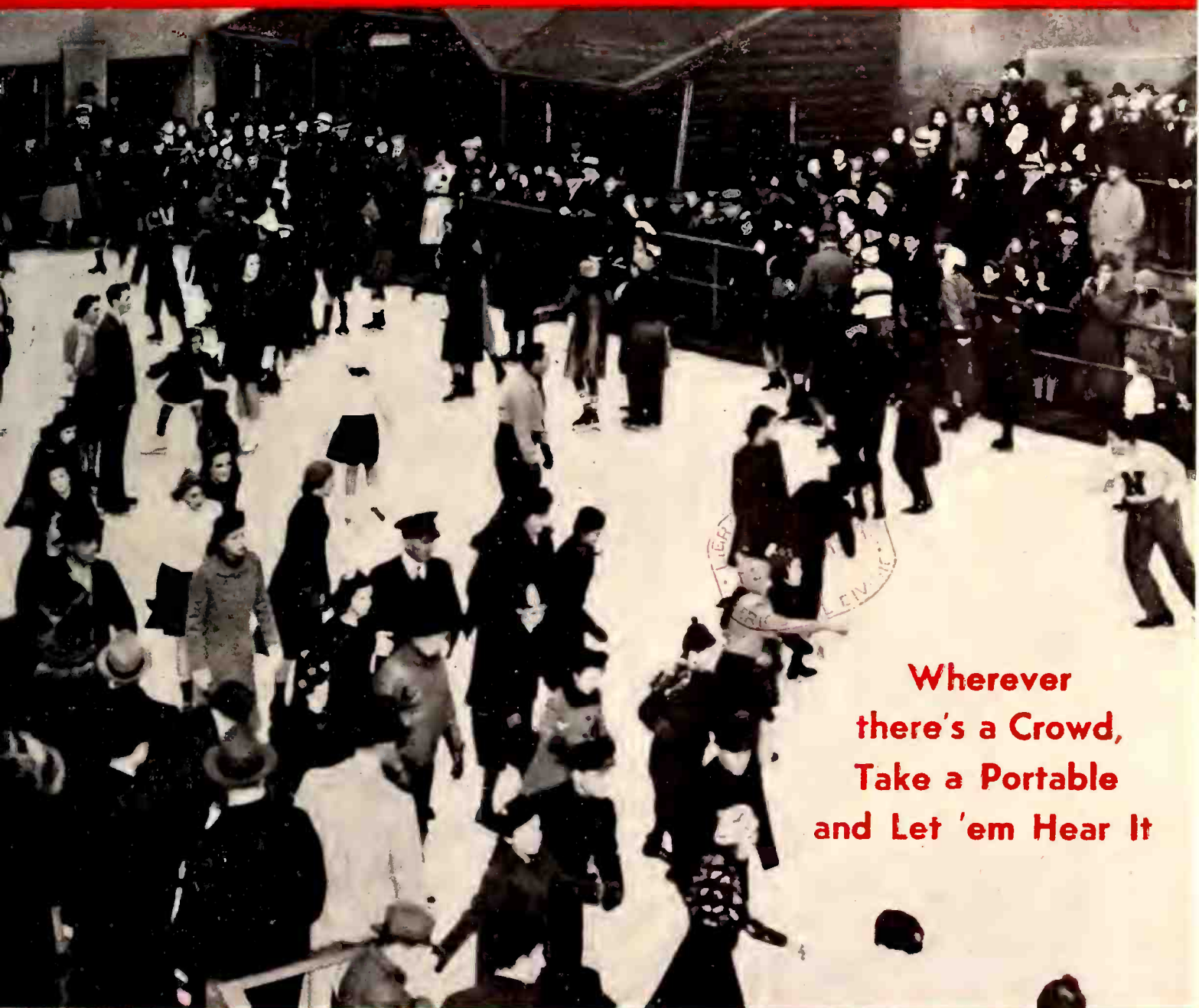


# RADIO TODAY



**Wherever  
there's a Crowd,  
Take a Portable  
and Let 'em Hear It**

**Broadcasters and Dealers Work Together  
New Auto Sets, Phono-radios, Facsimile**

**FEBRUARY**

**HOT! HOTTER! HOTTEST!**

**NEW  
SERIES**



**RADIOS**

**ARE THIS YEAR'S VALUE SENSATIONS!**



G-655



G-78



G-86

**NEW  
BEAM-A-SCOPE RADIO**  
*at the lowest price ever*

The exclusive G-E built-in Beam-a-scope — hit feature of 1938 — is now offered in the new model G-86 at a sensational new low price.



