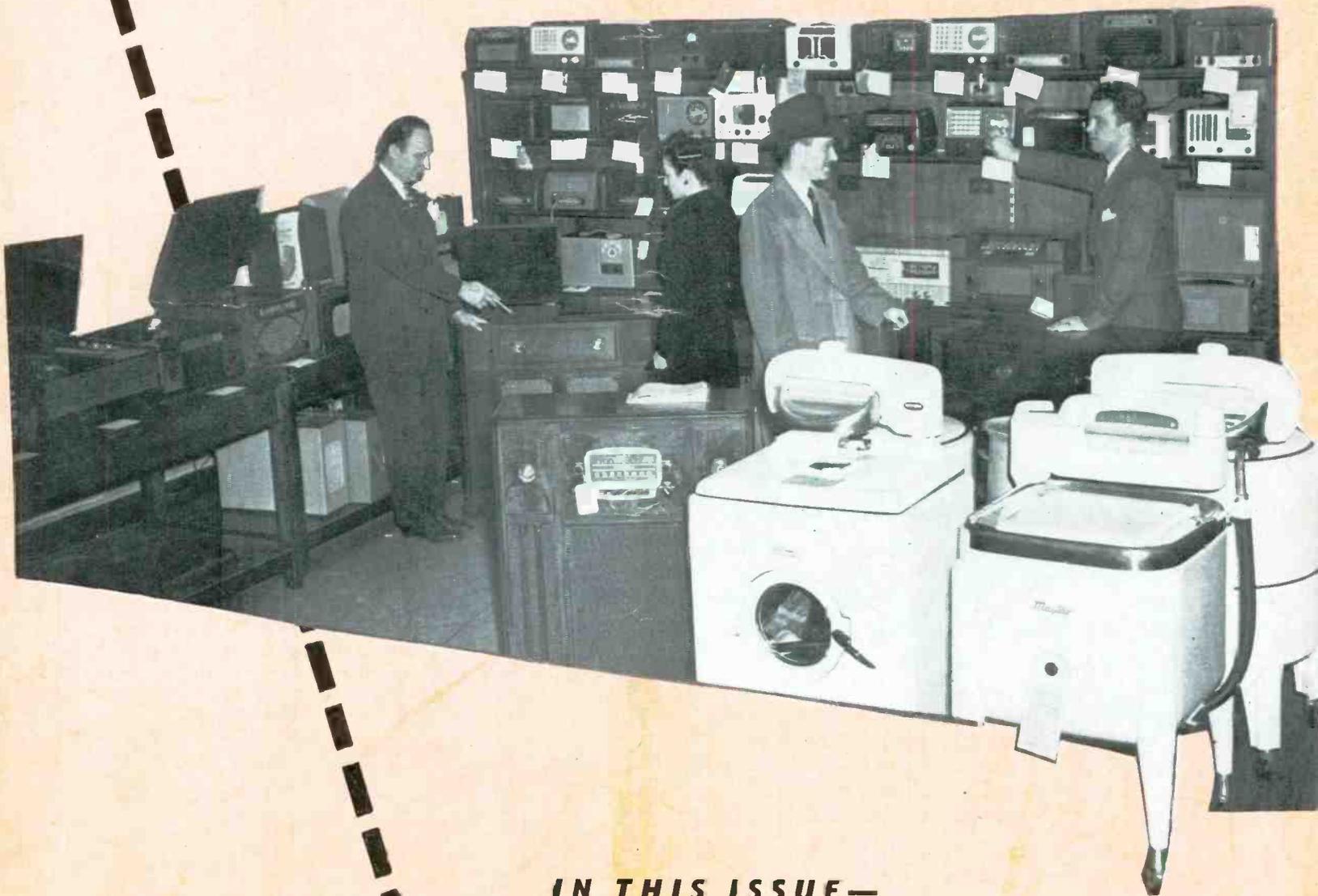


# radio service dealer



**MARCH  
1946**

**IN THIS ISSUE—**

**FRONTS BUILD CUSTOMER TRAFFIC**

**DISPLAYS SELL MORE RECORDS**

**OSCILLATORS, CONVERTERS & MIXERS**

**TEST EQUIPMENT DATA**



**A PORTABLE**

**STEAM HEATING "PLANT"**

*For Summer Cottages*



**Fan-Circulated Steam Heat On Chilly Days**

*F*IFTEEN advertisements in *eight\** important national magazines will bring the cheery news to your customers . . . that here, at last, is a heater that gives an *abundance* of comforting steam heat on those chilly, damp days in the country.

Real steam heat in minutes . . . fan-circulated evenly and gently *throughout* the room, a gentle flow of warm air floor to ceiling . . . not merely "fireplace" heat that toasts one side. Safe, too, for kiddies and pets. Luggage light, Wittie Heater, goes easily in a car . . . comes home again to give winter comfort.

Profit by the immediate and winter-long demand for this outstanding heater. Write today for details.

*\*In Cosmopolitan, Better Homes and Gardens, House and Garden, Field & Stream, Sports Afield, Outdoor Life, Popular Mechanics and Popular Science.*

*SPECIFICATIONS: Fan circulates 90 cubic feet of steam heat per minute; "Econo-Miser" Control turns fan and heat on-off intermittently, saves current; weighs only 32 lbs.; no exposed coils, and smooth-rounded cabinet never gets hot; baked Hammerloid finish; 1000 Watts, 110-120 volts AC only.*



Tube prospects will buy  
where they see this sign



**RADIO TUBES**



...because the radio-owning public is  
**PRE-SOLD ON G-E PRODUCTS!**



IT'S good news to passersby, your tube window-sign with the G-E monogram—famous symbol of quality! The men and women in your neighborhood value highly their General Electric radios, lamps, irons, refrigerators, and other home appliances. For years the G-E monogram has been their sign of *proved superior performance*. And now a great national advertising campaign is telling the public about G-E electronic products

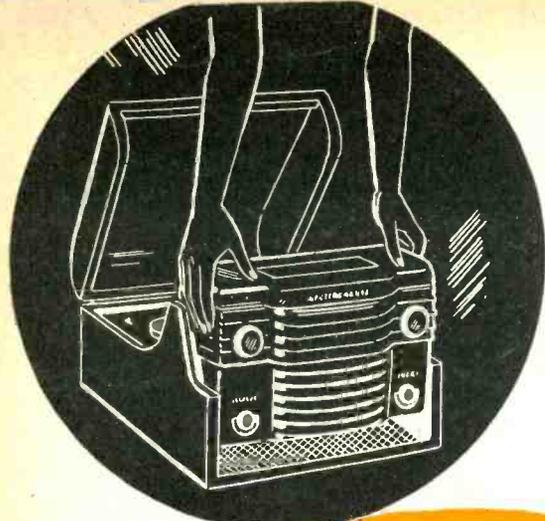
—appearing in magazines with a circulation of 30,000,000!

Your market is all the more eager to buy from you. *Of course you'll make money handling G-E radio tubes!* Ask for information about tube selling rights. *Electronics Department, General Electric Company, Schenectady 5, New York.*

*Write for G.E.'s "Sales Aids" Folder ETR-12, describing advertising and sales helps that are available to tube dealers seeking greater volume.*

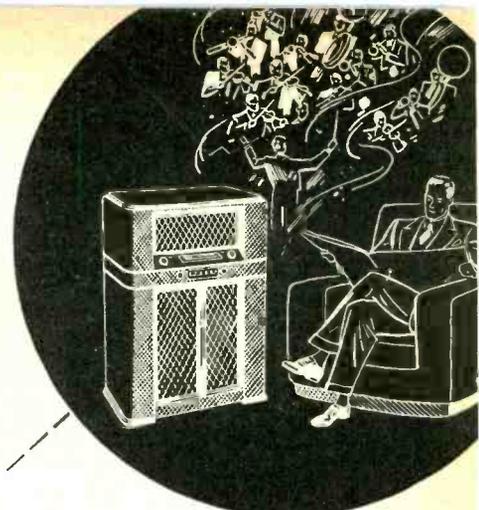
**GENERAL  ELECTRIC**

176-E2-6650



**The Revolutionary New WESTINGHOUSE DUO**

It's a radio-phonograph with automatic record changer . . . but you can lift out the radio and play it anywhere. The hottest sales feature of 1946!



**The Amazing PLENTI-POWER CIRCUIT**

This exclusive feature gives a low-priced Westinghouse 7-tube set more undistorted output than most 12-tube sets had prewar. *Anyone* can hear the difference . . . *everybody* likes it. It means sales to the millions who want 12-tube performance on a 7-tube budget.

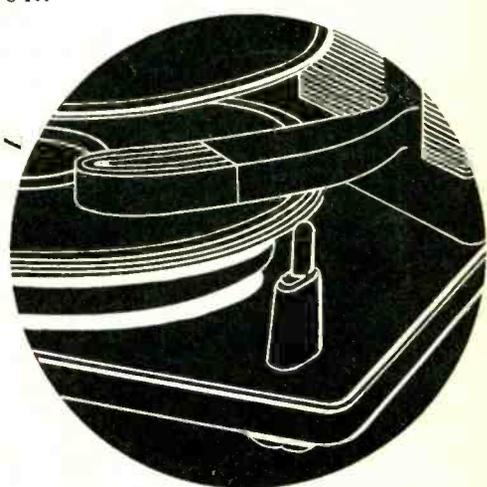


**A POWER-HOUSE IN A JEWEL CASE!**

Never before has such performance been packed into a set of this size. You'll have to hear it to believe it!

**NEW IDEAS**  
*That sell radios*  
 more proof that you can depend on WESTINGHOUSE RADIO for originality

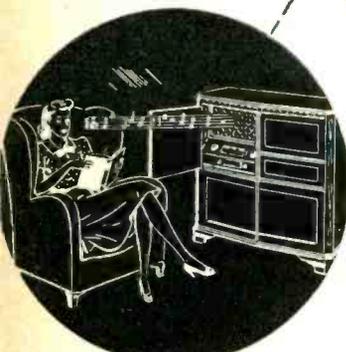
For more information call your Westinghouse Distributor or write Home Radio Division, Westinghouse Electric Corporation, Sunbury, Pa.



**A completely new AUTOMATIC RECORD CHANGER**

Single-button control! No changeover levers to push! No complicated operating instructions.

When you want to operate the tone arm by hand, do so . . . no danger of throwing the automatic mechanism out of adjustment. After the last record is played the tone arm returns to rest and the turntable shuts off automatically.

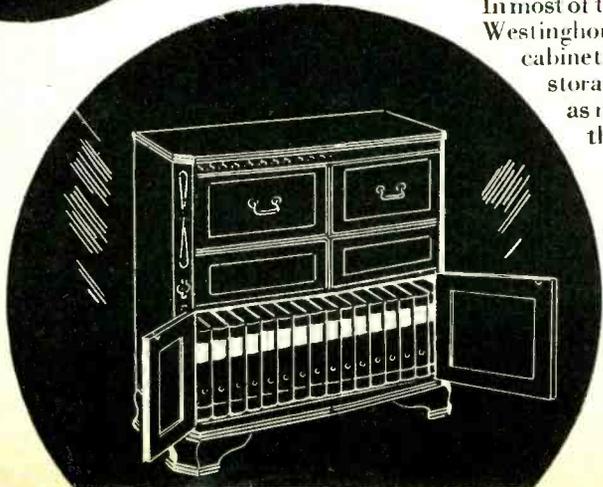


**THE EAR-LEVEL SPEAKER**

Something new you can demonstrate. The sound originates at the *most natural level* for listening enjoyment. No acoustical loss or distortion from the carpet or floor.

**6 TO 10 TIMES AS MUCH RECORD STORAGE SPACE**

In most of the new radio-phonographs, Westinghouse has made the entire cabinet width available for record storage space . . . 6 to 10 times as much as prewar cabinets of the same size . . . a real selling feature for people with record libraries.



**RADIO'S FIRST NAME IS**

**Westinghouse**  
 Radio Television

# radio service dealer

Member Audit Bureau of Circulations  
Covers all phases of radio,  
phonograph, sound and elec-  
trical appliance mer-  
chandising and servicing

VOLUME 7 NUMBER 3  
MARCH, 1946

## CONTENTS

With the Publisher .....	4
In & Around the Trade .....	6
Tips from Other Dealers .....	13
Prepare for Competition .....	13
Opens 9 Stores .....	14
Holds His Customers .....	16
Fronts Build Customer Traffic .....	17
Self Selection Displays Sell More Records .....	18
Merchandise Pre-Views — II .....	19
New Products — Radios & Appliances .....	20
Oscillators, Converters & Mixers .....	22
Test Equipment Data .....	24
Circuit Court .....	26
Ceramic Capacitor Chart .....	32
"Know How" and Dependable Parts for Servicing .....	38
Shop Notes .....	40
Radio Growth Advances Servicing .....	42
Cover: Shopping Scene: Davega, lead- ing New York dealers, display table and console radios, plus washing machines, all properly tagged as ordered by OPA. Store is in Com- modore Hotel.	

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, 1946

COWAN PUBLISHING CORP.

**SANFORD R. COWAN,**  
Publisher

**LEWIS C. STONE**  
Editor

S. L. MARSHALL, Asst. Technical Editor

Adv. Sales:

J. J. BROOKMAN, H. N. REIZES

JEAN M. WHEELER, Circl. Mgr.

DAVID SALTMAN, Adv. Prod. Mgr.

Branch Offices

HAROLD J. SUGARMAN, Western Adv. Mgr.

82 W. Washington St., Chicago 2, Ill.,  
ANDover 1395

H. W. DICKOW, West Coast Advtg. Mgr.  
1387 40th Ave., San Francisco 22, Cal.



## EVERYTHING IN RADIO AND ELECTRONICS

R. W. T., world's oldest and largest Radio Supply House, is ready again with tremendous stocks of sets, parts and equipment. You can depend on our quarter-century reputation for quality, sound values and super-speed service. Orders shipped out same day received. All standard lines already here or on the way, including: National, Hammarlund, R. C. A., Hallicrafters, Bud, Cardwell, Bliley and all the others you know so well.

## Radio Wire Television Inc.

100 Avenue of the Americas, New York 13 • Boston, Mass. • Newark, N. J.

ORIGINATORS AND MARKETERS OF THE FAMOUS

*Lafayette Radio*



**R. W. T.** DEPT. SC6, 100 AVENUE OF THE AMERICAS,  
NEW YORK 13, N. Y.

I want your big new post-war Catalogue.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

HAM?  (CALL LETTERS) \_\_\_\_\_

ENGINEER?       SERVICEMAN?       STUDENT?

## with the publisher.....

### "Industry Trade Show"—May 13, 14, 15, 16, 1946

ALL radiomen, manufacturers, distributors and service dealers anxiously await the opening of the "Radio Parts & Electronic Equipment Trade Show"—the first such industry trade show to be held since outbreak of war. May 13th to 16th inclusive are the dates; the Hotel Stevens, Chicago, is the place.

Without doubt the coming "Show" will be the most important and best in the industry's history — although admittedly some prewar shows were exceptionally fine. Because of "time and circumstance" the 1946 show is a "must for every manufacturer and distributor to attend. The latter, in turn, along with RADIO SERVICE DEALER's "Show Report Issue"—the special May number—will carry to Service-Dealers all of the show's highlights. Kenneth C. (Bud) Prince, with offices at 111 W. Washington Street, Chicago, is general manager of the trade show which is run under the joint auspices of the Sales Manager's Club, Eastern Group; the Radio Manufacturers Asso-

ciation; the National Electronic Distributors the Assn. of Electronic Parts & Equip. Mfrs.

After diligent effort the Housing Committee, H. Clough, J. Berman and A. Schaar got an allotment of rooms from 11 Chicago hotels and these are being rationed fairly. As attendance estimates vary from 3,000 to 8,000, it is vital that those planning to attend should make room reservations early through Mr. Prince's office.

At the 1946 Trade Show, dozens of manufacturers, newcomers to the field since Pearl Harbor, and over a hundred old timers, will display their post-war lines of parts and equipment. Some promise to be sensational. Service Dealers avidly await these first showings, knowing their future livelihood will be influenced by the new developments. Competition in all phases of radio making, selling and servicing is about to become keener than ever before. So, Service Dealers, watch for the May RADIO SERVICE DEALER — it'll cover the show for you. On the other hand, our April issue will be a "Show Preview" number for those manufacturers who are able to beat the gun.

### Crystal Ball

Although the radio industry has just celebrated its Silver Anniversary, representing a ripe old age to most folks, to our mind we are still in swaddling clothes and the public "just ain't seen nothing yet", compared with what lies ahead.

Let's reminisce! A few years ago cat-tail crystal sets, with Galena xtals selling for \$2.00 each. Then, great big bulky battery sets (with bird-cage antennas atop) squealing bargains at \$350.00. Annual upkeep for batteries and tubes generally averaged \$50.00. If repairs were needed — ouch! How few servicemen knew their business!! Soon there followed the A.C. set era — fair to middling performers at \$200.00. Then came the AC-DC midgets, a price warfare and sets selling for only \$7.00. (Of course many manufacturers went broke and servicemen nearly starved to death.)

1935-1937 was the pre-return-to-normalcy period when automobile radios and phonograph combinations took hold. Then, because of fair keen competition — and without government supervision — the public got very fine values in the \$80. - \$150.00 class. Following that came the portable-battery radio period, the portable record players - the 3 and 4 sets per-home era. And simultaneously, from 1937 to 1941 practical television made unmistakable progress. Then war — a black-out period — with hidden developments destined for the future.

That future is now dawning. So-called Dick Tracy

wrist-watch radios are no cartoonist's mere dream but a practical reality — except that there actually exists a watch-box sized radio receiver-transmitter. Yes, 2-band reception plus a strong signal capable of 3 mile transmission powered by tiny, long-life batteries. Watch radio telephony! Our children will consider this soon-to-be commonplace art as old stuff. And then natural color television will also be routine stuff for teen agers. Meanwhile, industry-wise, automatic electronic speedup production will improve living standards. Accident-preventing loran and radar will soon make travel as safe as sofa-sitting.

The purpose of such generalization is this — "What are the money-making prospects for how many service dealers"? Today, were there sufficient replacement parts and a suitable production of consumer durable goods, 20,000 dealers and another 20,000 technicians could serve public need at real profit to themselves. But with the new radio-communications vistas opening, we doubt whether double that number of service dealers will be able to handle the enormous sales and servicing volume. The future — the back-to-normal period — is approaching with every tick of your watch.

*S. R. Lowan*  
Publisher

# Cunningham's Opening Shot in New Sales Aids for You

## GET THIS CUNNINGHAM WINDOW DISPLAY NOW!

- ✓ It will attract more customers to your store.
- ✓ It will boost your servicing business.
- ✓ It will help you sell more and more Cunningham Electron Tubes.

NOW YOU CAN "tell the world" that quality tubes and quality service are guaranteed in your shop. The new 1946 Cunningham "Preferred Type" Display will do the job for you—and do it with a friendly smile from the beautiful "preferred type" girl. The display is lithographed in 9 colors, measures 25½" x 29", and is easel-mounted for convenient set-up in your window.

You know the Cunningham name—the standard of quality since 1915. So, waste no time in letting your trade know that you, too, prefer Big "C's", by getting this attractive poster from your Cunningham Tube Distributor today!

*And look for more Cunningham Sales Aids soon.*



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

**A QUALITY PRODUCT FOR RADIO SERVICE-DEALERS  
BY THE RADIO CORPORATION OF AMERICA**

# In & Around the Trade

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



Drawing for space in 1946 Radio Parts & Electronic Equipment Conference and Show. (l. to r.): Howard Horwich, Advertising Manager, Shure Brothers; J. A. Berman, Shure Brothers, Director; Kenneth C. Prince, General Manager, Show Corporation; T. J. Fullam, Jr., Assistant to General Manager, Show Corporation; Miss Dorothy Anderson, Ward Leonard Electric Corporation; H. W. Clough, Belden Manufacturing Company, President (back to camera); A. E. Schaar, Talk-A-Phone Manufacturing Company, (back to camera).

## EXHIBITION SPACE ASSIGNED

At a well-attended drawing for exhibit space held on January 25 in the Stevens Hotel, Chicago, manufacturers were assigned space in the 1946 Radio Parts and Electronic Equipment Conference and Show, sponsored by National Electronic Distributors Association, Parts Division of Radio Manufacturers Association, Sales Managers Club, Eastern Division, and the Association of Electronic Parts and Equipment Manufacturers.

The drawing, conducted on an open, fair, and equitable basis, was made in accordance with the rules and regulations of the Show Corporation, and included all companies who were members of the sponsoring associations and who had sent in their contracts for exhibit space on or before January 10. Companies that belonged to any of the sponsoring associations on or before October 31, 1945 were in the first

drawing; those who joined between October 31 and December 21, 1945 were in the second drawing; and those who became members subsequent to December 21 were in the third drawing.

After the three drawings, space was assigned to those companies who mailed their contracts subsequent to January 10, in the order of receipt of their contracts irrespective of the date on which they joined any of the associations.

In the first drawing there were 115 companies and since expressed preference for space varied widely, over 45 names were drawn before any company was assigned space other than one of the choices it designated. A total of 149 booths of the available 164 were assigned at that time. Since then the remainder of the exhibition space has been assigned, with the result that all

booths are now contracted for. Insofar as possible, competitive lines were separated within the Exhibition Hall.

HENRY H. TEPLITZ  
Advertising Counsel  
Show Corporation

## Jensen Plans

Postwar planning and sales for Jensen Radio Manufacturing Company, Chicago, designers and manufacturers of acoustic equipment, have been placed in the hands of a five-man committee according to an announcement just made by Thomas A. White, president and general manager. To this new sales committee (see photo below) falls the important job of keeping Jensen customers reasonably happy with not-enough production until such a time as material shortages and manpower lack is met and full production possible.

New plans for Jensen company include a complete redesign of both field coil and PM speakers to incorporate the new and powerful Alnico 5 magnet material so successfully used by the Jensen company in its military production. Plans also cover new Coaxial speakers, and reproducers housed in Bass Reflex cabinets.



Jensen sales committee (l. to r.): Ralph T. Sullivan, Eastern District sales manager; Charles A. Hansen, Western District sales manager; Sherman K. Hughes, sales office manager; Harold S. Hoffman, city salesman; and Bayard H. Clark, advertising and sales promotion manager.

## DuMont Realignment Service

There's a big job to be done. Several hundred DuMont teletests in the hands of owners must soon be converted over to the new television channel frequencies recently assigned by the Federal Communications Commission. Ernest A. Marx, general manager of the Television Division of Allen B. DuMont Laboratories, Inc., states:

"We are advising all owners of DuMont teletests that our service organization is ready to changeover their

[see page 10]

# SYLVANIA NEWS

## RADIO SERVICE EDITION

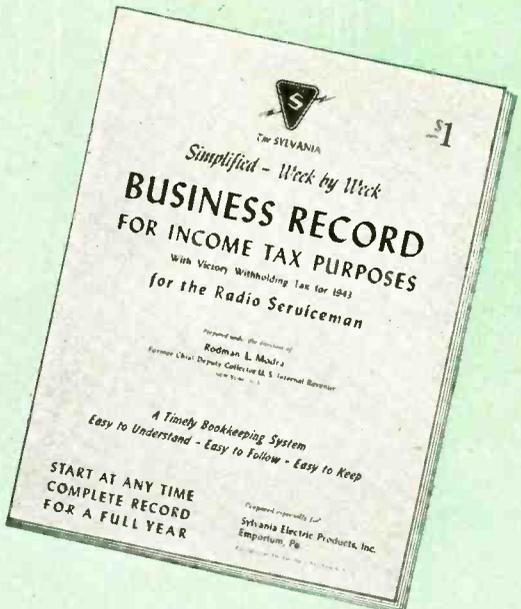
MARCH Published by SYLVANIA ELECTRIC PRODUCTS INC., Emporium, Pa. 1946

### LUCKY RADIO SERVICEMEN HAVE MINIMUM OF PUZZLE-TROUBLE AT INCOME TAX TIME

**SYLVANIA  
SERVICEMAN  
SERVICE**



by  
**FRANK FAX**



**BUSINESS RECORD  
FOR INCOME TAX PURPOSES**  
With Victory Withholding Tax for 1945  
for the Radio Serviceman

Prepared under the direction of  
Rodman L. Madry  
Former Chief Deputy Collector U. S. Internal Revenue

A Timely Bookkeeping System  
Easy to Understand - Easy to Follow - Easy to Keep

START AT ANY TIME  
COMPLETE RECORD  
FOR A FULL YEAR

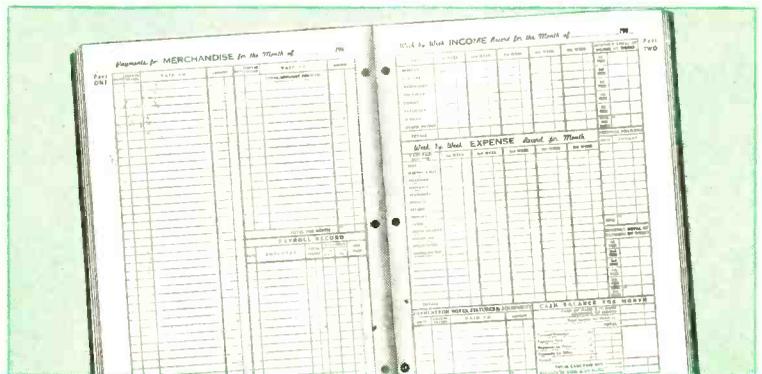
Prepared especially for  
Sylvania Electric Products, Inc.  
Emporium, Pa.

