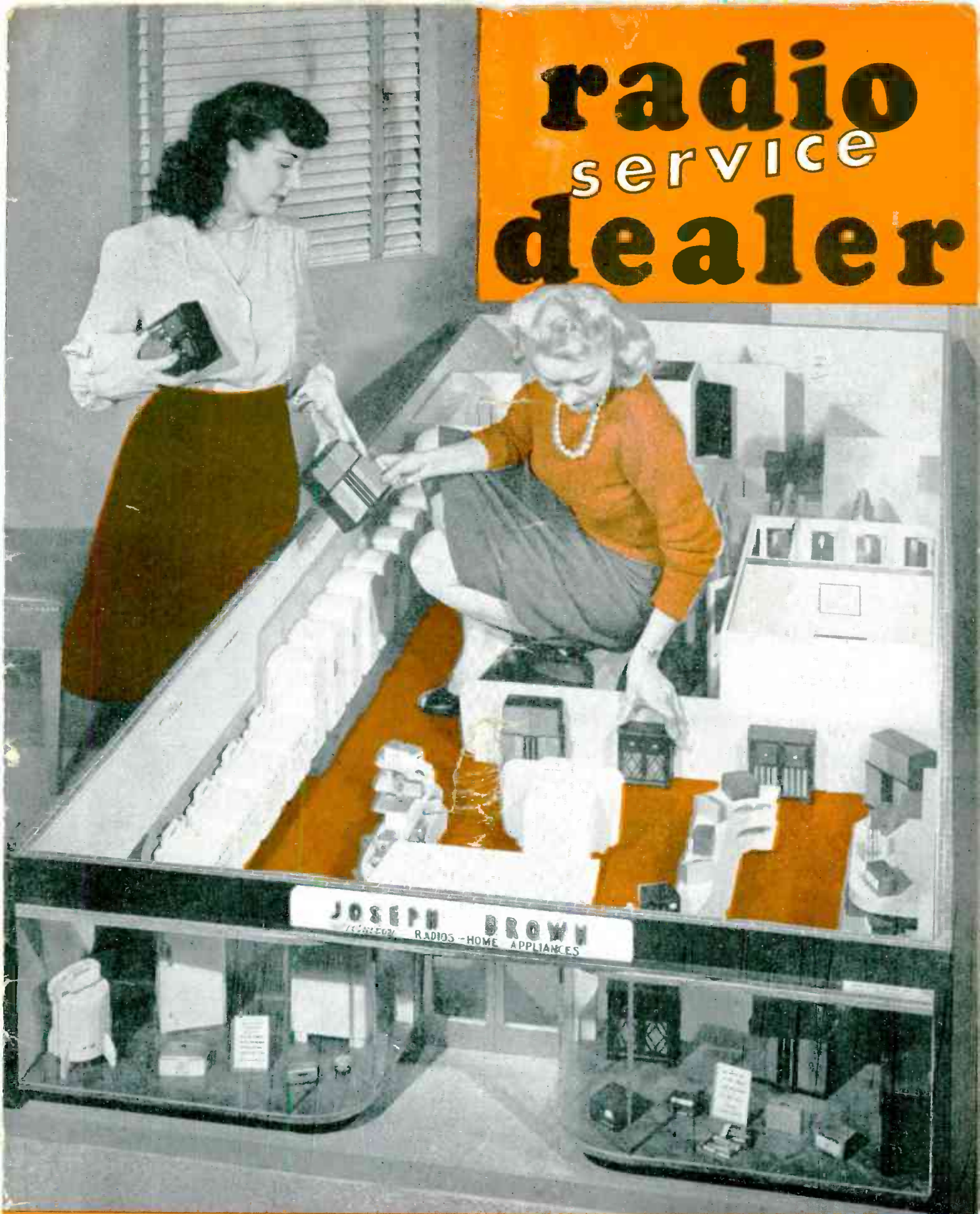


# radio service dealer



**JOSEPH BROWN**  
RADIO SERVICE DEALER  
RADIO SERVICE DEALER  
RADIO SERVICE DEALER

**In  
This  
Issue:**

**STORE MODERNIZATION MADE EASY**  
Market for FM Sets  
Record Promotion

Home Freezers  
Tube Substitution Charts

**December, 1944**  
25c



Up To Your Ears  
in Service Orders?

# Save Time with P. R. MALLORY & CO. Inc. **MALLORY** Replacement Parts

If you're like most service men we know, you wouldn't mind closing shop for a while—just to try to catch up with orders! Of course *that* idea is out of the question. So here's a more practical suggestion:

Use Mallory volume controls, vibrators, capacitors, switches, resistors. They'll help you speed up your work. By concentrating on Mallory precision parts, you'll assure yourself, too, that the job will "stay put."

Mallory approved replacement parts save precious time in at least two ways: Every part is *standardized* so that it fits any of a dozen or more types of receivers. And every part has been *proved in service*—has an *earned* reputation for dependable performance.

Mallory parts are interchangeable. They help get the job done faster. And Mallory parts avoid replacement failures—you won't have to do the job all over again. For a complete catalog of Mallory approved precision products, write direct or see your Mallory distributor.

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



Speed the Day of Victory.  
Buy More War Bonds.



**MYE TECHNICAL MANUAL**  
—408 pages of complete data on capacitors, noise suppression, receiving tubes, loud speakers, vibrators, phono-radios, automatic tuning and other valuable information. Available from your Mallory distributor...Price, \$2.00.

**4TH EDITION RADIO SERVICE ENCYCLOPEDIA**  
Complete information on repairing any make or model of receiver. Circuit references, original part numbers and recommended replacements. Available from your Mallory distributor... Price, 95 cents.

P. R. MALLORY & CO. Inc.

# MALLORY

*Approved Precision Products*

## THE SET THAT

# *never slept*

### 10,800 Continuous Hours

Fifteen months of continual service, 10,800 continuous hours, night and day with the switch never once turned off—and no repairs or replacements needed. That's the record established by a Hallicrafters SX-28 in use testing crystal standards at Scientific Radio Products Co., Council Bluffs, Iowa.

### Equal to Five Years' Use

Witness to this amazing performance was Myron C. Jones, resident inspector in charge. Day after day he watched "the set that never slept" in continuous action between January 5, 1943 and April 10, 1944.

### Inspector Jones writes:

"This is what I call punishment. It surpasses five years of ordinary use, with no new parts needed. This war plant had many more Hallicrafters receivers, all performing outstandingly. You can't beat Hallicrafters for endurance, sensitivity, selectivity, tone, ease of operation and all around performance."

### "The Radio Man's Radio"

This is only one more significant notch in Hallicrafters' record. Men who know radios inside out, men who depend on them when life itself is at stake and when there can be no compromise with quality, specify Hallicrafters, "the radio man's radio."



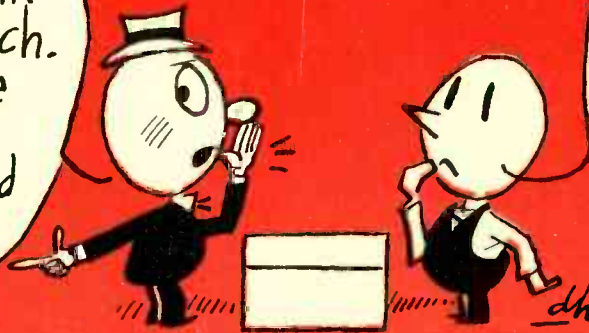
BUY A WAR BOND TODAY!



## hallicrafters RADIO

THE HALLICRAFTERS CO., MANUFACTURERS OF RADIO  
AND ELECTRONIC EQUIPMENT, CHICAGO 16, U.S. A.

The boys at the front won't miss them much. Let me have a few IRC Resistors and Controls



Gosh, we're sorry, but--

## We are sticking to our guns so they can stick to theirs

It's a temptation to us. We'd love to begin to get into our post-war stride and cultivate and renew friendships by slipping old and new customers just a few IRC wire wound resistors and controls out of our current shipments to the armed forces. Surely the lads wouldn't miss them too much! • Would you have us do THAT? We don't believe there is a single jobber or serviceman in America -- if he stops to think about those guys out there -- who will hold it against us for answering Uncle Sam's cry for more, more, more IRC

resistors and controls. • As peace approaches, we know that there'll be a scramble for your business. Very likely IRC resistors won't be the first to be available to you. But we're mighty proud of the fact that we happen to be able to make resistors and controls of a quality that Uncle Sam wants. In short,

we're drafted. We're stuck for being so darned good! • Please don't blame us. And if you have to sit under the apple tree with somebody else momentarily, please save your heart and your finger ring for us. Our intentions are matrimonial, and we look forward to many years of pleasant life with you after the war.

"If Uncle Sam wants all the IRC Resistors and Controls, they must be pretty good"



"Yes, these days, scarcity is a mark of leadership"



# INTERNATIONAL RESISTANCE CO.

401 N. BROAD ST. • PHILADELPHIA 8, PA.

IRC makes more types of resistor units, in more shapes, for more applications than any other manufacturer in the world.



NEED A SUPPLY  
OF MATCHES?

# SYLVANIA SERVICEMAN SERVICE

by  
FRANK FAX



Book matches, imprinted with your name, are one of the best and most economical ways to advertise your business.

Sylvania has prepared a new style of book match for your use.

Supplied to you for cost, with your name handsomely imprinted:

1,000 .. \$3.25    5,000 .. \$14.90  
2,500 .. 7.50    7,500 .. 22.40

Plus 40 cents per thousand Federal Tax. Orders under 7,500 are shipped FOB Shipping Point; over 7,500, FOB your address.

Order from your local Sylvania distributor, or send your order to Frank Fax, Sylvania, Emporium, Pa.



# SYLVANIA

ELECTRIC PRODUCTS INC.

RADIO DIVISION

# radio service dealer

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

VOLUME 5, NUMBER 12  
DECEMBER - 1944

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Photographs from: Admiral Corporation	

SANFORD R. COWAN... Editor & Publisher    LEWIS C. STONE..... Managing Editor  
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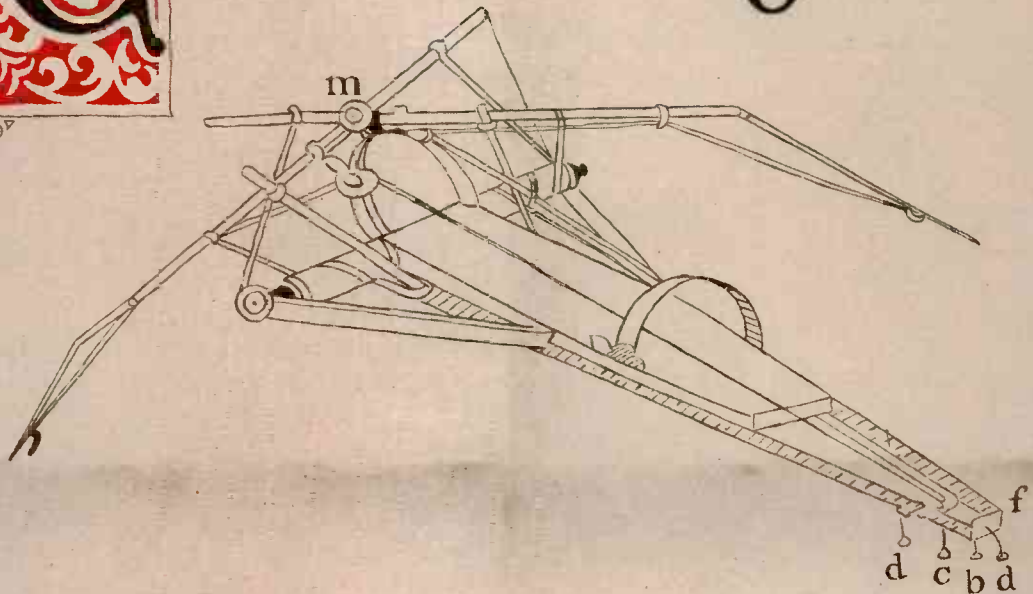
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COWAN PUBLISHING CORP.

Executive & Editorial Offices: 342 Madison Ave., New York 17, New York  
Member of the Audit Bureau of Circulations.

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. 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 October 3, 1941 at the Post Office at East Stroudsburg, Pa., under the Act of March 3, 1879. Permit for Second Class Entry pending at Orange, Connecticut. All subscribers should allow at least three weeks for change of address. Everything concerning subscriptions should be directed to Circulation Dept., 342 Madison Ave., New York 17, N. Y. Material submitted must contain a self-addressed stamped return envelope. While every effort will be made to handle articles with care, the publisher assumes no responsibility. Material accepted is subject to any revisions, including change to, or omission in "by-line" as well as author's name, which in the opinion of the publisher may be deemed necessary or expedient. Payment will include all photographs, sketches, diagrams as well as all of the author's right, title and interest in and to the material submitted. Material submitted will be considered to have been released by the person or persons shown or mentioned therein, and the authors agree to hold this publisher harmless from any manner of suit or damage resulting from the printing of said pictures or articles.



# Experience Counts



*In 1500, Leonardo da Vinci had a fine idea—a flying machine!*

His 16th Century Flying Fortress had a dandy arrangement of stirrups and pulleys which operated oars supposed to propel the craft through the air. Leonardo's machine didn't work and it didn't work for one simple basic reason . . . There wasn't enough knowledge and experience to develop a flying machine. Had da Vinci the benefits of our experience he could have built a flying flying machine.

*There is a very significant moral to that story—Experience Counts!*

For years, WARD PRODUCTS CORPORATION has been the leader in the design and manufacture of sectional and one-piece antennas. This position was established and maintained because WARD has the *Experience that Counts*. WARD has pioneered many of the design changes that have become accepted standards in the industry . . . For the finest sectional and one-piece antennas for automobile and home applications — Look to WARD!

*Send for our attractive new 1945 calendar.*



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

# WARD



BUY WAR BONDS

## Antennas

# with the editor . . . . .

## Licensing Servicemen

IT has been proposed time and again, by various interests, mostly political, that city or state laws should be enacted whereby radio servicemen would be forced to take out a license, for a nominal annual fee, in order to practice their profession in their respective localities.

In Madison, Wisc., such a city ordinance, licensing radio repairmen, has been in effect these past three years. Servicemen working there pay an examination fee of \$10 and an annual permit or renewal fee of \$5. To qualify originally a rather elementary examination is given. No provision is made to insure that a serviceman once granted a license will keep abreast of new techniques and developments and thus be competent to handle new problems, such as the servicing of an F-M or V.H.F. circuit, should occasion arise.

Behind all this licensing hooey is the hoped-for effect that only qualified technicians will practice the radio servicing profession; that those who do will maintain certain standards of ethics; that service fees will be kept at a uniform level; that amateurs, experi-

menters and the like would be discouraged from doing repair work for a fee.

We oppose the idea of licensing radio servicemen for an annual fee. Mixing politics with a technical, fast-moving profession such as is the radio game, can but lead to graft, dissension and harm to any community as well as to the servicemen practicing therein. We heartily subscribe to the premise that all practicing radio technicians should on not-too-frequent occasions be examined for competence. Servicemen, just like all other businessmen, or professional men, are either honest or they are dishonest—competent or incompetent.

The element of human error must be considered. Doctors of the highest standing have made serious errors in diagnosis, just as have some very capable radio servicemen. Dishonest and/or incompetent radio technicians should be removed from the profession. Usually their own short-comings take care of this. But all others should be entitled to wholehearted support and the right to enjoy free enterprise without qualification.

## Radio-Appliance Dealers Get Competition

SINCE the war began and civilian goods became unobtainable many thousands of retailers have gone out of business, department stores gave up their radio departments, etc. But now that there is some likelihood that radio sets and appliances may soon be available again, many thousands of old-timers who left the field, as well as many new-comers, are getting ready to jump back on the bandwagon.

Dealers now in business cannot be complacent. They must work hard and fight diligently to protect their investments and equity. No one can help a dealer who fails to help himself. Plan, PLAN NOW as to the ways and means you intend to use to protect yourself against the threat of great, not to be discounted competition.

*S. R. Lowan*

# Post Pages Start the Urge..



**PEOPLE PURCHASE PRODUCTS THAT**





**...that Ends  
with Buying  
Action**

**ARE PICTURED IN THE**

SATURDAY EVENING  
**POST**

# In & Around the Trade

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



In this striking photo, Don P. Caverly demonstrates how light can be electronically controlled for split-second studies of high-speed rotating machinery, at a recent meeting of the International Association of Electrical Inspectors in New York. Sylvania's commercial engineer indicated that this is one of many electronic devices which are revolutionizing industrial production and control.

## RCA Adds Appliances

The Apex Electrical Mdg. Co., Cleveland, O., has completed arrangements with RCA Victor's export organization for the postwar distribution of its electrical products abroad in 120 countries and territories. This was announced jointly by A. C. Scott, vice president in charge of sales for Apex, and Jay D. Cook, managing director of RCA Victor's international department.

Apex is one of the oldest and largest makers of home laundry equipment in the industry and will add a completely automatic washing machine to their previous line, post war. The inclusion of Apex products in its export setup will also give RCA dealers and distributors here a complete line of household appliances. Other products already announced for postwar distribution include electric toasters and irons, oil burning furnaces, hot water heaters, stoves and the RCA electric refrigerator.

## Sales Manager of G.E. Ranges

The appointment of J. F. McBride as sales manager of the range division, effective January 1, 1945, was announced by General Electric.

McBride has had extensive experience in the promotion of the company's electric ranges. He joined the appliance and merchandise sales promotion divi-



Charles E. Wilson, president of General Electric and Undersecretary of War Robert P. Patterson photographed with the 300,000th bazooka made in Bridgeport.

sion at Cleveland in 1937 and, at the end of that year, was made advertising supervisor for the range and water heater divisions. In 1939 he was in Minneapolis as range and water heater representative for the west central district.

He was first employed in the International General Electric accounting section at Schenectady in 1929, transferring to IGE's publicity section in December of the same year.

## Service Equipment Serviced

Burlingame Associates announce a special instrument repair section for the servicing of test equipment which may be yielding below-par results due to minor defects that can be rectified by repair-men who know their jobs. Servicemen and experimenters will find this new service helpful, but all are cautioned to write to the company first (11 Park Place, New York City) giving the make of instrument and other data before sending it along.

## Stewart-Warner Centralizes

Sales, advertising and service department offices of Stewart-Warner Corporation are again located at the corporation's main plant, 1826 Diversey Parkway, Chicago. Removal from temporary war-time quarters in the Builders' Building, 228 North LaSalle, to a newly converted general office building at the Diversey address, was completed recently. When current remodeling work is completed, all production, administrative and office personnel will be under one roof. The Chicago plant is headquarters of the corporation, which has other plants in Indianapolis; Bridgeport, Conn.; Winston-Salem, N. C.; Dixon, Ill.; and Belleville, Ont.

## Raytheon Radio Program

Laurence K. Marshall, president, announces that last October, Raytheon Mfg. Co. launched an impressive national advertising program with its first broadcast, over the entire Blue Network, of the famous radio show "Meet Your Navy." One of the top variety programs on the air today, "Meet Your Navy" was selected as the vehicle through which the company will build a greater postwar market for its radio tubes and other products among the nation's millions of radio listeners.

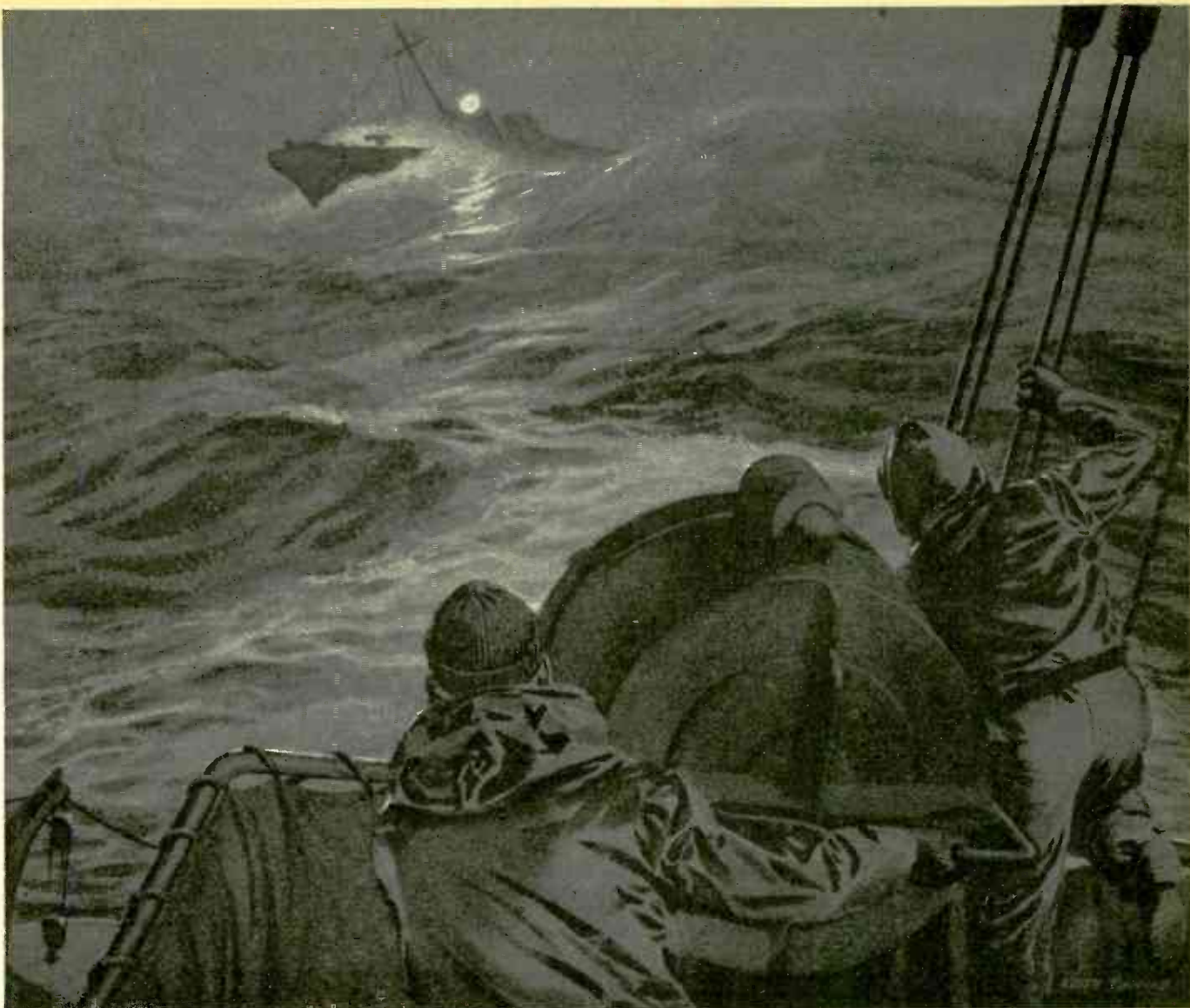
## Hamilton's Olympic Division

Percy L. Schoenen, vice president, announces the organization of Olympic Radio and Television in the Hamilton Radio Corporation, New York. The new division will handle the marketing, advertising and sales promotion activities of the "Olympic" line of household radios and radio-phonograph combinations. Jack F. Crossin, formerly with Crosley Corporation, is head of the new Division.

## Special Tubes Bulletin

Nine types of electronic tubes for specialized applications are described in a new 24 page bulletin published by Sylvania Electric Products, Inc. Products described include stroboscopes for the study of reciprocating and rotating motion; Pirani and thermocouple tubes for measuring vacuum; voltage regulator tubes; facsimile tubes; germicidal tubes; black light and near ultraviolet lamps. Specifications, basic circuit diagrams and suggested applications for products and accessories are given. Fluorescent lamp characteristics are shown in tables and curves. Copies of bulletin 202 are free, from Sylvania Electric Products, Inc., Special Products Division, 60 Boston Street, Salem, Mass.

(Continued on page 10)



*History of Communications. Number Twelve of a Series*

## COMMUNICATION BY THE BLINKER



The Blinker, an adaptation of the Heliograph with its own source of light, has been found invaluable for night and day Naval Communications. While limited by "line-of-sight" transmission and the elements of weather, it has been an aid to our cautious convoys during "radio silence."

When Victory is ours and the days of "radio silences" are gone forever, private citizens again will have electronic voice communication equipment for their yachts and other pleasure craft. With the release of civilian radio bands Universal will again offer the many electronic voice components for use in marine craft.

*< FREE—History of Communications Picture Portfolio. Contains over a dozen pictures suitable for office, den, or lobby room. Write for your "Portfolio" today.*

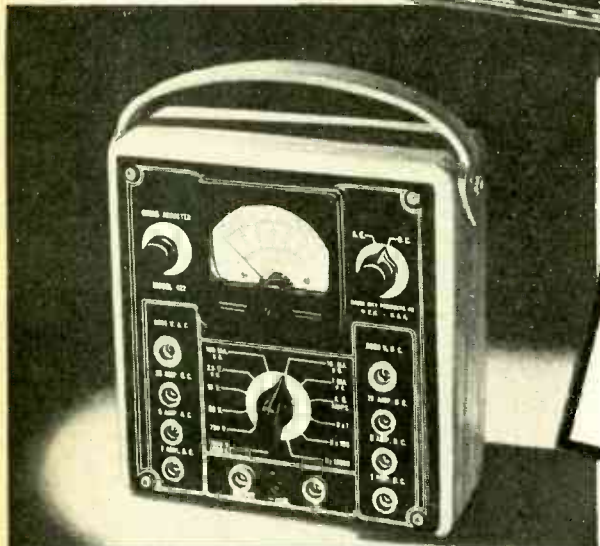


**UNIVERSAL MICROPHONE COMPANY**  
INGLEWOOD, CALIFORNIA



## TWO VERSATILE VALUE-PACKED PORTABLE TESTERS

MODEL 665  
**RCP  
 INSULATION  
 TESTER**  
**\$79.50**



MODEL 422  
**RCP  
 SUPER-  
 TESTER**  
**\$29.50**

### RCP QUALITY • ADVANCED ENGINEERING AND DESIGN

*These are only two out of the complete line . . . the line that built a reputation for quality and value before the war. Today it's packed with still greater technical advancements, better engineering, smarter design . . . the up-to-the-minute instrument line. Want the facts? Write today for Catalog No. 128 of standard commercial models.*

#### RCP INSULATION TESTER MODEL 665

This V.T. Volt Ohmmeter Insulation Tester provides 29 precision measuring operations in one unit for shop or laboratory. Tests at 500 volts up to 10,000 megohms. Vacuum tube voltmeter with 13 AC and DC voltage scales, from a fraction of a volt to 6,000 volts. Capacitometer ranges from 2.5 mufd to 2,000 mfd. Vacuum tube ohmmeter has seven ranges to 1,000 megohms. Rugged metal case — thorough shielding — Size: 9 $\frac{3}{4}$ " x 12 $\frac{1}{2}$ " x 6"; Weight: 13 lbs. With batteries, ready to operate. Code: UTEL.

