



radio SERVICE dealer

Set Production for Dealers Begins

In
This
Issue:

MODERNIZE MERCHANDISE DISPLAYS

What Customers Will Spend Serves with Sales Trouble Shooting

September
1945
25c



Star Performer

SERVICE engineers agree that where replacements call for a four-contact vibrator, Mallory vibrators are best by far.

No wonder! Mallory was first to design and introduce the four-contact type of vibrator. It has had longer and more intensive manufacturing experience with it. As a result, reed and flexible contact arms are so precisely tuned and balanced with relation to each other that optimum performance and longer operating life follow as a matter of course.

The contact "make" in the Mallory four-contact vibrator is slow and bounce-free. High pressure is maintained during the closed time, and this is followed by a rapid contact break. These

important features, added to Mallory's careful selection of materials, its precision methods of manufacture, its rigid testing standards, explain why millions of Mallory four-contact vibrators are in use today.

Mallory also manufactures eight-contact replacement vibrators for interruptor and self-rectifying applications—and these of course measure up to the same high quality.

Your Mallory distributor has them in stock. Ask him, too, for the Mallory Vibrator Standardization Chart, showing how 65 Mallory Vibrators now replace 101 different types . . . how 90% of your replacement needs can be met with only 12 vibrators!

P. R. MALLORY & CO., Inc., INDIANAPOLIS 6, INDIANA



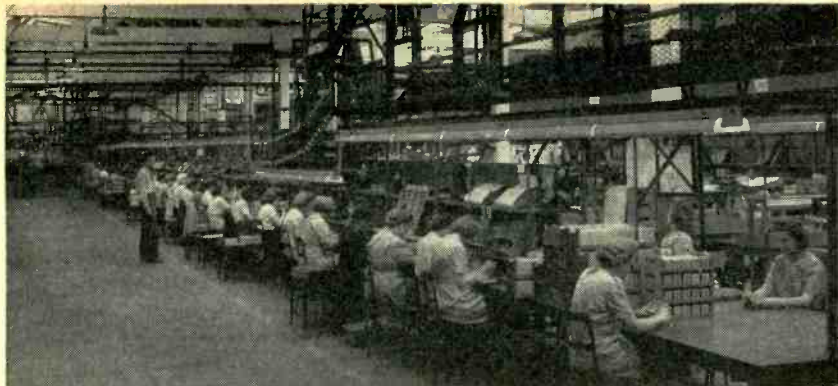
*More than ever—
ALWAYS
INSIST ON*

P. R. MALLORY & CO., Inc.
MALLORY
APPROVED
PRECISION PRODUCTS

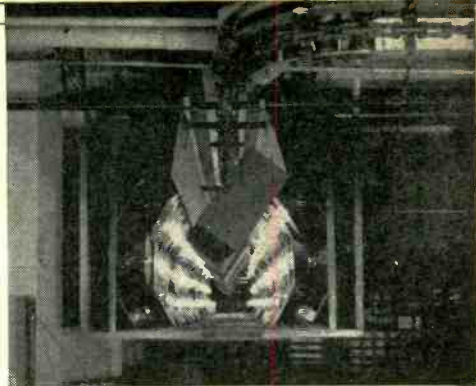
**VIBRATORS • VIBRAPACKS™ • CONDENSERS
VOLUME CONTROLS • SWITCHES • RESISTORS
FILTERS • RECTIFIERS • POWER SUPPLIES**

ALSO MALLORY "TROPICAL" DRY BATTERIES, ORIGINALLY DEVELOPED BY MALLORY FOR THE U. S. ARMY SIGNAL CORPS, NOT PRESENTLY AVAILABLE FOR CIVILIAN USE.

* Trademarks



Radio Receiver Production line and stock conveyor system.



Infra-red drying oven.

Sparton Will Deliver!

5 Modern Plants Assure Quality Radios in Volume

Sparton's exclusive dealer *will* have radios—plenty of them! That's a promise.

Back of that promise are five completely modern plants, each equipped with up-to-the-minute precision machinery (much of it specially built by Sparton engineers) designed with overhead carriers for high speed assembly. These Sparton plants provide unexcelled production facilities for the manufacture of quality radios.

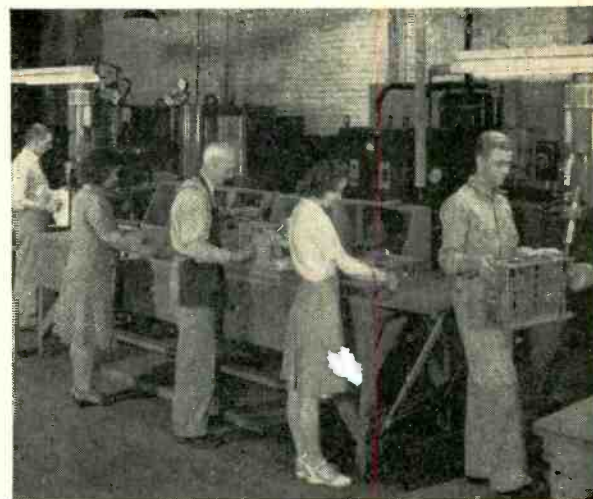
Thus, Sparton dealers will not miss the golden era of radio retailing sure to be with us soon, now that civilian production has started.

For complete particulars on the exclusive *SCMP franchise for your territory, write today to—

Ed. Bonia—Sales Manager
Sparks-Withington Company
Jackson, Michigan



Flash testing and calibrating department.



Aluminum chassis spot welding department.

THE SPARKS-WITHINGTON CO., JACKSON, MICH.

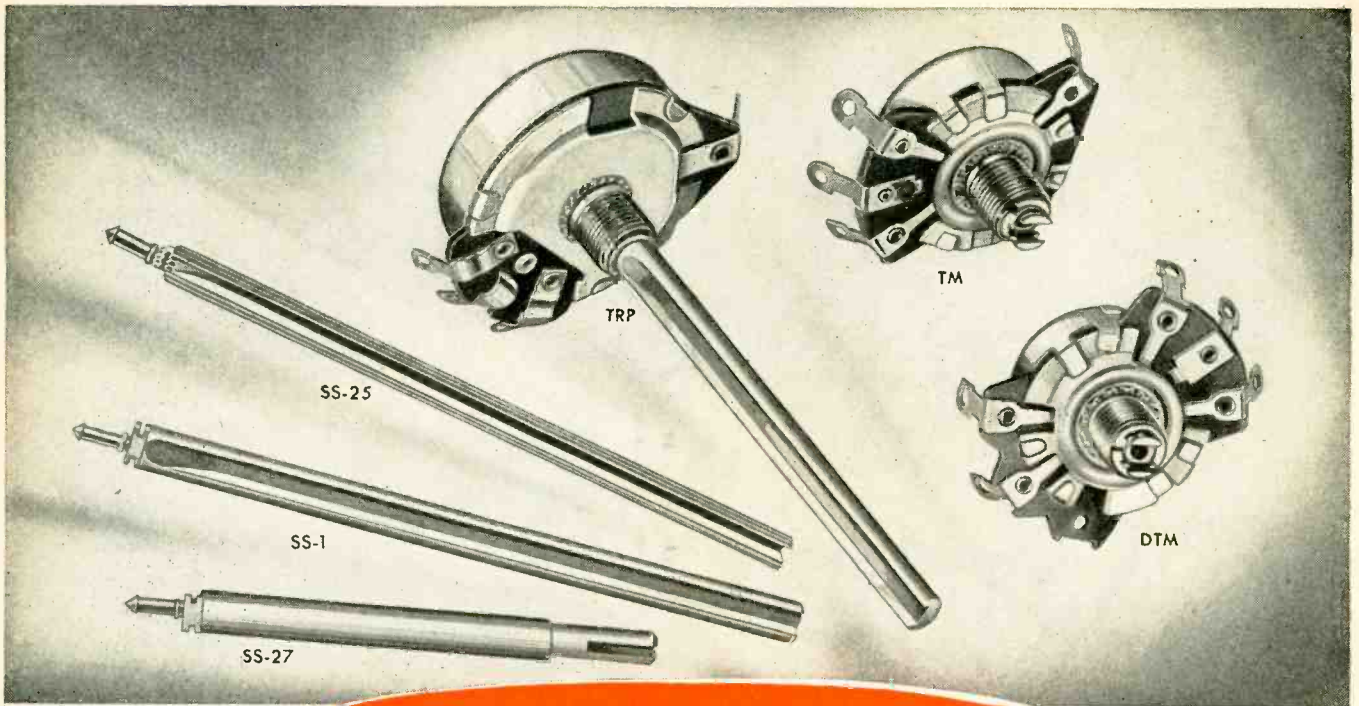
SPARTON

RADIO'S RICHEST VOICE SINCE 1926



Army-Navy "E" awarded five Sparton plants simultaneously for production excellence.

*SPARTON COOPERATIVE
MERCHANDISING PLAN



MALLORY REPLACEMENT CONTROLS (TAPPED)

TO retain the original tonal characteristics of a radio, tapped replacement controls must duplicate the electrical operation of the original controls. That's exactly what Mallory tapped replacement controls do—*duplicate*, not approximate or imitate!

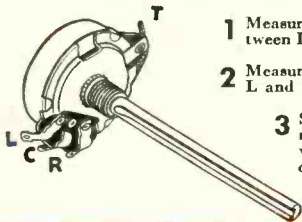
Mallory provides a tapped control for nearly every

replacement need—yet the total number of types is small. This is due to the use of Mallory Universal control shafts! With these shafts and controls, you suit the part to fit the job.

There are 27 plug-in shafts for use with Mallory TM (Tapped Midget) and DTM (Double Tapped Midget) controls. Thirteen are exact mechanical replicas of shafts now widely in use—the remaining fourteen need only be cut to length. Where required shaft lengths are three inches or less, the Mallory TRP (fixed shaft) control replaces large originals using set screw or spring type knobs.

Convenient? Unquestionably! Economical? You bet! And your Mallory Distributor carries a complete line in stock—always! See him for proper selection of a handy kit.

TO SELECT A MALLORY TAPPED REPLACEMENT CONTROL:



- 1 Measure overall resistance between L and R on old control.
- 2 Measure Tap resistance between L and T on old control.
- 3 Select Mallory Tapped replacement control having values nearest both those of the original.

P. R. MALLORY & CO., Inc., INDIANAPOLIS 6, INDIANA



**More than ever—
ALWAYS
INSIST ON**

P. R. MALLORY & CO. Inc.
MALLORY
APPROVED
PRECISION PRODUCTS

**VIBRATORS • VIBRAPACKS* • CONDENSERS
VOLUME CONTROLS • SWITCHES • RESISTORS
FILTERS • RECTIFIERS • POWER SUPPLIES**

ALSO MALLORY "TROPICAL"® DRY BATTERIES, ORIGINALLY DEVELOPED BY MALLORY FOR THE U. S. ARMY SIGNAL CORPS, NOT PRESENTLY AVAILABLE FOR CIVILIAN USE.

*Trademark

radio service dealer

Member Audit Bureau of Circulations

Covers all phases of radio, phonograph, sound and electrical appliance merchandising and servicing

VOLUME 6 NUMBER 9

SEPTEMBER, 1945

CONTENTS

With the Publisher	7
In & Around the Trade	20
Radio Sales Channels	29
Modernize Merchandise Displays	30
Dealers Must "Sell"	32
Doubles Selling Space	33
"Super" Servicemen Needed	34
Merchandise Pre-Views — 3	35
Ads That Get Customers	36
"Serves" With Sales	38
Choose Your Distributor	40
OPA Delays Radios for Dealers	40
What Customers Will Spend	41
Trouble Shooting by Resonance Testing	42
All About Mikes and Pickups	46
Low Cost Audio Signal Generator	49
Product News	50
Technical Portfolio	52
Distributor News	58
What FM Offers	63
Shop Notes	64
Radio Telephone	71

Cover: Working on all-wave civilian radio sets (Hallicrafters photo).

RADIO SERVICE DEALER (title registered U. S. Pat. Off.) is published monthly at Boston Post Road, Orange, Connecticut, by the Cowan Publishing Corp. Executive & Editorial Offices, 342 Madison Avenue, New York City 17, New York. Publication Office, Boston Post Road, Orange, Conn. Subscription rates:—United States and Possessions \$2.00 for 1 year, \$3.00 for 2 years; elsewhere \$3.00 per year. Single copies: 25c. Printed in U. S. A. Entered as Second Class Matter at the Post Office at Orange, Connecticut, under the Act of March 3, 1879. All subscribers should allow at least three weeks for change of address.

Copyright, 1945

COWAN PUBLISHING CORP.

SANFORD R. COWAN,
Publisher

LEWIS C. STONE
Editor

CHARLES H. FARRELL, Advertising Manager

HAROLD J. SUGARMAN, Eastern Adv. Mgr.

JEAN M. WHEELER, Circulation Manager

MARY E. MADER, Advertising Prod. Mgr.

10,000 PARTS

Ten thousand different radio and electronic parts immediately available on priorities

FAST SERVICE

Trained expeditors select and ship same day your order is received

SINCE 1922

Known since 1922 as reliable jobbers, wholesalers and manufacturers of radio and electronic equipment

Radio Wire Television Inc.

World's Largest Radio Supply House
100 Sixth Ave. (Dept. S-9) New York 13, N. Y.
Boston, Mass. Newark, N. J.

Originators and Peacetime Marketers of the Celebrated

Lafayette Radio

Write today for our bargain flyers and special bulletins

Announcing Batteries by RCA

- **RADIO-ENGINEERED
FOR EXTRA LISTENING HOURS**
- **PREFERRED-TYPE LINE
FOR BETTER PROFITS....**

**RADIO-ENGINEERED
BATTERIES**



RADIO CORPORATION OF AMERICA

RCA VICTOR DIVISION • CAMDEN, NEW JERSEY

LEADS THE WAY... In Radio... Television... Tubes...
Phonographs... Records... Electronics

WHY! —

● RCA batteries offer you something *new*... batteries engineered specifically for *radio* under the trademark of RCA—one of the leading radio manufacturers... the best-known name in radio!

A *Preferred-Type* line, similar to the famous RCA *Preferred-Type* tube program, will simplify your battery stocks... will bring you faster turnover for a smaller investment... will require less stocking space... will ensure fresher batteries at the time of sale.

The top quality and peak performance that you and your customers expect from any RCA product will give them longer listening... and in the long run you will do more business with satisfied customers.

RCA Radio-Engineered Batteries for All Types of Sets...and a Complete Line of RCA Dry Batteries



WHEN! —

RCA Radio-Engineered batteries will come to you as soon as civilian radio batteries are released in quantity...and as soon as possible after you order them.

That day may be just around the corner. *Now* is the time to get ready.

Listen to "THE RCA VICTOR SHOW,"
Sundays, 4:30 P.M., EWT, NBC Network

WHAT TO DO ABOUT IT

Mail this coupon to your tube distributor *today*. It's your reservation for a personal preview of RCA's battery plans for you. He will send you a complete explanation, telling just what to do to get set for big profits from RCA batteries.

WHERE! —

You'll be able to order RCA *Radio-Engineered* batteries, as well as tubes, from your tube distributor. RCA batteries will be sold *only* through authorized tube distributors.

MAIL THIS RESERVATION TODAY!

62-6736-103

DEAR MR. TUBE DISTRIBUTOR:

I'm interested in increasing my battery profits, and I should like information concerning the new line of RCA *Radio-Engineered* batteries. Please mail me all details of the RCA battery plan as soon as possible.

Name.....

Company.....

Address.....

.....

Depend on
ARVIN
to Help You Sell

You can depend on Arvin for effective radio sales help—from consumer advertising to store display. Arvin national advertising is stimulating family desires now—to help you sell later, when radio deliveries can be made. Reproduced below is a typical Arvin consumer page—one of a series of pages appearing in current issues of leading magazines.

RINGS ON HER FINGERS...BELLS ON HER TOES

She Shall Have Music

WHEREVER SHE GOES



ARVIN
Top Flight
RADIOS
ALL THROUGH THE HOUSE

Upstairs Downstairs

... all through the house

MOTHER works all day, all over the house... upstairs, downstairs... and outdoors, too. And wherever she goes she can have music, news, a ball game, whatever she pleases... if there are Arvins all through the house. Mother deserves this pleasure, as she goes about her daily household tasks. And on Saturdays and Sundays, or any evening, when Dad and Nancy and Jimmie are at home with her... each wanting a *different* radio program, everybody can be happy. There'll be an Arvin for each and every one.

The new line of Arvin Top Flight Radios will include a wide choice of large and small models. There'll be radio-phonograph combinations with automatic record changers and FM, floor and table models, portables and farm battery sets. With them you can radio-equip your home completely and economically. And there'll be other Arvin Products, too, to add to the comfort and pleasure of your home.

Coming: As peacetime production begins, there'll be a wide range of useful Arvin products for your home... Arvin Top Flight Radios... Arvin Metal-Chrome Dinette Sets... Arvin Outdoor Metal Furniture... Arvin Portable Electric Heaters... Arvin Automatic Electric Irons and Other Appliances... Arvin Roll-a-Round Laundry Tubs... Arvin All-Metal Ironing Boards... Arvin Car Heaters.

* THIS NAME IS
GETTING BIGGER
ALL THE TIME

ARVIN FAMILY PRODUCTS are engineered and built by NOBLITT-SPARKS INDUSTRIES, INC., Columbus, Indiana
25 years' experience in manufacturing Eleven plants in five Indiana cities

with the publisher.....

Hold-Back Buying A Dangerous Condition

ALTHOUGH the public avidly awaits and really wants to buy all types of electrical appliances and radios one must not lose sight of the fact that many people intend to refrain from purchasing the first models to come off production lines, preferring instead to wait awhile in anticipation that more advanced models will immediately follow the first surge.

This hold-back of buying can be a most dangerous factor and to help combat it dealers

Another Type War Begins

THE BULLET-shooting, bomb-dropping war is over. Now the merchandise-selling battle for business survival war begins. Naturally there will be victors and many casualties. The practical idea is for us to try to have as few of the latter as possible.

Horizontal Editorial Policy

IN NORMAL prewar times some radio dealers and department stores did not operate their own service or installation departments, preferring instead to farm out such work to service specialists. Likewise, prewar some radio and appliance service organizations did servicing exclusively, selling no retail items. Times have changed.

Recent surveys indicate that in future the majority of retailers will also operate service departments and that many who were heretofore servicers exclusively will broaden their scope by engaging in retail sales from this point on. Properly managed firms can undoubtedly make a profit from both their selling and servicing departments. Careful attention must be given to both phases of one's business to accomplish it.

Soon-to-be-available FM and Television model radios must be *properly sold* and *properly installed* if the sale is to be successful and profit-

Time Payment Sales

BEFORE the war time-payment sales were a basic factor in the country's development and economy. Extended payments allowed many of us to buy cars, radios, washers and luxury items that otherwise could not have been obtained. But prewar, according to economists, it cost the public too much for the borrowing privilege and as a result manufacturers and dealers suffered a loss of a certain profit percentage that was not


and manufacturers must cooperate now. Dealers should try not to overstock themselves with first-made and deliverable items. Rather than risk being stuck with what might soon become distress merchandise, dealers should try instead to maintain an oversold position. Manufacturers will be wiser if at first they distribute their products thinly amongst as many dealers as possible until that first must-have-it-now buying surge passes. The lesson of the old Hare and Turtle Race story has much to commend it.

In the sharply competitive days ahead one prime pitfall — complacency — must surely be avoided if one hopes to be amongst the successful advantage may be taken of the situation. carried on franchise — no matter how fine a location or reputation one enjoyed in the past, nothing will avail unless modern, far-sighted merchandising policies are followed in future.

able, and if the customer is to be thoroughly satisfied. Make no mistakes about it, coming radios are going to be extremely complex compared to prewar models and it behooves the sales manager of a store to know what difficulties his technicians may face. Technicians, on the other hand, will in future be tremendously important factors in furthering sales, and they should know all the merchandising angles.

Keeping abreast of changed conditions our editorial policy is now fixed. About 3% of our readers do not sell merchandise, being engaged in service work exclusively; 6% confine their efforts to selling only. As 89% are engaged in both sales and service, our text content hereafter will be maintained on a fifty-fifty basis, one half to technical and the other half to non-technical matters. New products, new sales methods, new service techniques, new circuits — all these basic features will be vitally important reading to every "RSD" subscriber.

really justified. Now we learn that soon borrowing will cost less and will be easier to arrange. This will be a benefit to all parties concerned. We're for it! The subject should be discussed with competent authorities immediately so that full survivors. No matter what Name Brands are



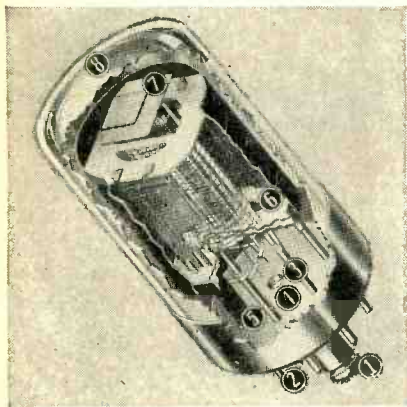
SYLVANIA NEWS

RADIO RETAILER EDITION

SEPT. Published by SYLVANIA ELECTRIC PRODUCTS INC., Emporium, Pa. 1945

SYLVANIA LOCK-IN TUBE IDEAL FOR NEW HIGH FREQUENCY BANDS

Because the mechanical and electrical features of the Sylvania Lock-In are better, more rugged than any other tube made, it can handle high and ultra-high frequencies much more efficiently. That's why it has no trouble taking in its stride the recent FCC assignment of the bands between 88 and 106 megacycles to frequency modulation. It can handle this trend—and is unsurpassed in *all* sets.

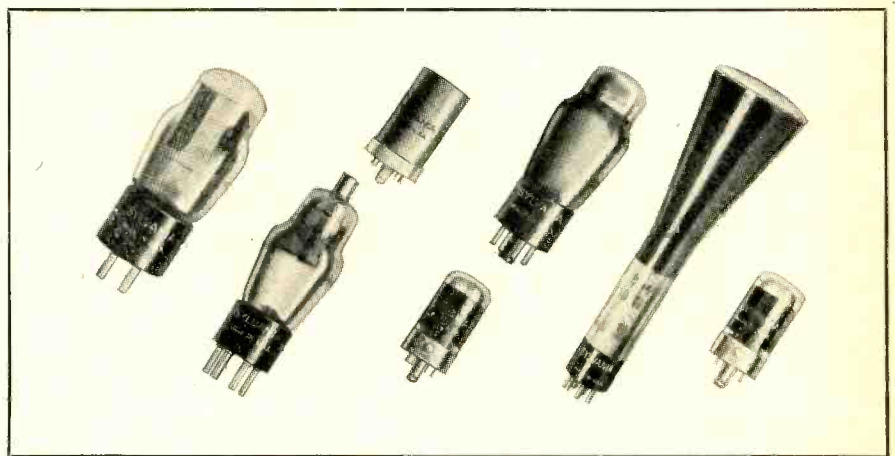


9 POINTS OF MERIT

- 1 Lock-In locating plug . . . also acts as shield between pins.
- 2 No soldered connections . . . all welded for greater durability.
- 3 Short, direct connections . . . fewer welded joints — less loss.
- 4 All-glass header . . . better spacing of lead wires.
- 5 No glass flare . . . unobstructed space for internal shielding.
- 6 Improved mount support . . . ruggedly mounted on all sides.
- 7 Getter located on top . . . shorts eliminated by separation of getter material from leads.
- 8 No top cap connection . . . overhead wires eliminated.
- 9 Reduced overall height . . . space saving.

RADIO RETAILERS CAN NOW OBTAIN FORMER GOVERNMENT TUBES

(Sylvania Tested and Guaranteed)



Sylvania Electric announces the following tube types available to radio retailers.

Several of the types released are of particular interest to amateurs and experimenters. With this market in mind, Sylvania has inserted similar announcements in representative "ham" publications.

The current list is as follows:

- 38—Well known standard output pentode.
- 39/44—Well known standard R.F. Amplifier.
- 2X2/879—The standard high voltage, low current rectifier for oscilloscope use.
- 7C4/1203A—A small lock-in diode rectifier suitable for use in vacuum tube voltmeter probes. 6/3 volt 150 ma. heater.
- 7E5/1201—A lock-in triode for use as a low power oscillator or amplifier up to 750 mc. 6.3 volt 150 ma. heater.
- 46—Standard power amplifier. Suitable for Class B or C amplifiers and used in many amateur transmitters.
- OD3/VR150—Retailers will recognize

this well known voltage regulator.

EF-50—A 9 pin completely shielded R.F. Amplifier somewhat similar to Type 7W7. Heater rating 6.3 volts at 300 ma.

1626—A transmitting triode requiring 12.6 volts, 250 ma. heater supply. Four watts output at 250 volts plate (max.).

1629—Same characteristics as Type 6E5 except for octal base and heater rating of 12.6 volts, 150 ma.

38142 (VT-52) — Similar to Type 45 except for its filament rating of 7.0 volts, 1.18 amperes.

5BP1—Well known 5" cathode ray tube with usual green trace. Makes a good scope with 1500 to 2000 v. anode supply.

5BP4—Same as 5BP1 except for the screen which gives a white trace.

VT-25A—This is the same as the regular Type 10 but has a low loss base. This item should be interesting to amateurs.

All tubes are available under the familiar L-265, or on rated orders, through Sylvania distributors.

SYLVANIA ELECTRIC

Emporium, Pa.

MAKERS OF RADIO TUBES; CATHODE RAY TUBES; ELECTRONIC DEVICES; FLUORESCENT LAMPS, FIXTURES, WIRING DEVICES; ELECTRIC LIGHT BULBS

Motorola **A-M** **F-M** Radio



Designed for better living and listening

Here is a preview of one of the *new* Motorola radios. Look at the handsome styling, the perfectly-balanced design. Here is a radio for any home to be proud of—a radio that will sell on *sight* as well as *sound*. And it's just one example of the complete line of Motorola radios in sleek modern and authentic period styles that will provide you with a Motorola to suit the taste of *every* customer!

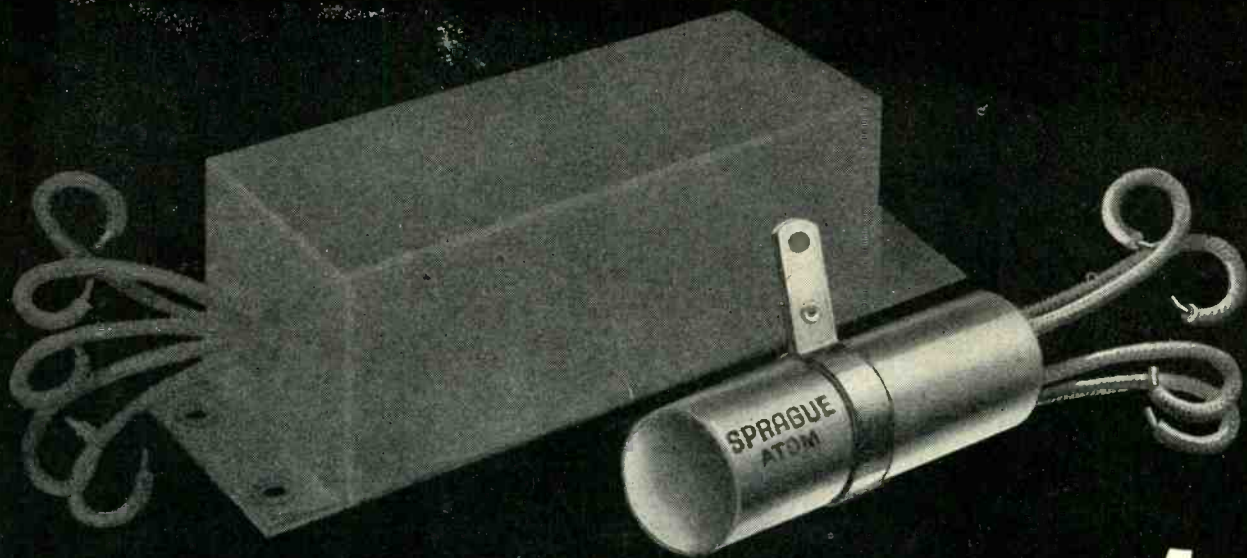
Your customer will appreciate the added con-

venience of Motorola's new exclusive ROLL-O-MATIC* record changer and TOP-VUE* full vision control panel. The radio itself is an electronic marvel from the laboratories of Motorola engineers who developed the battle-famous "Handie Talkie" and "Walkie Talkie." Your customers will be quick to see that for better living and better listening . . . *There is none finer than Motorola!*

*Two more exclusive Motorola Firsts.

GALVIN MFG. CORPORATION • CHICAGO 51, ILLINOIS

F-M & A-M HOME RADIO • AUTO RADIO • PHONOGRAPHS • TELEVISION • AIRCRAFT RADIO • POLICE RADIO • RADAR • MILITARY RADIO



HALF THE SIZE!
and twice as good!

REMEMBER back in pre-war days when anything less than an exact duplicate condenser replacement simply wouldn't do? Condensers were big as half a pound of butter and weighed almost as much. Today, you can replace any of those old "giants" with a Sprague Atom midget dry electrolytic less than half its size—and twice as dependable by any electrical standard of comparison you care to name. What's more, compare Atoms with any similar midgets and you will find they are smaller than most—and far and away the most dependable of the lot!

Sprague Products Company, North Adams, Mass.

(Jobbing Sales Organization for Products of the Sprague Electric Co.)

**TRADING POST
 ON PAGE 55**

Sprague's free wartime Advertising service, **THE TRADING POST**, also appears in this issue—and will continue to appear as long as it can be of help to our thousands of friends throughout the trade.

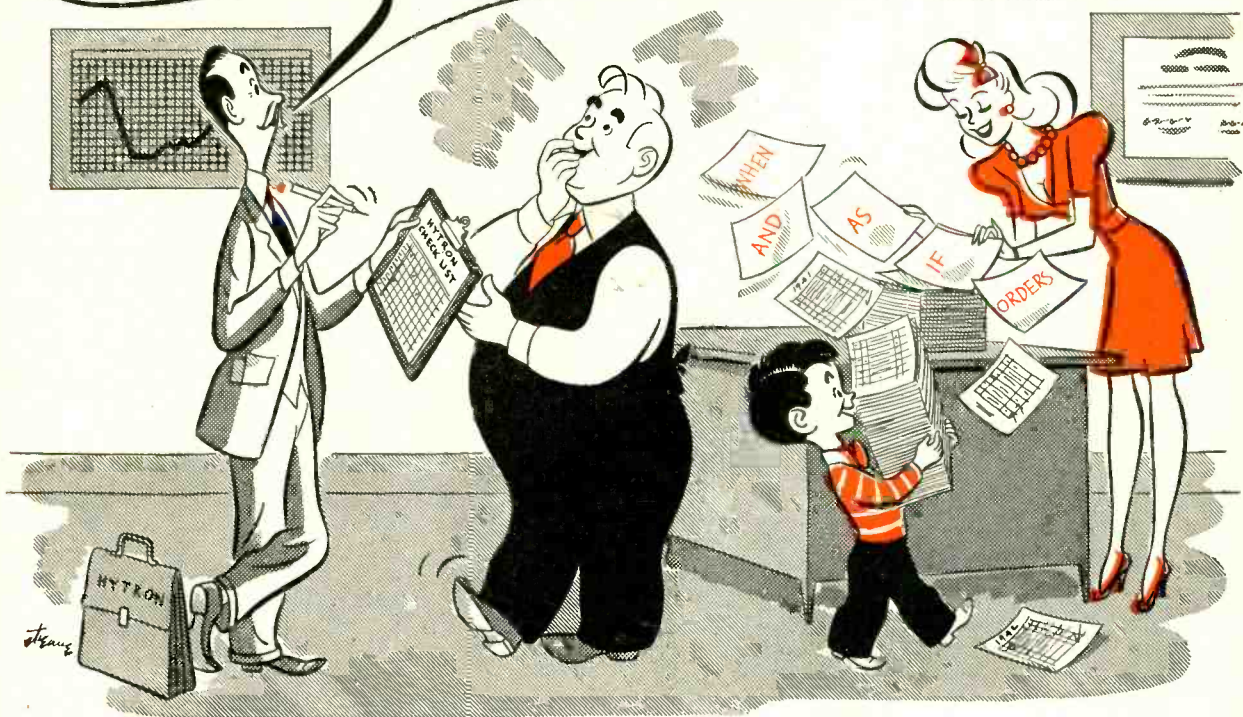


SPRAGUE ATOMS



THE IDEAL REPLACEMENTS FOR ALL DRY ELECTROLYTIC CAPACITOR TYPES

"WHAT RECEIVING TYPES DO YOU NEED MOST?"



Right now we cannot give you *all* the receiving tubes you need. With your help, however, we can do our best to give you types for which your customers clamor loudest. You Hytron jobbers and dealers know best which these types are. Only you can specify exactly your local demands.

Hytron is emphasizing production of GT types which fortunately are in great demand by both the Services and you. As it becomes possible to increase gradually availability of civilian types, we want to pick those you want most. Each Hytron dealer can help by sending to his jobber a list of types in the order needed. Hytron jobbers can then inform us with confidence of the types required first.

Will you help? It will take only a few minutes. If you do co-operate, you can be sure Hytron will do its best to pull demand and supply together. We'll be looking forward to receiving the information we need to plan for you.

HYTRON HYLIGHTS



IF WE HAD A CRYSTAL BALL

If we had a crystal ball, we could predict how many tubes you may expect to get. We could, in fact, predict the end of the war. (Perhaps it will be over when you read this.) As it is, we can only say: Hytron is ready to step up production for you the minute the green light flashes. WPB favors shipment of replacement tubes over those for new home receivers.* If the war goes well, your shelves should gradually be filling up with those Hytron tubes you have waited for so long.

* WPB Limitation Order L-265 as amended July 26, 1945.



BUY ANOTHER WAR BOND



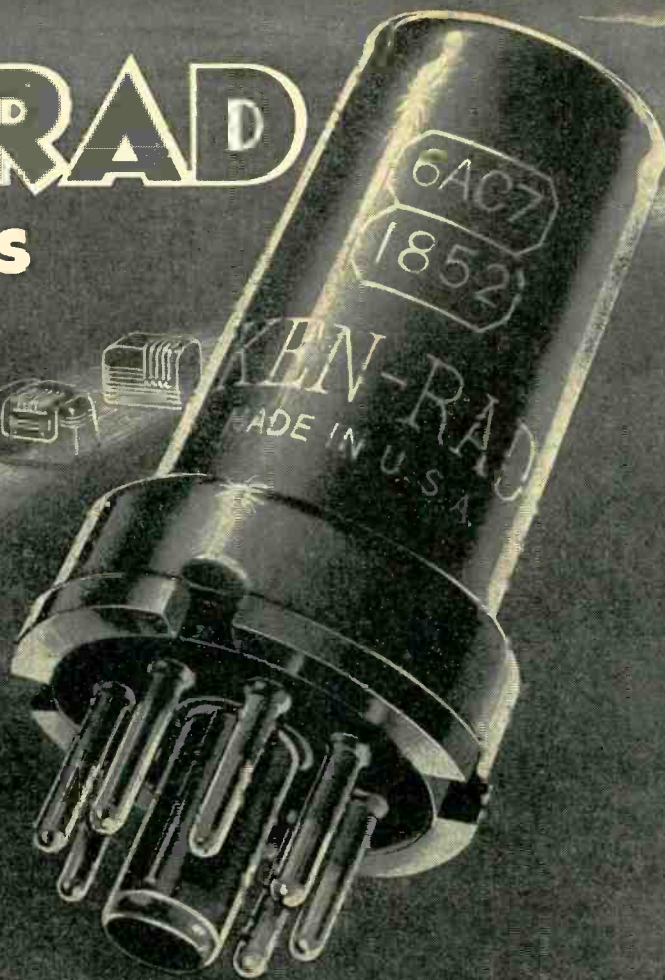
OLDEST MANUFACTURER SPECIALIZING IN RADIO RECEIVING TUBES

HYTRON
RADIO AND ELECTRONICS CORP.