Radio servicemen everywhere are considering themselves lucky to have the above business record book — prepared as a special service by Sylvania Electric. Frank Fax tells how you can get one, too.

Radio servicemen who took advantage of one of the helpful hints expressed before in this column are considering themselves pretty lucky these days. That hint was to get a copy of Sylvania's specially prepared Business Record book, shown here.

Sylvania prepared this handy volume not only for just this time of the year — the tax season — but also as an aid to you business men all year 'round.

Now's the time to start *your* bookkeeping. This system takes only a few minutes a day, yet it does a complete job — and keeps your records straight! Only \$1.00. See your Sylvania Distributor, or write directly to me, *Sylvania Electric Products Inc., Emporium, Pa.*

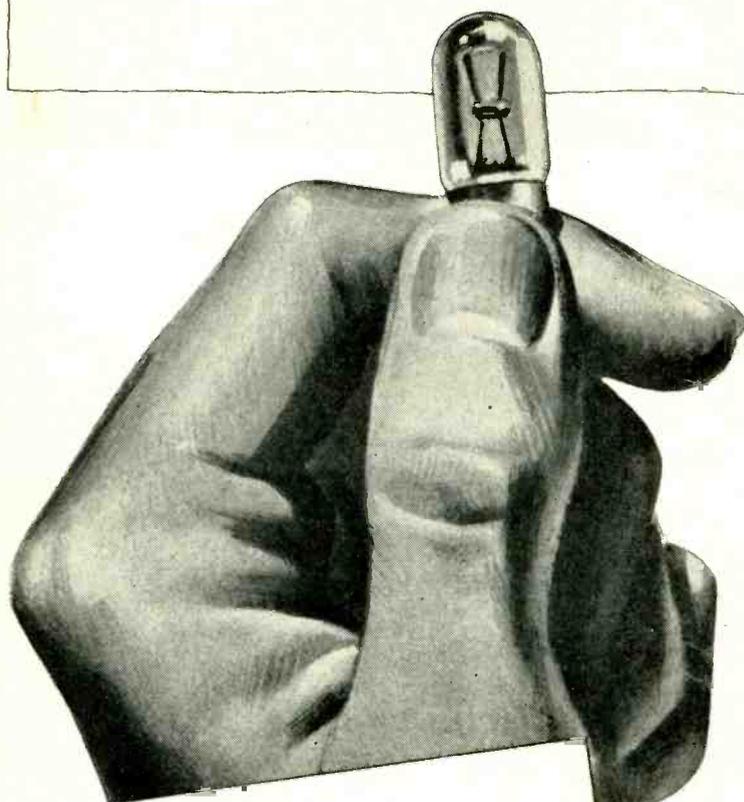
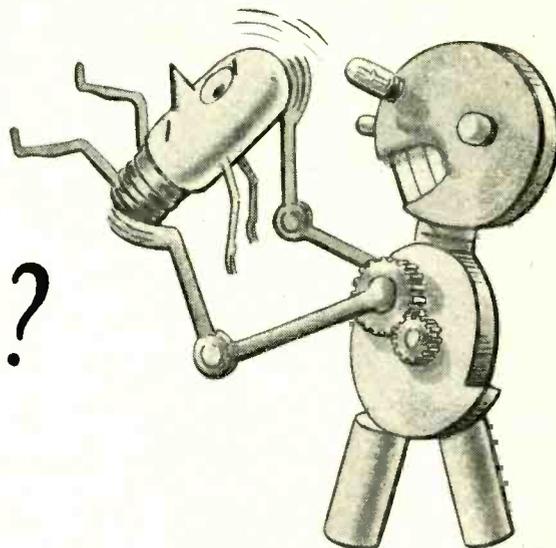


# SYLVANIA ELECTRIC

Emporium, Pa.

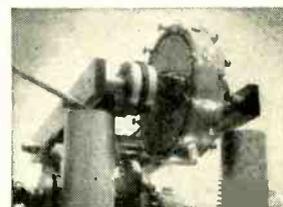
MAKERS OF RADIO TUBES; CATHODE RAY TUBES; ELECTRONIC DEVICES; FLUORESCENT LAMPS, FIXTURES, WIRING DEVICES; ELECTRIC LIGHT BULBS

Ever see a  
robot bouncer?



 Radio  
Dial Lights

Chances are, you'll never need one. But the unique device shown below—actually called a rotary hot shock tester—bounces lamp bulbs up and down more than once a second for eight hours, and gives the lighted lamps a terrific beating. The hot shock tester is just one of many testing devices built by General Electric to assure top quality in G-E Miniature Lamps.



And that's another important reason why it will pay you to sell G-E Miniature Lamps for radio dial lights and other similar uses. Features like these will give your profits a real lift selling G-E Lamps:

1. Dependable, trouble-free performance.
2. High level of maintained light output.
3. Low current consumption.
4. Long life.
5. Profitable to handle.
6. Greater dealer acceptance.

*For information on prices and types of G-E Miniature Lamps, see your nearby G-E Lamp Office. Or write to General Electric Company, Division 166, RSD-3, Nela Park, Cleveland 12, Ohio.*

GENERAL  ELECTRIC



**Thanks to  
7 tough  
Years...**

**... this greatest of test instruments has  
been tested into top ranking reputation**

The Simpson 260 has out-sold and out-performed every other even remotely similar test instrument in the electronic and electrical fields ever since its introduction in 1939. Through the ensuing seven years, covering the War period, circumstances gave it a gruelling test for accuracy never visioned by its makers. It stands today as irrefutable proof that Simpson design and Simpson quality produce accuracy that *stays* in an instrument year after year.

The demand for the 260 from men who first used it in the Armed Services (in laboratories of 300 government agencies and universities, and on the battlefields the world around) has now been added to its enormous popularity among radio servicemen. The Simpson 260 is easily the world's most popular high-sensitivity set tester for television and radio servicing.

The basic reason for this out-selling and out-performing by the Simpson 260 is this: It out-values every other similar instrument in the field. You cannot touch its precision, its useful ranges, or its sensitivity in any other instrument selling for the same price or even substantially more.

**SIMPSON ELECTRIC COMPANY  
5200-5218 W. Kinzie St., Chicago 44, Ill.**

**Simpson**

INSTRUMENTS THAT STAY ACCURATE

**SIMPSON 260, HIGH SENSITIVITY SET TESTER  
FOR TELEVISION AND RADIO SERVICING**

Ranges to 5000 Volts—Both A.C. and D.C.  
20,000 Ohms per Volt D.C.  
1000 Ohms per Volt A.C.

At 20,000 ohms per volt, this instrument is far more sensitive than any other instrument even approaching its price and quality. The practically negligible current consumption assures remarkably accurate full scale voltage readings. Current readings as low as 1 microampere and up to 500 milliamperes are available.

Resistance readings are equally dependable. Tests up to 10 megohms and as low as 1/2 ohm can be made. With this super sensitive instrument you can measure automatic frequency control diode balancing circuits, grid currents of oscillator tubes and power tube, bias of power detectors, automatic volume control diode currents, rectified radio frequency current, high- $\mu$  triode plate voltage and a wide range of unusual conditions which cannot be checked by ordinary servicing instruments. Ranges of Model 260 are shown below.

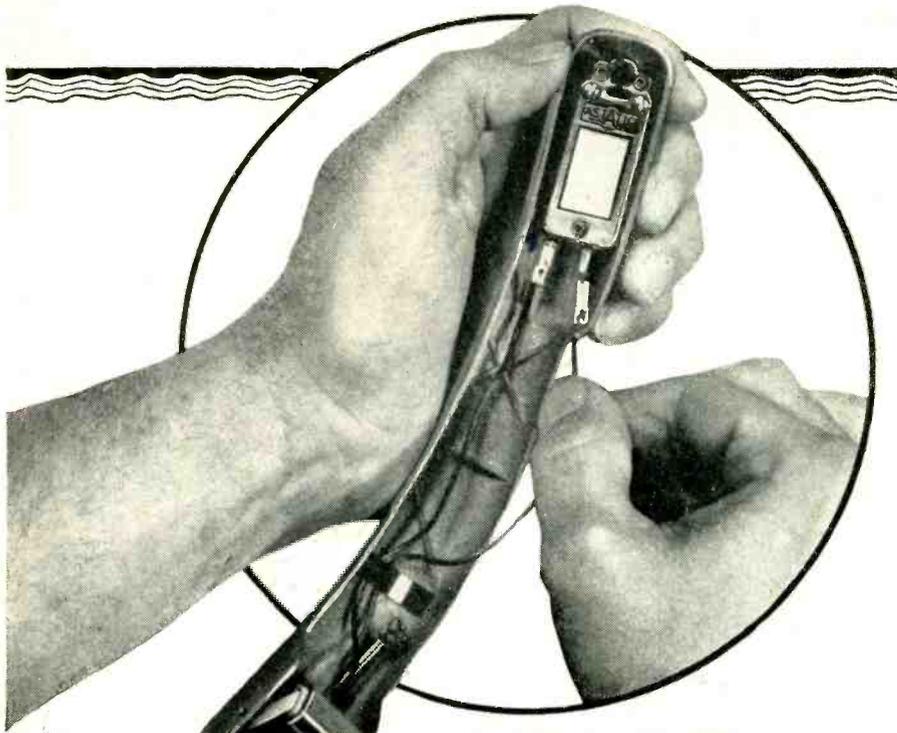
Price, complete with test leads.....\$33.25  
Carrying case ..... 4.75

Volts D.C. (At 20,000 ohms per volt)	Volts A.C. (At 1,000 ohms per volt)	Output
2.5	2.5	2.5 V.
10	10	10 V.
50	50	50 V.
250	250	250 V.
1000	1000	1000 V.
5000	5000	5000 V.

Milli-amperes	Micro-amperes	Ohms
D.C.		
10	100	0-1000 (12 ohms center)
100		0-100,000 (1200 ohms center)
500		0-10 Megohms (120,000 ohms center)

(5 Decibel ranges: -10 to +52 DB)

**ASK YOUR JOBBER**



## QUICK DISCONNECT

Among other improvements in the design of new Astatic Phonograph Pickups is a QUICK-DISCONNECT feature for instant removal or insertion of Crystal Pickup Cartridges. Wire leads on the pickup tone arm are now equipped with special terminal connections which may be slipped on or off the cartridge pins without tools, soldering or unsoldering. Originally, these wire terminals were permanently attached to the cartridge. This new QUICK-DISCONNECT feature, used with both permanent and removable needle type cartridges in newly designed Astatic Pickups, eliminates messy soldering and saves valuable time in service work. Small details, such as this, coupled with the high operating efficiency of Astatic Pickups, contribute to their ever-increasing popularity and usage.

### NEW L-70 SERIES CARTRIDGES

Replaceable needle type. Streamlined housing. High output voltage. Low needle pressure.

Astatic Crystal Devices manufactured under Brush Development Co. patents.

# THE Astatic

## CORPORATION

CONNEAUT, OHIO

IN CANADA CANADIAN ASTATIC LTD., TORONTO, ONTARIO

### In Trade [from page 6]

sets in order that they may receive all three New York television stations—WABD, WNBT and WCBW. This work, as well as pickup and delivery of the set, will be done for a flat fee.

“Obviously, if work other than the frequency changeover is required, a slight additional charge for labor and material will be necessary. Orders for realignment service should be placed as soon as possible, so that our factory-trained technicians may provide the best possible service.

“It’s a mighty big job,” Mr. Marx concluded, “but with the proper planning and cooperation all around, we hope to have the telecasts ready for the new telecasting frequencies about as soon as the station changeovers take place.”

### Hallicrafter Doings

The Hallicrafters Company announced the opening of spacious sales offices and showrooms for its Echophone Division in the Diana Court Section of the Michigan Square Building, 540 North Michigan Avenue, Chicago.

The Michigan Avenue location is the headquarters of Paul Eckstein, Echophone sales manager; Robert H. Campbell, midwest sales manager of the home radio division; and Williams Export Associates, the export department of Echophone headed by T. F. Williams.

Rogers Majestic Limited, 622 Fleet Street West, Toronto, is announced as sole representative for Hallicrafters in the Dominion of Canada. It will handle both commercial and amateur equipment produced by the Chicago firm.

Marshank Sales Company, headed by David N. Marshank, will represent Hallicrafters in California and Arizona.

### Newcomb Line

Now in production at Newcomb Audio Products Company is a new line of audio amplifiers, pre-amplifiers and accessories. The line features two distinct series: the K-Series deluxe models, with plastic, keylock control cover; volume and overload indicator and master volume control, housed in heavy gauge welded steel chassis and cabinet; and the H-Series standard models, designed for applications where lower cost must be considered without sacrifice in dependability and performance.

[see page 30]



## IMMEDIATE DELIVERY for all radio service replacements

Now it's N. U. Panel Lamps, as month by month the N. U. line of quality tubes and parts grows broader . . . opens up more avenues for profitable business for service engineers. And now, you can pick up extra sales of panel lamps *by the box*. That smart looking new vest-pocket N. U. package of 10 lamps does it! Countless numbers of replacements are needed, for radios, cars, flashlights, and other uses. *Order now from your N. U. Distributor.*



NATIONAL UNION RADIO CORPORATION, NEWARK 2, N. J.



Vest-pocket box of 10 lamps—easy to sell that way—and profitable!



Complete line of types for all radio dials, panel boards, tuning meters, instruments, auto radios, flashlights, parking lights, coin machines.



The right bulb for every job—engineered to initial equipment standards—builds your reputation for accuracy and good work.

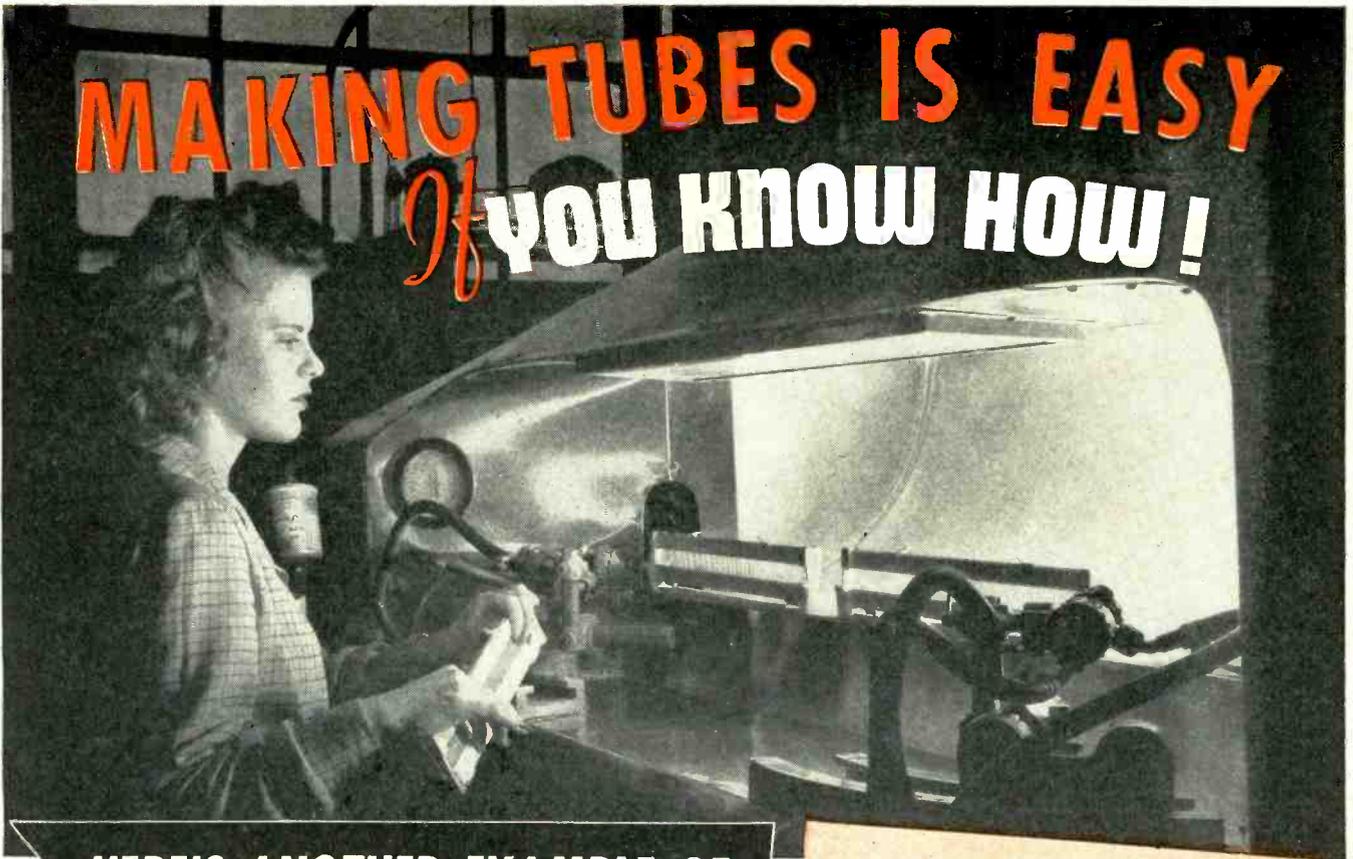


Torsion-tested filament wires . . . torque tested basing cement . . . shock and vibration tested bulbs . . . all combine to assure better service—*longer*.

# NATIONAL UNION RADIO TUBES AND PARTS

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

# MAKING TUBES IS EASY *If* YOU KNOW HOW!



HERE'S ANOTHER EXAMPLE OF

UNMATCHED **HYTRON** KNOW-HOW



**A** GAIN a painstaking, tough job is made easy. This Hytron electronically-controlled cathode-spray machine minimizes the element of human error always present with hand spraying. Evenly applied emissive coating of exactly the right weight and density is obtained hour after hour. Number and speed of coating passes, distance from spray guns to cathode sleeves, and intensity of the spray are precisely controlled.

An endless belt, with 8 racks each containing 40-100 bare cathode sleeves, travels before the two spray guns at 37-112 racks per minute. These guns are fired electronically only while racks appear before their nozzles. Each gun can be aimed through an arc of 0-45° to accommodate flat, oval, or round sleeves. Distance between gun and rack is finely adjustable. Number of passes is electronically controlled between 2 and 32.

An ingenious device automatically reverses—at each revolution of the endless belt—the side of a given rack exposed to the guns. A bank of infra-red lamps

dries each layer of coating immediately after its application.

Intensity and width of spray are regulated by pressure and nozzle adjustments. A continuously circulating system (instead of suction or gravity feed) maintains the coating fluid in the necessary state of suspension, and prevents clogging by coagulation.

Cathode coatings are held to such close tolerances that they must be measured by weight—on balances capable of reading .1 milligram. Yet this machine can apply accurately over 100,000 of such fine coatings daily. Another example of Hytron's mass production with precision—the Hytron know-how which gives you better tubes.

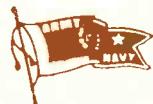


OLDEST MANUFACTURER SPECIALIZING IN RADIO RECEIVING TUBES

# HYTRON

RADIO AND ELECTRONICS CORP.

MAIN OFFICE: SALEM, MASSACHUSETTS



# TIPS

## From Other Dealers

by L. A. KEATING

IT'S not difficult to see the strong and weak points of another radio and appliance dealer's business—but have you ever put into practice for your own benefit what you've learned?

That you possess the ability to gauge your competitor is entirely reasonable to assume. As an outsider you are able to view his business objectively. At the same time, because you are experienced in retailing radios, washers, ironers, and so on, you are competent to evaluate his efficiency.

Your competitors' bad points should teach you what *not* to do. But we'll concern ourselves with their merits—those practices and traits which steadily bring them new business, keep old customers, and increase their volume and make for larger profits.

### Your Attitude

Look around you. Analyze Competitor A for a starter. What sort of chap is he? He has an infectious chuckle that indicates his great zest for living. Folks like that. Competitor A, they feel, is immensely interested in having his products help to bring them comfort and leisure time. Too, A knows how to listen with whole-hearted attention; and what is so pleasing to one's ego? And when he sympathizes with a customer's personal or business hard luck, his manner and tone prove he means it.

True, Competitor A isn't strong on bookkeeping. He's rather slack in credit policies, too. Let's not copy those. But A has a fine asset in humaneness and understanding. It acts like a magnet, drawing folks to his store despite his shortcomings.

How does your humaneness, your liking for people, compare with A's? Oh, you're the cool, even frosty sort? You just can't gush?

No . . . maybe you can't. But you certainly could unbend a little. Try

smiling more—it's only a habit, like lifting your foot over that broken step at the rear of your store. Try telling little jokes three times a day; you'll be surprised what it will do for your personality. Try interesting yourself in customers, treating them like people instead of mere names on monthly statements. Try asking each customer you know how his family is, how his radio is serving him—something like that.

Keep this up and in a short time

you'll notice that folks like to come to your radio shop because you've proved yourself a warm, human personality. Not as warm as Competitor A, perhaps, but warm in your own way. Thus you have learned from a competitor's good points.

### Your Store

Turn to Competitor B. He's a stickler for neat appearance. He and his employes wear fresh, starched jackets, their names on the pockets. The store is always clean and in perfect order. It's well lighted. Goods are where folks can see them—and not too many articles, either. Windows are kept gleaming so passers-by can plainly see the frequently-changed displays. And those displays are not all of a "Buy this!" nature. About every third one doesn't even hint buying but is educational.

Do you wonder people like to deal at Competitor B's? They like the efficient atmosphere of his store and the snappy way they're waited on. It shouldn't take a club to convince you that B has some distinct assets.

Once again, look at your own business. Hmm . . . the place does need a little freshening with paint. Your sign

[see page 36]

### PREPARE FOR COMPETITION

Speaking at a luncheon meeting of the American Marketing Association in New York City recently, William J. Cashman, director of promotion and publicity at Landers, Frary & Clark, New Britain, Conn., made the following observations:

Eventually there will be a competitive cat-and-dog fight in the appliance field that will hit the industry right in the eye. While the demand may rise 30% over the 1940-41 average in the first year of postwar production, competition will increase at a far faster pace. There will be many more dealers and manufacturers in the field, stressing the need for better merchandising by the retailer and selective distribution by the brand name manufacturer.

Many people especially newcomers who don't know the appliance business have been falsely propagandized into overestimating the lushness of the market ahead. Even if the demand for appliances was ballooned 20 to 25 percent and in some cases 40 percent over prewar figures, competition has

increased 100 percent. To prepare for the pitfalls which are self-evident brand name manufacturers will have to work on the principle of selective rather than fringe-type distribution.

Dealers should bear in mind the following:

1. Develop your best physical apparatus for sales; store appearance, displays, lighting etc.
2. Shrinking profits because of OPA will force you to look closely at costs and margins; don't deal with fly-by-nights just because you can get a quicky buy.
3. Better marketing and lowered distribution costs, eliminating prewar frills will be mandatory.
4. Rehabilitate your entire structure for selling, promotion advertising etc., and watch out for the cutthroat days ahead.

Competition? Major appliances will face strong competition within two full years of production . . . at the most. Radios on the other hand, ought to be in the midst of hammer and tongs competition within a somewhat briefer period after output is reached, he predicted.



Formula for building customer traffic based on using records to attract people. Each of the shops carries a \$10,000 inventory of records; features depth-of-store selling displays.

rears were visited for data on the per capita worth, industry, progressive spirit, cultural nature of cities under consideration. Cities with colleges, sizable industry, and fertile farms were ultimate preferences.

### Ready for All Lines

Records have, of necessity, dominated the merchandising scene at the Wright stores, but after appliances flow records will withdraw to a twenty percent space allocation. Another hobby item — camera supplies — has recently been introduced in the stores.

A nucleus of traffic has been attracted by complete stocks of records and photography supplies. "Quality traffic builders", is the succinct description George Shearer, former distributing company representative, applies to these products. A wide stock of camera accessories and records has enticed exuberant young patrons — *tomorrow's* customers for appliances, who go home to their parents — *today's* appliance customers — and describe the conveniences of the Wright

# OPENS NINE STORES

by L. GRIER

**A**N enterprise charged with high sales voltage was launched in the record and appliance field in Missouri and Kansas in 1945. In Missouri at Boonville, Marshall and Carrollton; in Kansas at Junction City, Manhattan, Ottawa, Lawrence, Leavenworth and Atchison, the Wright Appliance

**Dealer establishes group of record-appliance stores in Missouri-Kansas areas. Neighborhood surveys guided location choice. Plugs stores in special sales campaigns.**



Dealer Gary Wright

Stores ushered in a hard-selling style of merchandising.