**NEW G-E WIRELESS  
RECORD PLAYER**

**No Wires — No Connections to Radio**

Reproduces recorded music through the loudspeaker of any radio — electrically. Operates from any location — within hearing distance of radio set. No wires — no connections to radio. Turns any radio into a modern-type radio-phonograph combination. Priced to sell in big volume.

● Just Out! The newest and smartest line of radios G-E has ever presented. In features, in design, and in performance they set the pace. And they're priced at new and sensational lows. G-E sales soared to a new all-time high in 1938. And these great new, value-for-your-money models are headed for another record-smashing year. When you study the values offered in this new line you'll realize that G-E Radio means business in 1939. Phone your G-E Radio Distributor without delay.



G-64



GD-600



GD-610

GD-63



GD-500

Model G-1150  
Priced with the  
lowest — styled  
with the latest  
Spinel brown  
plastic finish. An  
exclusive in  
ever — with  
dials and controls  
in six lovely color  
combinations.

**GENERAL ELECTRIC**



# Is It Any Wonder That

P. R. MALLORY & CO. Inc. REPLACEMENT

# MALLORY VIBRATORS

## Lead the Field?

They are Original Equipment in Auto Radio Receivers built for:

BUICK . . . CHEVROLET . . . FORD . . . HUDSON . . . NASH . . . OLDSMOBILE  
 PONTIAC . . . SEARS-ROEBUCK . . . WESTERN AUTO . . . FIRESTONE

and in Receivers made by:

Canadian Marconi  
 Colonial  
 Crosley  
 Detrola  
 Delco (Kokomo)  
 Fairbanks-Morse  
 Galvin (Motorola)  
 Gilfillan  
 Mission Bell  
 Noblitt Sparks (Arvin)  
 Northern Electric  
 (Canada)  
 Packard Bell  
 Pilot

RCA  
 RCA-Victor, Ltd. (Canada)  
 Radio Products  
 Rogers-Majestic, Ltd.  
 Sparton (Canada)  
 Stewart-Warner  
 Stewart-Warner-  
 Alemite (Canada)  
 Stromberg-Carlson  
 (U.S. and Canada)  
 Zenith  
 Western Electric

★ Millions in use  
 ★ Trouble-free  
 Long Life  
 ★ Lowest Cost  
 per Hour  
 Insist on Mallory  
 Buy the best  
 They cost no more!

Only the Second Edition  
 Mallory-Yaxley Radio Encyclo-  
 pedia gives you all data on  
 every Vibrator application. It  
 covers every servicing problem  
 —you cannot afford to be  
 without it. Ask your distributor.



Use  
**P. R. MALLORY & CO. Inc.**  
**MALLORY**  
 REPLACEMENT  
 CONDENSERS...VIBRATORS

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

Cable Address—PELMALLO

Use  
**YAXLEY**  
 REPLACEMENT  
 VOLUME CONTROLS

# LOOK FOR *All Three*



**1. COMPANY DEPENDABILITY:** You must do business with a company whose policies and finances are sound—a company that's progressive, responsible...interested in you and your business.



**2. PRODUCT DEPENDABILITY:** And you must sell the kind of tubes that will win customers' confidence in your ability—enhance your reputation as a reliable retailer.



**3. PROFIT DEPENDABILITY:** But most important to you, after all, is PROFIT. That's why you must feature a tube line that assures you maximum returns—both on a per-sale basis and from year-to-year, too.

MONEY—hard, cold cash—is your first consideration, of course. But when choosing the tube line to feature, look further than that—check on the company and product as well.