MAIN OFFICE: SALEM, MASSACHUSETTS
PLANTS: SALEM, NEWBURYPORT, BEVERLY & LAWRENCE

KEN-RAD

METAL TUBES



Better than Ever

New radio sets coming from production lines demand new heights of tube quality and performance. New research and manufacturing facilities superbly equip Ken-Rad to meet these higher requirements. In the future, just as today, user enthusiasm produced by the clear dependable tone from Ken-Rad sturdy Metal Tubes will spell profits for Ken-Rad dealers.

● Write for your copy of "Essential Characteristics" the most complete digest of tube information available.

KEN-RAD

DIVISION OF GENERAL ELECTRIC COMPANY
OWENSBORO, KENTUCKY

178-09-8850



AT LAST
a Real
 STANDARDIZATION
 PLAN!

4 E-L VIBRATORS
 MEET 95% OF ALL
 AUTO-RADIO
 REPLACEMENT NEEDS

Think what this means! Only 4 models to stock for serving the 1122 auto-radio models which comprise 95% of the market. It means lower stock investment, faster turnover, no more dead wood in your inventory! It guarantees greater profits for distributors and dealers. E-L streamlined standardization is the result of an extensive, careful analysis of auto-radio vibrator requirements.

Superior Quality... 33% Longer Life

The design and every exclusive feature of these outstanding vibrators has been thoroughly proven in the most rugged wartime service. E-L has developed and perfected a vibrator of the balanced resonance type with 8 contacts instead of 4—twice as many as other vibrators

Complete Auto-Radio Vibrator Replacement Guide Is Ready for Service Men

This E-L Guide is a handy, hang-up wall card. You can tell at a glance which E-L Vibrator to use for most makes and models of auto-radios as far back as 1936. Available from your E-L distributor when you order your supply of E-L Vibrators. →

of this type. This means 33% longer vibrator life, with output voltage and starting voltage requirements maintained virtually constant at all times. Thus, E-L Vibrators not only assure longer life, but maintain the characteristics necessary for satisfactory auto-radio operation.

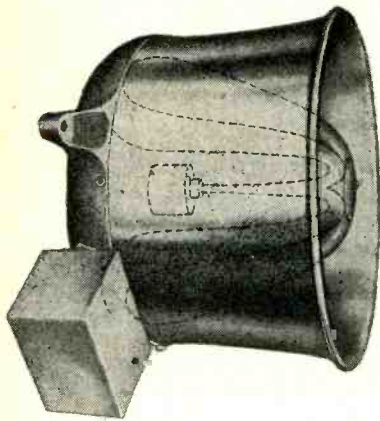
Available Now

Order your E-L Vibrators from your nearest E-L distributor. He will fill all orders as soon as possible, and in the order of their receipt. Naturally, the supply of vibrators available for civilian needs will depend upon military demands. See your E-L distributor today—order your E-L Vibrators and get your copy of the new E-L Auto-Radio Vibrator Replacement Guide!

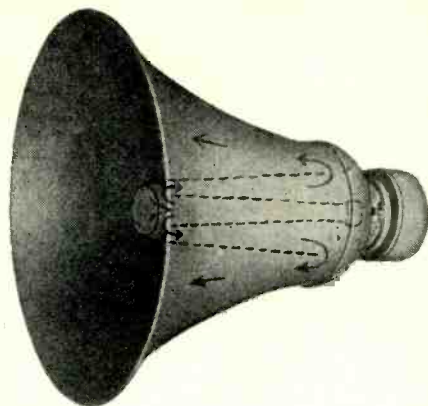


Electronic
 LABORATORIES, INC.
 INDIANAPOLIS





Left—MARINE SPEAKER; approved by the U. S. Coast Guard, for all emergency loudspeaker systems on ships. Re-entrant type horn. Models up to 100 watts. May be used as both speaker and microphone.



Right—RE-ENTRANT TRUMPET; available in 2½-3½-4½-6 ft. sizes. Compact. Delivers highly concentrated sound with great efficiency over long distances.



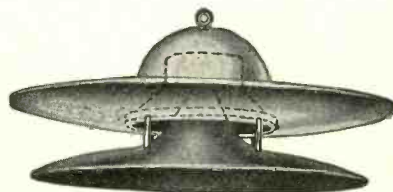
Left—RADIAL HORN SPEAKER; a 3½' re-entrant type horn. Projects sound over 360° area. Storm-proof. Made of RACON Acoustic Material to prevent resonant effects.



Right—AEROPLANE HORNS; super-powerful and efficient P. A. horns for extreme range projection. 9-4 and 2 unit Trumpets available.



Left—PAGING HORN; extremely efficient 2' trumpet speaker for use where highly concentrated sound is required to override high noise levels. Uses P.M. unit.



Right—RADIAL CONE SPEAKER; projects sound over 360° area. Cone speaker driven. Will blend with ceiling architecture. RACON Acoustic Material prevents resonant effects.

SEND FOR CATALOG



RACON

RACON ELECTRIC CO. 52 EAST 19th ST. NEW YORK, N. Y.

MORE TUBES RELEASED SOON!

Get Your Share of RCA Tubes—Order Now



As the war ends, RCA is immediately ready to make larger and larger quantities of tubes for civilian requirements.

Since it will take some time to satisfy all new set requirements, your customers will have to depend on you to keep their old sets working.

Be sure to make the most of this opportunity by assuring yourself of a supply of RCA tubes. They have been, and will continue to be, *best sellers*—because they carry the *best-known name in tubes*.

Your RCA distributor will see that you get your share of any increased quantities of RCA tubes if he knows your requirements well in advance. You stand to gain a lot if you order your next 60 days' supply of RCA tubes from him *today*.

And remember, it's good business to do business with RCA. It pays to have the RCA name selling for you.

BUY WAR
BONDS

Listen to
"The RCA Victor Show,
Sundays, 4:30 P. M.
EWT, NBC Network



62-6636-06

In Metal, Miniature, or Glass,

THE FOUNTAINHEAD OF MODERN

TUBE DEVELOPMENT IS RCA

RADIO CORPORATION OF AMERICA

RCA VICTOR DIVISION • HARRISON, NEW JERSEY

LEADS THE WAY... In Radio... Television... Tubes
Phonographs... Records... Electronics

ALWAYS SPECIFY

Centralab

- Volume Control
- Selector Switches
- Lever Action Switches

Old Man Centralab urges you today, as he has for the past two decades, to "always specify CENTRALAB" Replacements.

Your jobber or supplier has comparatively ample stocks of the famous RADIOHMS, Selector Switches (Bakelite or Steatite insulation) in kit form or standard completely assembled and individually cartoned Tone Switches and Lever Action Switches.

... and because there is no substitute for quality be sure to "always specify CENTRALAB"

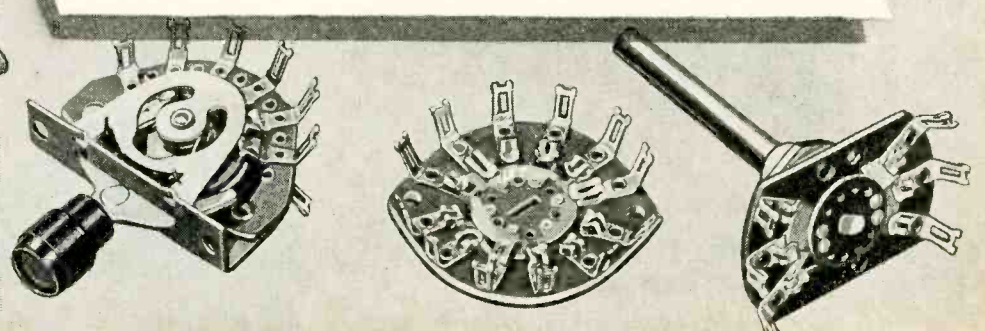
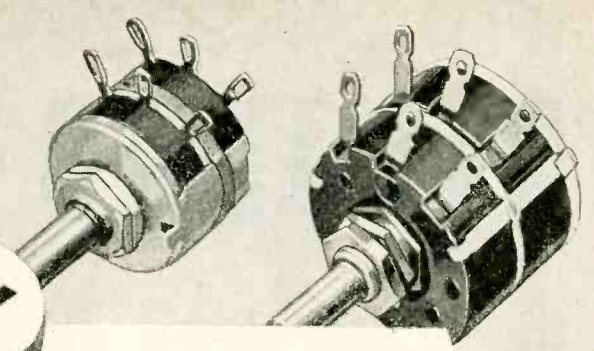
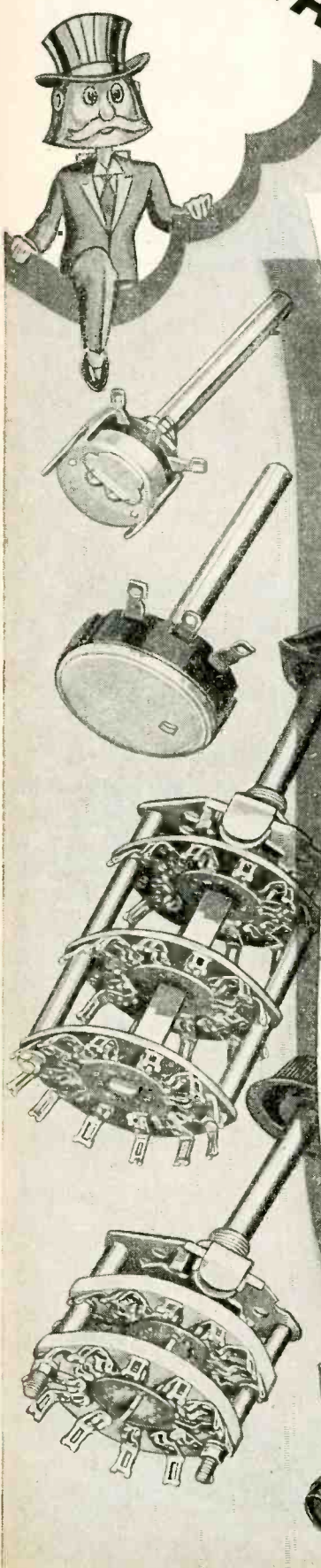


Send for Catalog No. 24.

Centralab

Division of GLOBE-UNION INC., Milwaukee

Producers of: Variable Resistors • Selector Switches • Ceramic Capacitors, Fixed and Variable • Steatite Insulators and Silver Mica Capacitors,



Since there's nothing finer than a Stromberg-Carlson

for the Main Radio



in any home

There's nothing finer than a Stromberg-Carlson

for the Main Radio Line in your showroom!



THESE SEVEN WORDS, "There's nothing finer than a Stromberg-Carlson" have aptly summed up Stromberg-Carlson leadership for 51 years. Today, by the millions, America is swiftly swinging to the conviction that the *main* radio in any man's home should be as fine a musical instrument as its owner can possibly buy.

Stromberg-Carlson is the main choice for the *main* radio in whatever price range — whether table model, console, or radio-phonograph combination. And its superiority as a musical instrument is carried to the public through vigorous national advertising with some 475,000,000 impressions in thirteen leading magazines during 1945.

Ask your Stromberg-Carlson distributor for details

SEPTEMBER, 1945.

of the very favorable Franchise Agreement now being offered, or write us directly. For Stromberg-Carlson is:

- *the important radio unit*
- *the radio unit carrying real profit opportunity*
- *the radio unit with easy-selling public acceptance.*

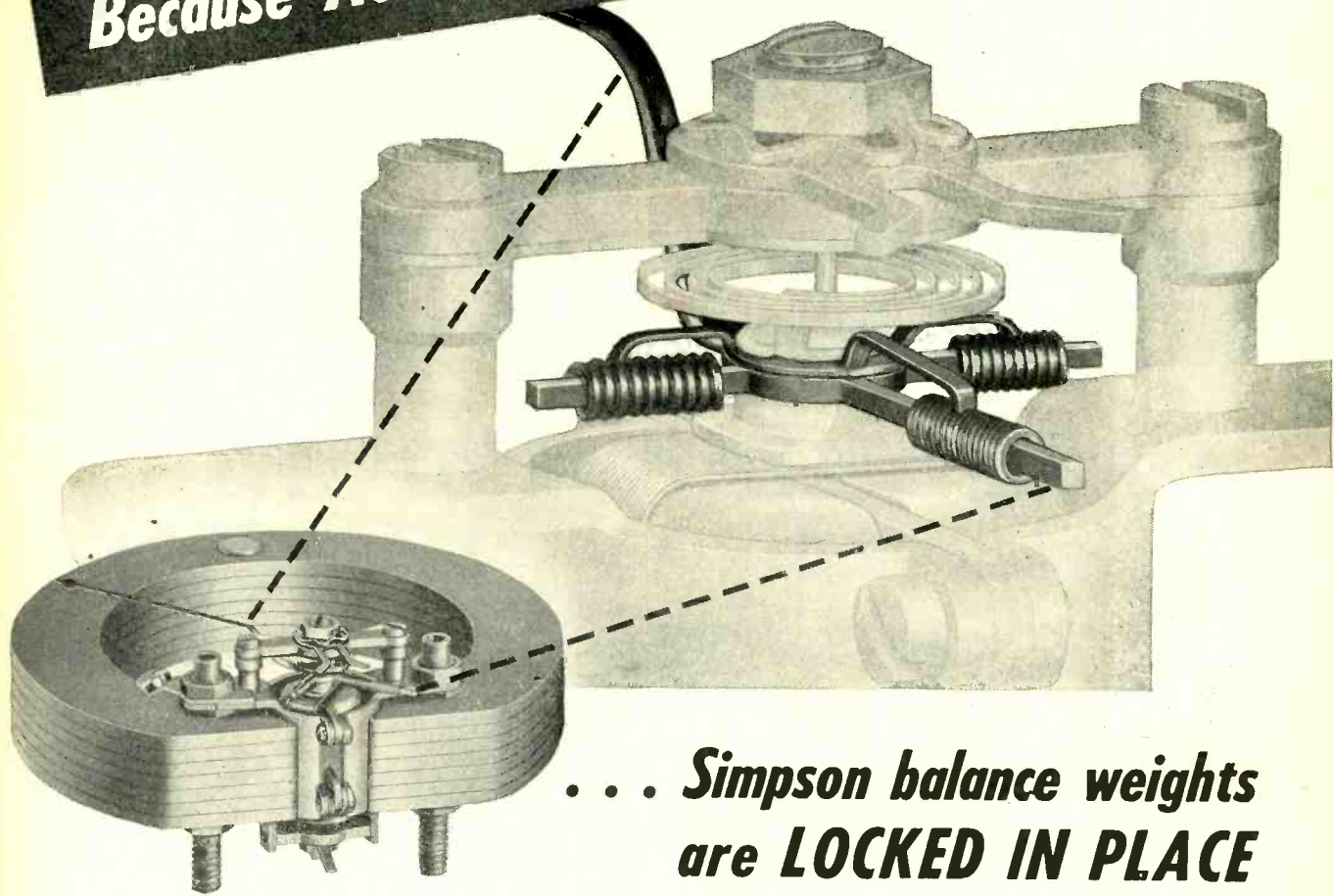
Become an Authorized Dealer now, and organize your postwar business around the Stromberg-Carlson *main radio* — a consistent profit maker whether in an outstanding table model, console, or radio-phonograph combination.

STROMBERG-CARLSON

ROCHESTER 3, NEW YORK

RADIOS . . . RADIO PHONOGRAPHS . . . AND TELEVISION

Because Accuracy Hangs in the Balance



... Simpson balance weights are LOCKED IN PLACE

PERHAPS it's the smaller details, like these balance weights, that best illustrate the value of Simpson's 35 years of experience.

Though only tiny coils of wire, these balance weights have an important function—to offset the weight of the pointer so the moving assembly will swing in perfect balance. If the instrument is to stay accurate, they must stay in place.

So Simpson has devised a method of locking these balance weights in position. This construction not only defeats vibration and shock, it per-

mits even greater initial accuracy and makes possible faster, more efficient production.

Such refinements come from a greater knowledge of the problems of instrument manufacture, and a greater fund of practical experience which can be applied to their solution. This is the simple reason Simpson Instruments are writing such an outstanding service record in posts of vital responsibility. This, too, is your guarantee of the ablest translation of today's advances in tomorrow's instruments.

SIMPSON ELECTRIC COMPANY
5200-5218 Kinzie St., Chicago 44, Illinois

Simpson

INSTRUMENTS THAT STAY ACCURATE

Buy War Bonds and Stamps for Victory



Announcing...

NEWLY DESIGNED **RADIART AERIALS**



WITH FEATURES AND
ADVANTAGES THAT MAKE
THEM THE

Sensation of 1945!

This new RADIART Line is complete — 3 and 4 Section Models — to fit all cars — all angles — cowl, fender and under hood types — with waterproofed leads of new design featuring lowest capacity — high efficiency construction — with combination pin and bayonet fittings.

All models are made with only highest quality Admiralty brass tubing and stainless steel top section — thereby providing the maximum in

elastic load limit consistent with the utmost in strength and rigidity.

Newly designed method of mounting provides simplest form of one man installation — Mounting is completely waterproofed and impossible to short to the body.

And including those well known RADIART Features of the "Static" muffler magic ring and the permanent all-metal anti-rattler.

★ Check these RADIART advantages and features against all other aerial specifications and you will understand why RADIART AERIALS HAVE ALWAYS BEEN THE STANDARD OF COMPARISON.

Ask your distributor about deliveries of these new models.

MANUFACTURED BY THE MAKERS OF RADIART EXACT DUPLICATE VIBRATORS



Radiart Corporation

3571 W. 62nd STREET

CLEVELAND 2, OHIO

Export Division
25 Warren St., New York 7, N.Y.

Canadian Office
455 Craig St., W., Montreal, Canada

In & Around the Trade

Being a condensed digest of production, distribution and merchandising activities in the radio and appliance trade.



R. A. Graver, vice president, Admiral Corp., inspects new record changer which went into production in August. Market appeal is to the younger set.

Admiral Record Changers

Ross D. Siragusa, president of Admiral, announces that the company is producing a record-changer attachment for radios and that "sizeable quantities" will be coming off the assembly line during September. The attachment is one which, when plugged into a home radio, converts the latter instrument into an automatic phonograph.

The record-changer attachment now being made is a vastly improved model of the one popularized by Admiral before the war. It consists of a phonograph turn-table, tone arm and automatic changer, electrically operated and mounted in one unit. By connecting it with any type of home radio, whether table or console model, the user gets phonograph performance and automatic changing of phonograph records as well. It is portable, can be placed on top or alongside the radio, and attached or detached at will. The retail price, Siragusa said, will be lower than pre-war prices for the same device.

It completes the operation of changing a record in five seconds as contrasted to a pre-war time of 10 to 15

seconds for the same operation. "A new principle of internal design has made this the first virtually fool-proof changer," Siragusa explained. "It has only three moving parts during a change cycle and is so constructed that the tone arm can be picked up while playing and moved in any direction without affecting the operation of the changer." The unit will be made in three different styles, all with the automatic change feature. Each style will hold a playing "load" of twelve 10-inch records or ten 12-inch discs. It will have special appeal for the young people, who have been responsible for the phenomenal growth of the record industry. They are designed to match the color scheme of any room and are ideal for playrooms, living rooms and dens.

GE Radios in October

General Electric will begin manufacture of home radios on October 1 and is preparing to start production of television and frequency modulation receivers soon after, I. J. Kaar, manager of the receiver division, has announced.

Scheduled for early distribution are

a variety of portables, table models, consoles, radio phonograph combinations and farm sets. All radios will incorporate new features which will give them an efficiency not achieved in prewar sets, Mr. Kaar said. The phonograph combinations, he added, will be equipped with the recently perfected electronic reproducer which almost entirely eliminates needle scratch and gives recorded music a new dimension in enjoyment.

Television sets, available some months after initial production of radio receivers, will range from the smaller direct view receivers to large-screen sets. Many of the frequency modulation receivers, Mr. Kaar said, will be built in combination with standard receivers so as to be of immediate use in cities other than where FM stations are now operating.

Meck Radios in Production

The John Meck Industries of Plymouth, Indiana, announce that they are the first radio manufacturers in the United States to turn out radios, having started production August 21. The company expects to reach production of 2,000 sets a day shortly and expects that the first shipment will be made during September.

The company was a prewar producer of public address and sound equipment. They will produce a complete line of table model, console, and radio-phonograph radios. First production will be limited to a five tube table superheterodyne called the "Trail Blazer". John S. Meck, president, says that he hopes that the plant will shortly reach full employment which will be equal to top war time peak.

RMA Industry Statistics

Arrangements have been made for industry statistics by RMA immediately upon the resumption of civilian production. The statistical services being arranged by the RMA Industry Statistics Committee, under the chairmanship of Fred D. Williams of Philadelphia, will cover data on sets, tubes, and transmitting apparatus, with later parts statistics under consideration.

Oct. 1 is the tentative starting time for the set statistics, which will include both distribution and production. The RMA set statistics were suspended during the war. Present tube statistics will be continued, and the new statistics covering the products of all sections of the Transmitting Division will be initiated to cover the last quarter of 1945. The RMA reporting forms are being prepared for final approval by transmitting apparatus manufacturers.

[Continued on page 22]

THE MARION FRANCHISE

A

24-KT. PROPOSITION



*With these advantages
to offer you:*

- a strong line-up of quality instruments covering all radio and electronic applications
- a merchandising and promotional "package" including the new Marion MeterTester which helps you sell, helps customers see what they're getting
- a Special Industrial Application Department to cooperate with customers on new and unusual applications
- trouble-free performance and right price have practical appeal among progressive engineers and purchasing agents
- a hard-hitting, consistent advertising campaign, with full color advertisements in leading electronic journals
- and, of course, a good margin of profit, completely protected throughout the line

Marion has plenty of "ideas" for your growth as well as for new instruments. For complete details regarding a Marion Franchise, write to our Jobber Sales Division.



MARION ELECTRICAL INSTRUMENT CO.

MANCHESTER, NEW HAMPSHIRE

Jobber Sales Division: Electrical Instrument Distributing Co.
458 BROADWAY NEW YORK, N. Y.

HOMER G. SNOOPSHAW says:

"Yessir! Burgess is a winner! And when folks read ads like this in 39 national magazines, they'll buy the batteries electronic engineers say are best! See your Burgess distributor!"



BURGESS WINS IN NATION-WIDE POLL!

Where electronic engineers use dry batteries (as in Radio Compass Test Unit above) their choice is "BURGESS 2 out of 3!"

When you need batteries for Flashlights, Radio, Hearing Aid, Ignition—choose the brand that experts prefer—BUY BURGESS! Burgess Battery Company, Freeport, Ill.



BURGESS BATTERIES

THE JOB AHEAD—JAPAN!

In Trade

[from page 20]

Joins Sylvania

Paul S. Ellison, Director of Advertising and Sales Promotion of Sylvania Electric Products Inc. has recently announced the appointment of Mr. Scott Barlow as Editor of the Sylvania News, and as assistant to Mr. H. G. Kronenwetter, Advertising Production Manager of the Radio Tube Division. For the past several years, Mr. Barlow has had a wide and extensive background of advertising experience, mostly in the agency field. He came to Sylvania by way of the McCann-Erickson Advertising Agency, Sweet's Catalog Service, the Batten, Barton, Durstine & Osborn Advertising Agency, and Westinghouse Lamp Division's Industrial Relations Department. Mr. Barlow will make his headquarters at the Sylvania New York office.

Trade Shows Corporation Sponsored

Radio Parts and Electronic Equipment Shows, Inc. is the name of the corporation newly formed to sponsor and conduct future trade shows on a non-profit basis for the radio parts and equipment industry. Formation of the trade show corporation was instigated by a recent resolution of the Radio Parts Industry Coordinating Committee. Following the suggestion of the committee, The Radio Parts Industry National Trade Show, Inc. and the Electronic Industry Conference Committee, Inc. have taken action to merge their respective interests and pool the balances remaining in their treasuries and transfer them to the new show corporation.

A board of eight directors has been appointed, two from each of the four sponsoring groups. These are:

From Parts Division of Radio Manufacturers Association: Leslie F. Muter—The Muter Company, Chicago, Illinois; Jerome J. Kahn—Standard Transformer Corporation, Chicago, Illinois. From National Electronic Distributors Association: W. O. Schoning—Lukko Sales Corporation, Chicago, Illinois; Sam Poncher—Newark Electric Company, Chicago, Illinois. From Association of Electronic Parts and Equipment Manufacturers: H. W. Colugh—Belden Manufacturing Company, Chicago, Illinois; J. A. Berman—Shure Brothers, Chicago, Illinois. From Sales Managers Club, Eastern Division:

[Continued on page 24]

Get **EVERYTHING!**

Standardize on

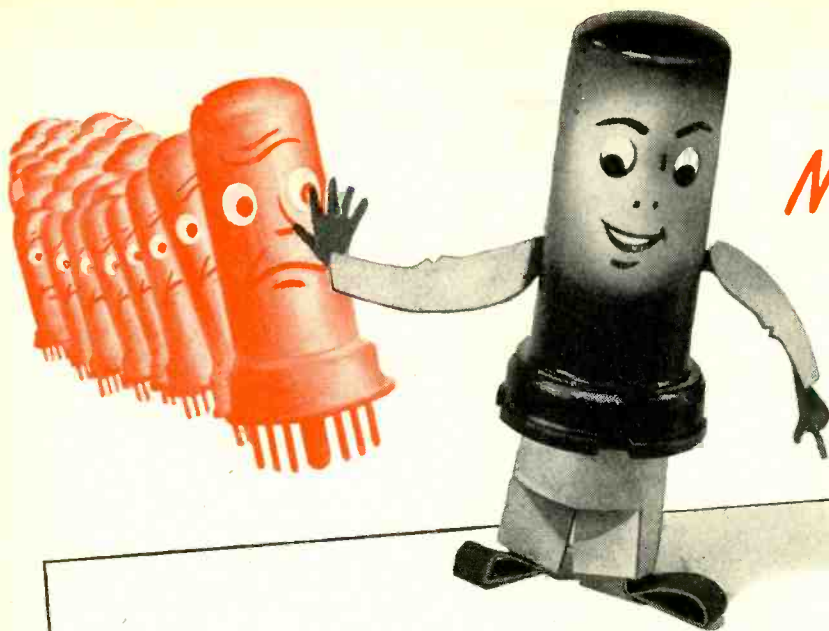
STANCOR

Transformers

Call your nearest Stancor Jobber...
or write us for his address

STANDARD TRANSFORMER CORPORATION
1500 N. HALSTED STREET • CHICAGO





NOW- REPLACE OVER 875
 TYPES OF BALLAST TUBES WITH
 ONLY 10 N.U. UNIBALLASTS

N.U. UNIBALLAST

**COVERS YOUR REPLACEMENT NEEDS WITH
 ONLY 10 FAST-SELLING PROFITABLE TYPES**

YOU BET Uniballast are a real profit-maker for service men. With only 10 types of N.U. Uniballast to carry, you keep your investment constantly turning, and putting profits in your pocket. Order Uniballasts today from your N.U. Jobber. And ask him for the "N.U. Uniballast Service Manual" or write—National Union Radio Corporation, Newark 2, New Jersey.

SPECIFICATIONS

- Uniballast—the universal ballast tube—small—compact—easy, quick installation.
- Metal envelope is excellent heat radiator. "Plug-in" simplicity.
- Provides proper operating current conditions regardless of variations in line voltage and in the characteristics of tube heaters and pilot lights.
- Even if one or more pilot lights burn out Uniballast continues to operate the tube filaments in the string, at efficient current range.
- Resistance is self-compensating—adjusts itself automatically—true ballast action. Voltage dropping range is indicated on every Uniballast.

NATIONAL UNION RADIO TUBES AND PARTS

*Transmitting, Cathode Ray, Receiving, Special Purpose Tubes • Condensers •
 Volume Controls • Photo Electric Cells • Panel Lamps • Flashlight Bulbs*



Actual size
 Ov. Length 3 1/8"
 Seated Ht. 2 11/16"
 Diameter, 1"

Order Today from your N.U. Jobber

Available NOW

VHF RECEIVER KIT with New FM Band

FM*AM



88.6 to 107.6 Mc

115 to 140 Mc

SEPARATE TUNING UNIT ACORN TUBES

Ideal for Communications Work,
Instruction, Training, etc.

A unique 10 tube Concord Kit for FM-AM and VHF reception with a separate tuning unit employing the new acorn tubes. Circuit design is straightforward and simple with no frills or unnecessary components. Extremely compact, sturdy and easily assembled. Has only two controls on the front panel—the tuning control and the volume control. There's a standard headphone jack for output, a switch for change-over from FM to AM, and a power switch in the AC line.

Comes complete with all necessary parts including holes punched and all tubes, wire, solder, hardware, and detailed instructions. Chassis is 10" x 12" x 3" black finish. Dull black panel is 6 1/4 x 12" wide. Two models—CRC-130—Range 88.6 to 107.6 Mc (for the new FM Band), and CRC-140—Range 115 to 140 Mc. Quantity limited—while they last—Use coupon below to order today or to ask for literature giving detailed information and specifications. **\$54⁹⁵**

CONCORD RADIO CORPORATION

Lafayette Radio Corporation

CHICAGO 7, ILL.

ATLANTA 3, GA.

901 W. Jackson Blvd.

265 Peachtree Street

Concord Radio Corp.
901 W. Jackson Blvd., Dept. K-95, Chicago 7, Ill.
Please ship at once the Concord VHF Receiver Kit—or special descriptive literature—as checked below.

- CRC-130—VHF Kit—Range 88.6 to 107.6 Mc
- CRC-140—VHF Kit—Range 115 to 140 Mc
- Send literature giving details and specifications

Name.....
Address.....
City..... State.....

In Trade

[from page 22]

R. P. Almy—Sylvania Electric Products Inc., Emporium, Pennsylvania; Charles Golenpaul, Aerovox Corporation, New Bedford, Massachusetts.

All these men are well known throughout the industry and have had considerable experience in the organization of trade shows. This directorate has already commenced functioning and has held its first meeting. Comprehensive by-laws were prepared for general approval by the members of each sponsoring group. Other business having to do with setting up the organization was transacted. The following officers were elected unanimously:

Herb Clough, President; Charles Golenpaul, Vice President; Sam Poncher, Treasurer; Jerry Kahn, Secretary.

J. Arthur Kealy has been retained as legal counsel. It is planned to hold an industry show as soon as practicable following the lifting of travel and other restrictions, and resumption of peacetime operations. Best guess as to the probable date is October, 1946. Present plans also call for the appointment of a show manager on a full-time basis to handle the direction and manifold details in connection with the conduct of the type of shows planned.

Mr. Herb Clough, President, commenting on the new Trade Show Corporation, stated, "With the formation of the Radio Parts and Electronic Equipment Shows, Inc. the wheels have been set in motion to conduct future trade shows on a national or regional basis for the benefit of the entire industry."

Dealer Promotion

An attention-getting idea in promotional tie-ups, the "Air Heroes" cutout campaign being introduced by Bendix Aviation Corporation's Radio division, is the first of many projected dealer sales aids now being launched to stimulate interest in the company's postwar radio sales for the forthcoming line of AM and FM radios and radio-phonograph combinations, announces Leonard C. Truesdell, general sales manager for radio and television.

The nationwide promotion is built around full color, cardboard cutout figures of Army, Navy and Marine pilots in authentic uniforms. Complete and colorful facts about the personal equipment of each airman are printed on the reverse side of the cutouts to-

gether with information concerning the forthcoming Bendix line and the company's wartime aircraft communications achievements. A full card of eight different cutout figures will be given away by Bendix radio dealers to children accompanied by parents. The figures, measuring 6" high, are die-cut so that they can be easily removed from the card without further cutting. The aviator figures are designed to "stand up" on a wing-easel base.

This promotion includes a full line of colorful window displays and counter cards featuring the cutouts. The window displays are so arranged that they can be used as general Bendix Radio displays, even after the dealer's supply of cutouts is exhausted. The "Air Heroes" cutout campaign is part of a general dealer activity program which includes identification signs, a customer registration plan, and a consumer direct mail campaign. The entire series of dealer aids, aimed to attract dealer traffic and build prospect lists, supplements the company's expanding program of national advertising in the leading magazines, trade publications, outdoor billboards, and a network radio program. Bendix is also planning extensive national and cooperative advertising campaigns to herald its radio line.

Westinghouse Ready

From 60 to 90 days after restrictions on manpower and materials have been lifted, new Westinghouse Home Radio receivers will start rolling from production lines at Sunbury, Pa. Into these Home Radio receivers will be incorporated all of the experience and electronic "know-how" which has been gained in the production by Westinghouse of approximately \$350,000,000 worth of high-priority radio and radar equipment during the war.

Harold B. Douley, Manager of the Westinghouse Home Radio Division in Sunbury, estimates that when production is resumed, Home Radio and, later, Television sets will be manufactured at a rate of from 3000 to 5000 units per day on the conveyORIZED lines in the thoroughly modern seven-acre plant there.

Sparton FM

With FM receiving major interest in consumer and trade paper publicity in the radio industry, Harold V. Neilson, chief engineer of Sparton's Radio

[Continued on page 26]

Dear Sir:

You recently asked "How's it going?" Here's how :

true

The Man's Magazine, is a great, growing success. ("Over the transom" subscriptions are coming in at the rate of 1,500 a month, but 95% of the copies of *true*, are bought at the newsstands by fellows who plank down their 25c a copy.)

true

's Advertising volume has increased 249 pages since last year — comparing 1944 totals with 1945 space actually sold and conservatively estimated. This is a 155% space increase this last year.

true

's Circulation in 1943 was slightly over 250,000. In 1944, nearly 475,000 readers bought *true* at their newsstands. In 1945, sales already are more than 600,000 an issue. We estimate that by December, they'll jump to 800,000. Our January, 1946, rate card guarantees you 500,000 A.B.C. The bonus is gravy.

true

's Advertising revenue in 1944 was about \$85,000. In 1945, it will be more than \$400,000. This is a 370% dollar increase this last year.

true

's Advertisers will total more than 130 in 1945—last year, only 30 advertisers used the book.

true

will grow and keep on growing, because men like the dramatized truth they get in *The Man's Magazine*. They get top-flight writers doing stuff that interests them. They get the best illustrators in the business. They get man-sized excitement. They get what men always go for.

true

puts you in a man's world. Do men buy your product? *true* will sell it for you.