At the helm of the organization is Gary Wright, president, who guides the destiny of his initial retail embarkation from a comfortable office in the deluxe headquarters store in Kansas City, Missouri. Charged with supervision of each of the departments are men selected for business erudition in their lines. Such department heads as Paul Cook, vice president and general sales manager; Stanley Jeppeson, appliance sales manager; George Shearer, record sales manager; and Frank Wolter, photography sales manager, reveal the extreme care with which Gary Wright has carpentered the administrative structure.

Retail curtain raisers in the Wright venture were launched a year after some of the store buildings had been leased in order that choice locations would be guaranteed. Forerunning the stores were surveys conducted in Missouri and Kansas cities. Credit bu-

stores. "There is a natural tie-in with appliances," comments George Shearer anent the hobby departments.

Not auxiliary merchandise, photo accessories and records stand squarely on their own feet. Records were profitable at the outset. Photography sections are in their infancy, but there is no tendency to fret over the fate of this merchandise. In most of the cities other merchants stock no wide line of photo supplies, no one handles the items aside from the corner druggist, who is too busy with a fountain and prescription business to give photo supplies more than cursory attention.

### Records Profitable

Importance attached to records is demonstrated in the exhaustive training dispensed to the two record girls at each Wright store. Training program set up by George Shearer, Record Sales Manager, indoctrinates in the girls the necessity for learning to use catalogs of record companies, to

develop more than a nodding acquaintance with music by studying books pertaining to music and composers. Girls are taught to read books such as David Hall's "Record Book"; to tie reading in with actual listening to the music during dull sales periods; to learn inventory control and proper display technique before they graduate from the Shearer School. Clerks speak the lingo of record fans!

Ever-changing displays of records is a Shearer precept. While self-selection is a very definite operation of the stores, it is hardly expected to actually close sales. "The customer still must be urged to buy," reminds George Shearer, "and it is up to the girl to consummate the sale after the display has created the sales opportunity." How to lure the customer into the listening booth is covered in record selling technique. Each store has a \$10,000 record inventory. Store layouts are all patterned from the same design.

Another sample of Wright record promotions is the issuance of regular copies of a publication to record clientele which features critical dope as well as praiseworthy attention to new discs. Arouse controversy among your patrons, get them to talking pro and con, and you'll have extra publicity for your record department is the Wright formula.

### Major Appliances Stressed

Fanfare that preceded each Wright Store introduction was something to behold. Full-page advertisements in leading newspapers were succeeded by smaller display ads that exploited spe-



**Above:** Appliance sales manager Stanley Jeppeson points out features of a new electric range in headquarters store in Kansas City, Mo. **Below:** Billboard effect of store front calls attention to showroom for exhibiting major appliances.

cific merchandise and flaunted a parade of nationally-recognized brands. Boxholders were peppered with salvos of direct mail announcements.

A Wright store manager is picked for his talents for personal salesmanship.

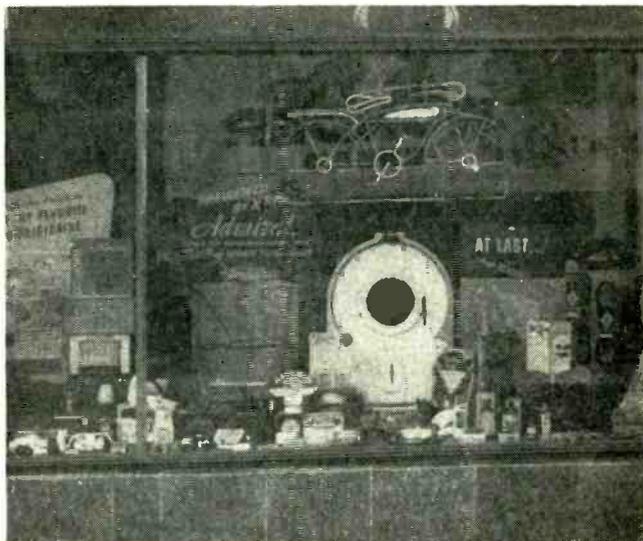
"He doesn't have to know a thing about records or camera supplies," commented an official. "Frankly, we don't want him to dabble in these sections. We have trained salespeople for these departments, and it would be foolish for him to dawdle with any displays, say, when he might be pol-

ishing off a deal that would dispose of twenty refrigerators or other major appliances."

In January, 1946, Gary Wright introduced a fancy downtown record-photography retail store to Kansas City, Missouri. This cozy store is a hobbyist's dream store, with a galaxy of facilities arranged for his comfort.

The headquarters store, an office and warehouse clearing house for the complete unit, lies on the fringe of Kansas City's downtown district, and serves further as retail outlet for major appliances.





Varied lines attract shoppers; friendly "line" of welcome makes them customers, helps line up future selling.

# HOLDS HIS CUSTOMERS

by M. MITCHELL

**T**HE unceasing practice of good customer relations is a policy which has and will continue to provide Dealer Sam Gerchgall, proprietor of General Appliance Shop, 3842-44 W. Lawrence, Chicago, a handsome profit. In this relationship three factors enter the picture: the product, the service given that product and the dealer himself.

Good customer relations mean that

the shop will continue to do business with the same person many times after *he once* makes a purchase. In the opinion of this dealer a steady, repeat clientele goes to provide a good dividend and builds towards the continued growth of the concern.

This dealer's object in all customer contacts is to make the customer feel that he is welcome; this is done by the friendly and helpful attitude on the part of the dealer. Through talking courteously to customers Gerchgall has

learned of the kinds of appliances they now prefer to buy and consequently he will stock the lines for which there has been a majority of calls.

There is a great demand for table model radios, and governed by this demand the shop will handle a full line of such models. Sale of smaller sets is especially appealing to this dealer on account of the fact that a customer simply pays for the set and takes it along. Larger models require delivery and sales are more infrequent.

With the return of merchandise advertising will be resumed by this dealer. Point of sale displays will also be attractively arranged in the windows. The spacious show windows will be filled with all kinds of household necessities.

The radio and appliance service department will be moved to the rear of the quarters to make room for incoming new merchandise.

Throughout the war period dealer Gerchgall also maintained a bicycle service department. As the radio and appliance lines return this department will be moved to the rear of the shop too.

Present plans of this dealer call for enlarging along with decoration of the interior. He estimates it will cost \$5,000.

**Major and Minor:** Miscellaneous merchandise, displayed in triple show windows, help keep trade alive, foster habit of shopping at General Appliance. Service departments will move to rear to make room for incoming merchandise.



# FRONTS BUILD CUSTOMER TRAFFIC

**Potential customers see your store from "across-the-street." The front can make them "cross over" . . .**

**Y**OU can't tell a book by its cover—they say, but how often is what we have to sell judged by what appears on the surface! And this is particularly true of the Radio Service Shop. The first impression the potential customer gets is a particularly important one. If the shop has a seedy, unattractive outward appearance, the customer may not even enter your place of business. Therefore, give some attention not only to the technical job of repairing radio receivers but to the "sales" angles as well.

All of us, in every walk of life, are selling something, whether it's technical ability or some other valuable asset. We can illustrate what we mean by an attractive appearing shop by means of Fig. 1. The personality of the owner is vividly reflected in the general appearance of the store front. The store front is the cover on the book, in a manner of speaking, but going inside and meeting the owner you would find that your earlier expectations were fulfilled. Not only did he have an attractive store front, but he backed up that good first impression with real technical ability. However, for the purpose of this story we shall be concerned primarily with outward appearance and the fact that so few servicemen capitalize and exploit to the fullest degree the latent advertising possibilities of their store fronts.

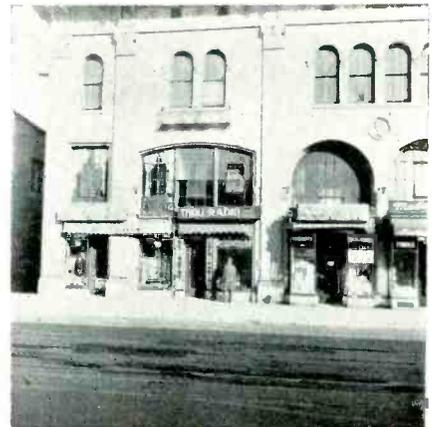
Remember, the first thing any customer will ever see will be the store front. By contrast, take Fig. 2. Note the perfect wastage of the huge white space on the store front. Far from being in good taste, which is what the

owner evidently had in mind, there is a complete absence of advertising value in the bare white expanse. One can look at a desert and appreciate its beauty, but how much more attractive are green trees! The third example, Fig. 3, is even worse. There are stores with a complete and lamentable lack of originality. There are stores and stores. Some fronts are almost dismal in appearance, unattractive and, going inside and interviewing the owner, we find that only routine servicing is done, with no great imagination for sales, no particular technical proficiency—just a run-of-the-mill shop. Such will be the ones most likely to get it in the neck when returning servicemen increase competition or when general servicing begins to feel the effect of increased receiver production and decreased demand for radio servicing work, when the fewer jobs that are available will go the more

**Figure 1.**



**"Styled" to fit their neighborhoods, these stores drew profitable trade. Figure 2 (above); Figure 3 (below).**

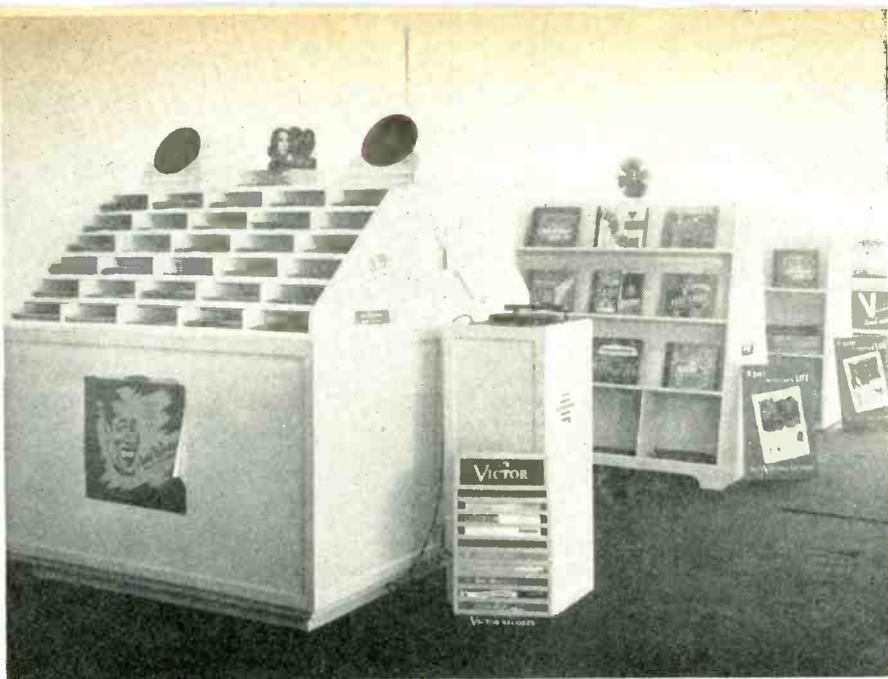


enterprising service establishments.

On a quiet side street, with not a great deal of street traffic passing by, but none the less attractive for all of that, is a small neighborhood shop with an attractive store front. It is shown in Fig. 2. The design is simple. Note that the top sign is split into a sort of V shaped form, permitting greater visibility and making for easier reading as a passerby comes down the street. Thus, the full advertising value of the sign is realized effectively. Note, too, the provocative question in the window legend which asks, "Radio Trouble?"

The inference is perfectly clear. The sign almost says to you, "If you ARE having radio trouble, come in and talk it over, we'll be glad to help you." The dealer's name is clearly displayed. You have no doubt about whose shop it is and you remember the name. Next time you have radio trouble the name pops into your head. You go to the telephone directory. You say to yourself that name seems familiar and although you can't exactly recall where you saw it you think it is a good thing. The Raines telephone rings. The Raines establishment gets the business

[see page 34]



The record department of the Boone Appliance Co., Boone, Iowa, is equipped for complete self-selection merchandising and display of albums and singles.

## SELF SELECTION DISPLAYS Sell More Records

**G**REATER volume production of records is anticipated soon, with sufficient labor supply becoming available. Although the phonograph record business has had virtually no reconversion problems — inasmuch as discs were produced throughout the war both for military and civilian use — there has heretofore been insufficient labor available for record manufacturing to meet the surge pent-up demand.

Popular demand for recorded music of all types has been so great ever since the late thirties, and particularly during the past few years, that the industry's production has not yet been able to catch up with it. From all indications, the public appetite for re-

The substantial increase in record sales can be traced in part to the practice of openly displaying both single records and albums. Dealers who have adopted this method have found that attractive open displays mean extra profits because they help to sell discs the customer hadn't known he wanted until he was directly "exposed" to them. As the value of open displays has made itself felt, more dealers have adopted this plan.

corded music is still on the upswing. There is a growing demand for records not only in the home entertain-

England Bros., Inc., Pittsfield, Mass. Single record displayer and merchandiser shown at left of salesgirl.



by J. W. MURRAY\*

ment field, but in industrial and educational fields as well.

Nevertheless, the sales volume of phonograph records in the next few years must depend to a very considerable extent upon the number of new turntables sold by all instrument makers. Every turntable sold obviously creates additional potential customers for phonograph records.

The non-breakable plastic record for home use, introduced last August by RCA Victor and received with enthusiastic acceptance by the press, the trade and record purchasers alike, is rapidly establishing itself as major record merchandise. Production of this Red Seal Deluxe record, the result of 11 years of research, will be stepped up as manufacturing facilities can be made available.

In the merchandising of records, the most significant trend is toward open displays and self-selection methods. It can be said without exaggeration that the tremendous public appetite for recorded music has been cultivated in no small measure by the fact that dealers have brought to bear on phonograph records during the war the same merchandising and promotional technique which before the war they had applied to radios, phonographs, household appliances and other products, with emphasis on eye-catching displays.

As this was done, the market for records expanded both vertically and horizontally. More people gained a desire to own records, thus increasing the customer potential; and people have become interested in more different types of recorded music, thereby extending the merchandise line itself.

A continuously growing variety of recorded music is gaining public acceptance as effective promotional technique is applied. It was once believed by many, for instance, that chamber music recordings could not be sold in any substantial quantity. Yet during the war, thirty times as many RCA Victor albums of the Archduke Trio were sold in two months as had previously been sold in a year.

In 1946 RCA Victor will continue to emphasize the "self-selection" method in which the Company pioneered and which has proved successful wherever adopted. Nation-wide advertising and promotional activities will continue to expand with added emphasis on dealer promotion to spur point-of-purchase sales. Promotion of pop records will be stepped up.

\*Vice President in Charge of RCA Victor Record Division

## MERCHANDISE PRE-VIEWS—11

# FULL SELLING RANGE

**R**ADIO's great and growing importance in "electrical living" is underlined by nine distinctive receivers being shown by the Westinghouse Home Radio Division. Available in 16 cabinet variations, this partial line will be augmented during the year, according to Division Manager Harold B. Donley, and when completed will include a full line of ultra-modern radio and television receivers. Prices, some still to be approved by OPA, are expected to range from \$32.95 to about \$300.

Illustrated here are 5 consoles (upper half) and 4 table models. One table model and four consoles are phonograph combinations. One of the former and all the latter are equipped to receive programs in both the standard (500-1600 kilocycles) and international shortwave (5.0-18.0 megacycles) bands. In addition three receivers are equipped for FM reception in the new 88-106 megacycle band in which this service began operation January 1 by order of the Federal Communications Commission.

### Lift-Out Receiver

"Most outstanding in its new and unusual features, perhaps, is the Duo—a wood-and-plastic table phonograph-combination from which the radio can be removed as a complete unit and carried elsewhere to serve as a straight receiver. Top engineering development is our new Plenti-Power circuit which practically doubles the output of pre-war sets employing the same number of tubes. This phenomenal performance is obtained by adding one audio tube and employing new and unusual circuit applications.

"Built-in antennas are featured in

all models", Mr. Donley continued. "although provision is made for outside connections if poor local reception conditions make them necessary. All record players, while fully automatic, can be operated manually if desired. Each unit will accommodate either 12 10-inch or 10 12-inch records.

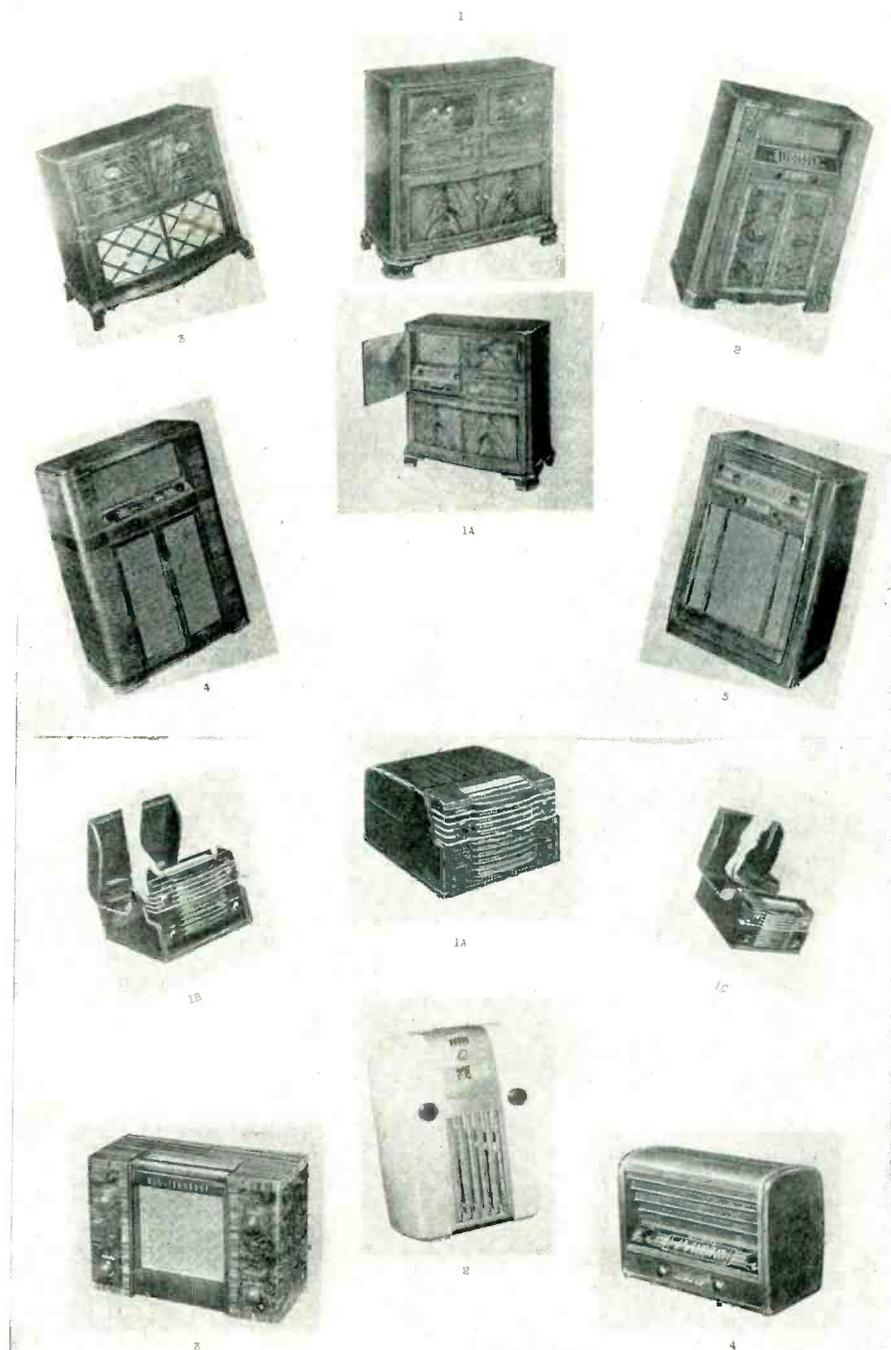
"Other features which have received special attention in our designing include: continuously variable tone control, push-button tuning and — on all but the lowest priced model — a special built-in connection, operated

by a single switch, whereby the receiver's sound system may be used to hear programs from independent record pickups, television or FM sets or wire recorder pickups without any change in wiring."

### The Sets

Models include: the Little Jewel (2), a six-tube plastic-and-metal AC-DC carry-about set with tuck-away handle for easy carrying. It is available in ivory and gold, pastel green and gold or burgundy and gold.

[see page 35]



# NEW PRODUCTS

# radios and



### Zenith

Model 9H081; console, combination; broadcast and FM; 7 radio tubes plus 1 special triple-purpose phono tube, plus 1 power rectifier tube; Radionic Cobra Tone Arm; silent speed intermix record changer on roll-out phono unit; 12-inch Concert Grand speaker, new Super-Six tube, three gang condenser and tuned r.f. amplification, rotor Wavemagnet and built-in FM antenna. Walnut cabinet in matching grains. Zenith Radio Corp., 6001 W. Dickens Ave., Chicago 39, Ill.



### Sonora

Table model, radio-phono combination. Model RGF-212, walnut; RGF-230, blond prima vera, 5-tube AC-DC, superhet. Tunes 535-1620 KC. Built-in Sonorascope loop; dynamic speaker, automatic volume control. Phono has feather-weight crystal pick-up with permanent needle; self-starting motor; push-button on-off phono switch; plays 10- and 12-inch records. Production in early April. Sonora Radio & Television Corp., 325 N. Hoyne Ave., Chicago 12, Ill.



### Hoffman

Laguna, model A301. 6-tube AC, tuned radio frequency; automatic volume control, variable tone control; built-in loop antenna; 6" oval electrodynamic speaker behind wood grill. Grained mahogany, walnut or blond wood; push-button tuning with permeability tuned oscillator circuit in addition to manual tuning on illuminated slide rule dial. Hoffman Radio Corp., 3761 S. Hill St., Los Angeles 7, Calif.



### Zenith

Model 9H079; console phono-radio combination; standard and FM. 7 radio tubes plus 1 special triple-purpose phono tube plus 1 power rectifier tube; Radionic Cobra Tone Arm; silent speed intermix record changer on roll-out phono unit; 10-inch concert grand speaker. Other specifications same as 8H061. Cabinet in solid walnut and mahogany in modern finishes. Zenith Radio Corp., 6001 W. Dickens Ave., Chicago 39, Ill.



### Zenith

Model 8G005Y; Transoceanic, standard and short wave portable. 7 radio tubes plus 1 power rectifier tube; six tuning scales with super-spread band short wave; automatic push-button band selection, listening time-chart; push-pull amplification, 4 button Radiorgan, Alnico Dynamic speaker; 3-gang condenser, tuned R.F.; detachable Wavemagnet and swing-top mounting, detachable short wave Wavemagnet and pop-up Waverod. 115 volts AC-DC or self-contained, long-life battery. Case streamlined luggage style in black with Roman gold hardware and trim. Zenith Radio Corp., 6001 W. Dickens Ave., Chicago 39, Ill.



### Zenith

Model 5D011Y; standard broadcast superhet; modern plastic case; 4 radio tubes, 1 power rectifier tube; improved Wavemagnet, Alnico-Dynamic speaker; large black dial. Ruby on/off indicator; cabinet finishes in polished ebony, soft white and swirl walnut motif. Zenith Radio Corp., 6001 W. Dickens Ave., Chicago 39, Ill.



### Crosley

Farm Battery table model 56FB; 2-band, broadcast and overseas reception; 6-inch PM speaker; 500-hour standard 1 1/2 volts-90 volts battery pack. Full-view dial; continuous tone control; modernistic walnut cabinet. The Crosley Corp., Cincinnati 25, Ohio.



### Breakfaster

Toasts and cooks — makes toast in convenient pull-out compartment; at same time the top plate can be used for coffee, eggs, heating soups, cook vegetables, fry meat, fish or potatoes. 60-cycle, 110-volt, AC-DC. Heating element is entirely enclosed. Toast section removable for cleaning. Retail price \$12.95 Calkins Appliance Co., 104 North Second St., Niles, Mich.



### Zenith

Model 8H061; console; standard broadcast plus FM on both 45 and 100 mc. bands; 7 tubes plus 1 power rectifier tube, 3-gang condenser; tuned r.f. on AM; 3-gang permeability tuning on FM. 10-inch Concert Grand speaker, rotor Wavemagnet and built-in FM antenna; available in walnut and limed walnut. Zenith Radio Corp., 6001 W. Dickens Ave., Chicago 39, Ill.



### Utiliphone

Comes as two-way inter-communication product, with switches on both units for controlled 2-way office conversation; installation with three-wire connections; retails at \$29.95. There's also a toy set, retailing at \$19.95. Electronic Laboratories, Inc., Indianapolis, Ind. (ElecToy Division).