Feature the Sylvania line during 1939. For

Sylvania gives you full measure on “all three”—company, product AND profit dependability. It's the perfect combination for a better tube business... this year and every year!

*Hygrade Sylvania Corp., Emporium, Pa. • Also makers of Hygrade Lamp Bulbs.*

## SELL SYLVANIA

SET-TESTED RADIO TUBES

• D E P E N D A B L E A L L W A Y S •

# RCA's SERVICE TO *Motion Pictures*

**Y**OU enjoy movies more because of radio. Radio helps make movies so interesting that the annual attendance in the United States equals twice the population of the world. Yet few realize that the reproduction of voices and the whole range of sound that makes pictures live—is a laboratory product based on research in radio and sound.

Because the recording and reproduction of sound involves so many principles which have grown out of radio, research in RCA Laboratories has been, and continues to be a big factor in creating finer motion picture sound entertainment. This work is closely connected with research and actual practice in making Victor Records and operating the National Broadcasting Company.

Here is another example of the way in which RCA uses research to develop services of benefit to the whole world. It was research that built the world-wide radio message service of R.C.A. Communications... research that developed the RCA "direction finder" and other safety devices for ships at sea which the Radiomarine Corporation of America supplies... research that has made RCA Victor Radios and RCA Victrolas outstanding in the field of radio and record entertainment.

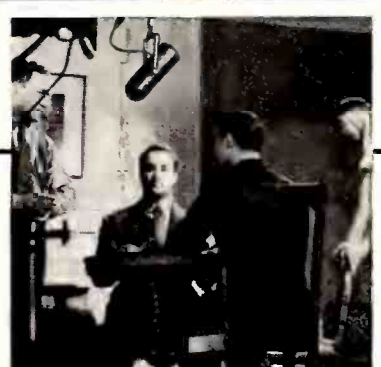
Because the Radio Corporation is active in every field of radio, the sum total of its research benefits every person engaged in the sale of radio products. The efforts of RCA make radio more attractive to those who listen and thereby improve the opportunities of those who sell radio instruments. This is in line with the RCA policy of making radio serve more people in more ways and serve them better in all ways.

*Listen to the "Magic Key of RCA" every Sunday, 2 to 3 P. M., E. S. T., on the NBC Blue Network.*



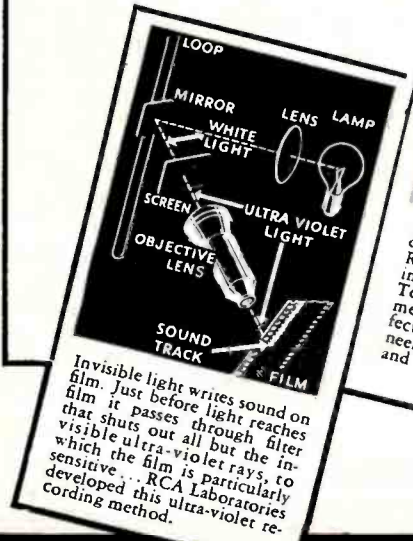
**PHOTOPHONE**  
**RCA**  
**HIGH FIDELITY SOUND**

RCA Photophone plaque—the sign of the best in sound reproduction.



Recording sound through Directional "mike," one of the outstanding microphones developed by RCA Laboratories. RCA microphones are used in film and radio studios all over the world.

## RCA Contributions to Three Important Phases of Making Talking Pictures



Invisible light writes sound on film. Just before light reaches that shuts out all but the invisible ultra-violet rays, to which the film is particularly sensitive... RCA Laboratories developed this ultra-violet recording method.



The sound reaches the theatre audience through RCA Photophone Reproducing Equipment such as is in use in more than 5,000 theatres. To insure good sound the movement of the film must be at a perfectly constant speed. RCA engineers accomplish this by the unique and ingenious rotary stabilizer.

# Radio Corporation of America

RADIO CITY, NEW YORK

RCA MANUFACTURING CO., INC.
RCA INSTITUTES, INC.
NATIONAL BROADCASTING COMPANY

RADIOMARINE CORPORATION OF AMERICA
R.C.A. COMMUNICATIONS, INC.