#### RCP SUPERTESTER MODEL 422

For general circuit testing, speedier trouble-shooting, 27 individual instruments in one portable unit. Very low and very high ranges. Voltage measurements in both AC and DC up to 5,000 volts. Resistance measurements up to 10 megohms. High voltage not applied to selector switch nor to general test circuits. 3-inch square meter with movement of 200 microamperes or 5,000 ohms per volt sensitivity on DC. 6 $\frac{1}{4}$ " x 7" x 2 $\frac{3}{4}$ " — with strap handle. Weight: 2 lbs. Complete with batteries. Code: MERAY.

## RADIO CITY PRODUCTS COMPANY, INC.

127 WEST 26th STREET



NEW YORK 1, N. Y.

MANUFACTURERS OF PRECISION ELECTRONIC LIMIT BRIDGES — VACUUM TUBE VOLTMETERS  
 VOLT-OHM-MILLIAMMETERS — SIGNAL GENERATORS — ANALYZER UNITS — TUBE TESTERS  
 MULTI-TESTERS — OSCILLOSCOPES — AND SPECIAL INSTRUMENTS BUILT TO SPECIFICATIONS

### In Trade

(from page 8)



Paul H. Eckstein

#### Eckstein to Westinghouse

Harold B. Donley, manager of the new radio receiver division of the Westinghouse Electric and Manufacturing Company, announces appointment of Paul H. Eckstein as assistant sales manager.

Mr. Eckstein, who comes to his new position from the Stewart-Warner Corporation where he has been sales promotion manager, also served that firm as district manager of home radio sales and as manager of field expediting for war production materials. He has been identified with the radio receiver and merchandising fields since 1923.

#### Universal Notes

Albert D. Leban, 5716 Nassau Road, Phila., has been appointed a factory representative for the Universal Microphone Co., Inglewood, Cal. He had previously held the same post for several years previous to Pearl Harbor. Mr. Leban's territory will be Philadelphia and certain contiguous area.

The company has distributed an envelope stuffer to parts jobbers calling attention to its Stroboscope for jobber distribution during the holiday season. The size of an ordinary large sized envelope, the stuffer carries a picture of the Stroboscope and filing folder, Xmas wreath decorations in two corners, and advises parts jobbers that unlimited quantities of the Stroboscope are available, without charge, and with carrying charges prepaid.

#### V-Mail for Retailers

The Office of War Information, at the request of the Army and Navy, is launching a new campaign on V-Mail, and asks the support of retailers and advertisers. This intensified program will include information on the kind of letters most desired by service men and will give a new approach for stressing the need of increased use of V-Mail.

OWI asks retailers to make use of V-Mail promotion whenever possible. A retailers' booklet and a special bulletin for advertisers are being prepared

(Continued on page 12)



# YOUR COMING BEST SELLER!

— a forecast of your future electronic tube business



A little G-E symbol goes a long way—into the homes, stores, factories and farms of millions—into the confidence of a buying America

that has learned to depend on G-E MAZDA lamps as it does on sunlight

General Electric Research stands back of the quality which has built the wide public acceptance for G-E MAZDA lamps. And it is also at work on G-E

electronic tubes. The same effective advertising is carried to consumers through national advertising media. Consequently, G-E electronic tubes are earning the same consumer confidence now given to the famous G-E MAZDA lamps.

Today, the market for electronic tubes in communications and industry is growing rapidly. Tomorrow, these growing markets will combine with FM broadcasting, Television and electronic appli-

cations to vastly increase your replacement-tube market.

Plan now to profit from this growing demand by selling the complete line of G-E electronic tubes. *Electronics Department, General Electric, Schenectady 5, N. Y.*

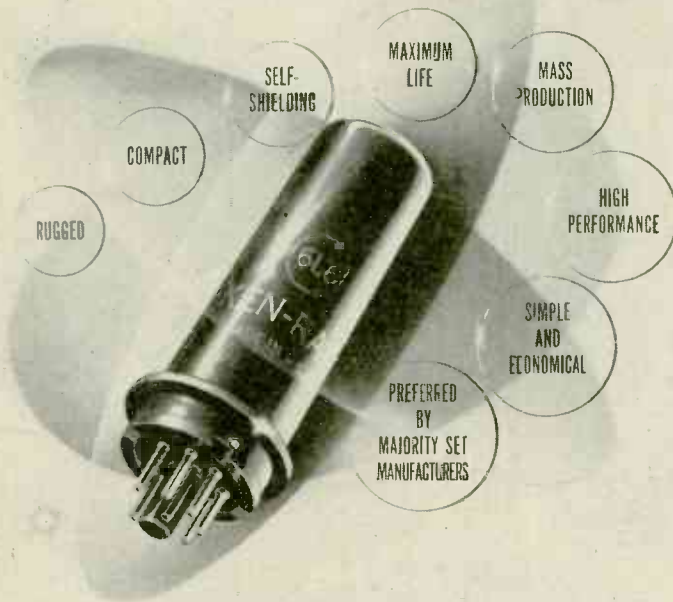
*Tune in General Electric's "The World Today" and hear the news from the men who see it happen, every evening except Sunday at 6:45 E.W.T. over CBS network. On Sunday evening listen to the G-E "All Girl Orchestra" at 10 E.W.T. over NBC.*

There's a G-E Electronic Tube for Every Purpose

**GENERAL  ELECTRIC**

176-C7-8850

# KEN-RAD *Metal Tubes*



The weight and space saving advantages of Ken-Rad "self-shielding" metal tubes have long been recognized. Their sturdy ruggedness under severe service conditions in fighters and bombers is a matter of record.

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

- TRANSMITTING TUBES
- CATHODE RAY TUBES
- SPECIAL PURPOSE TUBES
- RECEIVING TUBES
- INCANDESCENT LAMPS
- FLUORESCENT LAMPS

**KEN-RAD**  
 EXECUTIVE OFFICES  
 OWENSBORO · KENTUCKY  
 EXPORTS 11 MOORE STREET NEW YORK

## In Trade

(from page 10)

and will go out in January. These two pieces will present the problem, give helpful ideas for promotion, and will list all material that will be available for use in support of the campaign. Radio support will be heavy, and the OWI News Bureau is planning a series of releases on the better letters and the new V-Mail theme.



Fred E. Walters, appointed plant manager in charge of all production, for Meck Industries, Plymouth, Ind.



Benjamin Abrams

### Sixth War Loan Drive

Benjamin Abrams, president of Emerson Radio and Phonograph Corp., served as co-chairman of the Radio Manufacturers Division of the War Finance Committee for New York. H. M. Stein, president of Davega-City Radio Inc., was chairman.

### Conklin to Admiral

L. H. D. Baker, vice President in charge of appliances, Admiral Corporation, announces the appointment of Harold D. Conklin as manager of the electric range division. Mr. Conklin just resigned as Manager of the Range and Water Heater Division of the Edison General Electric Appliance Company, after an association of sixteen years in various capacities.

(Continued on page 14)

SERVICE TO SERVICEMEN... THAT'S STANCOR'S RECORD

Standardize  
ON

**STANCOR**

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

*Transformers*

STANDARD TRANSFORMER  
1500 N. WALSTED STREET · CHICAGO



CORPORATION

# RCA's New 170-A

## Audio Chanalyst

Tests Everything  
from Microphones  
to Multiple Speakers



**T**HE new 170-A Audio Chanalyst is a combination testing unit which includes the famous Volttohmyst circuit, a new diode flat through the audio range, a B.F.O. signal source, a gain calibrated amplifier, and speaker and line output connections.

The various channels of the RCA Type 170-A can be used independently or in unison to check

all common defects in audio amplifiers and sound systems. Polarity indication and a.c. can be determined instantly with the new electronic indicator, without danger of overload!

A pamphlet containing full description and specifications of the 170-A Audio Chanalyst will be sent gladly, on request.

*Please use this coupon*

BUY MGRE WAR BONDS



Test & Measuring Equipment, Dept. 97-87 F  
Radio Corp. of America, Camden, N. J.

Please send the bulletin describing the new RCA 170-A Audio Chanalyst to:

Name .....

Position .....

Company .....

Street ..... City.....

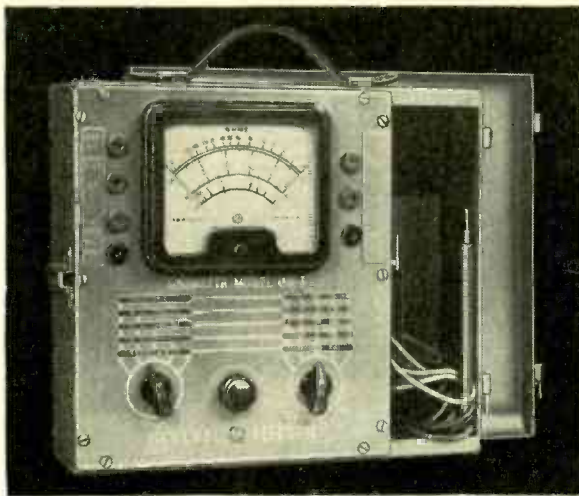
**RADIO CORPORATION OF AMERICA**

RCA VICTOR DIVISION • CAMDEN, N. J.

In Canada:

RCA VICTOR COMPANY, LTD., MONTREAL

# HERE'S THE POPULAR G-E UNIMETER



LIKE so many servicemen, you'll want to work with this completely portable all-around utility instrument. Large meter calibrated and protected by unique switching arrangement. Reduces error possibility, easy to read.

Other G-E units available for testing electronic circuits and component parts are: audio oscillators, oscilloscopes, condenser resistance bridges, signal generators and other utility test instruments.

It's a new G-E line—developed by G-E engineers—to help you do a better service job. *Electronics Dept., General Electric Co., Schenectady, N. Y.*

**GENERAL  ELECTRIC**  
164-C7  
ELECTRONIC MEASURING INSTRUMENT..



## STEPPING UP WAR PRODUCTION TEMPO

At its large, new, modernly equipped plant at Conneaut, Ohio, The Astatic Corporation is today supplying Microphones, Pickups, Cartridges and wartime unmentionables to the armed forces, essential industries and accredited government agencies. With all operations and departments now under one roof, Astatic looks optimistically forward into the new year with greatly increased production facilities and customer accommodations. These advantages will enable Astatic to make a quick transition to meet commercial demands when the reconversion time arrives.

THE  
**Astatic**  
**ASTATIC CORPORATION**  
CONNEAUT, OHIO.  
IN CANADA: CANADIAN ASTATIC LTD, TORONTO, ONTARIO

NOTE: Please change Astatic address in your files to CONNEAUT, OHIO.



## In Trade (from page 12)

### Raytheon to Televise Post-War

Among recent applicants for television stations before the F.C.C. is the Raytheon Mfg. Co., Waltham, Mass., which has filed for Channel No. 1.

About 100 television stations will be operating in at least 29 states and in the District of Columbia just as soon as wartime restrictions are relaxed and manufacturers can make the needed equipment. Total number of commercial video applications pending is 91. With nine television stations already operating in the four major market areas, this makes a total of 100 stations post-war a certainty.



Nate Hast

### Lear Joins Home Radio Makers

William P. Lear, president, announces entry of Lear, Inc., into the home radio field with the appointment of Nate Hast as merchandising manager in charge of styling and marketing. Mr. Hast leaves his own firm known as General Television and Radio Corp. His earlier connections, which date back to the days of crystal sets, include Philco and Emerson.

Mr. Lear invented the dynamic speaker, the first practical auto radio, the radio frequency unit, and other innovations. Now making radio exclusively for military aircraft, the company's entry into the home radio market will be, according to Mr. Hast, "unhampered by pre-war tools, dies, inventories, equipment and ideas. Lear sets will be new in all respects and will have all the features of luxury sets, but at a price that will make them salable to people who want something better than the ordinary. The new line will include FM, television and other features."

With headquarters at 230 East Ohio Street, Chicago, Mr. Hast is organizing the Lear sales staff and drawing plans for distribution.

### Stewart Warner Appoints

Floyd Masters, manager radio division, Stewart-Warner Corp., announces appointment of George Johnson who will handle sales promotion work pertaining to civilian post-war Stewart-

(Continued on page 16)



# SPRAGUE TRADING POST



## A FREE Buy-Exchange-Sell Service for Radio Men



...from all of us to all of you!

To all our friends, old and new, to those in the armed forces, to all who have entered war work, and to those still on the job at the old stands...

*Our best wishes for the 1944 Yuletide and our sincere hope that the year 1945 will see the dawn of a peaceful, better, happier world.*

**SPRAGUE PRODUCTS CO.**

**WANTED**—Complete set Rider manuals; also new and used tubes, Hickok sig. generator #15, and Hickok tube checker, #530. Withain G. DeNavit, 2614 Warring St., Berkeley, Calif.

**WANTED**—Sig. generator and all hard-to-get tubes. No lot too small. Wm. H. Greiner, White City, Kansas.

**WANTED**—Latest model all-type tube checker and all-wave sig. generator. Douglas W. Lee, 449 Grant Ave., San Francisco, Cal.

**FOR SALE**—2½ meter, battery-operated portable transceiver, police antenna, transmitter microphone, \$35, less batteries. Also brand new Zenith pocket model 4 tube radio, \$25 less batteries. William Menzies, 2207 Devonshire Dr., Cleveland Heights, Ohio.

**URGENTLY NEEDED**—V-O-M in perfect working condition and first class tube tester. Simon's Radio Shop, Rt. 2, Box 318, Pascagoula, Miss.

**FOR SALE OR TRADE**—Radios, complete with tubes; Philco 16-B, 2-Stewart Warner 11-126, Grunow 750 and others; also 2 brand new farm radio batteries, and RTL Model O tube checker. Want good oscilloscope, chanalyt or traceometer. Don T. Arata, 3821 Lake Park Ave., Chicago 15, Ill.

**WANTED**—Good channel analyzer. George A. Bach, 1745 Clarkson St., Baltimore 30, Md.

**WANTED**—Tube tester, ohmmeter or multimeter, and sig. generator, to operate on 25 cycles A-C current. Vernon E. Romain, Red Tank C.Z., Pedro Miguel P.O.

**FOR SALE OR TRADE**—Photo cell and amplifier, 9 v. Utah copper oxide rectifier, 115 v. to 25 v. transformers, 6-9 v. relays, 25 v. relays. \$25 for the lot, or will trade for Meissner P.M. tuner with tubes, or what have you? C. A. Mahorney, Montpelier, Ind.

**WANTED**—RCA Rider channel analyzer, preferably new. Robert Leo Boiley, Culpepper Electric Co., Demopolis, Ala.

**FOR SALE**—Following new tubes in kit form, at 30% off O.P.A. list: 25, 6F5GT, 6SK7GT, 6L6GT, 6V6GT, 5U4G, 45, 80, 6H6GT, 84, 12SK7GT, 6D6, 5Y3GT, etc. Mason Radio Service, 114 E. 3rd St., Mt. Vernon, N. Y.

**WILL TRADE**—New tubes: 3-185, 2-184, 3-1T4, 1-1R5, 1-37, 1-38, 1-1V, 1-6L6G, 1-1C6, 1-25L6GTG, 1-25Z6G, 1-7B4. Want 0-1 millimeter — battery 6 v. charger for one or two batteries. Must be Al. W. S. Moore, Box 203, Allen, Okla.

**WANTED**—Rider manuals—complete set or individual volumes. Carp's Radio Service, 419 E. Sagman, Lansing, Mich.

**FOR SALE**—Tube kits, each kit containing 20 brand new tubes, including 5Y3GT, 6V6GT, 5U4G, 6H6GT, 6D6, etc. Stein Radio, 7 Monroe St., Mt. Vernon, N. Y.

**WANTED**—Sig. generator, tubes of all types, and Rider manuals. R. M. Paris, 1100½ No. Dodge, Iowa City, Ia.

**FOR SALE**—30 asst. output and input X-formers, p.p. & singles, all good sizes; 2-220 v. line 6.3 v. 5.0v. 650 v. 70 mil. X-formers, 1-32 v. to 115 v. rot. converters, several 6 v. vib. packs with vibrators; all types miniature tubes in sorted cartons. Radio Labs., Hudson, Wis.

**URGENTLY NEEDED**—Volt-ohm-ammeter tester. Will buy or trade for Zeiss Ikon camera #120-6.3 f. Luis Sandoz, 148 Northwood Ave., Dayton, Ohio.

**WANTED**—G. E. JFM-90 F.M. connector, Precision E-200 sig. generator, Halli-crafter S-29 receiver, Philco 048 trs. unit, George G. Chandler, Assoc. Eng. U.S.N., P.O. Box 73, Back Bay Sta., Boston 17, Mass.

**FOR SALE OR TRADE**—Solar #CB-1-60 condenser and resistor analyzer. Need tubes: 50L6, 12SA7, 12SQ7, 12SK7, and 70L7. George E. Bryant, 20 Vine St., Batavia, N. Y.

**WANTED**—Hickok or Supreme sig. generator and Philco #30 or Superior sig. tracer. Elton Radio Service, 725 Elton Ave., Bronx 55, N. Y.

**FOR SALE**—RCA television magnetic yoke, scanning and oscillation transformers, 50% off list; also UTC and Inca modulation transformers, 60% off list. M. Schaefer, 280 Wadsworth Ave., New York 33, N. Y.

**WANTED**—Late model tube tester; also small V-O-M. W. J. McMillan, P.O. Box 792, Palm Springs, Calif.

**WILL TRADE**—Delco motor, S-29 Halli-crafter's drill motor, multipliers, slunts, high Fidelity crystal pickups, G.E. phono motor, amplifiers, 2 small radios, Gruen Veri-thin wrist watch, and other items. Want Bausch & Lomb binoculars, altimeter, compass, Sky Traveler, all-wave tuner, V-O-M, car radio, barometer or what have you? Earl E. King, 1431 E. Florence, Los Angeles 5, Calif.

**WANTED**—At least two each, 25Z5, 35Z5, 35L6, 50L6, 50C6, 7B8, 1A7, 1A5, 1T5, 1R5, 1S5, 1S4, 384, 11Z6, 11Z7, 11Z7, 1H5, 1N5, 1LA6, 1LN5, 6A7, tubular, .0004mfd., .005mfd., .004mfd., .05mfd., .02mfd., .03mfd. James A. Smith, T/Sgt., Communications Office, #17 Bomb Squadron, Godman Field, Ky.

**FOR SALE**—Set of 4 short-wave plug-in coils for amateur bands, built-in band spread trimers for regenerative receivers, \$2.75; Hammarlund midget variable condenser, .00014mfd., \$1.65; National Velvert drum vernier dial, \$3.45; 1LH4 and 1LN5 tubes, \$1.50 each. Dave Radio, 1316 — 42nd St., Brooklyn 19, N. Y.

**WANTED**—Up-to-date V-O-M, tube tester, analyzer, and other service equipment. E. August, 1263 Clay Ave., New York 56, N. Y.

**FOR SALE**—Back number radio and mechanical magazines—also electrical and radio books. Aubrey Ederton, 116 West 6th Ave., Houston 7, Texas.

**WANTED**—Used tube tester or new or used filament transformer—also tapes for

a tube checker, with a V-O-M. A. L. Pomey, 210 S. Croton Ave., New Castle, Pa.

**CLOSE OUT**—New tubes in cartons: 6J5GT, 6NG, 0Z4G and 80; also condensers, magnetic speaker, film tank and developing set. Nelson's Service, Beverly, Kans.

**WANTED**—Set of Rider manuals, Superior #1230 sig. generator or equivalent, and tube tester. D. E. Strong, Vernonia, Oregon.

**FOR EXCHANGE**—30 hard-to-get metal and 4 glass miniature 1.4 v. tubes. Will exchange all and cash for portable battery or 3 way receiver. Herman Fischer, 626 Carlton Ave., Brooklyn 17, N. Y.

**WANTED**—Thordarson, Stancor or Ken-sion high-fidelity interstage transformer, single plate to p.p. grids, or p.p. plate to p.p. grids. Must be highest quality. Irving R. Verson, Jr., U.S.N.R., Naval Tng. Unit, W.P.I., Worcester 2, Mass.

**WILL SELL OR SWAP**—2¼ x 3¼ Autografex Jr. camera with 4.5 Zeiss Tessar lens, new and tested focal plane shutter. Urgently need Hickok #188X or Supreme #561 sig. generator, Hickok T53P, Jackson #637 or late Precision tube tester, and Jackson 650-A condenser tester. Kron Radio Service, 413 Monroe St., Passaic, N. J.

**WANTED**—Halli-crafter SX-25 and speaker, in good condition. Lt. Richard Carlton, Turner Field, Albany, Ga.

**WANTED**—Communication receiver, Al shape. Ron L. Wollard, Box 52, Walparaiso, Ind.

**FOR SALE OR EXCHANGE**—Little used Superior channel analyzer and Readrite freepoint #710 tester—\$20 plus postage for both. What have you to trade or sell? A. L. Albright, Maplewood Br., Sulphur, La.

**WANTED**—Inexpensive recorder less amplifier, mike and accessories. Can use either complete unit or just the gear, recording arm and chassis, to build one. John E. Thiel, 742 N. Denver, Tulsa 6, Okla.

**URGENTLY NEEDED**—Up-to-date tube tester; also sig. generator and dynamic capacity tester. George Murakami, 3303 B. Newell, Calif.

**FOR SALE**—Superior set tester #1150S, perfect shape, \$25. R. B. Magee, Winona, Miss.

**FOR SALE**—Radio parts for set builders. Urgently need 1A7, 1115, 1N5, 1A5 tubes; also used 0-1 or 0.5 ma. meter. Richard Wolf, Box 49, Rt. 2, Wishek, N. Dak.

### — YOUR OWN AD RUN FREE! —

This is Sprague's special wartime advertising service to help radio men get needed parts and equipment, or dispose of radio materials they do not need. Send your ad today. Write **PLAINLY OR PRINT**—hold it to 40 words or less.

Different Trading Post ads appear monthly in Radio & Television Retailing, Radio Service-Dealer, Service, Radio News, and Radio Craft. Sprague reserves the right to reject ads which do not fit in with the spirit of this service.

When buying Capacitors—please ask for Sprague's by name. We'll appreciate it!

HARRY KALKER, Sales Manager.

**SPRAGUE PRODUCTS CO., DEPT. RSD-124, North Adams, Mass.**

(Jobbing distributing organization of products manufactured by SPRAGUE ELECTRIC COMPANY)

# SPRAGUE CONDENSERS

# \* KOOLOHM RESISTORS

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

# HATRY & YOUNG

HARTFORD 3, CONNECTICUT

## Try our 14-DAY Milk-Bottle TETS

Everyday radio repair needs are written on small slips, put into a milk bottle and then shaken out at Hatry & Young.

You will be surprised to learn that shortages are seldom bothersome, a large stock of radio and electronic parts and things save time, trouble and disappointment.

Hatry & Young is devoted to Connecticut's needs. Connecticut's demands are satisfied first.

Try the milk-bottle test for 14 days and improve the complexion of your business.

Electronics Specialists



Consultants • Expeditors



**Still your best bet for replacements**

## Centralab VOLUME CONTROLS

### \*Old Man Centralab

"Old Man" is right ... for he is a real "old timer". There is no substitute for experience, and the "Old Man" now, as in the past twenty-two years, is still your best bet.



# Centralab

Division of GLOBE-UNION INC., Milwaukee

## In Trade

(from page 14)

Warner radios. His duties will also include radio distributor relations. Johnson comes to Stewart-Warner with more than 25 years experience in advertising, sales and promotional work in Chicago.

### New Dealer Sales Guide

Walker-Jamieson, electronics distributors, Chicago, announce a new catalog of merchandise available to dealers for immediate delivery from stock. The "Dealer Sales Guide" lists service and resale items, such as: condensers, wire, resistors, transformers, tools, etc., as well as batteries, amplifiers, intercom units, antennas, records and record accessories. Featured are exclusive items, such as the plastic packaged servicemen's hardware kit, and the continuity tester. Service dealers can get a free copy by writing to the company at 311 S. Western Ave.

### High and Low Frequency Loudspeaker

Altec Lansing Corp., Hollywood, Cal., announces a new compact two-way multi-cellular loudspeaker combining both high and low-frequency units for monitoring, radio, p-a, recording, home radio, phonograph and FM reproductions. Its compactness (less than one-and-a-half cubic feet of space) makes it suitable as a sound reinforcement system.

The input impedance of the duplex speaker is 20 ohms and a dividing network of the constant impedance type is used with a crossover frequency of 1200 cycles for separating the power for each unit. This crossover permits the horn to load the high-frequency unit down to a point where little power is being transmitted. It also eliminates any tendency to distortion, and prevents damage to the high-frequency circuit. The speaker is available separately or in a cabinet; also with mountings for ceilings and sidewalls. A 60 DB gain amplifier with 15-watt output is also available for driving the speaker. Address: Altec, 1210 Taft Bldg., Hollywood 28, California.



