens Hotel during the show.

Smaller sized audio transformers, also new, are the 255 and 256, at \$6 each. There is a corresponding output, No. 251.

Silver-Marshall is taking a leading part in the short wave field, also. The Round the World Four is in the circuit (one model \$44.30, complete, with dials).

Short Wave Coils

The new S-M "130 Series" 5-prong plug-in coils (fitting any AC tube socket), listing at \$1.25 each; and the unwound coil forms at 50 cents each.

The new S-M 685 Public Address Unipac Amplifier also was demonstrated.

The new S-M 638 Copper Stage Shield at \$1.25 list is another item.

Full information is obtainable from Silver-Marshall at the above address. Mention RADIO WORLD.

[Other Illustration on Front Cover]

Electrad, Inc.

Electrad, Inc., parts and accessories makers of New York, are featuring in 1928 a full line of radio resistance controls in addition to their regular staple items. Some of the well-known Electrad products this year are:

Truvolts.—A complete line of all-wire variable, tapped and fixed resistances which are of especial interest to eliminator builders. They are particularly adapted for use as voltage controls, and a feature is that the units are kept from overheating because of their unique design which gives maximum radiating surface.

Tonatrols.—A complete line of volume and sensitivity controls of the Electrad Royalty Resistor type. They are offered in types to meet the specific requirements of all AC or battery powered circuits. They are recommended for installation in



NEW SHORT WAVE
PLUG-IN COILS MADE BY
SILVER MARSHALL

standard sets or incorporating in the circuit by the builder of receivers.

Royalties.—The well-known variable high resistances which Electrad has been making for years. It is offered in standard and potentiometer styles in eleven ranges for all radio purposes requiring a resistance of its type.

Phasatrol.—A balancing device for radio frequency amplifiers. The function of this item is to suppress the oscillations of R.F. amplifying tubes and thus eliminate the noises and disturbances to reception which they cause. Owing to its ease of installation, this item has proved popular with owners and constructors of RF receivers who have been troubled with oscillations.

New Truvolt Divider.—Arthur Moss, treasurer of Electrad, Inc., gave out the information that the company will announce in the next issue of this magazine a universal voltage separator, called the Truvolt Divider.

This newest Electrad product is a complete resistance unit for simplifying the construction of B battery eliminators. It is so arranged with variable taps that the proper grid and plate voltages are easily obtained with any set and eliminator combination. By dividing the filter voltage into usable values, it eliminates a great deal of the mathematical calculations and much wiring.

It is said that the Truvolt Divider will make it comparatively easy for even the non-technical radio fan to construct a B power unit which will deliver the proper voltages for receivers of present or anticipated future design.

Preliminary tests have proved that the Divider is going to be very well received by professional and amateur eliminator builders and experimenters. Every indication points to the device being one of the big sellers in the Electrad line this year.

United Radio Corp.

The United Radio Corporation of Rochester, N. Y., makers of the Peerless Speaker, announces several new models for the coming season. Foremost among these is the New Dynamic Speaker, incorporating several new principles of dynamic design. It is equipped with a rectifier element providing for light socket operation. It handles the output of any tubes.

The Dynamic Speaker is offered in three models. The Model 17-A is a mahogany Gothic cabinet, similar in conception to the reproducers of past years but considerably larger. This lists at \$75. The Model 19-T is a complete built-in Speaker Table, listing at \$100. Finally, there is a Manufacturer's Model, 17-C, for built-in use in Console Sets.

The Model 7-A Cone-type Speaker, in the familiar Gothic cabinet, will be continued in the same form, and at the same list price of \$35, as last year; likewise, the Model 7-B, manufacturer's built-in unit of this same chassis. In addition to these, a new Model, 7-T, which is a built-in Speaker Table, using the Model 7 chassis, is offered at a list price of \$50. Both this Table and the Dynamic Speaker Table carry out in design the Gothic lines which are characteristic of Peerless.

For further information address the company direct and mention RADIO WORLD.

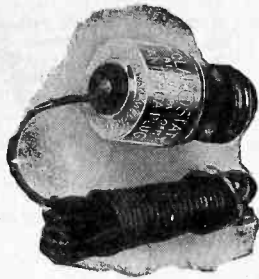
SMITH JOINS PEERLESS

The United Radio Corporation of Rochester, New York, manufacturers of the Peerless reproducer, announce that Herman A. Smith, formerly sales manager of the Argus Radio Corporation, has been appointed eastern sales manager of the United.

Mr. Smith will have charge of the Atlantic Coast District south of New York, with headquarters at Baltimore.

American Mechanical Labs.

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Yaxley Manufacturing Co.

Among the new line of Yaxley products is a 12 conductor Cable Connector Plug especially designed for AC sets, which will meet any AC requirements. New insulated tip jacks with bakelite tops, red and black for plus and minus, for AC sets, are announced, also a complete line of junior rheostats and potentiometers with special filament switches. By the use of these switches a switching rheostat can easily be made out of any

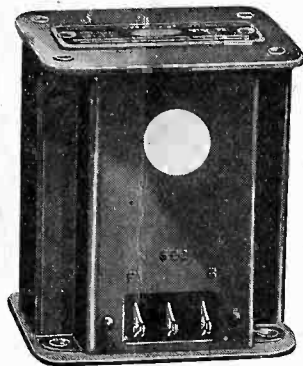
Yaxley rheostat by removing the knob and lock nut, placing the filament switch over the shaft and replacing the nut. A full line of center tapped resistances to meet all requirements is also ready, also a new 440 full Automatic Power Control Switch. This relay has many new features, among them that it is so adjusted as to automatically cut off when the battery is fully charged.

A full line of convenience outlets for AC sets as well as for DC use, is finished in fine, rich bakelite. Yaxley approved radio products include pilot light switches, panel lights, pilot switching rheostats, jacks, junior jacks, pup jacks, plugs of all kinds, nameplates, cable markers, switches of all kinds and a full line of cables and cable connector plugs. Full information on the complete line and on the new products described above may be had on application from the Yaxley Manufacturing Co., 9 South Clinton Street, Chicago.

J. H. C.

Sangamo Electric Co.

In addition to its line of condensers, the Sangamo Electric Company, Springfield, Ill., offers a new line of audio frequency transformers to meet every need for quality reproduction. The transformers give faithful reproduction over the useful audio frequency range. They are well made. Each



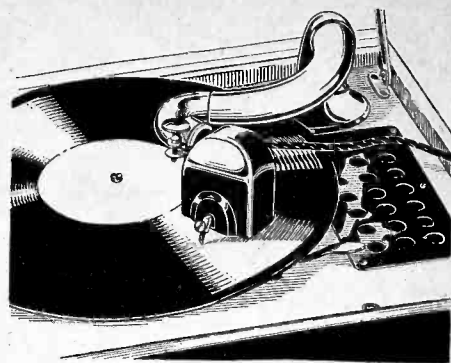
transformer is tested at the equivalent of 1,000 volts direct current between primary and secondary and ground. Uniformity of product is also assured by other exacting tests. There are types to meet every need. Type B, Input, is 4.5 to 1 ratio, designated by mural blue spot; type C-171 output, for 171 tubes, designated by leaf green spot; type D-210 output for 210 type tubes, designated by lake blue spot, also for 112 type tubes. The type E output impedance is of 30 henrys inductance and is marked by a mandarin red spot. The type F plate impedance is 200 henrys inductance and is designated by the orange spot. Sangamo engineers are working on several new products that will be ready shortly and which will match up to the regular Sangamo high standards of construction and operation. Information on these and on the above may be had on application to the Company, address above, or to Rossiter & Co., 136 Liberty Street, New York City.—J. H. C.

R.C.A. Personnel Changes

J. L. Ray, general sales manager of the Radio Corporation of America, announced the following changes:

Quinton Adams, formerly manager Radiola Division, becomes manager of a new major sales division to be known as the Engineering Products Division, which will handle the sale of broadcasting stations, the sale of special apparatus and various sales contracts of the Radio Corporation. E. A. Nicholas, formerly district sales manager at New York, becomes manager Radiola Division. A. R. Beyer, formerly assistant district sales manager, Chicago, becomes district sales manager at New York. D. A. Lewis becomes assistant district sales manager at Chicago.

Pacent Electric Co.



NEW MODEL PACENT PHONOVOX, (ELECTRIC PICKUP) FOR ATTACHMENT TO EXISTING TONE ARM.

When the Pacent Electric Co., 91 Seventh Avenue, New York City, brought out the Phonovox, an electric pickup of phonograph recordings, enabling amplification through the audio channel of your set and final reproduction through your speaker, the service took the country by storm. Now the Pacent Co. has an improved pickup, in two de luxe models—No. 124 complete with counter-balanced tone arm, list price, \$13.50, and No. 105-A, without tone arm, list price, \$10.50.

The pick-up itself is even more sensitive than its predecessor and shows a relatively flat characteristic curve. Nine months of expert research were devoted to the perfection of the de luxe models, and they bid fair to outrank all others on the market.

One of the special features is the external location of the chuck, so that a fibre needle may be used or an optional steel needle. The needle scratch almost disappears when a fibre needle is used, and volume remains ample.

The counter-balanced tone arm improves quality and preserves record life, since the needle does not "engrave" the record.

Each de luxe model Phonovox is provided with special AC and DC adapters with each outfit. It is not necessary to remove the detector tube to work the new Phonovox.

Louis G. Pacent, president, and J. J. Ryan, treasurer, confidently expect the de luxe models to become the market leaders in that line.

As usual, the Pacent Company has a fine and variegated line, including a new Super-Audioformer of superb tone quality, sockets, speakers, a speaker unit cleverly designed by Mr. Pacent, and a power amplifier and B supply. For further information, address Louis G. Pacent, president, Pacent Electric Co., 91 Seventh Avenue, New York City, and mention RADIO WORLD.

[Other Illustration on Front Cover.]

Arcturus Radio Co.

An AC screen grid tube has just been placed on the market by the Arcturus Radio Company. AC tube manufacturers of Newark, N. J.



In the Arcturus AC screen grid tube there is one more element than in the standard tube. The filament draws a current of 0.35 ampere and its normal operating potential is 15.0 volts. The additional element, i.e., the screen grid, is a combination grid interposed between the usual plate and control grid and a fine mesh arrangement completely enclosing the whole tube structure, thus introducing a completely shielded tube.

A new five prong base replacement tube for use in receivers requiring a -27 type heater tube, has been developed by the company. Quick heating (between six and twelve seconds), superior sensitivity and a life comparable with that of the best DC tubes are points stressed.

Silver-Marshall, Inc.

Silver-Marshall, Inc., of 846 West Jackson Boulevard, Chicago, announced an extensive line of new products, all exhibited at the show, and all demonstrating advanced design and skillful technique. The line is resourceful and versatile, covering virtually every need of the custom set builder and home constructor, and offering attractive advantages also to manufacturers and commercial institutions outside of the radio manufacturing field.

An outstanding reservoir power unit, in two models, is one of the special features. The models are obtainable wired or in kit form. Model 670-B has fixed voltage taps for 22, 90, 135 and 180 volts, with one variable three-voltage tap for 22-90 volts. The maximum current drain is 60 milliamperes at these voltages. The 280 rectifier tube is used. The S-M 670-B lists at \$33 in kit form and \$36 wired.

The other model, 670-ABC, has the same foundation as the 670-B, but is additionally provided with a built-in filament transformer, from which taps are brought out to posts for 1.5 volts (up to 4 amperes current capacity), 2.25 volts (up to 3.5 amperes) and 5 volts (.5 ampere). Thus up to five —26 tubes, two —27 tubes and two 112A or —71A tubes may be fed from this filament AC heating source. The 670-ABC lists at \$35.50 in kit form and \$38.50 built-up.

New Drum Dial

A drum dial is another new S-M product. It is controlled by a knob, with which is connected a friction drive upon the etched brass drum. Both right and left-hand models are provided (S-M 806-R and S-M 806-L) for 180 degree rotation, 0 to 100. The drum dial is \$2.50 list, while a bronze window is 50 cents extra.

Recognizing the rising demand for great beauty in front panel appearance, combined with simplicity of operation, Silver-Marshall has brought out one of the hand-somest escutcheons yet to appear. It is in two models, S-M 808 for single tuning control and S-M 809 for double tuning control. The plates are provided with windows. (The double model is illustrated on the front cover.) The escutcheon plates are bronze, beautiful to behold and easy to mount. The single model lists at \$2.25 and the double one at \$2.75.

These escutcheons are intended for use specially with another new product of this enterprising concern—a steel cabinet, No. 700, providing the latest in cabinet design for custom set builders and home constructors.

Has Own Cabinet

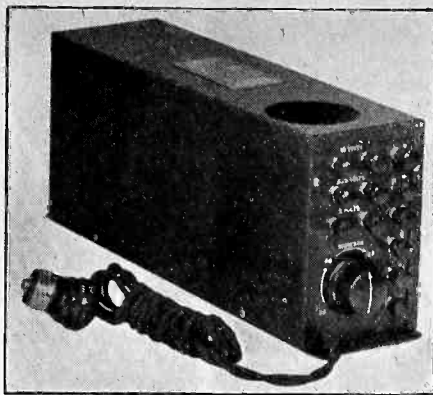
This steel cabinet is included in the new Screen Grid Six Kit, (No. 710 kit, list price about \$70, including cabinet). The circuit consists of three stages of screen grid TRF, detector and two-stage audio amplifier. Great distance, enormous volume, superb tone are outstanding advantages cited.

An AC model screen grid receiver is the S-M "Coast to Coast," kit No. 740, using one stage of screen grid RF, a 227 detector, a screen grid first audio stage and a power tube output—total only four tubes. The list price of the kit is about \$45, less cabinet and power supply. Cabinet and chassis cost \$8.50 extra. In conjunction with the S-M 670 ABC Power Supply and S-M 700 cabinet and chassis, a complete AC operated receiver is constructable for about \$89.

A high mu audio transformer is used in the AC Coast to Coast receiver, and this transformer is another new part. It is No. 223.

New Audio Transformers

Two new large-sized audio transformers, which will not be ready for distribution before June 25, are the 225 (first stage) and 226 (second stage). These



THE S-M 670-ABC POWER SUPPLY

list at \$9 each and are pronounced by those who have heard and analyzed them as "wonderful." The curve is reported as most excellent. In fact, so sure is Silver-Marshall of the predominance of these particular transformers that they staged comparative tests for the benefit of all-comers in Room 435-A in the Stevens Hotel during the show.

Smaller sized audio transformers, also new, are the 255 and 256, at \$6 each. There is a corresponding output, No. 251.

Silver-Marshall is taking a leading part in the short wave field, also. The Round the World Four is in the circuit (one model \$44.30, complete, with dials).

Short Wave Coils

The new S-M "130 Series" 5-prong plug-in coils (fitting any AC tube socket), listing at \$1.25 each; and the unwound coil forms at 50 cents each.

The new S-M 685 Public Address Unipac Amplifier also was demonstrated.

The new S-M 638 Copper Stage Shield at \$1.25 list is another item.

Full information is obtainable from Silver-Marshall at the above address. Mention RADIO WORLD.

[Other Illustration on Front Cover]

Electrad, Inc.

Electrad, Inc., parts and accessories makers of New York, are featuring in 1928 a full line of radio resistance controls in addition to their regular staple items. Some of the well-known Electrad products this year are:

Truvolts.—A complete line of all-wire variable, tapped and fixed resistances which are of especial interest to eliminator builders. They are particularly adapted for use as voltage controls, and a feature is that the units are kept from overheating because of their unique design which gives maximum radiating surface.

Tonatrols.—A complete line of volume and sensitivity controls of the Electrad Royalty Resistor type. They are offered in types to meet the specific requirements of all AC or battery powered circuits. They are recommended for installation in



NEW SHORT WAVE
PLUG-IN COILS MADE BY
SILVER MARSHALL

standard sets or incorporating in the circuit by the builder of receivers.

Royalties.—The well-known variable high resistances which Electrad has been making for years. It is offered in standard and potentiometer styles in eleven ranges for all radio purposes requiring a resistance of its type.

Phasatrol.—A balancing device for radio frequency amplifiers. The function of this item is to suppress the oscillations of R.F. amplifying tubes and thus eliminate the noises and disturbances to reception which they cause. Owing to its ease of installation, this item has proved popular with owners and constructors of RF receivers who have been troubled with oscillations.

New Truvolt Divider.—Arthur Moss, treasurer of Electrad, Inc., gave out the information that the company will announce in the next issue of this magazine a universal voltage separator, called the Truvolt Divider.

This newest Electrad product is a complete resistance unit for simplifying the construction of B battery eliminators. It is so arranged with variable taps that the proper grid and plate voltages are easily obtained with any set and eliminator combination. By dividing the filter voltage into usable values, it eliminates a great deal of the mathematical calculations and much wiring.

It is said that the Truvolt Divider will make it comparatively easy for even the non-technical radio fan to construct a B power unit which will deliver the proper voltages for receivers of present or anticipated future design.