**THE PERFECT  
REPLACEMENT TRANSFORMER!**

**Meissner**

**DOUBLE-TUNED  
I.F. TRANSFORMERS**

The ideal replacement transformer! Perfectly engineered! High in quality! Built to hold a plus or minus 5% tolerance—not 25%! Designed for the serviceman or experimenter who demands the utmost in I. F. transformer performance at low cost. Unusually high gain—extremely wide frequency range—and double-tuned with Meissner Low-Loss Ceramic Base Mica Di-electric trimmer guarantees you a superior, more efficient transformer which actually improves the receiver!



**Eliminate Signal or  
Code Interference with  
MEISSNER WAVE TRAPS**

For those of your customers who are annoyed at intermittent signal or code interference, MEISSNER offers Wave Traps to suit every purpose. They are connected to the aerial lead-in of the receiver, and are adjustable so that the interfering signal or signals may be "tuned out." Simple and easy to attach—Meissner Wave Traps are priced to make a handsome profit for you.

**DeLuxe Dual Universal Wave Trap**

A dual wave trap tuning two frequencies. Tunes 400-475 kc to eliminate code signals, etc., entering receiver at the intermediate frequency. Also tunes 550 to 1950 kc for interfering signals in the Broadcast and low-frequency Police bands. Constructed with Ferrocart (iron core) for greater efficiency. Retail List, \$2.65.

**NOTE:** *Other Meissner Wave Traps available for eliminating interference on amateur bands or other wave bands.*

**SEE YOUR PARTS JOBBER OR WRITE DEPT. T-2, MT. CARMEL, ILL.**

**Complete Receiver Kits  
I. F. Transformers  
Service Parts  
Dials • Switches  
Tuning Units**



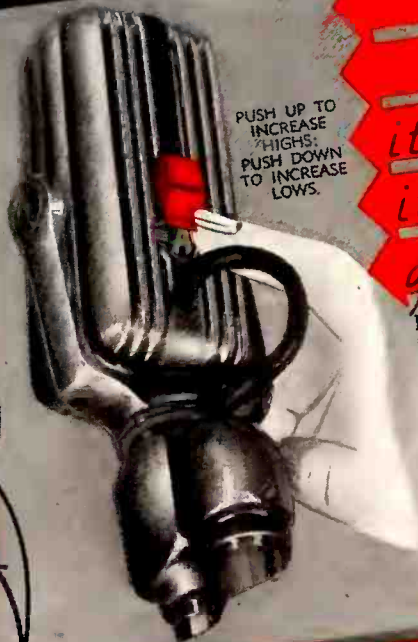
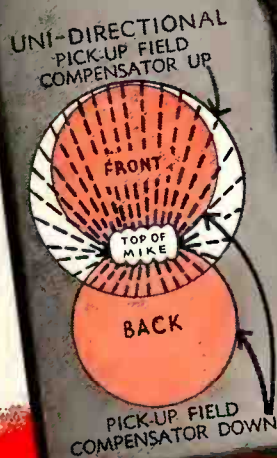
**Meissner**

**MT. CARMEL, ILLINOIS**

**"A FAMOUS NAME FOR TWO DECADES"**

Now...

# 5 VITAL FEATURES COMBINED AND UNIFIED IN THE AMPERITE VELOCITY WITH ACOUSTIC COMPENSATOR



PUSH UP TO INCREASE HIGHS. PUSH DOWN TO INCREASE LOWS.

- it's a VELOCITY
- it's a DYNAMIC
- it's UNI-DIRECTIONAL
- it's NON-DIRECTIONAL
- gives HIGH OR LOW PITCH

By moving up the Acoustic Compensator, you change the Amperite Velocity Microphone to dynamic operation—without peaks. At the same time you reduce the back pickup, making the microphone practically uni-directional.

With the Acoustic Compensator down, the microphone is bi-directional... 120 degrees front and back without frequency discrimination. Rotating the microphone until it parallels the ceiling makes the microphone non-directional.