C. S. Tay, manager, Appliance Distributors, Chicago branch of Admiral Corp.

**AFTER VICTORY**

# Cunningham Radio Tubes



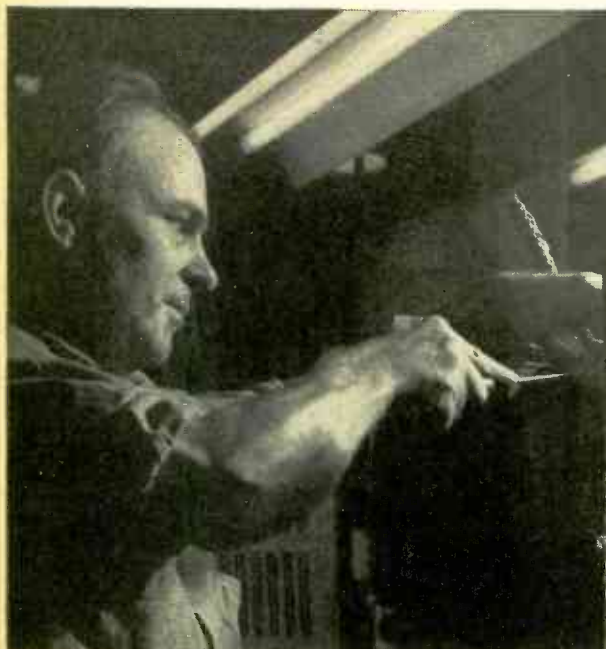
**STANDARD  
SINCE 1915**

*PREFERRED BY SERVICE MEN  
FROM COAST TO COAST*

**A QUALITY PRODUCT OF THE RADIO CORPORATION OF AMERICA**

# WHERE BUT MT. CARMEL

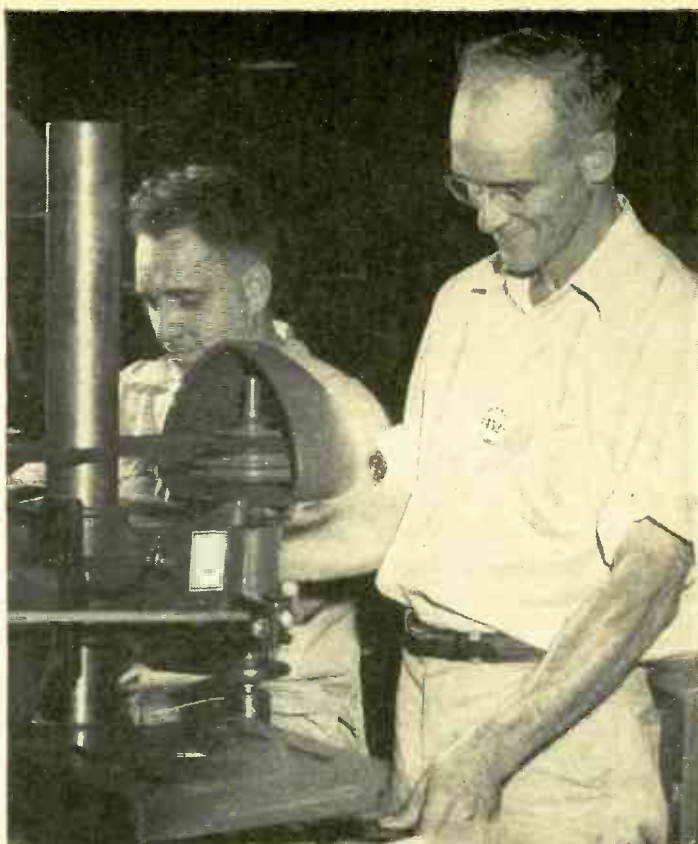
WOULD YOU EXPECT TO FIND  
SKILLS LIKE THESE?



**Sure, deft, hands**—No compromise with quality here at Meissner as "precision-el" produces vital electronic war equipment.



**Precisioneer**—The years of experience this Meissner veteran brings to his job are just another reason why the Meissner products you use will do your job better.



**Concentration with a smile**—One more reason for the precision performance of Meissner products. It's a smile of pride in a job well done that helps make personnel "precision-el."



## Easy Way To "Step Up" Old Receivers!

Designed primarily as original parts in high-gain receivers, these Meissner Ferrocarril I. F. Input and Output Transformers get top results in stepping up performance of today's well-worn receivers. Their special powdered iron core permits higher "Q" with resultant increase in selectivity and gain. All units double-tuned, with ceramic base, mica dielectric trimmers, thoroughly impregnated Litz wire, and shield with black crackle finish. Frequency range, 360-600. List price, \$2.20 each.

# MEISSNER

MANUFACTURING COMPANY • MT. CARMEL, ILL.

**ADVANCED ELECTRONIC RESEARCH AND MANUFACTURE**  
Export Division: 25 Warren St., New York; Cable: Simontrice

RADIO SERVICE DEALER

## SOUTH PROMISES BIG RADIO AND APPLIANCE MARKET

Vast development in the field of electrical and electronic appliances for the South in the post-war world was forecast by R. L. Chapman, of Chapman & Wilhelm Co., newly appointed Stromberg-Carlson distributors for North and South Carolina. High wartime wages have virtually ended the cheap labor in the south. These wages have resulted in a higher standard of living that has important implications for the electrical appliance business there.

The South has an abundance of electric power; rural electrification has been well established. A higher wage scale has raised the average family's purchasing power far above its pre-war mark. A significant result of this war boom developed when a recent survey

disclosed that thousands of southern women are planning on doing all of their household work themselves. This means that thousands of washing machines and vacuum cleaners can be sold immediately. Modernizations of kitchens—with major electrical appliances included—will be big business for a number of years in the South, following the war.

Radio will enjoy a particularly good market in that region. Removed from the larger cities, many southern families depend on radio for news and entertainment. Qualities such as fidelity of tone and a high degree of station selectivity are now readily understood and appreciated.

Dealers know that before the war

the cheapness of household labor practically stymied the sale of major electrical appliances to most southern families. In fact, manufacturers who made detailed studies of their markets and territories for wholesalers and dealers before the war, found it necessary to discount any estimated sales potentials for their lines in the South by means of a "cheap help factor." This factor helped manufacturers to make realistic sales budgets for their Southern distributors and their dealers, in the face of indicated purchasing power per family which were more accurate indicators of potential radio and appliance sales in other parts of the country. The war has brought greater wealth to the South, and this may well bring about a revolution in living standards—together with the capacity to live up to the higher standards. All of which means more sales for dealers. —L. C. S.

## RADIO FRANCHISE POLICY CALLS FOR DEALER SERVICE DEPARTMENTS

Harold B. Donley, manager of the radio receiver division, Westinghouse Electric and Mfg. Co., Baltimore, announces appointment of 97 distributors to handle the company's new post war home radio receiver throughout the nation and in Hawaii.

All distributorships, except in the New York metropolitan area, are exclusive. Dealer franchises, however, will be non-exclusive. In all but fifteen territories Westinghouse Electric Supply Co. will handle radio distribution. The other territories will be covered by "independent" jobbers. The Times Appliance Co., Inc., will share the New York area in dual distribution with Westinghouse Supply Co.

"With the system of distribution just arranged," stated Mr. Donley, "our television, standard-band, short-wave and FM sets will be in the hands of dealers at the earliest possible moment. Prominent in our planning is adequate sales and promotional support for dealers. A recent survey for the OCR shows 15 per cent of the nation's 46 million radio sets forced out of operation by the war, while 50 per

cent of those sets still in use are five or more years old. This means that production of receivers must be planned to the last detail now, and begun with all dispatch just as soon as plant facilities are released from war production.

"Plans are ready for conversion of the Sunbury plant and thus establishment of a comprehensive distributor

coverage—which is virtually complete—rounds out the company's preparations and insures prompt delivery of sets to dealers' shelves.

"The sale of a receiver will not represent the conclusion of our relationship with the customer, but rather its firm establishment. Thus Westinghouse will insist that distributors stock adequate supplies of maintenance and repair parts at all times, and every dealer will be encouraged to make an up-and-coming service unit a vital part of his organization."

L. to r., Bond Geddes, John S. Garceau, Edgar G. Herrmann, who are members of RMA Advertising Committee.



## FOR BETTER RADIO BUSINESS

Suggestions for revisions and additions to the radio section of the National Association of Better Business Bureau's publication, "A Guide to Retail Advertising and Selling," were submitted by members of the Advertising Committee of the Radio Manufacturers Association at a recent meeting in Chicago.

Improved types of radio receivers and components to be marketed when civilian production is resumed after the defeat of Germany are covered in the suggestions. Fair practice standards and definitions for retail advertising and selling are set forth in the Better Business Bureau's publication.

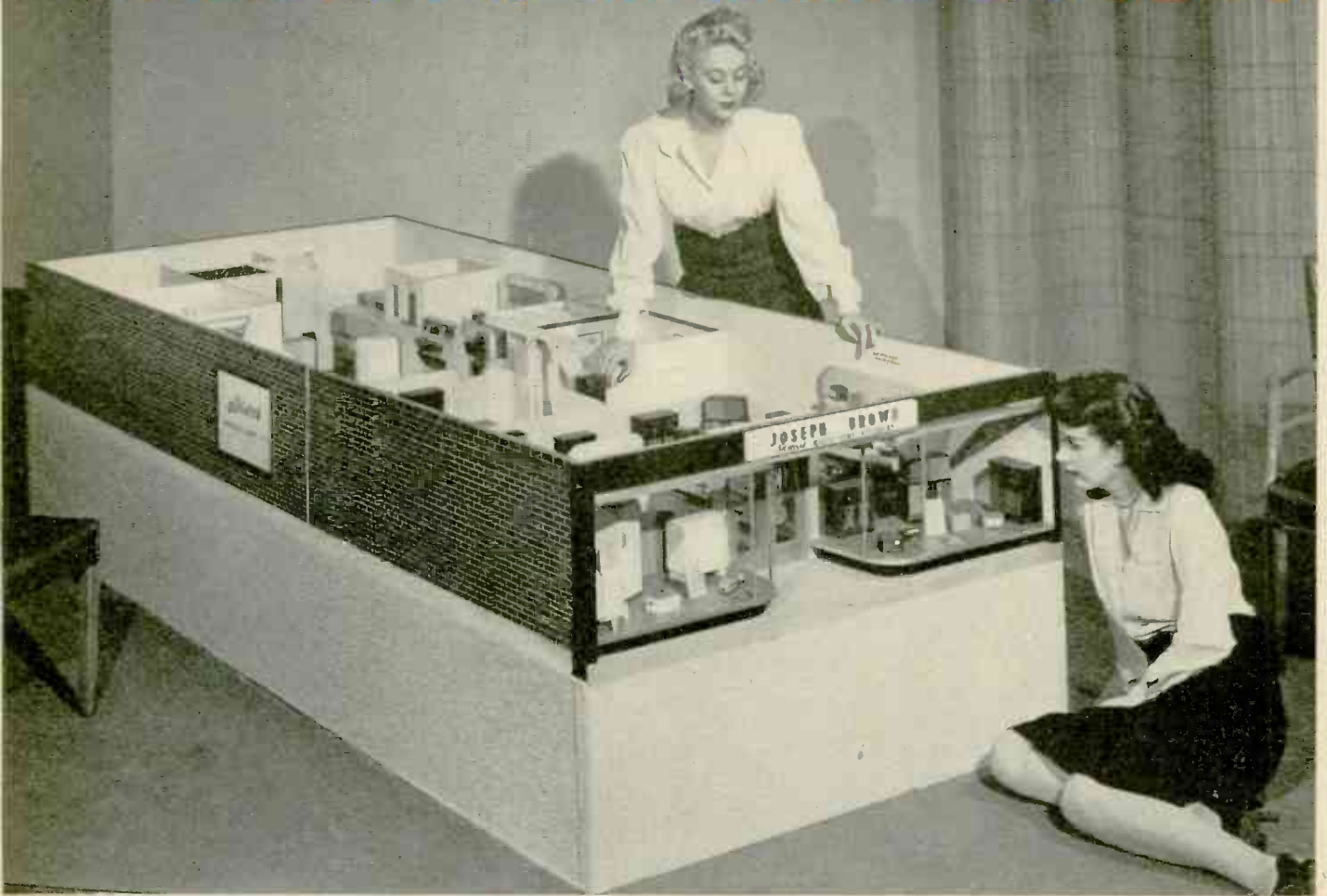
Host to the Advertising Committee were the Zenith Radio Corp., Chicago, whose advertising director, Edgar G.

Herrmann, is a member of the committee. Other committee members who attended are its chairman, John S. Garceau, Farnsworth Television & Radio Corp., Fort Wayne, Ind.; Sydney Mahan, The Crosley Corporation, Cincinnati; James H. Carmine, the Philco Corporation, Philadelphia; John G. Porter, General Electric Company, Schenectady, N. Y.; Charles B. Brown, RCA Victor Division, Camden, N. J.; Victor A. Irvine, Galvin Mfg. Corp., Chicago; Stanley H. Manson, Stromberg-Carlson Co., Rochester, N. Y.; P. G. Gillig, Emerson Radio Co., New York City, and Seymour Mintz, Admiral Corporation, Chicago. Bond Geddes, executive vice president of RMA, was present also.



Harold B. Donley

# STORE MODERNIZATION



**I**N normal times every store, from the lowliest shoe repair shop to the grandest beauty salon, depends upon the art of merchandising to increase sales and profits. The radio-electrical appliance fields have not had normal times since Pearl Harbor and it is rather apparent that most firms engaged in handling radio-appliance lines have paid but little attention to the ordinary details of business aside from the attempt to keep abreast of the huge volume of repair work that has deluged them.

## The Time is Now

Perhaps many months will pass before radio-appliance dealers obtain a stock of receivers, toasters, irons—not to mention major appliances—for retail sale. It goes without say-

ing that dealers will carry on with their service departments in the interim. But lax, indeed, would be the dealer who neglects to think about and plan for the future right now, when things are happening, new products are being publicized and projects are being developed that will change the entire field of retail selling when V-Day arrives.

As stated in the opening paragraph, all store operators practice some form of merchandising. The smallest independent radio service shops used to "doll up" their windows either by displaying a pile of burned-out tubes alongside of a tube manufacturer's lithographed cut-out display, or in some similar fashion. S w a n k musical instrument-radio stores generally relied upon professional window display dressers,

by **SANFORD R. COWAN**  
EDITOR

who, with the aid of drapes, flounces, signs and similar decorations, frequently achieved a measure of presentable "eye-appeal" that brought customers into the store.

True merchandising of any product, series of products, or of a retail establishment itself, is not a hit or miss proposition. Merchandising is almost synonymous with advertising . . . and long experience proves that it pays to advertise. It certainly pays to "merchandise" a store. Of course, the proper way to merchandise any business is to start from

# MADE EASY



Illustration: courtesy of Admiral Corporation

## One of a series on product merchandising, promotion, store modernization—the art of making customers want to buy.

scratch. The ideal method would be for a dealer who plans to open a store to select his location, obtain the services of an architect and then with the aid of an experienced department store advertising counselor, establish the proposed floor layout and general scheme of placing various departments, display counters, etc., with the ultimate goal of obtaining maximum utility from every available foot of floor and window space, bearing in mind customer-comfort and simplified store operation. All this would be the

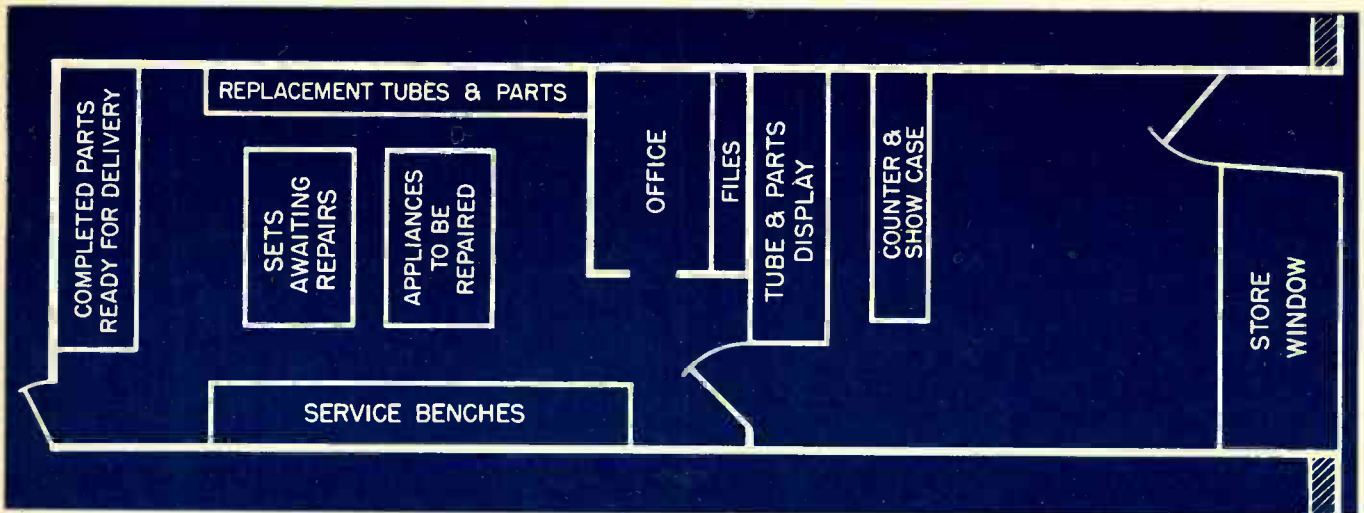
ideal method of merchandising. But it is impractical, of course, for any dealer who is now tied up under a long term lease. The best he can do is to convert and modernize his present premises to meet his future needs.

### Modernize for Sales

The thousands of radio-appliance service dealers who read this article now operate successful establishments, the size floor-plans and dimensions of which probably differ in every case. Hence, any suggestions

we offer regarding store modernization must necessarily be general. Likewise, not all of our readers have the same projected plans for store expansion and changed merchandising in the days to come. Some of you will add record retailing departments, others will not. Some will take on major electrical appliances, others will broaden their sales only by adding small lines of what are known as traffic appliances. Some appliance dealer readers who, pre-Pearl Harbor, did not handle radio receivers will do so when they are again available, but not all will take on phono-combinations. Instead some will confine their radio lines to the smaller types.

One can plan to modernize a store very simply, and have a lot of fun in the doing. In this connection, it is



**Fig. 1. (above): All is planned for service only. Fig. 2 (below): The same store, modernized to display and sell radios & appliances.**

worth noting that the Admiral Corporation of Chicago (\*) has developed a sales promotional plan along the lines we have in mind. By using a few of the Admiral "Flex-O-Plan" illustrations we will attempt to project our views for your consideration.

Mr. George Locks, Chicago specialist in miniatures, conceived the demonstration scale model of an average retail radio-appliance store as shown on the front cover of this issue and used in illustrating the heading of this article. The scale model, 4 by 10 feet, represents a store actually 35 by 90 feet and is

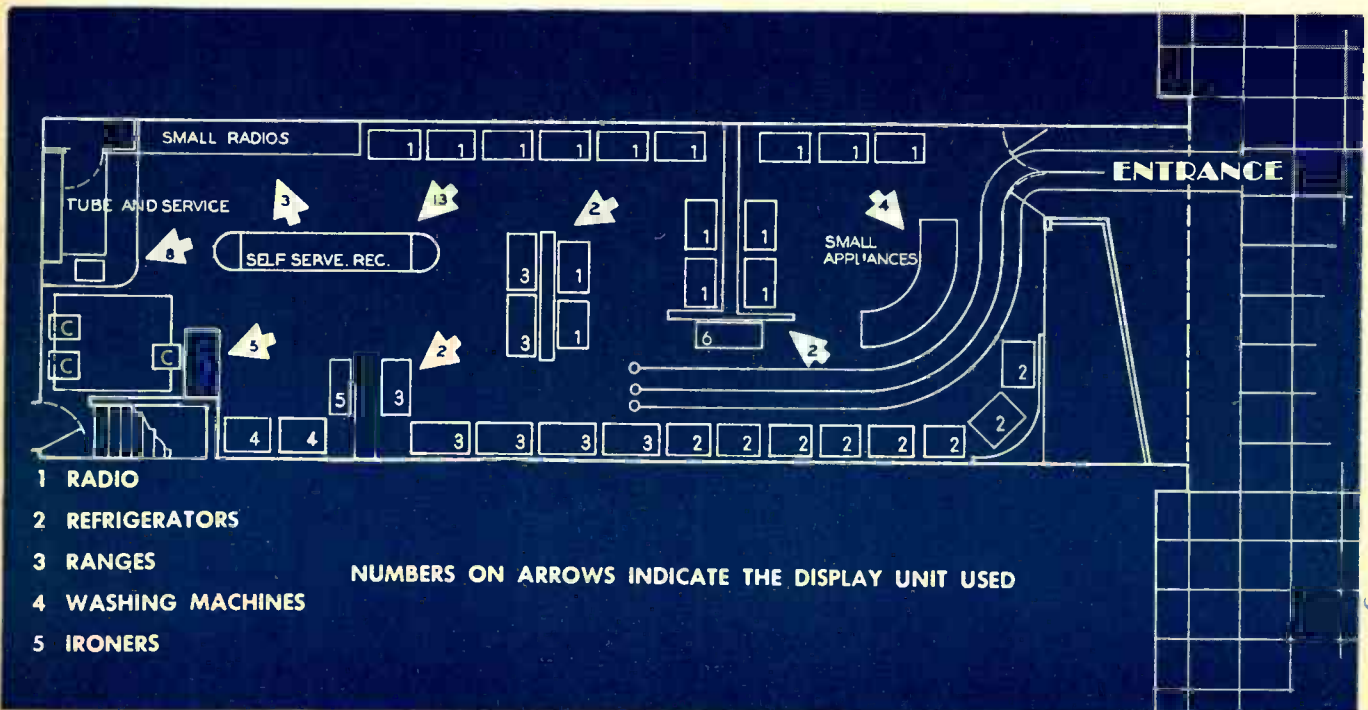
complete in every detail. Along with it are scale models of radio sets, electrical appliances of all types, store fixtures, furniture, etc. Using these, one can easily position a store's complete layout, visualizing how the finished store would ultimately appear. But for more practical purposes, we have included with this article a series of blue-print type schematic diagrams which any dealer can simulate to meet his own particular requirements.

A glance at Figure 1 shows a typical, present-day store layout. Because the dealer has not been able to obtain radio sets or appliances for retail sale, relying instead upon his service departments, the present layout meets his current requirements. With but a little imagination and perspective, a dealer can plan to reconvert to meet his needs at some

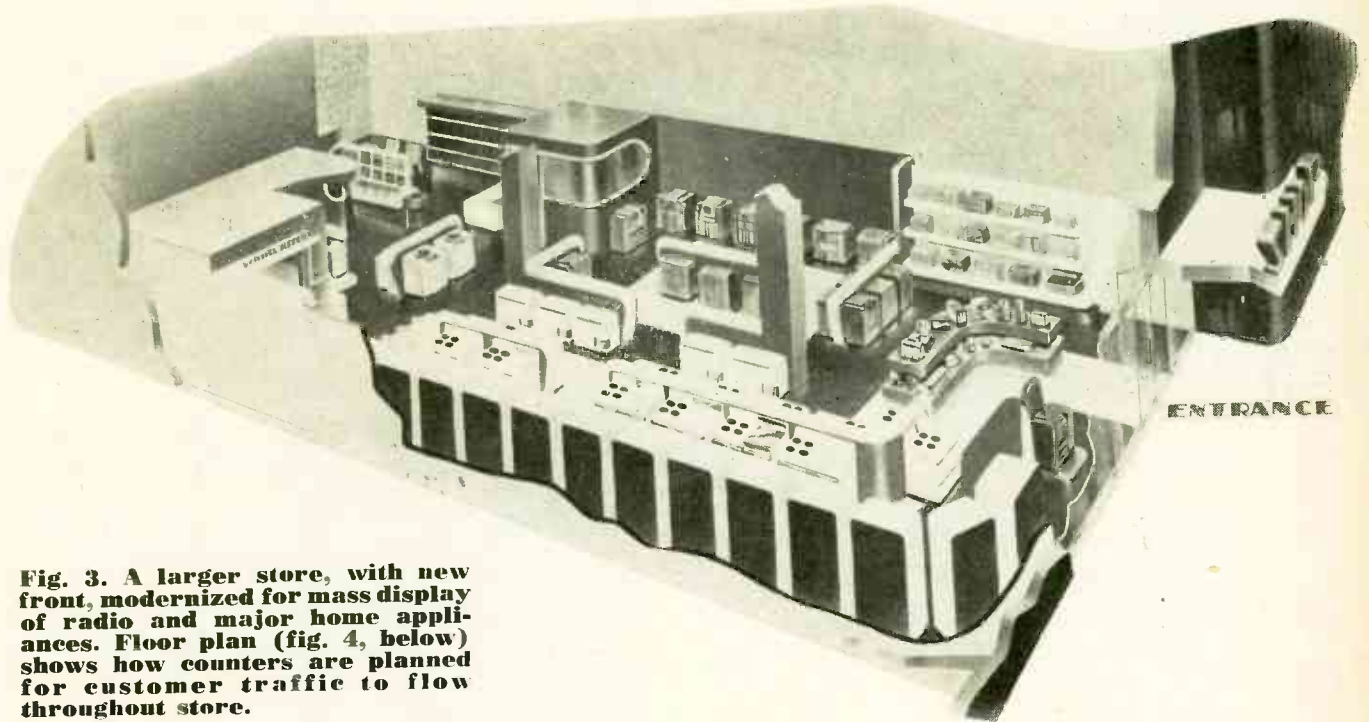
\* *A beautiful brochure, "Flex-O-Plan" —for the radio and appliance store of the future, will be sent free to all RSD readers who request a copy from the Admiral Corporation, 444 N. Lake Shore Drive, Chicago, Ill.*

A	Radios
B	Refrigerators
C	Ranges
D	Washing Machines
E	Home Freezers
F	Roll Ironers
G	Upright Space Heaters
H	Vacuum Cleaners
I	Water Heaters
Unit 4	Appliance Display
Unit 5	Desk
Unit 8	Record Display (Wall Type)
Unit 9	Tube and Service Counter
Unit 10	Feature Display
Unit 12	Listening Booth
Unit 13	Self-Service Record Display
Unit 14	Small Display Unit

**Key to Plan Displays**







**Fig. 3. A larger store, with new front, modernized for mass display of radio and major home appliances. Floor plan (fig. 4, below) shows how counters are planned for customer traffic to flow throughout store.**

future date when merchandise is again available for sale. For example, glance at Figure 2, which represents the exact same store converted and modernized to handle radios, records and appliances. It might be advisable to point out one flaw in the store projected as Figure 2. Note that very little space is planned for the service departments as it is assumed from this layout that the service departments would be moved downstairs to the basement along with the office and management facilities, neither of which are shown in the diagram.