Preliminary tests have proved that the Divider is going to be very well received by professional and amateur eliminator builders and experimenters. Every indication points to the device being one of the big sellers in the Electrad line this year.

United Radio Corp.

The United Radio Corporation of Rochester, N. Y., makers of the Peerless Speaker, announces several new models for the coming season. Foremost among these is the New Dynamic Speaker, incorporating several new principles of dynamic design. It is equipped with a rectifier element providing for light socket operation. It handles the output of any tubes.

The Dynamic Speaker is offered in three models. The Model 17-A is a mahogany Gothic cabinet, similar in conception to the reproducers of past years but considerably larger. This lists at \$75. The Model 19-T is a complete built-in Speaker Table, listing at \$100. Finally, there is a Manufacturer's Model, 17-C, for built-in use in Console Sets.

The Model 7-A Cone-type Speaker, in the familiar Gothic cabinet, will be continued in the same form, and at the same list price of \$35, as last year; likewise, the Model 7-B, manufacturer's built-in unit of this same chassis. In addition to these, a new Model, 7-T, which is a built-in Speaker Table, using the Model 7 chassis, is offered at a list price of \$50. Both this Table and the Dynamic Speaker Table carry out in design the Gothic lines which are characteristic of Peerless.

For further information address the company direct and mention RADIO WORLD.

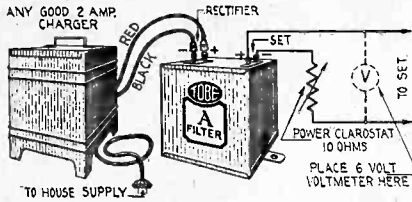
SMITH JOINS PEERLESS

The United Radio Corporation of Rochester, New York, manufacturers of the Peerless reproducer, announce that Herman A. Smith, formerly sales manager of the Argus Radio Corporation, has been appointed eastern sales manager of the United.

Mr. Smith will have charge of the Atlantic Coast District south of New York, with headquarters at Baltimore.

Tobe Deutschmann Co.

The Tobe A-Filter, a new product, consists of a new and different dry condenser of 7,600 mfd. with two especially designed choke coils of proper size combined in one unit to supply humless A current to any radio set. This new filter can be attached to any good two ampere charger, such as a Tungar or Rectigon, for completely eliminating the A battery. Without a charger, only a rectifier and step down transformer are needed to assemble this eliminator in a few moments, as the principle wiring is done inside of the Tobe A-Filter. List price, \$18.



HOW TOBE A-FILTER IS CONNECTED TO A TWO AMPERE CHARGER. A TEN OHM CLAROSTAT REGULATES VOLTAGE.

In its Radio Interference Filter No. 1, the Tobe Deutschmann Company presents a small and compact piece of equipment for use with household appliances using motors up to and including one quarter horse-power. This covers the usual range of electric refrigerators and oil burners. No. 1, for DC and AC motors up to 1/4 horse-power, price \$10.

A condenser, for use in filtering 6-volt filament supply, which contains the astonishing total of 3,600 mfd. within a space of only 5 x 5 3/4 x 1 1/2 inches is announced. No attention or refilling whatever is necessary. The Tobe A-Block is just a condenser unit in a characteristic Tobe case, and needs no more attention than any other kind of a Tobe condenser. Once installed, it can be forgotten. The development of a condenser of this type immediately makes possible the use of low-voltage rectified alternating current, for lighting the filament of ordinary battery-type tubes from a lamp socket AC supply.

By combining the Tobe A-Block with a pair of chokes of suitable size, and a battery charger of the proper type, completely wired, reliable, 6-volt, filtered, rectified current is available, for direct electrical operation of the filaments of battery-type tubes. List price of A-Block, \$7.00.

Tobe Mica Condenser, of standard grid-leak size, fitting the ordinary grid-leak clip, contains an accurately mica-insulated condenser element, sealed into a glass tube in a high vacuum, and thus permanently protected from change or deterioration. Easily identified by the sealing tip. List prices, .0002 mfd. 40 cents; all sizes to .006, 80 cents.

A new A-condenser of approximately 4,000 mfd., is another feature. To build a condenser of extremely high capacity, but small in size and low in cost, was the work of months, both in the laboratory in Cambridge and in Germany. This condenser is cased in a metal can 5 x 5 3/4 x 1 1/2 inches. The breakdown voltage of the condenser is 50 volts. The life appears to be indefinite when the condenser is used at voltages well below 50. This condenser has many uses. It can be combined with a good trickle charger, and used to energize the field of a dynamic cone speaker. List price, \$6.

General Description

Higher plate voltages now used in high-power amplifiers call for condensers with higher operating voltage characteristics. It is only a short time ago that we all used 90 volts of plate voltage for our amplifiers, with one-01-A tube in

the last socket. Developments have been extremely rapid and we think nothing now of using 600 volts or more with two —10 power tubes in push-pull, or two new —50s. To provide condensers with ample factors of safety for this high voltage use, Tobe Deutschmann Company has developed a new 1,100 line, with safe working voltage of 1,100 volts DC., recommended for use with UX-210 Push-Pull Amplifiers and similar high voltage equipment. List prices, No. 1101 (1 mfd.) \$5.50; 1102 (2 mfd.) \$10.00; 1104 (4 mfd.) \$17.50.

For further particulars address Tobe Deutschmann Co., 11 Windsor Street, Cambridge, Mass. Mention RADIO WORLD.

Jensen Radio Mfg. Co.

Radio and phonograph reproducers or speakers are expected to show marked improvement during the next few months based on information and reports coming from the laboratories and experimental departments of leading manufacturers. In practically every instance, improved tonal quality and trueness of reproduction are being obtained through the use of the dynamic principle.

The dynamic method and principles are not new, patents dating back to 1912. Some of the first radio speakers and public address systems, designed by and built under the direction of Peter L. Jensen, pioneer radio engineer and recognized authority on radio transmission and reproduction, employed the separately energized magnetic field construction which is now used in this latest type speaker.

During the past three years, Mr. Jensen has been devoting his entire time to the development and perfecting of the dynamic speaker. About a year ago, speakers of this type bearing his name were produced for the first time on a successful commercial basis.

In tonal quality, the new dynamic speakers are said to equal and exceed in ability any of the other types. They are capable of producing great volume without appreciable distortion. During the development work carried on by Mr. Jensen, an experimental model used to reproduce an orchestra was clearly audible at a distance of twenty-five miles.

In reproducing orchestras and bands, the dynamic speaker does not overemphasize the bass notes and bring them into the foreground which is characteristic of practically all present day reproducers or speakers.

The new dynamic speakers receive their power directly from lighting socket 110 volt AC current. No rectifying or other tubes are used in the dynamic speaker, however, the AC hum being eliminated by a simple filter system. Where 110 volt current is not available, a model using a six volt supply from an ordinary storage battery is also being produced.

This new speaker will handle the outputs of receivers using the regular power tubes as well as the higher outputs of the latest push-pull or other type audio amplifiers using the CX-310 or even CX-350 tubes.

For further information write to Jensen Radio Mfg. Co., Chicago, Ill., or Oakland, Calif., and mention RADIO WORLD.

* * *

Five appointments to the sales force of the Jensen Radio Manufacturing Company have been made by Thomas A. White, general sales manager. Four of the men have been assigned definite territory and will devote the greater part of their time to the jobbing trade, while the fifth will call on manufacturers.

J. W. Sands, with headquarters at Dayton, Ohio, will contact the wholesale trade in Ohio, Michigan, Indiana, Kentucky and West Virginia. Mr. Sands was with the Magnavox Company at the

Weston Corporation

The Weston Model 537 AC-DC Radio Set Tester is a complete outfit, adaptable to the testing requirements of every set made, whether operated by direct current from batteries or battery substitutes, or by alternating current from socket power.

It will measure the various currents and voltages employed anywhere in the set, including those at the tube sockets. All tests can be made by using the regular voltages normally supplied to the set by



WESTON TESTER

its batteries or socket power without the necessity of changing connections. Nor is any auxiliary power required.

The set is provided with two instruments—an AC voltmeter and a DC voltmilliammeter. An ingenious system of switches and binding posts provides for automatically connecting the instruments to the circuits being tested. The AC voltmeter has three ranges—150/8/4 volts—the lower ranges being required for measuring the filament voltages of tubes, and the highest range is provided for measuring the line voltage. The DC voltmilliammeter has four voltage ranges—600, 300, 60 and 8 volts and two current ranges—150 and 30 milliamperes. All voltage ranges have a resistance of 1,000 ohms per volt. The set is furnished with the necessary socket adaptors and a complete instruction book. For complete data, write to Weston Electrical Instrument Corporation, Newark, N. J., and mention RADIO WORLD.

same time Mr. White was with that organization. Prior to this recent appointment, Mr. Sands was with the sales department of the Splitdorf Company.

The New York City (Metropolitan) territory, in addition to the States of Pennsylvania, Delaware, New Jersey, Maryland, and the city of Washington, D. C., has been assigned to James A. Kennedy, who will make his headquarters in New York.

L. R. Hadin, with headquarters at Schenectady, will travel upper New York State and the New England States.

In the Northwest territory, consisting of Wisconsin, Minnesota, Iowa, Nebraska, North and South Dakota, W. V. Crowley will be the Jensen sales representative. Mr. Crowley will make his headquarters at Chicago, where he was formerly with Charles H. Freshman, Inc.

C. F. Crane, who up to the time he joined the Jensen organization was assistant sales manager of the Briggs & Stratton Co., Milwaukee, will call on manufacturers. Mr. Crane will also travel out of the Chicago office.

Jobbing connections are being closed rapidly. Among those closed recently are K. W. Radio, New York; Wholesale Radio Equipment Company, New York and Newark; Lewis Radio Jobbers, Philadelphia; Detroit Electric Company, Detroit; Harry Alter Company, Chicago; and Benwood-Linze Company, St. Louis.

Polymet Corp.

The engineering department of the Polymet Manufacturing Corporation announced several new products.

New Center-Tapped Resistances are made in all standard sizes from 10 ohms to 100 ohms. The center mounting hole distance can be made to suit requirements. A handy combination soldering and mounting lug is provided. Delicate laboratory instruments control accuracy to a very close degree to insure proper balance of the grid of the highly sensitive AC tubes.

Resistance Strips, flat and flexible, are in two types. The resistance element is wound on a flat insulating strip and equipped with a unique combination soldering and mounting lug; or on a flexible non-inductive tubing and covered with an insulating sleeve. The flexible



strip is equipped with a tinned soldering lug. Light in construction, highly accurate, this element can be usefully employed wherever a low current carrying capacity of resistance of low ohmage is required. The flat strip is made in all sizes from 1 ohm to 2,000 ohms. The flexible resistance is made in all sizes from 1 ohm to 5,000 ohms.

In its metallized grid leak with pig tail soldering connection, Polymet has succeeded in developing a method of making a positive contact between the resistance element and an external soldering connection. The grid leak can now be soldered directly into the circuit without the need of an extra mounting. This means fewer production operations and saves the cost of a mounting.

The new small moulded bakelite condenser combines all the electrical and constructional features of the large sized moulded Bakelite condenser into a light, compact unit for easy mounting in any position. For further particulars, address Polymet Manufacturing Company, 597 Broadway, New York, N. Y. Mention RADIO WORLD.

* * *

Thomas is Appointed

The Polymet Manufacturing Corporation, manufacturers of the Polymet line of power supply essentials, announced the appointment of Leslie G. Thomas as factory manager.

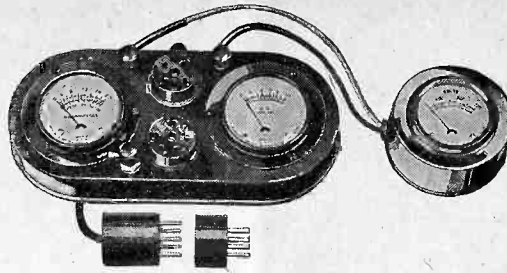
Mr. Thomas has had a broad experience in the electrical field and allied pursuits.

He was factory manager for the F. A. D. Andrea Company, and later was with the Freed-Eismann Corporation as works manager.

Cornish Wire Company

The Corwico AC Harness consists of a twisted cable of heavy Corwico Flexible wire and the necessary number of adapters to fit into the sockets of a battery set to be converted to AC operation. Connect the harness to any standard step-down transformer, insert the AC tubes into the adapters and the old battery set is changed into an AC receiver. Corwico AC Harnesses are made in two types—one with adapters attached for R. C. A. type AC tubes, and one without adapters for Arcturus AC tubes. The Corwico AC Harness can be used to convert all makes of battery sets of six tubes or less into AC receivers. Type "R" for R. C. A. type tubes, \$8.00. Type "A" for Arcturus tubes \$5.00. Made by Cornish Wire Company, 30 Church Street, New York City. An instruction sheet is obtainable on request. Mention "RADIO WORLD."

Guaranty Radio Goods Co.



FOUNDATION UNIT THAT TESTS BOTH AC AND DC TUBES IS AT LEFT, B METER AT RIGHT

A versatile set and tube tester and trouble shooter, consisting of a foundation unit for testing AC and DC tubes, with an optional high resistance meter to test plate voltages, is being marketed by the Guaranty Radio Goods Co., of 145 West Forty-fifth Street, New York City. The device is known as the Two-in-One Universal DC and AC-Scientific Troubling Shooting Test Set and lists at \$10.00.

The foundation unit, in a noire metal case of handsome appearance, contains two meters. One is a 0-10 voltmeter. This meter reads both AC and DC voltages without necessity for any change or adjustment. The other meter reads 0-20 and 0-100 milliamperes, either scale being obtainable from the same meter simply by throwing a built-in switch. The 0-20 scale is used for testing a single tube, usually, but if a big power tube is being tested, which means even the biggest, like the type —50, the 0-100 milliamperes scale is used. There are two binding posts for the high resistance voltmeter, and high resistance voltmeter is to be attached. The high resistance voltmeters also are sold by the same company, at \$4.50 and \$5.50 respectively. The combinations sell at \$13.50 and \$14.50 respectively.

The foundation unit has four padded feet, so that the tester may be placed on a delicately finished piece of furniture without scratching. On top are the switch for the double reading milliammeter, two binding posts for the high resistance voltmeter and the plate milliammeter and filament voltmeter, as well as a five-prong and a four-prong socket. From the rear extends the lever of a grid bias switch, which enables quick change from positive to negative grid bias, to determine the condition of the tube by noting the change in plate current as bias is switched. Also from the rear extends the cord which connects to a five-prong plug. A four-prong adapter enables use of the same plug for a four-prong socket in a set.

To use the device, remove a tube from a socket in a receiver and insert the plug, using the five-prong plug for a five-prong socket, or adding the adapter, if for a four-prong socket. The high resistance voltmeter is then connected to the pair of binding posts on the noire case. The tube taken from the set is put into the proper socket of the foundation unit—it is impossible to make a mistake, since only the right tube fits in the right socket—and the set is turned on. The filament voltage, plate current and plate voltage are thus read. The grid bias switch enables quick determination of the liveliness of the tube, while the readings not only give you information on continuity but also enable you to make sure that too much voltage is not being disastrously applied to the AC tube filaments. This question is very important, and the filament voltmeter is so scaled that voltages from 1½ to 7½ are particularly easy to read. Line voltage regulation, by means of any approved device, thus may be accomplished by gauging the filament voltage.

The high resistance voltmeters (0-300 to 0-500 volts) are made in portable type, with full nickel finish and 30" tipped connecting cords. The cable joining plug to the meters also is 30" long.

Geo. W. Walker Co.

(Victoreen Products)

The display of the George W. Walker Co., of 2825 Chester Avenue, Cleveland, Ohio, attracted much attention at the show. The display consisted of the new Victoreen AC circuit and power supply, a Victoreen DC circuit and also a complete new power amplifier and a C power supply.

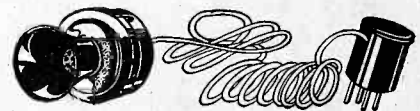
The company is working on a voltage regulator and a new short wave unit to be placed ahead of a receiver. These two products, although completely developed, were not exhibited at the show.

The new power amplifier is extremely efficient, reproducing with remarkable clarity as well as volume. This power amplifier is provided with both volume and tone control and should reach a market which is very much interested in power supplies for phonograph pickup in places such as theatres, bazaars, dances, etc. For full details write to the company at the above address, mentioning RADIO WORLD.

Insuline Corporation

The Insuline Corporation of America, 80 Cortlandt Street, New York City, announces the production of a timely product for owners of electric receivers and receivers that have been adapted to use AC tubes. It is the Resistovolt, a small cylindrical, bakelite encased device which plugs into the AC line, the receiver plug fitting into the open end. It contains a specially constructed coil which reacts when the line output is higher than 110 volts and does not decrease the voltage below this point. It is claimed by the manufacturer that this device in addition to acting as a protector to all AC tubes, also acts as a protective fuse, performs the functions of a lightning arrester, and holds back a large percentage of annoying line noises. Type I. C. A.—7 operates any electric set up to seven tubes, type I. C. A.—10 operates seven to ten tubes. Both types work on AC or DC. Full information as to the possibilities of this device will be sent to those interested upon application to the above concern. Mention RADIO WORLD.—J. H. C.