### Wittie

Portable electric steam heater. Lightweight, luggage-styled. Thermo-electric control; starts and stops fan and heating current intermittently; keeps room at even temperature; works from any plug outlet. No exposed coils; cabinet has no sharp edges, does not become hot to touch; automatic shut-off. Wittie Mfg. & Sales Co., 1414 S. Wabash Ave., Chicago, Ill.



### Select-O-Ray

Sun and heat ray unit lamp; combines 275-watt RS sun lamp and 250-watt R-40 heat ray lamp in one fixture. Finish ivory baked-on enamel, chromium plated bow and sliding tubing. 2-way, 3-position toggle switch; used as floor or table model. Frame extends to 63 inches, lowers to 40 inches. 5000 burning hours operating life of heat lamp; sun lamp will provide more than 400 applications. Indicators at switch control type of ray used. Westinghouse Electric Corp., P. O. Box 868, Pittsburgh, Pa.



### New Pocket Radio

Having more sensitivity than previous circuits which operate without batteries, the Detectron Pocket Radio is being offered. Its small size (3 1/2" long x 1 1/2" wide) allows it to be slipped into a pocket or handbag with ease. Reception is had with the use of a ground cord alone in cities. Rural districts require a short antenna wire to be connected. Address inquiries to R. G. Middleton, 47-25 44th Street, Woodside, L. I., N. Y.



### Toastermaster

Model 1B12; flexible timer; toast-taste indicator; finger-touch control; pop-up feature; hinged undercover for easy cleaning. Elements, pure mica plate — hand wound with nickel chromium flat ribbon wire. Chromium finish; molded brown Bakelite fittings. McGraw Electric Co., Toastermaster Products Div., Elgin, Ill.



### Electronic Blanket

Similar to conventional blankets, in choice of 5 colors; can be laundered in soap and water. Automatic electronic control maintains degree of warmth selected, compensates for changes of body and bed temperature independently of room temperature. Operates with small bedside control containing 3 electronic tubes, 2 conductors — one is warming element; the other governs degree of warmth through control unit, approved by Underwriters Laboratories. Volume production scheduled for Spring; distributions through appliance dealers, department and furniture stores. Simmons Co., 383 Madison Ave., New York, N. Y.



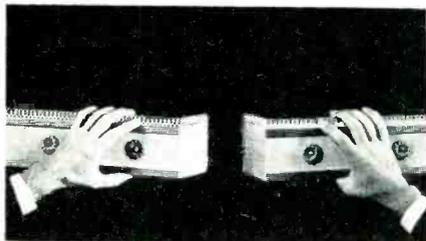
### American Beauty

Electric Iron, adjustable-automatic thermostat control, with dial for types of fabrics. Handle of molded plastic is removable for replacement without removing hood or other parts. Thermoscope indicates actual temperature of ironing surface in terms of fabric being ironed. Selected heat remains constant. Cord is super-flexible heater cord, brought from housing through flexible rubber sleeve, with strain-relief clamp at terminal connections. American Electrical Heater Co., Detroit 2, Mich.



### Dual-Heat Soldering Iron

Features two heats — regular 150-watt heat for aluminum soldering, tin-smithing and production soldering. High temperature reserve heat is obtained by pressing a simple button in the handle. Replaceable tip can be heated to cherry red and held there if desired. Heating element is molded into a Thermal Shock Resisting Ceramic Insulator. Hand is protected from the heat by a double shield. Dual-Heat Iron Co., 4370 Sunset Blvd., Los Angeles 27, Calif.

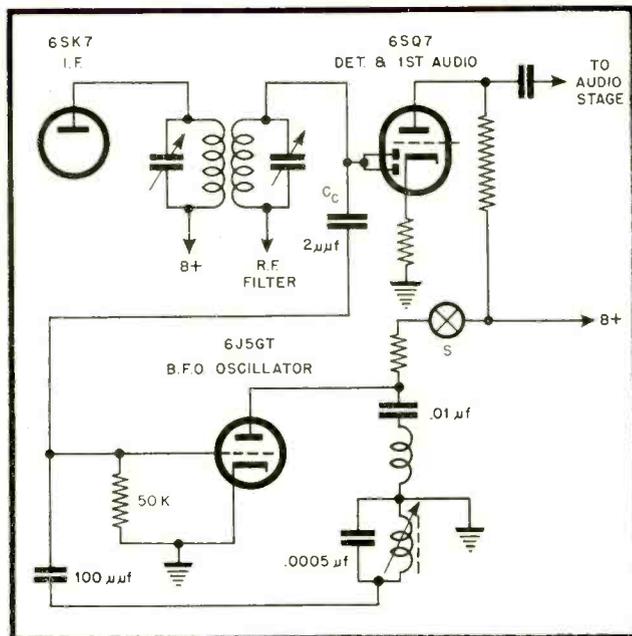


### Unite-A-Light

Low-cost, movable fluorescent fixture with interchangeable shields and reflectors which can be plugged in end-to-end. Plug connection at one end, plug receptacle in the other. Openings in back of channel section allow mounting on wall or ceiling. Can be sold as a "packaged" item which customer can take home and use. Moe-Bridges Corp., Sheboygan, Wis.

# OSCILLATOR MIXER & CONVERTER CIRCUIT APPLICATIONS

Figure 7.



## Discussion and Classification of Circuits Used to Date — Part I

**T**HE advent of reception in the ultra-high frequencies causes many radio technicians to wonder what type of oscillator and converter circuits will be used. A better perspective of this subject can perhaps be obtained if a clear picture of the present types of oscillators and converters is made available. It is the purpose of this article to discuss and classify the circuits used to date.

### OSCILLATORS, CONVERTERS AND MIXERS

The purpose of an oscillator is to generate energy in the form of radio frequency vibrations. This energy is then combined with the energy of an

incoming signal, resulting in energy at four different frequencies in the output of the stage in which the two frequencies have been mixed. *Fig. 1* shows that the four frequencies consist of the two original signals and their sum and difference beat frequencies.

From the output of the mixer stage we transfer the signal into the I.F. stage by means of a tuned transformer which couples the desired signal frequency into the following tube. Due to the fact that the plate load of the mixer is a parallel resonant circuit, all other frequencies but the frequency to which it is resonant will be short-circuited to ground. It is customary

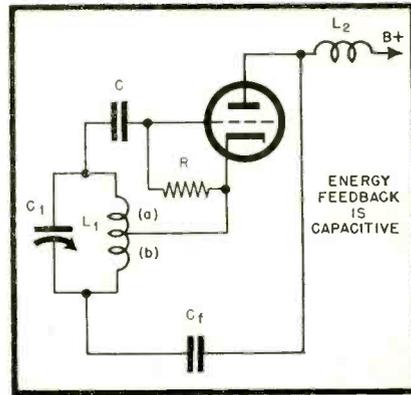
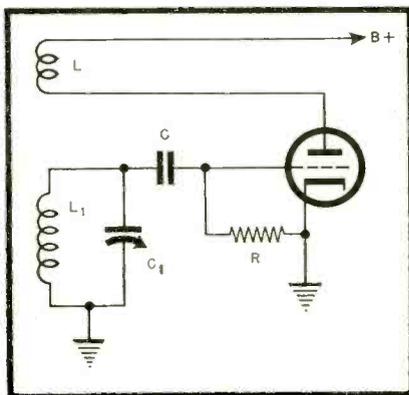
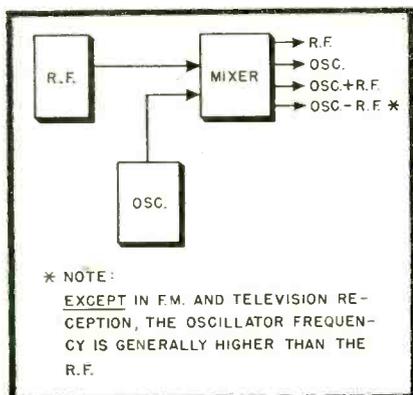
by **S. L. MARSHALL**

to utilize the beat frequency corresponding to the *difference* between the oscillator and R.F. frequencies as the intermediate frequency to be further amplified.

The tube in which the oscillator and R.F. signals are combined is called the *Mixer Tube*. If the oscillator and mixer tubes are combined into one tube in a single envelope it is called a *Converter Tube*.

In order to generate R.F. energy, the basic circuit requirements are that a portion of the energy developed in the output circuit of the tube be trans-

*Below (l. to r.):* Figure 1, The mixing of two frequencies results in four distinct frequencies appearing in the circuit. Figure 2, Ticker feedback oscillator circuit energy feedback is inductive. Figure 4, Hartley Circuit. *Top of this page:* Figure 7, Simplified schematic of Hallicraft Model S20-R, showing application of B.F.O. Circuit.



ferred back to the grid circuit. The transferred energy must be equal to, or greater than, the energy losses in the circuit if oscillations are to be maintained. This energy transfer in oscillators is called *feedback*. Feedback may be effected by many circuit arrangements. Of these, three basic types are of especial interest to radio-men: *inductive, capacitive, and electronic*.

*Inductive* feedback makes use of the magnetic coupling between two coils to transfer energy from the output to the input circuits.

*Capacitive* feedback utilizes a condenser for this purpose.

*Electronic* feedback or *negative resistance* oscillators depend on the imposition of a flow of electrons within the tube in a direction opposite to the *normal* electron flow. This condition may be obtained in a number of ways, one of which is to effect a large flow of secondary emission electrons.

### Maintaining Oscillations

The requirements for maintaining oscillations will be made clearer by the following example. Let us assume that a pulse is developed in the plate circuit (Fig. 2) of an oscillator, due to the action of turning on the plate current. Assume, also, that it has an amplitude of 10 volts. It will then be fed back to the grid circuit at reduced amplitude due to the circuit losses. If this loss is assumed to be 90%, the potential across the grid circuit will be 1 volt. If the tube has an amplification factor of 5, the voltage appearing in the plate circuit due to the 1 volt grid signal will be:

$$1 \times 5 = 5 \text{ volts}$$

This 5 volt signal will now be fed back to the grid circuit. However, the 90% circuit losses will cut its value down to .5 volts in the grid circuit. Again, the signal is amplified within the tube and appears in the plate circuit, its value now being:

$$.5 \times 5 = 2.5 \text{ volts}$$

This reduction in voltage continues until the amplitude reduces to zero. It, therefore, becomes obvious that if oscillations are to be maintained the losses in the circuit must be reduced, or the feedback increased. This feedback, or *excitation*, as it is often called, may be increased by increasing the coupling between the output and input coils.

Suppose that, in the example given, the excitation is increased so that the voltage transfer from the plate circuit to the grid circuit is now 20%. The 10 volt plate pulse will feed back to the grid circuit, and its value there will be 2 volts. It will then be amplified by the tube. Since the amplifica-

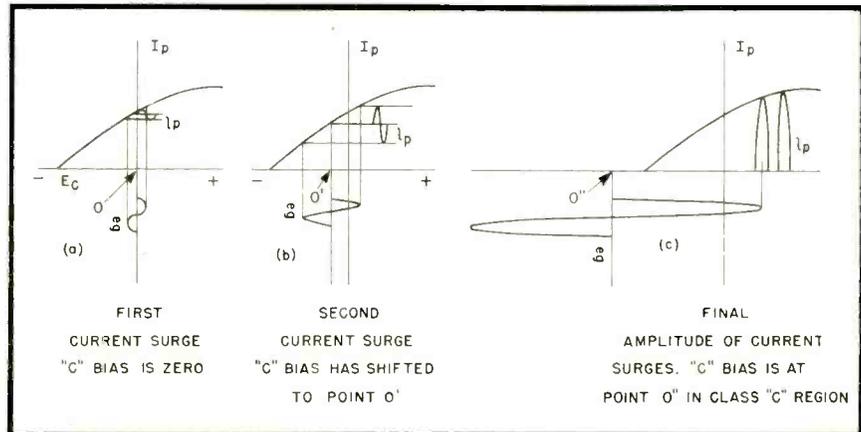


Figure 3. How plate current and grid voltage are built up in an oscillator.

tion factor of the tube is 5, the voltage appearing in the plate circuit will be 10. This cycle of events will continue indefinitely, and the oscillations thus maintained.

Excitation, in an oscillator, is an important factor in its operation. From the above example it is obvious that an under-excited oscillator will not function. On the other hand, an over-excited oscillator will be inefficient from a point of view of power supply dissipation; and in some cases causes the oscillator tube to stop working entirely. These points are well worth noting, especially in their potential application to ultra-high frequency circuits.

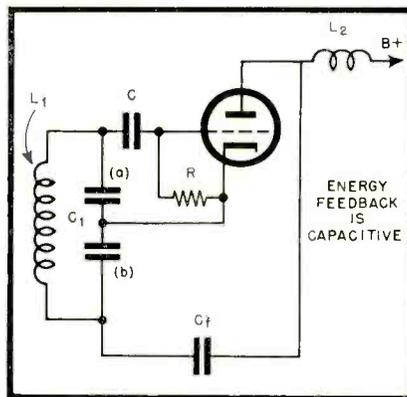
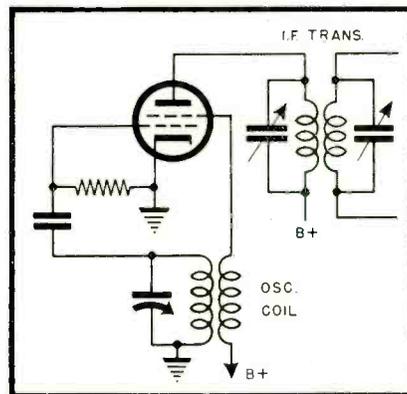


Figure 5. Colpitts Circuit

Figure 6. Electron Coupled Oscillator.



### Methods of Obtaining Feedback

The circuit of Fig. 2 illustrates one commonly employed in oscillators. It is called the *Armstrong* or *tickler feedback* type of oscillator. If the tuned circuit is in the plate circuit, it is referred to as a *reversed feedback* oscillator. To a close approximation, the frequency of oscillations in this circuit is:

$$f_0 = \frac{1}{2\pi\sqrt{L_1 \times C_1}}$$

Physically, the operation is as follows. A small plate current surge, such as that produced by the rise in plate current within a tube, flows through  $L_1$ . Energy from  $L_1$  is transferred inductively to  $L_2$ . Thereupon  $L_2$  and  $C_1$  begin to oscillate at the resonant frequency,  $f_0$ , given in the above equation.

The first plate current pulse,  $i_p$ , will produce the first grid voltage pulse,  $e_g$ , as given in Fig. 3(a). The time constant of  $R$  and  $C$  is such that the condenser,  $C$ , will remain charged up to the maximum value of  $e_g$  for a few cycles, causing grid current to flow through  $R$  during the positive half of the cycle. The voltage drop across  $R$  thereby becomes the grid bias on the tube.

The next cycle, therefore, begins with an initial "C" bias on the tube as is shown in Fig. 3(b). The new operating point is at  $O'$ , and results in a greater plate current surge. As a result of this action the excitation is increased, thereby increasing the grid voltage swing. The cumulative result of this repeated cycle of events causes the grid bias to extend well into the class "C" operating region. The maximum grid voltage amplitude that can be obtained depends on the maximum plate current surge values. These, in turn, are limited by the horizontal portion of the plate current curve as is illustrated in Fig. 3(c).

In addition to the requirements that [see page 46]

# NEW INSTRUMENTS

The instruments described here are the first of a series to be treated similarly in forthcoming issues. Our purpose is to acquaint technicians with the newest equipment, circuit diagrams, etc.



R. C. P. Model 668  
Electronic Multitester

This A.C. operated vacuum-tube multitester has the following ranges and features:

### D.C. Vacuum-Tube Voltmeter—Direct Reading

Sensitivity: 160 megohms (high ranges), 16 megohms (low ranges)  
Six Ranges: 0-6-30-150-600-1500-6000 volts  
Voltmeter readings can be taken without affecting circuit constants.

### A.C. Vacuum-Tube Voltmeter—Direct Reading

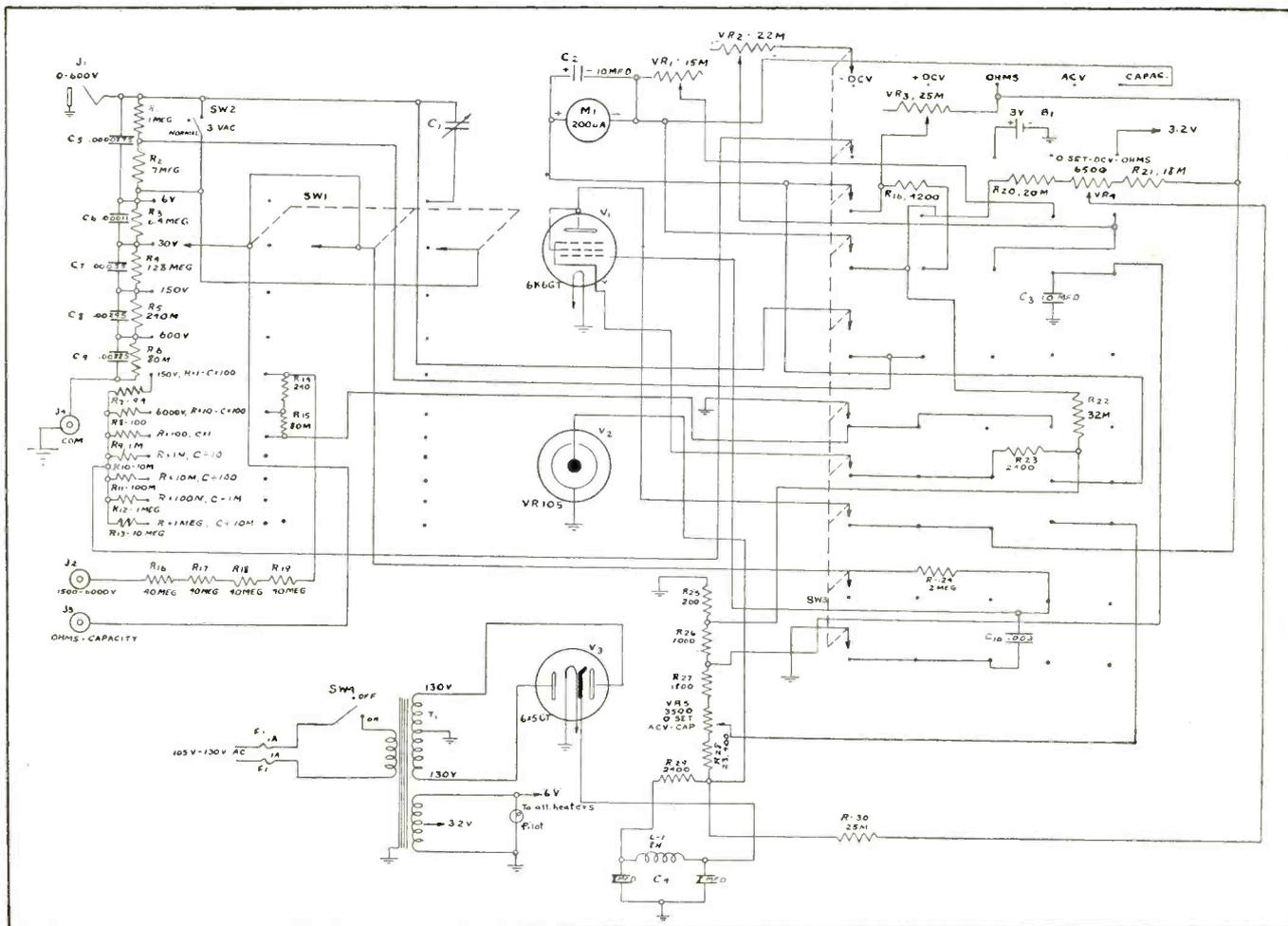
Input capacity: 0.00005 mfd. at terminals of instrument  
Input resistance: 160 megohms (high ranges), 16 megohms (low ranges)  
Seven ranges: 0-3-6-30-150-600-1500-6000 volts  
Measures signal and output voltages, etc.

### Vacuum-Tube Ohmmeter—Direct Reading

From 0.1 ohm to 1,000 megohms.  
Seven Ranges: 0-1,000-10,000-100,000 ohms; 1-10-100-1,000 megohms.

### Vacuum-Tube Capacitometer—Direct Reading

Accurate measurements from 0.00005 to 2,000 mfd.  
Seven Ranges: 0-0.002-0.02-0.2-2-20-200-2,000 mfd.  
No danger of shock on low capacity measurements. No test leads too short.  
No resetting when changing ranges.





# CIRCUIT COURT

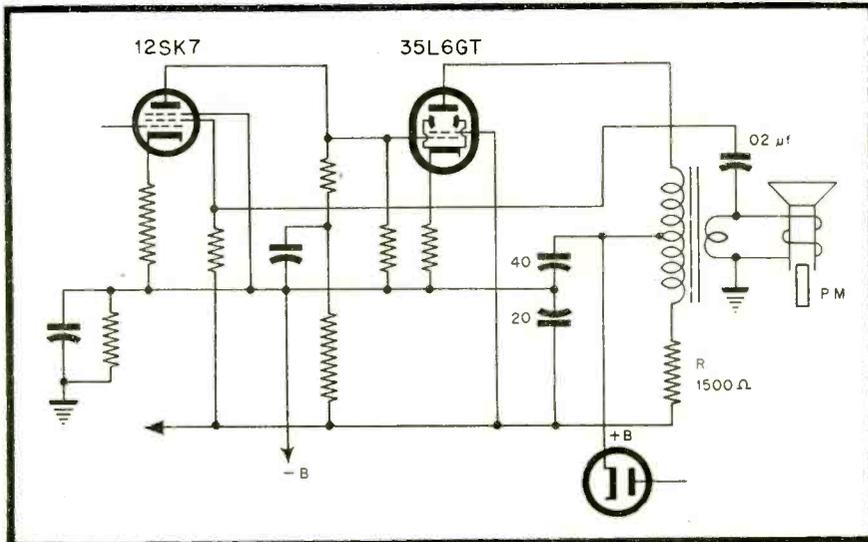


Figure 1.

## INVERSE FEEDBACK — SPEAKER CONNECTIONS (Fig. 1)

In replacing speakers in inverse feedback circuits it is important to maintain proper phase relationship. If the connections to the output transformer are reversed or if the feedback connection is made to the wrong side of the output transformer secondary, the system will become regenerative instead of degenerative. Under those conditions audio oscillation may result. At least distortion will occur with an increase in hum. The remedy is to reverse the connections to the secondary of the output transformer. In the receiver circuit of Fig. 1, of the Stewart Warner models 61T16 and 61T26, the audio system utilizes a two stage inverse feedback, from the output transformer secondary to the screen grid of the first A.F. thru the .02 by-pass capacitor. Such feedback reduces hum and distortion arising within the first and last A.F. stages included in the feedback loop.

## HUM REDUCING TAPPED TRANSFORMER CIRCUIT (Fig. 1)

The divided output transformer is ordinarily used with permanent magnet speakers in small ac/dc type sets, reference being made to Fig. 1 as a typical circuit. Hum reduction in the output stage is obtained by a bucking action, the ac hum current flowing in opposite directions thru the primary portions from the tap near the lower end. Resistor R is designed to cause just the right amount of hum current to flow thru the lower part of the primary winding to balance, in ampere-turns, that in the other part. If R is replaced, the value must be correct. The dc plate current also flows in opposite directions and produces some can-

cellation reducing core saturation a small amount. The tap is usually only about one-tenth the way up from the lower end of the primary, but the inductance of the lower part is sufficient to give a certain amount of filtering. This, with the help of resistor R and the large 20 mfd capacitor, provides filtering for the stages ahead.