THE MAN'S MAGAZINE
true



LEO'S SPECIAL!

Immediate Delivery

Money Back Guarantee on this all-purpose



Model WRL 300 ONLY \$18.75 Less Leads

Multitester

Handles AC and DC Voltmeter, DC Milliammeter, High and Low range Ohmmeter. Size 5 1/2 x 8 x 3 3/4. 3" meter with sturdy D'Aronsva movement. Write for priority information.

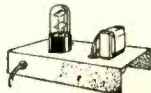
EVERYTHING IN TEST EQUIPMENT

We have it or can get it. Preferred delivery, quick service on all makes, all types. Hundreds of new items on order. Buy from Leo, W9GFQ.

See Leo for WRL Radio Kits priority required



Phono Amplifier Kits Complete with tubes, instructions **\$9.50** No. 1059



Code Oscillator Kits Complete with tube. Size 3"x6". **\$4.95** No. 86-200

PLACE YOUR ORDER NOW!

Leo is making delivery now on **HALLICRAFTERS** For preferred delivery, easy terms, and liberal trade in allowance write Leo W9GFQ.

DUAL FIL. TRANSF. Fully Shielded

110 V. Tapped Primary. Secondary, 5 volt @ 3 amp. and 6.3 V.C.T. @ 4 amp. **\$2.25** No. 9-551.

EXCLUSIVE AT LEO'S!

44 Page **FREE** Parts Flyer...

Packed with hard-to-get items. Immediate delivery to radio repairmen. Usual priorities. Experimenters write Leo, W9GFQ, on how to get radio repair parts.

- Tube and Circuit Reference Book10c
- Handy Tube-Base Calculator25c
- Giant Radio Reference Map, Size 3 1/2 x 4 1/2 ft 15c



MAIL TODAY

Wholesale Radio Laboratories
744 West Broadway
Council Bluffs, Iowa SD-9

Please rush Multitester No. 300, \$18.75 is enclosed, or Enclosed is \$_____. Balance C.O.D.

Here's 10c, Send "Tubes and Circuits" Book.

I want a Tube-Base calculator. 25c enclosed.

Ship me your radio map. 15c enclosed.

Send me your free flyer of hard-to-get radio parts.

Name _____

Address _____

Town _____ State _____

I am an amateur; experimenter; service man.

QUICK SERVICE

Your order will receive my own personal attention. You'll get "same day" delivery service from the heart of the nation . . . on anything in radio.

Sincerely,
Leo W9GFQ



Wholesale RADIO LABORATORIES

In Trade

[from page 22]

and Appliance Division, stated that the new Sparton FM receivers are ready. Although the F.C.C. has had 3 frequencies under consideration, new Sparton Receivers have been designed and samples tested which meet the new wave band 88 to 108 Mc recently announced as the final decision of the F.C.C.

Since graduating from Cornell in engineering, Nielsen has concentrated on radio research. His first assignment was on the superheterodyne radio set for mail planes. Then came improvements on household receivers for U. S. Radio and Television and highly specialized equipment for aircraft with the Bell Laboratories.

In 1939, under Nielsen's direction, Sparton had developed television and placed a number of sets on the market. Thus, Sparton was one of the four major manufacturers to be first in the field with television. Volume production of practical television sets was well under way when interrupted by the war.

Car Radio Vibrators

A drastic stock simplification plan through which 95% of the existing demand for auto radio vibrators may be met by four vibrator models has been announced by Walter Peek, vice president in charge of sales, Electronic Laboratories, Indianapolis. Use of the new E-L Auto Radio Vibrator Replacement line will enable radio distributors, dealers and servicemen to reduce their inventories of vibrator types as much as 92%, Mr. Peek said.

Recent surveys indicate that there will be more than 8,000,000 car radios in need of repair by the time replacement parts become available. A program to promote the E-L Auto Radio Vibrator Replacement plan through advertising, publicity and related activities has already been initiated by the company.

Consolidates Advertising

The consolidation of the Westinghouse Electric Corporation advertising programs under direction of J. M. McKibbin, Assistant to Vice President, including all general advertising, the radio programs, motion pictures and sign identification work, has been announced in Pittsburgh by George H. Bucher, president. Mr. McKibbin has had charge of company product and industry advertising since May, 1944. Assignment of the additional advertising responsibilities to Mr. McKibbin

places the entire Westinghouse program under his direction. His office will be in Pittsburgh.

Radio Sales Manager

E. P. Toal has been appointed Sales Manager of standard radio receivers in the Receiver Division of General Electric Company's Electronics Department, according to an announcement by Paul L. Chamberlain, Manager of Sales for the division. Mr. Toal will be located at the Bridgeport, Conn., plant. Mr. Toal has been employed by General Electric since 1937 when he was graduated from Marquette University, Milwaukee, Wis., with a B.S. degree in business administration.

Joins Agency

M. L. Muhleman has joined the editorial staff of the trade and technical division of J. Walter Thompson Company. Mr. Muhleman was editor and publisher of the engineering magazine "Radio" and a writer for many trade and technical publications.



Harcourt-Harris Photo

A. A. Juviler, president, Hamilton Radio Corp. (right) gets a piece of Army-Navy "E" award.

Crosley Radios and Refrigerators

Production of 1,400,000 home radio receivers and 450,000 electric refrigerators in the first full year of post-war operation has been set for the manufacturing division of The Crosley Corporation, Frank A. Schotters, vice-president of Crosley in charge of production, told Crosley regional and merchandising managers at a meeting at the Crosley general offices in Cincinnati.

"Production of Crosley home radio receivers will start in a small way in September," Mr. Schotters told the

Crosley sales executives. "We can produce 4,800 home radio sets per day in one plant operating one eight hour shift daily. When the other plant is available, we can add to our production schedules an additional 600 console radio sets per day. This is a minimum total of 5400 radio receivers per day operating one eight hour shift. That means 1,400,000 sets a year. If the plant is operated on two eight-hour shifts a day basis, we could produce 2,800,000 sets in a year. If our sales department can sell them, we can build 5,000,000 radio sets a year.

"As to refrigerators, our Richmond, Ind., plant is in part reconverted and is now ready to produce 600 Crosley Shelvador refrigerators per day when materials are available. Of the plant additions, totalling 660 feet in length for Richmond, one 300 foot section is already under way. Upon completion of our entire reconversion program, 1800 Crosley Shelvador refrigerators will be produced per day, and in addition to that, all the home freezers that our sales department can distribute."

New RMA Committees

For the industry's early reconversion to peacetime production, President R. C. Cosgrove has organized and appointed RMA committees for the ensuing year, following the RMA annual meeting last June in Chicago. New peacetime activities of RMA and new services for its membership, now numbering 264, the largest in almost two decades, have been planned, including prompt collection of industry statistics of peacetime production. Additional new committees to deal with new peacetime problems are projected. General RMA management continues under President Cosgrove and the RMA Board of Directors, which has its next meeting scheduled October 10-11, with the officers and directors of the Canadian RMA as guests, at the Westchester Country Club, Rye, N. Y.

RMA Division operations are under the direction of the following: Set Division: Chairman—E. A. Nicholas, Farnsworth Television & Radio Corp. Tube Division: Chairman—M. F. Balcom, Sylvania Electric Products Inc. Transmitter Division: Chairman—C. J. Burnside, Westinghouse Electric Corporation. Parts Division: Chairman—R. C. Sprague, Sprague Electric Company. Amplifier & Sound Equipment Division: Chairman—Lee McCanne, Stromberg-Carlson Company.

Major industry problems, with WPB on industry reconversion and OPA on postwar prices, also disposal

[Continued on page 56]

These 2 GHIRARDI BOOKS Will help you to Diagnose, Locate and Repair Receiver Troubles EASIER • BETTER and FASTER



744 big manual-size pages. Weighs 4 pounds!

Ghirardi's complete guide to modern PROFESSIONAL RADIO SERVICE WORK Instruments — Trouble-shooting — Repair

Complete data on all essential service instrument types; How, when and why to use them; How to Build your own; Point-to-point testing; Preliminary trouble checks; Circuit Analysis; Repairs; Obscure radio troubles; Aligning and neutralizing; Interference reduction; AVC and QAVC circuits, etc., etc.

Modern Radio Servicing

The finest, most complete book of its kind for the professional service man — bar none! Covers all phases of the work. Read from the beginning, it is a complete course in servicing by the most modern methods. Used as a reference volume by the busy serviceman it is an invaluable means of brushing up on types of work that may puzzle you. Its 1300 pages, 706 illustrations help you visualize every action. 720 self-testing review questions help you check your progress every step of the way. Get yours NOW! Only \$5 complete (\$5.50 foreign) while the present limited supply lasts!

MONEY-SAVING COMBINATION OFFER

Save Money! Get BOTH Modern Radio Servicing and Radio Troubleshooter's Handbook—a complete service library of over 2,000 pages—for only \$9.50 (\$10.50 foreign). See coupon.

CUT TIME IN HALF ON 4 JOBS OUT OF 5

Double Your Output of Work!

Ghirardi's RADIO TROUBLESHOOTER'S HANDBOOK isn't a "study" book. It rolls up its sleeves and goes to work for you the minute you get it. It will more than pay for itself the first time you use it! Simply look up the make, model, and the Trouble Symptom of the Radio you want to repair. The likely trouble and exact instructions for fixing it quickly will be found listed. No useless testing! No lost time!

Eliminates Useless Testing — Gives Specific Data on 4,800 Models

Over 400 pages include specific common Trouble Symptoms, their Causes and Remedies for OVER 4,800 RADIO MODELS. In addition, there are hundreds of pages more of time-saving material including i-f alignment peaks for over 20,000 superhets; a big section on i-f transformer troubles; an up-to-the-minute TUBE CHART with complete information on every type, and dozens of tips on tube substitutions plug-in and ballast resistor replacement charts; coil, transformer, wire, capacitor data, etc. A wealth of material to save you time and help you make more money! Only \$5 (\$5.50 foreign). Money-back guarantee.

5-DAY MONEY-BACK GUARANTEE

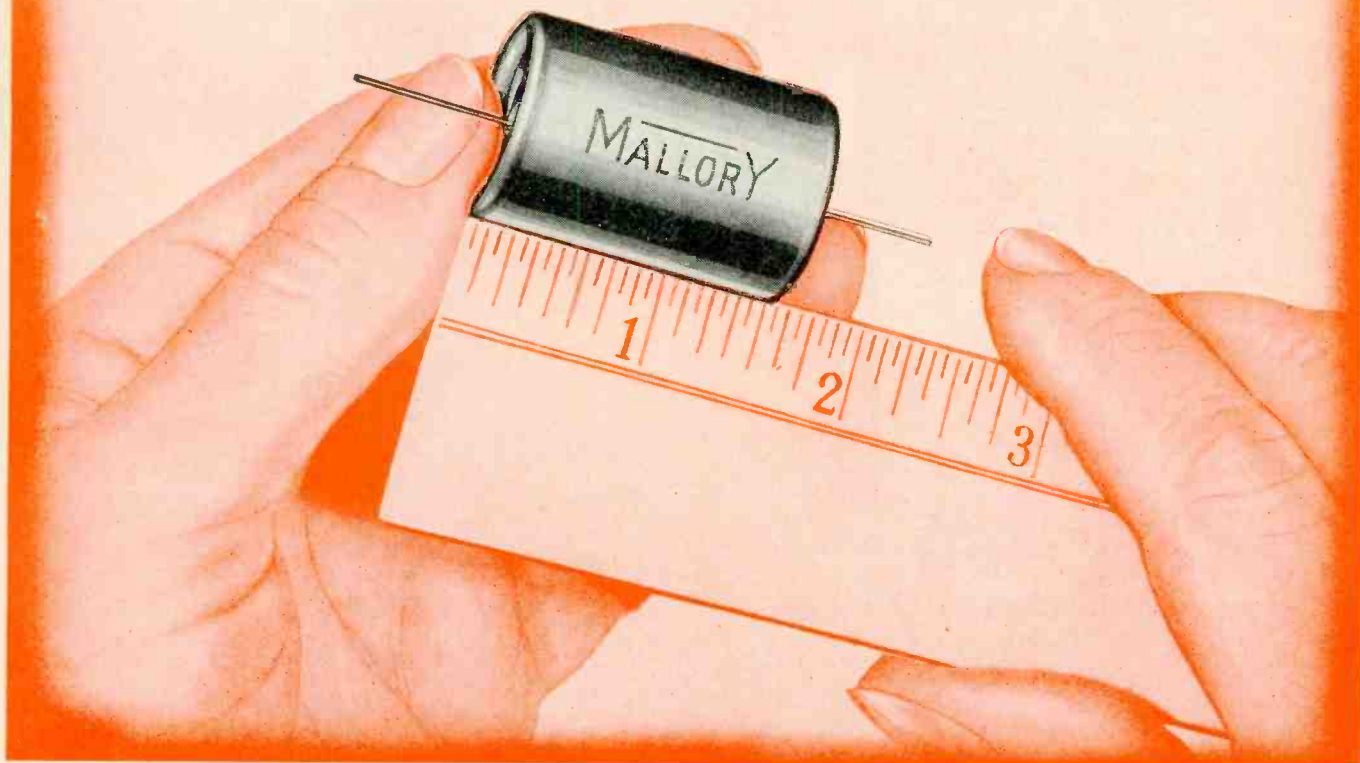
MURRAY HILL BOOKS, Inc., New York 16, N. Y.
Dept. RSD-95, 232 Madison Ave., New York 16, N. Y.

Enclosed find \$..... for books checked or [] send C.O.D. (in U.S.A. only for this amount plus postage.) If not fully satisfactory, I may return the books at the end of 5 days and receive my money back.

- [] MODERN RADIO SERVICING \$5 (\$5.50 foreign)
- [] RADIO TROUBLESHOOTER'S HANDBOOK \$5 (\$5.50 foreign)
- [] Special MONEY-SAVING COMBINATION Both big books for only \$9.50 (\$10.50 foreign)

Name
Address
City & Dist. No. State
(Please print or write plainly)

Meet the MALLORY "TC" Capacitor!



A Tiny Tubular That's New to the Market

YOU'VE heard that good things come in small packages—and this Mallory "TC" proves it!

This capacitor is actually *smaller* than most cardboard types, but is superior in every respect. It's enclosed in aluminum, then hermetically sealed, *then* protected by insulating tubes against possible "shorts."

Just introduced, the "TC" is but one of a series of Mallory tubulars including single capacity, dual common negative and dual separate section units.

Sizes range from $\frac{9}{16}$ " x $1\frac{1}{4}$ " up and there's no sacrifice in ripple current rating or any other characteristic. See your Mallory distributor!

P. R. MALLORY & CO., Inc., INDIANAPOLIS 6, INDIANA



More than ever—
ALWAYS
INSIST ON

P. R. MALLORY & CO. Inc.
MALLORY
APPROVED
PRECISION PRODUCTS

VIBRATORS • VIBRAPACKS* • CONDENSERS
VOLUME CONTROLS • SWITCHES • RESISTORS
FILTERS • RECTIFIERS • POWER SUPPLIES

ALSO MALLORY "TROPICAL"* DRY BATTERIES, ORIGINALLY DEVELOPED BY MALLORY FOR THE U. S. ARMY SIGNAL CORPS, NOT PRESENTLY AVAILABLE FOR CIVILIAN USE.

*Trademarks

Radio Sales Channels

More complex home radio receivers, FM & television antennae installations, bring radio service dealers to fore in postwar radio marketing to ultimate set owners.

**by JOHN MECK, President,
The John Meck Industries, Inc.**

IF one were to survey at a glance the radio industry, he would find two separate forms of distribution predominant, neither one alone being proven completely satisfactory. There are several companies in the field that follow a system that combines both of these, and in their viewpoint may be best suited for their particular case.

The John Meck Industries, manufacturers of various items in the radio and electronic field made an analysis of the type of distribution best suited for their purpose. It was found that the principle of employing well established, independent dealers through a carefully selected jobber organization would be most likely to fulfill all requirements. So far as can be determined in the pre-production period this method appears highly successful. The results obtained to date indicate that we have not erred, and only further elaboration of this plan need be made.

Not too long ago this company indicated its intention of manufacturing radio receivers of all types—from the small-type midgets to consoles. It was immediately decided that a complete analysis be made as to what manner of distribution be used in marketing their receivers. Although the manufacturing processes involved in fabricating home receivers is very closely allied to our prewar lines, we had to be assured that regardless of what path was to be followed, it was to be of the best.

As a result of these studies, it was apparent immediately that the merchandising of these products through

properly chosen local radio service dealers, would again prove to be the key solution to the problem. The radio serviceman has proven that he is a worthy businessman. He has operated successfully during the last few years under the most difficult situations possible, and yet the results of his operation, in keeping the sets playing, have shown that he is not only here to stay, but he can be of considerable help to the actual consumer and the manufacturer. The service dealer knows his neighborhood and his customers—he knows their individual problems and requirements. This is an important factor and will become more so in the postwar period to come.

With FM and television will come many local problems that only a local

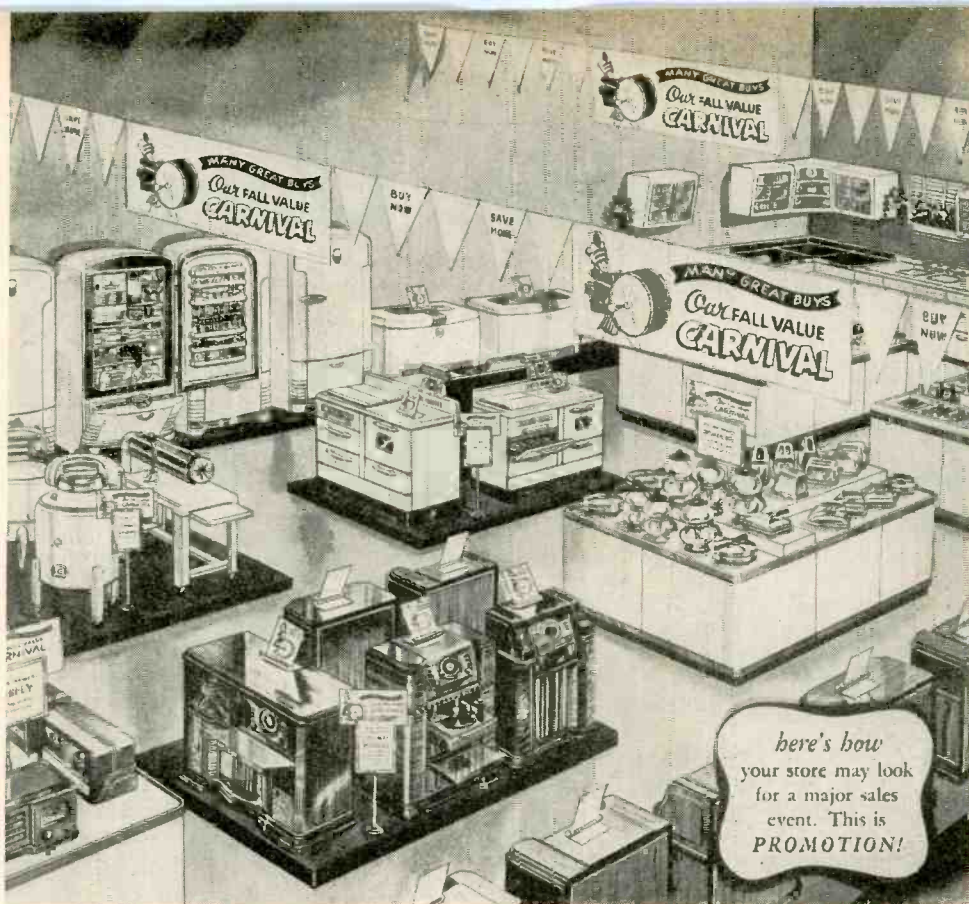
dealer—one who thoroughly knows his community—can combat successfully. Along with these problems, FM and television receivers will need special antenna installations which in most cases must be done by a specialized serviceman. Radio dealers can supply all these services directly, along with tube replacements and servicing, as the case may be. FM and television features make direct factory-to-consumer operation unlikely as a merchandising process.

Highly-recommended distributors, located throughout the country, are the answer. They have sufficient warehousing facilities and at the same time can promptly supply the needs of the local dealer. Through these channels this company will market home radio receivers. This plan follows closely the prewar system and many of our prewar distributors and dealers will pave the way to an extensive expansion of this plan, which no doubt will prove to be a successful marketing system.

There is also this added advantage that as soon as possible many of the radio dealers will not only need, but will themselves look forward to specialized training in salesmanship, installation, and servicing of the more complicated FM and television equipment to come. This can be accomplished more easily with a decentralized system, which falls directly in line with the plans we have inaugurated.

Radio production channels go active for dealer stocks. Among the first is the Meck plant in Plymouth, Ind. Production will rise to 2,000 a day.





Modernize MERCHANDISE DISPLAYS

Crosley Sales Promotion Institute promotes store modernization, issues "idea" book for dealers.

Mr. Van Modernizes His Store

• Practical Pointers on How to Plan and Prepare a Store

Written by experts who have the valuable pointers and prepared thousands of stores.

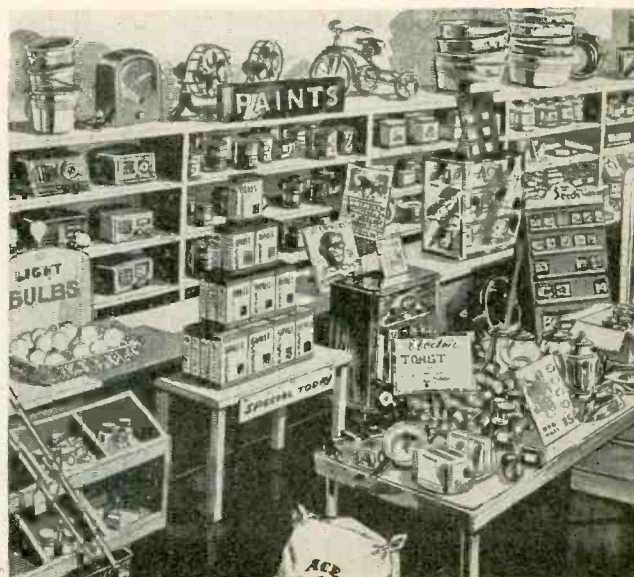
Sound, realistic calls show planning making more.

Fill today's urgent need for level-headed guidance.

Outlines a practical, workable plan based on modern merchandising methods.

Presented in smart, crady fashion.

A book for retailers with their feet on the ground and their eyes on the cash register.



"FLAT TOPS" FOR MERCHANDISE DISPLAYS

RIGHT: "Flat Tops" in the battle for business. The selling table "... is the foundation — the basic fixture of store planning ... the simplest way to make your merchandise openly accessible ... its cost is reasonable ...". Selling fixture theme is expanded primer style (see illustration).

ACROSS, BOTTOM: Left, Crosley "covers" dealer portfolio (opens to 23 inches) on store planning and promotion in primer fashion: "... sound sensible talk about planning a selling store ... a book for retailers with their feet on the ground and their eyes on the cash register ... fills today's urgent need for level-headed guidance ...".

Right, jumble display photo is captioned: "... you've seen stores like this ... there's plenty of merchandise in the open, yet it's not readily accessible because of confused, disorderly arrangement ...".

Top, Crosley version of planned in-store promotion, from "Peter Van Modernizes His Store".

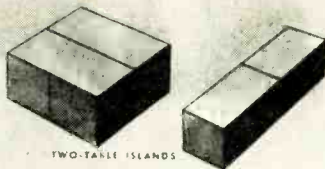
DEALERS in home radio receiver and household appliance lines are today rearranging, refurbishing, redecorating and planning to modernize their stores to be in readiness for their first shipments of peace-time goods. Crosley field sales representatives report that hundreds of dealers throughout the country franchised to distribute for the company, are planning to modernize their stores in line with a program suggested by the Crosley Sales Promotion Institute.

The company is conducting a series of regional meetings in principal cities, at which its store modernization program is presented directly to its thousands of dealers by Bert Johnston, head of the Institute, and S. D. Mahan, Crosley's director of advertising and public relations.

"To make available to independent dealers the same high caliber of merchandising counsel and promotional service available to chain outlets, we have retained the services of an agency specializing in retail store merchandising," Mr. Mahan said.

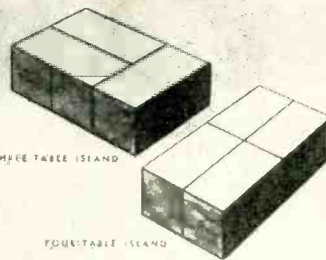
"Correct store layout and fixturing is not only simple but inexpensive," he pointed out, at one of the meetings of Crosley dealers. "No merchant can afford to install elaborately-designed

tables into islands



TWO-TABLE ISLANDS

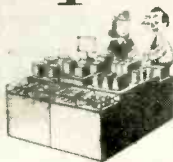
You get best results when you use your Selling Tables in certain ways. And one thing to remember is that a single table cannot be a well-balanced selling unit.



THREE TABLE ISLAND

FOUR-TABLE ISLAND

points to consider



With Selling Tables in open layout, customer and clerk need not face each other over the barrier of a counter. They may stand side by side—go from island to island as the clerk points out special values. They "shop together"—or customers may browse alone.



Careful placing of merchandise at various points may help you draw traffic through more of your store. For example: if an item is selling unusually well from a front island, move it to a rear island. At the front put a number that may not be moving so well. Then, customers seeking the "hot" number are exposed to other merchandise on their way to the rear.



As a rule, advertised specials do more good for your entire store if displayed in the rear. This question of merchandise arrangement has many angles. You'll want to study and experiment and learn all you can about it.



Wrapping and cash register stations are essential—but they should be flexible like the rest of your store. On weekdays one may be enough, while on Saturdays you may need an extra station. This, too, is part of a selling island. Tables are the answer.

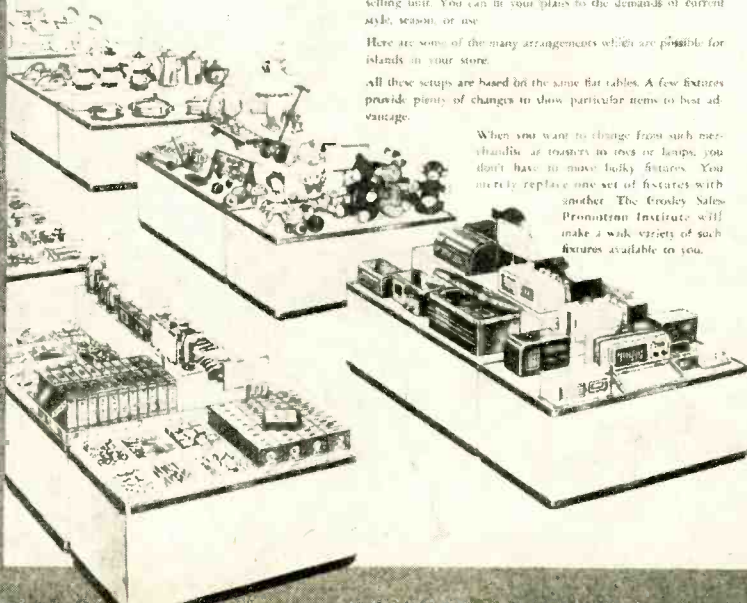
arrangements unlimited...

Now, Peter, you need never be stuck for a suitable, accessible selling unit. You can fit your plans to the demands of current style, season, or use.

Here are some of the many arrangements which are possible for islands in your store.

All these setups are based on the same flat tables. A few fixtures provide plenty of changes to show particular items to best advantage.

When you want to change from such merchandise as toys to tools or lamps, you don't have to move bulky fixtures. You merely replace one set of fixtures with another. The Crosley Sales Promotion Institute will make a wide variety of such fixtures available to you.





Radio and appliance dealers hear description of store modernization program of Crosley Sales Promotion Institute, as guests of Modern Distributing Co., Cincinnati. Below, Bert Johnston, head of Institute, is the speaker.



equipment, so specifically built to handle one type of merchandise that it becomes a total loss if necessary to adapt that space for the sale of any other type of goods."

In addition to store-planning counsel, the program of the Sales Promotion Institute includes a year-round promotional service, based on the over-all needs of dealers' stores. At

regular intervals, complete store display material goes out to members to "breathe new life into the store" as Johnston pointed out. This service includes material for two major sales events, one in the spring and one in the fall; a colorful set of display material for Christmas, and special trims for six special occasions to liven up what are generally the less "colorful" seasons of the selling year.

The year-round program also includes plans for other promotions — such as premium deals, sales contests, store demonstrations, animated displays, store openings, sales incentive plans, special merchandising hints for the Christmas seasons and others. Dealers are also provided with bulletins and booklets covering the latest thinking on various phases of store merchandising. Johnston has just prepared a book, "Peter Van Modernizes His Store". It is for the use of members of the Crosley Institute. The book deals with store planning and fixturing, stressing the importance of flexibility and simplicity.

DEALERS MUST "SELL"

Dealers share with the manufacturer the responsibility for speedy and effective reconversion — and their problems as distributors of goods are likely to be even more extended than those faced by the producer, according to Charles T. Lawson, vice president in charge of sales of Nash-Kelvinator Corporation, Detroit.

"While the manufacturer's job can be accomplished in a matter of months, it seems that the dealer may have to take much longer than that to rebuild his sales forces to a point consistent with the opportunity lying ahead", Mr. Lawson told two association meetings, addressing both the Electric League of Western Pennsylvania and

the Beaver Valley Electric League, in Pittsburgh.

The dealer's reconversion problems are primarily concerned with the revitalization and reharnessing of sales manpower. The reconversion of men, he believes, is the most serious of the postwar tasks facing merchandisers, especially those normally handling products not available during the war period.

Aside from the general need for a full practice of "the arts of salesmanship", Mr. Lawson outlined the major phases of the problem as including:

- 1) the reorientation of servicemen and war workers entering or re-entering the selling field;
- 2) the competition with other professions for the services of the best men;
- 3) the need for intelligent and tolerant coaching of green or rusty manpower;
- 4) the development and activating of sound "work plans";
- 5) the need for far better-informed salesmanship.

Pointing up the joint responsibility of distributing and manufacturing forces in working for postwar prosperity, Mr. Lawson asserted that whether full employment after the war means 53, 55 or 60 million persons, the job is not entirely "industry's", as is generally declared. Of the 54 million persons employed in 1941, he said, only 14,700,000 were engaged in any manufacturing, construction or mining efforts, while 16,000,000 were employed in retailing, wholesaling, finance and service type of professions, proprietors, self-employed, etc. Of the latter figure, retail stores and wholesale trade alone accounted for nearly 7,000,000 individuals, he pointed out.

Speaking of the potentialities of the postwar market, Mr. Lawson declared that while there will be "greater purchasing desire and greater purchasing power", there will also be the "greatest competition of all time for the consumer dollar". As an example in point, he cited the case of one of his department heads who recently sat down with his wife and listed the number of things they had expressed an intention to buy after the war. When the list was totalled, he said, it actually amounted to more than the man's yearly income after taxes.

"His case is no different from that of most consumers today", Mr. Lawson said. "He has the desire and his income outlook is good—yet many salesmen will be competing for his dollar, and whoever does the best job of selling him is going to be the one who gets the sale".

Modernization to Double Selling Area

by G. LOWRY

NEVER have the advantages of maintaining a smooth working repair section been so well illustrated as in the no-merchandise interim "success story" of the Electrical Equipment Co., Springfield, Missouri. Three specialist repair technicians have set a repair pace of some twenty appliances per day, and already the good will spread by this achievement has clinched a vast amount of post-war appliance business for the firm. The three-day repair service offered by the workmen of the repair shop has given the company a priority in the regard of new appliance customers in the territory.

Three fully-equipped work benches are utilized on the second floor. A smaller service bench is maintained on the first floor for very small appliances, including irons and toasters, for frequent while-you-wait service. Facilities here allow the customers to watch the serviceman as he repairs their ailing irons and toasters, and his careful work serves as an advertisement for the more spacious repair department upstairs for major appliances, including radio, refrigerators, washing machines, and so forth.

Problems that arose during the late war in connection with the repairs were overridden, thanks to the judicious service management policies of President J. T. Coon. A large pre-war inventory of appliance parts smoothed the parts shortage path, and the equally tough problem of securing replacements for a changing repair staff was handled by uncovering youthful recruits in local schools who displayed an aptitude with electrical devices in laboratory work.

A phase of war-time merchandising deserving generous mention is the wiring service offered farms in the region which were included in the government's REA program. Few local firms had sufficient wire and fixtures on hand during the war to furnish these farm homes, but the Electrical Equipment Company made it a policy to stock complete lines of sup-

Second floor service department helped carry dealer. Modernization and added store selling space in his program of better radio and appliance merchandising.



J. T. Coon, president, with a member of the sales staff of Electrical Equipment Co. Firm pioneered electrical refrigeration in its area, is one of oldest in the Southwest. Smoothly working radio and appliance service section has been the leading money-making wartime activity of the firm. Below: Postwar expansion program includes taking over of vacant store (right) for display and sale of radios and home appliances. This dealer foresees high volume sales in home and farm appliances to ruralists of the region.



plies necessary to electrify the rural homes.

Sales of such equipment have helped to offset profits lost because of appliance shortages, but apart from this value, serving these farmers has also developed a farm trade that will be immensely useful when appliances are again stocked. At least three hundred Greene County farm homes purchased wiring, fixtures, etc. from the firm during the war. Wire is the opening wedge with these farm customers, and it is possible for the firm that furnished the wire to go from there with the sale of some apparatus. Usually sale of the wire nets an order from the farmer of from thirty to one hundred dollars' worth of merchandise. In the store's main showroom, there are over one hundred electrical

fixtures on display for the convenience of these customers.

Forty years of appliances and electrical equipment merchandising are back of the Springfield concern, and the officers have adhered strictly to electrical lines with no substitutes stocked even during the war. Radios, refrigerators, washers, ironers, vacuum cleaners, ranges, water heaters, and lighting equipment have comprised the main stock. Pre-war staff averaged around seven salespersons, with both an outside and inside sales staff.

To "showcase" the beautiful appliances anticipated in the post-war era, the firm is planning a handsome store expansion and modernization that will embrace the building next door (see photo). The additional space will be used exclusively for appliances retail-

ing, and the present buildings will show off fixtures, and other electrical construction equipment. A delivery service will be added.

An advertising campaign, especially slanted to help the firm reap the post-war appliance harvest foreseen among the farm trade, will be launched. "The farmer prospered during the war, he is parsimonious by nature, and has saved his money. He will be a potential prospect for many new electrical items to enhance the appearance of his living room, and to ease his wife's work in the kitchen", said Mr. Coon. The dealer also foresees a heavy improvement program among the community's home owners after the war, and is readying a sales campaign designed to heighten radio and appliance sales among them.