Brooklyn Metal Stamping



Brooklyn Metal Stamping Corporation, 718 Atlantic Avenue, Brooklyn, N. Y., has a new home broadcaster, consisting of a microphone, long extension cord and socket. The socket is inserted into the detector of a set and the extension cord is run into another room and attached to the microphone, allowing the user to cut into the broadcast program, and make his own announcement. It can also be used to test out home talent on voice or music and has many novel and useful adaptations. Full information on this and other B. M. S. products may be had from the above concern upon application. Mention RADIO WORLD.—J. H. C.

SOME ARCTURUS PRICES LOWER

The Arcturus Radio Company announces a price reduction on its 15 volt AC amplifier and power tubes. The list price on these tubes has been dropped from \$5 to \$4. The prices on the 15 volt detector, the type 127, the 2.5 volt detector and the AC shield grid tubes remain unchanged.

Aerovox Wireless Corp.

To meet the demand for a resistance unit which can be easily changed to fit the requirements of electric sets and varying line voltages, the Aerovox Wireless Corporation, 72 Washington Street, Brooklyn, N. Y., is bringing out a wire wound Pyrohm resistor fitted with an Edison Base. This unit may be connected into a circuit by screwing it into any standard lamp socket or screw type receptacle.



WIRE WOUND RESISTOR WITH EDISON BASE

The various sizes are suitable for use as regulating resistances in battery chargers or DC eliminators, for primary circuit resistors or for any other purpose where a resistor with this type of mounting is required to effect quick changes of resistance value. The unit itself is wound with a high grade resistance wire on a refractory tube and coated with a porcelain enamel which thoroughly covers and protects the wire from moisture and mechanical injury.

A new line of extremely compact condensers is making its appearance under the Aerovox name. These units are non-inductively wound, thoroughly impregnated and sealed in round fibre tubes. The terminals provide a convenient means for mounting the condenser on subpanels or directly to the binding post terminals. They are suitable for use in high voltage circuits where capacities of from .01 to .1 mfd. are required. They are made in various ranges to withstand working voltages of 200, 400, and 1,000 volts DC.



IMPREGNATED SMALL CAPACITY CONDENSER

A complete line of Tapped Pyrohm Resistors suitable for use with the most popular power supply units is announced. They are made in the same manner as the standard fixed Pyrohm resistors. They are wound on refractory tubes, using a high grade resistance wire and then coated with a porcelain enamel which protects the wire from moisture, oxidation, and mechanical injury. An important feature of these units is that the wire, tube, and enamel have the same coefficient of expansion which allows the unit to be used under heavy loads without displacement or injury to the wire. In the process of manufacture, the unit is subjected to high heat and for this reason will stand overheating in service without injury.

A new line of fixed wire wound resistors is announced. These resistor units are wire wound on flat fibre strips using the best resistance wire. They are provided with positive contact terminals which may be used for eyeleted mounting, soldered connections, or direct mounting on socket terminals. The fixed resistor units are available in resistance values of from 100 to 2,000 ohms and are ideal for use as grid suppressors or as grid biasing resistors. The same type of resistor is also available in center tapped form for use in AC filament circuits as illustrated on front cover.

A unique moulded bakelite mica condenser is another new product. An out-

standing feature is its extremely small size. The capacity of the unit is predetermined by a patented process in the manufacture. The condenser is sealed in bakelite, which protects the condenser against extreme temperature, moisture or chemical action. The dielectric is of the finest grade India ruby mica. The plates are tin foil and the condenser element is thoroughly impregnated. The special lugs provided allow for screw, eyelet, or soldering assembly. The construction of the mounting lugs and the insulating holes of the condenser unit permit either mounting on metal sub-panels or bakelite sub-panels. In mounting on metal subpanels, the unit can be entirely insulated from the subpanel.



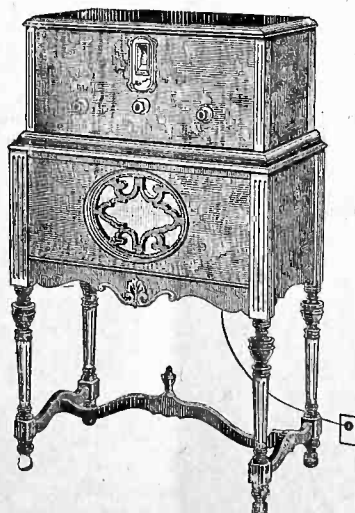
REMARKABLY SMALL-SIZED FIXED CONDENSER

The Aerovox Interference Filter, another new item, is designed to prevent noises from the power line from affecting the operation of electric receivers or power supply devices. It may also be used to prevent radiation and interference from electric motors, electric refrigerators, electric sewing machines, oil burners, and other electric appliances.

The corporation announces a complete line of filter condenser blocks to fit the requirements of the latest power supply devices. These units are available in a large variety of combinations of capacities and working voltages to suit the rectifier and power amplifier circuits that are now so popular. Write to Aerovox for catalogue and mention RADIO WORLD.

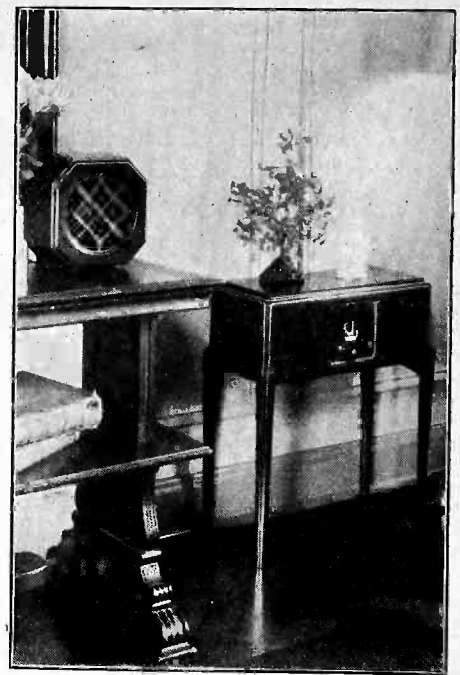
Grigsby-Grunow Co.

The Grigsby-Grunow Company, Chicago, Ill., makers of the nationally known Majestic A and B power units, is ready with a complete line of AC operated sets for immediate delivery. These sets include a powerful dynamic type speaker fed by the latest development in push-pull amplification. Cabinets, dynamic speakers, chasses and power units are made in six great Majestic plants covering acres of ground and employing over 4,000 persons. There are several beautiful models, built to meet every requirement, and priced at a range of from \$85 to \$167.50. Chasses are uniform, completely shielded, rigid and sturdy, built for long wear and satisfaction. The dynamic speaker is of advanced design. The full line is displayed at the Show. Those locally interested may obtain full information from K. W. Radio Co., 98 Park Place, New York City.—J. H. C.



MODEL 71 MAJESTIC AC SET

National Carbon Co.



THE EVEREADY RECEIVER MODEL THAT IS MADE OF DIE-CAST ALUMINUM. EVEREADY SPEAKER AT LEFT

The National Carbon Company, Inc., has entered the radio receiving set field.

The statement announces that the company will sell both AC (batteryless) sets and battery-operated sets, beginning with the Fall radio buying season.

A departure in materials for production of cabinets is the use of die-cast aluminum for one of the receivers.

This particular Eveready receiver is dark green, with routed silver striping forming decorative borders and a silver-striped lozenge, or diamond, at each end, and on the top surface of the cabinet.

Die-cast aluminum, which is simply hot molten aluminum forced into a die and cast into shape by a terrific impact of air pressure, and be moulded into the same soft contours that distinguish the work of the master craftsmen in woods. But where a craftsman would produce but one piece of such work over a long period, it is possible by the die-cast method to duplicate the craftsman's achievement many times in a short while. Aluminum can be painted by the baking processes employed for automobile bodies. The result is a beautiful finish which cannot be marred by dust, smoke, grease or water, and which the housewife simply brushes off to restore to its natural appearance despite any defacement which would ordinarily scar a radio cabinet.

In the casting of the Eveready cabinet, a special die was made to permit of the bevelled edge which runs around the top of the cabinet, accentuating the two-tone color scheme. The aluminum cabinet serves as an additional complete shield for the entire Eveready set, in addition to imparting a distinctively smart, modern atmosphere.

Balkite Has AC Set

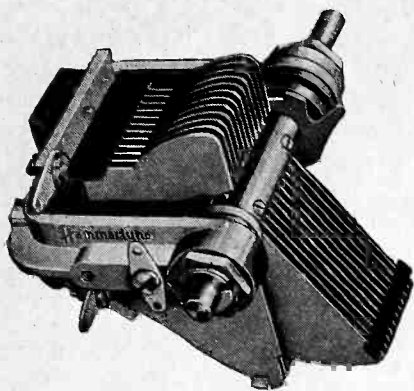
Chicago.

The Fansteel Products Company, Inc., North Chicago, Ill., manufacturers of Balkite power units, has added to its line the Balkite AC receiver. The first showing of this receiver was held at the Balkite National Sales meeting, at the Drake Hotel, Chicago.

The receiver does not attempt to enter the low priced field. There are three models—the table model, A-5, at \$235; the Highboy, A-7, at \$487.50; an additional model for people who want fine radio without any trimmings is the table model enclosed in a simple steel case at \$197.50, A-3.

Hammarlund Mfg. Co.

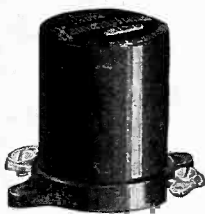
A new product of the Hammarlund Manufacturing Co., of 424 West 33d St., New York City, is a set of short wave coils, which, when used with the Hammarlund .00015 mfd. tuning condenser,



and a .00025 mfd. Hammarlund condenser for feedback, enables receptions of virtually the entire short wave band. The famous Midline condensers are used, of which the .0005 mfd. model is illustrated herewith. The short wave circuit includes a 65-millihenry Hammarlund RF choke coil, also illustrated.

The company makes a new shield for the famous Hi-Q Receiver, as well as coils for the broadcast band, and is one of the best known and most substantial concerns in the radio business.

A reprint on short wave data is available. Write to Hammarlund Manufacturing Co., at the above address, and mention RADIO WORLD. Also be sure to ask for data on the full Hammarlund line, including new parts.



Radiall Company

The famous line of Amperites, the standby in filament rheostats that automatically adjust themselves, because they alter their resistance automatically, by a heat principle, to compensate for current or voltage change, continues to be outstanding in the field. The 622 is the latest announced Amperite. It drops a 6-volt source to 3.3 volts for the screen grid tube. Amperites are manufactured by Radiall Company, 50 Franklin Street, New York City. Write to the concern for the Amperite book of latest construction data and circuits, mentioning RADIO WORLD.

Arthur H. Lynch, Inc.

Always alert to serve the radio public's needs, as well as the radio manufacturers', Arthur H. Lynch, Inc., 1775 Broadway, New York City, has produced an exceptionally accurate and durable center-tapped wire-wound resistor, for equally dividing the voltage across the secondary of a filament transformer. So accurate is the device that it has a very appreciable effect upon eliminating hum, hence has been named the Hum Killer. This part is made in different resistance values, so that experts in the design of AC receivers, careful to watch the effect of the total current drain, will find the Hum Killer absolutely dependable.

Another valuable part made by the Lynch organization, under the direction of Arthur H. Lynch, president, is the Filgrid, a resistor arrangement, on a

Lynch double mounting, whereby two resistors, when in series, give exactly the right automatic bias for DC type screen grid tubes and likewise afford the proper voltage of 3.3 volts, from a 6-volt source. The Filgrid is used in the National Screen Grid Five and in other popular circuits and has won exceptional favor among home constructors of radio receivers, and custom set builders. It may be connected in parallel for other purposes, or one resistor omitted, thus affording versatility.

Output potentiometers, or tapped resistance units, for B supplies, as well as heavy duty resistors of the same general type, but suitable for enormous current loads, also are made by this corporation. A five tube deck for a compact and efficient receiver, single and double mountings moulded of Bakelite and with securely fastened clips that stay put indefinitely, as well as the famous line of Lynch metallized grid leaks and plate resistors for detector circuits and resistance coupled amplifiers, continue to be favorites in the parts market, and much sought-after by manufacturers, too. Mr. Lynch was one of the first to concentrate strongly on resistance coupled audio, of which he has always been a big booster.

The company is prospering excellently, having been formed about three years ago by Mr. Lynch and William H. Bearsley. Mr. Lynch's personal popularity in the trade and among radio set builders in the home and custom workshop, combined with the excellence of the products manufactured by the concern, are considered the "open secret" of the corporation's success. Readers should write to Mr. Lynch for full data on his line of products, and also inquire about his book on resistance. Mention RADIO WORLD.

General Radio Co.

General Radio Company, Cambridge Mass., manufacturers of a complete line of high grade radio instruments and parts for receivers, has added a line of transformers, choke coils and speaker filters for use with the -50 type power tube. The type 587-A power speaker filter contains a choke coil having an inductance of 15 henrys, a continuous current rating of 100 milliamperes and a direct current resistance of only 250 ohms. It also contains two 2 mfd. condensers, one on each side of the loudspeaker, to protect the speaker from the direct current and the high voltage used with the -50 power tube. The construction of the unit not only protects the loudspeaker but also the operator, since at no point are any high voltage conductors exposed. The price of this unit is \$10.

The 565-B is a full-wave high voltage transformer designed for use with two -81 type rectifiers in a full-wave rectifier circuit. It contains one center-tapped winding of 1,200 volts, and two 7½ volt windings for the filaments of the rectifier tubes and the amplifier tubes. It is rated at 200 watts and is for use on a line of from 105 to 120 volts and 50-60 cycles.

Those who are interested in these new parts and others in the same line may receive full information by writing to the manufacturer. Mention RADIO WORLD.

National Company, Inc.

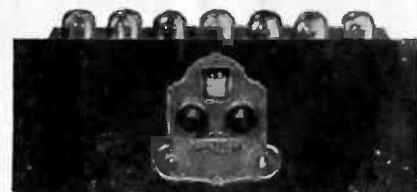
Renowned as a manufacturer extraordinary, with an aesthetic taste in design and skill of execution, the National Company, of Malden, Mass., under the direction of W. A. Ready, president, has a line of new apparatus that is fetching. Included are the new National dials with hammered silver escutcheon, in two types, one (Type F) for drum control, where the condenser, in single or gang formation, is mounted parallel with the front panel, the other (Type E), for condenser mounting at right angles to the front panel. The famous velvet vernier feature is re-

Ferranti, Ltd.



The Ferranti audio transformers, famous in this country for radio use for several years, thus acquiring some of the fame attaching to the name in England, have companion inductances this season in choke coils for B eliminator designs, as well as output transformers and push-pull couplers. The company has a fine descriptive book. Inquire for it by addressing Ferranti at 132 West 42d Street, and mention RADIO WORLD.

Pierce-Airo, Inc.



Pierce-Airo, Inc., 119 Fourth avenue, New York City, has a new model chassis. It is made of heavy gauge, drawn and welded steel, housing all the component receiver parts, including power supply. It is rigidly constructed. It is controlled by an illuminated single drum dial operated by bakelite knob, positive friction drive. Compensating control makes possible extreme selectivity and easy tuning. One stage of transformer audio amplification and one stage of power push-pull are used after three RF stages and detector. The power supply is an integral part of the chassis. Type -26, -27 and 171A tubes are used. The panel is 7x18 inches. Full information on this may be had from the above concern. Mention RADIO WORLD.—J. H. C.

tained in all its smoothness and perfection in each model. The dials met with instantaneous success and bid fair to be the reigning favorites of the season.

A radio frequency assembly for the National Screen Grid Five, consisting of two coils, two condensers, one drum dial, pilot light and a frame on which these are mounted, is another fetching product of this factory. The input coil, in the antenna circuit, has an inductive trimmer, while a third winding on the interstage coil is adjustable likewise, and serves as a tickler, as in the Browning-Drake hook-up, of which the National Screen Grid Five is an improvement. The familiar Impedaformers, arranged for two resistive plate loads and one inductive plate load, for equalized frequency characteristic, constitute the audio channel, the output of which is through a National Tone Filter.