#### Sales Through Service

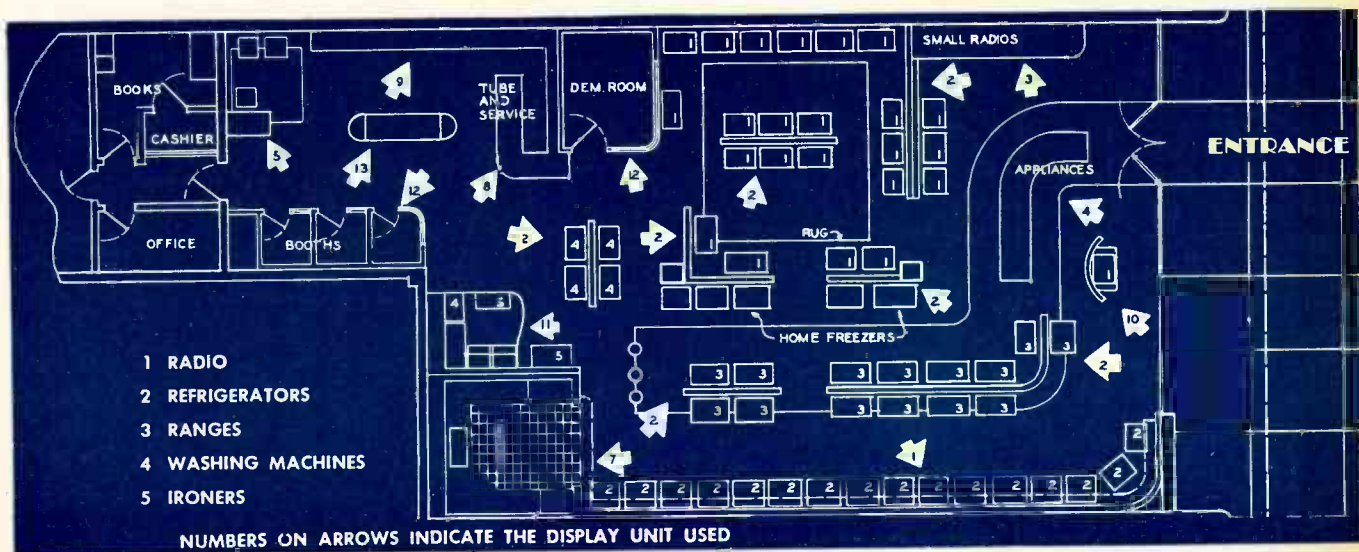
We hold to the theory that a

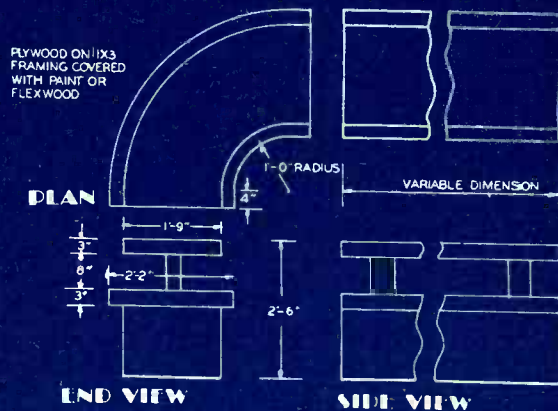
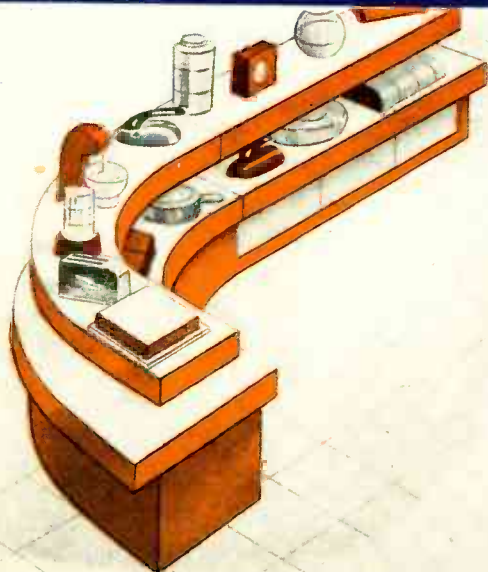
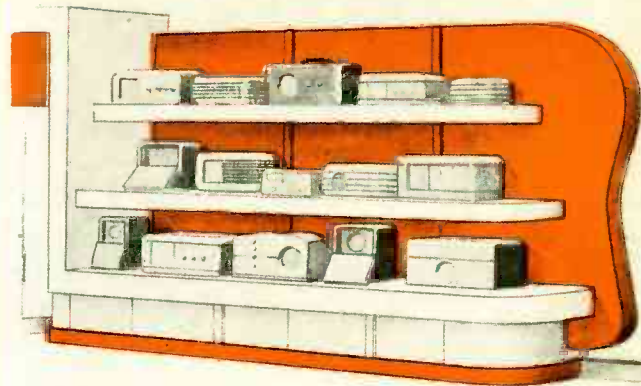
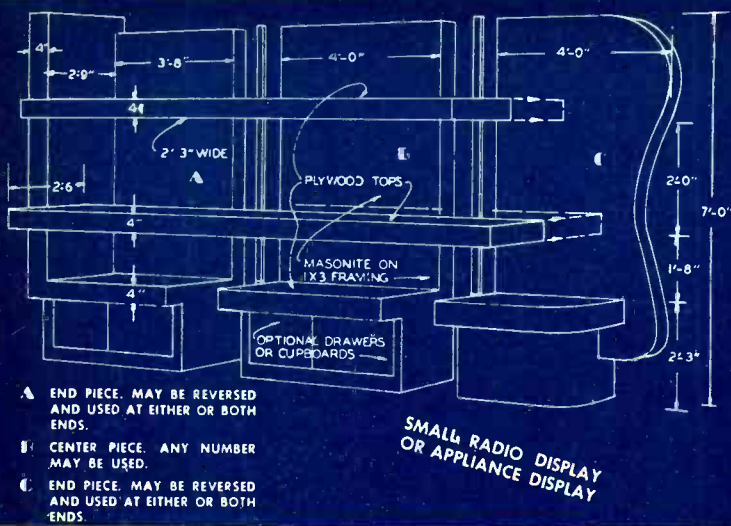
store's service and repair department should not be relegated to the dungeon. As a matter of good business, any established service-dealer will admit that a service department can and will make satisfactory profits for the operator, and furthermore, that a well planned service department can easily be made as modern and presentable as any other department of a store. A well conceived service bench, manned by technicians clothed in neat smocks, having available up-to-date test equipment, can and will cause a most favorable impression upon any customer, resulting, oftentimes, in his placing an order for a more expensive unit, especially if such a unit

requires, because of its character, technically qualified installation and periodic checkup. F-M and Television set retailers should bear this in mind.

Illustrated as Figure 3 is a proposed store layout, which in schematic form, is shown as Figure 4. The average dealer, or some one on his staff, is mechanically inclined, and without too much difficulty could build any required display counters or racks such as are shown in Figure 3 and amplified in constructional details by Figure 5.

Getting back to merchandising, the basic subject of this article, let it be emphatically stressed that now is the time when planning for the





**Fig. 5. Modern fixtures and backgrounds dramatize the merchandise displayed and help hold the attention of shoppers. Curved display counter can be arranged in various ways, as blueprint shows. The display for small radios has eye-appeal. Both can be "dealer made" from blueprints. Materials used make fixtures light and durable.**

future must be undertaken. Consider what lines and types of merchandise you plan to handle, and sign franchises for them now, if possible, to insure priority in delivery schedules. Study your store's facilities and capabilities to handle such a planned project. It can be done easily, and will settle at least one important problem, to wit, whether or not you had better start looking for a new store location, or whether your present store can accommodate your future requirements, at least at the outset of resumed civilian selling.

#### Plan Your Merchandising

Make a layout, on paper, of your store's dimensions, reduced to scale, say one quarter inch to equal one foot. Visualize how, why and where is would be best for you to position your various departments. Try to achieve the most important objective in all display and store mer-

chandising, which is to get the average customer who strays into your store just as far back towards the rear of the store as possible and subconsciously, too. Needless to say, a potential customer who is permitted to remain very close to the exit can quickly get out of your store on the slightest pretense, whereas a customer who can be gotten way back, deep into a store, must necessarily take more time, and pass by more interesting items on display for sale, should he decide to leave.

It is human nature to want to look at, and buy things, especially when the items have eye appeal, the basic ingredient built into almost every radio-electrical appliance line. Think how many times you have gone into any store with the object in mind of making a single purchase, but after having seen a lot of other items, displayed and merchandised to the hilt, though your subconscious didn't allow you to admit it, you've finally made your exit the proud owner of several

additional items, some of which probably weren't even really required by you at that particular time, or which you didn't plan to buy from that particular store.

Brother, that's what they call merchandising, and you've been sold, just as all of us have, by clever, planned and practical methods. It would be unfair to yourself if you neglected to incorporate the same ideas of merchandized selling when you plan and establish your own retail business. The art of merchandising, then, is nothing more than the art of making items help sell themselves. So, from the basic planning of your on-the-street display windows, down through each and every department, keep that objective in mind—catch the potential customers' eye, instill the beauty of the merchandise for sale as simply as possible, make the customer see as many items as possible . . . and allow him to help sell himself.

**GROWING INTEREST IN**

# HOME FREEZERS

**2,000,000 families already are using food freezers. Predict about two hundred manufacturers plan to make freeze units. Dealers may handle wide range of home freezers postwar: 24 to 50 cubic foot units for farms, 4 to 6 for cities.**



**by DR. D. K. TRESSLER**  
Manager, General Electric Consumers Institute



**Multiple-unit farm freezer. One unit will serve city needs.**

**I**T has been stated that 192 manufacturers are planning to make freezers in the postwar era. Undoubtedly there will be many two-temperature household refrigerators made which will have a large compartment for cool storage and a relatively small compartment for freezing of foods and the storage of frozen foods. It is probable that most of these frozen food compartments, designed primarily for the storage of frozen foods, may be ill-adapted for the freezing of foods.

There will undoubtedly be the lift-top chest type freezers of various sizes and shapes manufactured in the postwar era. Some manufacturers will try upright or side-opening freezers. Many will also make large walk-in freezers. Undoubtedly, there will be novel types different from anything yet offered.

Some persons are confident that the great demand will be for 4 and 6 cu. ft. home freezers. Since these will be offered at a relatively low price when compared to larger models, it is probable that the immediate demand will be for such small freezers. In recent years, however, the size of the best selling model refrigerator has increased materially. It is likely to be the same with home freezers.

Prior to 1937, all of the home freezers in use were either home-made or custom-built. In the three years before the war, factory-built models were available but the public was slow to accept them. However, acceptance

mounted to a substantial demand during the war years when foods were scarce. To meet this demand, many ice-cream holding cabinets were converted for freezing and storage of



**A. G. Chaffer, sales manager, General Electric Co. household refrigerators.**

foods, although ill-adapted for the purpose because of inadequate temperature control and poor insulation.

The factory-built models, however, have provided a proving ground for efficacy of design: lift-top chest models; upright or side-opening freezers; rectangular freezing and storage compartments; cylindrical freezing and storage compartments; single compartment in one unit; multiple compartments in one unit; single temperature control for all compartments; thermostatic temperature control for compartments.

Most of the freezing cabinets thus far have been used to maintain a temperature of zero F., although some models have freezing compartments which may be turned down to minus 20° F.

The average quality of the food frozen in home freezers now in use is excellent. Home freezers enable a person to carefully select the food to be frozen. If directions for preparing, packaging, and freezing are followed carefully, a product can be produced equal to or superior to that of commercial products.

Housewives find the ownership of a home freezer very desirable. It is an on-the-premise convenience; it enables her to conserve much perishable food which otherwise might go to waste. It is simpler and easier, in general, to freeze food than it is to preserve it by other methods, and the results correspond much more nearly in quality to the fresh product.

During the period 1938 to 1942, the number of locker plants in the United States increased from 1,269 to more than 4,000. Since then, the number has gone beyond the 5,000 mark. This means that nearly 2,000,000 families have become accustomed to frozen foods because of their use of locker plants. This means, too, that when home freezers are manufactured in quantity after the war there will be an already established market for them among the locker plant users.

*Abstract of talk before the Southeastern Freezer Locker and Home Freezer Conference at the University of Tennessee, Knoxville.*

by OWEN STANTON

**T**UTTLE Electric, of Syracuse, N. Y., believes that platters and Christmas go together like sausages and hot cakes. Let's take a look at some of the promotions this concern has dished up, hot off the griddle.

#### Army-Navy Specials

The armed services naturally come in for a lot of attention this year. From local families the store gets names and addresses of WACS, WAVES, soldiers, navyites who are still in domestic stations. To each goes a personally typed letter suggesting that "record card" might be the solution of gifts to the folk back home. The cards entitle the recipient to any number of records, depending upon the card's face value which may be 75 cents or that many dollars. The record cards look like holiday greeting cards and read "Season's Greetings from . . . . .". At the bottom, "This card entitles you to . . . . . of records at Tuttle's. It may be used any time during the coming year." Cards are sent special delivery by the store.

The letter to the armed forces also suggests that if there is a certain recorded song that would awaken memories in the heart of someone back home, all Tuttle needs is the title and a remittance to cover. The recording will be delivered personally if to a local address, or packaged and mailed if to a loved one or friend outside the store's delivery area.

Next on the menu, this store emphasizes the fact—in a companion promotion—that more of the armed forces than ever before will be home on Christmas leave. Tuttle sponsors a five minute radio newscast twice weekly, giving the names of all who have notified their friends or families to expect them home for the holidays. Also, news of marriages,

# RECORDS GO like hot cakes

All records are "hot" numbers with this dealer. Special promotions bring rush holiday trade, but steady merchandising gives Tuttle all-year peak sales. Volume is upped with middle class music programs, record trading post, premium albums, bureau of missing records, special windows.

The kids get a "play" by merchandising thru schools & their clubs.

Windows tie-in with local billings of popular disc stars.



birthday celebrations and the like taking place on or near Christmas. Tuttle asks local families to drop in with such news items—one way of creating store traffic during an important selling season. This radioizing goes on between December 1st and the 24th.

#### Kids Get Promotions

From thoughts of things military, Tuttle turns next to the small-fry brigade. He talks with the music and art teachers in the grade, junior and senior high schools of the community. Window exhibits consisting of sketches of great composers in the past—short essays about how famous tunes were written, etc., are planned and executed by pupils in various classes. High school students may design a window around fan specialists. One school will deal with orchestras like Benny Goodman's, Duke Ellington, Krupa, while another group may dedicate a window to Whiteman, Ted Lewis, Jimmy Dorsey, Guy Lombardo, etc. Pupils dig up photos and biographical data on music masters, and window displays are built up around such material. From mid-November until the 24th of December one of Tuttle's two display windows is handled by school kids.

In all school newspapers the store runs ads suggesting that youngsters give their parents and relatives a disc for Christmas—total investment "under a buck." Tuttle will package it in holiday style and even toss in a greeting card to boot. In the high school papers the store suggests that the students buy a platter album and present it as a gift to their families—an economical way of satisfying the family group on a student's limited budget.

This store has great success with a radio program heard Sundays entitled "Middle Class Music." Light opera, folk songs and similar tunes are played on this program—music neither highbrow nor lowbrow but in the middle bracket. The commercials on this program feature records in the Tuttle Library of Middle Class Music. Between the 20th of November and December 24th, purchasers of a dozen or more of these 75-cent platters get a handsome album thrown in without cost.

#### Special Services and Rentals

A special service department called The Bureau of Missing Records which Tuttle operates during the Christmas season only has attracted much attention. Almost every record user would give a lot to possess some special recordings, whether strictly ancient wax efforts dating back to Edison releases, or a new hepcat number which has sold out with phenomenal rapidity, a hill-billy tune, corn-fed lullaby or a spiritual. For those who come in



**THE RECORD IS MADE:** Within 24 hours of lifting of Petrillo ban, Victor's Vaughn Monroe and Marilyn Duke made first new pop disc.

before December 10th, Tuttle will canvass all available record sources to find the desired platters. The regular retail price plus a 25-cent service charge is made for each selection found. Many a store patron who wants to give an old record with a sentimental attachment to a close friend of long standing for Christmas finds this bureau doing its best to oblige.

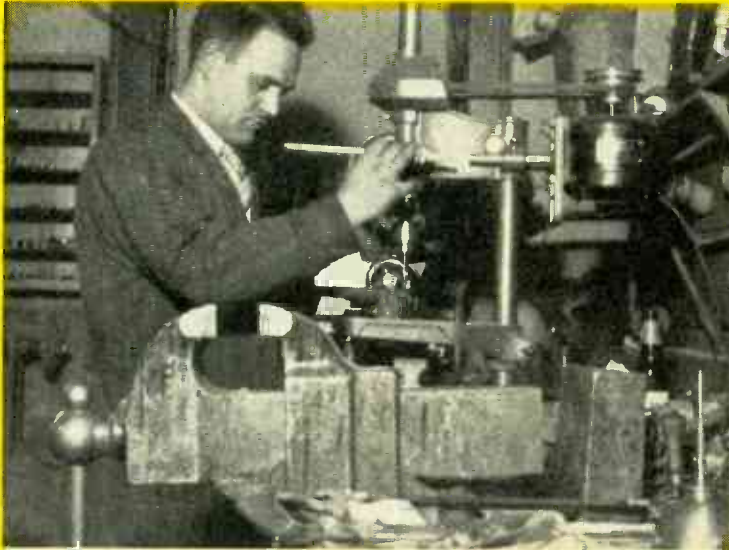
A Record Trading Post is run during the pre-holiday season, and it may become established all the year around. Lists of records offered in the exchange for certain

others are posted on a bulletin board, with the customer's name, address and phone number. The lists remain on display for at least a week. There's no charge for this service, but since it acts as a steady store traffic feeder, Tuttle finds that it pays.

This is how Tuttle manages to increase platter sales during the Christmas season. With some variations shaped to fit individual cases, similar promotions can pay off for other radio and appliance dealers who have added lines of records in recent years.

**THE RECORD IS SOLD:** Next day dealers had copies of new discs (The Trolley Song) and did a rush over-the-counter trade. Tuttle finds buyers of all ages responsive to well-timed record promotions.





Self-contained repair shop facilities enable this dealer to render full-line service on home laundry equipment.

# Repairs Washing Machines

**... and builds good-will. Awaiting new line franchises, dealers emphasize service to their customers. Display areas in stores over-run with "stocks" of home appliances turned in for repair and service.**

by A. NELSON

**I**N these busy war days, the Milwaukee Washing Machine Co., 2220 W. Fond du Lac Ave., Milwaukee, Wis. tries to get as many complete overhaul jobs as possible, according to John C. Paris, owner. The theory behind this is that once a machine gets into the shop for a repair, no matter how small, the owner might as well have the machine put in shape so that it need not come back shortly for some other repair.

"We feel that the customer and ourselves get a break when a complete overhaul job is authorized," says Mr. Paris. "Folks want those machines to be in good shape and we want to turn out completely satisfactory jobs. The fact that we do good work has resulted in numerous customers sending their friends to us for service, and that is what counts in the long run."

This shop often has as many as 30 washing machines awaiting repair and even the front display room is needed



**Service department crowds into display area of this dealer's store. Service customers of today will be buyers of new appliances "tomorrow."**

to accommodate the repair line-up. Three men in the shop are kept busy principally on washing machine service, although some radio and vacuum cleaner repairs are handled also.

## Jobs Run \$25 and Up

Recently a housewife brought in an old washer for repair. The job cost her \$59.50 but she was very satisfied with the way the machine performed. The job included resoldering the whole tub, a new motor, overhauling the transmission, a wringer with new rolls and bearings, new cord, plugs, etc. Overhaul jobs range as a rule from \$25 and up, says Mr. Paris, and customers do not haggle about price for they are very anxious to have their machines put into good condition.

Every washer that is repaired at this shop is filled with water and set into operation with actual clothes in the tub. Mr. Paris says that this method of testing has worked out very well.

Tubs filled with water only sometimes test OK, but when the housewife puts clothes into them trouble may develop. This store foresees all such contingencies by testing the machines in the shop under actual working conditions.

#### Washer Parts In Stock

The firm has a large stock of washer parts built up through its past operations, but there are signs that some parts are getting scarce. Mr. Paris says he hopes the situation will be eased very soon.

"We do not refinish washing machines here, because our shop is too small and we haven't got the equipment," he says. "Nowadays we figure it is more important to get a washer working mechanically than to make it look like new."

This firm maintains a call-for and delivery service as well as a home-call repair service. Many an ordinary service call for a minor repair at a home later results in a complete washing machine overhaul job, as the housewife realizes that with additional service and parts her washer can be put into excellent operating condition.

"We advertise in the classified section of our local newspaper," says Mr. Paris, "and we get excellent results from it. With a large staff we need a lot of washers to keep our shop operating at capacity and that is why we advertise regularly. However, work has been coming in so fast lately, that I may have to stop advertising for awhile."

The firm has a well equipped repair shop and does all of its own mechanical work except armature rewinding. Mr. Paris has been in the washer business since he was 15 years old, and has operated his own firm over 10 years.

**Systematic "filing" of parts & components help speed washer repairs at the hands of trained service experts.**



#### Customer Files

On his desk there are four card index files. These contain the carbon copies of washing machine repair orders that the firm has completed in recent years. Mr. Paris points out that these files will provide an excellent prospect list for new washers after the war. Practically all the owners will want new washing machines within the next two to four years.

"We know that during this war period we have put a lot of washers in good operating condition for customers," says Mr. Paris. "This has

meant profit for us, yes, but it has also meant much good will. We have made many contacts with folks who are grateful for our having been able to repair their washers. Such contacts are bound to be very helpful to us in the future."

This building-up of customers' goodwill certainly adds up to great possibilities for converting service accounts into commodity sales. Systematic records and aggressive follow-up are essential to any success dealers may anticipate in this process of "Customer re-conversion." (See page 46, November RADIO SERVICE DEALER.)

## 4-POINT PLAN for radio service

A four-point program of pre-planning to prepare the nation's radio service business for the strongly competitive postwar situation that it will face in common with the radio manufacturing industry, is proposed by Leonard C. Truesdell, newly appointed general sales manager who will direct marketing of the home radio line to be introduced by the Radio division of Bendix Aviation Corporation, Baltimore.

Speaking at a meeting of the Philadelphia Radio Service Men's Association, Truesdell predicted new developments in FM receivers and television will create many installation and service opportunities for radio service businesses which prepare now to offer efficient and economical service to the radio-buying public. These opportunities will be enlarged by a huge trade-in-market.

*Resale of used radios probably will constitute for the service industry a large portion of its immediate postwar business. This will offset the shrinking volume of repair and maintenance business which will come with production and sale of new radio equipment which will require considerably reduced servicing due to higher quality and new war-born precision manufacturing techniques.*

To merge with and capitalize on the tremendous postwar sales effort which will be launched by the radio manufacturing industry, Truesdell recommended to service men this program:

**First: Start now to assemble the additional "know how," modern facilities, equipment and personnel which will be needed to keep pace with the newest developments in**

**Second: Absorb into the service industry the highly trained ex-service-men whose advanced military training in radio will fit them to make valuable contributions to this field.**

**Third: Sell the radio service industry's technical knowledge, services and facilities with soundly conceived advertising, conveniently located places of business and orderly, attractive surroundings.**

**Fourth: Establish and maintain an efficient system of cost controls and operating budgets so as to be able to provide high quality service on a profit basis.**

In this connection Truesdell urged study of the valuable and timely information, suggestions and ideas contained in the industry's trade press.

# The MULTI-TESTER

by OSCAR E. CARLSON

**HOW multi-range meters are designed, constructed & operated.**

## PART 3

### AC VOLTAGE MEASUREMENTS WITH DC METERS

For measuring AC voltages we must rectify the AC and measure the DC. This is accomplished in most multi-testers by use of a copper oxide rectifier of the full wave type. Such an arrangement allows current to flow only in one direction and thus rectifies or converts AC to DC.

Before going further let us review what happens when we rectify a sine wave. Half-wave rectification results in a wave form as in Figure 17A. Here there is a one-half cycle time of no voltage, then a half-cycle time with voltage. For full-wave rectification we get a wave form as in Figure 17B. Here the voltage remains at zero value only instantane-

ously. The rectified AC reaches the same peak value as before rectification, or 1.416 times the effective value of the sine wave. Our DC meter responds to average values of voltage. The average of the half-wave rectified sine wave is .636 of the peak value for one-half cycle or .318 of the peak value if taken over the time of one cycle of the sine wave. For full-wave rectification the average over the period of one cycle is .636 of the peak. Thus the average is only 90% of the effective which is .707 of the peak. To use our DC scale for AC with full-wave rectification to determine R.M.S. values of the AC, we must have the multipliers of the AC scales only 90% of the values used on the DC. Study Figure 18, which shows a typical circuit for measuring AC with a DC meter as described.

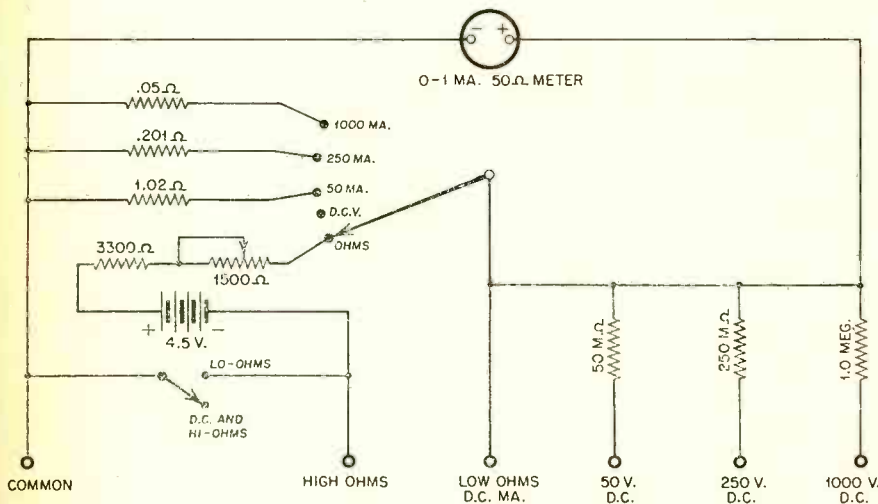


Figure 20.

D.C. multi-tester, made with 0-1 ma. meter and with scale as in lower Fig. 19.