## PERMEABILITY TUNING (Fig. 2)

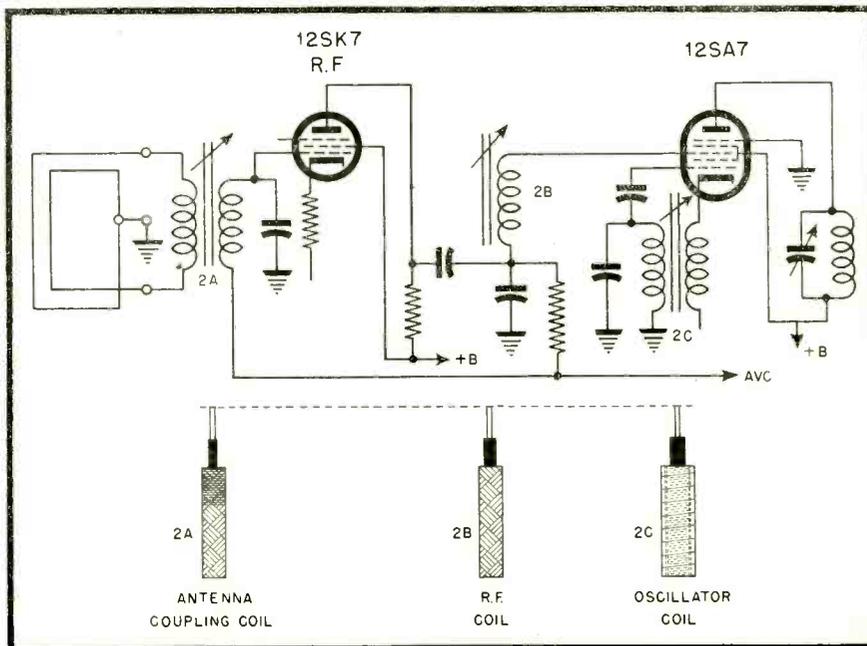
The permeability tuners for the detector and R.F. stage (if one) are similarly designed to cover the broadcast tuning range, and for this purpose the coils

and cores are unusually long and narrow for R.F. reactors. The ratio of length to diameter is much greater than would be found in fixed reactors for high Q. The purpose is to get a large inductance variation (9:1), necessary for tuning over the broadcast range. The inductance must be small with the core out and large with it in. In a long coil, relative to its diameter, the end turns are far apart and the mutual coupling low, when the core is out and the coupling is thru air; this gives low minimum inductance. With the core in, the end turns are coupled magnetically thru the core which fills up as much as possible of the area within the coil, small spacing between core and coil, resulting in a high maximum inductance. There being an i.f. frequency difference between the input circuits and the oscillator, the latter is made to cover a smaller range of tuning.

The oscillator coil is designed with a smaller ratio of length to diameter, usually with a large diameter and larger spacing between coil and core, thereby making the core less effective in changing the inductance, slowing up the action. The action is similar to that of a padding capacitor in capacitor tuning. In most cases the cores for the R.F., Det. and Osc. will be found to be of the same diameter, and tubing for the oscillator coil will be found to be quite thick, same inner bore as the others but larger outer diameter. The serviceman will encounter various designs, but in all cases he will find the same principle; for like movements of the ganged cores, the effect of the oscillator core must be to change the frequency at a slower rate than do

[see page 28]

Figure 2.



What you see here is the Lear advertisement that is appearing in the national magazines this month. It's another in the series that is keeping the name Lear, together with Lear Radios and the Lear Recorder, right up in the public eye.

Lear advertising appears in America's big circulation magazines and in the specialized trade press. Its appealing story is bringing an active response for Lear Dealers.

This, plus the unusual qualities of Lear Radios themselves, makes the Lear Franchise a very valuable property. You

should get all the details. Write today to: LEAR, Incorporated, Home Radio Sales and Merchandising Division, 110 Ionia Avenue, N. W., Grand Rapids 2, Michigan.

**LEAR**

**RADIO**



**ENCORE!** As many as you like  
on "*The Tape that Remembers*"

Put your own little sweetheart into this picture. Music was never as good as yours.

You can even do better than that. Today you can snap a switch and record that tune — then hear it again and again over a lifetime. Besides, you can take down your own part-time — or even break-

With Lear **SOUND ON TAPE**, such recording can be minutes or over an hour long. They can be lost a again immediately — not even the type of recording wires.

**LEAR  
RADIO**



And if there's anything you don't want to keep off it goes just by recording something like up the tape.

**SOUND ON TAPE** is only one of the advanced features you find on Lear Radios. They'll have telescoping, shockless — and on entirely new remote tuning control.

Search for Lear Radios at your dealer's. Right you see them you'll say: "That's for me!"

LEAR, Incorporated, Home Radio Sales and Merchandising Division, 110 Ionia Avenue, N. W., Grand Rapids 2, Michigan.



# CIRCUIT COURT

[from page 26]

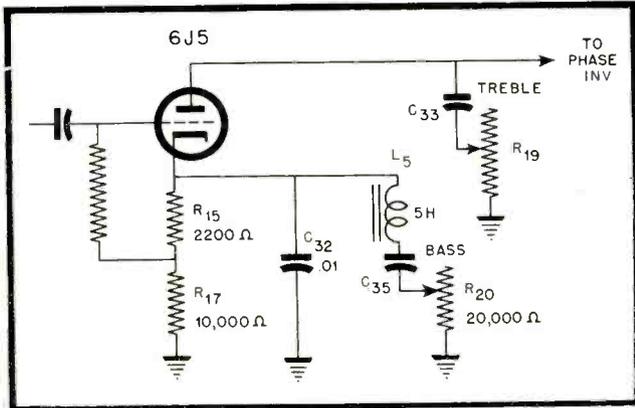


Figure 3.

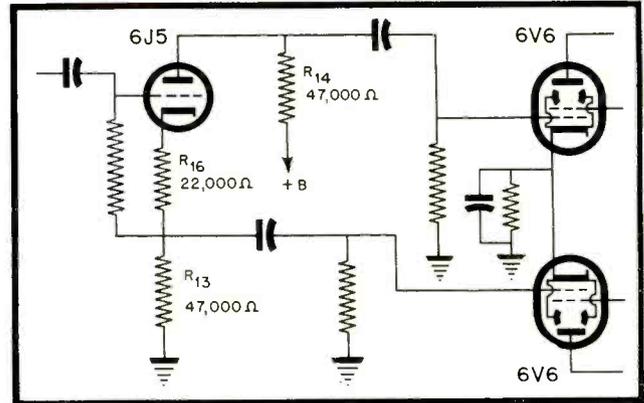


Figure 4.

the other cores. The circuit, Fig. 2, is of the Stewart Warner Model 61T16 and 61T26, altho the above discussion is of a general nature and is not necessarily descriptive of these models only.

## TONE CONTROL — DEGENERATIVE (Fig. 3)

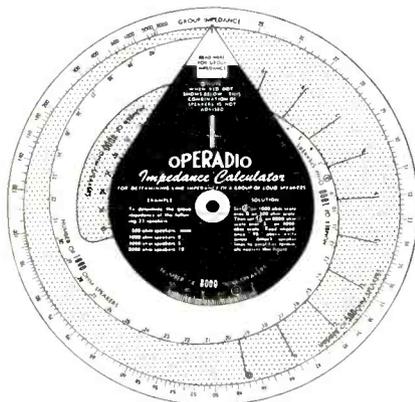
The Hoffman Radio, Model A501, uses a bass control that appears different. The cathode resistors R15 and R17 are bypassed with a .01 mf capacitor so that the circuit is not degenerative for highs, and the highs are amplified without loss in gain, to be controlled by R19 and C33. C32 is too small to by-pass lows around the cathode resistors which therefore gives degeneration for low frequencies, and loss of gain for low A.F. The

bass control however variably controls an effective by-pass of lows, L5 and C35 being a series resonant "trap" circuit. As R20 resistance is lowered, the effectiveness of L5 & C35 increases in bypassing R15 and R17 for the band of low frequencies to which L5, C35 and C32 resonates, thereby reducing degeneration, hence boosting gain for these lows. It will be noted that the cathode resistors add up to much more resistance than needed for bias on the 6J5, which is taken off R15 only, thereby increasing the degenerative feedback, except as modified by the by-pass elements above described.

## PHASE INVERTER (Fig. 4)

The Hoffman Radio Model A501 used

a cathode follower and anode output phase inverter. In the usual straight cathode follower circuit, the anode is connected directly to +B supply. In this type of inverter circuit, impedance in the form of a 47,000 ohm resistor is added in the anode circuit. Resistance of similar value is in the cathode circuit, unby-passed. When an audio signal is impressed on the grid the anode and cathode "move" in opposite directions, electrically, 180 degrees out of phase. The resistor values are such that equal and opposite a.f. voltages are applied to the control grids of the 6V6 output tubes. As in the case of Fig. 2, the cathode-to-ground resistance is higher than necessary for bias which is taken off a small portion of the total resistance in the cathode circuit.



## Impedance Calculator

An Impedance Calculator, designed to quickly match loudspeaker lines to an amplifier for any sound system covering 500, 1000, 4000, 8000 or 16,000 ohm loudspeakers, has been developed by C.S.P. engineers of Operadio Manufacturing Co., St. Charles, Illinois.

Doing away with the sound man's impedance matching bugaboo of the "reciprocal of the sum of the reciprocals", the new device eliminates pencil computations and reference tables. It calculates the group impedance automatically by simply setting the various dials in accordance with the number and type of loudspeakers in any given system. The unique calculator represents an unusual innovation in timesaving devices for sound men, since nothing like it has been previously available.

Scales for 500, 1000, 4000 and 8000 ohm loudspeakers are incorporated on three revolving discs. Total group impedance of all loudspeakers is obtained by matching specific ohm scales to the number of loudspeakers involved in a sound installation. The Operadio Impedance Calculator, which has a 5" diameter and is made of heavily varnished card stock, is available to sound men for 25¢ direct from the company

or from any of its distributors.

## Historic Speech Records

Those interested in permanent records of World War II history-making events will take interest in the first of a series of new albums containing direct recordings of the speeches that laid down the policies of the world now available through Historical Recordings, 505 Fifth Avenue, New York City.

The records which form the album include the most significant addresses of the period. "Vinylite" non-shattering and non-flammable plastic was used to insure both durability and fidelity. There are eight sides to the album, which includes the most important speeches of Britain's wartime Premier, Winston Churchill, President Truman, the late President Roosevelt, Generals Eisenhower and MacArthur, Field Marshal Montgomery, and Admiral King.



## "KNOW-HOW"

The superiority of WARD Antennas reflects the "know-how" gained through many years' experience devoted to the exclusive manufacture of precision-built antennas. WARD'S excellence in this field has won the high favor of America's auto dealers, manufacturers, and motorists. All products bearing the WARD name are the finest in modern design, materials and craftsmanship, and can be counted upon for their consistent trouble-free performance. That's why WARD is "first choice" in antennas for all automobile and home radio applications.

*World's Finest for Car and Home . . .  
Combining Precision and Streamlined Beauty*

### Only WARD gives you all These Dominant Plus-Features

- Easy One Man Installation
- Patented Fluid Type Anti-Rattle Construction
- Positive Silver-to-Silver Contacts
- Extra Heavy Triple Chrome Rust-proof Plating
- Top Section, Stainless Steel
- Heavy Admiralty Brass Tubing
- Hi-Q Detachable Low Loss Lead-ins with Polyethylene Insulation and Vinylite Covering
- Complete with all Fittings and Conversion Kit for Torpedo Bodies
- Smooth Action Telescoping Sections
- 100% Shielded

# WARD "Hi Q" Antennas

THE WARD PRODUCTS CORPORATION  
1523 EAST 45th ST., CLEVELAND 3, OHIO

EXPORT DEPT.—C. O. Brandes, Mgr., 4900 Euclid Avenue, Cleveland 3, Ohio  
IN CANADA—Atlas Radio Corp., 560 King Street, W., Toronto 1, Ont., Canada



Meet Alfred A. Ghirardi—servicing expert and author of the most widely used books in radio technical publishing history.

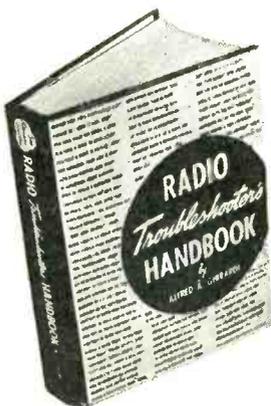
**I'LL TEACH ANY  
AMBITIOUS SERVICEMAN  
TO WORK BETTER,  
FASTER, MORE  
PROFITABLY!**

**... OR REFUND Every Cent of YOUR MONEY!**

Where will you be when servicing competition again gets tough? What will happen when you are called upon to repair the highly complicated F-M and Television equipment? Or industrial Electronic equipment? Whether you have the basic training these famous books shown here are so well equipped to give — OR WHETHER

YOU DON'T — will tell the story! Read these two Ghirardi servicing books for five full days. If you're not fully satisfied they'll do everything we claim — AND MORE — return them and every cent of your money will be refunded and no questions asked!

**ELIMINATES TEDIOUS TESTING  
on 4 jobs out of 5**



This big manual-size Ghirardi Handbook is worth another man in your shop. Helps do 2 jobs in the time normally required for 1.

Maybe you've tried servicing short cuts before — NOW try the one method that really works — the one that pays for itself in time saved on the very first job. There's no magic about it. In this big 4-lb 744-page Manual-Size RADIO TROUBLE-SHOOTER'S HANDBOOK Ghirardi supplies you with a carefully tabulated compilation of common troubles (and their remedies) that account for about 90% of the service work on almost every model of radio in use today — over 4800 models of 202 manufacturers. You just look up the Make, Model and Trouble Symptom of the radio you want to repair. Four times out of five, all troubleshooting and testing will be eliminated. More than half your time will be saved. The Handbook will tell you exactly what the trouble is likely to be — and exactly how to repair it. Ghirardi passes on to you the priceless servicing experience obtained from thousands of hours of tedious troubleshooting so that you may save your own precious time and make your work EASIER. In addition, there are over 300 pages of repair data and diagrams, tube charts, tuning alignment and transformer data, color codes, etc. designed to help you repair ANY RADIO EVER MADE better, faster, more profitably. Only \$5 complete — and sold on our UNRESERVED 5-DAY MONEY-BACK GUARANTEE BASIS.

**STOP GUESSING  
MISTER!**



Get where the good money is—by learning to handle even the most complicated jobs profitably!



**DON'T BE A "HACK"!**

Learn PROFESSIONAL Servicing by Modern Scientific Methods

MODERN RADIO SERVICING is Alfred A. Ghirardi's famous COMPLETE 1 VOL. COURSE in professional radio-electronic service work. It gives you the kind of training that will be your "Open, sesame!" to the better money-making opportunities that only thoroughly trained servicemen will be in a position to grasp — including profitable industrial electronic work. It explains all types of radio-electronic test instruments. It shows you how to analyze circuits scientifically; how to use all types of test instruments for troubleshooting; how to test, repair and replace components; how to make substitutions — how to handle every phase of radio repair work from A to Z by approved time-saving MODERN methods. Absolutely "tops" either as a basic course or as a "refresher" course on any type of work that puzzles you. Worth its weight in gold in giving you real Know-How and paving your way for a profitable radio-electronic-television future. 1300 pages — 706 illustrations — 720 self-test review questions. Only \$5. 5-DAY MONEY-BACK GUARANTEE.

**HAVE A LOOK AT THEM-NOW!**

Murray Hill Books, Inc., Dept. RSD-36,  
232 Madison Ave., New York 16, N. Y., U. S. A.  
[ ] Enclosed find \$..... for books checked; or  
[ ] send C. O. D. (in U. S. A. only) for this amount plus postage. If not fully satisfied, I may return the books within 5 days for full refund.

[ ] RADIO TROUBLESHOOTER'S HANDBOOK \$5 (\$5.50 foreign) [ ] MODERN RADIO SERVICING \$5 (\$5.50 foreign)

[ ] MONEY-SAVING COMBINATION OFFER:  
Both big books—over 2040 pages—only \$9.50 for the two (\$10.50 foreign)

Name .....  
Address .....  
City & Dist. No. .... State.....

**MONEY-SAVING  
OFFER**

Let the HANDBOOK save time on common service jobs. Let MODERN RADIO SERVICING train you for PROFESSIONAL electronic service work. Get BOTH big books at special Money-Saving Combination price of only \$9.50 for the two. Mail coupon today!

**In Trade**  
[from page 10]

Also available are portable systems built around all models of both the K- and H-Series. These are lightweight, housed in durable, genuine plywood cases, finished in airplane-type fabricoid. Emphasis on quality results in a slightly more expensive product, but the company feels that there is an ever-growing demand for quality sound equipment.

A Newcomb exclusive, designed for both series and all models, is the plug-in, hum-free input transformer for instant conversion from high to low impedance. All products are fully described in a new 24-page catalog just off the press. Included are actual response and distortion curves based on tests of completed amplifiers. Inquiries may be addressed to Newcomb Audio Products Company, 2815 S. Hill St., Los Angeles 7, Calif.

**RCA Appoints**

Appointment of John C. Marden as assistant advertising manager and sales promotion manager of the RCA Victor Home Instruments Department is announced by J. David Cathcart, advertising manager of the department. Mr. Cathcart also announced the appointment of William H. Tindall and Frank Schmitt as staff assistants.

Appointment of Lt. Col. Gordon Wright as field sales manager of the RCA Victor Home Instruments Department is announced by H. G. Baker, general sales manager. In his new capacity Col. Wright will supervise the RCA Victor Home Instruments field staff from headquarters at Camden, N. J.

**Radio Parts Super Market**

Los Angeles was one of the first cities in the country to open brilliantly lighted, mass-display, super food markets. Now the same treatment is being given to the radio parts business. Radio Television Supply Company, which is one of the oldest radio parts jobbers in the country, has gone modern in a big way. Radio parts are displayed in bulk and in quantity so that customers can inspect the parts, fill their own order, or just browse around.

In addition to the display, which contains the regular radio parts inventory, a special acoustically treated room has been set up to show sound equipment, amateur receivers, transmitting equipment and marine radio equipment.

[see page 34]

RADIO SERVICE DEALER—*the only monthly trade paper that devotes one-half of its text to Merchandising and one-half to*

*Technical Subjects*

**offers this special  
REDUCED PRICE  
SUBSCRIPTION RATE**

**Good UNTIL MAY 1, 1946**

"RSD" is subscribed to by more owners and managers of the Nation's Leading Service Dealer establishments than any other monthly trade journal.



**TEAR  
OUT**



**RADIO SERVICE DEALER**

SPECIAL REDUCED RATE OFFER —  
U. S. Subs. — \$3 for 3 yrs. Foreign Subs. — \$5 for 3 yrs.

*(Remit by Check or Money Order. We cannot assume responsibility for cash sent thru mails)*

COWAN PUBLISHING CORP.  
342 Madison Ave., New York 17, N. Y.

Good only until May 1, 1946.

Sirs: Here is my  check (or  money order) for \$..... Enter my subscription order for the next 36 issues. The information given below is accurate. If my subscription is rejected I expect an immediate refund in full. Regular Subscription Price: 12 issues \$2.—24 issues \$3. Foreign subscription is \$3 annually.

Name (print carefully) .....

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

Firm Name ..... Year Est. 19.....

- OWNER
- DEP'T MGR.
- EMPLOYEE

If some other classification or occupation, state it on the line below:  
.....

Please check whether firm is

- Radio Dealer
- Radio Service Organization
- Automotive Store
- Radio Wholesaler
- Music Store
- Any other classification (State it) .....
- Hardware Store
- Electrical Appliance Dealer

# CERAMIC CAPACITOR CHART

The fourth of a series of Charts, invaluable to technicians, containing important, time-saving data on new standards, codes, etc.

RADIO SERVICE DEALER, MARCH, 1946

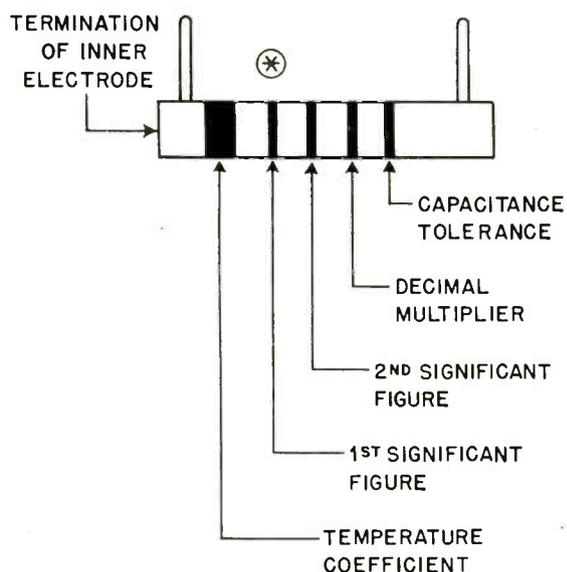
COPYRIGHT 1946, COWAN PUB. CORP.

CERAMIC CAPACITORS MAY BE COLOR CODED, OR MARKED WITH A TYPE DESIGNATION, THE LATTER BEING A SERIES OF LETTERS AND DIGITS DESCRIBING THE CHARACTERISTICS OF THE CAPACITOR SEE BELOW.

COLOR CODE					
COLOR	SIGNIFICANT FIGURE	DECIMAL MULTIPLIER	± TOLERANCE OF CAPACITANCE		TEMP. COEFFICIENT OF CAPACITANCE PARTS/MILLION/°C.
			CAPACITORS OF GREATER THAN 10 $\mu\mu\text{f}$ TOLERANCE IN PERCENT	CAPACITORS OF 10 $\mu\mu\text{f}$ . OR SMALLER TOLERANCE IN $\mu\mu\text{f}$ .	
BLACK	0	1	20	2.0	0
BROWN	1	10	1		-30
RED	2	100	2		-80
ORANGE	3	1000			-150
YELLOW	4				-220
GREEN	5		5	0.5	-330
BLUE	6				-470
VIOLET	7				-750
GRAY	8	0.01		0.25	+30
WHITE	9	0.1	10	1.0	-330 ±500

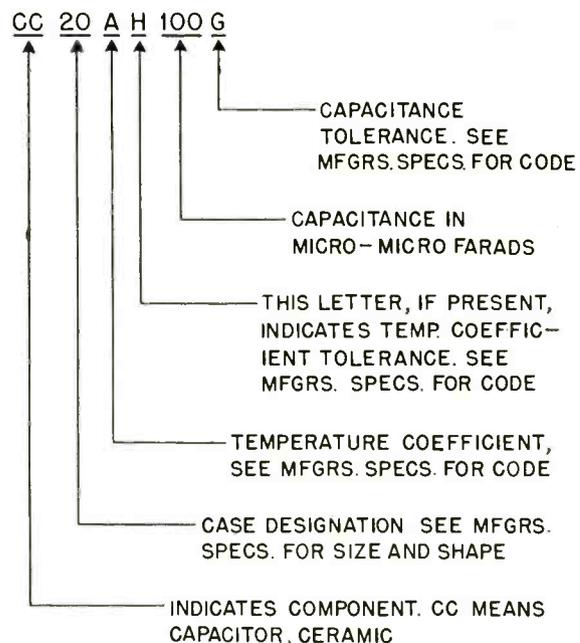
TEMPERATURE COEFFICIENT IS EXPRESSED IN MMF/MMF/°C. THE STANDARD TEMPERATURE COEFFICIENT TOLERANCE IS 15% OR ±.00003 MMF/MMF/°C., WHICHEVER IS LARGER.

## EXAMPLE - COLOR CODE



⊛ SOME MANUFACTURERS USE COLORED DOTS INSTEAD OF THIN BANDS

## EXAMPLE - TYPE DESIGNATION



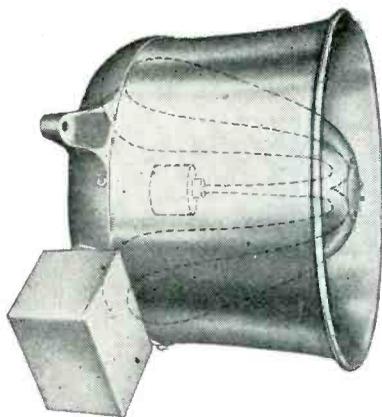
**THE ANSWER  
TO TODAY'S  
PROBLEM—**

## **RACON's . . . the leading speaker line . . . for all types of sound installation!**

Most of the best industrial p. a. installations in use are RACON speaker equipped. They are the finest speakers made and there is a type for every conceivable application.

For Marine p. a. installations, too, RACON leads. Approved by the U. S. Coast Guard, RACON speakers are used aboard Army and Navy vessels. Only RACON can supply, when needed, patented Weather-proof, Stormproof Acoustic Material which is impervious to any weather condition and prevents resonant effects.

Most manufacturing plants will soon order sound installations. Specify RACON Speakers! All types now available in unlimited quantities.



*Left:* MARINE HORN Speaker, approved by the U. S. Coast Guard. Several sizes available. Re-entrant type, suitable for indoor or outdoor use — may be used as both speaker and microphone. 2½', 3½', 4½' and 6' sizes available.  
*Right:* RE-ENTRANT TRUMPET; available in 3½', 4½' and 6' sizes. Compact. Delivers highly concentrated sound with great efficiency over long distances.



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

## Fronts Build Customer Traffic

[from page 17]

and the poor fellow with an ineffective store front wonders why it is that his phone doesn't ring as often as he expects that it should. The answer is clear—effective store advertising by means of your store front. Still another store front is that shown in Fig. 3, with a potential "customer" peering into the window. Obviously there is something in that window that has attracted his attention. We don't care what it is especially. It could be a simple moving display of some sort, or a new radio or a tube—anything that will interest a non-technical public, get that public to stop momentarily

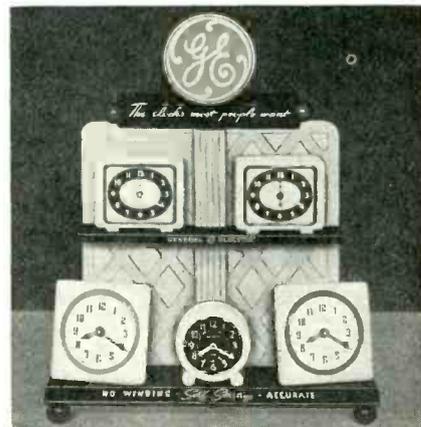
and get started thinking about radio. The first principle is to arrest attention; the second to hold it. And, of course, we must leave a good impression. We can impress on passers by three important things:

1. Our desire to serve.
2. Our ability to serve.
3. That they need what we have to offer.

So, go over your store front. You may find new ideas for making it even more effective, keying it more closely with your technical and selling abilities.