Housing a Portable

By Walter J. McCord

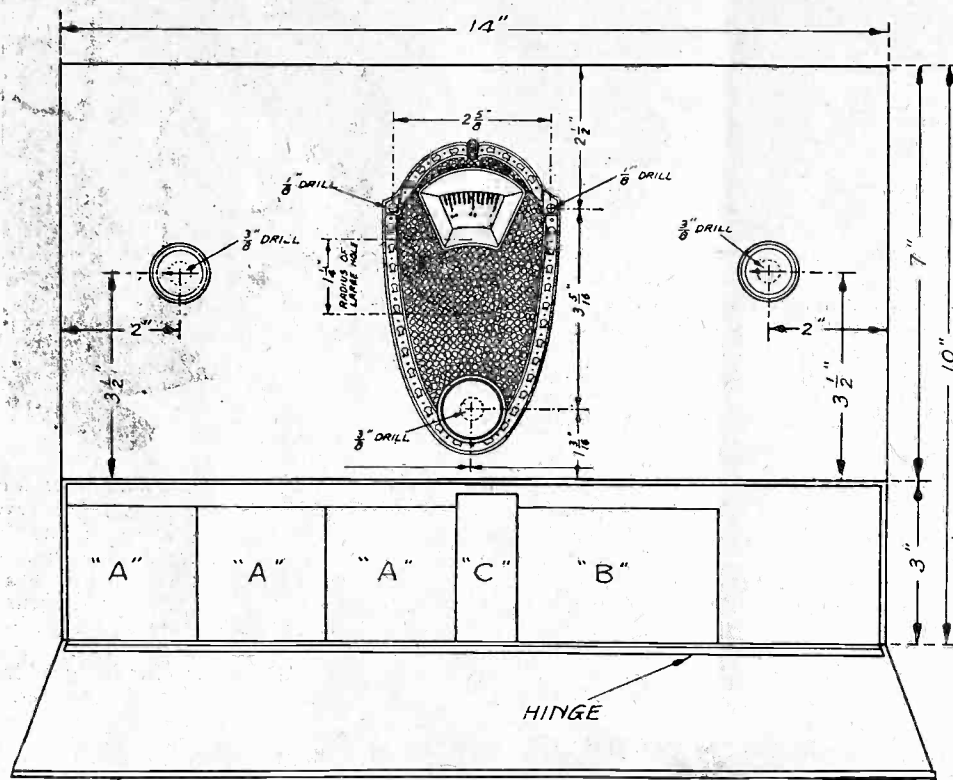


FIG. 1

THE BATTERIES FOR THE PORTABLE RECEIVER ARE PLACED IN A COMPARTMENT UNDER THE RECEIVER PROPER AS SHOWN IN THIS SKETCH. THE LOOP IS MOUNTED INSIDE THE BOX ON A SPECIALLY PREPARED FRAME. THE LOUD SPEAKER IS PUT AT THE BACK.

IN the June 2d issue a portable "that perks even in stubborn places" was described. Here is how the receiver is encased and powered.

The carrying case is made of wood of such dimensions that not only the receiver proper can be installed in it but also the batteries, the loop and the loudspeaker. Fig. 1 gives the inside dimensions of the box.

The batteries are placed in a compartment below the receiver. This compartment is 3 inches high and 14 inches long. For portable purposes small dry cells must be used for all the batteries. Three No. 6 cells connected in series constitute the A battery. The cells are placed at the left in the battery compartment and laid on the side. The cells are 2 1/2 inches square and slightly over 6 inches long. Hence they will occupy 7 1/2 inches of the length of the battery compartment and little of 6 inches of the depth.

The "B" consists of 5 small 22 1/2 volt batteries—each of which is 2 1/2 inches high, 2 inches wide and 3 3/8 inches long. They are stacked in a row one back of the other so that the total depth required for the 5 is 10 inches. Since these cells may take a little more room than the nominal it is well to make the inside depth of the battery compartment 11 inches or more.

The "C" is one 7 1/2 volt battery having a height of 2 7/8 inches, a width of 7/8 inch and a length of 4 inches.

Ample Room Allowed

All the batteries occupy 11 3/4 inches of the total 14 inches of the length of the battery compartment. Hence there is a space of 2 1/4 inches left. This may be used for spare parts and tools.

A hinged door is provided in front of the battery compartment. This may be made of such height as to cover the

panel of the set as well as the battery compartment if it is not desired to have the tuning controls exposed while the set is not in use.

Mounting of the loop is always one of the problems in portable designs. One method in use is to wind the loop on a detachable frame fitting into the front of the receiver. When the set is set up for use the loop is taken out and plugged into a jack provided for this purpose. But this method is not very convenient.

LIST OF PARTS

- Lo—One loop.
- C1, C4—Two .0005 mfd. tuning condensers, ganged (Karas).
- L1L2L3—One three-circuit tuner with large primary for shield grid tube (Bruno SG tuner).
- AF1, AF2—Two audio frequency transformers (Karas Harmonik).
- C2, C5, C6—Three .001 mfd. mica fixed condensers (Aerovox).
- C3—One .00025 mfd. grid condenser with clips (Aerovox).
- R4—One standard Clarostat.
- R1—One No. 20 Amperite.
- R2—One Lynch 5 meg. metallized grid leak.
- R3, R5, R6—Three No. 4v199 Amperites.
- SW—One Yaxley No. 10 switch.
- 1, 2, 3, 4—Four sockets (Frost).
- Ant., Gnd.—Two XL, bakelite push posts.
- OP—Two X-L bakelite push posts (speaker +, speaker —)
- One 7x14 inch front panel.
- One 9x13 inch baseboard.
- One National type E dial (not drum).
- One small knob for tickler shaft.
- One 222 Vac-Shield and one 201A Vac-Shield.
- One No. 45 Universal peewee clip and 5 inch flexible wire.

(Note: Constants refer to circuit diagram, published last week, issue of June 2.)

Another way of mounting the loop is to wind it on a frame which just fits into the case and then leave it permanently in place. The set as a whole can then be turned to point the loop into the direction which gives the greatest pick-up.

Loudspeaker Built In

The loudspeaker is another problem that must be solved for every portable receiver. A horn large enough to be of much value occupies too much space. The

(Concluded on page 18)

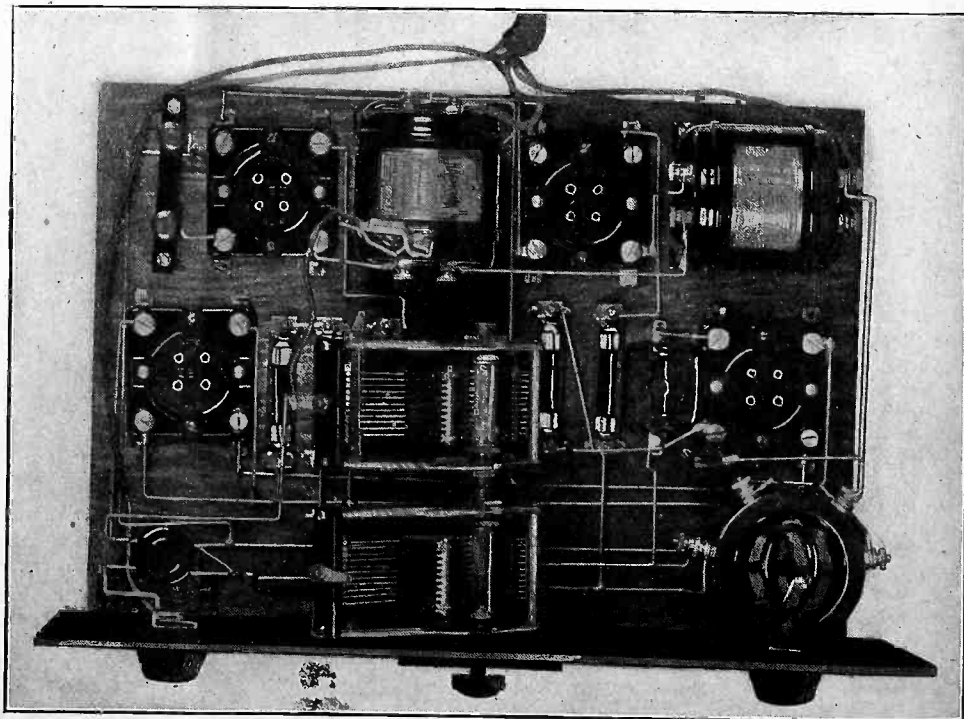


FIG. 2
TOP VIEW OF THE RECEIVER

Turkey's Brief Turn

By Tim Turkey

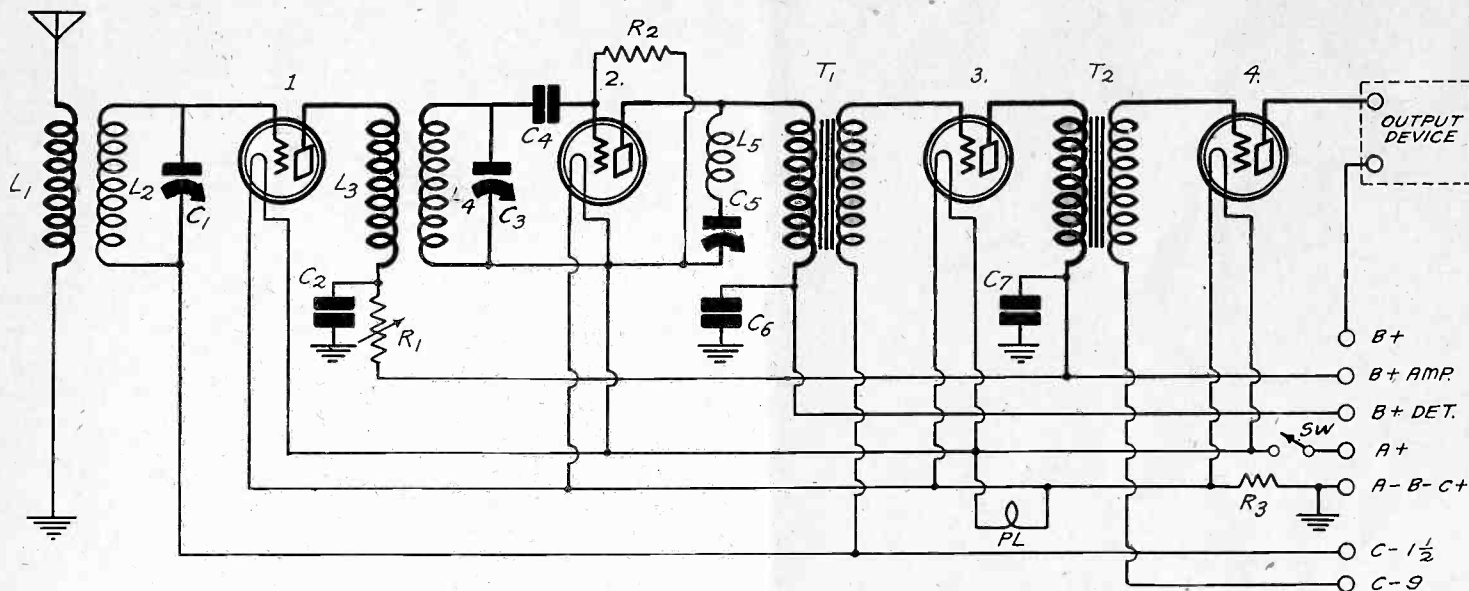


FIG. 1

A SIMPLE, EFFECTIVE ECONOMICAL CIRCUIT, ADAPTED TO -99 OR -01A TUBES FOR SOCKETS 1, 2 AND 3, AND -20 OR 112A TUBE FOR SOCKET 4, BY MERELY INSERTING THE APPROPRIATE BALLAST, R3. THE FUNDAMENTAL DESIGN USED IS THAT OF THE 4-TUBE UNIVERSAL. THE CIRCUIT IS A DX GETTER.

THERE is a large number of fans devoted to the simple four tube receiver consisting of one radio frequency amplifier, a regenerative detector and two stages of transformer coupled audio amplification.

Those fans who still give their allegiance to the four tube circuit do so for obvious reasons. That circuit gives more reception value per dollar of first cost and per dollar of maintenance cost than any other receiver. It is selective, for it has two sharp tuners and regeneration in the detector. It is sensitive, for it has a high amplification at radio frequency, a high detecting efficiency and a high audio amplification. It is easy to tune, for it has only two tuning controls. It is easy to control, for it has a tickler with which the volume can be controlled. It reaches out for distance, for it has a high overall amplification and usually is operated with a good outdoor antenna. It is inexpensive to build, for it has only a few standard parts. It is not very expensive to maintain, for it has only four tubes with moderate plate voltages. It is capable of high quality, for high type audio transformers can be obtained at a reasonable cost and up-to-date transformers now give unexcelled quality when worked in conjunction

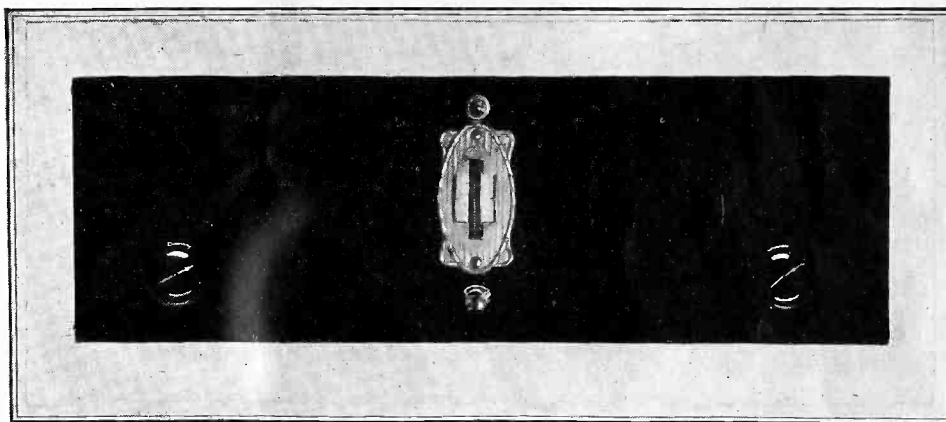


FIG. 2

THE SIMPLICITY OF CONSTRUCTION AND CONTROL OF THE FOUR TUBE REGENERATIVE RECEIVER IS REFLECTED IN THIS ATTRACTIVE PANEL LAYOUT

with adequate tubes and voltages.

The circuit is so easy to build that it is scarcely necessary to give more than the diagram, photographs and list of parts, for those fairly well versed in radio. So here are those data. Try the circuit. You'll like it.

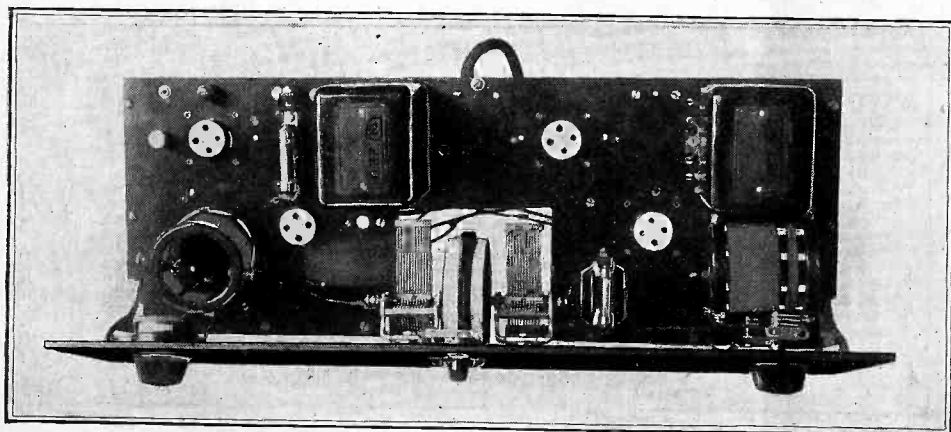


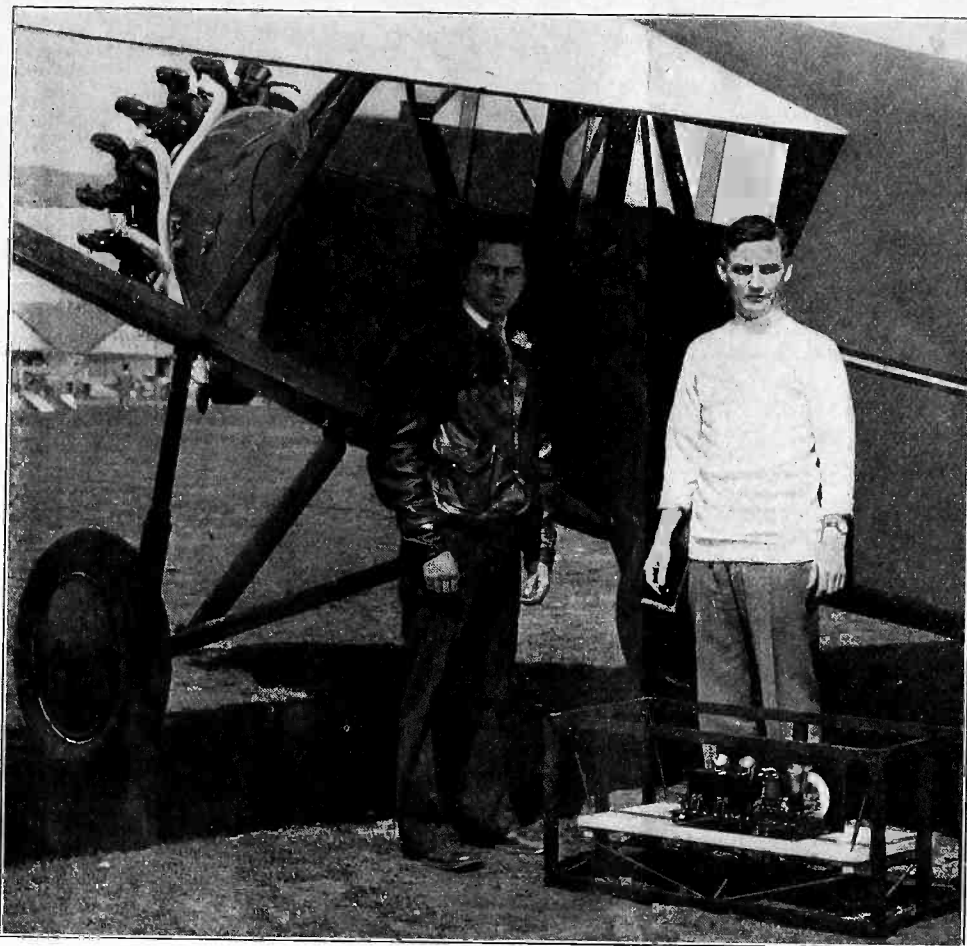
FIG. 3

INTERIOR CONSTRUCTION OF THE FOUR TUBE REGENERATIVE RECEIVER HAVING LOCALIZED TUNING CONTROLS AND EFFECTIVE REGENERATION CONTROL