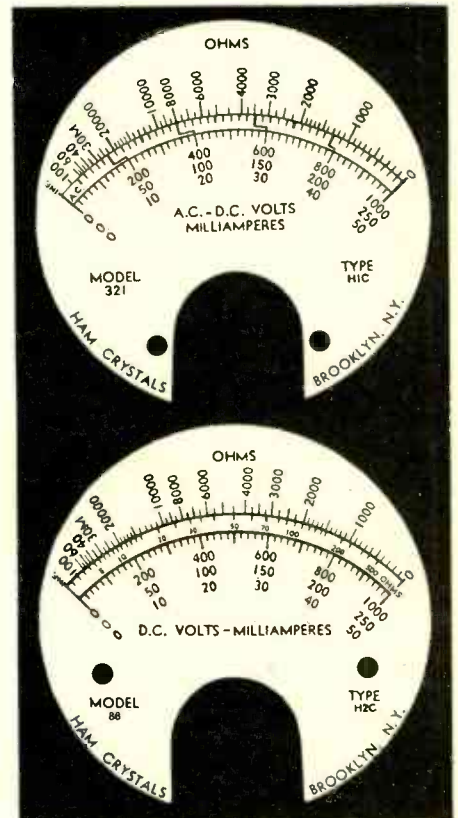


Figure 19.

Meter scales for simple multi-testers made from old 0-1 milliameters

As shown by Terman in his "Measurements in Radio Engineering," the resistance of copper oxide rectifiers is a variable, but it averages to such a value for one milliampere current that a 0 to 1 milliampere meter used as in Figure 18 will look like about a 620-ohm impedance to the AC being measured. Thus for low voltage, a low current flows through the rectifier



and its resistance is high. An unshunted instrument will be fairly linear in calibration when a high series resistance is used so that the rectifier impedance is a small portion of the total. This is possible only for high voltage ranges, on which a sensitivity of about 900 ohms per volt is obtainable for the instrument. On low AC voltage ranges the variable rectifier resistance causes the scale to be bunched near the low end. Consequently most multi-testers of the 1000-ohm-per-volt and 2000-ohm-per-volt types have no AC scale for less than 10 volts of full scale deflection. Very linear readings are obtained for full scale ranges of 50 volts and greater. For ranges of 50 volts or greater, the series multipliers will be approximately 90 percent of the value used for the same DC range.

With the above information the reader should be able to construct a multi-tester from components usually available around most radio service shops.

### SIMPLE DC MULTI-TESTER

Just as a spare tire is indispensable for your car, so is a spare volt-ohm-milliammeter combination essential to your shop. Figure 19 shows two meter scales for simple multi-testers that can be made with

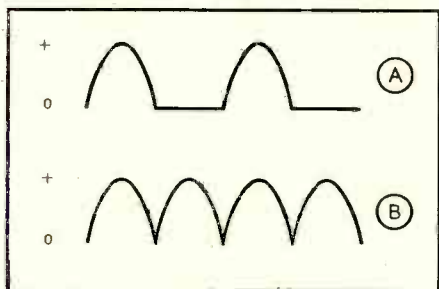


Figure 17.

- a. Half-wave rectified sine wave
- b. Full-wave rectified sine wave

old 0 to 1 millimeters that are usually found around the shop in old equipment. Such scales are manufactured for Jewell, Triplett, and Weston meters by the R. E. Nebel Laboratories and you can purchase them from most distributors. Figure 20 shows a simple DC multi-tester, made by using scale as in the left of Figure 19. The various ranges are:

- DC Volts.
- 0 to 50
  - 0 to 250
  - 2 to 1000

- DC Currents
- 0 to 50 milliamperes
  - 0 to 250 milliamperes
  - 0 to 1000 milliamperes

- Ohms
- 0 to 500 ohms
  - 0 to 100,000 ohms

Multiples of the above scales may be incorporated by the individual constructor. Such a unit serves not

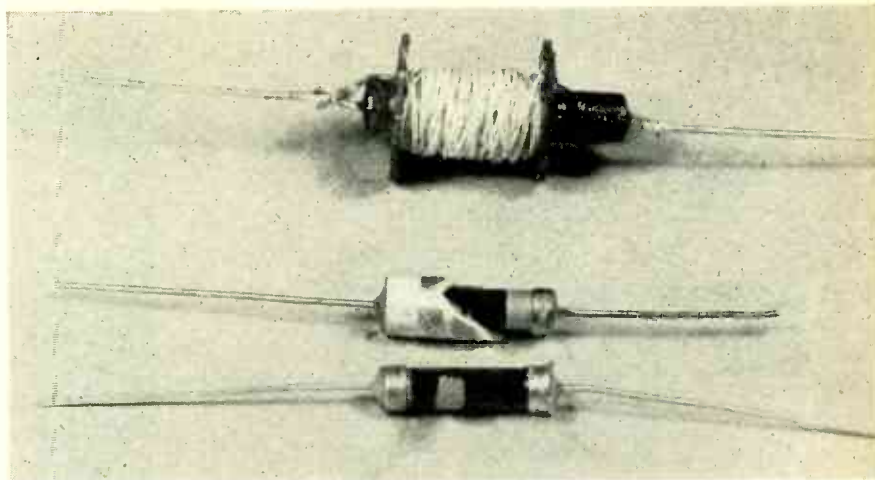


Figure 22.

Top, 4-ohm shunt resistor wound with #38 S.C.C. copper wire using 100-ohm resistor as a form. Center, cut-away view of 2700-ohm carbon resistor which can be used to make 3000-ohm "precision" resistor, similar to that shown at bottom.

only as auxiliary test apparatus in trouble-shooting receivers, but may also be used to check and repair failure in other test equipment. If such a unit is constructed it should be carefully calibrated against the shop's standard equipment and a correction chart drawn for each range. Then, having made the unit as accurate as the other equipment in the shop, it may be used in recalibrating and checking the standard equipment when and if it may need repairs or adjustments.

### MULTI-TESTER TROUBLES AND REPAIRS

Outside of possible occasional damage to the meters themselves, trouble with multi-testers falls in one or the other of the following:

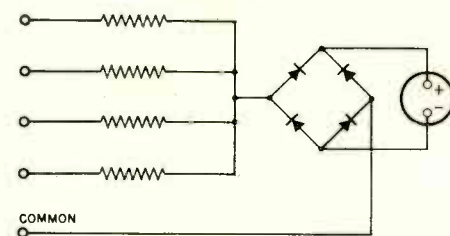


Fig. 18. Rectifier meter circuit

1. Open shunt resistors
2. Open or altered value multipliers
3. Defective rectifiers.

Shunt resistors are usually wire-wound and may be replaced by home-made shunts of proper current capacity. The Simpson model 260 multi-tester is an excellent instrument showing very good design in its circuit arrangement. In it are several shunts as shown in Figure 24. Such shunts may be made from cotton-covered copper wire or of cotton-covered resistance wire such as the "Advance" and "Manganin" wires manufactured by the Driver Harris Co. Resistances per foot of copper wire and of "Advance" or "Manga-

nin" wire will be found in Figures 21 and 23.

If a bridge is not available for measuring shunt resistors, a substitute method may be employed, as follows: From the tables in Figures 21 and 23 we may select a wire with which to make the shunt. For example, #38 wire has .6726 ohms per foot. To construct a 4-ohm shunt, would require approximately 7 feet of that wire. To allow for percentage variations, plus and minus the stated resistance per foot, make the shunt of wire 10 percent longer than indicated, or about 7½ feet long. This wire may be wound on a carbon resistor, which should be of such high value that it will not affect the shunt factor. Solder ends of the shunt wire to resistor pigtails. Such a shunt is shown in Figure 22. The proper length may be determined by tailoring the length and measuring with an accurate ohmmeter. Another method is described for "universal shunts" later in this article.

For the common shunt, the circuit

(Continued on page 50)

No. B & S	Ohms per Ft. at 68° F.
18	.006510
19	.008210
20	.01035
21	.01305
22	.01646
23	.02076
24	.02617
25	.03300
26	.04162
27	.05248
28	.06617
29	.08344
30	.1052
31	.1327
32	.1673
33	.2110
34	.2660
35	.3350
36	.4230
37	.5334
38	.6726
39	.8481
40	1.069

Fig. 21. Resistances of copper wire

## SMALL TOWN DEALER FINDS

# Service Signs SAVE TIME

by M. SLOANE



BECAUSE he is short of help, Ben Schmutzler, radio, bicycle and paint dealer of Watertown, Wis., has turned to the use of hand painted signs in his shop to help him conserve time. He is well pleased at the way such signs work out for him in his busy little shop.

Schmutzler, who has been selling and servicing radios since the middle 1920's is proud of the fact that he has several lines over which to spread his overhead—radio sales and service, bicycle sales and repair, paints, oils and wall-paper sales. He also repairs shades for Watertown homeowners and has an elderly man help him with this work.

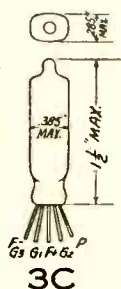
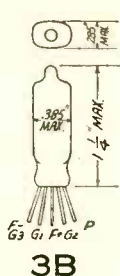
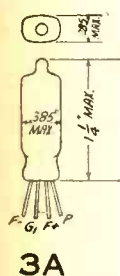
"I tell the rest of my friends in the local business association that I will be the last independent man in business on Main Street, if it comes to that," says Mr. Schmutzler, "because I have a number of lines which help me carry overhead and make a profit. This way, I am kept busy most of the year."

Regarding his signs on radio service, Mr. Schmutzler declares that the average person who comes into the shop during wartime, asks the same questions over and over again. One is, "How soon can I get this radio repaired. I would like to have it as soon as possible." If Mr. Schmutzler patiently explains that there are many

other radios awaiting repair, the customers often may not believe him; they often think that he slips his friends' orders in ahead of those already in the shop. To combat this situation and to advise all publicly of his policy, Schmutzler has a sign on his receiving counter which says plainly, "Every Job Will Be taken Only As 1st Come 1st Served."

The service prospect who reads this sign knows that he must take his turn with the rest, that he cannot get his radio repaired until those who are ahead of him have had their radios serviced. This is a fair policy and saves a lot of explaining on the part of

## PANEL LAMP AND SPECIAL TUBE DATA



Tubes  
for Flat Hearing-Aids

FOR a while, a month or so ago, it looked as if the tube situation might ease up early in 1945. Now, however, manufacturers are of the opinion that the shortage of receiver replacement tubes will become more critical before it gets better. They are therefore making special efforts to compile and pub-

TYPE	DESIGN	CATHODE TYPE	HTER OR FIL VOLTS	FIL AMPS	BASING DATA	MAX SIZE VIEW	CAPACITIES			USED AS	PLATE VOLTS	GRID VOLTS	SCR VOLTS	PLATE MA	SCR MA	VOLTAGE GAIN	PLATE RESIS OHMS	MUT COND mho	OUT PUT WATTS	LOAD RESIS OHMS	TUBE WEIGHT OUNCES	TYPE
							G-P mmfd	IN mmfd	OUT mmfd													
CK502AX	PENTODE	FIL	1.25	0.030	Term Conn. See Max. Size View	3C				POWER OUTPUT	45	-1.5	45	.45	.11	25MEG	500	.006	0.1MEG	.09	CK502AX	
CK503AX	PENTODE	FIL	1.25	0.030	Term Conn. See Max. Size View	3C				POWER OUTPUT	45	-2.5	45	0.5	.18	4 MEG	475	.010	0.05MEG	.09	CK503AX	
CK505AX	PENTODE	FIL	0.625	0.030	Term Conn. See Max. Size View	3B				VOLTAGE AMPLIFIER	30	0	30	.20	.07	5 MEG	180		1MEG	.07	CK505AX	
CK506AX	PENTODE	FIL	1.25	0.050	Term Conn. See Max. Size View	3C				POWER OUTPUT	45	-4.5	45	1.25	0.4		500	.025	.03MEG	.09	CK506AX	
CK507AX	PENTODE	FIL	1.25	0.050	Term Conn. See Max. Size View	3C				POWER OUTPUT	45	-2.5	45	.6	.21	.3 MEG	500	.012	0.05MEG	.09	CK507AX	
CK509AX	TRIODE	FIL	0.625	0.030	Term Conn. See Max. Size View	3A				VOLTAGE AMPLIFIER	45	0		.15		15MEG	160		1MEG	.07	CK509AX	

Mr. Schmutzler.

"I had to do it," he said. "I want to spend as much of my time as possible getting those radios repaired. I can't make any money arguing with customers about when I can get their jobs done. The sign saves me much grief."

Mr. Schmutzler also has his ceiling prices posted on a large sign in his shop where customers can see them the moment they enter. The ceiling prices show that Mr. Schmutzler charges a minimum of 85 cents for a city call, \$1.00 for a country call and \$1.00 for a shop diagnosis. Copy also states, "Our guarantee covers only to the extent of our tubes, parts and service—90 days."

At the present time, Mr. Schmutzler has discontinued his radio calls, and requires folks to bring their radios to his shop. This gives him more time to do bench work, he states. He also has quite a few radios in his shop at the moment, and he has had plenty of this work for the entire war period. His tube stock was ample last year, but is beginning to run low.

The wallpaper and paint department have prominent display up at the front of the store. Mr. Schmutzler has a sign near his bicycle stock which tells customers that new bicycles can be purchased on ration slips. He also states on this sign that the firm repairs bikes and paints them for only

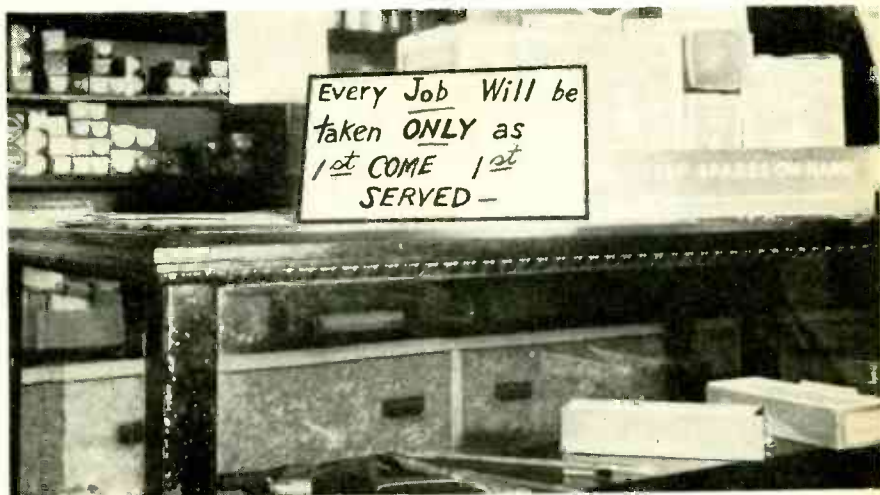
\$3.75. Bike repairs bring in a considerable volume of cash business, especially in early spring and summer.

While wallpaper production has been reduced some, Mr. Schmutzler still gets enough stock to take care of the demands of his customers. He has the stock displayed very neatly at one side of his store, with the rolls hung open from ceiling to floor to give customers a good idea of what the patterns look like, on the wall.

Paints also move very well. Mr. Schmutzler states that his combination of lines all serve the home owner, and this helps his radio business. "Folks

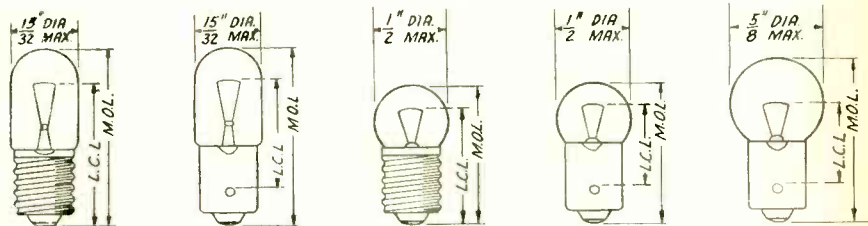
who come here to buy paints and wallpaper also bring in their radios for repairs," he states. "I am one of the first radio repair men in Watertown and I have customers who have been coming here for years."

This radio service dealer also feels that in the post war era, the dealer and serviceman who stayed in business taking care of the radios and other appliances in the war period, is going to get a large share of the new business. Not only will people patronize such a dealer, but will send their friends in to buy, he feels. He expects to do a big business post war.



Signs like this and opposite are "contracts" with clients.

### Radio Panel Lamps



40  
11  
12  
16  
18  
292

40A  
43  
41  
45  
49  
49A  
292A

50

51

55

lish (direct or through the trade press) detailed and all-inclusive data on tube types and their substitutes. Such information is of course good "for the duration" only, or for so long as the identical replacement tube types continue scarce or are non-existent.

Radio servicemen can keep civilian receivers going by referring to the charts and data provided by manufacturers (see, for example, page 38 in this issue) for the purpose of aiding them in making the best possible use of such tubes as they may have in stock, or can still get from jobbers, which may be made to serve the purpose. Substitute tubes used whenever possible with adaptors providing the needed socket wiring changes, but which leave the set itself unchanged, can easily be taken out and replaced with the proper type when tubes are again available.

The tables and drawings shown here are based on material in the section on special tubes and lamps in "Radio Tube Data and Substitution Chart," published by Raytheon Manufacturing Co., Chapel Street, Newton 58, Mass. Copies of the 44-page compilation may be had by writing to the manufacturer.

TYPE NO.	VOLTS	AMPS	APPROX. CANDLE POWER	BULB	BASE	BEAD COLOR	LIGHT CENTER LENGTH	MAX. OVERALL LENGTH	TYPE NO.
40	6-8	0.15	0.5	T-3 $\frac{1}{4}$	Min. Screw	Brown	$\frac{3}{8}$ "	1 $\frac{1}{8}$ "	40
10-A	6-8	0.15	0.5	T-3 $\frac{1}{4}$	Min. Bayonet	Brown	$\frac{3}{8}$ "	1 $\frac{1}{8}$ "	40-A
41	2.5	0.5	0.5	T-3 $\frac{1}{4}$	Min. Screw	White	$\frac{3}{8}$ "	1 $\frac{1}{8}$ "	41
42	3.2	0.5	0.75	T-3 $\frac{1}{4}$	Min. Screw	Green	$\frac{3}{8}$ "	1 $\frac{1}{8}$ "	42
43	2.5	0.5	0.5	T-3 $\frac{1}{4}$	Min. Bayonet	White	$\frac{3}{8}$ "	1 $\frac{1}{8}$ "	43
44	6-8	0.25	0.8	T-3 $\frac{1}{4}$	Min. Bayonet	Blue	$\frac{3}{8}$ "	1 $\frac{1}{8}$ "	44
45	3.2	0.5	0.75	T-3 $\frac{1}{4}$	Min. Bayonet	Green	$\frac{3}{8}$ "	1 $\frac{1}{8}$ "	45
46	6-8	0.25	0.8	T-3 $\frac{1}{4}$	Min. Screw	Blue	$\frac{3}{8}$ "	1 $\frac{1}{8}$ "	46
47	SAME CHARACTERISTICS AS 40A, WITH WHICH IT IS INTERCHANGEABLE								47
48	2.0	0.06	0.03	T-3 $\frac{1}{4}$	Min. Screw	Pink	$\frac{3}{8}$ "	1 $\frac{1}{8}$ "	48
49	2.0	0.06	0.03	T-3 $\frac{1}{4}$	Min. Bayonet	Pink	$\frac{3}{8}$ "	1 $\frac{1}{8}$ "	49
49-A	2.1	0.12	0.07	T-3 $\frac{1}{4}$	Min. Bayonet	White	$\frac{3}{8}$ "	1 $\frac{1}{8}$ "	49-A
50	6-8	0.2	1.0	G-3 $\frac{1}{2}$	Min. Screw	White	$\frac{3}{8}$ "	1 $\frac{1}{8}$ "	50
51	6-8	0.2	1.0	G-3 $\frac{1}{2}$	Min. Bayonet	White	$\frac{1}{2}$ "	1 $\frac{1}{8}$ "	51
55	6-8	0.4	1.5	G-4 $\frac{1}{2}$	Min. Bayonet	White	$\frac{1}{2}$ "	1 $\frac{1}{8}$ "	55
292	2.9	0.17	0.3	T-3 $\frac{1}{4}$	Min. Screw	White	$\frac{3}{8}$ "	1 $\frac{1}{8}$ "	292
292-A	2.9	0.17	0.3	T-3 $\frac{1}{4}$	Min. Bayonet	White	$\frac{3}{8}$ "	1 $\frac{1}{8}$ "	292-A

# NEW FM RECEIVING SYSTEM

**Anticipated increase in number of FM broadcast stations post-war (see map) emphasizes interest in new circuits for FM sets.**

**by George L. Beers  
Engineering Department,  
RCA Victor Division**

A HIGH degree of freedom from noise and from interference from undesired stations in the reception of FM radio programs is made possible by a new advance in receiver design. The new development is designated as a "frequency-dividing locked-in oscillator FM receiving system."

Frequency modulation is still in its infancy in terms of a nation-wide entertainment service. Until a large number of high-powered FM broadcasting stations are operating on a commercial basis, the major technical problems which are involved in the design of FM receivers will not be fully appreciated. Probably the most difficult requirement to be met is that of obtaining adequate adjacent channel selectivity. This problem was emphasized by a report on "Blanketing of High Frequency Broadcast Stations" issued in 1941 by the Federal Communications Commission.

The new FM receiving system, in which a continuously operating local oscillator is frequency-modulated by the received signal, represents a new approach to the problem. A substantial selectivity improvement has been obtained in the new system by designing the oscillator to lock-in only with frequency variations occurring within the desired channel. Another important feature of the system is a material improvement in the stability of the receiver from the standpoint of overall feedback. This results from the fact that the locked-in oscillator arrangement provides a substantial voltage gain at a different and lower frequency than the intermediate frequency employed in the receiver. High sensitivity is required in an FM receiver in order to obtain maximum performance. If this sensitivity is obtained at a single intermediate frequency, it is difficult to prevent over-all feedback and provide satisfactory receiver stability.

## How It Works

Basically, the operation of the new system depends on producing, in the receiver, a local signal which is frequency-modulated by the received signal. The local signal is provided by a continuously operating oscillator. The received signal, after it has been amplified by conventional r-f and i-f amplifiers, is applied to the oscillator in such a way as to cause its frequency to

change in accordance with the frequency variations of the received signal.

In the particular applications of this system, the oscillator is locked-in with the received signal at one-fifth of the intermediate frequency. With this 5 to 1 relationship between the intermediate frequency and the oscillator frequency, an equivalent reduction in the frequency variations of the local oscillator is obtained. Received signal frequency variations of plus or minus 75 kilocycles are reproduced as plus or

minus 15 kilocycle variations in the oscillator frequency.

Dealers and servicemen should note that the locked-in oscillator operating at one-fifth the intermediate frequency reduces the frequency deviation corresponding to any modulation frequency, but does not change the modulation frequency. The frequency-modulated signal derived from the oscillator is applied to a discriminator which is designed for this reduced range of frequencies.

## LOCATION AND POWER OF AUTHORIZED FM STATIONS

Maximum Transmitter Power	New Eng.	Mid. Atl.	South Atl.	E. N. Cent.	W. N. Cent.	E. S. Cent.	W. S. Cent.	Mtn.	Pac.	All Areas
.251-1 kw	1	8		5	1		1			17
1.1-3 kw	2	9		1	2			1	1	15
3.1-10 kw	2	3		5						10
10.1 kw & over	1	3	1	2		1			1	9
Power not available		1								1
Total, all powers	6	24	1	13	3	1	1	1	2	52

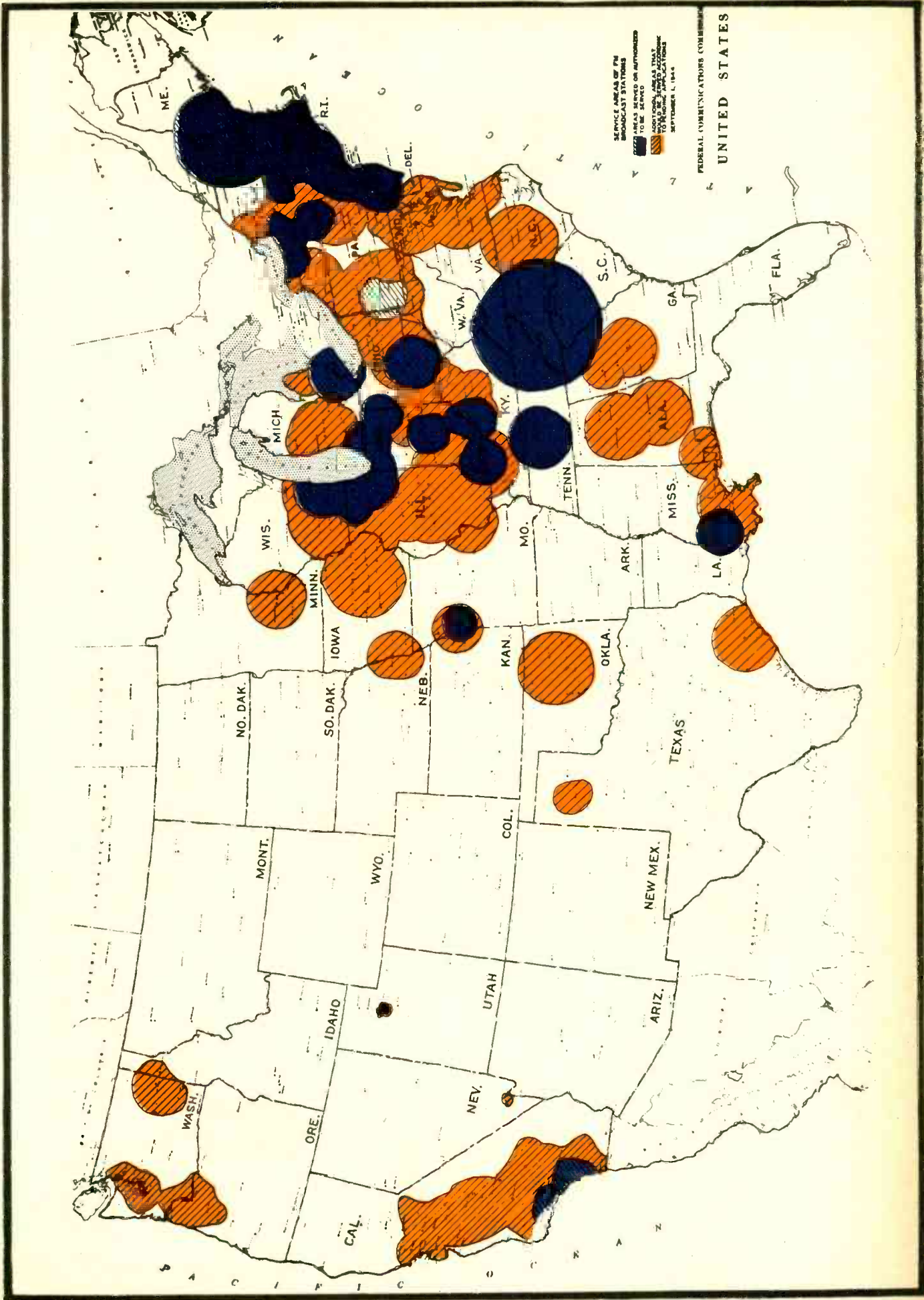
Source: Prepared by the Economics Division from licenses for FM stations granted by the Federal Communications Commission.