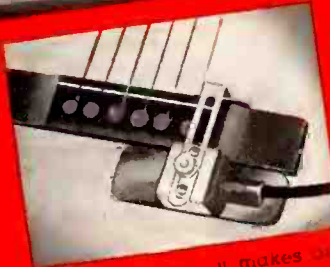
THE ACOUSTIC COMPENSATOR is a regular feature of these models: RBHk (hi-imp); RBMk (200 ohms) LIST \$42.00. RSHk (hi-imp); RBSk (200 ohms), \$32.00 LIST



FOR TOP-NOTCH QUALITY, AND AMAZING RUGGEDNESS, AT LOW COST

specify Model RAH (or RAL).

Here's why this popular Amperite Velocity Microphone leads the low price field: (1) it is excellent for both speech and music; (2) has flat response without undesirable peaks; (3) reduces feedback; (4) stands up under rain, wind, heat, and rough handling. Frequency range 60 to 7500 CPS. Output, -68 db. MODEL RAH (hi-imp), with 12' of cable; MODEL RAL (200 ohms), with 8' of cable. \$22.00 LIST.



SELL "CONTACT MIKES" to Professional and Amateur Musicians. New high output model can be used in the home.

Professional musicians are buying Amperite "Contact Strad." Now amateurs, too, can benefit by the "Contact Mike." The new HIGH OUTPUT MODEL SKH can be used in the home. It operates on most radio sets made since 1935. It is connected to the phono-input, or to grid ground of detector tube, or across the volume control. Note new clamp, making the mike easy to attach to guitars, ukies, etc. MODEL SKH (hi-imp), SKL (200 ohms) \$12.00 LIST. Any number up to 5 SKH's can be put in parallel and fed into one input. NEW FOOT PEDAL, \$12.00 LIST. CLAMP for Contact Mike, \$1.00 LIST.



Sales Aids for the P. A. Man

- (1) FREE Window Decal advertising your Sound Service Size 5 1/2 x 9 1/2, finished in 4 colors
- (2) FREE Window Display, 11 x 17
- (3) Special Sound Equipment Letterheads. Samples and prices on request
- (4) FREE use of cut for printing business cards, etc

AMPERITE Co. 561 BROADWAY, N. Y., U. S. A. CABLE ADDRESS ALKEM, NEW YORK



VELOCITY **AMPERITE** MICROPHONES

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# RADIO TODAY

MEMBER AUDIT BUREAU OF CIRCULATIONS

ORESTES H. CALDWELL  
*Editor*

M. CLEMENTS  
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## FALSE ALARMS RETARD SET SALES

Recent press stories about new radio developments still in the laboratory stage have had the effect of holding up radio sales in certain sections of the country.

In self-interest both radio dealers and servicemen should take out time to tell customers there are no radical changes in radio to obsolete present sets.

Television, which has recently received much publicity, is going to be available only in a few of the larger cities, and it is going to be a supplementary type of service. People will still listen to our present types of broadcasts for many years to come.

Stanford University's "Rumbatron" which has been called a new type of radio, at present is only a laboratory device for producing extremely short-waves of about 1/10 of a meter. Suggested applications to date are for aviation landing beacons and televi-

sion relay circuits. Even the inventors have not made any suggestions as to how these wavelengths might be used by the public. With no consumer uses in sight, the radio trade certainly can tell the public that it will not have any direct effects on broadcasting.

Discussed elsewhere in this issue is an article on frequency-modulated broadcast transmissions. Here again, the radio buying public should not put off buying a new radio set because of this development, for at most it will only be a supplementary factor in a manner similar to television.

Jobbers and manufacturers are urging their dealers to set the public straight on these widely misunderstood developments. While radio is continually progressing, the public should not be allowed to get the idea that the manufacturers are holding back—for such is far from the truth.

## PHILCO ENTERS REFRIGERATION, AIR-CONDITIONING AND BATTERY FIELDS, TELEVISION IN MAY.

To inaugurate the largest expansion in Philco's history, 400 Philco executives, field representatives and dealers attended a mid-winter convention held Feb. 16-19 at Palm Beach. A complete new line of electric refrigerators, new series of air-conditioners, and a line of dry batteries for all uses was announced.