LIST OF PARTS

- L1, L2—Two Bruno RF transformers for .0005 mfd. condensers
- L5—One General Radio 60 mh choke coil
- T1, T2—Two Silver-Marshall audio frequency transformers, type 220
- C1, C3—Two Bruno .0005 mfd. tuning condensers with drum dials
- C2—One .01 Aerovox condenser
- C4—One .00025 mfd. Sangamo grid condenser
- C5—One Hammarlund junior condenser (15 mmfd.)
- C6, C7—Two 2 mfd. by-pass condensers
- R1—One Electrad 50,000 ohm variable resistor
- R2—One Lynch 2 megohm metallized grid lead with mounting
- R3—One No. 1 Amperite
- Sw—One Yaxley filament switch
- PL—One pilot light
- One Yaxley terminal capable and connector
- Four binding posts
- Four Benjamin sockets
- One 7x24 panel
- One 7x23 sub-panel
- Two Bruno brackets

INTERFERENCE ON 'PLANE TESTED



(Chas. Curtis)

PLANE USED IN TEST FLIGHTS BY M. B. SLEEPER (RIGHT), WHO SEEKS TO MAKE FLYING PROMPTER AND SAFER BY OBTAINING WEATHER AND LOCATION DATA BY RADIOPHONE. THE SET-UP IN FOREGROUND IS USED FOR INVESTIGATING MICROPHONIC INTERFERENCE

Flight Tests of Radio Promise Safer Travel

By M. B. Sleeper

Engineers, after a lengthy investigation, have found that radio communication can provide the most important contribution to safety in the air. Only radio can answer the questions, "What is the weather ahead?" and, "Where am I?", asked by the airplane pilot.

They found no scientific data available concerning power and range; no analysis of skip distance effects in relation to wavelength on altitude. Reference to the war-time use of radio disclosed nothing useful beyond the fact that millions of dollars' worth of airplane radio sets sent to France were promptly incarcerated in warehouses.

More recent record showed that radio served no useful purpose on planes piloted by Byrd, Mrs. Grayson, and Bertaud, while Lavine, Jack Frost, and Hinchcliffe, after planning to install sets, lost confidence or interest in radio.

Yet Fitzmaurice, in one of the first communications from Greenely Island said, "If we had a radio, we would have reached New York!"

Decides to Buy Plane

Thus the Pilot Company decided to purchase a seven-passenger Stinson monoplane, specially built for use as a flying laboratory, to investigate radio conditions

in the air. With the plane completed, the radio research work is now under way, and tests are already in progress between the plane and the field laboratory.

There are many special features about the machine which will interest you. First of all, the Wright Whirlwind motor and the ignition system are electrically shielded to prevent spark interference with the receiving equipment.

Instead of using a wind-driven generator, useful only when the plane is in the air, we had the Wright Company build in a generator drive gear box, from which the generator can be run. The welded steel tubing which forms the fuselage frame work, the under-carriage, and all the metal parts were bonded together with low resistance connections, for they serve as the radio ground.

To Test Antennas

Small pipe sockets were built into the wings, so that an antenna can be stretched across the wings. The distance is about 40 feet between sockets, ample for a short wave antenna. This is in addition to the trailing wire antenna which can be reeled out through the cabin floor. Comparative tests will be made between the wing antenna and

trailing wire to determine their efficiency and directional properties.

The fuselage and wings are not covered with aluminum paint, as is customary but with non-metallic lacquer. This was done to prevent possible absorption in the thin metallic sheets presented by the aluminum paint.

At the rear of the spacious cabin is a compartment for the radio equipment. In addition, a shelf can be put in place extending out over the rear seat, for extra apparatus.

Makes Trip, Detroit to N. Y.

To give you an idea of the usefulness of radio in passenger and express routes imagine yourself taking a trip which was made from Detroit to New York, to bring the machine to the Pilot Air Port where the radio equipment is being installed.

We took off from the Ford Airport at 11:20 A. M. No weather reports were available to tell us what might be encountered ahead. The sun was shining but masses of heavy cloud sent succeeding shadows over the field. Our course plotted on strip maps, took us south over the Lake, and then east, across the length of Pennsylvania, past Pittsburgh, Middletown, Pa., where we planned to refuel, then over New Jersey, coming out past Staten Island, New York Harbor, down Long Island, landing at Mineola.

No sooner had we started across the Lake than the rain fell in torrents. It seems to rain harder in the sky than on the land, if that is possible. And it rained in small areas. As we came into the foothills of Pennsylvania we encountered snow. The mountains, or those tremendous ridges, over which our course took us, are likely to be covered by an impenetrable mist.

Important Questions

Should we take the rain and snow as a warning against crossing the mountains? Should we take a chance that the mountains would be clear? And having crossed them, what would conditions be in Jersey and Long Island?

Between the mountain ridges are farms to offer fair emergency fields, but the steep ridges are thickly grown with timber. Only one valley is entirely wooded.

Still, the fields are of no use if it is impossible to distinguish hill or valley through the mist. One of the mail pilots, injured in a forced landing in the mountains, crawled for five days until he came to a road where he was found—only to die in a hospital. Another pilot flew directly into the side of a mountain. The remains of the plane were not found until weeks later.

Need Weather Reports

Successful commercial flying is not merely a matter of flying only when the weather is known to be good. If conditions promise to be bad at the destination, the pilot must get through if possible, or at least go as far as he can.

On our trip, however, we should have had a weather report as we entered Ohio, for that would have told us the true significance of the rain and snow we encountered. We should have had a report at least 50 miles before we reached the mountains in Pennsylvania. No information was available at Middletown, where we landed. Over Jersey we should have had a report for New York and Long Island.

Safety Measures

Flying at 3,000 to 5,000 feet above the ground an airplane may or may not be heard on the ground. It cannot be identified, for the numbers on the wing cannot be seen. Suppose our ship had been a passenger or express plane, flying on

A DIZZY TASK ON AERIAL TOWER



A SURE FOOT AND STEADY NERVES ARE REQUIRED BY THESE WORKMEN REPAIRING AND PAINTING THE GIANT ANTENNA TOWER OF A BERLIN STATION. MOST PERSONS GET DIZZY JUST LOOKING AT THE PICTURE.

External Resistance Spares Power Tube

Rapid strides have been taken in the power side of radio and the improvement in B power units, power packs and power amplifiers has kept pace with the rapid tube, circuit and speaker advances. Within the memory of us all is the time when 90 volts applied to the plate seemed a veritable Niagara of power; and the pioneers in the use of 135 volts were regarded with awe. Nowadays, 200 volts is the average and the advanced fan is using as high as 450.

comes a serious matter. However, the remedy is simple and inexpensive. Every power unit should be provided with a control for the maximum output tap, especially in the case where the latest types of gaseous and filament rectifiers are used; if they are provided with an adjustable resistance control for the RF and detector, so much the better and so much more precise and smoother the operation.

Supply High Voltages

However, many of the present day power units, bought and home built, actually supply voltages of 400 and over, even under load, resulting in the overloading of the 71 type tube. This tends to shorten the life of the tube as well as causing distortion, preventing the tube from doing its best work. This applies also to the other types of power tubes.

When the cost of the power tubes is considered, not to mention the sacrifice of quality expected from them, this be-

Inserts Resistor

To counteract overloading, the insertion of a precise variable resistance such as the standard Clarostat in the B plus maximum lead will prove effective, smoothing out all the trouble and acting to a great extent as tube insurance.

J. A. C.

GET READY

The Democratic and the Republican conventions soon will be held, so now is the time to get your set in perfect working order.

schedule from Detroit to New York. And suppose the engine quit, bringing the machine down for a forced landing. The occupants might travel twenty to fifty miles to find assistance. If the plane was not seen coming down, its disappearance would not be known until the plane failed to arrive at its destination at the scheduled time. Its location would be known only as somewhere between Detroit and New York.

On the other hand, suppose the pilot reports by radio at intervals of 20 miles along the course? That would be in intervals of ten or twelve minutes. Then, in case of a forced landing, the ship could be located along a 20-mile line, and aid sent to the plane promptly.

Radio Problems

All airplane radio equipment must be considered with full regard for the facts that: (1), it is not possible to make a code operator of a pilot; (2), the pilot does not want to wear headphones all the time, for he wants to listen to his motor; (3), radio telegraph transmitters are much lighter in weight, for a given transmitting range, than telephone transmitters; (4), every pound represented in radio apparatus is a pound deducted from the pay load.

The first equipment, then, to be developed by the Pilot Company, to provide weather data reception and position reporting will function in this way:

As the pilot approaches a weather station, he will put on the headphones and press down an automatic calling key. The operator on watch at the ground station will hear a telegram signal indicating a request for weather information, and the identifying call of the plane. Referring to his reports received by radio or land wire, he will give the necessary reply by radio telephone. Any other messages to the pilot will be deferred at the same time.

Thereupon, the pilot will proceed with all confidence that he can get through the next weather station, or he will prepare to land at the first intermediate field. Such weather stations would be marked by special beacons at night.

To report his position at 20-mile intervals, the pilot will push another automatic key button. This will send his identifying call on a different wavelength, with a signal to indicate that he is reporting his position.

On the ground, the weather stations will also serve for dispatching. An automatic recorder, giving the time of reception, would register the plane's call. These are among the problems for which the Pilot Airplane Radio Laboratory will be used. Nor is this looking far into the future, either, for already plans are underway to open a trans-continental plane-train passenger service, which must have these radio aids to navigation as a part of its operating equipment.

Listeners Identify

Stations by Voices

Cincinnati.

The personality of a radio station's announcers is as identifying as its call letters, according to Powell Crosley, Jr., president of the Crosley Radio Corporation, which took over the control of WSAI in addition to retaining WLW.

For that reason announcers of WLW and WSAI will be the only members who will confide their efforts to only one of the stations. Regular dialers, Crosley contends, locate their favorite radio stations by the voice of the announcer as much as by listening for call letters.

How Television

By Neal

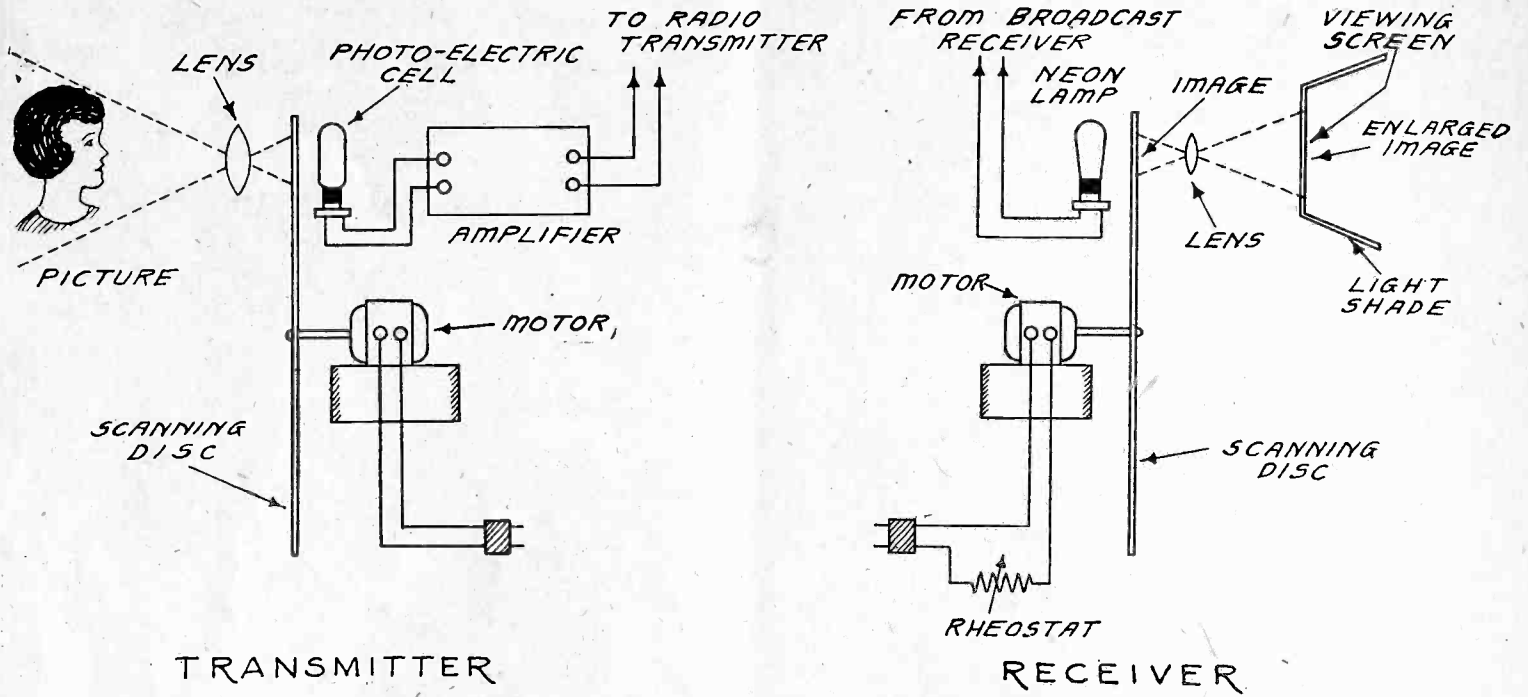


FIG. 1.

AT LEFT ARE SHOWN THE ESSENTIALS OF A TELEVISION TRANSMITTER FROM THE LIVING PICTURE TO THE RADIO BROADCAST TRANSMITTER. AT RIGHT ARE SHOWN THE ESSENTIALS OF A TELEVISION RECEIVER FROM THE OUTPUT OF THE AUDIO AMPLIFIER TO THE VIEWING SCREEN.

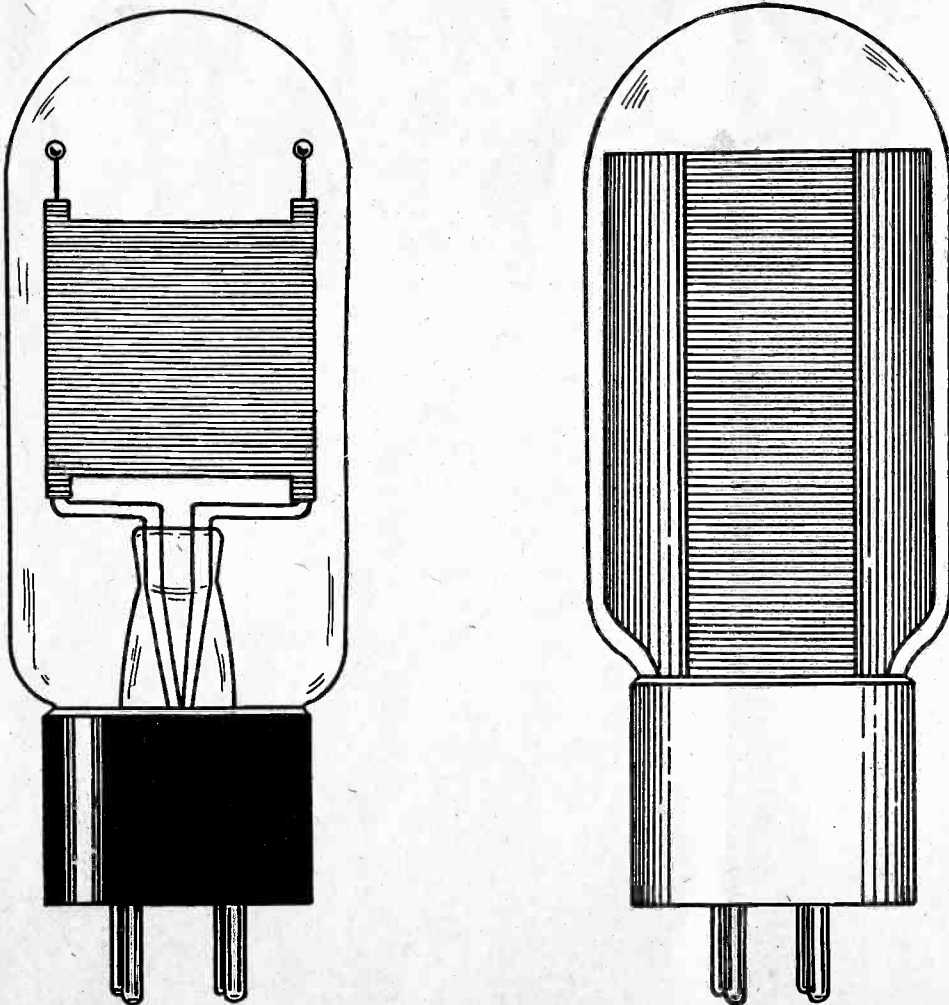


FIG. 2.