## In Trade

[from page 30]



### Clock Displays

A new "back-in-business" electric clock display is now being made available to General Electric dealers, R. O. Fickes, manager of the company's Clock Division, announces. A miniature "clock-shop" valued at \$4.50, the blue and red display merchandiser, is being sold through G-E distributors for \$2.25. An assortment of six electric alarm clocks must be purchased at the same time.

Five clock models are offered with the display. They are the Herald, which is fair traded at the retail level for \$3.95; the Chantilly, \$4.95; the Troubadour, \$4.95; the Corporal, \$4.50; and the Delegate, \$6.95.

Dealers can order any combination of six of these clocks — six of one model; three each of two models; etc. The wood display features the G-E monogram and stresses the fact that the General Electric clocks are "self-starting" and "accurate" and require "no winding." Painted two shades of blue and a bright red, the display is 22¼ inches high and occupies a space 18 by 18½ inches.

### Zenith Sales Managers

Zenith Radio Corporation will soon begin shipment of new radio sets to distributors, according to H. C. Bonfig, vice president in charge of household radio. The following are appointed district sales managers to represent the company in different territories: Ray L. Hoefler—Philadelphia, Baltimore, Washington, Norfolk; Edgar F. Lindgren—Atlanta, Charleston, Charlotte, Raleigh, Jacksonville, Roanoke, Knoxville, Chattanooga; Robert I. MacClellan—Cleveland, Columbus, Toledo, Pittsburgh; James H. McKee—Birmingham, Fort Smith, Little Rock, New Orleans, Shreveport,

[see page 37]



Masco MA 50 Amplifier 50 Watts of Truly rated power output for big PA systems



Masco Record Changer-Top Amplifier Improved and Modernized



Masco De Luxe Phono-Top PA Equipment



Masco RC-1 Portable Automatic Record Changer For twelve 10 or ten 12 records

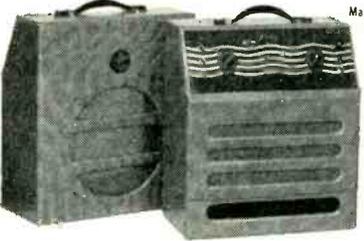
Ask your jobber about these illustrated items of  
**MASCO SOUND EQUIPMENT**  
*reprinted from our recent ads*



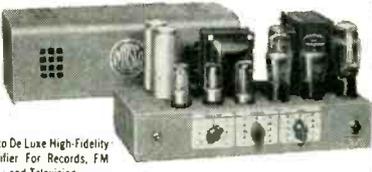
Masco MPA 3 All Electric Phonograph Reproducer



Masco Intercommunication Equipment Master-to-Remote and Master-to-Master 6 and 12 position



Masco MAP-15 True-Tonal Musical Instrument Amplifying System



Masco De Luxe High-Fidelity Amplifier For Records, FM and Television



**MARK SIMPSON MANUFACTURING CO.**  
 186-194 West Fourth Street, New York 14, N.Y.

**SOUND SYSTEMS and Accessories**

Telephone CHelsea 2-7112-3-4

## Merchandise Pre-Views - 11

[from page 19]

The Library (3), a six-tube table-mantel-bookshelf set in walnut, featuring continuously variable tone control, an uncommon feature in sets of this size.

The Duo (1A-1B-1C), a table radio-phonograph combination of sleek airflow design from which the radio may be removed for use as a separate receiver. Used separately, this six-tube unit is an AC-DC set. Record player handles 12 10-inch or 10 12-inch records and is fully automatic. Phonograph cabinet is of mahogany veneer, radio unit of mahogany plastic with gold lacquer trim.

The Super 7 (4), a standard band-shortwave push-button table model in airflow cabinets of walnut or mahogany. Plenti-Power Circuit gives this set a greater undistorted power output than most 12-tube pre-war sets.

### Fine Cabinetry

The Symphonic 14 (1 and 1A in illustration) — top of the "going-in" line — features three-band reception with Plenti-Power, radio-phonograph combination and full-width record storage space. The cabinet is a contemporary interpretation of Chippendale in rich swirl and crotch mahogany.

The Musicale 14 (2), longwave-shortwave-FM console phonograph combination with Plenti-Power and fine cabinetry in walnut or mahogany.

The Concert Grand (3), a 7-tube longwave-shortwave radio-phonograph combination console with Plenti-Power. Cabinets of walnut or mahogany reflect unusual workmanship.

The Super 7 Automatic (4), a two-band phonograph combination console featuring Plenti-Power and generous record storage space. Available in walnut or mahogany.

The FM Century (5), receives programs in the standard band, shortwave band and at the new FM frequencies. This is a 14-tube Plenti-Power console in walnut or mahogany.

### Ten Assembly Lines

Receiver production will be centered in the Sunbury (Pa.) plant where more than \$1,000,000 has been spent in reconverting from wartime radio and radar production to peacetime radio receiver manufacture, Mr. Donley explained.

"We have approximately 19 acres available there, of which nearly 10 acres are devoted to plant proper. This allows ample space for laboratories,

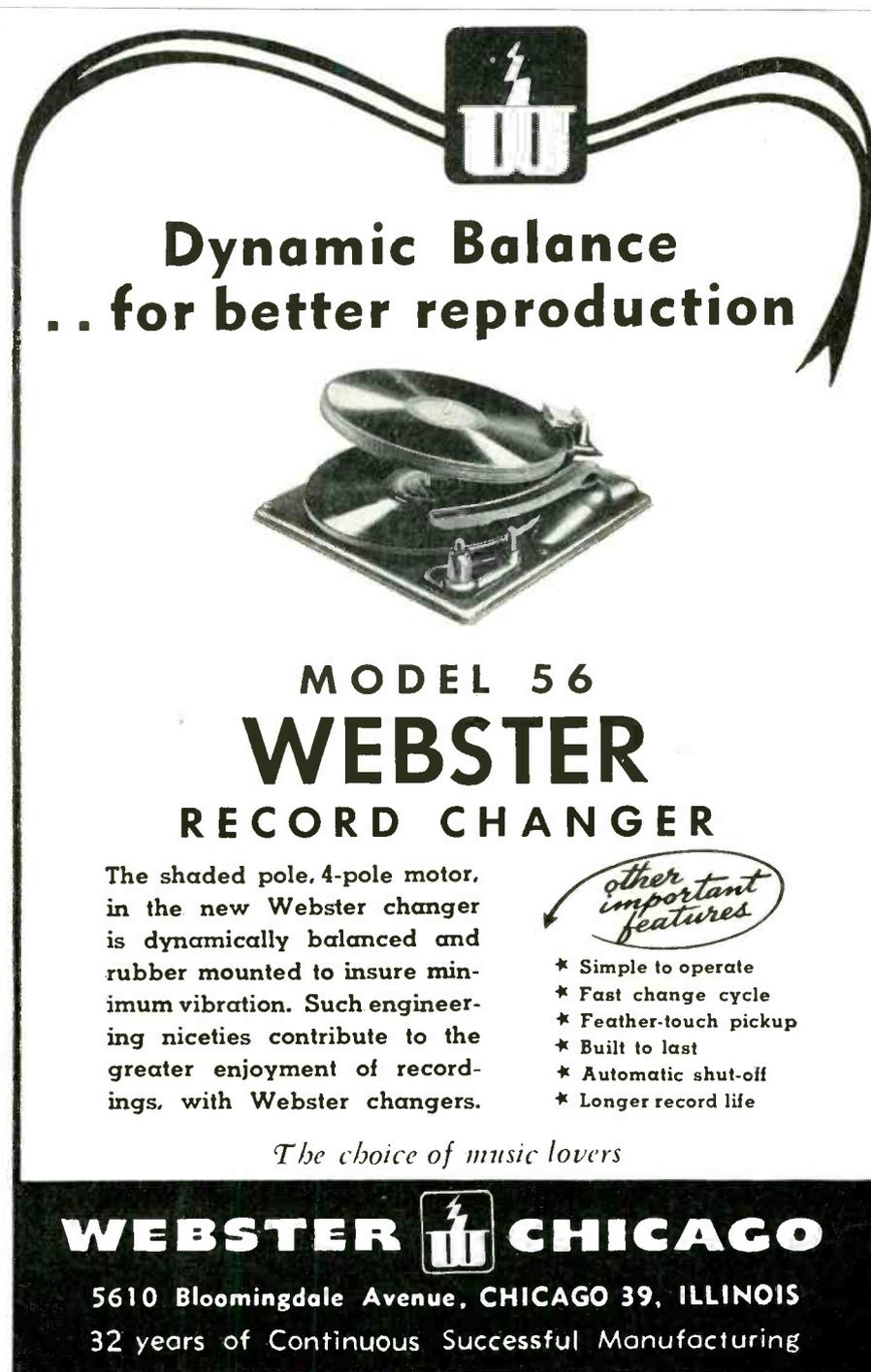
manufacture and storage. Ten assembly lines, totalling nearly a mile in length, are available and another three-quarters of a mile of conveyor lines are used to handle materials. Production will run from 3000 to 5000 sets per day, depending upon their size, when we reach capacity." Sets will be distributed through more than 100 distributors serving upward of 12,000 retailers throughout the United States, Alaska and Hawaii.

### Moore Joins Pugh

After almost four years of specialized V.H.F. and Radar work with the 12th Air Force, Jack (not John) Moore has joined forces with "Muggs" Pugh of C. L. Pugh Company, manufacturers' representative, whose headquarters are maintained at 1670 Doone Road, Columbus 8, Ohio.

### Horwitz To Insuline

Charles K. Horwitz, just released from the Army, has been named executive assistant to the president of the Insuline Corporation of America. He will also serve as director of personnel.



**Dynamic Balance**  
**.. for better reproduction**



**MODEL 56**  
**WEBSTER**  
**RECORD CHANGER**

The shaded pole, 4-pole motor, in the new Webster changer is dynamically balanced and rubber mounted to insure minimum vibration. Such engineering niceties contribute to the greater enjoyment of recordings, with Webster changers.

*other important features*

- ★ Simple to operate
- ★ Fast change cycle
- ★ Feather-touch pickup
- ★ Built to last
- ★ Automatic shut-off
- ★ Longer record life

*The choice of music lovers*

**WEBSTER CHICAGO**

5610 Bloomingdale Avenue, CHICAGO 39, ILLINOIS  
32 years of Continuous Successful Manufacturing

## Tips from Other Dealers

[from page 13]

out front is fading and hard to read. Of course you know what it says, but a potential customer driving past wouldn't be impressed. Inside, you've needed better lighting since before the war. And those walls are getting dark. If they were painted a light hue, the stock on the shelves would stand out much better and lighting would be improved. And all those old signs on the wall—they're dusty and dingy. They ought to be junked.

Let's glance at Competitor C. He's a bug on unusual displays, some of them alive. He had goldfish swimming inside a washer once. He's had rabbits, guinea pigs, and chicks. He always manages to tie up his livestock, if only remotely, with some item he sells. Or he'll have photograph displays, sometimes amateur photos. The fellow is ingenious: he gives it some thought. Of course, he changes his displays often and alternates the trick ones with straight merchandising. But folks have got in the habit of looking in his windows just in case there's something to talk about.

Once again, look at your appliance shop. You've never had an unusual dis-

play. You felt it would be messy and a bother. But sometime's it's messy to make a living, and a great deal of the time it's a bother. So while we're at it, let's try to make a *good* living. A little extra effort—maybe along the lines of Competitor C—may pay off!

### "Take Stock"

Sit down with a pencil and a scratchpad. Write down "Competitor A" or his firm name. List the specific things he has on the ball. Then go on to B, C, D and so on through the field. Here and there you will discover a stunt, a trait, or a method worth adapting to your own use. You'll learn things by studying men who are in the same business in your locality.

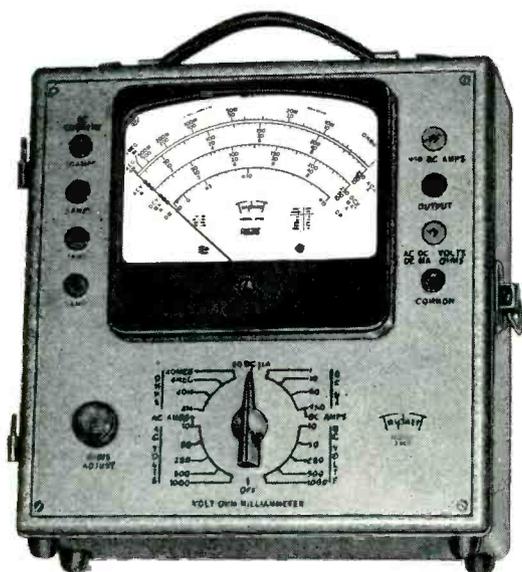
The best thing about such a program is that it doesn't cost a dime. Thinking and observing are free. They'll tell you your competitors' strong points, for they are evident in their every-day merchandising. When you find a policy working well in the same or similar business, you'll be wise to reflect whether you cannot improve your own approach to that same problem.

The radio and appliance dealer who meets his competitors' strong merchandising points with improvements in his own service, then adds his original ideas, will greatly fortify his position. There is little new under the sun—but there can be great differences in the application of business principles. Since such principles are common property, help yourself to them, add them to your present know-how, and you will have "profited from your competitors."

### Electronic Labs. Sales Manager

F. Theodore Hegeman, 3055 Ruckle Avenue, Indianapolis, was named sales manager of the distributor division of the Electronic Laboratories of Indianapolis, announces William W. Garstang, president. He will work directly with more than 500 national distributors in the sale of E-L products.

The Laboratories produce auto radio replacement vibrators; inverters and converters used to operate a-c appliances from various d-c power sources, and other electronic products. The company specializes in providing vibrator conversion equipment for operation of mobile and portable radio transceivers, radios, radio-phonograph combinations and 110 volt a-c appliances.



### NEW ENGINEERING • NEW DESIGN • NEW RANGES 30 RANGES

- Voltage: 5 D.C. 0-10-50-250-500-1000 at 25000 ohms per volt.
- 5 A.C. 0-10-50-250-500-1000 at 1000 ohms per volt.
- Current: 4 A.C. 0-.5-1-5-10 amp.
- 6 D.C. 0-50 microamperes — 0-1-10-50-250 milliamperes—0-10 amperes.
- 4 Resistance 0-4000-40,000 ohms—4-40 megohms.
- 6 Decibel -10 to +15, +29, +43, +49, +55
- Output Condenser in series with A.C. volt ranges.

Model 2400 is similar but has D.C. volts Ranges at 5000 ohms per volt.

Write for complete description

### MODEL 2405

## Volt-Ohm-Milliammeter

25,000 OHMS PER VOLT D.C.



### SPECIFICATIONS

NEW "SQUARE LINE" metal case, attractive tan "hammered" baked-on enamel, brown trim.

- PLUG-IN RECTIFIER—replacement in case of overloading is as simple as changing radio tube.
- READABILITY—the most readable of all Volt-Ohm-Milliammeter scales—5.6 inches long at top arc.
- RED-DOT LIFETIME GUARANTEE on 6" instrument protects against defects in workmanship and material.

# Triplet

## ELECTRICAL INSTRUMENT CO.

BLUFFTON OHIO.

## In Trade

[from page 34]

Memphis, Nashville, Houston; Clarence J. Pagel—Fresno, Los Angeles, Sacramento, San Diego, San Francisco; Herbert H. Sheldon—Hartford, New Haven, Portland, Boston, Providence, Burlington; William A. Shirk—Denver, Billings, Portland, Salt Lake City, Seattle, Spokane.



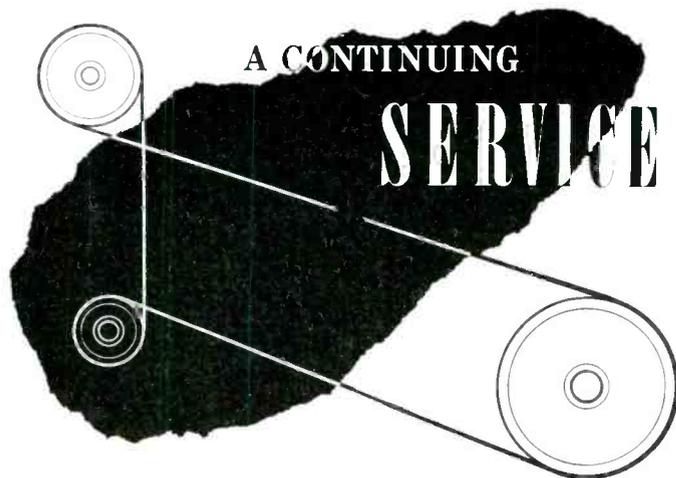
### Point-of-Sale

Garod Radio Corporation launches its 1946 merchandising and point-of-sale campaign with announcement of the Garod "Authorized Dealer Identification Program" according to Lou Silver, sales manager. A typical display deal, Promotion Package No. 4, includes a four-color Rayon Banner; four-color process Window Display Card featuring lovely dancing star Zorina; a four-color process Counter Display Card featuring singing sensation Joan Roberts; a three-color Window Streamer; a set of 26 actual Photographs of the Garod line; a three-ring Binder for the photographs; an Indoor Electric Sign in three colors; a three set Window Display Stand; a Floor type Small Set Display Stand; complete line Wall Chart; plus a quantity of complete line Consumer Folders.

Other material available as individual items include: a Garod Authorized Dealer Decal; a small "authorized dealer" Display Card; a Garod trade mark electro; and a larger "Garod Radio" logotype electro.

### Stamford Transformer

The Stamford Electric Products Company announces the appointment of Jack R. Siegel of White Plains, N. Y., as vice-president in charge of sales and advertising. Mr. Siegel [see page 39]



Rider Manuals are not just bound pages of radio schematics; they are more than static pieces of servicing equipment. Rider Manuals are living things! Working hand in hand with successful servicemen for the past sixteen years they have become an unchallenged institution in the servicing industry.

In spite of this leadership, Rider Manuals are constantly being improved with the sole aim of making still easier, the diagnosis and repair of faulty receivers. For example, in preparing the material for Volume XV we are doing things with the diagrams which will furnish information not normally appearing on, or in conjunction with, such diagrams. This additional information alone will save a serviceman hundreds of hours a year; time which will be worth ten times the cost of the Manual.

Rider Manual owners also enjoy continuing benefits from the findings of the staff of engineers employed in the Rider Laboratories of "Successful Servicing," the technical business paper published by John F. Rider. "Successful Servicing," sent free upon request, keeps you up to date on all developments in all phases of the servicing field.

So, your purchase of a Rider Manual, any volume, is not the end of a transaction; it is only the beginning of a chain of benefits that add up to an invaluable and continuing service.

Although your jobber may not have every volume number you want, please understand his position—and ours. We are doing everything possible to get them to you at the earliest possible date. Place your order to enjoy priority.

**JOHN F. RIDER PUBLISHER, INC.** 404 Fourth Avenue, New York 16, N. Y.

Export Division: Rocke-International Electric Corp. 13 E. 40th Street New York City Cible: ARLAB

### RIDER RADIO BOOKS KEEP YOU UP TO DATE

Just Out "INSIDE THE VACUUM TUBE". 424 Pages, \$4.50

#### RIDER MANUALS (14 VOLUMES)

Volumes XIV to VII . . .	\$12.50 each volume
Volume VI . . .	9.50 each volume
Abridged Manuals I to V (1 Vol.) . . .	\$15.00
Record Changers and Recorders . . .	7.50
The Cathode Ray Tube at Work . . .	4.00
Frequency Modulation . . .	2.00
Servicing by Signal Tracing . . .	4.00
The Meter at Work . . .	2.00

The Oscillator at Work . . . . .	\$2.50
Vacuum Tube Voltmeters . . . . .	2.50
Automatic Frequency Control Systems . . . . .	1.75
A-C Calculation Charts . . . . .	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

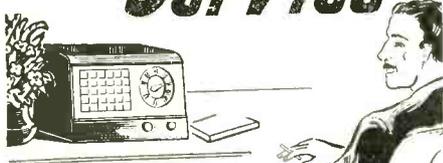
### PRODUCERS of:

- Variable Resistors
- Selector Switches
- Ceramic Capacitors, Fixed and Variable
- Steatite Insulators
- Silver Mica Capacitors

# Centralab

Division of GLOBE-UNION INC., Milwaukee

# Long and Satisfying Service



IT'S ENGINEERED WITH **HI-Q** COMPONENTS

Ask any service man with years of radio set repair experience and he'll tell you most sets "go bad" because of the failure of some insignificant component. That's why it's important to give more than ordinary consideration to the selection of capacitors. Engineer a unit with Hi-Q components and you have strengthened every link in the chain of satisfying performance. Hi-Q ceramic capacitors are individually tested at every step of their manufacture. They'll stand up under the severest conditions of temperature, humidity, vibration and shock. Send for samples and complete data.



## CERAMIC CAPACITORS

CN type with parallel leads  
CI type with axial leads



## WIRE WOUND RESISTORS

Sizes and quantities available promptly to required specifications.



## CHOKE COILS

Uniform in quality — rugged construction tested for performance.

**ELECTRICAL REACTANCE CORPORATION**

FRANKLINVILLE, N. Y.

## REAL "KNOW-HOW" PLUS DEPENDABLE PARTS SPELL POSTWAR SERVICING

**K**EENER competition on the one hand but counterbalanced by a vastly expanded market for real servicing on the other is the way Charley Golenpaul, who heads up Aerovox capacitor sales to the jobbing trade, sees the postwar situation.

"Never was a trade so blessed with thoroughly trained men as we are today", says this well-known merchandiser. "I have talked with many of the returning G.I. technicians, and let me tell you that those fellows know their stuff. After having worked on Army and Navy radars, let alone the latest radio rigs, those chaps consider home radio set repairs just so much apple pie. I think many of us in the trade are too apt to pool-pool these G.I. technicians. But they've got a lot on the ball. And many of them are going into radio servicing.

"On the other hand, I don't believe that the fellows let out of wartime radio factories offer any serious competition for the trained serviceman. For the most part these ex-factory workers have not had a rounded-out experience. They usually know just one kind of work, and that isn't enough training for servicing today's intricate radio sets.

"Likewise, there is no special cause to worry over the part-time serviceman — the chap who holds down a daytime job and attempts radio servicing on the side. I know that we shall

have more and more of these fellows, since many of them want to pad out their income. But servicing is essentially a full-time job. People want service all through the day. The part-time chap simply cannot get very far. This is usually negligible competition.

"Real 'know-how' comes first. The wise serviceman is investing all he can spare in service manuals, books, subscriptions to factual magazines, and dues in worthy associations. But a very close second is the use of dependable material. Especially so today when surplus war goods are pouring into the regular radio market and providing real temptation to the chap who likes to save pennies and take a chance on losing dollars.

"Much of that dumped stuff carries well-known brand names. Much of it is good. But inasmuch as it is usually sold 'as is', the buyer really doesn't know what he is actually getting. Much of the radio parts may have been used or abused. Much of it has been stored under questionable conditions for a long time. The manufacturer cannot be held accountable for the condition of the stuff at this late date. Regardless how liberal the guarantee or warranty may be, it cannot apply now. Some servicemen have learned this to their bitter disappointment, when they tried to get free replacements for broken-down surplus items bought for a fraction of the cost

## SPEED UP REPAIRS WITH THESE G-C AIDS!

Handle Dial Belt Replacements the Easy G-C Way!



1. To determine proper belt for any radio, G-C supplies a complete Belt Replacement Guide and Measuring Scale.

2. By using G-C Belt Guide, just check model number of the set to determine correct G-C Belt.

3. If you don't know model number or make of the set, use G-C Measuring Scale and simple instructions to measure belt.

4. Order belt by number from your radio parts distributor. Phone or mail your order to receive prompt service — no waiting.

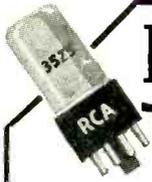
5. Better still — have a complete G-C Belt Kit on hand. Belts are indexed in permanent steel box with slide-in drawer.

**FREE TO ALL RADIO SERVICEMEN** — 68 page G-C No. 345 Belt Guide and Service Book and Measuring Scale. Ask for them at your Radio Parts Distributor.