"Super-Servicemen" Needed

by L. H. HARLOW

SPEAKING of postwar plans, we wonder if many of your readers have ever given much thought to what kind of servicemen are going to be necessary after the fighting ceases on the various battlefronts, and the manufacturers really get under way. A great deal of the service work on these new instruments will of necessity have to be done on the job and in the user's home or place of business.

Even now, with the last run of radio receivers, after you have been very careful to bring in the loop, remote control units, speaker, etc., everything but the cabinet, and you start to realign the set, being careful to follow the maker's schedule, step by step—after all this careful work you at last reach the bottom of the schedule and find one of these (*) marks. You look around to see what is referred to, and you discover to your chagrin the following note: "Do not attempt to make any of the above adjustments until you have the complete set and loops and other components in their proper relation within the cabinet." The parts are in the shop all properly realigned but the cabinet is in the owner's home, many miles from your shop.

That is only a drop in the bucket

compared to what we will run into after the war. Then there will be television, facsimile, electronic heating, precipitron installations, and many more newer wonders. And they all will be of a more or less permanent installation nature in the place where they are to be used, which would preclude taking the whole outfit to your store for servicing.



John A. Vassar

is new general service manager for Westinghouse Electric Supply Co., including home appliances & radios.

More than ever, the outside serviceman will be necessary, and he will surely come into his own. But he will have to be good, good in a lot of ways. Not only will he be a high grade technician-electrician-mechanic, but he will have to be a first-rate salesman, and a diplomat as well.

His pay will be of no great moment if he can deliver the goods. His time will be his own, and he will never have to punch a time clock. He will have to carry a regular laboratory with him and all necessary components. At the same time he will not be above doing a little real work once in a while as we will still have the lowly by-pass and filter condensers, which might have to be changed right on the job. Of course he might carry a helper along with him and let the helper do these menial jobs.

The writer believes the following imaginary telephone conversation will be more or less commonplace once these "super" servicemen get going: "Mrs. Smith, this is Professor Electron's secretary calling. Prof. Electron will be at your residence at 9 a.m. next Tuesday. Please arrange to have all the children away, remove all the furniture from the den except the Televisor. Also please provide a table about two by six feet in size with a soft covering so that he will not damage any of his delicate instruments. Have lunch served promptly at 12:30, and I might add that he is very fond of avocado sandwiches and home-made apple pie."

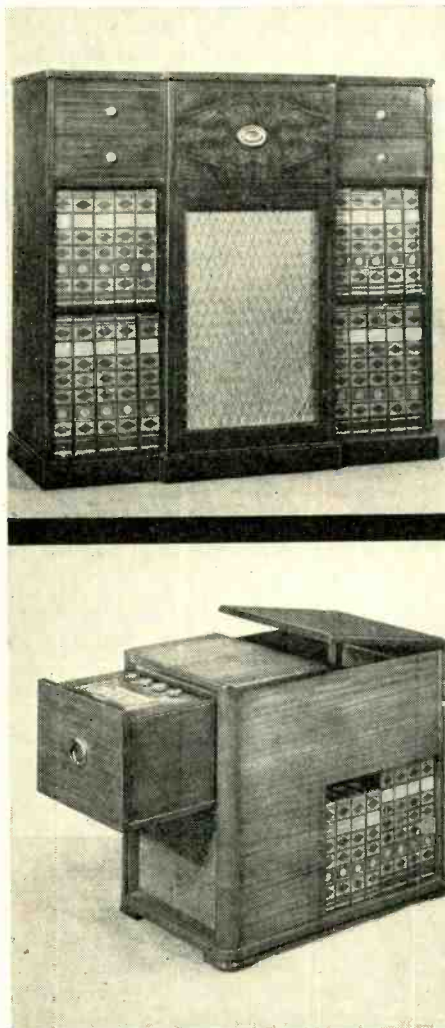
FULL LINE SHOWN

AT a recent New York City conference of its distributors from all over America, Garod Radio Corp. displayed a complete line of table and console radios. Six different table model radios, in both wood and plastic in a variety of styles, sizes and finishes; a table phonograph combination, also in plastic and in wood, with and without an automatic record changer; and several three-way portables.

The series of ten console combinations, including two chairside models, will come in both walnut and mahogany, and some in bleached mahogany finishes. These consoles reflect a wide range of period designs including Sheraton, 18th Century, Hepplewhite, Neo-Classic, and a breakfront cabinet.

"For many years distributors and dealers have been asking for a line of radios incorporating features which reflect consumer preferences," was the Garod message to distributors. "These thoughts have guided the production of every model, based on a survey of dealer-consumer preference. The fruits of precision engineering, beauty in design, and maximum utility are evident in the models on display. The tremendously expanding demand for recorded music, as well as the rapid development of home recordings, is reflected by the incorporation of record storage space in the portable combinations as well as in most of the other models."

A highlight of the meeting was the



LEFT: Top, Model 8BPY6, breakfront cabinet. Receiver concealed behind small door on right; superheterodyne circuit, push-pull audio, continuous tone control. 3-gang condensers with RF stage, armored chassis, large auditorium speaker. Phonograph in hide-away center drawer. 20 record albums store over 250 discs; metal grilled sound chamber. 2-post record changer loads twelve 10" or ten 12" records. Bottom, Model 6DPS3, chairside combination radio-phonograph. New circuit, AC, two bands; tone control; same record changer as above. Hide-away radio; record storage space is



housed in cabinet for convenient accessibility.

RIGHT: Top, Model 6E1, deluxe 3-way portable in 2-tone leatherette; genuine leather handle, lock. Superhet, 3-gang condenser tuning and RF stage. Lucite dial scale, built-in loop, plus liftup loop for tuning in congested areas. Middle, Model 6A1, catalin, two-tone cabinet, with drop handle for portability; lucite dial scale. AC-DC super, untuned RF stage, large P. M. speaker, concealed loop. Bottom, Model 5A2, 5-tube superhet; plastic cabinet in two colors, 4 different combinations; lucite dial scale, concealed loop antenna.

announcement of a comprehensive advertising and promotional campaign formulated to win widespread consumer acceptance for Garod radios. A

detailed presentation of the campaign was given by Louis Shappe, of Shappe-Wilkes Inc., advertising counsellors for the company.

ADVERTISING DONT'S

1. Don't try to say too much. An advertising expert once said: "An ad attracts as much attention as it has white space."
2. Don't belittle the quality of your work. You may be slow — but not careless.
3. Don't promise anything that you can't deliver to the letter.
4. Always err to the customer's advantage. If you're talking about deliveries and say one month, be sure it isn't six weeks. If you can deliver in three weeks, you'll have a delighted customer.
5. Don't put out a sassy copy, like one service man — not a radio man — did. He advertised: "Don't be so impatient. There's a war on. We'll get you in your turn, but please don't keep calling us." He thought it was funny, but people did not like it. The service man could have put the same message across this way: "Blame it on Tojo, folks. I'm sorry I didn't get around to your work today, but I'll get it in its turn. Meantime, please don't worry about it, I'm not skipping you."
6. Be on the level in your ad. In fact, why not be above level? It is a mighty nice touch to give a patron a service that you did not boast about. But it is a mean trick to fail to give him the service you advertised. The customer may not say a thing, but he will hold it against you for life.

in 1944, they were complete new comers. Here was no well-known name, no down-town location, no previous business record of which to boast. Here was a brand new company starting from scratch.

J. Edward Devin, president of the new company, and Ralph Berry, his partner, talked the proposition over, realized that their biggest hurdle was that of inspiring confidence. They knew that most radio owners distrust a radio serviceman, and figured if they could overcome that feeling they could establish for themselves a community reputation that would serve them well in the post-war field. They also knew that only advertising could build them the business for which they hoped.

Consequently the United Radio and Electronics Company mapped out an

Ads That Get Customers

Advertising helps these dealers cope successfully with shortages in men, materials, parts.

by **ROBERT E. MURRAY**

WE were only there five minutes, but we saw three customers bring in their radios for repairs, in response to an ad that was printed nearly two weeks before! Here was a department store offering radio repair service in but a single newspaper and drawing actively after twelve days. It must have been a good ad, you say. It was.

It was the advertisement of the Jordan Marsh Company. It caught the eye with a clever cartoon of a radio doctor attacking a faulty radio with a screw driver and hammer. A clever caption provoked further inspection. That caption went: "Maybe your radio CAN be repaired." And then the copy proceeded to say in a breezy, friendly way: "At any rate it's worth a try. We can't promise that we have the cure-all for every 'kind . . . 'cause there still are some essential parts not being manufactured . . . but 70% of them can be put into good shape. So bring it in. . . Dr. Jordan will diagnose its case . . . and if perchance it can't be fixed you'll know the bad news in thirty days or less."

No one promised anything. No one said, "We'll do wonders for you." Instead, they frankly stated that some 30% of the radios didn't stand a chance of getting repaired and even to find this out would take about a month. Therewith the Jordan Marsh Com-

pany placed all its cards right on the table, quite gentlemanly, of course, and said: "If that's O.K. by you, then we want to try and help you."

Gain Confidence

The ad definitely gained the confidence of the reader by telling him just where he stood. That confidence would go a long way toward turning him into a customer, and a customer with faith in the men who offered to serve him. It was a good ad. It promoted a generous response, and Mr. Stanley, manager of the radio department, was well pleased with its results.

Does your advertising inspire the same type of confidence. Does it attract attention? Does it bring new customers into your shop? Possibly you are not looking for new customers, have more business than you can handle. But soon conditions must change, and good advertising may be one of your valued allies. Consequently, there is no time like the present to consider its potentialities and your possible approach.

Of course, the Jordan Marsh Company, an old time reliable department store, had a reputation, and the drawing power of their ad may have been increased by this. So let's look at what happened with the United Radio and Electronics Company in Brookline, Massachusetts. Entering the field

active advertising campaign designed not only to offer their service, but also to overcome the reader's instinctive distrust. Each ad in bold print offered "Radio and Phonograph Repair with COMPLETE PROTECTION." It further guaranteed that every radio or phonograph would be returned in perfect condition and remain in that condition for the generous period of 90 days or be repaired without any further charge. It referred to its quarters as "a scientific laboratory" and its personnel as "engineers and technicians". It invited anyone to visit the laboratory and watch the repairs, to see for themselves what was done. There was no back room. Their shop was truly a "scientific laboratory".

Increased Business

The results of the ad were wonderful to behold. Innumerable calls forced an increase in staff to three times its original size, would have multiplied it further save for labor-finding impossibilities. Now the United Radio and Electronics Company has a reputation for dependability. They are well known, trusted and considered tops in radio service. Theirs is a large and growing clientele. They jumped to the top at the very beginning by clever advertising . . . and, of course, follow-through. But . . . they might have been just another radio shop.

The Boston Electronics Company followed a similar pattern in their advertising copy. They say: "Radio Repairs with a WRITTEN GUARANTEE." A new company, they, too, attack the customer's distrust with a

"Guaranteed Service". Here, also, the emphasis is on expert "radio technicians" — not "repair men".

Each of these organizations decided that they must be on the level with their clientele. The large department store offered its services in its regu- friendly and honest way, frankly stat- ing the prevailing conditions in their repair shop. The other two companies, new and completely unknown, could not do this in the same way. Their approach was to surround themselves with an air of respectability. They were no ordinary shops, no ordinary workmen. These were scientific engi- neers tackling vital electronic prob- lems. They built this theme into their advertising, then incorporated it into their places of business. They were rewarded with success.

Now such advertising runs into a pretty penny especially if extensive campaigns are conducted. (The Unit- ed Radio and Electronics Company planned on three to five hundred dol- lars a week.) It cannot be haphazardly approached or it will fail to pay off. But, well worded copy can pay for itself in no time, fill the shop with business and change a limping estab- lishment into one that is dashing full tilt ahead.

Write Your Own

You can write such copy yourself. An advertising man might help you, but we think you can do a good job alone. Start off by giving yourself a complete mental house-cleaning. You are not a plumber or a carpenter. You are a trained technician. Make your- self, then, an electronic engineer or technician. You studied long and hard, still study constantly to keep abreast of developments. *You are a profes- sional man.*

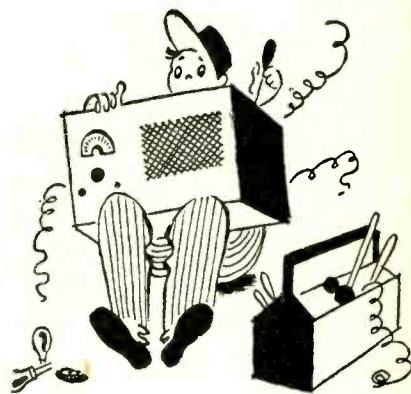
O. K. Now get that into your copy. Consider yourself and your business

as providing an essential service to your community. Leave out the bar- gain-basement approach. Your doctor and dentist and pharmacist don't cut prices on their services.

Guarantee everything. You are a good workman, aren't you? Well, then boast of it. You *can* and *will* guarantee your work. But boast of it with a seemingly modest pride — not a bla- tant manner, 12 feet long, across the top of your store. Be conservative; it gains respect for you.

You may have a sense of humor, if

JORDAN MARSH COMPANY



MAYBE YOUR RADIO

Can BE REPAIRED

At any rate it's worth a try. We can't promise that we have the cure-all for every kind . . . 'cause there are still some essential parts not being manu- factured . . . but 70% of them can be put into good shape. So bring it in . . . Dr Jordan will diagnose its case . . . and if perchance it can't be fixed you'll know the bad news in thirty days or less.

JORDAN'S RADIOS
THIRD FLOOR ANNEX

you like. Some people make it pay divi- dends — but being funny is often harder than playing it straight. If in doubt, avoid it, but don't overlook the fact that if you can get people to smile at your advertising copy, you are mak- ing them notice you. For instance, you might dream up an ad, today, with a comic figure looking wonderingly at a calendar, while your caption states: "It may take us a month or even longer . . ." Then you could go on: ". . . to fix your radio — but we'll guarantee to return it to you in as good shape as when you bought it."

Or, you might have a workman sur- rounded by radios up to his rather large ears and caption it: "Brother, we're up to our ears in work." Your copy might go on to say: "We don't know why we're telling you that we repair radios, except that we know you want to keep in touch with world news all the time. If your radio really needs repair, why don't you bring it to us. We won't guarantee any speedy service, but we will guarantee that our work puts your radio in A-1 condi- tion."

Advertising can be a big boon to your business, but use it wisely. Make it attract attention to your business. Make it impress the reader with your dependability. *Make it sell your serv- ice and your store.* If you can do this, then you have written a successful ad.

RADIO REPAIRS

*with a
Written Guarantee!*

Record Changer Specialists

• ALL PARTS •

**EXPERT RADIO
TECHNICIANS**

**FREE PICK-UP AND
DELIVERY SERVICE ON
LARGE RADIOS**

REBUILT PORTABLE
ELECTRIC PHONOGRAPHS
FOR SALE

*Visit Our New and
Different Record Department*

INDUSTRIAL ELECTRONIC
ENGINEERING

**Boston Electronics
Company**

KENMORE 4242
103 NEWBURY ST. (Cor. Clarendon)

RADIO & PHONOGRAPH REPAIR

WITH

COMPLETE PROTECTION

1. **AGAINST GUESSWORK!**
We have the finest scientific labo- ratory and factory-trained Engi- neers and Technicians.
2. **AGAINST ANOTHER BREAK- DOWN!**
Using only the best in parts, tubes and manpower — the scientific methods of the factory — we are able to give you the same guar- antee that your RADIO or PHONOGRAPH had from the fac- tory, complete and unequalled.
3. **AGAINST RISING PRICES!**
Due to greater volume of work and a complete well-trained and staffed laboratory, we are able to repair your RADIO or PHONO- GRAPH in the minimum of time and labor.
4. **AGAINST DELAY IN OBTAIN- ING COURTEOUS, EFFICIENT SERVICE!**
By utilizing the ultimate and skilled scientific methods which are used and approved by all leading manufacturers of RADIOS.

UNITED RADIO & ELECTRONICS CO.

SALES - SERVICE

1046 BEACON STREET • BROOKLINE, MASS. TEL. LON, 5594

"SERVES" WITH SALES

"Nest-egg" stock of pre-freeze sets yields new set business for duration and now. In-tact personnel installs and services store sales, also reconditions outside used sets.



by **BOB CORRIGAN**

RADIO dealer Blair F. Uber of Indiana, Penna., reports that an out-of-town partnership has applied for license to operate a new broadcasting station in the town of Indiana which will be less than a block from his store. This he expects to be fine for trade. It will also fit nicely into his advertising program when the time comes for resumption of that, because radio time is an important feature of his plan.

He still has a floor and a store room well filled with new sets and combinations, an impressive reminder of the large number of sets with which he went into the period of shortages. Then he had the largest retail stock in Pennsylvania. Now that other dealers' radio supplies have run down to the vanishing point, his is known to be so much the largest stock in the

RADIO SERVICE DEALER

State that he has had to fend off the efforts both of wholesalers and of other retailers to get him to supply them.

"I need every item of my backlog of radio sets for this trading area," Uber assures any inquirer. "This region furnishes a steady, predictable demand for retail merchandise, a good and even flow, with no booms and no busts. I was lucky in being able to prepare for the freeze in radio manufacturing for civilian use, and am still lucky in being able to maintain service on all my models. I have to keep it that way."

The Uber repair shop has kept fully busy throughout the war period, with the same personnel who have been with him for years. They install and service all his own sales, which still include car sets, and recondition used sets which come in to him in considerable quantities. He has been able to get parts enough for general repairs, and such jobs are welcome.

For about fifteen years Uber used an advertising budget of \$2,000 per year to build a solid field of acquaintanceship which he says covers a territory stretching a radius of 25 miles out of Indiana. (Actually it is known to reach much farther, and to include Pittsburgh—but the difference between the fact and his claim is just a measure of his native modesty.) All forms of advertising were employed except direct mail, and word-of-mouth had a good part in the process, outside the budget. Some time in 1943 it seemed clear that the need for wide, formal advertising had declined.

Just now the program has been reduced to only the inevitable institutional advertising in year books, church bulletins and the like. The location of the Indiana State Teachers' College in the town gives some of that a permanent value, since graduates of the institution carry their annuals over a large part of Pennsylvania. The known fact of Uber's having in stock a sizable remnant of his original 1500 models plus several hundred reconditioned used sets which keep coming in for sale all the time, however, results in his being given all the business he can handle without any emphasis on merchandise advertising.

One important point is offered other dealers from Uber's experience. He has decided that sales on approval and demonstrations outside the store do not pay. He is certain that they serve no useful purpose, and his practice rules them out. He guarantees every instrument he sells, and therefore the customer can depend on what the floor demonstration shows. This makes for a record of genuine sales, and the fact

of his own financing of time payments bears it out. In sixteen years at the business he has had to repossess only about 25 sets.

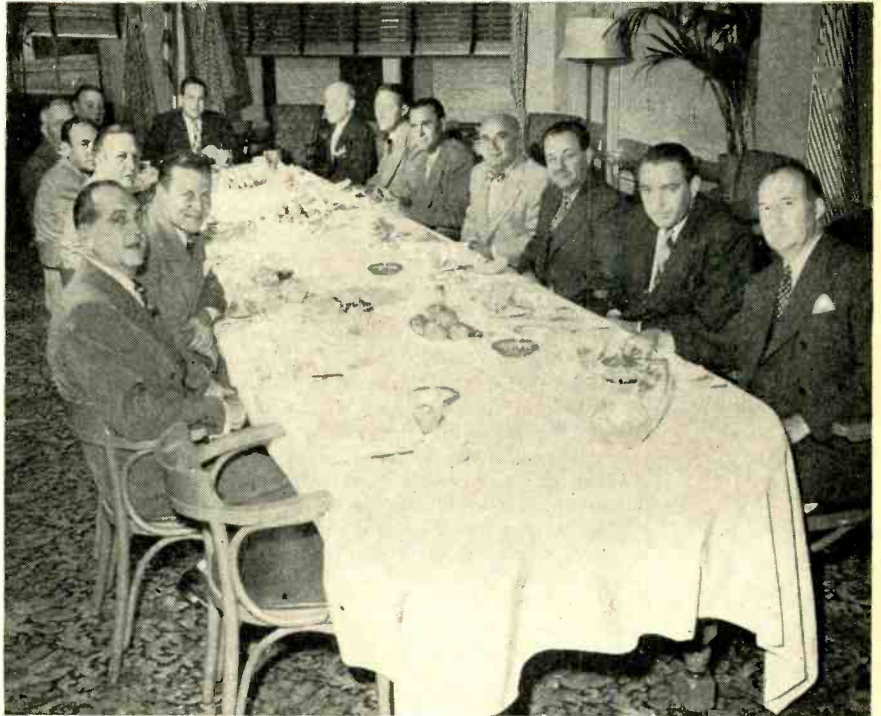
The Uber volume has run to at least \$70,000 annually throughout this emergency. The total is inclusive of sales of the usual small appliances, but has been reached without adding such stop-gap stocks as toys and furniture. Records and albums have been built up beyond the original figures of 15,000 and 1,100 respectively. The store's listening booths are busy spots.

This is, by the way, one of the few radio shops still able to keep a cabinet set playing softly to passers-by on the sidewalk throughout the business day.

Uber has a Philco devoted only to that, a sort of annex to his show window display.

His postwar plan includes a return to all the lines which the store has previously handled: Zenith, Philco, Emerson, Crosley, RCA Victor, General Electric and Motorola.

"With frequency modulation well established in the territory after about five years of sending from Pittsburgh," he says, "and with television coming up soon to supplement long- and short-wave broadcasting, I expect to find quite enough trade in radio receivers, records and players. The more combination sets the manufacturers put out the better, in my opinion."



RMA ADVERTISING COMMITTEE MEETS

At Edgewater Beach Hotel, Chicago. Host is Admiral Corp. Seated, left to right: S. D. Mahan, advertising mgr., The Crosley Corp.; L. E. Pettit, advertising mgr., electronics div., General Electric. Bridgeport; L. Chesley, Theo Sills Co.; Theo Sills; Bond Geddes, exec. v.p., RMA; R. H. Hooper, sales prom. mgr., Admiral Corp. of America; Seymour Mintz (head of table), director advertising, Admiral Corp.; J. Garceau, director advertising, Farnsworth Television & Radio Corp.; E. I. Eger, Cruttenden and Eger; H. Burros, Theo Sills Co.; Vic. Irvine, advertising mgr., Galvin Mfg. Corp.; W. B. McGill, advertising mgr., electronics div., Westinghouse Radio Stations; W. E. Kress, regional mgr., Philco Corp.; Edgar Herman, v.p. in charge advertising, Zenith Radio Corp.

Choose Your Distributor

by GERALD O. KAYE

Merchandising Manager, Bruno-New York

AS to how a dealer should select a distributor, I would like to point out two obvious facts and then ask the dealer to draw his own conclusions.

First — *no dealer's store is large enough* — whether it is 10,000 square feet, 15,000 square feet, or 20,000 square feet, it is not large enough for samples and stocks of products of 120 radio manufacturers, 20 refrigerator manufacturers, 60 stove manufacturers, 50 vacuum cleaner manufacturers, and heaven only knows how many small appliance manufacturers. It is an impossible task and there is no store in

the United States large enough to carry every brand. It is obvious, therefore, that the dealer must select—and never has he had a better opportunity to be selective.

A sample formula in determining brands to carry, is to measure the square feet of the store and then determine how much volume per square foot is necessary to carry the operation and make a profit. It is at this point that the dealer will realize that turnover is the first measuring stick and the brands that turn over most are the top lines.

Secondly — strong "brothers" can-

not always help weak "sisters". Regardless of who the manufacturer is, he cannot have a family of *all top lines*. The manufacturer may be a leader in the radio field, but that does not necessarily follow that the same manufacturer can build a top line of vacuum cleaners, and vice versa. In a family of products you are bound to find both strong "brothers" and weak "sisters". The manufacturer who specializes within his own field has the best opportunity of developing a top line.

In the final analysis, when selecting a distributor, think not only in terms of the ethics and selling practices of the operation, but also in terms of the lines that the distributor carries.

My advice to the dealer is to translate square feet of selling space into top name brands—the best in the industry. Put on the strong "brothers" only and you will never need any crutches for the weak "sisters".

OPA DELAYS RADIOS FOR DEALERS

The action of the OPA in refusing to allow component parts manufacturers to raise their prices to meet higher production costs was denounced in two speeches as "an amateur attempt to run the radio business into the ground." The speaker, Joseph Gerl, president of Sonora Radio & Television Corp., also maintained that this action "has already postponed civilian radio production for at least four weeks."

Gerl addressed mid-western radio dealers in Kansas City, Missouri and Omaha, Nebraska on September 11 and 12. In Kansas City, the luncheon-meeting was held at the Phillips Hotel under the sponsorship of Ryan Radio & Electric Co., and in Omaha, the radio luncheon at the Fontenelle Hotel was sponsored by H. C. Noll Co.

"The situation today," said Gerl, "is such that the delivery of new radios has been delayed from about September 20 to about October 15. Directly responsible is the OPA refusal to grant honest increases to component parts manufacturers—increases made necessary by the direct rise in the cost of labor and materials.

"The brand manufacturers such as Sonora, Philco, Zenith and others, have had their production schedules thrown off by this blockade. Electrolytics, resistors, fixed condensers and variable condensers—the basic necessities of new radios—will not be forthcoming. The parts manufacturers are unable to produce these items at the prices fixed by the OPA, and the result is that hundreds of thousands of radio employees wait for jobs, while the radio factories cannot begin large-scale operations.

"The OPA seems worried that the prices of finished radios may climb too high if component parts manufacturers receive the increases they need. But anyone familiar with the radio business knows that despite higher prices for parts, the prices of finished radios would scarcely be out of line with pre-war prices.

"Moreover, the radio industry has never had to worry about high prices. The industry has always had to bear the brunt of too low prices. With 110 radio manufacturers in the field—and more to come—competition would soon wreck any manufacturer who attempted to gouge the public with high prices.

"Under the circumstances," concluded Gerl, "it is idle folly for the OPA to worry about a high price situation which has never arisen in the radio industry. What the OPA should bear in mind is that it is more important to get men into jobs and production moving to the consumer than it is to worry about a possibility which happens to be utterly foreign to the radio industry. Jobs and national income must be maintained if made-work is to be avoided. I can only pray that these OPA gentlemen awaken to that realization quickly."

ESTIMATED EXPENDITURE FOR RADIOS WITH PHONOGRAPHS

AMOUNT OF EXPENDITURE	PER CENT OF TOTAL
Under \$50	1.1
\$50 - \$99	11.9
\$100 - \$149	14.9
\$150 - \$199	14.6
\$200 - \$299	16.7
\$300 and over	8.6
Don't know	32.2
MEDIAN	\$170

ESTIMATED EXPENDITURES FOR RADIOS WITHOUT PHONOGRAPH

Under \$25	5.2
\$25 - \$49	6.9
\$50 - \$74	15.0
\$75 - \$99	7.5
\$100 - \$149	17.2
\$150 and over	13.2
Don't know	35.0
MEDIAN	\$93

What Customers Will Spend

While these price ranges may appear to be high, they are significant in that they indicate that the anticipated availability of pending new technical developments in radio — such as frequency modulation and television — influence purchaser opinion of expenditures. (Curtis Publishing Co.)

THE postwar market for radios, both with and without phonograph attachments, will be substantial, according to the findings of a survey recently completed by the Research Department of The Curtis Publishing Company. The survey dealt primarily with the postwar urban home building market, but families were also queried as to their buying intentions for radio and other household appliances which increase the comfort and livability of a home.

The survey, which is based on com-

plete interviews with families in 35 states and 118 urban centers, was started some time ago by The Curtis Publishing Company, under the direction of Donald M. Hobart, when it became convinced that there was a great deal of wishful thinking on the subject of housing and that no true picture of the probable postwar market could be obtained except through the medium of a comprehensive consumer survey.

Of all of the families interviewed, 27.8 per cent plan to buy a new radio.

Over 14 per cent will buy a radio with a phonograph attachment, and 14.4 per cent one without a phonograph attachment. A few will buy both types or more than one.

Over 95 per cent of the families now own at least one radio. Replacement possibilities in this market are indicated by the fact that about one out of every ten of those who now own a radio-phonograph combination expect to buy a new one of the same type, and nearly one-sixth of those who own a radio without a phonograph attachment will replace these sets. The median age of the sets owned by those who say they will replace them is now four years for the radio-phonograph combination, and eight years for radio without phonograph. The market for the latter type radio will be essentially replacement, but for radio-phonograph combinations will be largely new customers.

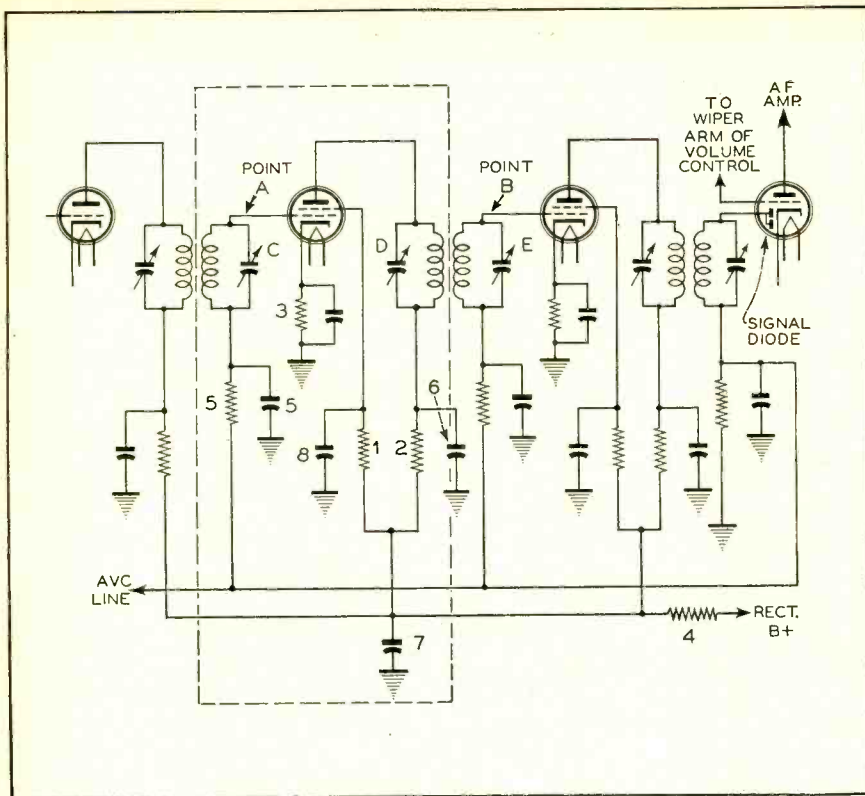


Figure 1

Trouble Shooting by

Much time and a great deal of needless searching may be saved by attacking all radio receiver troubles with a standard procedure.

by **C. C. ROBERTS**

THE standard procedure herein given not only saves time and searching but covers some of the obstinate conditions, such as those "intermittents", wherein the condition is so critical that the touch of a meter probe causes the receiver to resume operation and, also, resonant troubles where meters are of no avail.

As the title suggests this procedure is of no use when the trouble exists in the audio or rectifier portion of the receiver, consequently this portion of the receiver's circuit must be eliminated as a source of trouble. The first step therefore, in any case, is to apply an

audio signal to the signal diode of the second detector and observe the output from the speaker. If a normally loud signal is heard, the rectifier and audio portions are functioning correctly and the procedure that follows can be applied.

Signal Generation

The following procedure necessitates the use of one piece of test equipment, namely a signal generator or oscillator with an R.F. output of 1 or 2 volts or more. The reason sufficient R.F. output is necessary is, be-

cause the signal generator must be able to drive an I.F. signal from the antenna or 1st R.F. stage of the receiver all the way through it under abnormal conditions. The purpose of this will be apparent later on as we follow this procedure through to its conclusion.

After ascertaining that the audio system of the receiver is okay, the signal generator should be connected, in case of completely inoperative receivers, successively to the grid of the last I.F. tube, the next to the last I.F. tube, etc., on up to the grid of the 1st Detector. (The "Signal Tracing" method of isolating a faulty stage by means of a signal injected from a signal generator is shown graphically in the block diagram, Fig. 1B, which is self-explanatory). At some point, such as point "A", Fig. 1, assume that no signal is heard in the speaker, although at point "B" one had been heard.

Up to this point the procedure has been one of ordinary signal tracing such as is used to isolate troubles as to stage. (In this example; the stage en-

closed by dotted lines). The cause of failure in this stage may be determined by observing the resonance conditions, that is, by turning the trimmer adjustments and observing the effect on the output of the receiver. In order to do this, a very faint signal must be audible in the loud speaker. If no trace of signal can be heard, as is often the case, it will be necessary to advance the attenuator of the signal generator to its maximum and connect the signal generator leads to the receiver antenna; by so doing a more or less faint signal can be heard. (Note: The signal generator may be left tuned to the I.F. of the receiver throughout these operations if the faulty stage is an I.F.) The signal generator attenuator now should be retorted to the point where minimum output from the signal generator still gives sufficient output from the receiver to be barely heard.

The trimmer adjustments "C", "D", and "E" can now be tried in that order, and the effects observed and interpreted as described in the following paragraphs.

Trimmers

The trimmers should be turned two or three turns backward, and forward. If the effect of this movement is to produce an increase and decrease of the audible signal, i.e. twisting the trimmers back and forth gives evidence of a resonance peak, then the tuned portion of the circuit is alright. If this normal resonant reaction is present, and yet no signal (or very little signal) goes through the stage that has been isolated, the trouble will be found to be either a defective tube or some voltage failure; in which case, the trouble may be quickly found with either an ohmmeter or voltmeter, as the possible components that may be defective must be between the rectifier supply line and the individual resistors supplying only this stage. (For example: Condenser #6 but not 7; resistor #1, 2 or 3 but not 4, see Fig. 1.) This normal reaction, therefore, may be taken to eliminate the possibilities of there being any trouble whatsoever in the I.F. or R.F. trans-

typical resonant circuit together with components found in most amplifiers). There are four possible reactions:

1. No change in signal strength as the trimmer adjusting screw is turned in either direction.
2. A more or less slight and gradual increase as the adjusting screw is turned to maximum capacity or inductance.
3. A slight and gradual increase in signal strength as the trimmer adjusting screw is turned to a minimum capacity or inductance.
4. A surge of signal as the trimmer adjusting screw is turned in either direction from its normal position.

Before proceeding, it must be assumed that the tube in the questionable stage is normal, as a defective tube can give any of the above reactions. The tube should therefore be replaced with one known to be good.

When there is absolutely no change

Fig. 2 (if one is used) or in the wiring of the Transformer or its leads. This same diagnosis is applicable to the inductively tuned stage, shown in Fig. 3, or, to an R.F. stage. In the case of the inductively tuned stage, Fig. 3, one more possibility presents itself; namely, that the core which tunes the inductance coil may be broken off, (as very often is the case). Visual inspection will verify this.