THIS SHOWS HOW THE PHOTO-ELECTRIC CELL AND THE NEON GLOW LAMP DESIGNED FOR TELEVISION TRANSMISSION AND RECEPTION APPEAR. AT RIGHT IS THE PHOTO-CELL AND AT LEFT THE NEON GLOW TUBE.

TELEVISION has captivated the radio fans, just as radio broadcasting captivated them seven years ago.

There are many systems of television. Some are exceedingly complex and entirely outside the range of broadcasting at the present time. Other systems are simple and are quite suitable for broadcasting and for reception by the radio fan.

One system in particular is attracting wide attention at this time because of its simplicity and because vision is actually broadcast regularly by it by a radio station within tuning range of a broadcast receiver. That system is the one designed by Dr. E. F. W. Alexanderson and his co-workers of the General Electric Co. of Schenectady, N. Y. The station broadcasting is WGY, operating on a wave of 380 meters.

The principle in brief of this system is as follows:

A lens system, such as an ordinary camera, throws an image of the scene to be transmitted on the flat side of a revolving disc, near the periphery of that disc. The disc contains 24 small holes arranged in a spiral and spaced 15 degrees apart in the angular direction and 1/16 inch in the radial direction. These holes pass in review, one after the other, across the image. Only one hole at a time is on the image. As soon as one hole leaves the image the next enters, and so on. One hole traces a line across the image 1/16 inch below the preceding hole until the last or inner hole has finished. Then the first hole re-enters and the process is repeated. This repetition occurs 18 times every second.

Photo-Electric Cell Used

The light that passes through any hole enters a photo-electric cell. The amount of light that passes through depends on the intensity of the light in the image. The photo-electric cell converts the varying light that enters it into a corresponding varying electric current. The cell re-

Is Tuned In

Fitzalan

sponds instantaneously and accurately to the varying light so that the conversion is exact.

The varying current given out by the cell is amplified and impressed on a radio wave just as a voice current is impressed on the radio wave of a broadcasting station. Thus the carrier wave of the station is modulated according to the light and shade values of the scene that was scanned by the disc.

Vision Tuned In

The picture modulated radio wave is tuned in with any receiver having adequate sensitivity.

The receiving apparatus is almost a replica of the transmitting apparatus. The revolving disc is the same in every respect. It is driven by a small electric motor at exactly the same speed as the transmitting disc. If the speed of the two discs is not the same the image will not appear. It will only be a blur. The speed of the motor driving the receiver scanning disc is controlled manually in the Alexanderson system, and it is simply done by putting a rheostat in series with the line feeding the motor and varying the resistance. A universal motor is required.

In the receiver the photo-electric cell is replaced by a neon glow lamp which has a luminous plate at least $1\frac{1}{2}$ inches square. The output of the broadcast receiver is impressed across the terminals of this glow lamp, and in addition a suitable high voltage is impressed on it to cause it to glow. The output of the receiver causes the intensity of the glow to vary, and this variation is exactly the same as the variation of the lights and shades of the original scene.

Viewed Through Holes

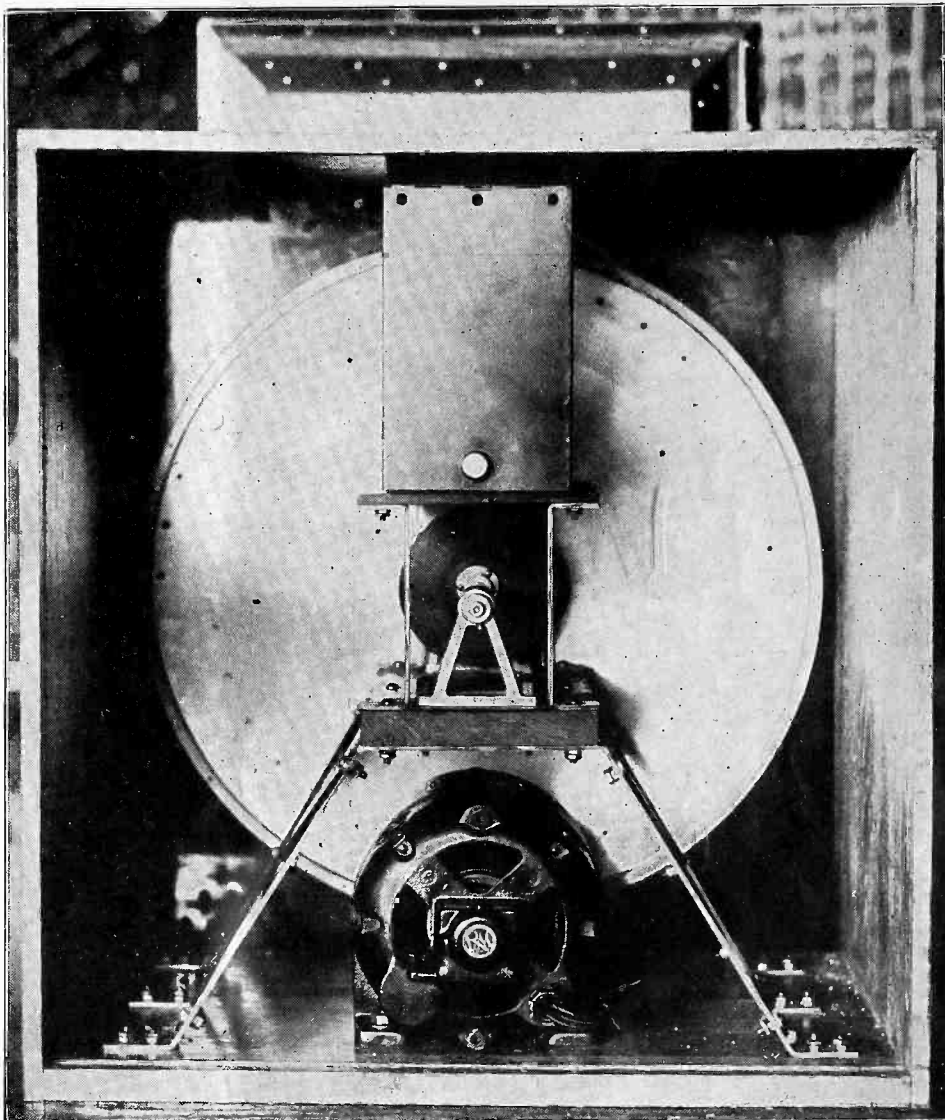
The glow lamp is viewed through the holes in the revolving disc. When the two discs are in synchronism, that is rotating at exactly the same speed, the image will appear on the disc. This image will be $1\frac{1}{2}$ inches square. If a larger size image is required the disc may be viewed through a lens system which magnifies it to the desired extent. The image of the disc formed by the lens system is focused on a ground glass for observation.

The fan should be very careful in buying television receiving equipment to get something suitable for the purpose. The scanning holes should be accurately placed and the size of each hole should not be too large. The diameter of each hole should be just slightly greater than one half the radial separation between two successive holes. A suitable size for each hole is .035 inch when the radial separation between two successive holes is $\frac{1}{16}$ inch. If they are larger there will be too much overlapping of adjacent scanning lines and the image will not be produced with the highest possible definition of which the system is capable.

The size of the luminous plate on the neon lamp must be at least as large as the area covered by the scanning holes. If it is smaller there will be no image near the edges. The lamp used should have been designed for the purpose. Makeshifts will only result in failure. Neon lamps having a luminous area of $1\frac{1}{2} \times 1\frac{1}{2}$ inches which have been designed for receiving television and to operate directly from the output of a -71A type receiving tube are available.

Many fans will no doubt like to ex-

A TELEVISION TRANSMITTER



(Underwood and Underwood)

HOW A TELEVISION TRANSMITTER LOOKS

The interior view of a simple television transmitter shows a scanning disc driven by a small electric motor, a photo-electric cell and an optical system for focusing the image to be transmitted. Part of the housing of the optical system can be seen back of the box containing the disc. The image to be transmitted is focused sharply on the disc. Light is admitted from the image to the photo-electric cell through the small holes in the disc.

The disposition of the holes in the disc and the size of the image are so adjusted that only one hole at a time is on the image.

periment with television transmission as well as reception. This they can do without getting a radio transmitting license for it is not necessary to use radio waves at all. Interesting experiments can be performed by transmitting from one room to another by means of connecting wires.

The necessary photo-electric cell is available. In fact there are now several photo-electric cells on the market. One is made with the same physical dimensions as the neon lamp having the $1\frac{1}{2} \times 1\frac{1}{2}$ inch plate. This makes it possible to use two identical units, one for transmitting and one for reception. In one the photo-cell would be used and in the other the neon lamp.

The outside hole covers a fine line on the upper edge of the image. The next hole covers another line $\frac{1}{16}$ of an inch lower, and so on until the last hole covers a line across the lower edge of the image. There are 24 holes in all and the speed of the disc is such that every hole crosses the image 18 times every second.

A receiver for this television transmitter is an exact duplication of the apparatus except that a glow lamp is used instead of the photo-electric cell and a viewing screen is used as the optical system to replace the picture transmitted.

South Africa Prepares for Television Tests

Washington.

Installation of television apparatus in South African broadcasting stations is reported under consideration in that country, the American Trade Commissioner at Johannesburg, Edward B. Lawson, has advised the Department of Commerce.

A British television company is offering broadcasting television apparatus to South African radio stations at a price between \$2,500 and \$3,000. Receiving sets for television reception are being quoted at about \$150 in Britain.

List of Short Wave Stations

Call Signal	Wavelength (meters)	Frequency (Kilocycles)	Power (Watts)	Controlled by and Location
8XK	Variable	Variable	40,000	Westinghouse El. & Mfg. Co., East Pittsburgh, Pa.
4XE	Variable to 200	Variable to 1,499	250	Wm. Justice Lee, USNR
8XP	10-150	29,982 to 1,999	500	Westinghouse El. & Mfg. Co., East Pittsburgh, Pa.
2XAL	30.91	9,700	500	Experimenter Pub. Co., Coteysville, N. J.
8XAO	32	9,370	75	WJR (Inc.)
6XBR	40 and 105	7,496 and 2,855	500	Warner Bros., Los Angeles, Calif.
8XAL	52.05	5,760	500	Crosley Radio Corp., Harrison, Ohio
7XAO	53.54	5,600	100	Wilbur Jerman Inc., Portland, Ore.
2XBH	54.02	5,550	150	Charles G. Unger, Coney Island, N. Y.
8XJ	54.02	5,550	50-250	Ohio State University, Columbus, Ohio
3XL	59.96	5,000	30,000	R. C. A., B o u n d Brook, N. J.
9XU	61.06	4,910	500	Mona Motor Oil Co., Council Bluffs, Iowa
2XBA	65.18	4,600	50	WAAM (Inc.) Newark, N. J.
2XAQ	65.4	4,610	50	L. Bamberger & Co., Newark, N. J.
6XAI	66.04	4,540	50	Los Angeles Radio Club, Los Angeles, Calif.
8XF	66.04	4,540	500	Radio Air Service Corp., Cleveland, O.
6XUA	104.1	2,880	50	Times Mirror Co., Los Angeles, Calif.
6XBX	105	2,885	50	McWhinnie Electric Co., Venice, Calif.
9XAB	105	2,885	50	R. J. Rockwell, Omaha, Neb.
1XY	105, 109	2,855 and 2,751	50-250	Booth Radio Laboratories, Tilton, N. H.
7XC	105.2	2,850	5-250	Northwest Radio Service Co., Seattle, Wash.
6XAN	105.9	2,830	250	Freeman Lang, Los Angeles, Calif.
6XA	107.1	2,800	100	Los Angeles Evening Express, Los Angeles, Calif.
6XAK	108.2	2,770	50	F. Wellington Morse, Eureka, Calif.
6XBA	108.2	2,770	250	Echophone Mfg. Co., Los Angeles, Calif.
6XAL	108.2	2,770	50	L. E. Taft, Los Angeles, Calif.
6XAF	108.2	2,770	100	Clarence B. Juneau, Los Angeles, Calif.
1XAA	200	1,499	7.5	Stanley N. Read, Providence, R. I.
2XE	236.1 and 106	1,270 and 2,828	50	Atlantic Broadcast-Company, Richmond Hill, N. Y.
2XAD	19.73	15,200	Var.	General Electric Co., Schenectady, N. Y.
2XAF	31.4	9,550	Var.	General Electric Co., Schenectady, N. Y.

members of Congress, after having secured the passage of the Davis-Dill amendment hardly six weeks ago, would today like to see its enforcement indefinitely postponed, now that they have discovered what will be its effect on the various States and on their own political reputations when actually applied.

Can Be Made Useful

"But whatever the hardships that will be imposed upon present broadcasters and radio listeners by the general redistribution of wavelengths required by the Davis-Dill clause. It is also evident that such enforced reallocations can be used by the Commission in the public interest as an opportunity to adjust time and powers of stations so as to grant relief from the present overcrowding of channels.

"What the public itself has been demanding, and has a right to expect from the Commission, is prompt relief from the unhappy radio reception conditions which still persist. These conditions have rendered large parts of our radio spectrum useless, particularly to distant listeners on farms, ranches and in remote communities.

Must Reduce Stations

"This is the real situation which the Commission was created to correct, and which the millions of the public have patiently waited to have remedied. This is the situation of nightly interference which will again be upon us in September, after Summer static has rolled away. It can be remedied only by reducing the number of stations permitted to operate simultaneously on the air during night hours.

"The requirements are well known to all radio engineers. We have only eighty-nine wavelengths. For good radio not over 160 stations of the 500-watt and 5,000-watt classes can operate simultaneously on eighty-five of these wavelengths. On the remaining four channels we can tuck in a couple of hundred little 50 or 100-watt transmitters. And there you have the outline of the possibilities in the present state of the art."

Dr. Stanley Marie

Now CeCo Chemist

Ernest Kauer, chief engineer of the CeCo Company, announced the appointment of Dr. Stanley Marie as chief chemist of the CeCo organization.

Dr. Marie has published about 100 technical papers. He has taught science and radio in Boston English High School, is a member of the American Chemical Society, American Association Advancement of Science, American Society for Testing Materials, and the American Electro Chemical Society. He also has had considerable experience as a Radio Amateur, his license being for 11C and 10F.

He was at one time chief chemist of the Acme Smelting Company, and consulting chemist for a good many organizations, among them being the U. S. Smelting and Refining Company, Columbia Laccuer and Paint Company and others.

Dr. Marie was educated at Wentworth Institute, Franklin Union, and Harvard, receiving his Ph.D.

NEXT WEEK—

The advantages of an electrically recorded record for reproduction through your audio channel, using a pickup, will be detailed. Also antennas, an electric set and the dynamic speaker will be discussed.

Caldwell Finds Law Poor But Workable

Orestes H. Caldwell, Federal Radio Commissioner, speaking over WOR from its studio in New York City, recently, said:

"The Davis-Dill clause, [equalization of new radio law] while containing no provisions for the improvement of radio

reception, can, if properly applied, be used as a lever to effect this end.

"The language of the bill is plain, and the Commission has no option but to comply with it, despite thousands of protests from the public.

"It is no longer a secret that certain

162 Stations Must Quit

Ordered Off Air August 1, Getting 60-day Lease of Life Meanwhile, With Chance to Prove They Should Not Be Barred

Washington.

The Federal Radio Commission, in ordering a blanket extension of all radio broadcasting licenses from June 1 until August 1, announced the adoption of a general order terminating the licenses of 162 stations on August 1. The Commission stated in the order that it has not been satisfied that public interest, convenience or necessity will be served by granting them renewals of their licenses.

The station affected were given a hearing before the Commission on July 9 at Washington. They were asked to show cause why they should not be deleted from the list of broadcasting stations as ordered.

Third Zone Escapes

Ninety-one of the stations are in the the first, 30 in the second and five in fourth radio zone. Thirty-one are in the fifth. The third zone of Southern States escaped without any deletions.

Text of Order

The general order sent to those to be

eliminated (General Order No. 32) follows in full text:

"The Commission, after an examination of the applications for renewal of station licenses of the below named stations, has not been satisfied that public interest, convenience or necessity will be served by granting these applications.