Get "Smooth-Strong-Correct Fit" G-C Dial Belts from Your Radio Parts Distributor



**GENERAL CEMENT MFG. CO.**  
ROCKFORD, ILLINOIS



# Radio TUBES

Standard Brands  
ALL GUARANTEED

Available for Immediate Delivery

71A(01A) 54¢	6R7 . . . . . 90¢	1T4 . . . . . \$1.20
26 . . . . . 55¢	5X4 . . . . . 99¢	3S4 . . . . . \$1.20
5Y3 . . . . . 55¢	7A4 . . . . . \$1.00	6K8 . . . . . \$1.21
80 . . . . . 55¢	7A5 . . . . . \$1.00	XXL . . . . . \$1.21
76 . . . . . 60¢	7A6 . . . . . \$1.00	XXD . . . . . \$1.21
78 . . . . . 60¢	7A7 . . . . . \$1.00	6F7 . . . . . \$1.21
6SF5 . . . . . 67¢	7B4 . . . . . \$1.00	1A7 . . . . . \$1.27
5Y4 . . . . . 75¢	7B6 . . . . . \$1.00	1N5 . . . . . \$1.27
39/44 . . . . . 76¢	6A7 . . . . . \$1.00	2A3 . . . . . \$1.27
30 . . . . . 76¢	7C6 . . . . . \$1.00	35Z3 . . . . . \$1.27
5Z3 . . . . . 76¢	12K7 . . . . . \$1.00	35A5 . . . . . \$1.27
5U4 . . . . . 76¢	14B6 . . . . . \$1.00	7B7 . . . . . \$1.30
6C6 . . . . . 76¢	1A5 . . . . . \$1.09	25Z6M . . . . . \$1.30
6D6 . . . . . 76¢	1C5 . . . . . \$1.09	7A8 . . . . . \$1.30
6F6 . . . . . 76¢	1H5 . . . . . \$1.09	12K8 . . . . . \$1.30
6H6 . . . . . 76¢	6U5 . . . . . \$1.10	1LN5 . . . . . \$1.41
6K7 . . . . . 76¢	47 . . . . . \$1.10	6L6 . . . . . \$1.41
6SA7 . . . . . 76¢	6E5 . . . . . \$1.10	50A5 . . . . . \$1.41
6SK7 . . . . . 76¢	0Z4 . . . . . \$1.20	14Q7 . . . . . \$1.41
6SQ7 . . . . . 76¢	1R5 . . . . . \$1.20	14A7 . . . . . \$1.41
5W4 . . . . . 76¢	1S4 . . . . . \$1.20	117L/M7 . . . . . \$2.27
3Q5 . . . . . \$1.51	117Z6 . . . . . \$1.59	117N/P7 . . . . . \$2.27
	1S5 . . . . . \$1.20	

## ★ 5 TUBE KITS

50L6, 35Z5,  
12SA7, 12SK7,  
12SQ7

**\$488**

FOR ALL 5

## ★ TUBULAR CONDENSERS

EMERSON 20/20 MFD  
150 Volts  
GUARANTEED FRESH

**55¢**

## ★ CRYSTAL PICKUPS

COMPLETE WITH  
HARDWARE LATEST  
DATE OF MANUFACTURE

**\$287**  
Each

## ★ A GOLD MINE RADIO HARDWARE

Transformers . . . Coils . . . Sockets of all types  
Screws, all sizes . . . Nuts . . . Bolts . . .  
Grommets . . . Angles . . . Wire . . . Resistors  
Portable Battery Plugs . . . Connectors . . .  
Terminal Strips . . . Insulators . . . Lugs . . .  
Spaghetti, ETC.

A \$25.00 VALUE—DON'T MISS IT!

**\$200**  
Box

3 1/2 x 6 x 9" LOADED

And hundreds of other items. Send postal for free complete catalog of radio parts, tubes, batteries, record players, etc. Orders filled as received. We ship anywhere. Dept. R.

# FLANAGAN RADIO CORP.

America's Largest Stock of Radio Tubes  
N. E. Cor. 7th & Chestnut St., Phila. 6, Pa.

of corresponding items of current and guaranteed production.

"You take an awful chance when you install surplus parts or any parts of unknown quality. After all, your main item of cost is labor. Also, there is the matter of 'face' or reputation. Repairs which fail to stand up call for untold loss of time and reputation, and good parts must be installed after all if you are to stay in business. Yes, a chap just can't afford to gamble with questionable parts if he's a real businessman."

### In Trade

[from page 37]

brings a wealth of practical sales and technical experience to his new appointment. The Transformer Division is launching a nation-wide national advertising and sales promotion program for its complete line of radio transformers, which will be sold through radio jobber organizations as well as to manufacturers of radio sets and electronic equipment.

### Electron Tube Booklet

A new reference booklet giving typical operating conditions, characteristics and tube base diagrams for more than 450 types of electron tubes used in radio receiver and industrial electronic applications is announced by Sylvania Electric Products Inc. The booklet is attractively bound size 8 1/2" x 11" for convenient filing or ready reference. The tube base diagrams are also available separately, printed on card stock and punched for wall mounting. Copies of the booklet and chart are available on request to the company at Emporium, Pa.

### New Lines Announced

Cavalcade Industries, Inc., 39 South La Salle Street, Chicago 3, Ill., announce production plans for a complete line of radios and phonographs, small and large electrical appliances, housewares, juvenile furniture and toys. Five of seven company-controlled factories are now in production and four outside sources are being utilized.

Forerunners of a complete line of radios are now being placed on the market in the form of three receiving sets and two electric phonographs. There is a portable electric phonograph, priced at approximately \$33.00, an automatic electric record player that plays ten 12-inch records, twelve 10-inch records or mixed records priced at \$41.95 and two 5-tube AC-DC table

[see page 41]

**NEW** and Ready for you

## ALLIED'S 1946 Radio Parts and Equipment CATALOG

**FREE**

Send  
for it  
**NOW**



**SERVICEMEN! Dealers! Soundmen! Here's your handiest, most complete 1946 Buying Guide for Everything in Radio! Brings you latest facts on the parts and equipment you need. Places over 10,000 items at your finger tips—nationally known makes of guaranteed quality, at lowest prices. Assures fastest shipment from today's largest and most complete stocks under one roof!**



### SERVICE SUPPLIES

Everything for every radio service job! Parts, tubes, tools, service books, test equipment. America's best values—all centralized for you at this one reliable source—ready for rush delivery. Our expert staff is glad to help you.

### P. A. EQUIPMENT

Complete sound equipment to answer every public address need. Amplifiers, speakers, microphones, accessories. Allied leadership assures quality performance, rugged service, money-saving value!

You can't afford to be without this new Buying Guide! A copy is yours FREE for the asking!

## ALLIED RADIO

ALLIED RADIO CORP.  
833 W. Jackson Blvd., Dept. 35-C-6  
Chicago 7, Illinois

Date . . . . .

Rush new FREE 1946 CATALOG

Name . . . . .

Address . . . . .

City . . . . . Zone . . . . . State . . . . .

# SUPREME

## TESTING INSTRUMENTS

AFTER A GREAT  
WAR RECORD

# BACK AGAIN!



### SUPREME MODEL 504-A TUBE AND SET TESTER

SUPREME regrets that war necessitated an interruption of service to its customers and friends. We are genuinely glad to get back into peacetime production—production for YOU.

### MANY SUPREME INSTRUMENTS NOW AVAILABLE

—But not enough to take care of all orders at one time. Demand for accurate, dependable SUPREME equipment is such that we suggest you make arrangements for your needed new SUPREME models without delay.

SEE YOUR NEAREST SUPREME  
JOBBER NOW!

# SUPREME

SUPREME INSTRUMENTS CORP.  
GREENWOOD, MISS.  
U. S. A.

Export Department:  
THE AMERICAN STEEL EXPORT CO., Inc.  
374 Madison Ave., New York 17, N. Y.

# Shop Notes

## NOISE IN SETS

In many cases noise in sets may be due to external causes, coming from an outside source. The serviceman will often allow a receiver to leave his shop with the assumption that the noise does not come from the set itself. However, as it is difficult to distinguish by ear alone between various kinds of noise and their origins and causes, it is wise to make sure that the receiver under test is not at fault.

For example, noise develops in an AC-DC receiver like that caused by faulty fluorescent lamps operating in the vicinity. But such may not be the case. In all probability (and I have found it so in my experience) the noise may be caused by the internal arcing of the filter condensers. This condition may also be of an intermittent nature. In some cases rectifier tubes might produce the same effect.

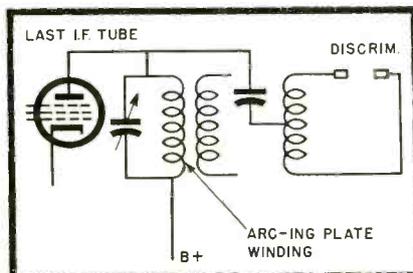
The components mentioned below are generally the cause of most noise cases in receivers: RF coils; Oscillator coils; IF transformers; audio transformers;

the method herein described can be used with very satisfactory results, I have found.

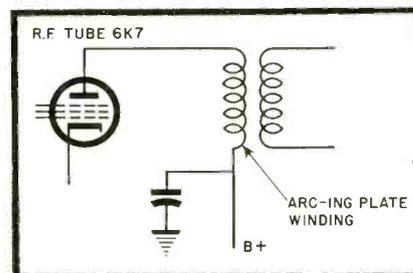
Disconnect the defective winding and apply 600 to 700 volts AC, obtained from the secondary of the power transformer, for several very short intervals until the resistance in the winding is permanently welded. Then make the aforementioned tests again, to be sure that the weld is good. Outlined below are a few cases of actual receiver jobs in which the writer has used the methods outlined above with good results.

### SPARTON

Models 1068, 1078, 1268, 1288P, 1089, 1288, 1568, and 8618 are all equipped with automatic frequency control. When a frying or crackling noise develops this is nearly always caused by the arcing of the plate winding of the discriminator transformer. Replacements of this component have been very hard to get since 1939, and are still a rare item. So, if winding is not burned out completely an



SPARTON



GRUNOW

output transformers and resistors. The method outlined below, which I have been using, may save other servicemen countless hours of hunting for the defective component causing the noise:

1. Without disconnecting, turn volume control on full.
2. Tap tubes and other component parts until the noise is isolated.
3. Arcing RF coils, Osc. coils, IF coils and transformers of all kinds may be located by grounding the plate lead of each coil and transformer for a second or so.

By grounding the plate the winding is loaded up with a few hundred volts, which a coil or transformer in good condition can withstand. But a defective coil or transformer will at first cause a very noticeable increase in the noise level coming from the speaker. By grounding the plate for a longer period of time the defective coil or transformer may be caused to burn out completely.

However, if replacement of a particular coil or transformer is not available

effective repair can be made as outlined above. (Figure 1.)

### GRUNOW

Model 1067 and others. Frying and crackling noise in this and several other models is caused by arcing in the RF coil mounted on the underside of the chassis. If winding cannot be welded permanently coil can be removed and plate winding can be easily be rewound. As this winding is untuned a few turns more or less are not critical in their effect upon set operation.

### L. A. Wheelock Appointed

The appointment of L. A. Wheelock as Western Manager of Equipment Tube Sales has been announced by C. W. Shaw, Sales Manager for the Radio Tube Division of Sylvania Electric Products Inc.

## In Trade

[from page 39]

model radios in wood and plastic cabinets priced at \$25.97 and \$17.59 in Zone 1, also a portable radio receiver. Capacity on some of these items is already sold for several months ahead but among the sets to come are a deluxe record changer in cabinet. A steady volume of five to six million dollars annually is being aimed at for the radio branch of the business.

Three sizes of home receivers have already been placed on the market under the Cavalcade name, 8, 16, and 24 cu. ft sizes priced at \$320, \$500, and \$176 respectively. Washing machines, ironers and electric refrigerators are being planned for the future. Other products include a Porta-Grill, an exclusive patented charcoal-burning outdoor grill to be fair traded at \$14.95 with deliveries starting in March.

Sales are made direct through the company's own sales organization. Six states, Illinois, Ohio, Michigan, Wisconsin and Minnesota, are handled direct from the home office at 39 S. La Salle Street, Chicago. Regional managers so far appointed are: W. H. Rich, New York City; A. J. Kroog, Atlanta, Ga.; Elinore Tudhope, Kansas City; Joe W. Marsh, Los Angeles, and Lloyd Marsh, Seattle. Erling Anderson is sales and advertising manager. A nation-wide program of dealer and consumer advertising is planned when production has been stepped up.

### Crosley Sets to Dealers

Millions of impatient prospective owners of radio receivers have been, figuratively, running around in circles and biting pieces out of the furniture, wondering when they could tune in "O Sole Mio" on their own sets.

Here's an indication that merchandise really is moving. Shipments in substantial quantities of three additional models of new Crosley radio receivers will be made to Crosley distributors by March 1, according to E. C. Brode, manager of distribution of the manufacturing division of The Crosley Corporation. In a letter just sent to Crosley distributors from coast to coast, Brode has advised them that Crosley regional managers will forward schedules of shipments on the three new models.

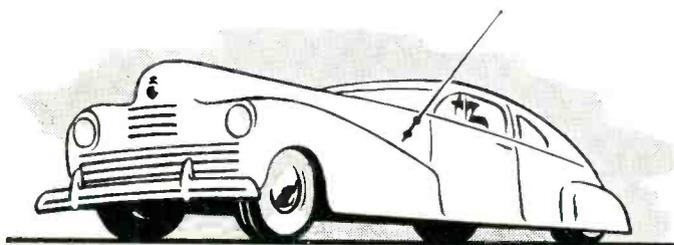
One of the models is a console type combination radio-phonograph with floating jewel tone system and automatic record changer. The other two are table model receivers in plastic cabinets.

[see page 43]

Where lasting appearance counts . . .

# SNYDER

## Antennas



# SNYDER

## MANUFACTURING COMPANY

PHILADELPHIA

**MANUFACTURERS . . . START TO FINISH**

*Broiler Beauty!*

by home-craft

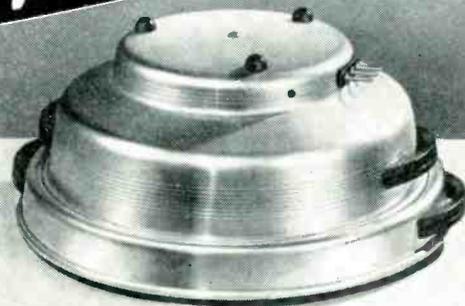
RETAILS AT \$19.95

(OPA CEILING PRICE)

YOUR PRICE ONLY

\$12.60

**IMMEDIATE DELIVERY!**



The Home-Craft Broiler's mirror finish, spun-aluminum construction (the result of war-time research) is by far the most attractive ever offered. It has instant appeal.

Two heating units provide both high and low heat. Both elements are made of pure, heavy gauge Nikrome wire for long service. Operates on either A.C. or D.C.

Handles and knobs of new patented Thermo-Setting plastic are more durable and heat resistant than pre-war types.

With its fast heating elements and generous 12" broiling surface, the Home-Craft Broiler will quickly broil delicious meals and then keep them warm until served. Beautiful streamlined appearance makes the Home-Craft Broiler a perfect addition to any dinner table.

At present, we are making immediate shipment on all orders. Terms: 2% check with order. Or, 25% deposit; balance C.O.D. Railway Express. Mail your order today!

**HOLLANDER RADIO SUPPLY CO.**

**549 West Randolph Street**

**Chicago 6, Illinois**

# LAKE'S

## RADIO CABINETS & PARTS



**Now Available!**

Postwar  
2 Post  
RECORD-  
CHANGER

In luxurious brown leatherette portable case, 15" L x 15" W x 10" D. Latest electronic developments make this modern

record-changer the finest on the market today!  
List Price—\$49.95 Dealer's Net—\$29.97



**De Luxe  
PHONO  
CABINET**

Covered in luxurious, genuine brown leatherette, has deluxe brass hardware throughout, made completely of plywood with brown plastic handle, has padded top and bottom. Motor board 14" x 14 1/2". Overall dimensions 16" L x 15" W x 8" H.  
Your special net price ..... \$8.95



Portable Phonograph case in brown leatherette covering. Inside dimensions 17 1/2" long, 13" wide, 7 1/2" high. Has blank motor board and opening for speaker. As illustrated at left, specially priced at . . .

**\$7.95**

Also blank table cabinets of walnut veneer in the following sizes, with speaker opening on left front side:

(Note: \*7 has center speaker grill.)

#1	8 1/4"	L x 5 1/2"	H x 4"	D \$1.95
#2	10 1/4"	L x 6 3/8"	H x 5"	D \$2.75
#3	13 1/2"	L x 7 5/8"	H x 6 1/4"	D \$3.25
#7*	10 3/4"	L x 7"	H x 5 1/2"	D \$2.50

\*Speaker Opening in center of front side.

All types of radio cabinets and parts are available at Lake's Lower prices. A large stock is listed in our catalog.



**SERVICEMEN—RETAILERS**  
Join our customer list today.

Dept. E

Write for our NEW 12 page, illustrated, elaborate catalog!

**Order from Lake!**  
You'll make no mistake!

**Lake Radio Sales Co.**  
615 W. Randolph Street  
Chicago 6, Ill.

## Radio Growth Advances Servicing

by JOHN MECK\*

**Electronic and radar developments and applications, FM and television have made the radio service industry more of a specialized field than ever before.**

**F**IVE years of war have resulted in a twenty-five year stride in radio development. During the emergency and under stress of war, radio engineers and research specialists performed virtual miracles in the laboratory and on the production line, so that the radio one buys today is actually the radio of many tomorrows.

It is reasonable to assume that the radio serviceman must match strides with radio development and it is gratifying to see that he is doing this. He is as important to radio as the sum total of developments and perfections given over to it. Besides a general and specific "know-how" he must have a genuine desire to give an intelligent service to the radio customer.

That the better class of radio servicemen wonder what the public thinks of them, their business methods and pricing scales is evidenced by the sincere objectives toward improved techniques that they have set for themselves. They, as the public they serve, shudder at the tactics employed by

the "screwball-mechanics" who do not grow up with radio and who do not care to employ ethics in their dealings with the public. Yet, they continue to force their service on the public. Fortunately, they are in the minority as compared to the high class and legitimate radio serviceman.

Whether one is for or against various licensing committees and associations, one thing is certain, and that is that the forming of these associations is evidence of the growing concern of the radio serviceman's relation to the public. Ordinance to license and regulate radio repair shops in various cities and communities may or may not be the solution due to many salient factors, but at least radio servicemen are cognizant that something must be done to keep the repair industry equal to the radio industry.

In addition to formulating programs of this nature, the high class radio serviceman is doing more on keeping up with technical developments. More and more courses are being offered in advanced radio theory and techniques and the serviceman is absorbing them as fast as radio advances.

\*President, John Meck Industries

### SERVICE DEALERS SPONSOR TRADE STANDARDS

**Editor:**

We comprise 45 good active members and they represent the majority of progressive and reliable individuals connected with the radio industry in Luzerne County. These members will soon benefit from an aggressive local advertising campaign sponsored by the association.

Our meetings are devoted to the cause of independent radio service dealers and others associated with the industry in this locality. Most of our regional wholesalers have attended our meetings to discuss their products, including sales policies and technical features.

The following men have taken office in this Association for the present year: President: Hayden White, Martz Bldg., Wilkes-Barre, Pa.; Vice

Pres.: Max Freidrich, independent serviceman, Wilkes-Barre, Pa.; Secretary: Edward Buckman, Radio Engineering Service, Wilkes-Barre, Pa.; Corresponding Secy.: C. F. Bogdan, C. F. Bogdan Radio Service, Wilkes-Barre, Pa.; Treasurer: Ben Gerstein, General Radio & Electronic Co., wholesale distributors, Wilkes-Barre, Pa.

The following are directors: Roy Stroh, Roy Stroh's Repair Shop, West Pittston, Pa.; Edmund Nowicki, Voss Sales Co., Nanticoke, Pa.; Joseph Sin-cavage, independent serviceman, Wilkes-Barre, Pa.; Milan Krupa, engineer station WBAX, Wilkes-Barre, Pa.

**Yours very truly,**  
C. F. Bogdan, Corresponding Secretary,  
Radio Servicemen's Assoc.  
of Luzerne County, Pa.

**In Trade**

[from page 41]



R. P. Almy



H. H. Rainier

**Sylvania Promotes**

Recent Sylvania Electric Products Inc. executive appointments named R. P. Almy as assistant general sales manager of the Radio Division with Harold H. Rainier to succeed him as Manager of Distributor Sales, Radio Division.

Mr. Almy, who joined Sylvania Electric's staff in 1928, will have his headquarters in Emporium, Pennsylvania. He is Chairman of the Sales Managers, Eastern Group. He is also a member of the Radio Parts Industry Coordinating Committee.

Mr. Rainier, who has been with Sylvania since 1940 as District Sales Manager and Assistant Distributor Sales Manager, will be located in Chicago. He was formerly associated with the Industrial Relations Department of the Pennsylvania Railroad and the sales departments of A. B. Dick Company and R.C.A.

**New Tool Line**

Joseph F. Patten, ex-chief machinists' mate, and Lawrence A. Feirberg, [see page 44]



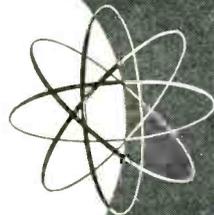
**UNIMETER**

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.

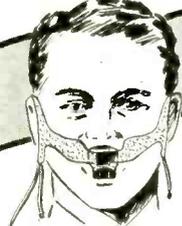
For details write: *Electronics Dept., Specialty Division, General Electric Company, Syracuse, New York.*

**Electronic Measuring Instruments**



**GENERAL ELECTRIC UM-3**

## MICROPHONES



**ATTENTION DEALERS**  
Order these Microphones for re-sale to amateurs and experimenters. We have a large quantity of both now, but when these are sold, no more will be available.

**Just received at OLSON RADIO WAREHOUSE:** a large shipment of Government-released Single Button Carbon Microphones with headstraps and connecting wires. Noise-cancelling, designed for use in Army Tanks. Straps on the head, with mike above the lips. These lip microphones are **NEW**, direct from factory on a contract termination. Cost the Government much more than our price. Can be used with any low gain amplifier, or connected to any radio and used as a home microphone. Can be used with only a battery and headphones for inter-office telephone work, with no amplifier. Microphone current, 50 mils; resistance, 50-100 ohms. Excellent frequency response from 200-4,000 CPS; not affected by variation in position. Immersion proof. **ORDER NOW!**



**EXTRA SPECIAL!** Same Microphone without straps or wires. Can be used as above, and also as a contact or guitar mike. The package of 12 is a super-bargain!

Regular Retail Price, \$8.00 ea.

Reg. Retail Price, \$12.50

**YOUR PRICE — \$1.05**

POST PAID

**50¢**

**PACKAGE OF TWELVE, \$5.00**

This offer good only in U. S. A.

Send for our **FREE** Monthly Bargain Catalogs

**MAIL TODAY**  **OLSON RADIO WAREHOUSE**

73 E. Mill St., Dept. 17, Akron, Ohio

Send me \_\_\_ Lip Microphones with Straps and Connecting Wires, @ \$1.05.

Send me \_\_\_ Lip Microphones only, @ 50c.  Send me pack of 12 Lip Microphones for \$5.00. I enclose \$\_\_\_\_\_.

**NAME** . . . . .

**ADDRESS** . . . . .

RECORD CHANGERS TEST EQUIPMENT  
TRANSFORMERS  
VOLUME CONTROLS  
CONDENSERS SPEAKERS  
MIS RESISTORS

**TROUBLES?**

Send them to us. We're specialists in solving problems due to shortages in radio and electronic parts. We have thousands of items in stock for immediate delivery.

Write for Free 1946 Parts Catalog

**R-L**  
**Electronic Corp.**

731 West Washington Blvd. — Dep't. 5  
Chicago 6, Illinois

**POST-WAR**  
*Special*

**6 TUBE "SUPER HET" RADIO KIT**

Complete, Including Attractive Walnut Cabinet. Diagram Furnished. Uses One 25L6 — One 25Z6 — One 6SQ7 — One 6SK7 & Two 6SJ7.

**ALL PARTS MOUNTED**

To assemble, all one needs is a soldering iron and 30 minutes of your time

**\$16<sup>95</sup>** LESS TUBES

Limited Quantity on Hand

TERMS: 10% DEPOSIT WITH ORDER—BALANCE C. O. D.

**LIBERTY SALES CO., INC.**  
115 WEST BROADWAY • NEW YORK 13, N. Y.

**In Trade**  
[from page 43]

former Signal Corps officer, have recently organized the Jewel Tool Company at 125-07 101st Avenue, Richmond Hill, N. Y., and are manufacturing and marketing a new, patented quadruple key. This key, a 1-piece drop-forged unit, fits 4 sizes of socket head and hollow head screws. The two veterans, interested in nationwide distribution, are negotiating with distributing agencies in various parts of the country. However, Mr. Feirberg, sales manager, states that many excellent territories are still available.