Inductance

When there is a more or less slight and gradual increase as the adjusting screw is turned to maximum capacity or maximum inductance, the cause is insufficient inductance or insufficient capacity in the circuit associated with the trimmer adjustment. Insufficient inductance is caused by shorted turns, or a burnt coil, in either case a continuity check with a low range ohmmeter will give positive identification of the trouble. (Although a burnt coil sometimes will show proper resistance, visual inspection will always reveal this defect). Insufficient capacity may be caused by an open shunt condenser, #2 in Fig. 2, if one is used.

Inasmuch as the capacitive type tuned circuits use compensating condensers whose physical construction precludes any possibility of a loss of capacity, the only location of the defect which will result in the resonant reaction described at the beginning of this paragraph, is in the coil, (if no shunt condenser is present). In the case of the inductively tuned circuit shown in Fig. 3, the same defects in the coil produce the same reaction of the trimming adjustment. To be explicit, the trimming adjustment will have to be turned so that the tuning slug (or core) is all the way inside the coil form. Usually the transformer is so constructed that the adjusting screw must be turned clock-wise. Also, in the case of the inductively tuned circuit, a broken tuning slug, or core, will produce its reaction. Visual inspection will of course reveal this defect.

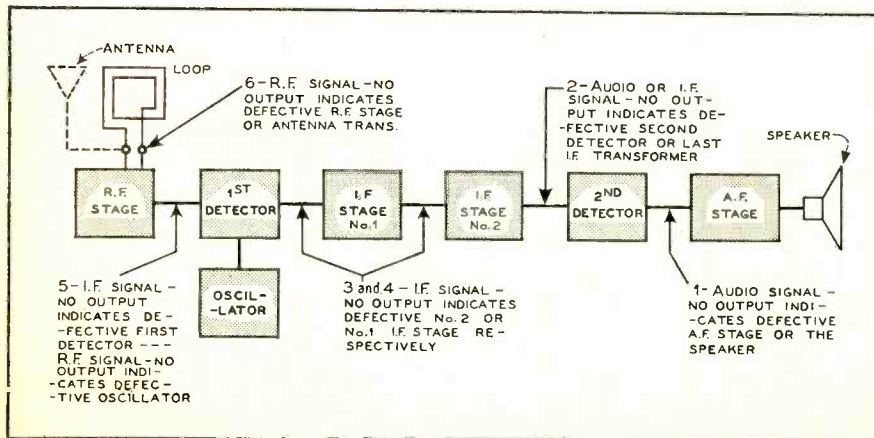
Resonance Testing

formers, as the case may be, of the stage in which the signal failure occurs and thereby serve to identify the trouble as a voltage or tube failure such as just described.

At this point we shall consider the resonant reactions of tuned circuits that are the direct result of various component failures. (Fig. 2 shows a

in receiver output as the trimmer adjusting screw is turned throughout its range, the only conclusion to be drawn is that there is a short or low resistance leakage in the coil and condenser circuit associated with the adjustment. The short or leakage may be in the compensation condenser itself, #1 in Fig. 2 or in a shunt condenser #2 in

Figure 1-B



Capacitors

If there is a more or less slight and gradual increase in receiver output signal strength as the trimmer adjusting screw is turned to minimum capacity, the only conclusion to be drawn is that there is entirely too much capacity in the tuned circuit associated with this trimmer adjustment. This is the only conclusion that can be drawn because it is inconceivable that too much inductance could be present. However the excess capacity can be the result of either one of two defects. First, it may be the

sult of high resistance internal or external solder joint connections to either the compensating condenser, *Fig. 2, # 1* or the shunt condenser, *Fig. 2, #2*, (if one is used). Second, it may be the result of high resistance soldered connections to the coil or inductance, or a partial open, high resistance coil itself. The effect, in any case, is to introduce a stray capacity which will be effectively in series with the tuned circuit, thus increasing the total capacity in the circuit.

The result is that the capacity of the of the compensating condenser must be reduced to a minimum in order to approach resonance. An ohmmeter check of the resistance of the coil or inductance will show whether it is the cause of the trouble as a resistance reading higher than normal will show, if the coil is at fault. If the coil checks okay the external soldered connections should be "sweated" by resoldering with a hot iron and, if the trouble persists, the compensating condenser (and shunt condenser, if one is used) must logically be accepted as the cause of the trouble. Replacement is the best method of testing these small value condensers.

In the case of the inductively tuned circuit shown in *Fig. 3*, these same defects will produce the same reaction of the trimmer adjusting screw, namely as the trimmer is turned towards the minimum inductance position, i.e. so that the tuning slug or core is all the way out of the coil form, the receiver signal output will show an increase. (note: This usually means turning in a counter-clockwise direction). Generally in the inductively tuned type of circuit such as many manufacturers use for their I.F. transformers, the possibilities of this type of stray-capacity-troubles are very much more prevalent.

Condensers

When there is a surge of signal output from the receiver as the trimmer adjusting screw is turned in either direction from its normal position or resonance, there are two possible causes of this reaction. First, if there is a sharp and very sudden surge of normal signal, the cause can only be a shorted compensating condenser, see *Fig. 2*. Of course the remedy is replacement of the compensating condenser #1, *Fig. 2*, which is shorting at the position of resonance only. Obviously, this defect can exist only in the type circuit shown in *Fig. 2*. The second possible cause of this reaction can be differentiated from the first by recognition of a somewhat different reaction of the receiver signal output as the trimmer adjusting screw is turned. In this case it will be observed

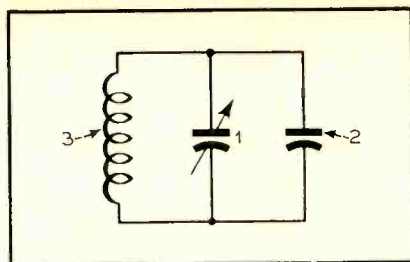


Figure 2

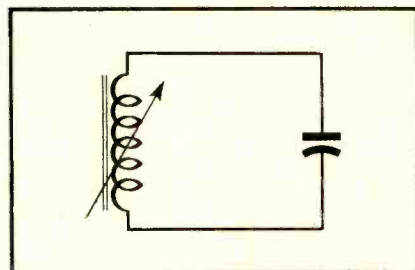


Figure 3

that as the trimmer adjusting screw is slowly turned in either direction from its normal resonant position, the signal surge or increase will be proceeded by either a motorboating sound or a variable pitched squeal, thus indicating a regenerative condition of the stage. The cause of this regenerative condition can be an open or partially open by-pass such as #5 *Fig. 1*, if the circuit is in the grid of the tube or #6 *Fig. 1*, if the circuit is in the plate of the tube. In any event, under these conditions, the open by-pass is isolated to an associated capacitor such as those indicated. It is well to note that if more than one trimmer adjustment exhibits this regenerative reaction, the open by-pass condenser must be a general by-pass such as #7 or 8, *Fig. 1*. Naturally, such an open by-pass would affect more than one stage. The best check on such condensers is by substitution of a like capacity across each of the suspected condensers in turn and observing whether the regenerative condition clears.

Assuming the tubes to be okay the only other causes of this condition of regeneration aside from by-pass condensers is wire-dress wherein capacitive action between wire leads causes regeneration. Moving all wires away from those nearest them and observing the effect on the regeneration is the easiest way of locating the offenders. The shield of the transformer may have a faulty ground to the chassis because of oxidation or loose mounting. The remedy, of course, is to secure the ground firmly. A quick check can be made by trying a temporary ground from chassis to transformer can and observing the results before looking further.

Transformers

The cause and effect just described hold equally true for the inductively tuned circuit, shown in *Fig. 3*. It should be remembered that many manufacturers incorporate the by-pass condensers that produce this trouble in their I.F. or R.F. transformer assemblies and as a consequence, they are inside the transformer can. In the case of the inductively tuned circuit, one more cause of this regenerative reaction is possible and that is stray coupling capacity within the transformer. This may be caused by a high resistance ground of either of the adjustable cores or a high resistance leak to ground from either the primary or secondary circuit, any one of which will produce the stray coupling effect that results in regeneration. Replacement of the transformer is the quickest method of eliminating the trouble in most cases.

All the trimmer reactions, together with their respective causes, heretofore described, can be applied to the R.F. stages. Obviously the signal generator should be tuned to some frequency end of the receiver tuning band and its output leads connected to the antenna of the receiver.

A comparison of the typical I.F. circuits of *Fig. 1* with the typical I.F. circuits of *Fig. 1C* will show that the essential difference is the frequencies involved. To be more explicit, the voltage distribution, coils, condensers, resistors and wiring are similar in every respect except for their physical and electrical dimensions; therefore, the isolation of the faulty stage and also the identification of the defective part can be accomplished by the identical procedure, as that used for the example of the I.F. stage, described later.

There are, of course, certain additional conclusions to be drawn and, as previously mentioned, the frequency of the signal generator must be changed.

With the signal generator tuned to the intermediate frequency of the receiver and the signal generator leads connected between ground or chassis and point A, *Fig. 1-C*, a signal should be heard in the speaker, indicating that the I.F. stages, first and second detectors, audio stages and rectifier are all functioning correctly (Should no signal be heard, the procedure would be the same as that to be described for the I.F. stage used as an example). If the I.F. signal is heard at this point, the signal generator should be returned to a frequency on the broadcast band and the receiver tuned to the same frequency.

Oscillator

(Note: The signal generator is still attached to point A, Fig. 1C). Now, if a signal is heard, the first detector, oscillator, in fact, the rest of the receiver have been eliminated as being defective, but if no signal is heard (with maximum signal output from the signal generator) at this point, the oscillator stage is faulty and tube, voltage and resistance checks must be made to identify the defective part in the oscillator. With the receiver and signal generator still tuned to the same frequency, point B, Fig. 1-C, should be connected to the output of the signal generator and if no signal is heard, the reaction of the trimmer adjusting screws should be observed and interpreted in the manner subsequently outlined. If, however, a signal is heard, the signal generator lead should be moved to the final point of test, namely, points C, and D, Fig. 1-C. This point is the antenna input terminal of the older style receiver but on the later loop type receiver, point "C" is the signal or high side of the loop as indicated in Fig. 1C.

The resonant reaction of certain trimmers can be used to advantage in diagnosing various general troubles in receivers; namely, oscillation or regenerative conditions, distortion, lack of sensitivity and lack of selectivity.

In the case of a receiver which exhibits an oscillatory or regenerative trouble, the trouble can usually be

quickly localized by checking the resonant reactions of all trimmers. The signal generator should be tuned to some R.F. frequency, the receiver tuned to the same frequency, and the signal generator connected to the receiver antenna or loop.

Note: Use as little signal from the signal generator as possible to still hear signal from signal generator. All trimmers should then be turned over their resonant peaks and the effect noted. If some particular trimmer causes the circuit to stop oscillation but the rest of the trimmers give a normal "peaking" reaction, then the oscillation has been identified as existing in that particular amplifier stage associated with the trimmer that gives the faulty reaction. It is then necessary to check only the by-pass condensers in the faulty stage. However, if several trimmers all act to stop the oscillation, the B-plus filters and supply by-pass condensers should be checked. As is readily apparent this method will eliminate many condensers as being the source of trouble which ever way the trimmer reacts.

A.V.C. Circuit

When there is distortion present in a receiver the trimmer reactions may also be used to quickly localize the trouble. The signal generator should be adjusted to a level that gives the clearest effect of distortion. Before proceeding, the overall location and

cause of the distortion should be ascertained. This may be done by slowly tuning the receiver to the side bands of the signal. (Note: In some cases better results are obtained by utilizing a broadcast signal than a signal generator.) If the distortion remains present when turned to the side bands of the signal, the cause will be found in the audio system or voltage supply and distribution system of the receiver. If, however, the distortion disappears at the sidebands, the trouble will be found in the A.V.C. circuit of the receiver.

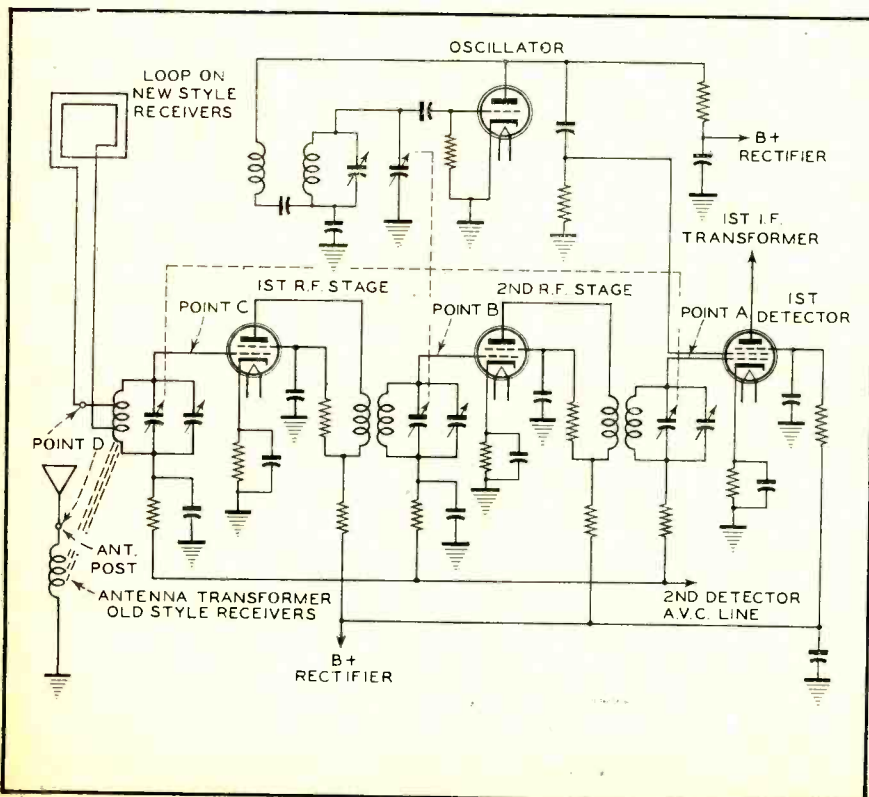
Should the trouble be identified with the A.V.C. system; the resonant reaction of all the trimmers should be checked in the prescribed manner. If none of the trimmers tend to clear the distortion as they are turned off resonance, the operating voltages of all R.F. and I.F. stages should be checked for proper values. If all the trimmers tend to clear the distortion, the A.V.C. filter condensers, resistors and the A.V.C. voltage and tube should be checked as well as the operating voltages of all R.F. and I.F. stages.

However, if the trimmers of one or more stages from the antenna end of the receiver on, fail to clear the distortion; then the first trimmer that does so, identifies that stage as being faulty. Therefore, the A.V.C. filter resistor and grid by-pass #5 and #5 Fig. 1 should be checked to see which is causing the trouble. It is important to note, at this point, the special effect the last I.F. trimmers have on distortion due to A.V.C. action. If the last I.F. is off resonance due to misalignment or any cause leading to a non-resonant condition at its normal setting, there will be a lack of A.V.C. voltage with consequent distortion. Thus the last I.F. trimmers should be checked for all resonant reaction as given in the preceding paragraphs on "Resonant Reactions".

The general resonant reactions of the receiver trimmers can be used, as heretofore described, for locating the causes of lack of sensitivity or selectivity simply by attaching the signal generator to the antenna of the receiver, tuning the signal generator and receiver to the same frequency, then testing the resonant reactions of all trimmers. The effects may be interpreted as described previously in this article.

The author has both used and taught this system with excellent results, while associated with a large distributor. Careful application of the system and reasoning outlined in this article will, after some practice, inevitably speed the diagnosis of all receiver troubles.

Figure 1-C



Types and Features of "Mikes" and Pickups

Guide for dealers in selecting proper types of microphones and pickups for P-A systems, recording apparatus, and other uses. Article 5 in the series, "Sound System Applications".

by **J. P. HOLLISTER**

ALL surveys indicate that the post-war demand for radio-phonograph combinations, recording apparatus and public address systems should far surpass that of pre-war years. Because microphones

best is none too good. And the same applies to pickups.

Carbon Mikes

Carbon mikes are available in single- and double-button types. The

buttons are small cylinders filled with carbon granules, ground as fine as powder. Each button makes contact with the diaphragm, which is made of wafer-thin metal, usually duralumin because of its lightness and strength. The resistance of the carbon button varies with pressure. When a sound wave strikes the diaphragm, this pressure is varied at a rate equal to the frequency of the wave. If a voltage source is connected in series with the diaphragm and buttons, then a current will flow which will vary when a sound wave is impressed on the mike diaphragm.

A diagram of a typical carbon mike hookup is shown in *Figure 1*. In this illustration, *a* and *c* are carbon buttons of a doublebutton mike and *c* is the diaphragm. The rheostat *R* is used to limit the current through the buttons to the proper rated value for the mike used. This is not particularly critical and may vary between 10 and 20 ma. If the current is too high, the carbon granules will not function properly. There is really no point in increasing the current beyond the point recommended by the manufacturer because it is the *change* in current resulting from the sound waves, and not the steady current, which is important.

Most carbon mikes are of relatively low impedance—approximately 200 to 1000 ohms—so a microphone transformer is usually employed to couple them to amplifiers. Such a transformer will have a voltage step-up of the order of 15 to 1 and thus provides nearly as much gain as can be secured from an additional amplifying stage using a medium- μ triode. With the

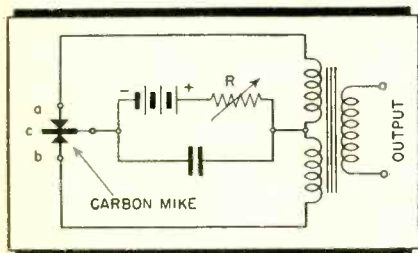


Fig. 1: Connections for double-button carbon mike. Button current is adjusted with resistance *R*.

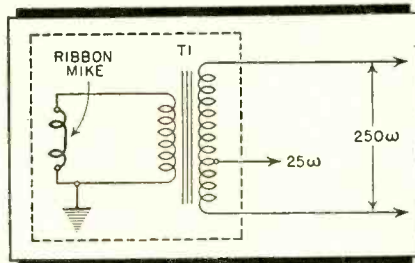
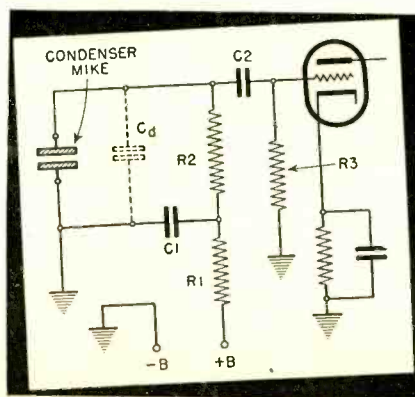


Fig. 2: Condenser mike requires a "head" amplifier for minimum distributed capacity and added gain.

and pickups are vitally important accessories for such equipment, a review of the characteristics and features of the many types becoming available will help guide the buyer in selecting the proper replacement type for older apparatus and in choosing the most suitable instrument for use with specific amplifiers. In addition, it is important in the case of public address systems, to know how a mike is to be used. If a p.-a. installation is made in a restaurant, and operated by waitresses with well-developed lungs and surrounding tissues to call orders to the kitchen, almost any mike which will stand the gaff will do the trick. But if symphonic music is to be properly amplified and reproduced, the

Fig. 3: Low impedance ribbon mike is used with step-up transformer, indicated by dotted lines.



transformer, the audio amplifier of the average receiver provides ample gain for full output from a sensitive single-button mike. If a p.a. amplifier is used, it is usually considered good practice to omit the transformer because the amplifier ordinarily has ample gain without this additional accessory. A drawback to the transformer is that it is apt to pick up hum by coupling to the power transformer. Thus, if used, it must be kept well away from the power transformer and, in addition, it is often necessary to orient the mike transformer at some angle providing minimum coupling and consequently, minimum hum.

Single-button mikes are cheaper and more sensitive than double-button types. However, they have the drawback of giving poorer reproduction. They are adapted to speech use, such as telephone applications whence they originated, but are decidedly not the choice for music. The double-button types are far more suitable for high-quality reproduction, despite reduced sensitivity and higher cost.

Many operators have a habit of tapping a carbon microphone when its response is not up to normal. This is perfectly okay, provided the battery or other voltage source is disconnected. It serves to loosen the carbon granules, which tend to become packed on the active surfaces as a result of moisture, over-voltage, and other causes. It is important to do this with the current off in order to avoid damaging the buttons.

Condenser Mikes

Like the carbon mike, the condenser type also requires a voltage source for its operation. But while the carbon type requires relatively low voltage and fairly high current, the current requirements for condenser mike operation are extremely small though the voltage needed is far higher.

The mode of operation may be understood by considering the circuit of *Figure 2*. The condenser mike consists of two plates, one movable and the other fixed. These two plates form a capacitor. When a sound wave is impressed on the movable plate, which corresponds to the diaphragm of a carbon mike, it vibrates and therefore the capacity of the condenser formed by the two plates varies similarly. By applying a high voltage through *R2* to the condenser mike, the voltage across *R2* will vary in like manner as the charge on the condenser changes. This voltage variation is impressed on the tube grid through the coupling condenser *C2*.

In the circuit shown, *R1-C1* serve

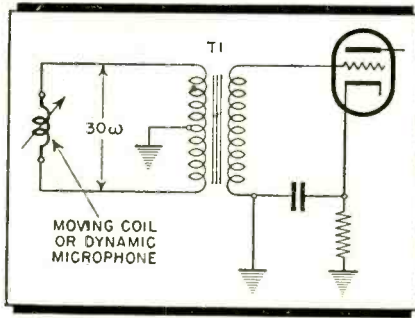


Fig. 4: Dynamic mike (higher impedance than ribbon type) allows external transformer to be mounted.

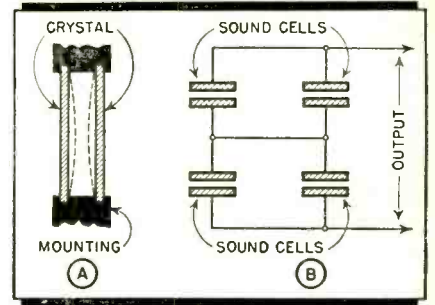
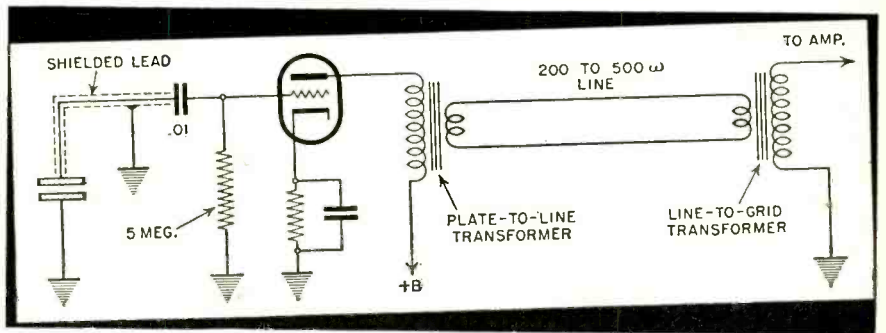


Fig. 5: Sound-cell crystal mike, with general cell connections.

Fig. 6: Due to high impedance of crystal mikes, long transmission lines will introduce losses occasioned by its shunting capacity. This can be avoided through use of pre-amplifier and line-matching transformers.



as a resistance-capacity filter, *R2* is made very high in value, usually 10 megohms or more, as is *R3*. The capacity *Cd* represents the distributed capacity of the circuit. Because *Cd* is in parallel with the mike capacity and represents a capacity which will not vary when sound waves are impressed on the mike, it limits the sensitivity of the mike. For this reason, it is important to keep the distributed capacity low when using a condenser mike.

The condenser mike is far less sensitive than the carbon type. The gain required from its amplifier is nearly 100 times as great. But it has a good frequency response and in early days before the development of the newer types of mikes to be described, it was considered the best available.

Velocity and Dynamic Types

In velocity mikes, a metallic ribbon is suspended between the poles of a powerful permanent magnet. Sound waves cause vibration of the ribbon and an audio-frequency current results from the corresponding variation in the electromagnetic field. A transformer is usually mounted in the microphone head to keep the leads to the mike ribbon short. The trans-

former is necessary because the impedance of the ribbon is extremely low, so that considerable voltage step-up is obtained even when low transformer secondary impedances are used. The illustration, *Figure 3*, shows a typical schematic of the velocity, or ribbon, mike.

Velocity mikes for broadcast studio work usually have output impedances as indicated in *Figure 3*. For public address use, impedances of the order of 2000 ohms are available, making unnecessary the use of an additional input transformer in the p-a amplifier.

Dynamic mikes are similar in principle to the velocity type, but instead of a ribbon in the field of a permanent magnet, a thin ribbon coil is used. This coil must be extremely light for good sensitivity and wide frequency response. As shown in *Figure 4*, a coupling transformer is also used. But since the impedance of the coil is higher than that of the ribbon used in velocity mikes, the transformer need not be mounted in the mike head.

Dynamic mikes are really miniature dynamic speakers used in reverse. In fact, many early dynamic mikes were made experimentally by simply substituting a very light voice coil in a dynamic speaker. (They didn't work very well.)

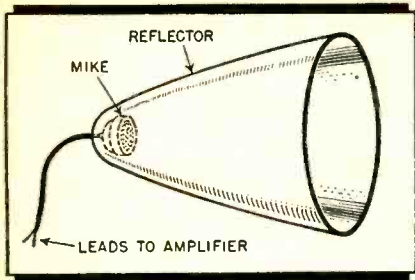


Fig. 7: A "sound telescope" which will increase sound input from any given direction.

The inductor mike is a variation of the dynamic mike in which the moving coil is replaced by a straight piece of aluminum wire fastened to a diaphragm. The current induced in the wire is coupled to a transformer built into the mike head, as with the ribbon mike.

These mikes find wide application in broadcasting where excellent fidelity is of greater importance than high sensitivity.

Crystal Mikes

Crystal mikes are by far the most widely used in public address work. Their simplicity of installation, requiring no input transformer, as well as their relatively high sensitivity as compared with ribbon mikes, and moderate cost, make them especially suited for this type of work.

The construction of a crystal mike is represented in *Figure 5A*. While this should not be interpreted as a commercial design, it does serve to show the method of operation. Two crystal slabs are used in the sound cell type, and several cells are frequently used in the series-parallel connection shown in *Figure 5B*. When the slabs are so mounted, each crystal serves as the plate of a condenser. Due to piezo-electric effect, when a sound wave is impressed on the Rochelle salt crystal elements, they generate a minute voltage. Since this voltage rises and falls in accordance with the sound frequencies, the output becomes an alternating voltage which may be applied to an amplifier. Because crystal mikes have high internal capacity, the connections to the amplifier may be fairly long without appreciably lowering the audio voltage input to the amplifier.

Directional Characteristics

Most mikes, with the exception of the carbon and crystal types, are directional to a certain extent. Often this is an advantage, because it makes

possible the placing of the mike nearer the loudspeaker without getting feedback to a degree necessitating reducing the amplifier gain. When using a non-directional mike, there are many simple methods of making it directional and thus correcting for this trouble. Two devices for this purpose are illustrated in *Figures 7* and *8*.

By placing the mike inside a parabolic reflector, as shown in *Figure 7*, the pickup from the direction toward which the reflector is pointed is increased while extraneous sounds from

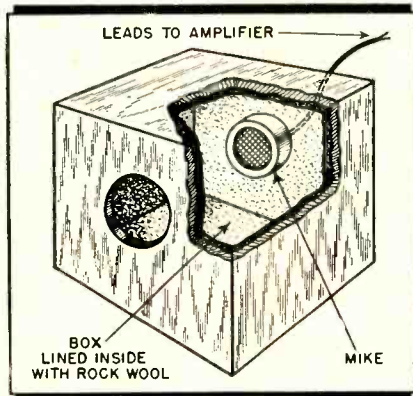
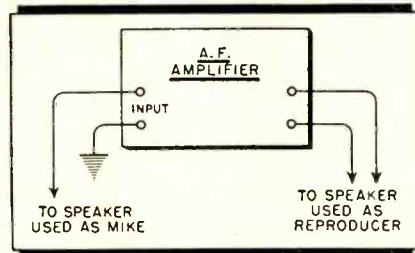


Fig. 8: Mike is enclosed in sound-absorbing box to exclude outside noises (cheering at ball game, etc.).

Fig. 9: Hookup for speaker-mike in use with standard audio amplifier.



other directions are greatly reduced.

Where it is desired to minimize all sounds other than that of a single speaker, a box lined with rock wool or celotex, as shown in *Figure 8*, may be employed. By installing any mike in such a box, it may be used in very noisy locations, such as for announcing purposes at football games, etc.

Speaker Mikes

When it is impossible to obtain a good mike, a magnetic type speaker can be used as an emergency substitute. The old Western Electric

cone types were often used for this purpose. Naturally the results secured cannot be compared with those secured from even the simplest carbon mike, but they will work in a pinch. A hookup for such a device is shown in *Figure 9*.

Phonograph Pickups

Most pickups now in wide use are of the crystal type. These have practically superseded the earlier magnetic types because of their lightness, simplicity, excellent sensitivity, and low cost. While, for broadcast use and similar applications special types other than crystal reproducers are used, their high cost is prohibitive for general work.

The lightness of the crystal pickup makes it unnecessary to use counterbalancing devices to minimize record wear. Further, by the use of equalizing circuits, which are of very simple design for crystal pickups, it is possible to obtain an excellent frequency characteristic. By making this adjustable, one can adapt the pickup to any make of record. This is necessary because it is often found that a pickup which has been equalized for one make of record will not be properly equalized for another make.

Rumbling noises which so often accompany record reproduction are not to be blamed on the pickup. This is generally due to vibration in the turntable which is transmitted to the record groove or to the pickup via the pickup arm. Mechanical resonance may cause over-emphasis of certain low frequencies; this is due to the pickup arm. Methods of construction are devised which aim to minimize this effect over the normal reproduction range, and equalizers or filters are sometimes employed for the same purpose.

The surface noise so common with most records is due to grit which is mixed with the shellac when the record is pressed. Newer types of records, using special plastic have just been introduced in which this trouble is greatly minimized.

While crystal pickups are fairly rugged, they must not be subjected to abuse. Poor reproduction is often caused by the crystal unit becoming cracked by rough handling. Also, and this is characteristic of both mikes and pickups of the crystal type, the crystal unit will not stand excessive heat. Temperatures above 130° F. cause quick deterioration. Such temperatures are seldom encountered in this climate and it is only necessary to prevent the mike or pickup from being exposed for prolonged periods to sun rays in summer.

For the radio serviceman who may not be able to purchase an audio signal generator at the present time, or who may not wish to invest a great deal of money in such a piece of equipment, this oscillator may prove very useful. The cost of the parts necessary to build it is comparatively low and it can be calibrated with sufficient accuracy for normal requirements.

LOW COST Audio Signal Generator

by **A. J. SHULTZ, Commercial Eng. Dept.**
Sylvania Electric Products, Inc.

THE oscillator is of the R-C type using a single tube (7N7 duotriode). The frequency of such an oscillator depends primarily upon the values of resistance and capacitance in a series and a parallel combination (C_4 , R_4 , R_5 and C_6 , R_2 , R_3 in the diagram). Referring to the values in the series and parallel combinations as C_s , R_s , C_p and R_p then

$$f = \frac{1}{2\pi\sqrt{C_s \cdot R_s \cdot C_p \cdot R_p}}$$

When $C_s = C_p$ and $R_s = R_p = R$ (as is true in this case) then

$$f = \frac{1}{2\pi RC}$$

The resistance R_3 and R_4 are one megohm potentiometers, as nearly identical as possible with regard to taper and rotation. The two potentiometers are ganged together so that R_3 and R_4 are about equal at all times. The resistors R_2 and R_5 determine the upper frequency limit. When R_3 and R_4 equal zero, R_2 and R_5 serve as the resistance in the series and parallel combinations. They have very little effect at the low frequency end of the band as they are small compared to one megohm potentiometers. Due to variations in resistors, condensers, and tubes, the frequency range may be slightly different from that specified. If so, it can be corrected by a very small change in C_4 and C_6 .

The second triode section serves as an amplifier. The output of this section is fed back to the oscillator section through the condenser (C_5) producing regeneration. Some of this signal is fed to the cathode of the oscillator section through the resistor (R_6) yielding degeneration for stability and good wave form. The three watt pilot lamp serves as the ballast tube for further stability. As the tube current changes, the resistance of the ballast tube undergoes a similar change. The resulting change in degeneration tends to bring the tube back to its normal

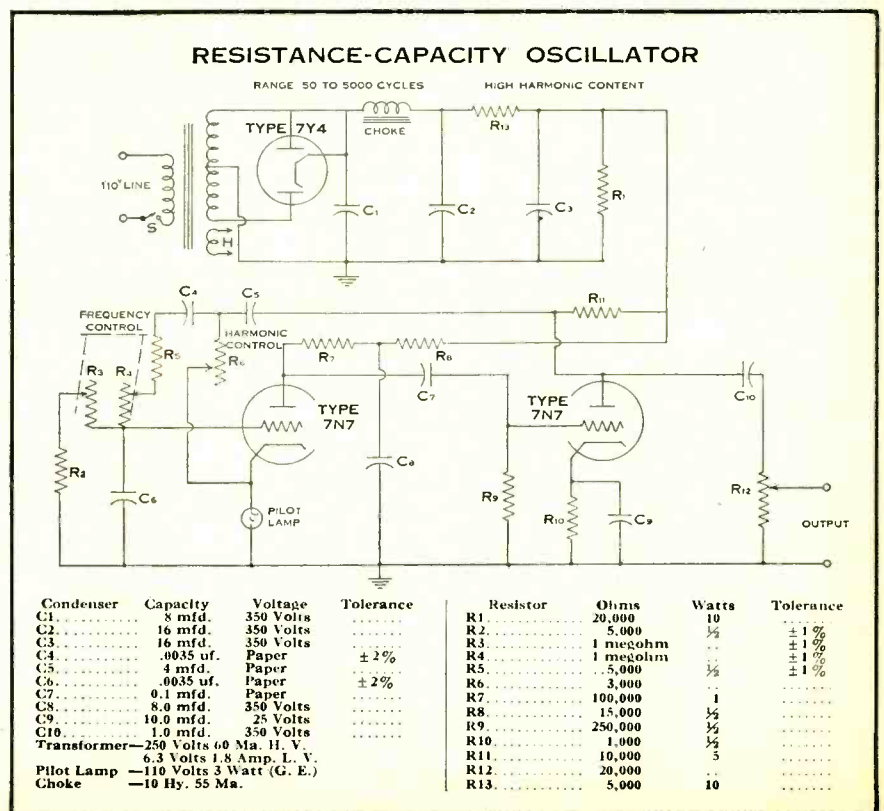
operating point. To allow for varying the wave form a potentiometer is used for R_6 . With this arrangement it is possible to vary the wave form from less than 5% distortion to one having a high harmonic content.