"It extends for a period of 60 days the existing licenses of these stations subject to all modifications and extensions, to terminate at three o'clock a. m., August 1, 1928.

"The Commission fixes Monday, July 11, ten o'clock a. m., in its offices in Washington, D. C., as the time and place for a hearing for each of these applications."

Another general order (General Order No. 34) extends the existing licenses to all portable broadcasting stations until July 1, after which they must go off the air.

List of Those Ordered Off

The stations that must quit the air, unless they can prove good public reasons for continuing, are by zones as follows:

Stations Ordered Off Air

NO. 1

WIBS—Elizabeth, N. J.
WBMS—Union City, N. J.
WBQ—Standard Cahill Company, Inc., N. Y.
WKBO—Jersey City, N. J.
WSGH, WSDA—Amateur Radio Specialty Company, Brooklyn.
WWRL—William H. Reuman, Woodside, N. Y.
WGCP—May Broadcasting Company, Newark, N. J.
WLBX—John H. Brahy, Long Island City.
WLBH—Joseph J. Lombardi, Farmingdale, N. Y.
WINR—Radiotel Manufacturing Company, Bay Shore, N. Y.
WHPP—Bronx Broadcasting Company, Englewood Cliffs, N. J.

WLBH—Cambridge, Mass.
WRAH—Providence, R. I.
WTRL—Midland Park, N. J.
WBES—Takoma Park, Md.
WRES—Quincy, Mass.
WAIT—Taunton, Mass.
WGOP—Flushing, N. Y.
WLOE—Chelsea, Mass.
WCON—Danbury, Conn.
WPCH—Hoboken, N. J.
WJBI—Red Bank, N. J.
WOKT—Binghamton, N. Y.
WHRJ—Jamaica, N. Y.
WAAT—Jersey City, N. J.
WCOH—Greenville, N. Y.
WBBC—Brooklyn, N. Y.
WCGU—Coney Island, N. Y.
WCLB—Long Beach, N. Y.
WEVD—Woodhaven, N. Y.
WGL—Secaucus, N. J.
WMBQ—Brooklyn, N. Y.
WCDA—Cliffside Park, N. J.
WCOT—Providence, R. I.
WCBM—Baltimore, Md.
WMES—Boston, Mass.

NO. 2

WFIC—Akron, Ohio
WBRE—Wilkes-Barre, Pa.
WKBN—Youngstown, Ohio
WLBV—Iron Mountain, Mich.
WHBJ—McKeesport, Pa.
WJAY—Cleveland.
WIBK—Ypsilanti, Mich.
WLAD—Philadelphia.
WABW—Wooster, Ohio.
WMBS—Leyone, Pa.
WRAK—Eric, Pa.
WGH—Jeannette, Pa.

WMBW—Youngstown, Ohio.
WQBZ—Weirton, W. Va.
WBPP—Petoskey, Mich.
WRAX—Philadelphia.
WFBG—Altoona, Pa.
WBWB—Norfolk, Va.
WBBL—Richmond, Va.
WTAZ—Chesterfields Hills, Va.
WABF—Kingston, Pa.
WFAN—Philadelphia.
WEBE—Cambridge, Ohio.
WFKD—Frankford, Pa.
WBMH—Detroit.
WMBG—Richmond, Va.
WBBZ—Ludington, Mich.
WHBC—Canton, Ohio.
WABY—Philadelphia.
WPBE—Cincinnati.

NO. 3

Not affected

NO. 4

WLBO—Galesburg, Ill.
WJBL—Decatur, Ill.
WMBB—JOK—Homewood.
WDZ—Tuscola, Ill.
WCAZ—Carthage, Ill.
WLIB—Chicago.
(Does not include WGN)
WJAK—Kokomo, Ind.
WLBC—Munice, Ind.
WCBS—Springfield, Ill.
WLBH—Wenona, Ill.
WFBZ—Galesburg, Ill.
WBAO—Decatur, Ill.
WTAO—Quincy, Ill.
WKBV—Brookville, Ind.
WNBV—Brookville, Ind.
WLBT—Crown Point, Ind.
WNBA—Forest Park, Ill.
WHBF—Rock Island, Ill.
WEHS—Evanston, Ill.
WRAM—Galesburg, Ill.
WKBE—Joilet, Ill.
WMBD—Peoria Heights.
WTAS—Elgin, Ill.
WEBQ—Harrisburg, Ill.
WTBA—Joilet, Ill.
WLBO—Atwood, Ill.
WLTX—Streator, Ill.
WEDC—Chicago.
WSDC—Chicago.
WPEP—Waukegan, Ill.
WHFC—Chicago.
WKBS—Galesburg, Ill.
WTRC—La Salle, Ill.
WKBH—Chicago.
WCLS—Joilet, Ill.
WFKB—Chicago.
WLTG—Chicago.
WQJ—Chicago.

WSAX—Chicago.
WJBZ—Chicago Heights.
WCRW—Chicago.
WRAF—Laporte, Ind.
WWAE—Hammond, Ind.
WCWK—Fort Wayne, Ind.
WMBE—White Bear Lake, Minn.
WHAY—St. Louis.
KWKC—Kansas City, Mo.
WIAS—Ottumwa, Iowa.
WFAM—St. Cloud, Minn.
WHAL—Omaha.
WKBH—LaCrosse, Wis.
WIBU—Boynette, Wis.
WIBA—Madison, Wis.
WCLO—Kenosha, Wis.
WAIZ—Appleton, Wis.
WKDR—South Kenosha, Wis.
WEBW—Beloit, Wis.
WHBY—West de Pere, Wis.
WOMT—Manitowoc, Wis.
WGWB—Milwaukee.
KFCX—Chicago.
KGFB—Iowa City, Iowa.
KFHL—Oskaloosa, Iowa.
KFHR—Sioux City, Iowa.
KFIZ—Fond du Lac, Wis.
KGCA—Decorah, Iowa.
KWOR—Cedar Rapids, Iowa.
KPHP—Muscatine, Iowa.
KICK—Red Oak, Iowa.
KFVG—Independence, Kan.
KFDZ—Minneapolis.
KGHC—Slayton, Minn.
KWUC—Lemars, Iowa.
KGCN—Concordia, Kan.
KGFQ—Minneapolis.
KFOW—St. Louis.
KFWF—St. Louis.
KGBX—St. Joseph, Mo.
KFOX—Omaha.
KGBY—Columbus, Neb.
KGCH—Wayne, Neb.
KGDW—Humboldt, Neb.
KGS—Central City, Neb.
KGFV—Ravenna, Neb.
KGEO—Grand Island, Neb.
KGRZ—York, Neb.
KCCR—Brookings, S. D.
KGDA—Dell Rapids, S. D.
KDIR—Devils Lake, N. D.
KGDY—Oldham, S. D.
KGFN—Aneta, N. D.

NO. 5

KFPR—Los Angeles.
KFUS—Oakland, Cal.
KGDH—Stockton, Cal.
KOOS—Marshfield, Ore.
KFUT—Salt Lake City.

VOICE THRILLING



BEATRICE BELKIN, GIFTED COLORATURA, WHOSE VOICE IS A RARE TREAT AND DELIGHT, IS KNOWN AS "THE RADIO SONGBIRD." SHE IS ONE OF THE ROXY ARTISTS, AND WHAT A ONE!

Riga to Increase Power

Washington.

Another increase in the Riga broadcasting station's power, which was doubled some time ago to three kilowatts, is expected this year, according to a report from the American Consul at Riga, A. W. Kliefoth, made public by the Department of Commerce.

During 1927, when the doubled power was on, it was stated, radio listeners in Latvia increased from 10,518 to 16,049, and the additional power under consideration is expected to raise that figure still further.

"Soundproof" Walls

Dwellers in modern apartment houses, being told the walls are soundproof, move in with the usual result that they can plainly hear the next neighbor's radio, even to understanding what the announcer says, provided it is in tolerable English. One tenant told the superintendent about it, only to be told: "You know, radio waves penetrate everything, even concrete buildings." He didn't say anything about sound waves.

NEW CORPORATIONS

Gene Austin, Radio broadcasting—Atty. R. Aronstein, 1650 Broadway, New York, N. Y.
Radio Broadcasting Corp. of New York—Atty. M. F. Cantor, 45 W. 57th St., New York, N. Y.
Consolidated Radio Sales Corp., Newark, N. J.—Atty. Green & Green, Newark, N. J.
Weston Radio Corp.—Atty. S. Solomon, 2 Lafayette St., New York, N. Y.

A THOUGHT FOR THE WEEK

SURELY the younger folk can stand "When You and I Were Young, Maggie," once in a while on the air, when their elders have so often sat for hours listening to such unwistful bits of jazzierine as "My Well-Rouged Gal," "Sallie's My Pally," "Gee, but She's a Hot Petater," to say nothing of that brilliant effusion entitled, "She May Not Be a Lady but She's Too Darned Good for Me." After all, time hasn't squeezed all the melody and beauty out of the good old ballads.

RADIO WORLD

The First and Only National Radio Weekly

Radio World's Slogan: "A radio set for every home."

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Fifteen cents a copy. \$6.00 a year. \$3.00 for six months. \$1.50 for three months. Add \$1.00 a year extra for foreign postage; Canada, 50 cents.
 Receipt by new subscribers of the first copy of RADIO WORLD mailed to them after sending in their order is automatic acknowledgment of their subscription order. Changes of address should be received at this office two weeks before date of publication. Always give old address; also state whether subscription is new or a renewal.

ADVERTISING RATES

General Advertising		
1 Page, 7 1/4"x11"	462 lines	\$300.00
1/2 Page, 7 1/4"x5 1/2"	231 lines	150.00
1/4 Page, 8 1/2" D. C.	231 lines	150.00
1/4 Page, 4 1/2" D. C.	115 lines	75.00
1/4 Page, 4 1/2" S. C.	57 lines	37.50
1 Column, 2 1/4"x11"	154 lines	100.00
1 Inch		10.00
Per Agate Line		.75

Time Discount

52 consecutive issues	20%
26 times consecutively or E. O. W. one year	15%
13 times consecutively or E. O. W.	12 1/2%
4 consecutive issues	10%

WEEKLY, dated each Saturday, published Wednesday.
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CLASSIFIED ADVERTISEMENTS

Ten cents per word. Minimum 10 words. Cash with order. Business Opportunities, 10 cents per word. \$1.00 minimum.

Entered as second-class matter March 23, 1923, at the Post Office at New York, N. Y., under the Act of March 3, 1879.

Music Close By Travels

A Stuttgart (Germany) radio paper publishes in facsimile a postcard from a listener in London. Referring to a recent relay of 2XAF, Schenectady, N. Y., by Stuttgart, he writes that from 11:30 to 11:45 P. M. on April 16 he was able to listen to dance music broadcast from a well-known hotel about a mile away, via 5XX, this relayed by 2XAF and 2XAF's broadcast again relayed by the Stuttgart station.

The distance was 6,000 miles.

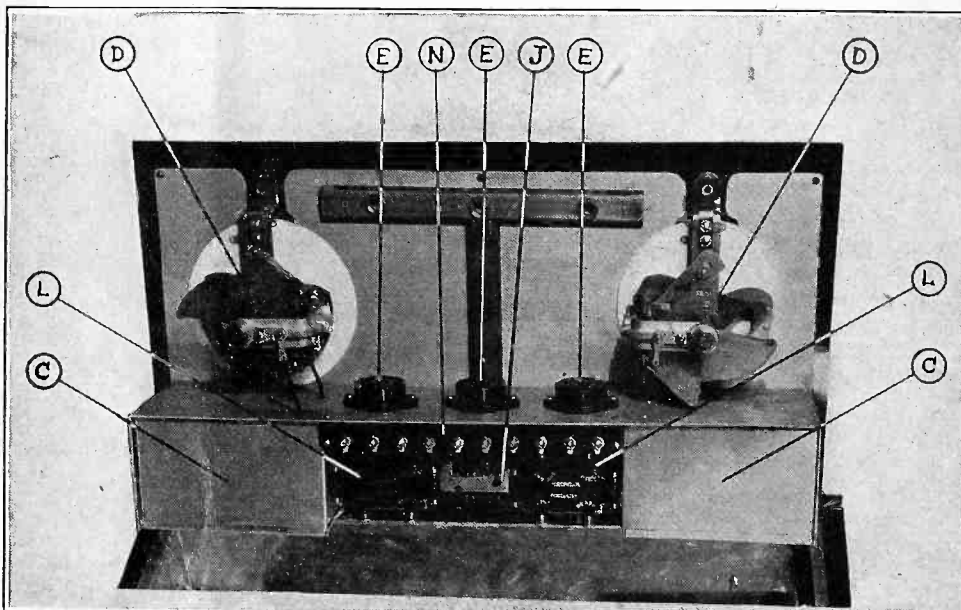
Build Televisors At Own Risk, Rice Warns

WGY is experimentally broadcasting radio television signals on a regular schedule and these are available to anyone who has constructed suitable apparatus but, according to Martin P. Rice, manager of broadcasting for the General Electric Company, no specific information on the construction of television receivers can be offered the public.

The art is still in the early stages of development, hardly comparable with radio broadcasting eight years ago, explains Mr. Rice, and in the course of experimentation the whole system of transmission may be changed overnight.

The schedule is adopted to assist the General Electric Company engineers in the development of a system of television transmission and reception and, while the public is welcome to experiment with the signals, it should be understood that the plan is purely experimental and subject to change at any time. To offer circuits or construction plans for a television receiver, Mr. Rice states, would be unfair as it might imply that the station will continue indefinitely the transmitting of signals suitable for the type of receiver described.

But fans are greatly interested.



STURDY CHASSIS CONSTRUCTION OF HOME-MADE SETS IS ALL THE RAGE, STARTED BY LEO FENWAY LAST YEAR WITH THIS MODEL 4 CONCERTROLA

The 4-Tube Portabie

(Concluded from page 10)

simplest solution to this problem is to use a cone or a stretched diaphragm. It is not necessary to use a cone or diaphragm of much depth, measured from the apex to the plane of the periphery. An inch or an inch and a half will be sufficient. The most convenient place to mount this is at the back of the receiver. The dia-

phragm may constitute the back wall of the containing case. This is the method employed in this portable receiver. The driver unit is mounted inside the set and mounted on a bracket. There is ample room for this in the set.

A suitable handle attached to the cover of the receiver will complete the portable set.

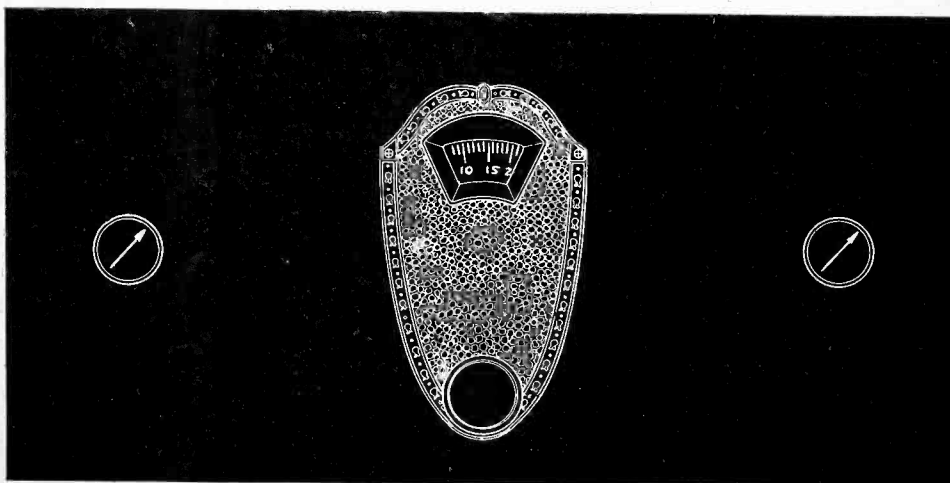


FIG. 3

A KNOB MAY BE PLACED ON THE SWITCH, SO THAT THE APPEARANCE AT LEFT AND RIGHT IS THE SAME. THE NATIONAL TYPE E DIAL HAS SCALE READING FROM LEFT TO RIGHT. THIS IS NOT THE DRUM DIAL, WHICH IS TYPE F AND HAS THE SCALE READING UP AND DOWN

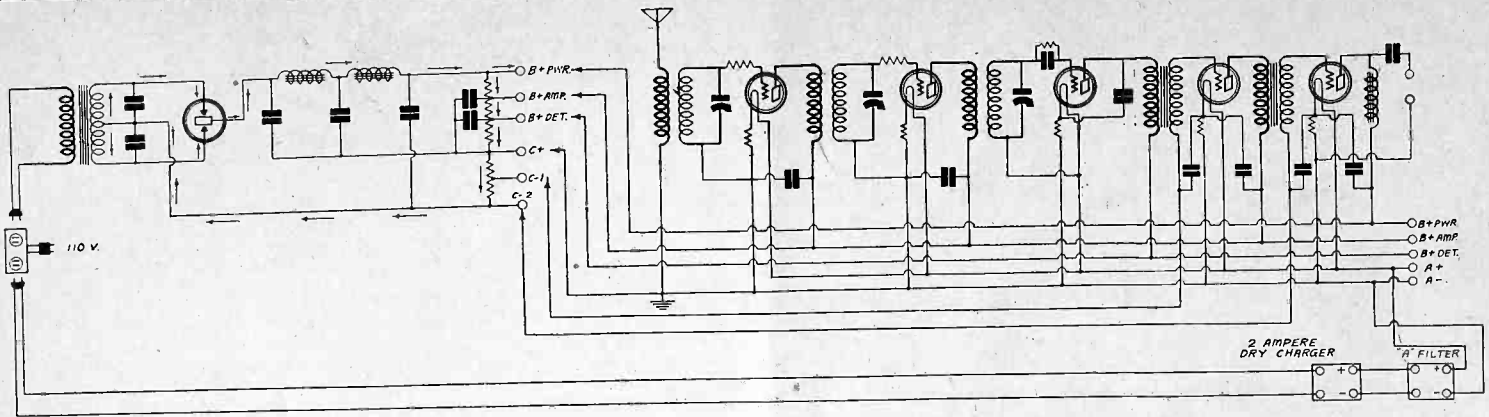


FIG. 1

A DIAGRAM OF A COMPLETE RADIO INSTALLATION EMPLOYING A RAYTHEON TYPE B BATTERY ELIMINATOR AND A TOBE A-FILTER WITH A 2 AMPERE DRY CHARGER. A TWO WAY SOCKET ADAPTER IS USED BETWEEN THE WALL OUTLET AND THE PRIMARIES OF THE TWO POWER TRANSFORMERS IN THE CIRCUIT. THE LINE SWITCH SHOULD BE PUT BETWEEN THE TWO WAY SOCKET ADAPTER AND THE WALL SOCKET.