The map opposite shows FM areas authorized to be served and additional areas that would be served according to some 248 applications now pending with the Federal Communications Commission. Blue areas show present coverage of 46 FM stations in operation. Red areas show added coverage post-war. Total expansion of FM station coverage is shown by both colors. Dealers may therefore be able to sell more of the higher unit-price FM receivers.

## MARKET FOR FM SETS

Presently 46 high frequency (FM) broadcast stations are licensed to operate on a commercial basis, and construction permits are outstanding for seven others. The construction of these stations was authorized prior to restrictions made necessary by the present war emergency, and in most cases construction was not entirely completed because materials could not be obtained.

Consequently most FM stations are rendering a limited service. As of October 1, 1944 there were 248 applications on file for new high frequency (FM) broadcast stations. The authorization of new FM stations has been restricted due to wartime policies; however, applications for construction permits are not dismissed but are instead being retained in the Commission's pending file without present action.



# DISCussion....

## Records and Record Makers by L. C. S.

Doings and goings: Tommy Dorsey Decembers into Chicago's Sherman Hotel . . . Duke Ellington does V-discs for the army . . . Charlie Spivak opens Cleveland . . . Phil Moore Four goes from RCA "Music America Loves Best" air spot to guest on NBC shows . . . Nancy Norman, vocalist with Sammy Kaye, gets a Gitem from the Aleutians, writ on captured Jap letterpaper . . . Bing Crosby, Fred Astaire, Spike Jones, Dinah Shore—return from France to unanimate about the grand job our boys are doing and their wonderful morale . . . Dinah tells of giving her special 3-octave piano (60 lbs.) to Sgt. Jack Leonard in France . . . Jack was Sinatra's predecessor in Tommy Dorsey's band . . . now in special service, Jack

with his fingers . . . 10-finger exercises? More Jonesiana, the Spike: while in France he bought a goat from a peasant . . . named it Charmaine . . . at the end of ten weeks someone "got" Spike's goat . . . and that's the guy he is looking for . . . the stealer of Charmaine. More on Phil Moore . . . and his Four is going to a new nightery on Manhattan's famous 52nd, or Swing, street . . . it's the "Tondelayo." Vaughn Monroe returns to his steady spot at the Commodore Hotel, N. Y.

Artie Shaw talked on "Jazz, Swing and the Popular Song," with composer Hoagy Carmichael before a panel at the U. of California . . . sponsored by the Musicians' Congress and the Institute of Music in Contemporary Life . . . high falutin' way of "keeping the

number somewhere in New York . . . plenty of top bandleaders are trying to buy-in on the lucky Dorsey ventures . . . Tommy (by the way) shares with Glen Miller and Dinah Shore the high honors in a recent "Serviceman Poll" taken by an entertainment trade magazine.

Sigmund Romberg, composer, conductor and pianist . . . his operettas are among the most pop. of all time, signs an exclusive recording agreement . . . says J. W. Murray, general manager, RCA Victor record activities. . . Everybody knows Romberg's "The Student Prince," "New Moon," "Blossom Time" "Maytime," and "The Desert Song," (recently a color-pix) . . . Sig. is the latest of a group of topflighters signed by Victor . . . others are Lauritz



The lithe, lissome, lovely, leggy lass is Martha Stewart, new Victor artist. "Classic" profile (right) belongs to Abe Lyman, "groover" for Classic records.



entertains a lot and piano was a Dina that went over big . . . David Street stays with the Joan Davis radio show, on long contract . . . Hal McIntyre tours Canada . . . Shep Fields and his all-reed band are five-weeking at Frank Dailey's famous Jersey dancery, the Meadowbrook . . . Phil Moore's late-hits with "Your Smile" . . . Coming up—a Bunny Merigan Memorial Album (Victor) . . . and Spike Jones fun-names his new Bluebird album, "Musical Depreciation of Songs You'd Like to Forget."

Lobstering between trains caught Duke Ellington short . . . ran from hotel with serving of lobster to make train . . . then dipped into pocket, pulled out lobster remains . . . and et them

common touch?" Tommy and Jimmy Dorsey made Collonades ballroom, Santa Monica, Cal., so popular since they took it over . . . yes, that the brothers are shopping for an opposite

Melchior, Zinda Milanov, Patrice Munsel, Nan Merriman, Blanche Thebom, Camilla Williams; Martha Stewart, David Street; William Kapell and Edmund Kurtz.

## Records to Sell

### RCA-Victor:

King Sisters with male chorus, offer "The Trolley Song"—romantic novelty—backed with "My Heart Sings"—a romantic ballad—with solo by Alyce King (30-0829).

Arthur "Big Boy" Crudup, guitar

and string bass, in "My Mama Don't Allow Me" and "Standing at My Window." Both sides are straight 12-bar blues, with spontaneous lyric expression. (34-0717).

Vaughn Monroe and orchestra, "The Last Time I Saw Paris," with vocal by



**"City Slickers"**  
Spike Jones displays war souvenirs to Harriette Henning. They toured overseas for U.S.O. Spike now has material for some more of his new and novel instrument-isms.

the leader and "After It's Over," vocal by the Four Lee Sisters. (20-1596). "Paris" is taken at an "up" tempo and the band swings; the flip is more of a ballad. Both are danceable

Dealers will get a brand new unreleased Glenn Miller disc in the near future; also a continuation of the swing jazz albums—such as Up Swing, Smoke Rings, Glenn Miller, Tommy Dorsey, Fats Waller, etc. One due at the end of November which cannot be named at this time.

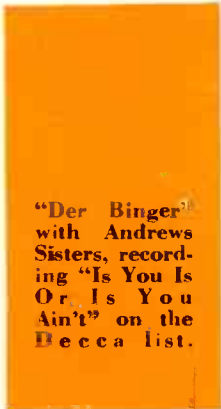
Shipments to dealers of the Musical Smart Set album P134—the Bunny Berigan Memorial Album—began end of October. Four records, carrying eight tunes which Bunny made with his own orchestra. A swing classic, for Bunny is probably second to Bix Beiderbecke as a trumpeter. Offered: "I Can't Get Started With You," "Frankie and Johnnie," and others, with bandleader George Auld on the tenor sax.

Glenn Miller's new release, a tune titled "Helpless," with Ray Eberle vocalizing. Flipover is "When Johnny

Comes Marching Home," sung by Marion Hutton and The Modernaires.

Erskine Hawkins trumpets "King Porter Stomp" and "Lucky Seven." And St. Louis Jimmy sings "Back On My Feet Again" and "Nothing But Blues."

By this time, dealers may have the new disc, "Whispering" and "Two In Love," by Tommy Dorsey and Frank Sinatra. The first is from the film



"Greenwich Village" which is currently popular. There's no need to say more on this, for Tommy and Frank will sell any record.

Duke Ellington offers a brand new coupling of two new tunes, "I Don't Mind," sung by Ivie Anderson. The flip is "What Am I Here For," an instrumental, featuring Rex Stewart, Johnny Hodges and Duke (trumpet, alto sax and piano).

Hal McIntyre and his young band turn in a two-facer: "It Might Have Been," with vocals by Jerry Stuart and the Four Lytle Sisters on this Cole Porter tune. The other face: "Daisy May," an instrumental written by Hal and Jack May. This band will be one of the best in a year or two.

Composer promotions: The month of October saw birthdays of three world-

famous composers, Franz Liszt, 133 years ago; Niccolò Paganini, 160 years ago; and Giuseppe Verdi, 131 years ago. The tie-in promotions, in terms of discs, for these composers include: 7 entries for Paganini; 26 entries for Liszt and 82 entries for Verdi. Artists who have recorded their works are: Alfred Cortot, Jesus Maria Sanroma, Leopold Stokowski, Arthur Rubinstein, Rudolf Ganz, Alexander Brailowsky, Vladimir Horowitz, Serge Koussevitzky, Eugene Ormandy, Arturo Toscanini, Yehudi Menuhin, Fritz Kreisler, Benno Moisevitch; Enrico Caruso, Rosa Ponselle, Rose Hampton, Lucrezia Bori, Leonard Warren, Antonio Scotti, Lawrence Tibbett, Titto Ruffo, John Charles Thomas, Amelita Galli-Curci, Louise Homer, Luisa Tetrazzini, Tito Schipa, Alexander Kipnis, Frances Alda and Ernestine Schumann-Heink.

All performers of unimpeachable excellence and first rank, they help the sale of almost any music.

### Columbia:

Hot Jazz, boogie woogie and swing numbers are being repressed to meet public demand to its fullest extent. Dealers will be getting most or all of the following items:

Eddie South (C-27); King Louis (C-28); Bix Beiderbecke (C-29); Fletcher Henderson (C-30); Bessie Smith (C-

31); Duke Ellington (C-38); Bud Freeman (C-40); Earl Hines (C-41); Frank Teschemacher (C-43); Boogie Woogie (C-44); Hot Trombones (C-46); Dorsey Brothers (C-51); Louis Armstrong (C-57); Teddy Wilson-Billie Holiday (C-61); Hot Trumpets (C-66); Louis Armstrong-Earl Hines (C-73).

These albums will sell for the regular O.P.A. prices, although many of the earlier issues have been selling at high "scarcity value" prices.

Frank Sinatra and Harry James—on one disc (36738). "It's Funny to Everyone But Me," is sung by Frank; the flip, "Don't Take Your Love From Me," is instrumental with solos by Harry. A sho-nuf dealer-doooper.

Lena Horne vocals in "Out of Nowhere," played by Teddy Wilson and

(Continued on page 46)



Bob ("You ought to be in pictures") Strong, recording for Classic flashes his china "keyboard" for this pix.

## TUBE SUBSTITUTION CHARTS

### SUBSTITUTE TUBE CHARTS—PART 2.

THE following charts are a part of a series which are being published to assist servicemen and dealers in meeting the present acute shortage of many tube types. They are intended to be more convenient, complete and reliable than most of those available but should not be followed blindly as many unusual circuits may be found which do not respond to any general treatment. There is still no substitute for experience in handling the tricky circuits.

The commonest changes are indicated by letters the meaning of which is explained in the chart headings and in greater detail in the footnotes. The number notes are to help when slightly more complicated changes may be necessary, or to indicate conditions under which it must be left to the serviceman's judgment as to whether the change will be satisfactory for his particular set, customer and location. (Footnotes are given below).

In general we have tried to list all the possible simple substitutions but experienced servicemen could work out others requiring more extensive modifications, such as changing from transformer to resistance coupled amplification in order to use a high-mu tube for an unobtainable low-mu type.

One of the biggest problems is finding a substitute which will fit mechanically into the space available. This must be found by trial for each job.

RADIO SERVICE DEALER will continue this series of tube substitution charts in consecutive issues. The whole series will include 150 ma. and 300 ma. tube types, battery tube types, and transformer and auto types. Please file this number of RADIO SERVICE DEALER for future reference. The introductory article explaining the circuit modifications requiring additional resistors appeared on page 18 of the November issue. It is referred to in these charts.

### EXPLANATORY NOTES

- A. This is shown only when the tubes are directly interchangeable for all published ratings. Unusual operating conditions may require analysis.
- B. This means that the heater voltage on the substitute tube is different from the required type. In most cases this can be taken care of by changing or shorting out a section of the series resistor. In cases where the resistor is in the line cord this is difficult unless the total voltage can be increased enough to make a line resistor unnecessary.
- C. Indicates that the heater current of the substitute tube is different from the desired tube and that parallel resistors must be used as explained in the article which precedes these charts.
- D. In these cases the tube socket is the same but some rearrangement of the connections may be necessary. It may only be necessary to be sure that contacts connected to elements of the substitute tube which are not required in that circuit are not used as tie points.
- E. Requires a different type of socket. Watch out for tie points as in "D".
- F. Realignment is recommended as good practice in all cases of RF and IF tube changes.
- G. Provision must be made for connection to the top cap of the substitute tube which was not originally required.
- H. The former top-cap connection will have to be changed to connect to a base pin.
- K. Indicates that the substitute tube operates at a different bias for the applied plate voltage than the original tubes.
- Self bias circuits give some automatic correction but this should be measured and changed if necessary to prevent early failures.
1. The use of a sharp cut-off pentode in place of a remote cut-off tube may cause great distortion in locations when strong signals are available. If no other substitute can be found all tubes on the A. V. C. system should be changed.
  2. The optimum load resistance for these types is more than 20% off. If tone or volume is noticeably poor, transformer tap adjustment or a new transformer may be required.
  3. Requires addition of screen voltage, resistor and bypass condenser. Select resistor to give screen volts approximately equal to actual plate volts.
  4. This type can be used as a triode by tying screen and suppressor to the plate. As a rectifier tie all grids to plate.
  5. This substitute satisfactory only if cathodes of the two diodes are tied together.
  6. Screen voltage should be decreased to prevent oscillation with this higher gm tube.
  7. Screen voltage may be increased for this type.
  8. Circuit for this substitution is given on last few pages of this booklet.
  9. Unused elements should be connected to chassis or cathode terminal.
  10. Pilot lamp may be omitted or provided for by other means.
- \* The G, GT, GT/G or metal types may be used interchangeably where space and shielding requirements permit. Realignment may be required to allow for differences in capacity



**TUBE SUBSTITUTION CHARTS**

REQUIRED TYPE	POSSIBLE REPLACEMENTS	REPLACEMENT METHODS										
		A	B	C	D	E	F	G	H	K		

REQUIRED TYPE	POSSIBLE REPLACEMENTS	REPLACEMENT METHODS										
		A	B	C	D	E	F	G	H	K		

IV	12Z3	B											4
	76					E							4
	37					E							4
	6J5GT*					E							4
	12A7	B				E							9
	14Y4	B				E							

Any type listed under 35Z3 in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6A7	6A8GT*					E	F						8
	6J8G					E	F						8
	6K8G*					E	F						8
	7B8					E	F						
	7J7					E	F						
	7S7					E	F						

Any type listed under 6D8G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6A8G*	J68G						F						
	6K8G						F						
	6A7					E	F						8
	7B8					E	F						8
	7J7					E	F						8
	7S7					E	F						
	12B8GT	B		D		F							8

Any type listed under 6D8G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6AE5GT/G	6C5GT*												K
	6AF5G												K
	6J5GT*												K
	6P5GT*												K
	7A4				E								K

Any type listed under 6L5G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.) See also type 25AC5GT.

6AF5G	6J5B												K
	6C5GT*												K
	6P5GT*												K
	7A4				E								K
	6AE5GT*												K
	76				E								K

6B7	6B8G*					E							
	6SF7					E							K
	7E7					E							
	7R7					E							K

Any type listed under 12C8 in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6B8G	6B7					E							
	6SF7			D									K
	7E7					E							
	7R7					E							K

Any type listed under 12C8 in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6C5GT*	7A4					E							8
	6J5GT*	A											
	6AF5G												K
	76					E							K

6P5GT*													K
37						E							K
6AE5G													K
6V7G							D						K
85							E						K
6R7G*							D						
6SR7G*							D						

Any type listed under 6L5G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6C6	77								F				
	6J7GT*					E	F						
	6SH7GT					E	F			H			6
	6SJ7GT*					E	F			H			
	7L7					E	F			H			6
	7H7					E	F			H			6
	7G7-1232					E	F			H			6
	36					E	F						
	6D7					E	F						

Also types under 6D6, but see note 1. Any types listed under 6W7G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6D6	78								F				
	39/44					E	F						
	6K7GT*					E	F						
	6SK7GT*					E	F			H			
	6U7G					E	F						
	6SD7GT					E	F			H			6
	6SG7					E	F			H			6
	7A7					E	F			H			
	6E7					E	F						

Also types under 6C6, but see note 1. Any types listed under 6S7G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6F5GT*	6K5GT*							D					
	6SF5GT*							E		H			
	6SL7GT					D							9
	6Q7GT*					D							9
	6SQ7GT*					D				H			9
	75						E						9
	6B6G						D						9
	6B8G*						D						3
	6SF7						D			H			3
	6F7							E					3-9
	6P7G							D					3-9
	6B7							E					3
	7B4							E					
	7B6							E					8-9

Any type listed under 12F5G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6F7	6F7S								F				
	6P7G								E	F			
	12B8GT				B				E	F			K
	25B8GT				B	C			E	F			K

6H6GT*	6C8G							D			G		4
	12A7				B			D			G		4
	7F7								E				4
	14N7				B				E				4
	14Y4				B				E				

Any type listed under 7A6 in 150 MA. chart

# TUBE SUBSTITUTION CHARTS

REQUIRED TYPE	POSSIBLE REPLACEMENTS	NOTE NUMBER									
		NO CHANGES	FL. VOLTS	FL. CURRENT	REWIRE SOCKET	CHANGE SOCKET	REALIGN	ADD TOP CAP CONNECTION	REMOVE TOP CAP CONNECTION	OR PLATE VOLTS	CHANGE BIAS
		A	B	C	D	E	F	G	H	K	

may be used with simple resistor changes. (See article on page 18, October issue.)

6J5GT*	6C5GT*	A									
		See also 6C5GT in this table.									
6J7GT*	7L7					E	F		H		6-8
	6SJ7		D				F		H		
	77					E	F				
	6C6					E	F				
	6SH7GT*		D				F		H		6
	7H7					E	F		H		6

Any type listed under 6W7G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6J8G	6A8GT*						F				
	6K8GT*						F				
	6A7					E	F				
	7B8					E	F		H		8
	7J7					E	F		H		8
	7S7					E	F		H		8
	6F7					E	F				
	6P7G		D				F				

Any type listed under 6D8G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6K5GT*	See 6F5GT*										
6K7GT*	7H7					E	F		H		6-8
	6U7G						F				
	6SK7GT*		D				F		H		
	39/44					E	F				
	78					E	F				
	6D6					E	F				
	36					E	F				
	6SQ7		D				F		H		6
	7A7					E	F		H		8

(Types under 6J7GT, but see note 1.)  
Any type listed under 6S7G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6K8GT*	6J8G						F				
	6A8GT*						F				
	6A7					E	F				
	7B8					E	F				
	7J7					E	F				
	7S7					E	F				

Any type listed under 6D8G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6P5GT*	See 6C5GT—Bias change may not be required.										
6P7G	6F7					E	F				
	12B8GT	B		D			F			K	
	25B8GT	B	C	D			F			K	

6Q7GT*	6B6G	A									
	6SQ7GT*			D					H		
	75					E					8
	7B6					E			H		8
	7K7					E			H		
	XXFM					E			H		
	6B7					E					3
	6B8G		D								3
	6SF7		D						H		3
	7E7					E			H		3
	7R7					E			H		3

Any type listed under 6T7G in 150 MA. chart may

REQUIRED TYPE	POSSIBLE REPLACEMENTS	NOTE NUMBER									
		NO CHANGES	FL. VOLTS	FL. CURRENT	REWIRE SOCKET	CHANGE SOCKET	REALIGN	ADD TOP CAP CONNECTION	REMOVE TOP CAP CONNECTION	OR PLATE VOLTS	CHANGE BIAS
		A	B	C	D	E	F	G	H	K	

be used with simple resistor changes. (See article on page 18, October issue.)

6R7GT*	6V7G										K
	85						E				K
	6SR7GT*				D				H		
	6B7					E				K	4
	6B8G				D					K	4
	6SF7				D				H	K	4
	7E7					E			H	K	4
	7R7					E			H	K	4
	7E6					E			H	K	4

Any type listed under 6ST7 in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6SA7GT*	6A8GT*				D			G			8
	6J8G				D			G			8
	6K8GT*				D			G			8
	7B8					E					8
	7Q7					E					8
	7J7					E					8
	7S7					E					8

Any type listed under 12SA7GT in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6U7G	6K7GT*						F				K
	6SK7GT*				D		F		H	K	
	6SD7				D		F		H		6
	39/44					E	F				
	78					E	F			K	
	6D6					E	F				
	7A7					E	F		H		
	6B7					E	F				9
	6B8G				D		F				9
	6SF7				D		F		H	K	9
	6F7					E	F				9
	6P7G				D		F				9
	12B8GT	B			D		F				9
	36					E	F				

Any type listed under 6S7G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

6V7G	85						E				
------	----	--	--	--	--	--	---	--	--	--	--

See type 6R7G—Bias change may not be required.

12A5	25B6G		B				E				2
	38		B				E		G	K	2
	25A6		B				E				
	43		B				E				
	14C5			C			E				K
	25A7G		B				E				
	32L7GT*		B				E			K	2
	25L6GT*		B				E			K	2
	25C6G		B				E			K	2
	25N6G		B				E			K	2
	12A7					D			G		K

Any type listed under 6G6G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

12A7	32L7GT		B				E			H	K	2
	25A7GT*		B				E			H	K	2

Any type listed under 70L7GT in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

# TUBE SUBSTITUTION CHARTS

REQUIRED TYPE	POSSIBLE REPLACEMENTS	REPLACEMENT METHODS									
		A	B	C	D	E	F	G	H	K	

REQUIRED TYPE	POSSIBLE REPLACEMENTS	REPLACEMENT METHODS									
		A	B	C	D	E	F	G	H	K	

12B8GT	6F7	B								K	
	6P7G	B								K	
	25B8GT	B	C								
12Z3	IV	B									
	12A7					E		G			4
	76	B				E					4
	37	B				E					4
	6J5G	B				E					4
	14Y4					E					
	28Z5	B	C			E					

Any type listed under 35Z3 in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

25A6GT*	14C5	B	C		E						8
	25B6G										2
	25N6G									K	2
	25L6GT*									K	2
	43					E					
	12A5	B				E					
	38	B				E		G		K	2-8
	25C6G										2
	32L7GT	B			D					K	9-2
	25A7GT*				D						9

Any type listed under 35A5 in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

25A7GT	12A7	B			E		G		K	2
	32L7GT	B							K	2

Any type listed under 70L7 on 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

25AC5GT*	Same type as 25A6GT. (Driver no longer required.)										
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25B6G	25N6G										K
	25L6GT*										K
	25C6G										K
	12A5	B				E					2
	38	B				E		G		K	2
	25A6GT*										2
	25A7GT*				D						2-9
	12A7	B				E		G		K	2-9
	25B5					E					K
	43					E					2

Any type listed under 35A5 in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

25C6G	25N6G										K
	25L6GT*										K
	25A6GT*										K
	43					E					2
	12A5	B				E				K	2
	38	B				E		G		K	2
	25B6G										2
	32L7GT	B			D					K	2-9
	25A7GT*				D					K	2-9
	12A7	B			D			G		K	2-9
	25B5					E					2

Any type listed under 35L6G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

25L6G	14C5	B	C		E						8
	25N6G										K
	25A6GT*										2
	25B6G										K
	25C6G										2
	43					E					2-8
	12A5	B				E					2
	38	B				E		G			2
	32L7GT	B			D						9
	25A7GT*				D						2-9
	12A7	B				E		G			2-9
	25B5					E					K

Any type listed under 35L6G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

25Y5	25Z5	A									
	25Z6GT*					E					
	50Y6GT	B	C			E					
	50Z7G	B	C			E					

When used as a half-wave rectifier, add types under 12Z3.

25Z5	Same as 25Y5 above.										
25Z6GT*	25Z5					E					8
	25Y5					E					
	50Y6GT	B	C			E					
	50Z7G	B	C	D							

When used as a half-wave rectifier add types under 12Z3.

32L7GT	25A7GT*	B								K	2
	12A7	B				E		G		K	2
	70L7GT	B	C	D							K
36	6C6					E	F				6
	77					E	F				6
	6J7GT*					E	F				6
	6SH7GT					E	F		H		6
	6SJ7G*					E	F		H		6
	7L7					E	F		H		6
	7H7					E	F		H		6
7G7/1232					E	F		H		6	

Also types under 6D6, but see note 1. Any type listed under 6W7G in 150 MA. chart may be used with simple resistor changes. (See article on page 18, October issue.)

37	76	A									
	Also types shown under 6C5GT, add note E.										
38	12A7	E									9
	Also types shown under type 12A5.										
39/44	78	E	F								
	6D6	E	F								

See also type 6D6.