Calibration

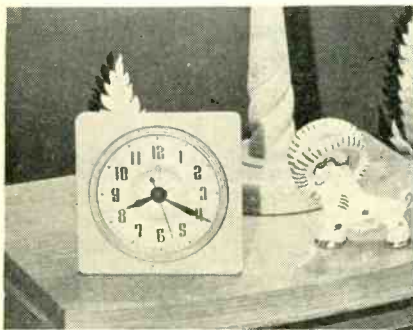
Calibrating the signal generator for ordinary use may be accomplished in

several ways. By far the best way is to use a standard signal generator feeding into either the horizontal plates of an oscilloscope or into a second speaker (or even into the same speaker if only one is available). A single loop (a circle for a good sine wave) on the screen of the oscilloscope indicates that both generators are at the same frequency. Using the

[Continued on page 69]



PRODUCT NEWS



The "Corporal"

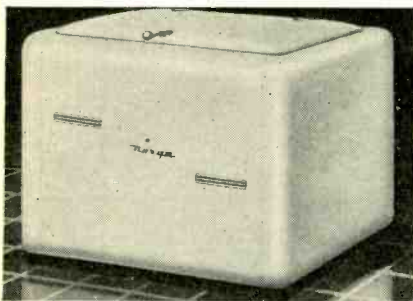
The "Troubadour"



G-E Clocks

Two new G-E electric alarm clock models are now in production, it has been announced by R. O. Fickes, manager of the General Electric Company's clock division. The models were released the end of July, bringing to a total of three the number of electric alarms produced by the company. The first went into production in 1944.

The two new newcomers are of ivory plastic, with self-starting, sealed-in-oil mechanisms. The "Corporal" is about 5 inches square with ivory face, brown hour and minute hands, gold colored second hand; the "Troubadour" is about 5 by 4 inches with luminous numerals and hands on a brown face.



NORGE Automatic Cycle Washer: Design and features are such, it is likely (say company officials) to open up an entirely new area of the market for this type product.

"Typatune" for Xmas Trade

Present production plans of the Electronic Corporation of America call for the release of the "Typatune," a patented item, in time for the Christmas toy and gift business. It is a musical instrument which looks and acts like a handsome standard keyboard portable typewriter but plays like a musical instrument. It weighs less than five pounds, requires no tuning, servicing or adjustments of any kind and has no parts which can get out of order.

A music book is included which enables persons without previous musical knowledge of any kind to play a full range of classical or popular music. The Typatune will be popularly priced for the toy and gift trade so that it will have mass appeal to youngsters from seven to 70. Housed in natural wood, red or green lacquer cabinets, it makes an attractive display in toy,



music, radio and office equipment stores or departments.

All interested dealers are invited to make inquiries to Jack Geartner at the company's offices, 45 West 18th Street, New York 11, N. Y.



NORGE Portable Water Cooler (left): First easily transportable unit ever to be offered. Adaptable for use in offices, homes, hospitals, hotels, clubs and elsewhere. Capacity of 1½ gallons, cools in one hour. Powered with 1/12-hp. hermetically sealed "rollator" motor.

Stimulate Disc Sales

A new feature designed to promote additional classical disc buying via mail has been established in the RCA Victor Record Review, national record customers' monthly, starting with the July issue.

The feature is a record order form, printed in a prominent spot on the inside back cover of the Record Review, which will permit readers to check off the records they want to buy, cut out the coupon, and mail it to their dealer. The records selected can then be either mailed to the customer or held until called for.

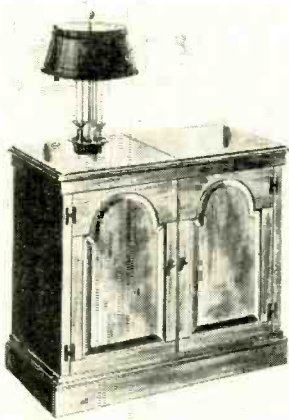
The order blank will cover all the Red Seal records reviewed in each particular issue of the magazine. This easily-detached coupon will stimulate disc sales since it provides the customer with an easy, convenient opportunity to "obey that impulse" and order recordings.



NORGE Home and Farm Freezer: To be offered in four sizes: 3 for city or suburban homes, the fourth for the farm. Capacities to be 6 cubic feet, 11, 18½ and 26. Chest type, lift lid construction. Modernly-styled with white exteriors to blend with other appliances.



NON-BREAKABLE RECORD: First non-breakable, high fidelity plastic phonograph record for home use is taken off the press by Arch Sterling, at RCA Victor plant in Camden, N. J. Developed after 11 years of research, it can be played on all home phonographs. First of these discs will be released in October.



ANSLEY "Salem": Popular American Colonial style. In pine with mellow brown finish to match finest American antiques. 34" high, 39" wide, 19" deep.



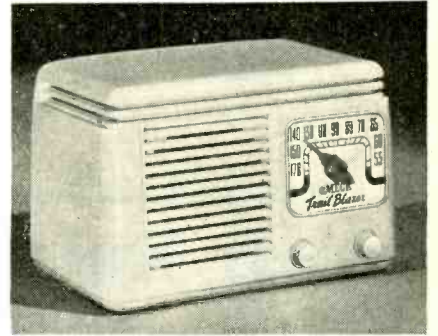
MECK dealer display, easel type, for show windows and counter placement. Issued just before new model "Trail Blazer" was announced (see photo in third column).

Home Laundry Merchandised

Automatic washing machines and electric tumbler dryers were announced as post war additions to the home laundry line of Edison General Electric (Hotpoint) Appliance Company, in a wartime "meeting-by-mail" bulletin sent to regional and district sales managers by Fred C. Margolf, manager, home laundry sales division. The field sales executives were told that the new appliances would be ready as soon after reconversion as manufacturing conditions permitted and that they would round out a "complete home laundry" merchandising presentation under the company's selective dealer activity.

Noting that in the past, the washing

MECK "Trail Blazer": The first set manufactured by the company. It is a 5-tube, AC-DC superheterodyne table model, in plastic cabinet. Will list for less than \$20 (dsp).

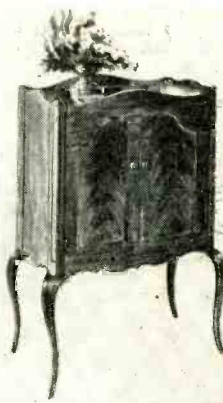


machine has been the only piece of home laundry equipment sold to almost 90 per cent of the people doing home laundering, and that most of the drudgery associated with home laundering of clothes was due to "hanging out on lines after carrying up basement stairs, with subsequent hours spent in hand ironing," a planned home laundry center was urged.

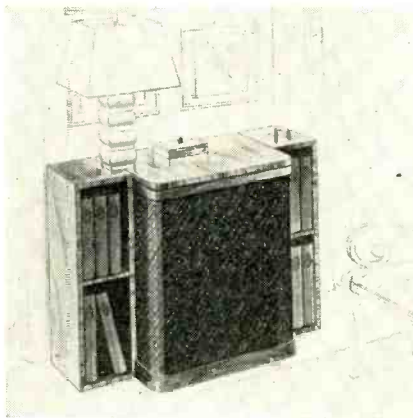
"Dealers have failed to plan for customers' convenience in the past, but new methods of equipment display will include 'complete laundry display centers,'" the bulletin said. "More than 4,300,000 families place a washer number one among their post war wants in 1944 War Production Board survey. The W. P. B. poll reported that an estimated 2,800,000 families had tried unsuccessfully to buy a machine during the year previous to April 1944."

The bulletin noted that 96 out of every 100 families do some laundry at home, while 55 wash all of the family's wearing apparel and household linens. Less than 15 of each hundred families own an ironing machine, and not one per cent own a clothes dryer. "Those figures indicate that most women have not had a chance to know what work-saving laundry equipment can do for them. The future of the home laundry appliance business rest in planning for complete equipment that will give women a light, comfortable work center, where work can be done pleasantly and quickly. When post war appliance stores offer attractive home laundry appliance ensembles, they will create a market for ironers, dryers, and metal cabinets, as well as increase their sales of washers.

"A 'complete home laundry center' store will sell both conventional and automatic washing machines, ironers, tumbler dryers, metal base and wall cabinets, rinsing tubs and automatic storage water heaters."



ANSLEY "Normandy": French provincial style; fills a need expressed by many dealers. Finish is natural walnut color, showing grain of wood. 50" high, 33" wide, 20" deep.



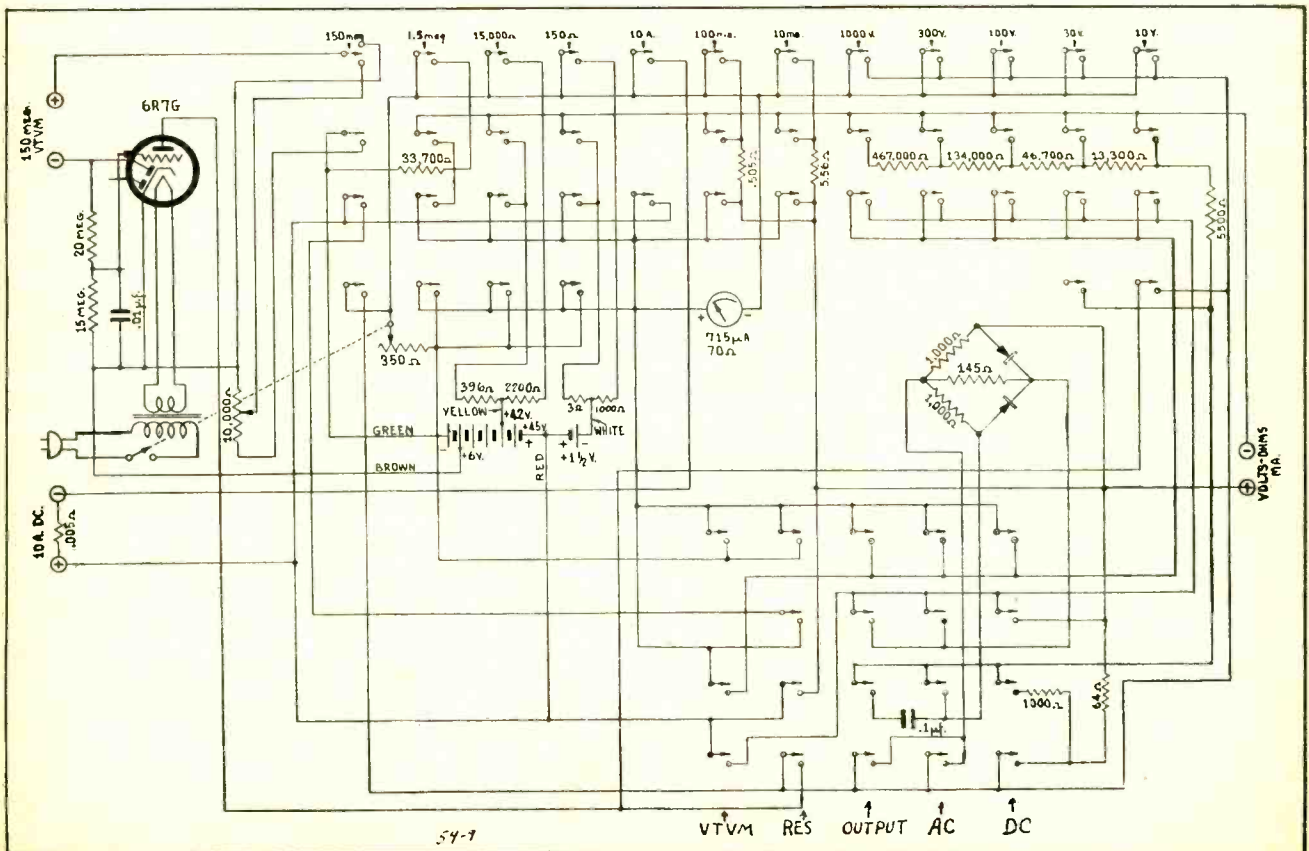
ANSLEY "Skyline": Modern cabinet, combining Dynaphone with ample record space. Center panel covered in fabric in choice of colors. Panel is removable so it can be changed by owner when he changes color scheme of room or changes draperies with the seasons. Finish in pickled oak and wheat birch. 31" high, 40" wide, 21" deep.

Technical Service Portfolio

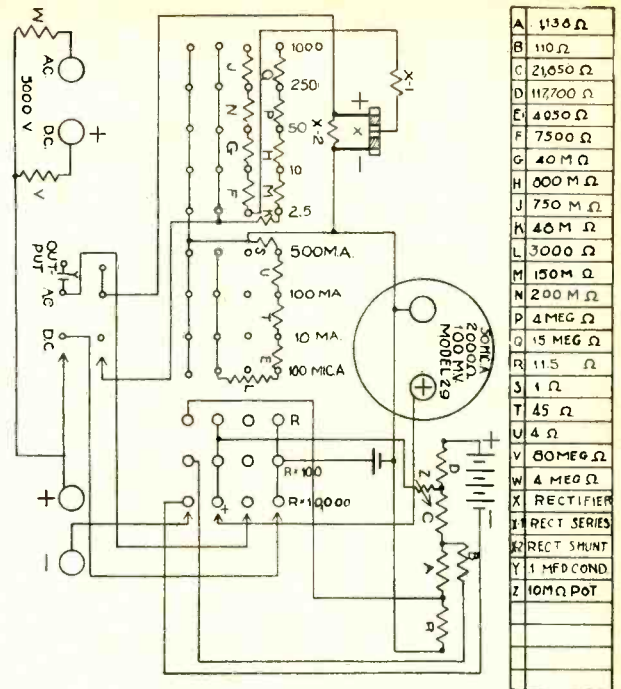
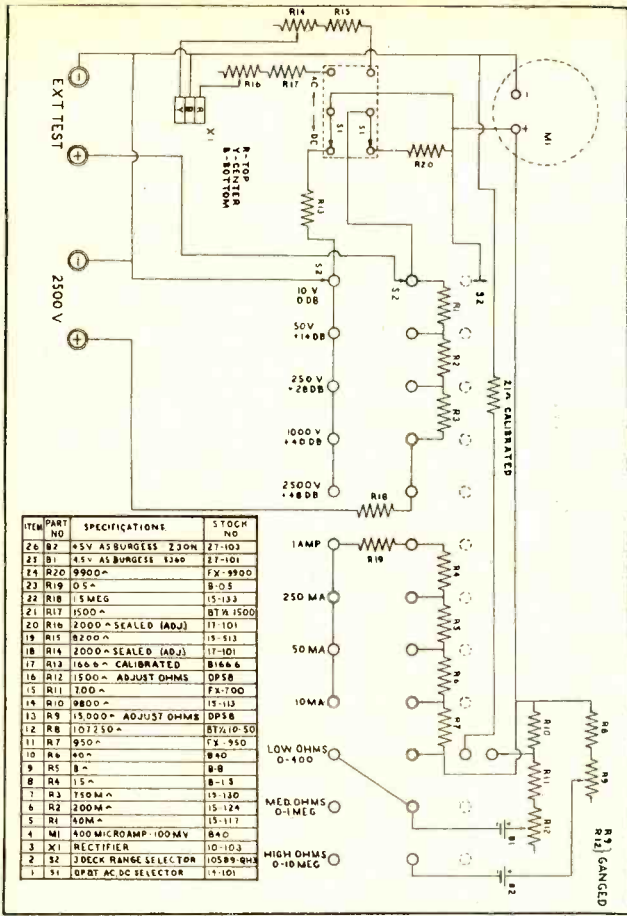
Section LIII

TEST EQUIPMENT CIRCUITS—Part 13

Through the cooperation of test equipment manufacturers we are publishing a series of hitherto unavailable schematics of their instruments. The circuit diagrams will be published without technical comment in a series of "Portfolios" of which this is a part. Subscribers desiring publication of circuits for specific instruments should write to Editor, Radio Service Dealer, for issue priority.



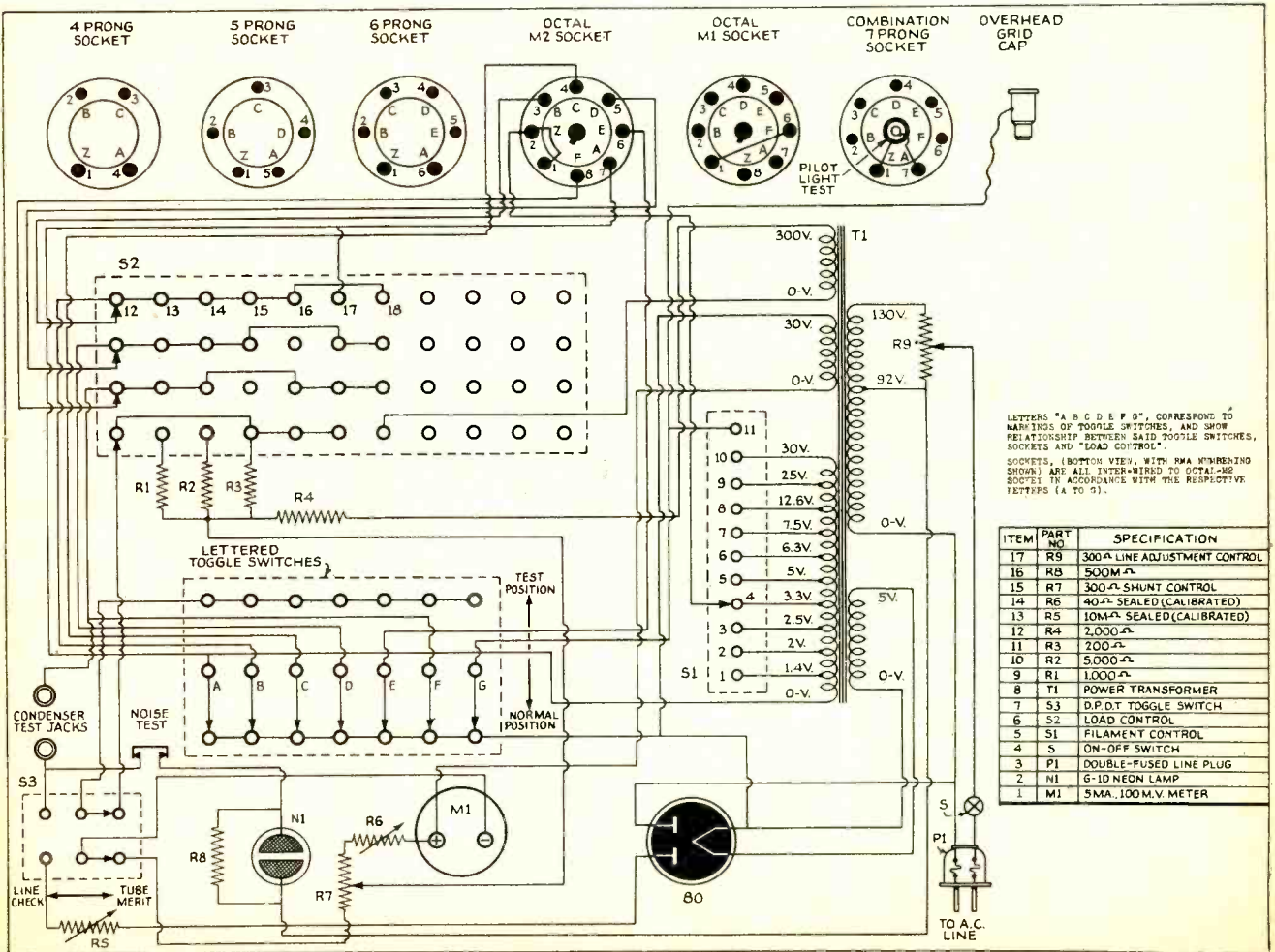
Philco Corp. Vacuum Tube Voltmeter, Model 027

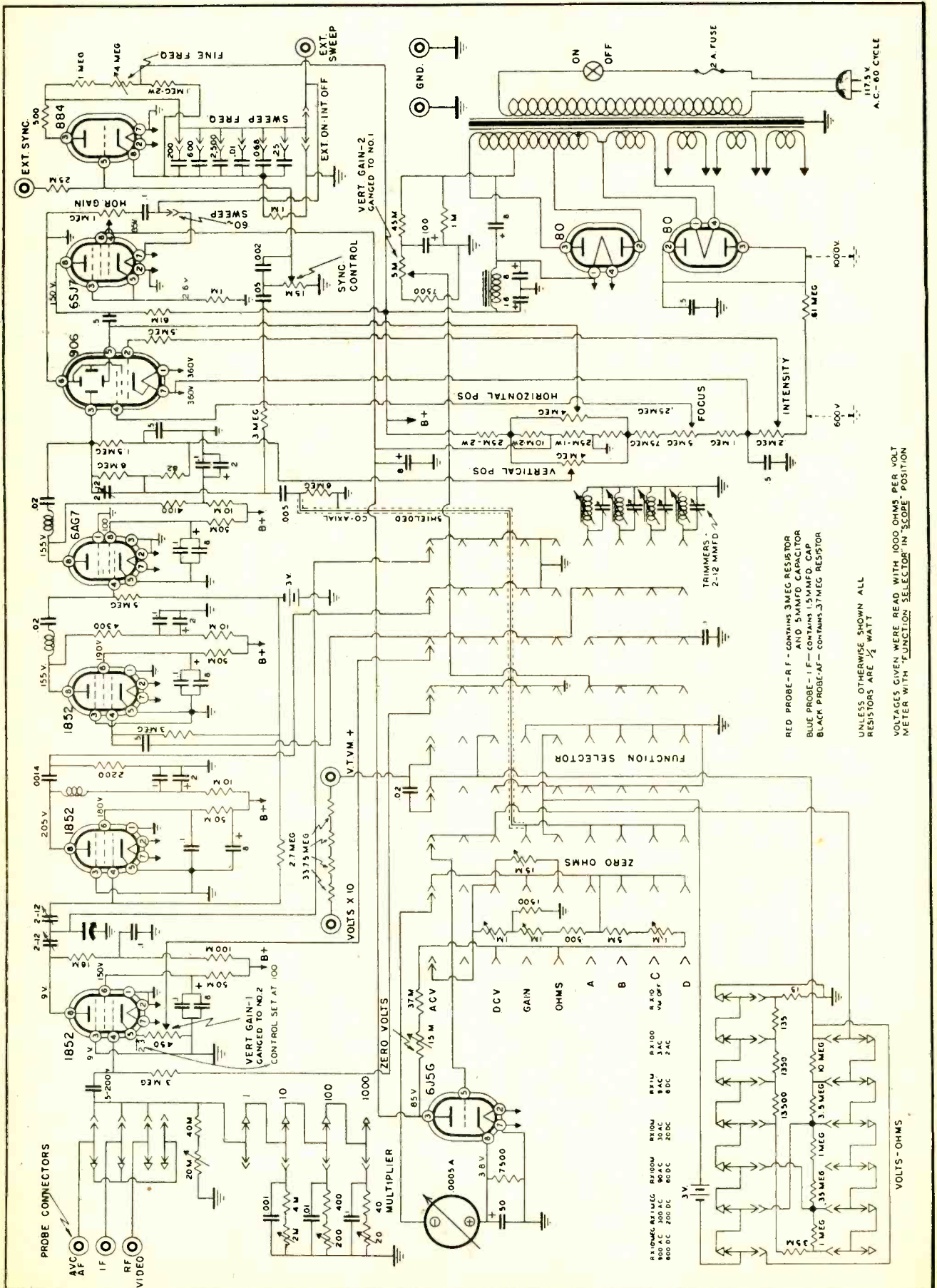


Left: Precision Apparatus Co. Volt-Ohm-Milliammeter Model 840.

Above: Simpson Electric Co. Set Tester, Model WD240.

Below: Precision Apparatus Co. Tube Checker, Model 510.





Supreme Instrument Corp. Vedolyzer, Model 560-A

SPRAGUE TRADING POST

A FREE Buy-Exchange-Sell Service for Radio Men



Five times cited for distinguished wartime service.

...NOW, In Peace

you can count on Sprague — just as the nation counted on Sprague in war!

FOR SALE—Meissner analyst practically new. \$97. Southern Radio Service, Thomasville, Ga.

WANTED—1N5G, 1G6G tubes. Will sell or swap tubes, parts, speakers, condensers, sign painters or letter patterns. John Haynes, Doe Run, Mo.

WILL TRADE—Crosley table radio and record player for tube checker for all modern tubes. Clyde Hathaway, Box 123, Pageland, S. C.

FOR SALE—12Z5, 6AF6G, 14B6, 6AE6G, 6A6, 6Y7G, 83, 34, 32, 31 new tubes. O. H. Williamson, Cooper, Texas.

WANTED—Rider's 1, 2, 3, 5. Moskow's Radio, Andrews, S. C.

FOR SALE—Weston 1000 ohm-per-volt meters and scale; Jewell and Triplett meters; National receiver; transmitting parts, etc. Write for list. F. C. Hoffman, 4615 E. Wise road, Appleton, Wis.

FOR SALE OR TRADE—Approx. 40 tubes. Want table model 32v radio. William Elder, Jamestown, N. Dak.

URGENTLY NEEDED—Portable phonograph or combination radio phono. table model. John Oxrieder, % Mrs. J. H. Oxrieder, Granville, Ohio.

FOR SALE—Triplett condenser analyzer #1241, \$25; Dayrad sig. gen. 330, \$15 and Confidence tube tester \$10. J. M. Foley, RFD1, Box 153, Harrisonburg, Va.

FOR SALE—1937 Ford custom fit Philco universal and Arvin 8-tube universal fit, auto radios; also 1/4 and 1/6 h.p. motors \$12.00 ea. Paul Capito, 637 W. 21st St., Erie, Pa.

WANTED—Battery charger, sig. gen. portable phonograph and player also 1A7, 1H5, 1N5, 35Z5 tubes. Have for sale, tubes, V-O-M and other parts. Royce Saxton, Rt. 1, Pontiac, Ill.

WILL TRADE—Kodak 16mm movie camera for recording outfit or cutting head ept; 5-meter transceiver for turntable and motor combination induction-type or good small a-c radio. S/Sgt. A. G. King, P.W. Camp, Fort Robinson, Nebr.

FOR SALE—Hickok oscillograph RFO-4. Frank Spainhower, 843 E. Heald St., Sheridan, Wyo.

SELL OR TRADE—Supreme #39 set and tube tester. What have you? Need 12SK7GT and 50L6GT tubes. Robert Petrunia, 109 S. Prairie St., Whitewater, Wis.

WILL TRADE—3 or less boxed & new 25L6/GT's for equal value 1A7/GT tubes. Dick's Radio Repair, 62 Stedman St., Brookline 46, Mass.

FOR SALE—Shure 100" handmike; Weston and G-E meters; Green Flyer motor; tubes, etc. E. Humphreys, 112-11 209th St., Bellerose, N. Y.

URGENTLY NEEDED—Late model tube tester, sig. gen.; volt-ohmmeter and Riders manuals. Wilfred R. Boshaine, 649 Neptune Ave., Pacific Grove, Calif.

FOR SALE—2 pairs each \$13 and \$15 tubes. Prince Taylor, 936 N.W., 2nd Court, Miami, Fla.

WANTED—Part or complete set Riders. H. & N. Radio Shop, 118 W. 5th St., Canton, S. Dak.

SELL OR TRADE—Clough-Bregle, OC sig. gen. ac-dc and many scarce type tubes. Want photo ept, 35mm reflex camera or what have you? E. Schmitka, 1481 Shakespeare Ave., New York 52, N. Y.

FOR SALE—Hook-up wire, rubber and aircraft covering 3 lbs for \$1. Donald H. Aldred, 2515 Boulevard, Jacksonville 6, Fla.

WANTED—Supreme #385 tube tester and analyzer also sig. gen. John Herman 611 W. Locust St., Bloomington, Ill.

FOR SALE—RCA #18 table model 7-tube broadcast receiver and RCA #100R speaker to match. \$15. F.O.B. Herman Fischer, 626 Carlton Ave., Brooklyn 17, N. Y.

WANTED—Multi-meter; sig. gen.; modern tube checker; cathode-ray oscilloscope; VT circuit analyzer; standard tube chart and capacity meter. Samuel Stewart, Button Willow, Miral Farm, Calif.

FOR SALE—G-E, F-M converter. Triplett V-O-M and latest model G-E tube checker, etc. Rex Wilson, Radiolab, Prescott, Ariz.

WANTED—25B8 tube. Cash or trade 117P7, 32L7, 50L6, 35Z5 or 12SA7. Also want set Riders manuals. Bobs Radio Service, 404 N. Montford Ave., Baltimore 24, Md.

URGENTLY NEEDED—Rider manuals, service manuals, test ept, meters, parts, tubes, wire, etc. R. Stewart, R.R. #1 West Chester, Ohio.

FOR SALE—Philco 088 all wave sig. gen. W. J. Adams, R.F.D. #2, Box 157, Fort Pierce, Fla.

SELL OR TRADE—General instruments record changer; 100 micro amp G-E meter; Green Flyer H turntable. Want professional 2-speed transcription or recording turntable or high-fidelity audio transformers. Willard Smith, 1929 E. Genesee St., Syracuse, N. Y.

WANTED—Phonograph motor and turntable, Donald Smith, 33942109, New York University, A.S.T.P., University Heights, Bronx 53, N. Y.

FOR SALE—2 Superior sig. gen. #1120S and 1130S less tubes, \$18 for both. Vincent Iavarone, 1218 Leland Ave., Bronx, New York, N. Y.

URGENTLY NEEDED—Used 913 or other C.R. tube, Robert Fontaine, 627 Kimball Ave., New Kensington, Pa.

FOR SALE—Radolek amplifier, 90-watts, five inputs, 15 tubes, 4-6L6 output, \$100 or will trade for M70 Winchester or M99 250 Savage. Will also sell Confidence tube tester. Joe Warnisher, Lewistown, Mont.

WANTED—Rider's radio circuit manuals 3, 4, 11, 12, 13 and 14. L. Hastrich, 65 Cleveland Drive, Cheektowaga, N. Y.

FOR SALE—Several hard to get tubes and other radio ept. Sam Nevins, 506 S. 41st St., Philadelphia 4, Pa.

FOR SALE—Large stock new tubes at O.P.A. ceiling. List your needs. Leading Radio & Appliance Co., 160 E. Third St., Mt. Vernon, N. Y.

WANTED—Exact duplicate oscillator coil for Buick Sonomatic radio #930690. Jim's Radio Shop, Mankato, Kans.

WILL TRADE—1-958; 1-RK43 and 1-IT4 tubes. Want 1-0-50 d-c voltmeter or 1-IV or what have you? Damon Francis, Apex Radio Service, 158 Hamilton St., New Haven, Conn.

WANTED—Hallcrafters SX-25 Sky Champion. Allen Pufahl, 541 Stepany St., Inglewood, Calif.

FOR SALE—Hickok #2 oscillograph and R.C. audio sig. gen. H. D. Blankenship, 520 N. Atlantic Blvd., Monterey Park, Calif.

WANTED—D.F. radio equipment for marine and aircraft. L. W. Passans, 2032 Burton St., San Diego 11, Calif.

FOR SALE—Fifteen tubes with adapters to hard to get types. One lot only. Robert W. Gorseline, 6 Ocean Green S.W., Washington 20, D. C.

WANTED—1½v A & 90v A-B pack radio batteries also 1v series tubes. Want 45v "B" Batteries. Ellison Radio Service, Centertown, Ky.

FOR SALE—General Industries Heavy duty 6v, 2 speed phonograph motor complete with 12" turntable \$6.50. Homer A. Doll, Box 127 Fork Union, Va.

YOUR OWN AD RUN FREE!

For three wartime years, the Sprague Trading Post helped radio men sell, trade or buy needed materials. Now, with the advent of Peace, this free advertising service will continue as long as the need exists.

We'll gladly run your ad free in the first available issue of one of the 5 magazines in which the Trading Post appears.

HARRY KALKER, Sales Manager

All we ask is that it be written clearly and concisely, that it be confined to radio materials, and that it fit in with the spirit of this service.

As always we know we can count on you to use Sprague Condensers and Koolohm Resistors — and to ask for them by name!

Dept. RSD-95, SPRAGUE PRODUCTS CO., North Adams, Mass.

Jobbing distributing organization for products of the Sprague Electric Co.



SPRAGUE CONDENSERS KOOLOHM RESISTORS

TM. REGISTERED U. S. PATENT OFFICE

Obviously, Sprague cannot assume any responsibility, or guarantee goods, services, etc., which might be exchanged through the above advertisements

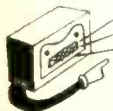
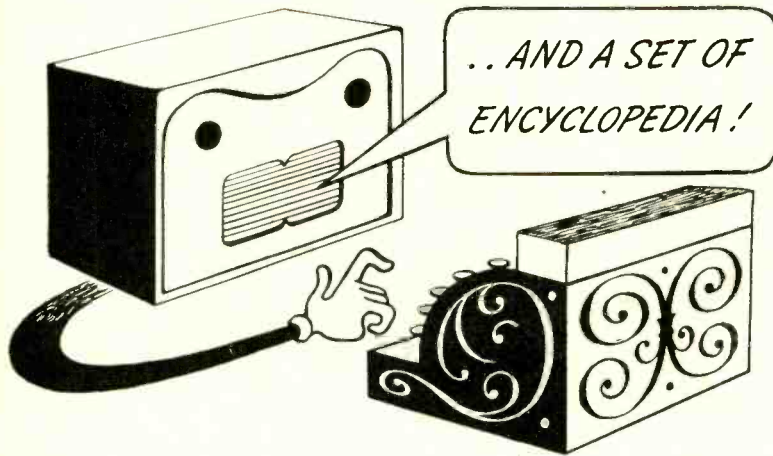
In Trade

[from page 27]

of war surpluses, are under the Industry Reconversion Committee, headed by A. S. Wells of Wells-Gardner & Co., ex-president of RMA. Paul V. Galvin of Galvin Manufacturing Corporation, also a former president of RMA, is the Vice Chairman of the committee, and its membership includes: M. F. Balcom of Sylvania Electric Products Inc., Chairman of the RMA Tube Division; Dr. W. R. G. Baker of General Electric Company,

Director of the RMA Engineering Department; Chairman E. A. Nicholas of the Set Division; Chairman R. C. Sprague of the Parts Division, T. A. White of Jensen Radio Manufacturing Co., Chairman of the Amplifier Division's Executive Committee; Walter Evans of Westinghouse Electric Corporation, A. Blumenkrantz of General Instrument Corporation, Monte Cohen of the F. W. Sickles Company, and Elmer R. Crane of Lear, Inc.

RIDER VOLUME XIV COVERS 1941-42 RECEIVERS



Even back in '41, when I was brand new, "Information Please" was giving sets of Encyclopaedia Britannica to people who submitted questions that stumped the program's "experts."

If the "Information Please" people ever want to get hundreds of servicemen to stay up nights thinking of questions they can offer a "set of Rider Manuals," recognized as the most valuable piece of equipment in any shop.

That's why there's such a tremendous demand for Vol. XIV right now. It contains the vital servicing data needed to quickly diagnose and cure the ills of radios of my age; the last generation born before the stoppage of civilian set manufacture.

We have been worked hard because of the war. For the same reason paper is scarce and WPB limitations on paper may cause your jobber to be out of a Rider Manual. Thanks for being patient.