Filter Easily Solves A Supply Problem

The A-filter which has recently made its appearance on the market has solved the problem of electrifying receivers designed to operate on DC. The filter consists of two electrolytic condensers in one unit and two low inductance chokes capable of carrying the current required by the average radio receiver. The total capacity of the condensers is 3,600 mfd. and the inductance of each of the two chokes is .05 henry, and capable of carrying 2.5 amperes.

The A-filter is designed to filter the rectified output of A battery chargers so that the current can be used directly for heating the filaments of DC tubes without the use of a storage battery.

The maximum current that should be used is 2 amperes, and therefore the charger used should be one that can deliver that current. That is enough to supply a circuit using 8 quarter ampere tubes. Therefore it will handle nearly all receivers, including most of the super-heterodynes. The hum which results from this combination of charger and A-filter is so slight as to be inappreciable, and probably if any at all is audible it comes from the B battery eliminator rather than from the A battery eliminator.

Many circuits of course do not require the full 2 amperes. But a two ampere charger may be used nevertheless. If

only one ampere is required, that is all that is taken from the charger. Under this condition the charger will last twice as long and the filter will be much more effective in eliminating any hum.

Many fans have trickle chargers which do not deliver as much as 2 amperes. In many of the chargers the limit is .75 ampere. Such may be used with the filter provided that no more than .75 ampere be used. The effectiveness of the filter circuit will be just as good as if a 2 ampere charger were used.

Circuit Illustrates Adaptation

In Fig. 1 is shown a complete DC radio receiver which has been fully electrified by means of battery eliminators. A regular B battery eliminator employing a Raytheon rectifier is used to supply the B and C potentials. A two ampere charger with a Tobe A-filter is used to supply the filament current to the five tubes in the circuit.

The charger consists of a suitable step-down transformer working between 110 and about 12 volts AC and a dry type rectifier. The "A" consists of a Tobe A Block which contains two condenser sections, and two choke coils of .05 henry each. For a heavy duty rectifier filter arrangement a power Clarostat of 10 ohms resistance is used to cut the output volt-

age down to 6 volts. The Clarostat has to be adjusted for different current drains to maintain the output voltage at 6 volts.

The advantage of the A-filter readily can be appreciated by all fans who have used storage batteries with or without trickle chargers. If a trickle charger is used the relay which throws on the power when the filament circuit is closed and which throws the charger on the battery when the filament circuit is opened often gets out of order and ceases to function. If the relay is not used it is always necessary to close and open two circuits when the set is turned on and off. That is always an annoyance.

If the storage battery is used with a heavy duty charger, to replenish the charge periodically there is always the chance that the battery will become exhausted at a critical moment of reception.

All these difficulties are done away with when the A battery eliminator is used. Perhaps the greatest advantage of the system is the elimination of the storage battery, which with its acid has always been an unwelcome part of the radio receiver.

Arrows Show Current Direction

In Figs. 1 and 2 the arrows show the direction of flow of direct current. In Fig. 1 the B supply, with C1 as the lower and C-2 as the higher C bias, is thus designated. In Fig. 2 this is duplicated for an eliminator that has no bias taps, but where external resistors are used. The tube at right in Fig. 2 is the detector tube, taken merely as a symbol to represent plate current flow. Some plate current goes through the A supply.

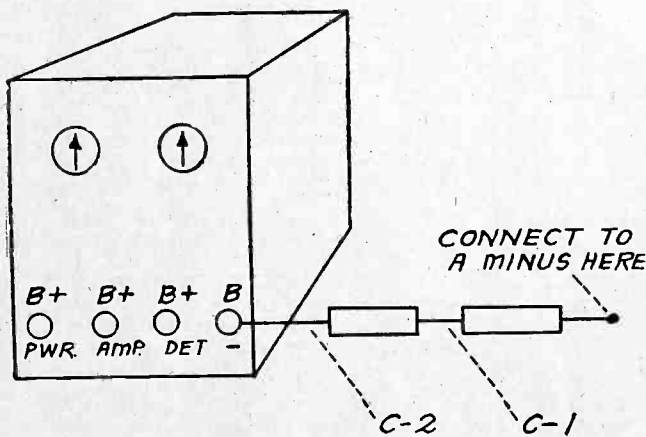
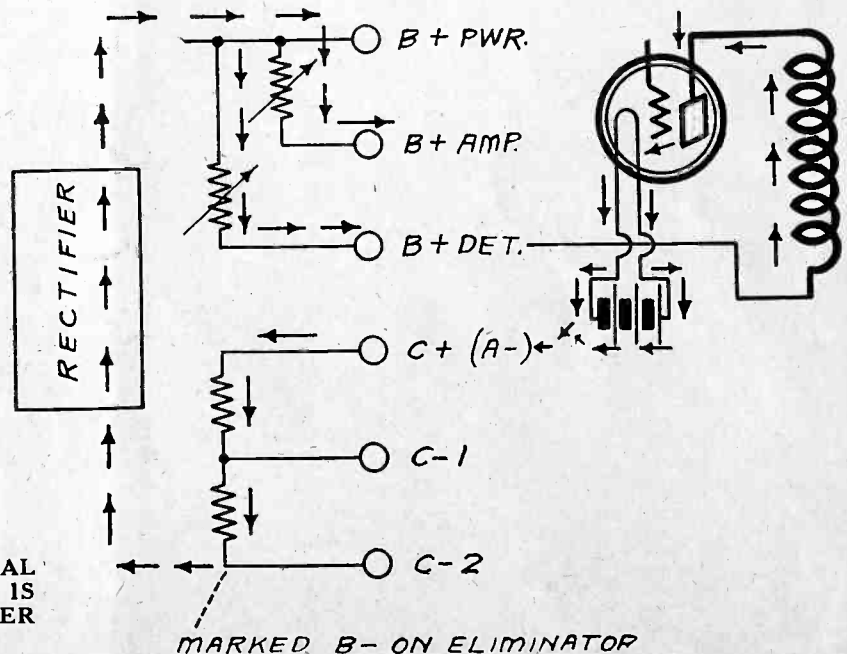


FIG. 2

AT LEFT IS A B ELIMINATOR, WITH EXTERNAL RESISTORS USED FOR C BIAS. AT RIGHT THIS IS SHOWN SCHEMATICALLY, WITH THE A-FILTER AND CHARGER LABELLED "RECTIFIER."



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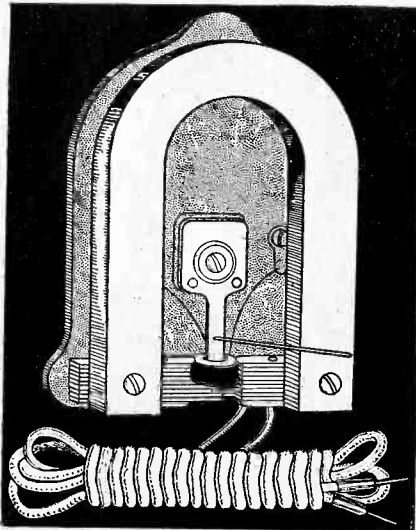
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This unit has a full floating armature, which means that armature is mounted so that it acts like a plunger between two sets of magnets or pole pieces. As the magnetization of the armature changes under the influence of the signal it plunges first toward one pair of pole pieces and then toward the other.

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The armature is adjustable from an exposed knob in the back.

Apex, chuck and thumbscrew supplied with each unit!

This unit stands 150 volts unfiltered. With filtered output the unit has stood up to 550 plate volts continuously without damage.

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The Powertune Giant Unit, complete with apex, chuck, screw and 60" cord; total weight, 3 lbs. (Cat. No. 1098)...\$3.75

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and the textual data giving full directions for construction.

Enclosed please find 25 cents to defray all expense.

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(These are not Shielded Grid Diamonds.)

R. C. A. Tube Clause Illegal, Says Board

Washington.

The Radio Corporation of America was charged with restraining competition in imposing limitations upon the use of vacuum tubes in radio receiving sets manufactured under its patent licenses, in a complaint filed by the Federal Trade Commission.

Notice was served to the corporation that a hearing on this and other charges set forth in the complaint will be held at 10:30 a.m., July 23, in the offices of the Federal Trade Commission at Washington.

The complaint criticises "Article 9" of the patent licensing agreements which the Radio Corporation of America has with other manufacturers of radio sets. Under "Article 9" the manufacturers building sets under R. C. A. licenses must agree to equip them initially with vacuum tubes manufactured by the R. C. A.

The complaint further alleges that patent rights on vacuum tubes to which the R. C. A. and affiliated companies claim exclusive manufacturing rights expired in 1924 and 1925, prior to the licensing agreements. The manufacture of these tubes, it is stated, has since been open to the public.

Colonel Manton Davis, attorney for the Radio Corporation of America, said in New York:

"The act solely relates to Article 9 of the Radio Corporation's license contracts to radio receiving set manufacturers. It is the contention of the Radio Corporation of America that this provision is governed entirely by the patent law, but that all of the issues involved in that complaint are under submission to the Circuit Court of Appeals at Philadelphia, and the Radio

Corporation would consider it inadvisable to discuss the complaint prior to the decision of the Philadelphia court."

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An expert consideration of antenna values, with advice on how to improve reception considerably, will be published. The article, by James H. Carroll, contributing editor, also tells how to determine approximately the natural period or wavelength of your antenna. Other articles will include a discussion of the single meter that measures both AC and DC, and dynamic speaker facts.

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Home constructors of radio receivers, and custom set builders, by **DISTANCE JUST ROLLS IN THOUGH SET IS EASY TO TUNE!**

All you have to do is to follow the official blueprint, and lo! a new world of radio achievement is before you! Distant stations that four-tube sets otherwise miss come in, and come in strong. No tuning difficulty is occasioned by the introduction of this new, extra powerful, startling tube, but, in fact, the tuning is simplified, because the signal strength is so much greater.

The circuit consists of one shield grid stage, detector and two transformer audio stages, with 112A in the last stage.

When you work from the official wiring diagram you find everything so delightfully simple that you marvel at the speed at which you get the entire receiver masterfully finished. And then when you tune in—more marvels! 'Way, 'way up, somewhere around the clouds, instead of only roof high, will you find the amplification!

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Enclosed please find:
 \$1.00, for which enter my name on your list of mail subscribers for seven weeks and send me FREE at once one official blueprint of the Four-Tube Shielded Grid Diamond of the Air, as designed by H. B. Herman, and described by him in the February 4th, 11th and 18th issues of Radio World. No other premium this offer. 45c extra for Feb. 4th, 11th and 18th issues.
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When you work from this blueprint you find that every part is shown in correct position and every wire is shown going to its correct destination by the ACTUAL ROUTE taken in the practical wiring itself. Mr. Herman's personal set was used as the model. This is a matter-of-fact blueprint, with solid black lines showing wiring that is above the subpanel, and dotted lines that show how some of the wiring is done underneath.

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Twenty German broadcasting stations and a network of Austrian stations, connected by telephone lines, successfully rebroadcast the New York reception of the Bremen fliers by picking up 2XAF, the General Electric short wave station, at Schenectady, N. Y., and on Wednesday, April 30th, a Dublin, Ireland, station picked up the Schenectady station.

An English radio publication "World-

Radio" in a column edited by Jay Coote, has the following description of the rebroadcasts:

"The last ten days or so have furnished many surprises in the shape of interesting transmissions of which no mention was made in the published programs. Personally, I enjoy them, although on most occasions devotion to my Super-Het. entails late hours and a corresponding lack of high spirits the following morning.

"However, in common with most radio fans, I think it is worth it.


The Eventful Night

"Germany, during these last days, was responsible for the majority of the special relays, and on many nights the WGY transmission could be picked up on the Stuttgart and other Continental wavelengths."

"On that eventful night of Saturday-Sunday, the Berlin transmitter gave out that the German aviators were on their way by rail to New York, and it was hoped to bring to the ears of their compatriots the official reception given to Captain Kohl and his colleagues. All German studios stood by and, via Munich, the Austrian transmitters were roped into the telephony system. From about 1 to 1:30 A. M. from Schenectady many speeches in English were relayed, including a few words of greeting by Mr. Walker, the Mayor of New York.

"Later, personal messages were sent in German by Baron von Hunefeld and Cap-

(Continued on next page)




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A handy manual of 36 pages and cover—88 illustrations—over 20,000 words—practical—concise—understandable—prepared by Austin C. Les-carboursa and our engineering staff. That's "The Gateway to Better Radio"—yours for 25 cents, either from local radio dealer or direct from us by remitting stamps or coin.

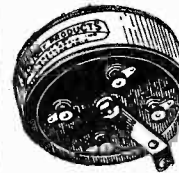
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(Continued from preceding page)
tain Kohl; Major Fitzmaurice also added a few words in reference to the Green Isle of Erin and the lesser Greene-ly Island on which they had landed.

Twenty German Stations Join In

"It would be difficult to estimate the number of listeners in Great Britain who picked up this broadcast either direct on short waves or through the Continental stations, but as some twenty German broadcasters took it, this interesting event was placed within the reach of many million hearers.

"Finally, quite unexpectedly, Dublin, on April 30, at the end of its evening program, announced that an attempt would be made to bring America to the ears of its subscribers. The relay of a transmission by WGY, Schenectady, via 2XAF, was a success; the broadcast was carried out from 11:20 to 11:47 p. m. and again from 11:57 p. m. to 12:22 a. m. with a transmission of gramophone records during the intervals."

Sidetracks Opera Opening

In the same publication appeared the following added information on the "Bremen" broadcasting:

"A relay was made by Berlin last Saturday from Schenectady of the preliminary reception given to the Atlantic fliers in New York. In view of the double attraction of a topical event and a relay from America, the Funk Stunde undertook to interrupt its program the moment the aviators arrived in New York—and this in spite of the fact that it was taking the long-awaited broadcast from the reopened Opera House in Unter den Linden. Fortunately, the necessity did not arise until 12:33 a. m.

"The American short-wave station was very well received in Germany, many of the words coming through with astonishing purity. Atmospheric were non-existent, the only palpable defect being an abrupt kind of fading, which, however, did not prevent the remarks from being understood.

Fitzmaurice Amuses

"The Mayor of New York, Mr. Walker, gave a hearty welcome to the aviators, who then spoke, Baron von Hunefeld and Major Fitzmaurice in English, and Captain Kohl in German.

"Major Fitzmaurice, whose address was the shortest, caused amusement by his concluding remark that he could not say how pleased he was to be there, 'because, as I have already mentioned, you never know what might happen. Goodnight!'

"The Mayor added that Major Fitzmaurice was looking very happy and that it was for them to see that every moment he

spent on American soil was equally happy. Then the broadcast continued until 1:15, when Schenectady resumed its regular program and Berlin closed down.

"It was evident from the remarks of those taking part in the informal proceedings that they thoroughly appreciated the fact that Germany was listening to them."



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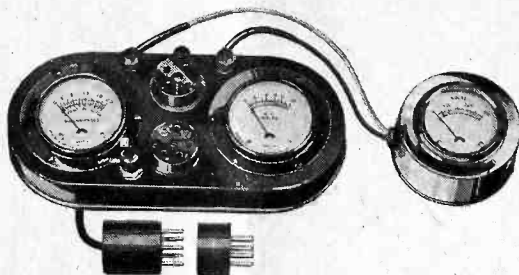
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