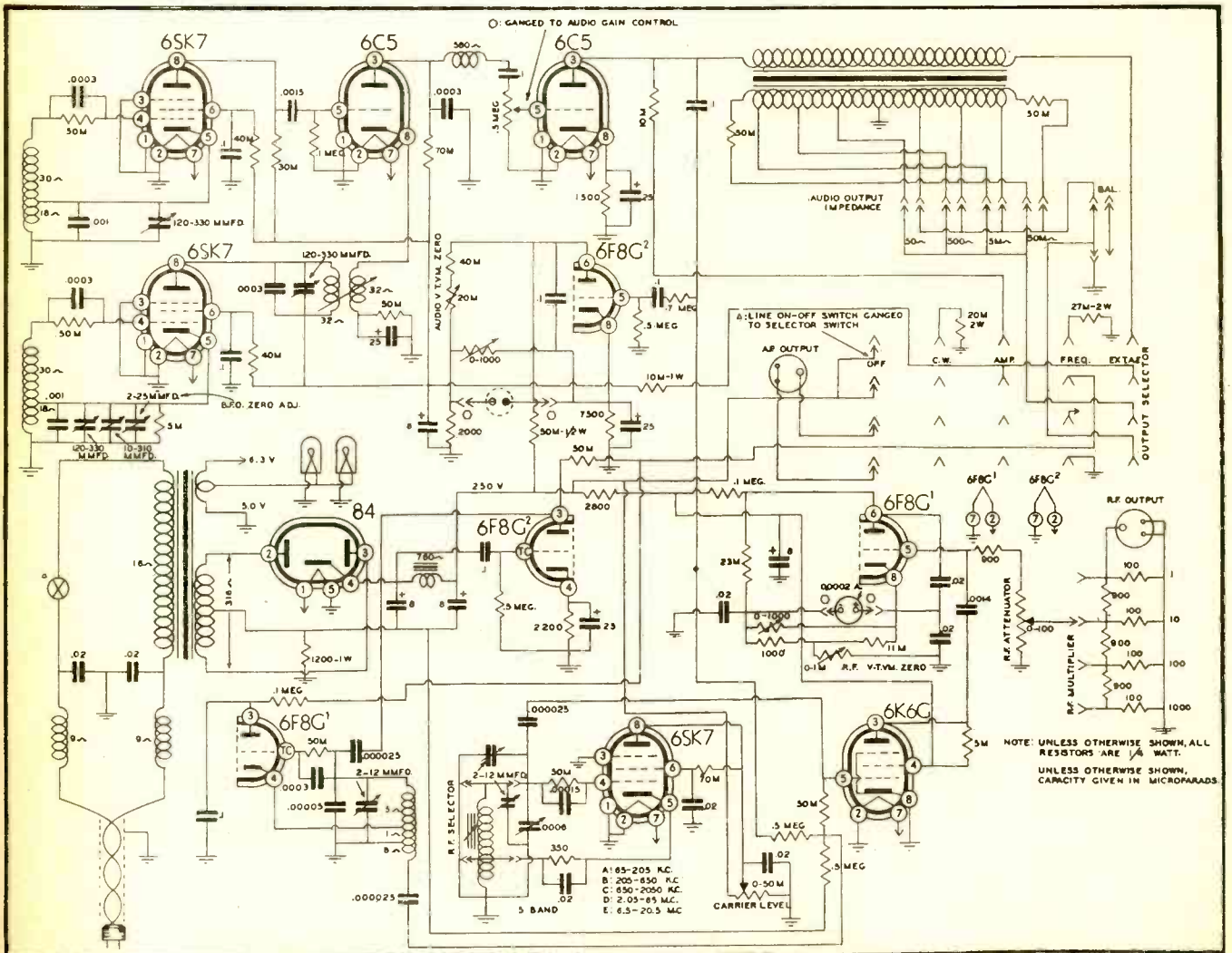
43	25A6GT	E									
	See also type 25A6GT and add note E.										
75	6Q7G	E									8
	See also type 6Q7G and add note E.										
76	37	A									
	Also types shown under 6C5GT and add note E.										
77	6C6					F					
	Also types under 6C6.										
78	6D6					F					
	Also types under 6D6.										
85	6R7GT*					E					K
	Also types under 6R7GT and add note E.										

# Technical Service Portfolio

Section XLIV

## TEST EQUIPMENT CIRCUITS—Part 4

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



Supreme Instruments Corp. Signal Generator 561.



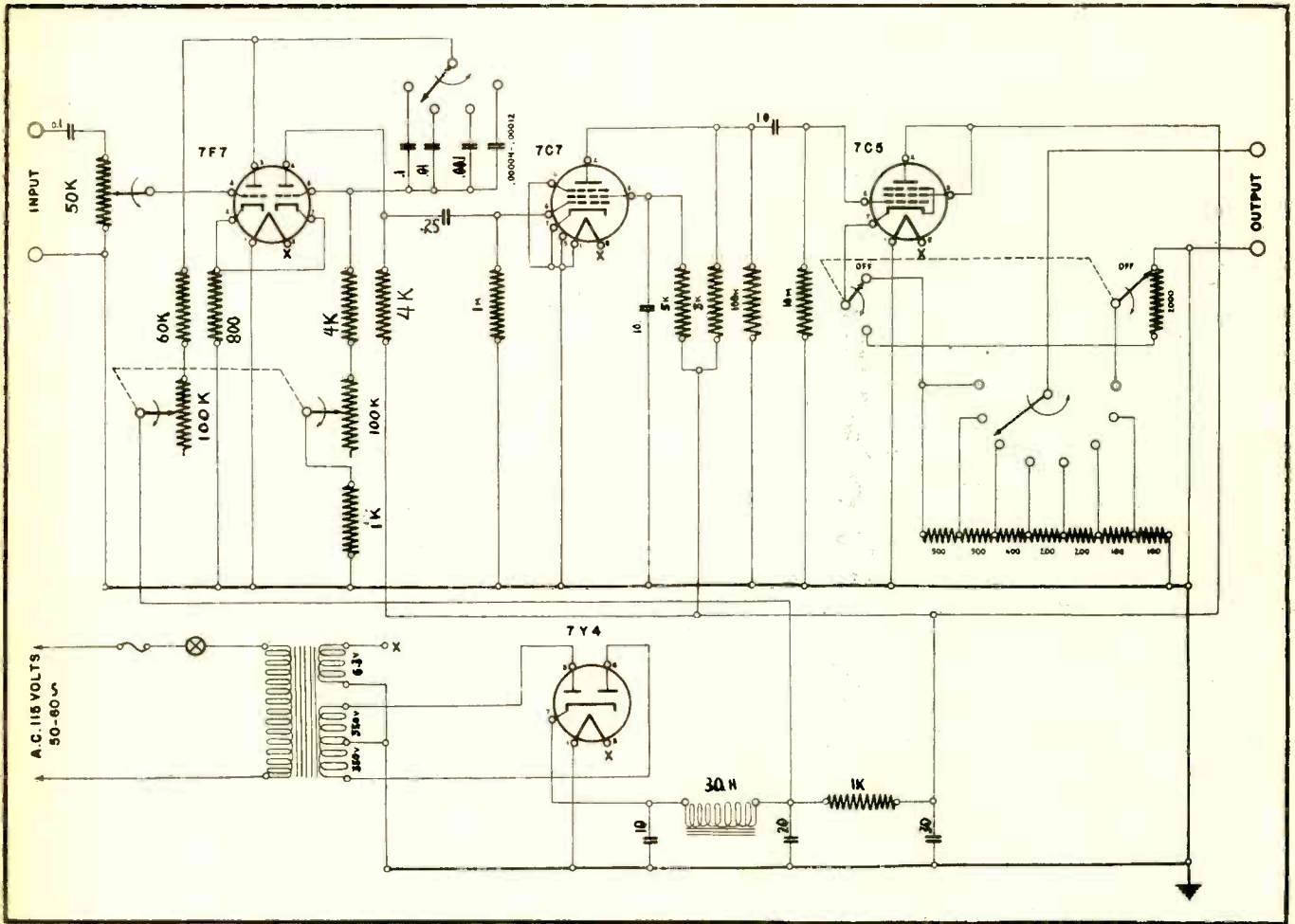
*"In times like the present, men should utter nothing for which they would not willingly be responsible through time and in eternity."*

*Abraham Lincoln, 1861*

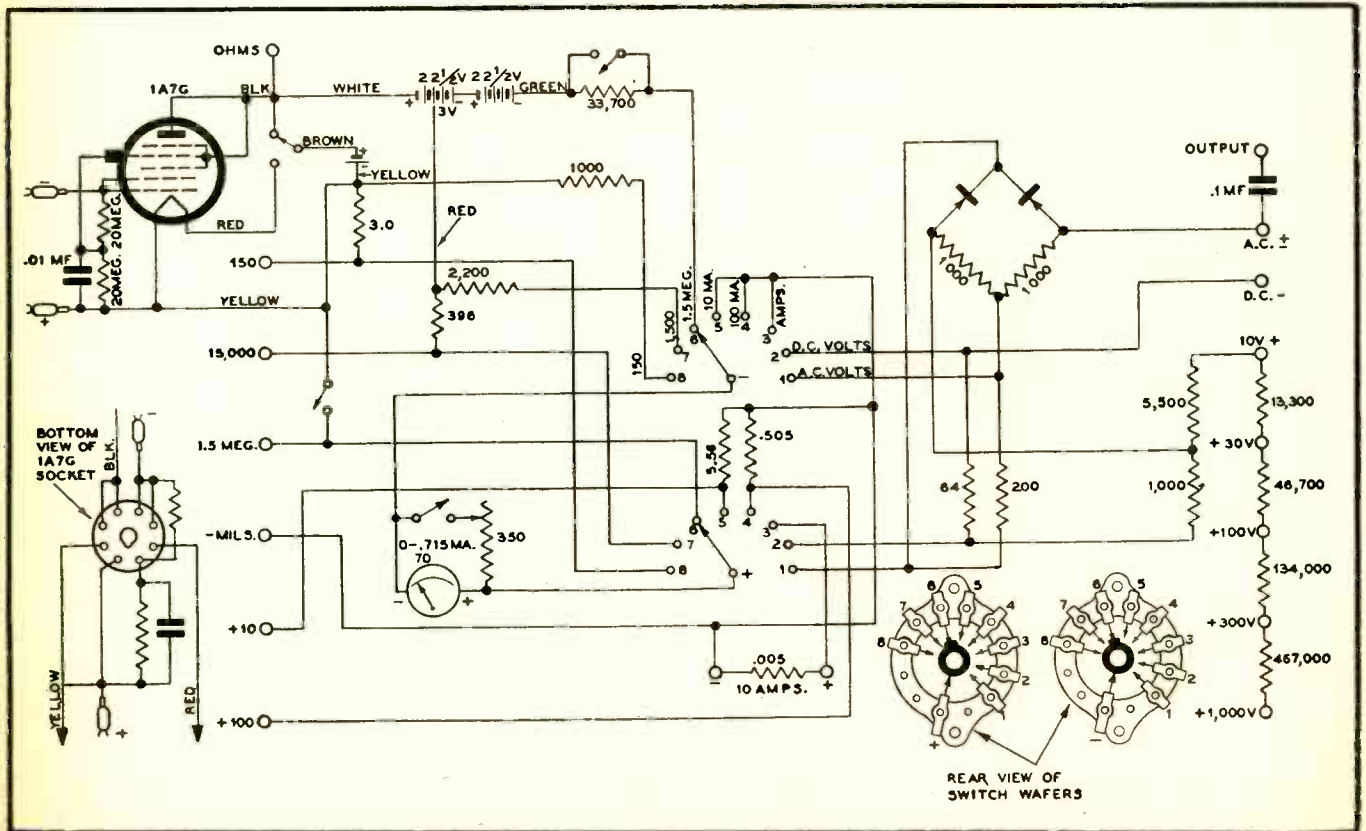
*a Merry Christmas  
and Happy New Year*

**Jensen**

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6601 S. Jerome Ave., Chicago, Ill.



Radio City Products Co. Model 530 Square Wave Generator.



Philco Vacuum Tube Voltmeter (Model 028).

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## Records to Sell

(from page 37)

Orchestra (36737); flip is "You're My Favorite Memory," with vocal by Helen Ward.

Roy Acuff and his Smoky Mountain Boys (6723) offer "Write Me Sweetheart," and "I'll Forgive You But I Can't Forget," with vocals by Roy.

Big Bill and his Chicago Five (6724) in "Bad Acting Woman," blues singer with piano, guitar and washboard accompaniment; "I'm Woke Up Now," blues with instrumental.

Burl Ives (Album C-103), "The Way-faring Stranger," folk tunes sung by

Burl with guitar accompaniment. There's Wee Cooper O'Fife, Cowboy's Lament, Peter Gray, Darlin' Cory, Cotton-eyed Joe, Sweet Betsy from Pike and many others. . . . And there's the Ives lilt and the strumming of his guitar—good for the dealer's fast-turn-over rack.

Cab Calloway (36751) and the Caballiers offer "The Moment I Laid Eyes on You," beguine (fox trot); flip is "Lordy" (fox trot); both with vocals by Cab. Good for Cab fans and for devotees of pop music.

Xaxier Cugat and his Waldorf-Astoria Orchestra (36752) in "Prisionero Del Mar," bolero, vocal chorus by Carmen Castillo and Cugat Chorus; flip, "Eco," rumba, vocal by Miguelito

Valdes. A top item in the Latin-Cugat beat.

Gene Autry (6725) sings with string band accompaniment, "Purple Sage in the Twilight," and "If You Only Believed in Me," both cowboy ballads—a natural for the singer, and for his fans.

Bing Crosby (Album M-555) in "Crosby Classics." Ten songs on five discs: Please, Some of These Days, My Honey's Lovin' Arms, I've Got the World on a String, Down the Old Ox Road, How Deep Is the Ocean, Home on the Range, The Last Round-Up, Thanks, and Shine. They are truly collectors' items—in 30 minutes of listening time.

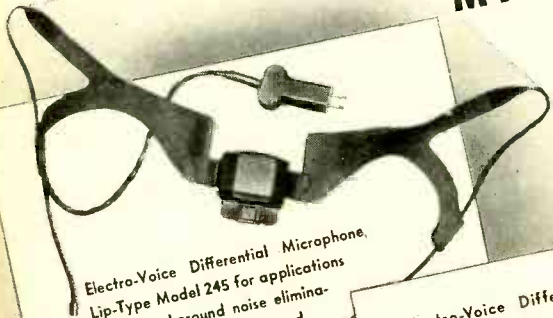
Ginny Simms with vocal chorus (36753) in, "Don't Ever Change," and "Wish You Were Waiting For Me"—a coupling for the romantic mood, and a realistic turnover item for the dealer.

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### Decca:

"Tico Tico"—samba, (23353) featured in MGM Pix "Bathing Beauty," and the flip: "Lero Lero" and "Bem Te Vi Atrevido"—marches. Ethel Smith at the Hammond organ with Bando Carioca. The first is familiar, with a new treatment and zing; the flip offers are in a fast dance tempo.

Woody Herman and Orchestra (18619)—"Let Me Love You To-Night," fox-trot, with vocal by Billie Rogers; other side, "Who Dat Up Dere?" with vocal by Woody himself. The first is a Spanish number; the coupling is a hot novelty number.

Jimmy Durante with Six Hits and A Miss (23351)—in "Umbriago" and "Inka Dinka Doo," both in brand new recordings. The first is from the MGM pix "Music for Millions," and the "Inka" is the Nose's trade mark. A raucous pair of ditties, chorused by the Hits and A Miss, with Roy Bargy's orchestra barging a background.

"Long Ago" and "I Love You," (23352)—by Percy Faith and Orchestra. "I Dream a Lot About You," and "Jeep Rhythm," (18618)—by Jimmie Lunceford and Orchestra. Percy gives his recordings a "concert interpretation." Jimmie offers a blue in the first number, with vocal by his Dan Grisson; the flip is instrumental.

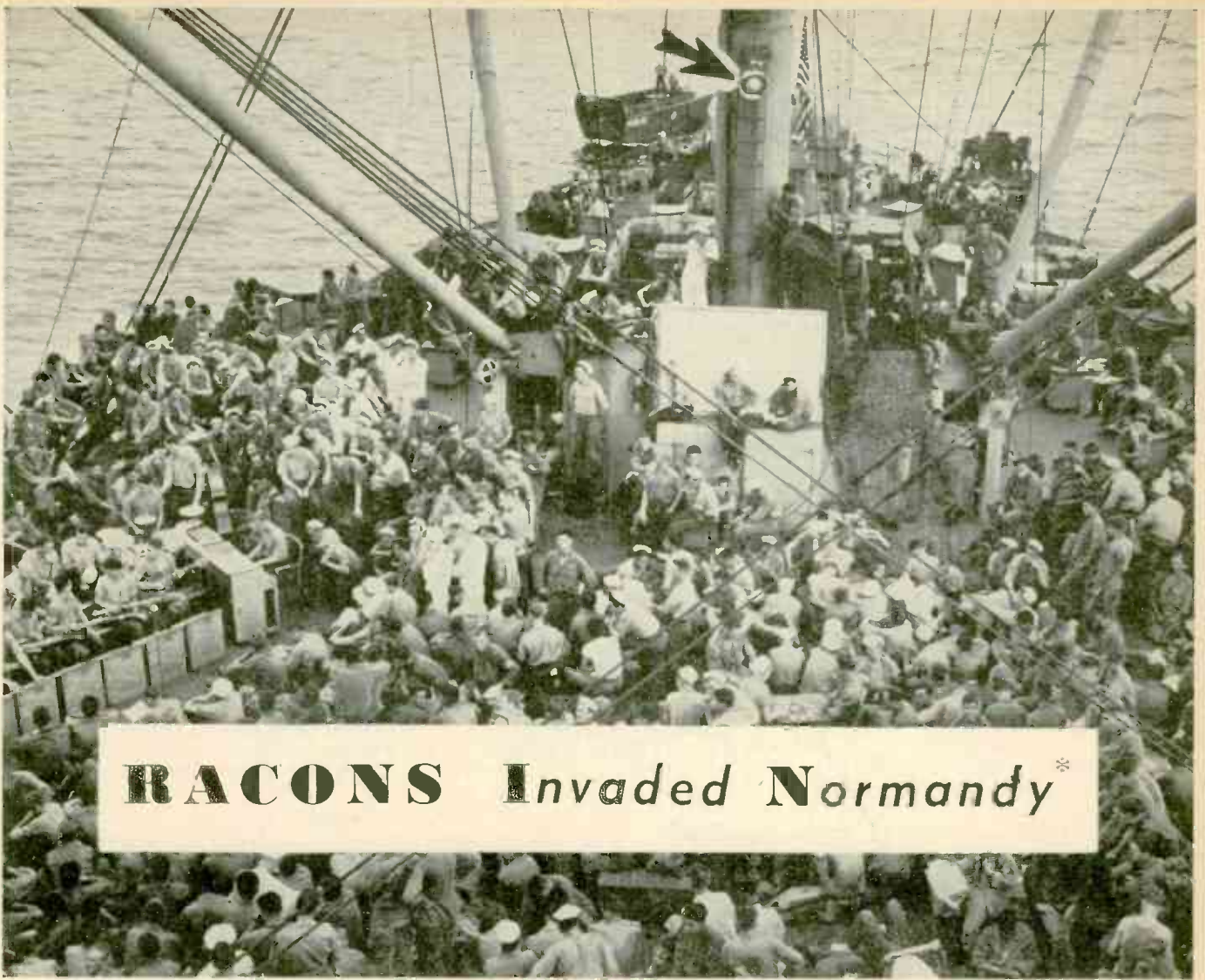
Ink Spots and Ella Fitzgerald (23356) in "I'm Making Believe," and "Into Each Life Some Rain Must Fall." Two tunes by this combination of real low-down singers of "Cow-cow Boogie" fame. The first is from 20th-Century-Fox pix, "Sweet and Low Down"—a romantic ballad. Flip features Ella's ad-libbing.

Helen Forrest (18624) in "Every Day of My Life," and "I Learned a Lesson I'll Never Forget,"—with Victor Young's orchestra. The first is a sweet ballad; the flip is on the lush, sentimental side.

Phil Hanna (4448): "It's A Crying Shame," and "Forget-Me-Nots In Your Eyes,"—with Leonard Joy's orchestra. The first features this tenor-baritone in a dance-time number; the turnover is a pretty love song.

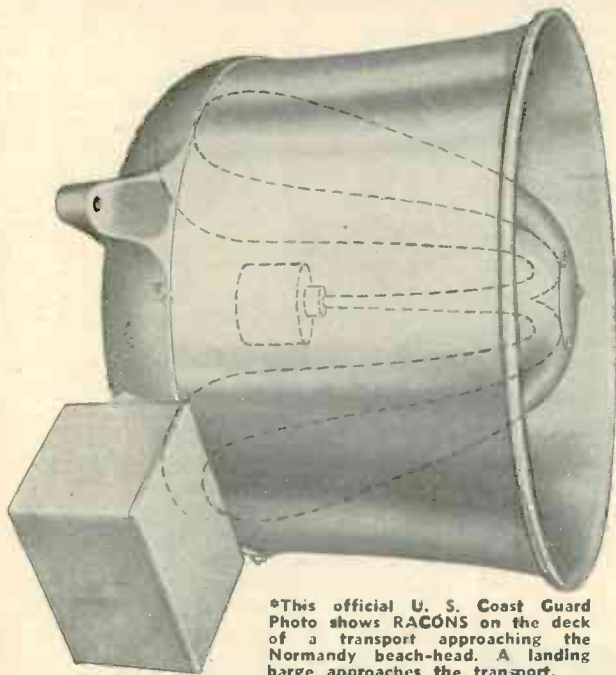
(Continued on page 48)





**RACONS** *Invaded* **Normandy** \*

*Official U. S. Coast Guard Photo*



\*This official U. S. Coast Guard Photo shows RACONS on the deck of a transport approaching the Normandy beach-head. A landing barge approaches the transport.

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## Records to Sell

(from page 46)

Jimmie Lunceford and Orchestra jammed Loew's State in N. Y. The Andrews Sisters swang their swing at the same city's Paramount. Louis Jordan plays a series of one-nighters in mid-west and mid-south cities. Evelyn Knight is on radio show, "Happy Island." Lucy Millinder bows into the well known Club Plantation, Los Angeles, six-weeking there from mid-December on. Charlie Barnet is being featured at Harlem's Apollo, N. Y. Guy Lombardo still the dancer's delight at the Hotel Roosevelt. New York's

Pennsylvania is home to Woody Herman, and at Palmer House, Chicago, is Carmen Cavallaro in the Empire Room. Les Brown gives out in the Panther Room, Sherman Hotel, Chicago. And Jimmy Dorsey to Earl Theatre, Philly, in November; Capitol, N. Y., December.

Bing Crosby and the Andrews Sisters (23350) in "Is You Is or Is You Ain't," vocal with Vic Schoen and Orchestra, from Universal pix "Follow the Boys." Flip is "Hot Time in the Town of Berlin," vocal with orchestra. Bing and the Sisters get together to put over two of the most popular songs of the day. The first tune is a blues plaint; the second is a forecast of what will happen to Berlin when the Brooklyn and Michigan boys get set.

Guy Lombardo and His Royal Canadians (18617) in "Together," waltz—with vocal by Tony Craig—from David O. Selznick pix "Since You Went Away." Coupling is "Come With Me My Honey," with Tony and the Lombardo Trio, in Calypso rhythm.

### Classic:

Special Album 1, "Victor Herbert Melodies"—four 10-inchers: Gypsy Love Song; Starlight, Starbright; March of the Toys, Badinage; A Kiss in the Dark; I'm Falling in Love with Someone; Kiss Me Again, Ah, Sweet Mystery of Life. Sung by Josephine Houston, Fred Hufsmith with Joseph Stopak and Concert Orchestra. Each record is complete, no medleys or distortions or abbreviations.

Special Album 2, "Music for Your Listening Pleasure,"—four 10-inchers: Begin the Beguine, Night and Day, Intermezzo, May Night, Caprice, Ecstasy; Indian Summer, Reverie. Issued to meet a popular demand for these numbers to be played in concert style. Done by Henry Nosco and Concert Orchestra. Intended for private listening, may also be in demand by coin operators.

Art Kassel and his Kassels-In-The-Air Orchestra (7111) in "Here's A Kiss for Texas," and "Come With Me My Honey." Two seasonal novelties, and attractive sellers' items.

### Capitol:

Jo Stafford and the Pied Pipers (171) in "I Didn't Know About You," and "Tumbling Tumbleweeds."

Jerry Colonna and Paul Weston's Orchestra (172) in "Can't Yo' Heah Me Callin' Caroline," and "I Hate Music."

The King Cole Trio (Album A-8)—four records, eight selections: Sweet Lorraine, Embraceable You, The Man I Love, Body and Soul, Prelude in C Sharp Minor, What Is This Thing Called Love?, It's Only a Paper Moon, Easy Listenin' Blues. All the sides are new, recorded in Hollywood this year. Piano and vocal choruses by Nat (King) Cole; guitar by Oscar Moore and bass by Johnny Miller.

Freddie Slack and Orchestra (172) in "Small Batch O' Nod," and "Cuban Sugar Mill." Also (102), with Ella Mae Morse in "Cow-Cow Boogie," and "Here You Are."

Paul Whiteman (116) in "Travelin' Light," and "You Were Never Lovelier."

Andy Russell (167) sings "What a Difference a Day Made," and "Don't You Notice Anything New?"—with Paul Weston and Orchestra.

Harry Owens and his Royal Hawaiians (Album A-4), eight selections of Hawaiian melodies—"Sweet Leilani" and other songs in this collection were composed by Owens (himself) while he lived in the Islands.

Johnny Mercer (Album-A-1) offers songs from his prolific pen in this album, featuring Johnny, Jo Stafford, the Pied Pipers, Paul Weston, and others.

## RIDER VOLUME XIV COVERS 1941-42 RECEIVERS



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On "Resonance & Alignment"—

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On "D.C. Voltage Distribution" . . . .90c each

404 Fourth Avenue, New York 16, N.Y.

13 E. 40th Street New York City Cable: ARLAB

# RIDER MANUALS *are complete* IN 14 VOLUMES

**BEFORE YOU SIGN UP...**

**STOP** 



**LOOK** 

**LISTEN** 



**TO MAGUIRE HOME RADIO** 

It's entirely new and different. It's an excellent feature-filled product. It's exactly what your customers will want. It's backed by a liberal dealer policy. **It's just what you've been looking forward to selling in the post-Victory market!**

Plenty has happened in the field of electronics since the last home radio sets were made. New materials, new devices... new men have forged to the front in answer to the demands of total War. **Emergency sires leadership** that will not falter or cease at the War's end, but rather will welcome Peace as a magnificent opportunity for further advancement... Maguire war-won leadership... in the electronics field; in the small arms field ("Tommy" guns and other small arms); in the food processing

field; in the oil producing industry... will continue with the same full vigor after Victory. **Only the best can produce the best!** This policy has been instrumental in assembling many of the nation's foremost scientists, engineers, designers and technicians at Maguire Industries, Inc. The combined efforts of these men have produced a line of Maguire Home Radio Receivers that establish a new high in **interference-free reception, tonal quality and uninterrupted operation.**

Don't discount new leadership produced by the War. Investigate Maguire Home Radio. For full information, write Maguire Industries, Inc., Electronics Division, 342 West Putnam Avenue, Greenwich, Connecticut... **today!**



**MAGUIRE INDUSTRIES, INC.**  
**ELECTRONICS**  
*division*

GREENWICH • STAMFORD • BRIDGEPORT • NEW MILFORD • NEW YORK

# CONCORD Service!

NONE BETTER IN AMERICA FOR RADIO AND ELECTRONIC PARTS AND EQUIPMENT



Sure! Swift! Satisfactory! That's the story of Concord Radio Corporation's service. Twenty-two years of "delivering the goods" have made us a top supplier of radio and electronic merchandise to industry, government and the trade. Two strategically located "supply bases"—CHICAGO and ATLANTA—are as close to you as a letter, a telephone call, a telegram, or a message on the teletype. Here is what Concord can offer you:



Weston 2 1/2" Model 506 Milliammeter D.C. 0-100  
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IRC Dual Potentiometer 1 1/4" diameter—1 1/4" deep 1/2" shaft—3/4" long  
Your Cost ..... 89c



25 mfd. 25 volt condenser in aluminum can.  
Your Cost ..... 29c



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- The finest merchandise from the best manufacturers
- Large and complete stocks of components and equipment
- A seasoned selling staff of radio and electronic experts
- Consultant radio technicians and engineers
- Same-day shipment, wherever humanly possible
- Super-speed "special service" for military and industrial needs



FREE! Special Supplement! "Hard-to-Find Radio and Electronic Parts and Equipment" . . . Sixteen pages, jammed to the margins with such items as condensers, wires, switches, volume controls, relays, resistors, test accessories, speakers, etc. There's not another listing like it anywhere in the country today.