The company also manufactures a set of three keys designed to fit eleven different sizes of hollow-head set screws and socket-head cap screws. This set eliminates the need for eleven different, individual wrenches.

**1946 Sound Line**

The Stromberg-Carlson Company, Rochester, N. Y., announces a new line of sound equipment for 1946, to clinch its claim to a major share of the multi-million dollar business. The line includes loud speaker intercommunicating systems, amplifiers of all sizes from the small portable type suitable for parties, with a phonograph turn table and microphone attached, to large complete units which incorporate radio, phonograph, microphone and switching devices. These units can be built up with additional matching amplifying units to give the necessary power for almost any sibe sound amplifying requirement. They will take care of paging, public address, signaling and music distribution.



Irving C. Brown, Sales Manager, Industrial Electronics Division, Raytheon Mfg. Co.

**Packard-Bell News**

The Packard-Bell Company, manufacturers of radios and PhonOcards, combination radio-phonographs and



• Aerovox again offers the outstanding line of molded-in-bakelite mica capacitors — widest choice of designs, sizes, mountings, terminals, voltages, capacitances. Also silvered mica capacitors for the most critical applications. Such real choice means *the right capacitor for any job.*

**• Ask Our Jobber...**

Ask about this outstanding line of mica capacitors. Ask for latest Aerovox catalog — or write us direct.



**FOR RADIO-ELECTRONIC AND INDUSTRIAL APPLICATIONS**

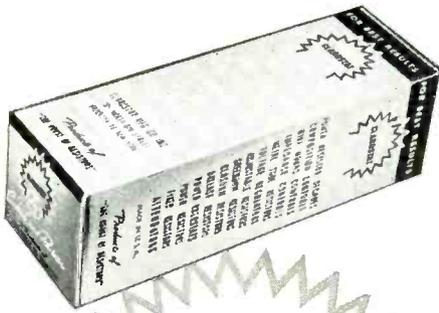
AEROVOX CORP., NEW BEDFORD, MASS., U.S.A.  
Export: 13 E. 40th St., New York 16, N.Y. • Cable: 'ARLAB'  
In Canada: AEROVOX CANADA LTD., Hamilton, Ont.

**ADDRESS CHANGES—**

Subscribers to RSD should notify our Circulation Dept. at least 3 weeks in advance regarding any change in address. The Post Office Dept. does not forward magazines sent to a wrong address unless you pay additional postage. We cannot duplicate copies of RSD sent to your old address.

RSD Circulation Dept.

**Cowan Publishing Co.**  
342 Madison Ave., New York 17, N. Y.



The  
**GREEN**  
signal

★ Shiny green Clarostat cartons once more dress up the jobber's shelves. It's the green signal inviting you to resume full speed in getting your share of the postwar business with Clarostat:

COMPOSITION CONTROLS  
WIRE-WOUND CONTROLS  
POWER RESISTORS  
GLASOHM RESISTORS  
BALLAST RESISTORS  
METAL-TUBE RESISTORS  
SOUND-SYSTEM CONTROLS  
ETC. ETC.

Our new No. 46 postwar catalog tells the whole story. Ask your jobber for a copy—or write us.



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

#### \$1.00 PAID FOR SHOP NOTES

Write up any "kinks" or "tricks-of-the-trade" in radio servicing that you have discovered. We will pay \$1 for such previously unpublished "SHOP NOTES" found acceptable. Send your data to "Shop Notes Editor," RADIO SERVICE DEALER, 342 Madison Ave., New York 17, N. Y. Unused manuscripts cannot be returned unless accompanied by stamped and addressed return envelope.



President of Packard-Bell Corporation, Herbert A. Bell, signs first share of stock offered to public. Officers of the new corporation standing by are, (l. to r.): Howard D. Thomas, Jr.; executive vice president and general manager; J. M. Spain, vice president in charge of sales; L. Day, Sec-Treas.

home recording instruments, has changed its organization from that of a limited partnership to a corporation. Officers of the new corporation are: Herbert A. Bell, President; Howard D. Thomas, Jr., Executive Vice President & General Manager; Joe M. Spain, Vice President in Charge of Sales; and Lowell R. Day, Secretary-Treasurer. In making the change, the Corporation offered 50,000 shares of its stock through Cruttenden & Co. to the public at \$6 a share. The issue was quickly over-subscribed on the first day of trading, and the stock rose to 9 $\frac{1}{8}$ .

Sale of the stock was first announced to employees of the company and to distributors of Packard-Bell products. When he announced that the stock was being offered to the public, Mr. Bell said that the proceeds would be used to expand the radio-Phono-cord production. Mr. Thomas pointed out that the Corporation's first really post-war product, Model 551D, was being delivered to franchised dealers, and other models were following closely behind on the production lines.

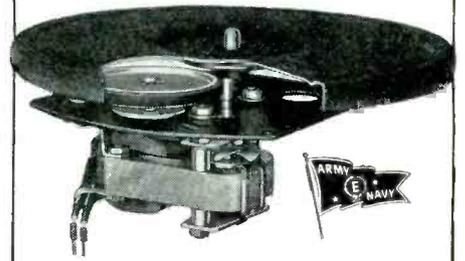
#### OPA Price on Meck

Retail prices on the new Meck phono-radio combination have been approved by OPA, announces Henry Hutchins, sales manager. OPA approved ceiling in zone 1 is \$49.80 and \$52.29 in zone 2. Designed in an attractive wood cabinet that measures 13" x 12" x 8", the phonograph uses a special constant speed A.C. motor and is equipped with a standard turntable pickup tone arm.

The radio in the combination is the five tube superheterodyne which Meck introduced as the first completely new radio of the post-war world. Meck now has a backlog of close to ten million dollars in orders. The "Trail Blazer" covers the full broadcast band, has automatic volume control and a built-in-loop.

DRIVE AHEAD WITH

*Smooth Power*



• You'll travel the roads to future markets faster and easier when you standardize on General Industries Smooth Power motors. Quick starting, uniform speed and quiet performance have for years made these motors leaders for phonographs, recorders and record-changers. From the GI complete line, select the proper motor for your new design. For smooth performance, standardize on Smooth Power.



The General Industries Company  
DEPT. M • ELYRIA, OHIO

# For Best Performance

## SPIRLING AUTO ANTENNAE

NEW POSITIVE BALANCED  
TENSION CONTROL IN  
TELESCOPING

Chrome plated! Rust-proof!  
Rattle-proof!

Our expanded engineering and creating departments are now at work on some of the outstanding products of tomorrow. Foremost is our line of AUTO ANTENNAE!

WRITE  
TODAY  
FOR FULL  
DETAILS  
ON OUR  
LINE!

**SPIRLING PRODUCTS CO.**  
60-62-64 Grand Street  
New York 13, N. Y.

### 18 YEARS IN RADIO



GET THIS  
New CATALOG  
By This Old Firm

Latest developments in radio and electronic parts and devices, newest ham gear, gadgets for experimenters, bargains in war surplus items.

**FREE TO YOU**

Mail the coupon below and get this new catalog FREE.

BURSTEIN-APPLEBEE CO.,  
1012 McGee, Kansas City 6, Mo.

Send me FREE catalog advertised in Radio Service Dealer

I AM \_\_\_\_\_  
STATE CONNECTION IN INDUSTRY

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

TOWN \_\_\_\_\_ STATE \_\_\_\_\_

### Oscillators, Mixers & Converters

[from page 23]

the excitation in an oscillator be sufficient to overcome its losses, it is required that the polarity of the induced voltages across the grid circuit be such as to cause a plate current increase when the grid voltage rises in a positive direction, and a plate current decrease when the grid voltage becomes more negative. This is taken care of by properly connecting the oscillator coil terminals.

A second method of transferring energy from the plate circuit to the grid circuit is illustrated in Fig. 4. Energy from the plate circuit is fed back capacitively through condenser,  $C_t$ , and the portion of the coil  $L_1$  marked (b), to the cathode. The magnetic field set up in (b) links the remaining turns of the coil, (a), inducing a voltage in the entire coil. From that point on, the circuit behaves in much the same manner as the tickler feedback circuit.  $L_2$  is an R.F. choke, the function of which is to prevent the generated R.F. from being short-circuited through the "B" supply to ground. Most of the oscillator circuits used in radio receivers are variations of the Hartley connected circuit, which is the one just described.

A variation of the Hartley circuit is the Colpitts circuit, Fig. 5. Energy from the plate is fed back to the cathode through  $C_t$  and the portion (b) of  $C_1$ . The latter discharges through  $L_1$ , which in turn charges condenser,  $C_2$ , in a series of pulses and at a frequency equal to the resonant frequency of the  $L_1$  and  $C_1$ .

### ELECTRON COUPLED OSCILLATOR

One of the characteristics of some oscillator circuits is the variation of frequency with changes of load impedance. The latter may be varied by any circuit coupled to the load and absorbing energy from it. If an amplifier stage is inserted between the oscillator and the load, the circuit absorbing the energy is effectively isolated from the load, and has no effect on the oscillator frequency. This amplifier stage is called a *buffer* stage, and the complete circuit is called a Master Oscillator Power Amplifier (MOPA).

By means of the circuit illustrated in Fig. 6, the oscillator output is transferred electronically to the plate circuit, a buffer action thus being effected within the tube itself. The func-

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

**PREVORE** Est. 1930  
Now Shipping  
  
CHROME  
Electric Boilers  
Inquire Now!  
Broiler Pioneers  
**PREVORE ELEC. MFG. CO.**  
126 - 18 St., Bklyn, N.Y.

### New Detectron Pocket Radio Developed



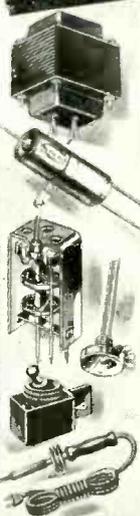
Advanced circuit with new Detectron detector gives HIGHER EFFICIENCY. Sensational. ENERGY wasted by former circuits USED by Detectron.

Plays BETTER than any batteryless radio in the world. Ideal for experimenters, campers, shut-ins, auto cabins, etc. Complete. Send \$1 check or m.o. On arrival pay postman \$2.99, plus delivery fee for kit with instruction book, ground cord. We assemble and wire for 99c additional. Address: Laboratory.

R. G. Middleton, 47-25 44th Street  
Woodside, Long Island, N. Y.

## RADOLEK

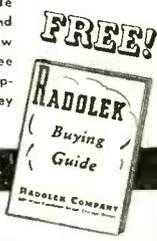
### Radio-Electronic Service Parts



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 Radalek 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.



### FAST SERVICE!

RADOLEK CO., Dept. R-111  
601 W. Randolph St., Chicago 6, Ill.

Please send FREE Buying Guide Supplements

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_

### ORDER FROM RADOLEK

# JOB AHEAD

...and we're equal to it!  
Each day we are shipping  
more for civilian use.



# WIRES

MADE BY *Engineers*  
FOR *Engineers*

## cornish

WIRE COMPANY, INC.

15 Park Row,  
New York City



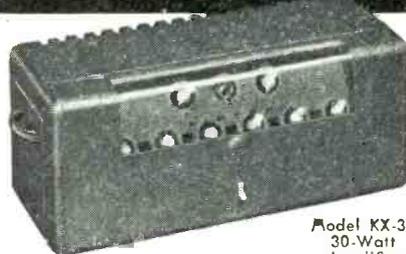
tion of the oscillator plate is taken over by the screen grid. This circuit, known as an Electron Coupled Oscillator, has excellent frequency stability, and is very popular.

### BEAT FREQUENCY OSCILLATOR

Code signals are generally interrupted C.W. pulses. In order to make these pulses audible, communications receivers make use of the Beat Frequency Oscillator, an example of which is shown in Fig. 7. By impressing the output of a local signal generator, tuned slightly above or below the incoming I.F. signal, on the electron stream which contains the I.F. variations beat frequencies will result. Thus, if the I.F. frequency is 456 K.C. and the local oscillator of the beat frequency generator is adjusted to 455 K.C., code signal pulses will be heard as 1 K.C. notes. The local oscillator shown in Fig. 7 is a typical modified Hartley circuit which is coupled by means of capacitor  $C_6$  into the diode plate circuit of the detector tube. When receiving Amplitude Modulated signals, switch, S, is thrown in the "off" position.

(To be continued)

## SOUND REPRODUCTION AT ITS BEST



Model KX-30  
30-Watt  
Amplifier

AN amplifier to satisfy the most discriminating judge of sound equipment. The Newcomb range of tone effects far exceeds usual amplifier performance. Overload and volume level indicators guide operator when not in position to hear loudspeakers. Master volume control regulates overall volume without disturbing balance between various input mixer controls. The protective keylock cover prevents accidental misadjustments.

Plug-in transformer permits changing standard high impedance inputs to low without re-wiring.

Write for details on complete line of Newcomb amplifiers.



THE SOUND OF QUALITY

*Newcomb*  
**AUDIO PRODUCTS CO.**  
MANUFACTURERS  
DEPT. D. 2815 S. HILL STREET  
LOS ANGELES 7, CALIFORNIA

Write for  
**BIG, NEW CATALOG**

... describing the comprehensive line of

# MARION

... Standard and Hermetically Sealed Electrical Indicating Instruments



... with an "extra" section containing a valuable guide to instrument ordering of prime importance to all who sell and use electrical indicating instruments.

**MARION ELECTRICAL INSTRUMENT CO.**

MANCHESTER, NEW HAMPSHIRE

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



### Heat Lamp Displays

To help the dealer promote infra-red heat lamp sales for home use, three-panel window display cards now available feature the four commonest home applications of Birdseye infra-red lamps — heat-treatment of muscular aches and sprains, drying hair after shampoo, hardening nail polish, and drying hosiery and clothing. Standing 30 inches high with two wings, these displays are available to dealers through the Wabash Corporation, Brooklyn 31, New York.

### Electro-Voice Appoints Soules

Electro-Voice, Inc., manufacturer of microphones, has appointed Lt. Col. Webster F. Soules, now on terminal leave from the Army Signal Corps, as sales manager working out of its South Bend, Indiana, plant.

VELCITY

P.G. DYNAMIC



THE FINEST MICROPHONES

# AMPERITE

FOR PUBLIC ADDRESS & RECORDING



KONTAK MIPES

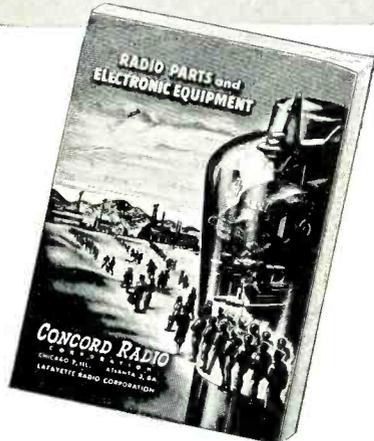
MICROPHONES THAT SURPASS THE HIGHEST REQUIREMENTS OF BROADCASTING, PUBLIC ADDRESS, AND RECORDING

Write for Catalog

**AMPERITE COMPANY**  
561 BROADWAY NEW YORK, N. Y.

Announcing

# 2 New CONCORD RADIO CATALOGS



Ready Soon! The presses are roaring now, pouring out the thrill-packed pages of the first great, post-war COMPLETE CONCORD Catalog—featuring

## RADIO SETS • AMPLIFIERS RADIO PARTS ELECTRONIC EQUIPMENT

Soon it will be in your hands, presenting the complete line of brand new post-war designed CONCORD Radio Receiving Sets and Amplifiers—incorporating a host of new improvements, new developments, modern cabinets, and superb quality throughout—plus page after page of nationally known standard top-quality radio and electronic equipment, supplies and amateur equipment. Mail the coupon below NOW—to be sure your FREE copy will be mailed to you as soon as off the press.



Ready Now!  
New CONCORD  
Bargain Book of  
RADIO PARTS  
SUPPLIES  
EQUIPMENT

Just off the press: The newest Concord Bargain Book listing hundreds of money-saving bargains in hard-to-get, standard-make radio parts and electronic equipment. Select your needs from remarkable values in Condensers, Resistors, Meters, Transformers, Volume Controls, Relays, Switches, Generators, Microphones, Speakers, Tools, etc., etc. Mail coupon for your copy now.

# CONCORD

RADIO CORPORATION  
LAFAYETTE RADIO CORPORATION  
CHICAGO 7      ATLANTA 3  
901 W. JACKSON BLVD.      265 PEACHTREE ST.

Concord Radio Corporation Dept. K-38  
901 W. Jackson Blvd., Chicago 7, Illinois  
Please mail immediately FREE copy of the  
New Radio Parts Bargain Supplement—and  
place my name on the list to be one of the  
first to receive the new CONCORD COMPLETE  
CATALOG.

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

# Ad Index

Aerovox Corporation ..... 44 <i>Agency: Austin C. Lescarboura</i>	R. G. Middleton ..... 46
Allied Radio Corp. .... 39 <i>Agency: Henry H. Teplitz Adv.</i>	Murray Hill Books, Inc. .... 30 <i>Agency: The Harry P. Bridge Co.</i>
Amperite Co. .... 47 <i>Agency: H. J. Gold &amp; Co.</i>	National Union Radio Corp. .... 11 <i>Agency: Hutchins Advertising Co.</i>
Astatic Corporation ..... 10 <i>Agency: Wearstler Advertising, Inc.</i>	Newcomb Audio Products Co. .... 47 <i>Agency: Gail Hall Adv.</i>
Burstein-Applebee Co. .... 46 <i>Agency: Frank E. Whelan Co.</i>	Olson Radio Warehouse ..... 43 <i>Agency: Jessop Advertising Co.</i>
Centralab ..... 37 <i>Agency: Gustav Marx Adv. Agency</i>	Prevore Electric Mfg. Co. .... 46
Clarostat Mfg. Company ..... 45 <i>Agency: Austin Lescarboura &amp; Staff</i>	Racon Electric Co. .... 33 <i>Agency: Leon Allen Advertising Agency</i>
Concord Radio Corp. .... 48 <i>Agency: E. H. Brown Advertising</i>	Radio Corporation of America ..... 5 <i>Agency: J. Walter Thompson Co.</i>
Cornish Wire Co. .... 47 <i>Agency: Hart Lehman Adv.</i>	Radio Wire Television, Inc. .... 3 <i>Agency: S. T. Seidman &amp; Co.</i>
Electrical Reactance Corp. .... 38 <i>Agency: Scheel Advertising Agency</i>	Radolek Company ..... 46 <i>Agency: Turner Advertising Agency</i>
Flanagan Radio Corp. .... 39 <i>Agency: Stewart-Jordan Co.</i>	Raytheon Mfg. Corporation ... 4th Cover <i>Agency: Burton Browne Adv.</i>
Galvin Mfg. Corp. .... 3rd Cover <i>Agency: Gourfain-Cobb Advertising Agency</i>	John F. Rider Publisher, Inc. .... 37 <i>Agency: Lansford F. King Adv.</i>
General Cement Mfg. Co. .... 38 <i>Agency: Turner Advertising Agency</i>	R-L Electronic Corp. .... 44 <i>Agency: R. S. Wittenberg Adv.</i>
General Electric Co. .... 1, 43 <i>Agency: Maxon, Inc.</i>	Simpson Electric Co. .... 9 <i>Agency: Kreicker &amp; Meloan, Inc.</i>
General Electric Co., Lamp Dept. .... 8 <i>Agency: Batten, Barton, Durstine &amp; Osborn, Inc.</i>	Simpson Mfg. Co., Mark ..... 34 <i>Agency: Edward Hamburger Adv. Co.</i>
General Industries Co., The ..... 45 <i>Agency: Fuller &amp; Smith &amp; Ross, Inc.</i>	Snyder Manufacturing Co. .... 41 <i>Agency: Arthur J. Gelula &amp; Assoc.</i>
Hollander Radio Supply Co. .... 41 <i>Agency: Turner Advertising Agency</i>	Spirling Products Co. .... 46
Hytron Radio & Electronics Corp. .... 12 <i>Agency: Henry A. Loudon Adv.</i>	Supreme Instruments Corp. .... 40 <i>Agency: O'Callaghan Adv. Agency</i>
Lake Radio Sales Co. .... 42 <i>Agency: Sander Rodkin Adv. Agency</i>	Sylvania Electric Products, Inc. .... 7 <i>Agency: Newell-Emmet Co.</i>
Lear, Incorporated ..... 27 <i>Agency: Kudner Agency, Inc.</i>	Triplett Electrical Instrument Co. .... 36 <i>Agency: Western Adv. Agency</i>
Liberty Sales Co. .... 44 <i>Agency: Sternfield-Godley, Inc.</i>	Ward Products Corp. .... 29 <i>Agency: Burton Browne Adv.</i>
Marion Electrical Instrument Co. .... 47 <i>Agency: Shappe-Wilkes, Inc.</i>	Webster-Chicago Corp. .... 35 <i>Agency: Wm. Hoffman &amp; Associates</i>
McElroy Mfg. Co. .... 46 <i>Agency: Shappe-Wilkes, Inc.</i>	Westinghouse Electric Corp. .... 2 <i>Agency: Fuller &amp; Smith &amp; Ross, Inc.</i>
	Wittie Manufacturing & Sales Co. .... 2nd Cover <i>Agency: Jones Frankel Co.</i>

THERE'S A SONG OF PROFITS IN

Motorola  
AUTO Radio



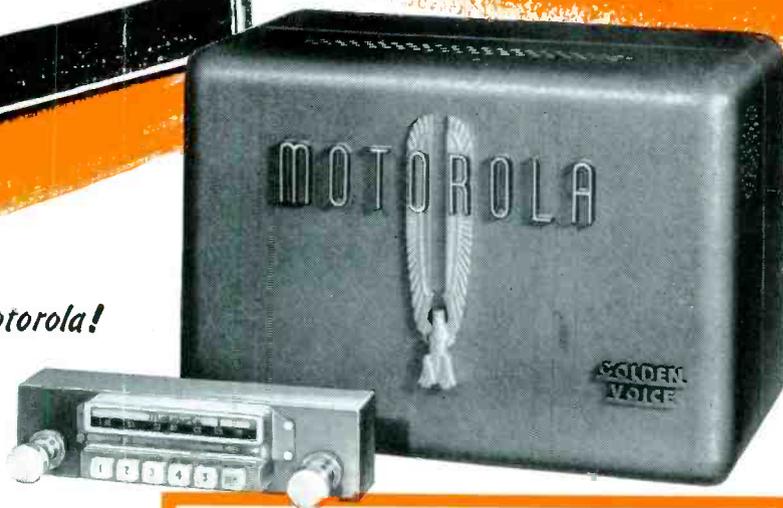
You'll hear sweet music from your cash register when you feature Motorola!

THERE are many reasons why it will pay you to feature Motorola Auto Radios . . . a gigantic advertising program, powerful dealer support, many exclusive features, etc. . . . but there is one basic reason that stands out above all others: *Motorola is the Finest Auto Radio ever built—regardless of price!*

Your customers don't have to be electronic engineers to appreciate the superiority of Motorola. It is apparent the moment they turn the switch. Its Vita-Tone is richer and more life-like! Its selectivity is razor-sharp! Its sensitivity is extremely fine! Truly Motorola Auto Radio sells itself. To hear Motorola is to want it.

*It will pay you to feature the Finest*

— MOTOROLA AUTO RADIO



There's a Control Head and dashboard Speaker to exactly fit and match your customer's car—no matter what make or model he's driving!

GALVIN Mfg. Corporation • Chicago 51, Illinois

Motorola **AUTO** Radio

F-M & A-M HOME RADIO • AUTO RADIO • AUTOMATIC PHONOGRAPHS • TELEVISION • POLICE RADIO • "HANDIE TALKIES" • RADAR

*A powerful display...*



RAYTHEON  
**Bonded**  
ELECTRONIC  
TECHNICIANS

**THIS RADIO REPAIR SHOP IS BONDED, BY WESTERN NATIONAL INDEMNITY CO., TO:**

- 1 Guarantee all radio repair work for 90 days.
- 2 Use only parts of recognized quality.
- 3 Charge not over established prices for parts.
- 4 Test customers' tubes as accurately as possible.
- 5 Keep labor charges at a reasonable level.
- 6 Perform only such work as is necessary.
- 7 Maintain the highest quality service.
- 8 Maintain proper equipment for good repair work.



**...to KEEP CUSTOMERS COMING!**



*Excellence in Electronics*  
RADIO RECEIVING TUBE DIVISION  
NEWTON, MASS. • NEW YORK • CHICAGO



Bringing radio repairing right out in the open for all your customers, this Raytheon Bonded Electronic Technician display tells them exactly how you operate in *their* interest. And that means *profitable* repeat business.

This is only one of many ways your prospects and patrons will learn to identify your shop with fair prices, quality work and guaranteed reliability. Find out how you can qualify to become a Bonded Electronic Technician. Bonded service means better customer relations. For full details, see your Raytheon distributor today.

**ANOTHER REASON WHY IT PAYS TO QUALIFY AS A RAYTHEON BONDED ELECTRONIC TECHNICIAN**