RIDER MANUALS (14 VOLUMES)
Volumes XIV to VII . . . 12.50 each volume
Volume VI . . . 9.50
Abridged Manuals I to V (1 vol.) 15.00
Automatic Record Changers and Recorders . . . 7.50
OTHER RIDER BOOKS YOU NEED
The Cathode Ray Tube at Work
 Accepted authority on subject . . . 4.00
Frequency Modulation
 Gives principles of FM radio . . . 2.00
Servicing by Signal Tracing
 Basic Method of radio servicing . . . 4.00
Servicing Superheterodynes . . . 2.00

The Meter at Work
 An elementary text on meters . . . 2.00
The Oscillator at Work
 How to use, test and repair . . . 2.50
Vacuum Tube Voltmeters
 Both theory and practice . . . 2.50
Automatic Frequency Control Systems
 —also automatic tuning systems . . . 1.75
A-C Calculation Charts
 Two to five times as fast as slide rule . . . 7.50
Hour-A-Day-with-Rider Series—
 On "Alternating Currents in Radio Receivers"—
 On "Resonance & Alignment"—
 On "Automatic Volume Control"—
 On "D-C Voltage Distribution" . . . 1.25 each

JOHN F. RIDER PUBLISHER, INC. 404 FOURTH AVE., N.Y. 16, N.Y.
 Export Division: Rocke-International Corp. 13 E. 40th Street New York City Cable: ARLAB

RIDER MANUALS *are complete*
IN 14 VOLUMES

Another major RMA group is the Employment & Personnel Committee, under the chairmanship of G. W. Thompson of Noblitt-Sparks Industries. This committee will handle problems of post-war employment, including reinstatement of war veterans. New post-war industry statistics, on receiving sets, tubes, transmitting equipment, and probably later on parts and accessories, will be compiled under the direction of the Industry Statistics Committee, of which Fred D. Williams of the Philco Corporation is chairman.

Another new peacetime project of RMA is equipment of schools and other public institutions with radio. This project is in charge of the School Equipment Committee, whose chairman is Lee McCanne of the Stromberg-Carlson Company. Another major activity is that of the Advertising Committee of the Set Division, under the continued chairmanship of John S. Garceau of the Farnsworth Television & Radio Corporation. This committee is in charge of general industry advertising, sales promotion and publicity, also in cooperation with the broadcasting industry.

The present RMA committee organization for 1945-46 follows: Advertising Committee (Set Division): Chairman—John S. Garceau, Farnsworth Television & Radio Corp. By-Laws and Organization Committee: Chairman—Leslie F. Muter, The Muter Company. Contract Terminations Committee: Chairman—L. W. Adkins, The Crosley Corporation; Vice Chairman—Ray F. Sparrow, P. R. Mallory & Co., Inc. Credit Committee: Chairman—T. W. White, Jensen Radio Manufacturing Company; Eastern Vice Chairman—Wm. W. Paul, Radio Condenser Company; Western Vice Chairman—J. T. McKenna, Chicago Molded Products Co. Employment and Personnel Committee: Chairman—G. W. Thompson, Noblitt-Sparks Industries, Inc.; Vice Chairman—R. T. Borth, General Electric Company. Engineering Department: Director—Dr. W. R. G. Baker, General Electric Company; Assoc. Director—Virgil M. Graham, Sylvania Electric Products Inc.; Chief Engineer—L. C. F. Horle, New York, N. Y. Export Committee: Chairman—Walter A. Coogan, Sylvania Electric Products Inc.; Vice Chairman—A. D. Keller, Federal Telephone & Radio Corp. Industry Reconversion Committee: Chairman—A. S. Wells, Wells-Gardner Co.; Vice Chairman—Paul V. Galvin, Galvin Manufacturing Corporation. Industry Statistics Committee: Chairman—Fred D. Williams, Philco Corporation.

[Continued on page 68]

WAR PRODUCTION SCHEDULE



All Set FOR PEACETIME PRODUCTION

FOR several months, we've been telling our friends in the trade that we of Eastern have completed our post-war plans and policies—have perfected the new line of Eastern sound equipment. Our peacetime production schedules are set up—BUT, we think winning the war is more important! We're still going all out on our war work,

building quality units for the Army Air Forces and the U. S. Navy. However (as of this writing), we're standing by for Uncle Sam's okay to start our peacetime production. For detailed information on Eastern's post-war line, fill out and mail the Coupon today! Eastern Amplifier Corporation, 794 East 140th Street, New York 54, N. Y.

EASTERN AMPLIFIERS

This is Your Ticket

for complete information on our post-war line and the details of our proposition.

EASTERN AMPLIFIER CORPORATION, Dept. 9C
794 East 140th St., New York 54, N. Y.

We are JOBBERS, DEALERS, A SERVICE ORGANIZATION, SOUND SPECIALISTS. We're definitely interested in your post-war line, your policy, your proposition. Mail us complete information, without obligation.

COMPANY NAME

ADDRESS

CITY ZONE STATE

INDIVIDUAL TITLE

DISTRIBUTOR NEWS

HOFFMAN

Hoffman Radio Corp., Los Angeles, Cal., announces the following distributors:

Radio Products Sales Co., 1237 Sixteenth St., Denver, Colo., for New Mexico, Colorado, Eastern Wyoming, and Eastern Montana. Radio Supply Co., 45 East 4th St., Salt Lake City, Utah, for Utah, southern Idaho, and western Wyoming to Laramie.

MOTOROLA

W. H. Kelley, general sales manager, Galvin Manufacturing Corp., Chicago, Ill., announces the following distributors. They will carry complete lines of Motorola radios for the home, the car, the outdoors and the farm:

Krisch-Delevan Company, San Antonio, Texas, for all of Texas south of the counties of Val Verde, Edwards, Kimble, Mason, Llano, Lampasas, Bell, Milam, Lee, Fayette, Lavaca, DeWitt, Goliad, Refugio and Aransas; will also handle Servel refrigerators, Com-

mercialaire Attic Ventilation, Lennox Central Heating Systems, Chrysler Air Temp Cooling. Goldner Distributing Co., Philadelphia, Pa., for the territory.

OLYMPIC

Jack F. Crossin, director of sales, Hamilton Radio Corp., announces the following distributors for Olympic radio and television sets:

Cardinal Distributors, Inc., for Southern Illinois and Eastern Missouri; this distributor will also handle Calorie ranges, Dutchess washers, Filter Queen cleaners, Jewett refrigerators and Sun Fame oil burners. Risley-Leete Co., New Haven, Conn. Burhans & Black, Inc., Syracuse, N. Y.; for 28 adjacent counties; will also handle Universal appliances. W. A. Case & Son Mfg. Co., Erie, Pa.; will also handle Manning-Bowman, Kitchen-Aid, Ilg, Everhot, and commercial refrigeration and deep-freeze equipment. Rhode Island Distributing

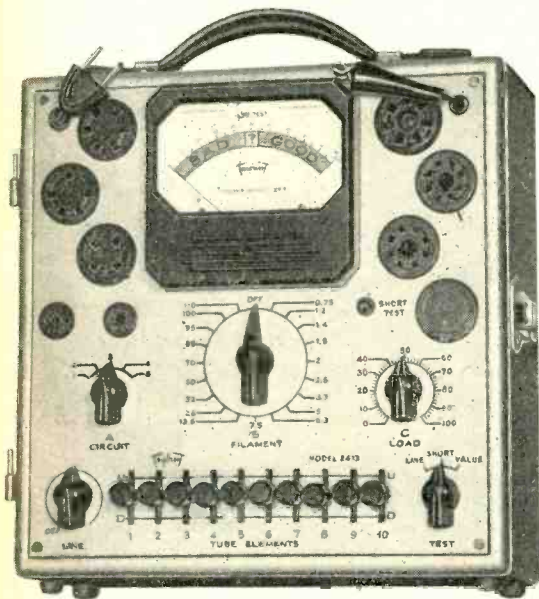
Co., Providence, R. I., for Rhode Island and Eastern Connecticut. Graybar Electric Company, Inc.; Cincinnati, Dayton, Columbus and Charleston areas are included in Graybar's Ohio Valley District, with headquarters in Cincinnati, Ohio.

STEWART-WARNER

Stewart-Warner announces the following distributors:

J. M. Keely Sales Company, Miami, Fla., for the southern half of Florida. Thomas H. Maginniss Company, for the Chicago area. The Rudning-Robertson Company, Sioux Falls, South Dakota, for eastern half of South Dakota and counties in western Minnesota and Iowa; will also handle Gibson refrigerators, electric ranges and home freezers, Blackstone home laundry equipment. Fitzgerald & Company, Kansas City, Mo., for the city trade territory. Bright Distributing Company, Knoxville, Tenn., for eastern

[Continued on page 66]



The New Speed-Chek Tube Tester

MORE FLEXIBLE • FAR FASTER • MORE ACCURATE

Three-position lever switching makes this sensational new model one of the most flexible and speediest of all tube testers. Its multi-purpose test circuit provides for standardized VALUE test; SHORT AND OPEN element test and TRANSCONDUCTANCE comparison test. Large 4" square RED • DOT life-time guaranteed meter.

Simplicity of operation provides for the fastest settings ever developed for practical tube testing. Gives individual control of each tube element.

New SQUARE LINE series metal case 10" x 10" x 5½", striking two-tone hammered baked-on enamel finish. Detachable cover. Tube chart 8" x 9" with the simple settings marked in large easy to read type. Attractively priced. Write for details.

Model 2413

is another member of
the **NEW TRIPLETT**
Square Line

Additional Features

- Authoritative tests for tube value; shorts, open elements, and transconductance (mutual conductance) comparison for matching tubes.
- Flexible lever-switching gives individual control for each tube element; provides for roaming elements, dual cathode structures, multi-purpose tubes, etc.
- Line voltage adjustment control.
- Filament Voltages, 0.75 to 110 volts, through 19 steps.
- Sockets: One only each kind required socket plus one spare.
- Distinctive appearance makes impressive counter tester.

*Precision first
...to last*



Triplet

ELECTRICAL INSTRUMENT CO. BLUFFTON, OHIO





MAGAZINE AND
RADIO ADVERTISING

Here's your profit leader for tomorrow!

A big PRE-SOLD market awaits G-E receiving tubes

MONEY WILL BE MADE by radio dealers and service men who sell G-E electronic tubes, once these are available in volume. The market is ready and waiting. Every month 19 leading magazines with a total circulation of 30,000,000 tell readers about G-E tubes. Every week listeners in 7,000,000 radio homes hear a similar message over CBS.

The people who read and hear about G-E electronic tubes are favorably in-

fluenced by the fact that for years, they have known and used G-E lamps—have been familiar with the many G-E household appliances.

Here is your big chance, as a radio dealer or service man, to cash in on the popularity that goes with the biggest name in electronics. Here is your straight, sure road to volume sales of a product known to everybody—one that will be consistently profitable to handle: G-E electronic tubes.

Don't delay the steps to secure your share of this pre-sold tube market that's just ahead. Write for the name of your nearest G-E tube distributor. Address *Electronics Department, General Electric, Schenectady 5, N. Y.*

Hear the G-E radio programs: "The World Today" news, Monday through Friday, 6:45 p. m., EWT, CBS. "The G-E All-Girl Orchestra," Sunday 10 p. m., EWT, NBC. "The G-E House Party," Monday through Friday, 4 p. m., EWT, CBS.

GENERAL ELECTRIC

176-D3-8850

In Trade

[from page 56]

Sales Financing Committee: Chairman—J. P. Rogers, Farnsworth Television & Radio Corp.; Vice Chairman—Ben Abrams, Emerson Radio & Phonograph Corp. School Equipment Committee: Chairman—Lee McCamie, Stromberg-Carlson Company. Service Committee: Chairman—F. L. Granger, Stromberg-Carlson Company. Traffic Committee: Chairman—O. J. Davies, RCA Victor Division of RCA.

Water Heaters

Gregory L. Rees, manager, water heater sales division, Edison General Electric (Hotpoint) Appliance Company, announces civilian production for shipment to dealers will accelerate rapidly during the fourth quarter, with a trickle of supplies reaching consumers.

New models will resemble pre-war

lines, with limited production of 10 and 30 gallon single unit models; 30, 40, 52, and 86 gallon twin unit models, all in round galvanized tanks, and a 30 gallon capacity table-top model for "complete kitchen built-in" installations. The first heaters produced will have NEMA-standard wattage units.

Sound Equipment Growth

One of the nation's major electronic industries, the sound equipment industry, is slated for an extensive market in the postwar growth of the Pacific Coast. So forecast Allan R. Royle, sales manager of the sound equipment division of the Stromberg-Carlson Company, and one of the industry's leading authorities, in a speech before 275 members of the dealer-organization of Gough Industries, Inc., Los Angeles, California, Southern California distributor for the Rochester, N. Y., company's sound equipment.

"Since its up-swing, not so many years ago, sound equipment has come to be known as equipment particularly fitted to new, wartime mass employment industries. While that is true, it is equally true that the time-and-labor-saving features of a correctly engineered sound system have been applied just as effectively to the old-line industries and those employing only small numbers of workers. Fortunately, the striving to effect greater economy and to achieve better employee morale and save time and effort are common to all of modern industry—big or little," Mr. Royle said.

"The advent of precision sound equipment built to withstand the shocks of modern war has paved the way to general acceptance by industry for the peacetime counterpart of the war sound system, multiplying its market many times. But the industry's history to date has been shrouded in a little too much mystery for its own future good. Because Stromberg-Carlson is conscious of its role as one of the more responsible pioneers of the industry, we are taking the lead in 'truth-ing' the sound industry. We already had 30 years in the communications business under our belts when we began the manufacture of radios in 1924. Later in the twenties we went into the new field of manufacturing sound equipment that would maintain our reputation and high quality standards. Today, we are rather proud of the fact that we are one of the few manufacturers of sound equipment approved and accepted by the Navy as meeting its high performance quality and standards," the com-

[Continued on page 62]

MASCO

Starts the New Era of Peace with profound

THANKS

from all Masco Employees and Sales Representatives

To All Our Suppliers...

for their whole-hearted cooperation and splendid support in helping us to produce war materials for our government.

To All Our Jobbers...

for their patient understanding of MASCO's war tasks.

To All Our Dealers...

for a mounting appreciation of MASCO quality and performance of our growing line of equipment.

WE PLEDGE...

Rapid reconversion. Maintenance of Quality. Clean channeling of all our goods through jobbers exclusively.

MARK SIMPSON MANUFACTURING CO.

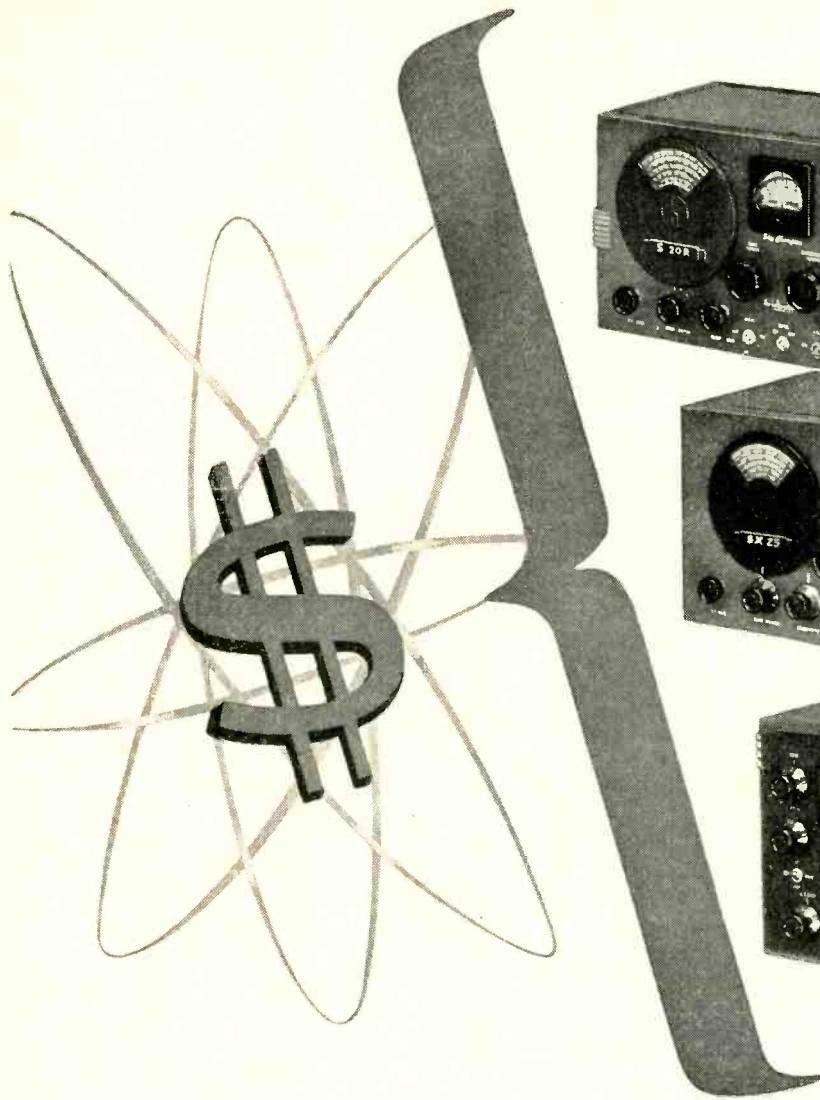
MANUFACTURERS OF

Masco Sound Systems and Accessories

186-194 WEST FOURTH STREET :: NEW YORK 14, N. Y.

Telephone CHelsea 2-7112-3-4





MODEL S-20R



MODEL SX-25



MODEL SX-28A

A Special, **VERY IMPORTANT
SECTION OF THE RADIO MARKET
MUST CONSIDER HALLICRAFTERS**

We mean the amateur market—the thousands and thousands of radio pioneers who know and demand the best. This market is growing—swelled by the rapid strides in communications training brought about by the war. The post war amateur market will be bigger, better than ever—with more than 186,000 amateurs expected to apply for licenses, according to recent FCC testimony by the American Radio Relay League. To this primary market Hallicrafters will be able to offer a line of high frequency receivers and transmitters that will be the most complete ever offered for amateur use.

hallicrafters RADIO



BUY A WAR BOND TODAY!

THE HALLICRAFTERS CO., WORLD'S LARGEST EXCLUSIVE MANUFACTURERS OF
SHORT WAVE RADIO COMMUNICATIONS EQUIPMENT, CHICAGO 16, U. S. A.

COPYRIGHT 1945
THE HALLICRAFTERS CO.

In Trade

[from page 60]

munications executive informed his audience.

"Still, we recognize the need for developing equipment to meet a wider range of application in modern American industry: sound systems which could be with equally good results installed on ship board, in schools and auditoria, theaters, churches, warehouses, factories, garages and show-rooms. Our line of so-called packaged sound systems is the result of a good deal of midnight-oil planning and intensive laboratory research. While we are now readying our line for the mass demand that is sure to come with the release for the WPB-priority plan, the sound systems and equipment described and pictured in our new catalogue, just off the presses, are available now under priorities to industrial plants and hospitals which can qualify. The systems are pre-engineered and are so built as to meet the special requirements of several types of industries. The step-by-step growth of this vital modern tool of industry which saves time and trouble has thus been brought to the threshold of every

industrial plant, hospital, and place of assembly in America. It's up to dealers to get it in the door and put to wider use," Mr. Royle continued.

Mr. Royle was introduced to the dealer audience by Douglas Roesch, of Gough Industries, Inc. Philip G. Gough, president of the distributing firm, and one of the foremost figures in the electronics field in the entire Pacific Coast area, was an interested spectator at the dealer meeting.

Mr. Royle's speech before the Gough Industries' dealer-organization, climaxed a three-week long tour of the Pacific Coast distributors of the company's sound equipment. He made stops at the company's other Pacific Coast distributors, Industrial Electronics, Inc., in Portland, Ore., and the Pacific Wholesale Company of San Francisco, Cal., one of the nation's largest sound equipment distributors. On his trip, Mr. Royle was accompanied by T. C. Thompson, West Coast division manager for the company, and Bond Barney, the company's sound equipment division representative in the key market.

RMA Appoints

Lawrence C. F. Horle, New York radio consulting engineer, has been appointed Chief Engineer of the Radio Manufacturers Association, Engineering Department. This has been announced by Dr. W. R. G. Baker, Director of the Department. In this capacity, Mr. Horle will be responsible for the management of the department, including the RMA Data Bureau, and related activities. Dr. Baker stated that the RMA Board of Directors had authorized such personnel and other changes in the Engineering Department as would be necessary to adequately serve the electronic industry after the war.

New Sound Equipment Catalogs

Concord Radio Corporation, of Chicago and Atlanta, have just published two new folders presenting complete listings of "available now" sound equipment units and sound accessories. Featuring illustrations and detailed descriptions of the complete Concord line of Amplifiers, Intercommunication Systems, Recording Equipment, and Accessories, these folders are up-to-the-minute catalogs of available equip-

[Continued on page 70]

AMPHENOL

ANTENNAS

Promise . . .

New Improvements In F-M and Television Reception

For every improvement the antenna array can bring to future F-M and television reception—look to Amphenol. With a background of wartime experience in special research and engineering for the Armed Forces on dipole broad band reception, Amphenol has amplified its long production experience that began in the early days of radio.

Features will include all-steel construction for supporting parts and hi-strength aluminum dipole and reflector rods.

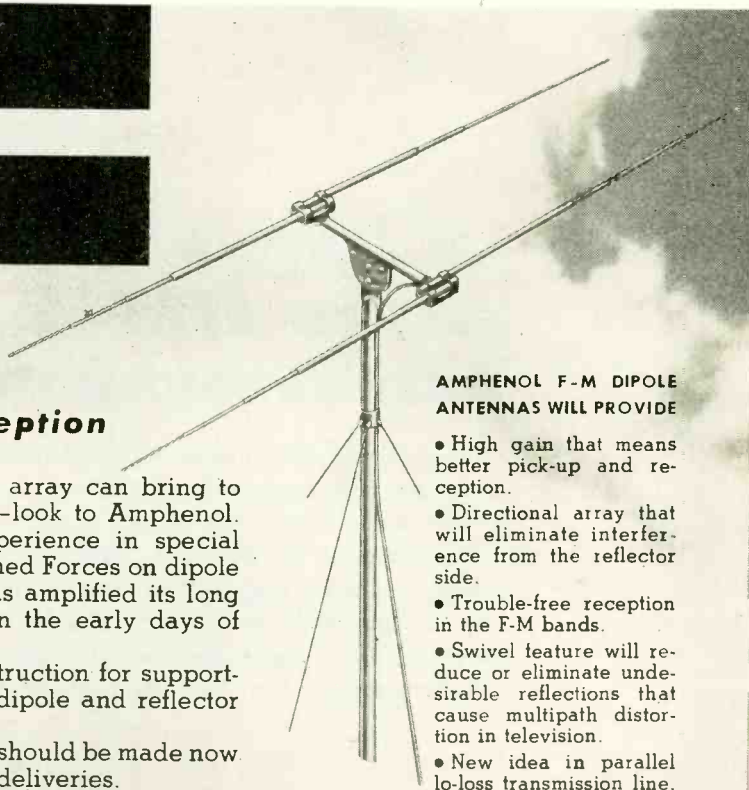
Your commitments should be made now to secure early deliveries.



AMERICAN PHENOLIC CORPORATION

Chicago 50, Illinois • In Canada • Amphenol Limited • Toronto

U. S. F. Cables and Connectors • Conduit • Fittings • Connectors (A-M, U. S. F., British) • Cable Assemblies • Radio Parts • Plastics for Industry



AMPHENOL F-M DIPOLE ANTENNAS WILL PROVIDE

- High gain that means better pick-up and reception.
- Directional array that will eliminate interference from the reflector side.
- Trouble-free reception in the F-M bands.
- Swivel feature will reduce or eliminate undesirable reflections that cause multipath distortion in television.
- New idea in parallel lo-loss transmission line.

What FM Offers

Perfect radio broadcasting is destined to become an actuality in the immediate future now that the Federal Communication Commission has established frequency modulation in the 88 to 106 megacycle band, according to Cyrus T. Read, director of sales engineering for the Hallicrafters Company, Chicago, producers of radio and electronic equipment.

In a booklet, "The New FM Frequencies and What They Offer to You," to be distributed to the public through Hallicrafters' distributors and representatives, Read states that perfected radio broadcasting may come sooner than any of the other scientific miracles promised for the postwar years.

He notes that every ingredient for the achievement of perfect broadcasts is now at hand; complete freedom from static and electrical disturbances of all kinds; absolute fidelity of reproduction with every overtone of the orchestra, every inflection of the singer's voice, recreated in the exact image of the original; and finally, total victory over interference, the scrambling

of programs that most listeners now accept as an inescapable accompaniment to all but the strongest of local stations.

Admittedly, Read states, this perfect broadcasting is not entirely a war-born achievement. Freedom from electrical disturbances, he asserts, became possible with the development of FM, first announced in 1936 by the noted inventor, Edwin H. Armstrong. He relates that fidelity of reproduction has come through the steady improvement in amplifiers and loud speakers and is made usable in radio broadcasting by the assignment of adequate channel width to individual stations.

"The victory over interference, however," he continues, "has only now been won, assured by the decision of the Federal Communications Commission which moves FM into a new band where it can easily fulfill all the promises that have been made for it." The part Hallicrafters has been able to play in this achievement is a matter of company pride, the booklet explains. The company, according to Read, was one of the earliest builders of FM re-

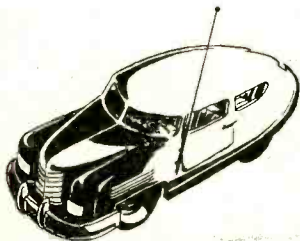
ceivers, a pioneer in the development of practical equipment for the very high and ultra-high frequencies, and the only manufacturer to produce a successful commercially-built receiver covering both the old and new FM bands.

The company also has developed and successfully demonstrated comparatively inexpensive converters that make it possible for FM receivers which do not cover the new band to tune in on the recently established frequencies. It has applied for authorization to manufacture the converters in quantity. To provide a basis for better understanding of the problems involved in establishing the new FM allocations, Read discusses in the booklet the theories of radio transmission and some of the reasons why Hallicrafters considers the revision upward of the FM band logical. He concludes:

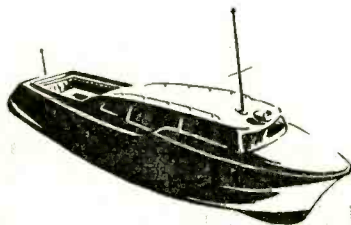
"The manufacturers of FM receivers and transmitters, exercising the ingenuity and teamwork which the radio industry as a whole has so magnificently demonstrated during the war, are preparing to take full advantage of the opportunity which the Commission's action offers and it now appears that broadcast stations and home receivers operating in the new band will be available within a few weeks after the official "go-ahead" is given.



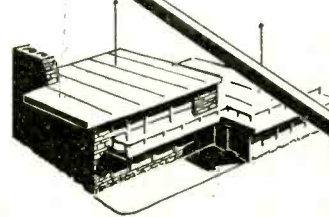
MANUFACTURERS • START TO FINISH



AUTOMOBILES



BOATS



HOMES



HANDY-TALKIE

THE SPEED TESTER

SUPREME MODEL 592

★ 25,000 OHMS PER VOLT



★ PUSH BUTTON OPERATED

- ★ Design proven by over 5 years production
- ★ Dual D.C. Sensitivity—25,000 ohms per volt and 1000 ohms per volt
- ★ Matched resistors of 1% accuracy
- ★ Push button operated—no roaming test leads
- ★ Open face—wide scale 4 1/4" meter. 40 microamperes sensitivity
- ★ 1 Microampere first scale division

SPECIFICATIONS

D.C. MICROAMPERES:
0-70-700 microamperes

D.C. MILLIAMMETER:
0-7-35-140-350 milliamperes

D.C. AMMETER
0-1.4-14 amperes

D.C. VOLTS, 25,000 OHMS PER VOLT:
0-3.5-7-35-140-350-700-1400 volts

D.C. VOLTS, 1000 OHMS PER VOLT:
0-3.5-7-35-140-350-700-1400 volts

A.C. VOLTS, 1000 OHMS PER VOLT:
0-7-35-140-350-700-1400 volts

OUTPUT VOLTMETER:
0-7-35-140-350-700-1400 volts

DECIBEL METER:
0 db to plus 46 db

DMMETER:
0-500-5000-50 000-500,000 OHMS
0-5-50 MEGOHMS

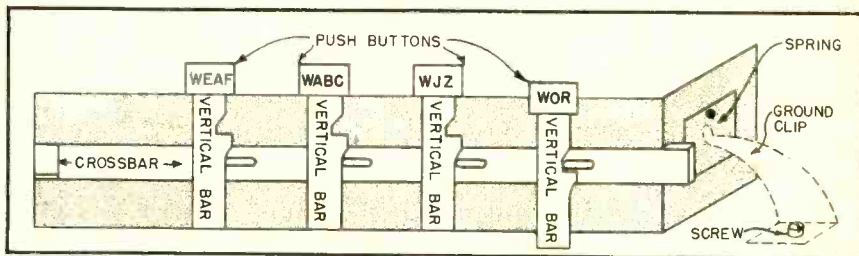
POWER SUPPLY:
Battery Operated

With the above specifications the Supreme Model 592 Speed Tester meets today's requirements for general laboratory use, assembly line tests and inspection, radio and other electronic repair and maintenance.

SUPREME

SUPREME INSTRUMENTS CORP.
Greenwood, Miss., U.S.A.

SHOP NOTES



GE PUSHBUTTON SETS

Restoring pushbutton operation on General Electric radios, such as models GD60, L660, etc.: When pushbuttons will not stay in when depressed, examine the spring on the right side of the cross bar of the pushbutton assembly.

Note that when any button is depressed about half way, a hill or bulge on the bar (vertical) of the pushbutton, forces the crossbar out to the right, and when fully depressed, the little spring forces the crossbar back to its original position and a notch on the vertical pushbutton catches on to the crossbar, thus

holding the pushbutton in.

If the spring has lost its elasticity or is bent out of shape, the crossbar will not spring back into place. To remedy, the speediest method is to install an ordinary ground clip, such as is used with a tube shield, onto the screw that bolts the pushbutton assembly to the chassis, as per diagram. The pressure of the clip upon the spring will insure proper operation.

Mack Kunzman, N. J.

PHILCO MODEL 37-62

High pitched squeal, locals very faint: Replace Condenser #4 in Philco Diagram. This condenser (.05 mfd) connects terminal of antenna coil nearest chassis (or #5 lug on strip) and ground.

C. E. Weigel, Ky.

SUBSTITUTE FOR 25Z6

Maybe this is old stuff, but I never

happened to see it before. Where plates and cathodes are tied together, a 25Z6 can be replaced with a 35Z4 by shunting the filament of 35Z4 with a 200 ohm 10W, resistor.

Spaghetti the leads and solder directly to 35Z4 tube prongs, leaving resistor stick up in air alongside of tube. The extra 10 volts of the 35Z4 will distribute over the string, and help hold down the high line voltages we have nowadays.


Van's Radio, Wash.

WARD

BACK AGAIN... SOON

WARD AERIALS

"WORLD'S FINEST FOR CAR & HOME"



First Choice . . .

OF AMERICA'S AUTO MAKERS

Utmost efficiency, finest quality, precision workmanship and vital war-time developments are four important reasons why Ward Antennas are first choice of America's auto makers today, as they were before the war.

For top performance and dependability, together with maximum profits and customer satisfaction, look to Ward for the world's finest antennas for car and home!

WARD

Antennas

BY VICTORY BONDS

THE WARD PRODUCTS CORPORATION
1523 EAST 45TH STREET - CLEVELAND 3, OHIO

SUBSTITUTE FOR 1LAG

Here is one for your shop notes:

To substitute for the 1LAG, I take the old 1LAG tube and break off the glass. Then take an old eight prong tube (6SK7 metal) remove the base of this tube and clean the prongs so that the loctal pins will fit into the octal prongs. Then by mounting a bantam octal socket on top of the octal base a 1R5 tube works swell.

Ted's Radio Service, Kan.

3Q5 VERSUS 1G4

In sets using a 3Q5, some trouble occurs due to a weak rectifier. If a new rectifier is unavailable, replacing the 3Q5 with a 1A5 or a 1G4 will help. Sometimes the oscillator quits, due to insufficient filament voltage. By substituting a 1A5 or 1G4, the slight increase in filament voltage will allow the oscillator to function properly.

50L6 VERSUS 12SK7

A 12SK7 may be substituted for a 50L6 or 35L6 by tying the plate and screen together and using a ten watt resistor to drop the filament voltage. 150 ohms for replacing a 35L6 and 250 ohms when replacing a 50L6. It will give about the same output as a 3Q5.

6X5 VERSUS 6N7

A 6N7 can be used to replace that 6X5 you could not get. This tube has 2 grids, 2 plates, a cathode and filament. The only change needed is to bridge a jumper from pin 3 to 4. Also a jumper from pin 5 to 6.

75 VERSUS 6F7.

The 75 tube is rather scarce now. Those 6F7's lying around can be used to replace the 75 by using an adapter. Connect plate and screen together. The triode plate and grid act as diodes.

Ed. Christner, Ohio

Capacitors for High-Temperature, High-Voltage Uses

Vitamin Q (trademark registered U. S. Patent Office), a special oil-impregnant pioneered and perfected by the Sprague Electric Company, North Adams, Mass., has resulted in capacitor developments of far-reaching importance for high-temperature, high-voltage applications. Moreover, when used on jobs where high temperature is not a factor, these capacitors result in materially higher ratings for a given size.

Although extremely compact, Sprague Type 25P Capacitors utilizing the Vitamin Q impregnant operate satisfactorily at thousands of volts at ambient temperatures as high as 105° C. Leakage resistance at room temperature is 20,000 megohms -:- microfarads, or at least five times higher than that of previous types.



Adaptol Adapters FIRST

with LOKTAL bases

PLANNED MONTHS AGO: available to YOU now!

Almost 500 types of adapters - 1650 substitutions - each model with its replacement function clearly stated on base. Save re-wiring - utilize slow-moving tubes! Above all, be sure of highest Quality and Precision!

Special types can be made, too . . . consult us

ADAPTOL COMPANY
260R
Utica Ave.
Brooklyn 13, N. Y.

Write for Literature



IS YOUR RADIO TUBE UNAVAILABLE

Get an **ADAPTOL** PERMITS USE OF AVAILABLE TUBES without re-wiring!

TUBES HARD TO GET? UNOBTAINABLE?

Get an **ADAPTOL** USE IT WITH THE TUBE YOU HAVE



The Symbol of Experience

Years of experience and research have enabled HALLDORSON designers and engineers to produce transformers of the highest quality.

Look for the well-known HALLDORSON trademark when ordering transformers. It is your guarantee of high quality backed by long experience. . . . We are developing additional and improved transformers to make our line more complete.