CONCORD RADIO CORPORATION  
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Please rush me the new 16-page "Special Supplement" by Concord Radio Corp

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ADDRESS.....

CITY..... STATE.....

CONCORD RADIO CORPORATION  
*Lafayette Radio Corporation*

901 W. Jackson Blvd. CHICAGO 7, ILL. 265 Peachtree Street ATLANTA 3, GA.

## Multi-Tester

(from page 31)

Fig. 23. Manganin and Advance wire resistance per foot by size. Values may vary plus-minus 5% (also Fig. 21)

No. B & S	Ohms per Ft. at 68° F. (20° C.)
MANGANIN	
18	.1813
19	.2238
20	.2832
21	.3570
22	.4531
23	.5678
24	.7178
25	.9051
26	1.147
27	1.438
28	1.826
29	2.271
30	2.900
31	3.662
32	4.581
33	5.754
34	7.305
35	9.247
36	11.60
37	14.32
38	18.13
39	23.67
40	30.18
ADVANCE	
18	.1837
19	.2270
20	.2871
21	.3619
22	.4557
23	.5756
24	.7277
25	.9176
26	1.163
27	1.458
28	1.852
29	2.302
30	2.940
31	3.722
32	4.594
33	5.833
34	7.408
35	9.375
36	11.76
37	14.52
38	18.37
39	24.00
40	30.60

in Figure 14\* may be used. With full scale reading of meter caused by current flow through it, place shunt across the meter as shown at Rx. The meter reading should then decrease to 1/5 if the shunt were to increase the full scale current reading by five times; it should drop to 1/2 if shunt is designed to double meter scale for full reading. The shunt may be tailored until the proper ratios are achieved.

To replace a portion of a "universal shunt" as in the Simpson model 260 whose current measuring

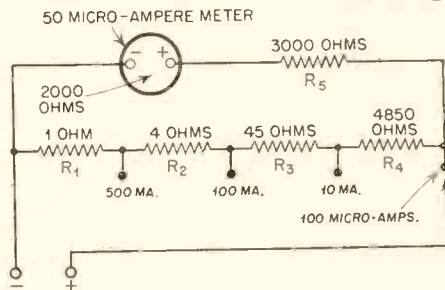


Figure 24.

circuit is shown in Figure 24, the following method is used:

If R1, R2, R3, or R4 should open, the first three may be wound of #30 wire for R1, #36 wire for R2 and #40 wire for R3. R3 may also be made by filing a 4500-ohm carbon resistor as described previously and shown in Figure 22. If another multi-range milliammeter is available these resistors may be adjusted by placing the two meters in series with current flowing through each near full scale deflection and adjusting, the above resistor being replaced until both meters indicate the same current readings.

(To be continued)

\*Part 2, Sept. RADIO SERVICE DEALER.

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



FREE STEEL CABINET

### G-C Dial Belt Kits

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



Automatic Wire Stripper

Strips insulation from all types of wire. Does the job instantly, easily, perfectly. An ideal tool for radio men, electricians and sound men.



G-C Contact Service Kit

Contains special contact cleaner and corrosion resistant lubricant. You can clean noisy controls nine times out of ten without dismantling chassis or control unit. Pays for itself over and over.

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



GENERAL CEMENT MFG. CO.  
ROCKFORD, ILLINOIS

## DISTRIBUTOR NEWS

The following new distributor appointments are announced by officials of the various companies listed:

### General Electric:

C. A. Brewer, secretary of G-E's distribution committee: Orkil, Inc., Hartford, Conn., will add Fairfield County in its coverage on ranges, refrigerators, water heaters, home laundry equipment, dishwashers, Disposalls, kitchen cabinet equipment and vacuum cleaners.

### RCA-Victor:

Harold M. Winter, regional manager of the company's Cleveland office: Van Zandt Supply Co., Huntington, W. Va.; Ewald Distributing Co., Louisville, Ky. These firms will serve dealers in their respective areas on standard and super FM radios, television, radio-phonographs, Victor and Bluebird records, electron tubes, test equipment, replacement parts and accessories.

### Motorola Radio:

William H. Kelley, general sales manager, Galvin Mfg. Corp., Chicago: Strickland Distributing Co., Paducah, Ky.; Post & Lester Co., Hartford, Conn.; C. & H. Company, Seattle, Wash. The firms will be full-time distributors on FM and AM table radios, consoles and automatic phonographs; AC-DC battery portables; the new Motorola "Playboy" personal portable; battery operated models for farmers; and auto radios.

### Stewart-Warner:

Floyd Masters, manager, Stewart-Warner radio division: Edward F. Hale Co., San Francisco, Cal. This company will serve approximately 500 dealers in its territory. State Distributing Co., Milwaukee, Wis., which will serve more than 400 dealers in that territory.

### Stromberg-Carlson:

Clifford J. Hunt, manager of Stromberg-Carlson radio sales: General Hotel Supply Co., San Antonio, Texas, who handle a complete range of household electrical appliances in addition to radios. Adair Appliance Co., Memphis, Tenn., for radio, FM and television lines. These lines will also be handled

by Chapman & Wilhelm Co., Charlotte, South Carolina.

### Westinghouse:

Harold B. Donley, manager, radio receiver division: 97 distributors throughout the country are listed, fifteen of them "independents," the rest Westinghouse Electric Supply Co. establishments.

### Emerson:

Charles Robbins, vice president in charge of sales: Sunset Electric Co., Spokane, Wash.; Capitol Distributing Co., Providence, R. I.; W. G. Walz Co., El Paso, Texas; Hughes-Peters, Inc., Columbus, O.; Haas Radio Distributing Co., Cleveland, Ohio.

Emerson distributors will be active at once in franchising dealers under the well-known "P.D.Q." plan. (See page 13, September issue.)

### "Phonola":

Waters Conley Co., Rochester, Minn., manufacturers: Philco Distributors, Inc., Detroit, Mich., and Toledo, Ohio; Strong, Carlisle & Hammond Co., Cleveland, O.; Bennet Radio Co., Inc., Columbus, O.; Electric Appliance Distributors of Kentucky, Inc., Louisville, Ky.; Rodefeld Co., Indianapolis, Ind.; Roycraft Co., Minneapolis, Minn.; Radio Specialty Co., Milwaukee, Wis.; Roycraft Iowa Co., Des Moines, Iowa; Sampson Electric Co., Chicago.

### Norge:

To handle the complete line of Norge Household appliances — refrigerators, gas and electric ranges, washers and home heaters — Krich-Radisco, Inc., Newark, N. J., have just acquired the distribution franchise for northern New Jersey.

### Zenith:

Jim Broadwell and Herman Hollander of Hollander & Co., St. Louis distributors, called at the Zenith factory in Chicago recently. Frank Clinton and Jack Erwin of Allison-Erwin Co., Charlotte, N. C., distributors, conferred with H. C. Bonfig, vice president in charge of household radio. Otto Woods of Wayne Hardware, Fort Wayne, Ind., distributors, visited the Chicago factory.



Dealer meetings were held throughout the country this fall by distributors of various radio and appliance lines. Above is a dealer council meeting to which radio service dealers in the St. Charles, Ill., territory were invited by Walker-Jimieson, Inc., Chicago distributors. Russ Jimieson, manager of dealer sales, was chairman and introduced Ralph Walker, the firm's president.



*Plug in*

## METAL TUBE RESISTORS

★ To facilitate the servicing of those AC-DC sets equipped with plug-in metal-tube resistors, CLAROSTAT offers 10 Universal Types which replace 90% of the original numbers.

Note particularly: A Clarostat Universal Type operates within voltage ranges specified on tube, regardless of what pilot current is drawn or of any pilot light combination. It operates regardless of burnt-out pilot lights, operating well within the .3 ampere range required for tube filaments. Also, the tube operates efficiently regardless of line-voltage variation. And above all, remember that Clarostat introduced, pioneered, and has produced the bulk of such resistors in daily use.



★ Ask Our Jobber . . .

Ask for latest Clarostat "Interim-Line" catalog which includes listing of these Universal Metal-Tube Resistors, as well as standard types replaced. Or write direct.



CLAROSTAT MFG. CO., Inc. • 285-2 N. 6th St., Brooklyn, N. Y.

## WHY INDUSTRIAL SOUND GROWS



### REPLACEMENTS

... for the duration

• Aerovox wartime "Dandeeds" are truly general-purpose electrolytics. A mere handful of numbers takes care of upwards of 90% of your service needs. For the duration, at least, you can bank on Aerovox "Dandeeds" for satisfactory, profitable, good-will-building servicing until you will again be getting the aluminum-can and other types now reserved for the use of our fighting men.

### • See Our Jobber ...

Ask him about Aerovox wartime "Dandeeds" and paper tubulars for your present needs. Ask about other types of capacitors that may be coming through soon. Ask for latest literature—or write us direct.

**AEROVOX**  
Capacitors  
INDIVIDUALLY TESTED

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

**FADA**  
Permanent  
NEEDLES

Special Introductory Offer **39¢**  
(TO DEALERS ONLY—IN LOTS OF 6 OR OVER)

- Plays 4M Records without changing
- Better Tone Reproduction
- Help Reduce Background Hiss
- Longer Record Life

**FADA OF NEW YORK**  
928 BROADWAY NEW YORK 10, N. Y.  
Large Stock of Replacement Parts and Cabinets

According to Anthony G. Schifino, manager, sound equipment division, Stromberg-Carlson Company, industrial sound, limited to a scant two uses during peacetime, almost suffered the fate of an actor who is type-cast by being shunted off to one side as war orders piled up before Pearl Harbor. Then new uses for the equipment began cropping up, and a short period of experimentation, some of it successful, some of it not, set in.

All told, industry has found that the initial two uses claimed for the equipment in 1940 has grown (in less than 5 years) to a total of twenty tested and proved applications. Those applications run all the way from paging officials, through music-while-you-work, to sewing up a monster plant War Bond drive in the record time of two hours. Sound equipment has prevented accidents, and plant work tie-ups which by their very nature could have cost the company concerned many times over the cost of the equipment. In those cases, sound equipment, by bridging the time-gap between labor and management, proved its alltime worth as a modern tool of business.

### Plant-Broadcaster Installed

Fred D. Wilson, commercial sound division sales manager for the Operadio Manufacturing Company, St. Charles,

### SOUND EQUIPMENT FOR CIVILIANS

The Industrial Sound Equipment Industry Advisory Committee believes that electronic equipment controls should not be revoked until all military requirements can be met, but that controls should be modified as war demands decrease and materials become more readily available, officials of the War Production Board's Radio and Radar Division announced.

Revocation or modification of Limitation Order L-265 was considered by the committee, which met recently in Washington. Equipment used in public address systems, inter-communication systems and other industrial sound amplifying equipment falls within the category of electronic equipment involving the use of vacuum of gaseous tubes, under L-265. Since the war, considerable apparatus of this sort has been used in industrial plants to increase production, maintain morale, and save time and labor. The military demand for this type of equipment and many of its components also contributes to the present civilian shortages, it was pointed out.

Means of acquiring equipment for civilian uses were outlined to the committee by John Creutz, Government presiding officer, who said that a user may file WPB Form 541 with an equipment manufacturer through any WPB field office, provided no construction is required. If construction is required, Form 617 must be filed.

WPB field offices will screen all applications on their merits. The burden of proof in establishing essentiality will rest with the applicant.

It is possible that some commercial equipment not suitable for military, marine and foreign uses, which require



Ill., announces that Steinway and Sons are the first piano manufacturers in the country to install a standardized system for industrial music and voice-paging. Steinway representatives reported that music had shown beneficial effects on employee morale, while voice-paging was credited with increasing efficiency throughout the plant.

special sealing and weather proofing, might become available for industrial use. Industry members pointed out that they probably could use rejected Army and Navy equipment if it could be made available. Supplies of sound equipment for industrial purposes and installations have been inadequate during the past year, members said, adding that they now had not stocks on hand.

Means of aiding jobbers in securing sound equipment for service and repair of their customer's systems were discussed and it was recommended that permission to acquire essential sound equipment be extended to a number of jobbers. Such jobbers that require units of equipment should file Form 547, but it was explained that this would not apply to, nor cover parts. Applications for equipment will be considered and the worthy ones processed, officials said. However, such stocking as allowed would be for emergency repairs, and not for general resale.

The issuance of a pamphlet entitled "Guide of Industrial Sound," designed to explain the uses and value of sound equipment will soon be put on sale by the Superintendent of Documents.

The committee will meet again during the second week of January, it was announced.

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

# Only 500 More Subscriptions Can Be Accepted

**Keep alert with vital information  
now and for the post war period**



RADIO SERVICE-DEALER's paid Circulation has increased greatly the past six months. We can accept only 700 more new subscribers under our present paper quota.

**Group Subscribers Can Save Up To \$1 Each**

The bigger the Group the more each man saves! 2 men subscribing together, each saves \$.25—4 men Groups save \$.75 per man—6 men Groups save \$1.00 per man. Present subscribers may join a Group to renew or extend their subscription. But hurry—the Group Rate offer will be withdrawn soon.

**"RSD" Gives You More For Your Money**

RADIO SERVICE-DEALERS's editorial scope has been broadened to cover *all phases of radio and electrical appliance merchandising and servicing*. Service-Dealers have written us that now our magazine "is just what men in the radio-appliance fields need."

## Use This Coupon For Convenience

(The coupon below can be used for from 1 to 6 subscription orders. Use it today!)

**---TEAR OUT---MAIL TODAY---**

**RADIO SERVICE-DEALER MAGAZINE**  
342 Madison Ave., New York 17, N. Y.

Please enter 1 year subscription orders for the names given below. Our remittance is enclosed.

**NOTE:** If you do not wish to tear this order blank out, just print or type the information on a single sheet of paper, following the style given. Each subscriber's occupation must be clearly described.

	In U.S.A. & Territ.	Canadian & Foreign
<input type="checkbox"/> One 1-year subscription . . .	\$2.00 . . .	\$3.00
<input type="checkbox"/> Two 1-year subscriptions . . .	\$3.50 . . .	\$5.50
<input type="checkbox"/> Three 1-year subscriptions . . .	\$4.50 . . .	\$7.50
<input type="checkbox"/> Four 1-year subscriptions . . .	\$5.00 . . .	\$9.00
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## TRADE PRODUCTS



### Dealers to Sell Heaters

One of the first electric heaters in the United States to come off the production line since the recent authorization of the War Production Board, was manufactured by the Economaster Products Company, of Shelbyville, Tennessee. Production was begun within a few hours of receipt of authorization. Wheelers Gambill, Jr., company executive, said that equal speed is being shown in shipping the heaters to regular distributors. The heater: wrinkle

finish, chrome trim, portable plug in, diamond grid circuflector, glo heat element, natural draft, infra red rays.



### New Tube Extractor

The BMP Company of Boonton, New Jersey, has placed on the market a device which eliminates the former hazards of metal tube extraction. It does away with burnt fingers, jiggling around to get the tube out and snapping caps. Constructed of one-piece steel, plain, zinc or cadmium plated, it contains no screws, rivets or welds. Just one firm pull is all that is needed in order to extract the hot tube. It fits all standard size metal tubes.

### Rasmussen Forecasts

There will be a big demand for electric refrigerators with enlarged frozen food storage capacity, owing to wartime improvements in processing and preserving frozen foods. The big meat packers are planning to put their industry on a production basis, and promise savings to the consumer of 20% to 30% on fifty-pound bulk frozen meat assortments which they will offer. Only a few home freezers have been manufactured and sold up to now, but the demand for them will be heavy after the war.

The room cooler industry was just coming along in 1941. With the right units at the right prices, post-war sales might reach 1,000,000 units a year.

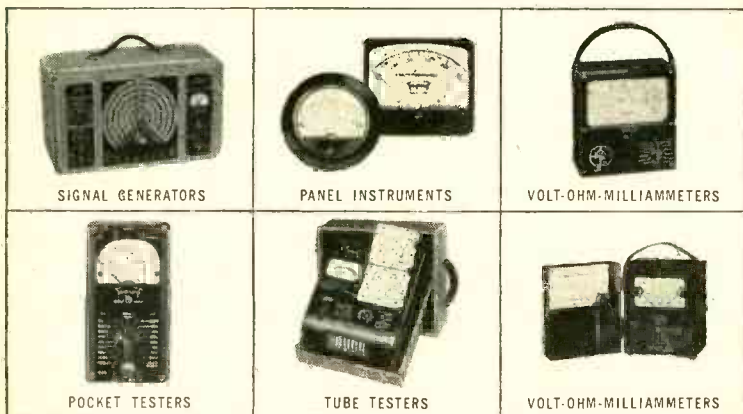
Within three or four years after television gets under way more than 30,000,000 persons—more than 35% of the nation's potential buying power—will be able to receive television. Some day, television will be a billion-dollar industry.

Radio, refrigerators and room coolers will be among the top selling appliances after the war, according to J. H. Rasmussen, Commercial Manager of The Crosley Corporation, in his recent speech at the Advertising and Sales Executives Club of Kansas City, Mo.

This year the radio industry will make about \$3,000,000 worth of signal and communications equipment for the armed forces, or more than ten times its 1941 production. Estimates of a post-war demand for more than 20,000,000 radios are widely accepted. Radio will go to new heights as television and FM are brought within reach of more consumers.

# What will you need...

## IN THE FIRST SIX POST-WAR MONTHS



### ✓ CHECK THE TYPES AND QUANTITY

Estimate your future equipment needs and place a tentative post-war order for them with your jobber now. This foresight will enable him to stock the Triplett instruments you will need, and will assure you quicker resumption of civilian business. Give best priority you can obtain to facilitate deliveries as production is available.

Get the complete list of Triplett instruments and radio test equipment.



# Triplett

ELECTRICAL INSTRUMENT CO. BLUFFTON, OHIO

## OLSON SPECIAL! The one and only ELECTRIC SOLDERING IRON

with all these features  
priced so low!



Only  
**\$2.95**

Complete With  
3 Tips

- ★ LIGHT WEIGHT
- ★ HEATS IN 2 MINUTES
- ★ 3 INTERCHANGEABLE TIPS
- ★ BULB CAN BE INSERTED TO USE AS TROUBLE LIGHT

This Electric Soldering Iron weighs only 3.6 ounces... handles easy as a pencil... yet it's ruggedly constructed, built to take plenty of punishment. At our low price of \$2.95 you get the Iron, cord, and three removable tips of different sizes. Cork-insulated handle. Overall length, 7 inches. Heats quickly, but draws only 17 watts. A precision tool every technician needs. Immediate delivery!

MAIL  
THIS  
ORDER  
TODAY!

**OLSON** Radio Warehouse  
73-B Mill St., Akron 8, Ohio

Please send me \_\_\_\_\_ Electric Soldering Irons with 3 tips at \$2.95 per set. (Add 15c postage.) Total, \$ \_\_\_\_\_

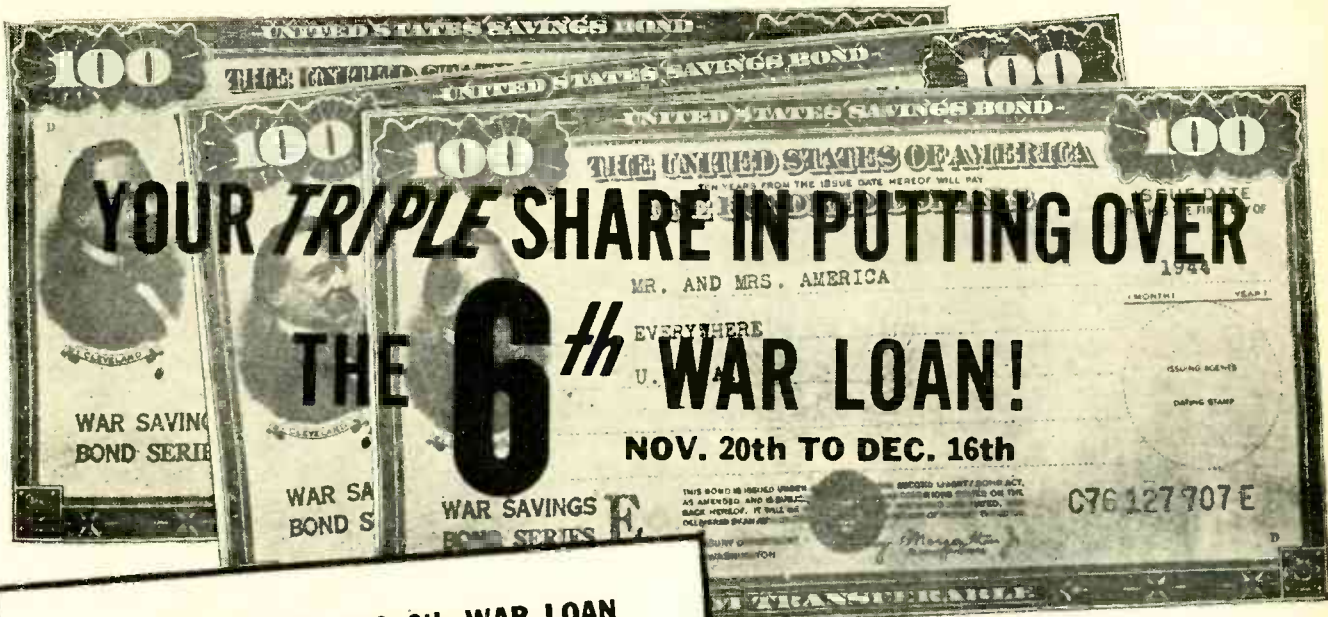
I enclose  check  money order.

AA-5-V3

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_





# 1 ENTER THE BIG 6th WAR LOAN DISPLAY CONTEST . . . OVER \$100,000 IN WAR BOND PRIZES!

Look now to see if your store is eligible to enter this history-making Display Contest. If it is, get in touch with your Local Retail Chairman today—secure your copy of the Campaign Book, explaining how you can win, not one prize, but THREE—over \$1,000 in War Bonds—and a Treasury Citation! Main Street or Fifth Avenue, all have an equal opportunity. Entries are judged solely on Sales and Attention Appeal, Artistry and Originality, so lose no time in setting up your prize-winning display.

# 2 ENLIST EVERY EMPLOYEE IN THE 3rd ARMY!

Today the over-a-million strong 3rd Army of Retail Bond Sellers backs both our Fighting Army, advancing against the Axis on land, sea and in the air, and our Production Army on the home front. Are all your employees numbered in this gigantic, victory-speeding 3rd Army? If not, your Local Retail Chairman will tell you how they may best serve!

# 3 FEATURE WAR BONDS IN YOUR NEWSPAPER ADVERTISING

War Bonds—the present with a future—deserve first place on every Christmas shopping list. Help the 6th War Loan by giving War Bonds first place in all your store advertising.



## STORES ELIGIBLE FOR 6th WAR LOAN CONTEST

### DIVISIONS

### SPONSORS

Department Stores	Textron, Inc.
Hardware Stores	Henry Disston & Sons, Inc.
Jewelry Stores	Bulova Watch Company
Grocery Stores	General Foods Corporation
Drug Stores	Abbott Laboratories
Women's Apparel Shops and Specialty Stores	Nemo Foundations
Men's Apparel Shops	Cluett, Peabody & Co., Inc.
Gasoline Stations and Garages	Shell Oil Co., Inc.
Radio Stores	Sylvania Electric Products, Inc.
Furniture and Floor Covering Stores	Congoleum-Nairn, Inc.
Limited Price Variety Stores	The Clopay Corporation

OTHER RETAIL GROUPS may be added. See your Local Retail Chairman if your store is not included in above divisions.

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

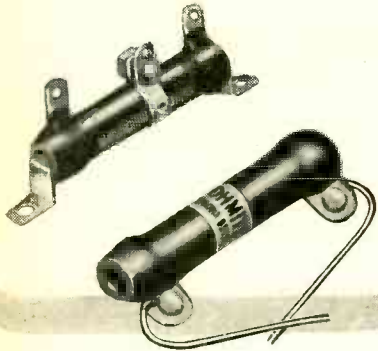
### RADIO SERVICE-DEALER

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

# OHMITE RESISTORS

for accurate  
trouble-free

# SERVICE

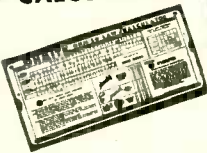


Time-proved, battle-proved, service-proved... Ohmite Brown Devils and Adjustable Divid-ohms are used today in critical war equipment. After Victory . . . these dependable units will again be the favorite of radio servicemen who want and use the best for resistor replacements.

For information about these and other Ohmite Resistors, write for Stock Unit Catalog 18.

## SEND FOR HANDY OHM'S LAW CALCULATOR

Figures ohms, watts, volts, amperes—quickly, accurately. Solves any Ohm's Law problem with one setting of the slide. Send only 10c in coin for handling and mailing. (Also available in quantities.)



OHMITE MANUFACTURING CO.  
4847 Flournoy Street • Chicago 44, U.S.A.

Be Right with **OHMITE**  
RHEOSTATS • RESISTORS • TAP SWITCHES

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