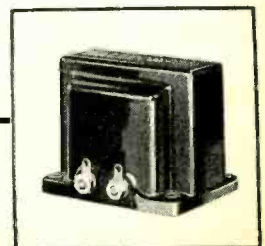
Join the list of alert jobbers who are planning to carry this better line of transformers. **WRITE TODAY.**

THE HALLDORSON COMPANY
since 1913
4500 Ravenswood Avenue • Chicago 40, Illinois

HALLDORSON

Vacuum Sealed

TRANSFORMERS





UNIMETER

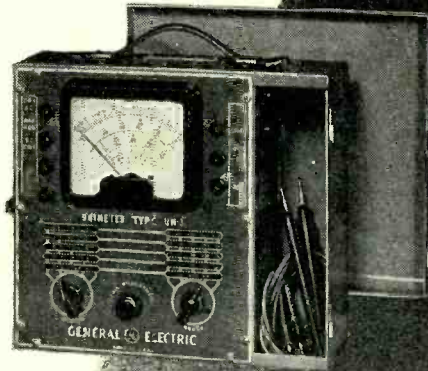
This unit fulfills an extremely important need for general utility portable service equipment. It has wide range coverage for both a-c and d-c measurements of voltage, current measurements on d-c and the popular ranges on resistance.

The UM-3 is designed to clearly indicate all the functions which aid in the prevention of application of high voltages when preparing for current or resistance measurements.

Other G-E units for better servicing include: Tube Checker TC-3, Unimeter UM-4, and Oscilloscope CRO-3A.

For details write: *Electronics Department, Specialty Division, General Electric, Syracuse, New York.*

Electronic Measuring Instruments



GENERAL ELECTRIC UM-3

Distributor News

[from page 58]

Tennessee. Shirley and Onstad, Minot, N. D., for the Minot-Fargo territory. Appliance Distributors, Mt. Vernon, New York, for Westchester and Rockland County territory; will also handle Roper ranges, Bengal ranges. Cowan-Boze Co., Inc., Atlanta, Ga., for Atlanta territory.

STROMBERG-CARLSON

Clifford J. Hunt, manager of radio sales, announces the following distributors:

Midwest - Timmerman Company, Davenport, Iowa; for Iowa, parts of Nebraska, Illinois and South Dakota. The Better Home Products, Inc., for Nashville trading area. Tri-State Supply Company, Chattanooga, Tenn., for sixty-mile trading area in Chattanooga. Appliance Distributors, Inc., Indianapolis, Ind.; will also handle Coolerator refrigerators, Blackstone home laundry. Schiffer Distributing Company, Atlanta, Ga., for Atlanta area.

Bendix Distribution

Completion of the nationwide organization of 62 independent distributors who will market Bendix Aviation Corporation's forthcoming line of AM and FM radios and radio-phonograph combinations is announced. "A total capitalization of more than \$25,000,000 is represented by these distributors in 62 of the nation's major trading areas," stated Leonard C. Truesdell, general sales manager for radio and television of the Bendix radio division. "We have carefully planned our distributor organization so that each territory provides a profitable operation. We have planned our distributor organization so that each territory provides a profitable operation. We have limited our distributor territories to 62 to avoid assignments of territories that are too small to provide fair profits to distributors. Our assignment of distributors and territories have been based upon modern, thoroughly tested marketing methods to assure a profitable operation for each territory."

Some of the leading Bendix Radio distributors are: D'Elia Electric Company, Bridgeport, Conn.; R. F. Trant, Inc., Norfolk, Va.; Biehl's Inc., Pottsville, Pa.; The Sampson Co., Chicago, Ill.; Stratton-Warren Hardware Co., Memphis, Tenn.; E. B. Latham Co., Newark, N. J.; Kelley-Howe Thomp-

[Continued on page 68]

SHOCK-PROOF
BATTLE-TESTED
DURABLE
DEPENDABLE

American Capacitors meet the most exacting precision requirements because they are fabricated by experienced craftsmen. Electrolytic and Paper Capacitors, incorporating new plastic designs, cover all standard capacitance values and working voltages.

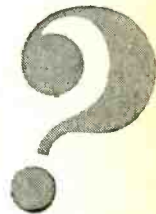
"There is an Amcon for every size and purpose"

AMERICAN CONDENSER COMPANY
4410 RAVENSWOOD AVENUE • CHICAGO 40, ILLINOIS

what are
YOU
doing



to combat inflation



No need to warn you, Mr. Retailer! You know what inflation can do to your business—large or small! You sell War Bonds over the counter to ward off its dangers—and help pay for the war yet to be won.

Here's how you can sell more Bonds through your employees:

1. Have a Payroll Savings Plan	
2. Have 90% employee participation	
3. Get 10% of your payroll going into Bonds	

Here's how to swing into action with your Payroll Savings Plan!

Be sure every man and woman in your store knows his and her personal quota. Arrange for personal solicitation of every employee. Speed the Bond selling pace with rallies, score boards, etc. Keep at it!

- Remember, no store is too small — or too

large — to have a successful Payroll Savings Plan. Until peacetime prosperity for America is assured, it's up to *all* stores to combat inflation *behind* as well as over the counter. Get into the fight against inflation today with your Payroll Savings Plan!

The Treasury Department acknowledges with appreciation the publication of this message by

RADIO SERVICE DEALER

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and War Advertising Council

Distributor News

[from page 66]

son Co., Duluth, Minn.; and Graybar Electric Company which is handling distribution of this line in several territories.

Walter Becomes Distributor

John W. Walter, formerly Eastern sales manager of the Apex Electrical Manufacturing Company of Cleveland, Ohio, announced the formation of his own distributing organization, the John W. Walter Company. The new firm will make its headquarters temporarily in Mr. Walter's present location at 37-08 Northern Boulevard, L.I.C., N. Y.

At the same time he made known that the new company has been named New York, New Jersey and Western Connecticut distributor for the "Duo-Disc" line of washing machines made by the Automatic Washer Company of Newton, Iowa; Stewart Warner FM and Television radio sets; Peerless space and fireplace heaters as well as the Empire line of ironers, traffic appliances and vacuum cleaners.

Mr. Walter will continue his home

laundry equipment servicing operation as well as the distribution of parts, including Goodyear wringer rolls and Oberwegner tools at the above address. Distribution of merchandise will be from a Manhattan address being selected.

Hoffman Branch

Hoffman Radio Corp., Los Angeles, in September will open a San Francisco branch, according to announcement from R. J. McNeely, sales manager. It will be located in the Merchandise Mart with offices and display room. Warehousing facilities are being set up in the wholesale district. Walter Epstein, the past 15 years radio manager for The Emporium, and one of the best known and informed radio men in the west, will head the new office. Sales area will cover the coastline from Palo Alto north to the Oregon border, and the counties of Alameda and San Leandro. Outside salesmen will contact the trade in this territory continuously.

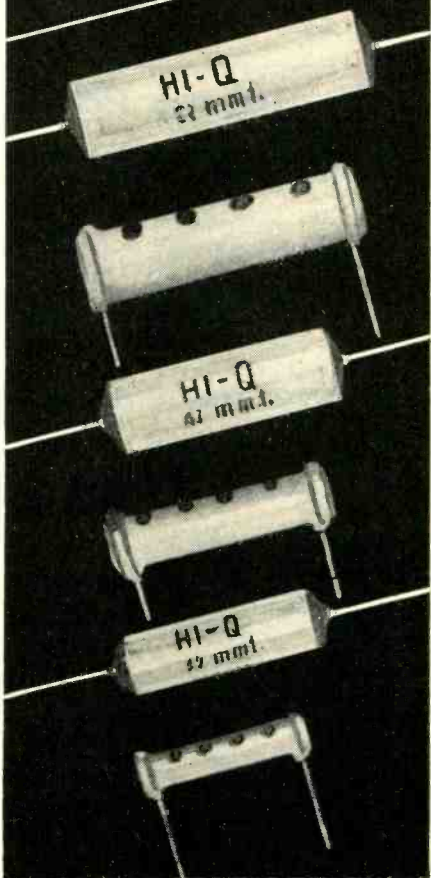
Vehicle Radio Interference

Tests designed to eliminate interference caused by automotive ignition systems in television and FM broadcasting and other high frequency communications have been conducted and a report is being prepared for circulation. The tests were conducted by a sub-committee of the Committee on Vehicle Radio Interference of the RMA and the Society of Automotive Engineers at the Delco Remy Radio Noise Suppression Laboratory just outside of Anderson, Ind.

The sub-committee members are Phil Kent of Chrysler Corporation, chairman; Jack Little of Chevrolet, secretary; Les Beltz of Packard; Fred Stromatt of Willys-Overland; K. L. Swarthout of Ford; Earl Wager of Studebaker; Herman Hartzell of Delco Remy; Bill Schneider of Auto-Lite; A. V. Nicol of Philco; and M. E. Piper of Colonial Radio Corp.

About twenty additional engineers were present representing the automobile, truck and radio industries, the Associated Police Communications Officers and the Signal Corps. Tests were conducted on several makes of automobiles and trucks, to determine how much suppression each vehicle would require to reduce radio interference to a tolerable value.

HI-Q
A NEW NAME
FOR
HIGH QUALITY
CERAMIC
CAPACITORS



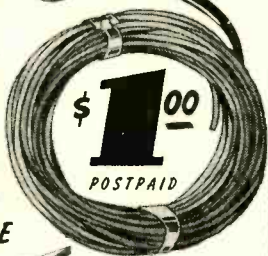
**ELECTRICAL
REACTANCE
CORPORATION
FRANKLINVILLE, N. Y.**

RADIO SERVICE DEALER

LOOK! 250-FT. COIL

Wire

Stranded
No. 20
Vinylite
Insulated



AVAILABLE
from



Radio
Warehouse

Flexible, waterproof and oilproof Wire. Use it for hookup, ground, lead-in, etc. Insulation strips off easily. Our price is only a fraction of the actual value of this high quality Wire, obtained through a manufacturer's cancellation.

ACT NOW!

(Send for our Free Monthly Catalog)



Olson Radio Warehouse

73-B MILL STREET, AKRON, OHIO

Please send me _____ 250-ft. Coils of No. 20 Wire
at \$1 per Coil. I enclose \$ _____

NAME _____

ADDRESS _____

Signal Generator

[from page 49]

speakers, a beat note will be heard when the two signals approach the same frequency. As one signal is varied this beat note will reach a point of zero frequency and a further variation in the same direction will cause the beat note to again increase in frequency. At the point where the beat note disappears the two signals are at the same frequency. Care must be taken to be sure the fundamental of one signal is not beating with a harmonic of the other signal unless it is so desired. If a standard signal generator is not available the oscillator can be calibrated by checking several points of known frequency. This, too, can be done by the use of an oscilloscope of two speakers. The most common point for calibration is the 60 cycle line frequency. When using an oscilloscope the 120 and 180 cycle points can be checked by means of Lissajou figures. With the speaker system it may be possible to tune the oscillator to the second and possibly the third harmonic of the 60 cycle line frequency. It is also possible to pick off 120 cycle voltage from the cathode of the 7Y4 rectifier tube. This should contain enough distortion to calibrate the 240 and 360 cycle points.

For the higher frequencies the standard 440 and 4000 cycle signals from W.W.V. can be picked up with a short-wave receiver on 2.5, 5, 10, or 15 megacycles. The speaker on the receiver can be used to beat with the one on the oscillator, or the audio output of the receiver can be fed into the horizontal amplifier of an oscilloscope. In the latter case it would be possible to calibrate at 880 and 1320 cycles. If a pitch pipe of known frequency is handy, the output from the oscillator speaker can be beat against it establishing another known point. In this case it might be best to have a second person blowing the pitch pipe so the operator can determine the beats more clearly. The resistance $(R_2 + R_3) = (R_4 + R_5)$ can be measured at known frequency points and by use of the

equation $f = \frac{1}{2\pi RC}$. The value of

(C) can be found accurately and used back in the equation with any desired frequency to find the correct value of (R) at that frequency. By again measuring $(R_2 + R_3) = (R_4 + R_5)$ and making this combination equal

[Continued on page 72]

SPEED UP REPAIRS WITH THESE G-C AIDS!



FREE
STEEL
CABINET

G-C Dial Belt Kits

Exact replacement woven fabric belts. Easy to install — no stretching — no adjustments — a perfect fit every time. Kits come with 25, 50, 100, 200 or 300 belts.



G-C Wire Stripper
Strips insulation from all types of wire. Does the job instantly, easily, perfectly. An ideal tool for radio men, electricians and



G-C Ne-O-Lite

New improved design. Useful hundreds of ways. Tests AC and DC lines, DC Polarity, fuses, etc. You can't afford to be without this handy all-purpose trouble shooter.

Immediate delivery on all G-C Products

Order From Your Radio Parts Jobber
ALWAYS ASK FOR G-C PRODUCTS



GENERAL CEMENT MFG. CO.
ROCKFORD, ILLINOIS

SUBSCRIPTIONS TO "RSD" ARE BEING ACCEPTED AGAIN

USE COUPON PRINTED BELOW

12 ISSUES \$2

24 ISSUES \$3

In the U. S. A. & Possessions —
In Canada & Foreign Countries \$3 per yr.

To the hundreds of new subscribers who have been on our "waiting list" for so long a time, thanks for your patience.

To our old subscribers! If you have a friend or business associate desiring to subscribe to RADIO SERVICE DEALER, have them place their order with us at once so it may be honored as quickly as possible, in the order received.

When a subscription of "RSD" is about to expire, notification is given two months in advance. If you receive such notice please act promptly so you will not miss any issues.



COWAN PUBLISHING CORP.

342 Madison Ave., New York 17, N. Y.

Gentlemen: Please send the next issues of RADIO SERVICE DEALER. Our remittance in the sum of \$ is enclosed.

Name
Address
City Zone State
Firm Employed By:
Position or Title

In Trade

[from page 62]

ment covering every requirement.

In *Amplifiers and Boosters*, the presentation covers models ranging in output ratings of 17 watts to 75 watts A. C.—includes 6-volt units with and without built-in phonograph. *Inter-communication Systems* covering all requirements are also listed—master and substation combinations for every purpose from 2 to 100 stations—and including push button control, universal operation, “busy signal” and “call waiting light” features.

The presentation of *Recording Equipment* lists professional-type units for microphone recording, radio recording, transcription and public address. A separate listing offers a complete line of sound accessories covering

microphones, speakers, and all essential needs. Copies of these important listings may be had without cost or obligation, by writing to either of the company's offices—901 W. Jackson Boulevard, Chicago 7, Illinois, or 265 Peachtree Street, Atlanta 3, Georgia.

G-E Staff Changes

Announcement has been made by A. L. Scaife, advertising and sales promotion division manager of the General Electric Company's Appliance and Merchandise Department, that J. W. Dunbar, former head of product service and sales promotion advertising, is now in charge of advertising and sales promotion of all major appliances. Responsible for all Appliance and Merchandise Department publicity is Stanley C. Schuler, who has moved up to Bridgeport from the New York office, where he was editor of the *G-E Monogram* and assistant special publicity representative.

New Capacitor Catalog

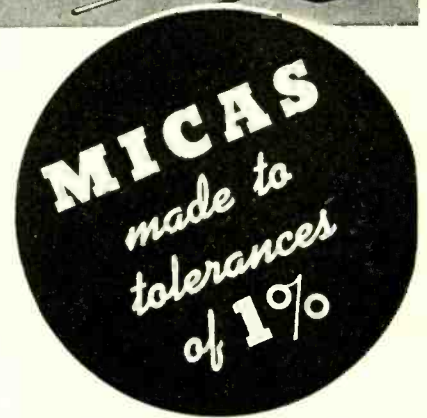
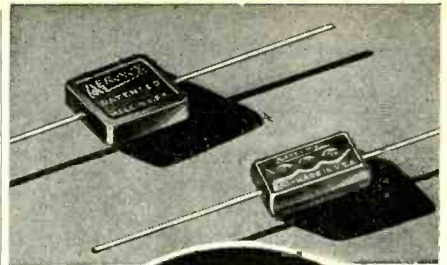
A new 56-page, profusely illustrated Paper Dielectric catalog just issued by the Sprague Electric Company, North Adams, Mass., has been designed to serve as a complete guide to the selection of these popular components for practically every industrial use.

Included in the catalog are full details and dimensions for Sprague cardboard and metal tubular types, bath-tub types, large and small rectangular units, cylindrical container units, hermetically sealed types, ignition capacitors, screw-mounted types, radio interference suppression filters, donut-shaped capacitors, 3-terminal network types, fluorescent lamp capacitors, paper dielectric capacitors for a-c applications, etc.

A copy of the new catalog will gladly be sent on request to the company. Ask for Catalog 20.

Test Equipment Bulletin

The inherent accuracy and reliability of accepted laboratory circuits and techniques reduced to simplest terms for lay operation in everyday industry characterizes the variety of instruments featured in the “Electrical Test Instruments” bulletin released by Industrial Instruments, Inc., 17 Pollock Ave., Jersey City, N. J. Among the instruments featured are the direct-indicating comparison bridge, capacity and resistance limit bridges, resistance



● Aerovox silvered mica capacitors are designed for the more critical applications. Precise capacitance values and extreme stability. Silvered coating is applied to mica and fired at elevated temperatures. Units encased in molded XM low-loss red bakelite for silvered-mica identification. Standard tolerance of plus/minus 5%. Also in 3, 2 and 1% tolerance.

Now limited strictly to the war effort, these precision micas will again be generally available for post-war radio-electronic assemblies. Likewise the many other types of micas comprising the extensive Aerovox mica capacitor line.

Ask Our Jobber . . .

Inquire about currently available Aerovox capacitor types for wartime servicing. Ask for latest catalog. Or write us direct.

AEROVOX
Capacitors
INDIVIDUALLY TESTED

AEROVOX CORP., NEW BEDFORD, MASS., U. S. A.
In Canada: AEROVOX CANADA LTD., HAMILTON, ONT.
Export: 13 E. 40 St., New York 16, N. Y. · Cable: 'ARLAB'

Outstandingly successful American firm located in Mexico City requires competent radio technician. Must speak Spanish fluently and have satisfactory background of radio service experience.

H. Steele Y Cia. S. A.
Balderas 27 Mexico, D. F.

RADOLEK

Radio-Electronic Service Parts

Large stocks assure the finest and most complete selections of all available items at lowest prevailing prices. Thousands of active buyers depend on us for their entire Radio repair and replacement requirements. Because we understand service problems, every order is expedited for delivery in double quick time. Everything we do is planned for convenience and satisfaction to our customers. You will find it profitable to make Radolek your buying headquarters.

FREE BUYING GUIDES

Because of existing conditions we keep our customers right up to the minute on available merchandise by releasing supplements frequently instead of sending our regular Big Profit Guide once a year. Send the coupon now to get these Free Buying Guide Supplements as they are issued.

FREE!

FAST SERVICE!

RADOLEK CO., Dept. R-106
601 W. Randolph St., Chicago 6, Ill.

Please send FREE Buying Guide Supplements

NAME _____
ADDRESS _____

ORDER FROM RADOLEK

NEW!
4-in-1
Job Card

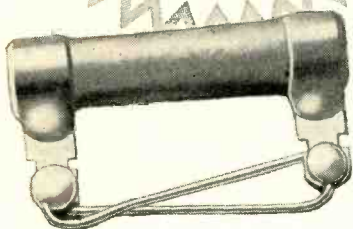
Designed for Service Dealers

Provides: 1. Radio or Appliance Tag;
2. Customer Claim Check;
3. Guarantee;
4. 3x5 Filing Card.

SAMPLE AND PRICES ON REQUEST

Radio Press MORGANTOWN WEST VIRGINIA

It's a
GREENOHM!



★ And that means a lot. Those green-colored inorganic-cement-coated Clarostat power resistors are now found in radio-electronic assemblies that are built to last. These resistors positively "stay put". They are brutes for punishment. Standard 10 and 20 watts fixed resistors (as here shown) in 1-50,000 and 1-100,000 ohms, respectively. Also standard adjustable resistors, 25 to 200 watts, in 1-100,000 ohms, with brackets. Remember Greenohms—for better initial equipment or for better maintenance jobs.



Ask your jobber for Clarostat Greenohms. Try them—and draw your own conclusions. Ask also for the Clarostat Interim Line of essential wartime resistors and controls. Or write us direct.



CLAROSTAT MFG. CO., Inc. • 285-7 N. 6th St., Brooklyn, N. Y.

YOUR NEW FREE CATALOG IS READY FOR YOU!

Radionic's Catalog No. 26 lists hard-to-get radio parts! • Helps you fill your radio and electronic needs. • All parts are available for immediate shipment • All are highest quality. • All are exceptional values.

SEND TODAY FOR YOUR FREE COPY TO RSD 9

RADIONIC EQUIPMENT CO.,
"CHANCELLOR" PRODUCTS
170 NASSAU STREET, NEW YORK 7, N. Y.

and capacitance decades, Wheatstone bridge, voltage breakdown testers and test fixtures, Kelvin bridge, megohm

bridge and megohm meter, and conductivity apparatus. Copy may be had on request.

RADIOTELEPHONE SYSTEM

A state-wide, two-way FM radiotelephone system is to be installed in South Dakota, now that permits have been granted by Federal authorities. It will include the use of several new innovations in two-way radio to assure blanket coverage for the entire State. All cars of the County Sheriffs, Deputy Sheriffs, and City Policemen are to be equipped with two-way Motorola FM radiotelephone units operating on the same frequencies as the State. When completed, this will give South Dakota the largest and most comprehensive three-way radiotelephone system in the world. All three law enforcement agencies will be united together into a cohesive, workable, state-wide communications system.

The initial installation will consist of six 250-watt Motorola Central Control Stations, with steel antenna towers 200 and 400 feet high, strategically located throughout the State. 110 vehicles of the State Highway Department and State Police are to be equipped with mobile Motorola two-way transmitter and receiver units.

In the Black Hills, where the mountains would ordinarily interfere with two-way radio communication between the mobile units and the central stations, two mountain automatic radio repeater stations will be installed, one at Deadwood and one at Custer. These stations will be located at high points of vantage to give maximum radio range between the mobile and the fixed units.

These mountain top stations, however, cannot be reached by the usual land line telephone wires so a two-way radio control circuit will be established at Rapid City to act as the control point between Rapid City and the mountain stations. The radio dispatcher at Rapid City will broadcast his message on a wave length of 118.55 megacycles which will be picked up by the receivers on the mountain top stations where the wave length will be changed to a lower frequency (39,180 kc) and thence broadcast to the mobile units.

Radio messages sent from the cruising automobiles will in turn be picked up by the receivers on the mountain top stations, thence broadcast on the 118 megacycle band and

picked up by the dispatcher in Rapid City. In all, four automatic mountain repeater stations of this type will be installed to insure complete two-way radio coverage in the mountainous areas.

Provision is made for three-way radio communication in case of emergencies. All central stations are to transmit on a frequency of 39,100 kilocycles and the cars on 39,180 kilocycles. The cars, however, will be provided with two easily interchangeable tuning crystals, one on each wave length, so that should any necessity arise the crystals may be changed and three-way radio, or car to car operation, instantly obtained. The equipment to be installed is similar to the Motorola F-M two-way radiotelephone systems now operating in over 1000 communities and in 34 State Police Systems throughout the United States, the Canal Zone and Hawaii.

*For the Finest
in
Sound Equipment
Watch ...*

NEWCOMB

... the sound of quality

Announcements of special interest to discriminating buyers of sound equipment may be expected in the near future. Send us your address to receive these mailings as they become available.

Newcomb

AUDIO PRODUCTS CO.
Manufacturers Since 1938
2815 So. Hill Street, Dept. D
Los Angeles 7, California

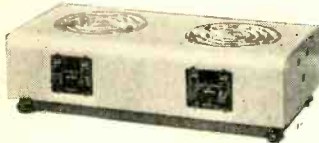
Surplus

Communication and electronic equipment, valued at \$44,282,000, constitute the fourth largest class of material surplus held by the RFC.

• Ted McElroy
 World's Largest Manufacturer of
 Wireless Telegraphic Apparatus
 COMPLETE CENTRAL OFFICE EQUIPMENT
McElroy Manufacturing Corp.
 82 Brookline Avenue • Boston, Massachusetts

NEW ELECTRIC STOVES AVAILABLE NOW!

2 burner, 3 heat stove, can be adjusted to low, medium, and high. Attractive white finish. In lots of 3 \$9.70 each
 lots of 12 \$9.50 each



Single burner electric stove with approved cord and plug, nicely finished in black metal. Packed 8 to a carton.



\$2.30 each
 Lots of 16 \$2.25 each

Join our customer list today
 2% discount for payment with order. Otherwise shipped C.O.D., net. Save C.O.D. charges, pay in advance less 2%.

SHEFFIELD RADIO & APPLIANCE CO.
 915 Belmont Avenue Chicago 14, Illinois

Ad Index

Adaptol Company	65	Noblitt-Sparks Industries, Inc.	6
Agency: Hart Lehman, Advertising		Agency: Sidener & Van Riper	
Aerovox Corporation	70	Olson Radio Warehouse	68
Agency: Austin C. Lescarboursa & Staff		Agency: Jessop Advertising Co.	
American Condenser Co.	66	Racon Electric Co.	14
Agency: Michael F. Mayger		Agency: Leon Allen Advertising	
American Phenolic Corp.	62	Radiart Corporation	19
Agency: Evans Associates, Inc.		Agency: Kenneth H. Kalpien, Adv.	
Burgess Battery Co.	22	Radio Corporation of America	4, 5, 15
Agency: Howard H. Monk & Associates		Agency: Kenyon & Eckhardt, Inc.	
Burnstein-Applebee Co.	72	Radio Press	70
Agency: Frank E. Whalen Co.		Radio Wire Television	3
Centralab	16	Agency: Diamond Seidman Company	
Agency: Gustav Marx Adv. Agency		Radionic Equipment Company	71
Clorostat Mfg. Company	71	Agency: Hirsch-Garfield, Inc.	
Agency: Austin C. Lescarboursa & Staff		Radolek Company	70
Concord Radio Corp.	24	Agency: Turher Advertising Agency	
Agency: E. H. Brown Adv.		Raytheon Mfg. Corporation	4th Cover
Eastern Amplifier Corp.	57	Agency: Burton Browne Advertising	
Agency: Roberts & Reimers, Inc.		Rider, John F.	56
Electrical Reactance Corp.	68	Agency: Lansford F. King Adv.	
Agency: Scheel Advertising Agency		Sheffield Radio Co.	72
Electronic Laboratories, Inc.	13	Agency: Sander Rodkin Adv. Agency	
Agency: Burton Browne Advertising		Simpson Electric Co.	18
Fawcett Publications, Inc.	25	Agency: Kreicker & Meloan, Inc.	
Agency: L. E. McGivena & Co., Inc.		Simpson Mfg. Co., Mark	60
Galvin Mfg. Corporation	9	Agency: Edward Hamburger Adv. Co.	
Agency: Gourfain-Cobb Adv. Agency		Snyder Manufacturing Co.	63
General Cement Mfg. Co.	69	Agency: E. L. Brown Advertising	
Agency: Turner Advertising Agency		Sparks-Withington Co., The	1
General Electric Co.	59, 66	Agency: Brooke, Smith, French & Dor-	
Agency: Maxon, Inc.		rance, Inc.	
Haldorson Company, The	65	Sprague Products Co.	10, 55
Agency: Sander Rodkin Adv. Agency		Agency: The Harry P. Bridge Co.	
Hallcrafters Company, The 3rd Cover,	61	Standard Transformer Corp.	22
Agency: Burton Browne Advertising		Agency: Burnet-Kuhn Adv. Co.	
Hytron Corporation	11	Steele, H., Y Cia. S.A.	70
Agency: Henry A. Loudon, Adv.		Stromberg-Carlson Co.	17
Ken-Rad	12	Agency: McCann-Erickson, Inc.	
Agency: Maxon, Inc.		Supreme Instruments Corp.	64
Mallory & Co., Inc., P. R. 2nd Cover,	28	Agency: O'Callaghan Adv. Agency, Inc.	
Agency: Aitkin-Kynett		Sylvania Electric Products, Inc.	8
Marion Electrical Instrument Co.	21	Agency: Newell-Eminett Co.	
Agency: Shappe-Wilkes, Inc.		Triplett Electrical Instrument Co.	58
McElroy Mfg. Corp.	72	Agency: Western Advertising Agency	
Agency: Shappe-Wilkes, Inc.		U. S. Treasury	67
Murray Hill Books, Inc.	27	Ward Products Corp.	64
Agency: The Harry P. Bridge Co.		Agency: Burton Browne Adv.	
National Union Radio Corp.	23	Wholesale Radio Laboratories	26
Agency: Hutchins Adv. Company		Agency: Pfeiffer Advertising Agency	
Newcomb Audio Products Co.	71		
Agency: Gail Hall Advertising			

Signal Generator

(from page 69)

to the desired value of (R), the intermediate points can be fixed quite accurately. In this manner the oscillator can be calibrated fairly accurately. It must be remembered that a change in the negative feedback potentiometer (R₆) will cause a slight shift in frequency, so that the calibration of the oscillator should be done with the harmonic control set at one known position. Using an oscilloscope with good amplifiers and with a good sine wave applied to the horizontal plates, it is possible to adjust the harmonic control (for a circular pattern on the screen) so that the output wave will have less than five percent distortion. The best wave shape occurs when the negative feedback is such as to just allow oscillation with stable operation.

This circuit may be elaborated or changed in many ways. The output of the oscillator (as shown) is sufficient to drive a pair of earphones. If more

power is desired a power amplifier tube can be installed to isolate the oscillator from the load. Reducing or shorting R₂ and R₅ will increase the upper frequency limit if such signals are needed.

This happens, however, at the expense of sensitivity in selecting frequencies. Inversely, if greater sensitivity is desired with less band width, the resistors R₂ and R₅ can be increased thus lowering the upper frequency limit.

The power supply should be fairly well isolated from the oscillator to prevent it from "locking in" with the 60 cycle line frequency. This is true also for any amplifier tubes which might be added since undesirable regeneration might occur. The power pack is of the conventional design using a 7Y4 full wave rectifier. The output voltage is approximately 250 volts.

FREE
 TO
RADIO MEN

COLOR CODE and OHMS LAW CALCULATOR
 Burstein-Applebee of Kansas City offers you this great convenience FREE. Easy to work. Solves many problems in a jiffy. FREE to radio men, electronic engineers and others in the business. Attach coupon to your letterhead.

MAIL COUPON NOW

BURSTEIN-APPLEBEE CO.
 1012 MCGEE, KANSAS CITY 6, MO.
 Send me FREE Color Code and Ohms Law Calculator along with latest catalog.

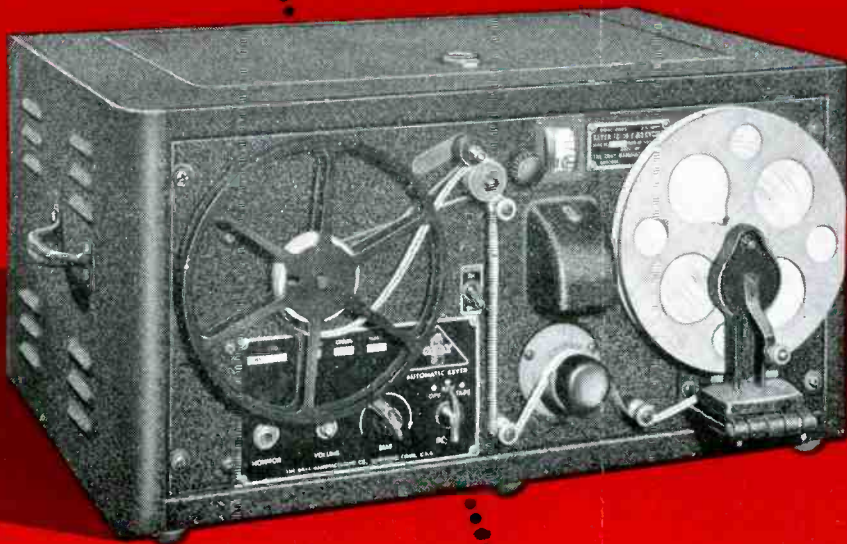
I am _____
 STATE CONNECTION IN INDUSTRY

NAME _____

ADDRESS _____

TOWN _____ STATE _____

JUST ONE



JUST ONE of numerous government radio and electronic items now available through the Hallicrafters Co., Chicago, agent for Reconstruction Finance Corporation.

This is a Keyer TG-10-F, an automatic unit for providing code practice signals from inked tape recordings. Excellent for group instruction, sufficient power to operate up to 300 pairs of head phones. Can be adapted as amplifier of 10 to 15 watts output for use with crystal mike or phono pick up. Completely checked and reconditioned by Hallicrafters engineers. Send coupon for further details and lists of other available items.

THESE VALUABLE ITEMS *Available Now*

Or Very Soon. Write, wire or phone for further information

• head phones • test equipment • component parts • marine transmitters and receivers • code practice equipment • sound detecting equipment • vehicular operation police and command sets • radio beacons and airborne landing equipment

hallicrafters RADIO

THE HALLICRAFTERS CO., AGENT OF RFC UNDER CONTRACT SIA-3-24
WORLD'S LARGEST EXCLUSIVE MANUFACTURERS OF
SHORT WAVE RADIO COMMUNICATIONS EQUIPMENT

COPYRIGHT 1945 THE HALLICRAFTERS CO.

CLIP THIS COUPON NOW

RFC DEPARTMENT 105, HALLICRAFTERS
5025 West 65th Street • Chicago 38 Illinois

- Send further details and price on Keyer TG-10-F
 Send listings of other available items

Especially interested in.....

NAME.....

ADDRESS.....

CITY..... ZONE.....

STATE.....

To Save Life

RAYTHEON TUBES ARE USED IN NEW ELECTRONIC STETHOSCOPE

The conventional "acoustic stethoscope," used by doctors since the horse-and-buggy days, now gives way to a revolutionary electronic stethoscope called the "Stethetron."

Human lives are saved by making diagnosis easier and more accurate with the "Stethetron" made by The Maico Company, Inc. Of particular interest to you is that miniature Raytheon High Fidelity Tubes are used in this remarkable device because of their complete dependability and precision performance.

This is just one more example of the superiority of Raytheon Tubes—the line that you should feature to give your customers the best possible service.

Feature Raytheon Tubes now—for greater profits—and watch for the Raytheon merchandising program designed especially for established radio service dealers who want to lead the field in postwar volume in their communities.

Increased turnover and profits, plus easier stock control, are benefits which you may enjoy as a result of the Raytheon standardized tube type program, which is part of our continued planning for the future.

Raytheon Manufacturing Company

RADIO RECEIVING TUBE DIVISION

NEWTON, MASSACHUSETTS • LOS ANGELES • NEW YORK • CHICAGO • ATLANTA



RAYTHEON

Radio Tubes


ALL FOUR DIVISIONS HAVE
BEEN AWARDED ARMY-NAVY
"E" WITH STARS

*Devoted to Research
and the Manufacture of Tubes for the New Era of Electronics*

Listen to
"MEET YOUR NAVY"
AMERICAN BROADCASTING CO.
Every Monday Night
Coast to Coast
181 Stations