"Philco expansion into other industries," declared Philco president L. E. Gubb, "does not mean for one moment that it will lessen our concentration on radio. It does mean that we consider that there will be a very substantial economic upswing during 1939, making it a propitious time for healthy expansion."

Opportunities for "year-round profits" were emphasized in connection with the new lines. Philco television sets, it was announced, will be ready in May.

## 50,000-HOUR TUBES IMPRACTICAL FOR RADIO SETS

A few weeks ago before the anti-monopoly committee, Dr. F. B. Jewett of Bell Labs made the statement that tubes that would last for 50,000 hours had been used by the telephone company for many years. Newspapers in some sectors played up story intimating that radio manufacturers were gypping the public. Had Dr. Jewett been given an opportunity to explain, he would probably have pointed out that the 50,000-hour tubes are much more expensive to make—that they would last for about 50 years in a radio set that has a probable life of 3 to 5 years. Also it would mean that our present sets selling for \$10 would have to sell for about \$30-\$40 because of the increased cost of tubes—and the set would wear out long before the tubes showed signs of deteriorating.

Present radio tubes average useful lives of 5 to 8 years.



L. E. Gubb, president of Philco, whose Palm Beach convention launched big expansion program into new fields.



Tom Joyce, newest and youngest vice-president of RCA Mfg. Co., whose interesting biography is on page 45.





L. L. Kelsey, radio veteran, is now head of radio sales for Stewart-Warner, Chicago.

### KELSEY SEES BRIGHT PROSPECTS

L. L. Kelsey, radio sales manager, Stewart-Warner Corporation, a veteran with over twenty years' experience in the radio industry, expresses the following outlook for radio during 1939: "Not for several years at least has the industry been able to step into a new year with as little distress selling and so many bright prospects as was the case this year. Our own inventory was reduced to a negligible factor which apparently was the case with the majority of other radio manufacturers. The outlook so far as we are concerned is the most encouraging that we have ever faced and the reception of the Campus and Senior Varsity models as well as the new eight-tube console has far exceeded our expectations."

Stewart-Warner's radio division is now a separate unit under Mr. Kelsey, with C. P. Galloway as assistant sales manager.

### E. A. NICHOLAS HEADS UP NEW \$5,000,000 FARNSWORTH CORP.

The Farnsworth Radio & Television Corporation has applied for registration of capital stock totalling about \$5,000,000 and plans to take over the factories of the Capehart company at Fort Wayne, Ind., and the U. S. Radio & Television Company at Marion, Ind., as well as the laboratories of the former Farnsworth organization at Philadelphia. Kuhn, Loeb & Co., leading investment bankers, are behind the new corporation.

E. A. Nicholas, former head of the

RCA license division, will head up the new company as president, and Philo Farnsworth will be vice-president in charge of research. Ray Cummings, for years in charge of transmitter engineering and design for General Electric and RCA, will be assistant vice-president. Other important announcements will be made shortly. Mr. Nicholas is temporarily making his office at 61 Broadway, New York City, but will later have his headquarters at one of the Indiana plants.

The new Farnsworth corporation plans to manufacture television receivers and transmitters under the Farnsworth patents, as well as radio receivers, combination phonograph-radios, and other commercial radio apparatus. It is planned to continue the Capehart merchandising set-up substantially as it exists today.

### 1938 DOLLAR VOLUME OF SETS OFF 33% FROM 1937

The dollar volume of radio set and phonograph sales for 1938 was 33.4 per cent lower than the previous year, according to figures based on the 5 per cent excise tax collections by the government. Month by month sales of radio sets by the manufacturers in terms of the tax collections are shown on the accompanying chart for 1935 to 1938.

Because of the fact that tax collections for 1935 and 1938 were almost the same in spite of more than 25 per cent reduction in the average selling price, some prophets are inclined to believe that the radio set production for 1938 will be 7½ to 8 millions. Earlier this year both the RMA and RADIO TODAY estimated 6 millions.



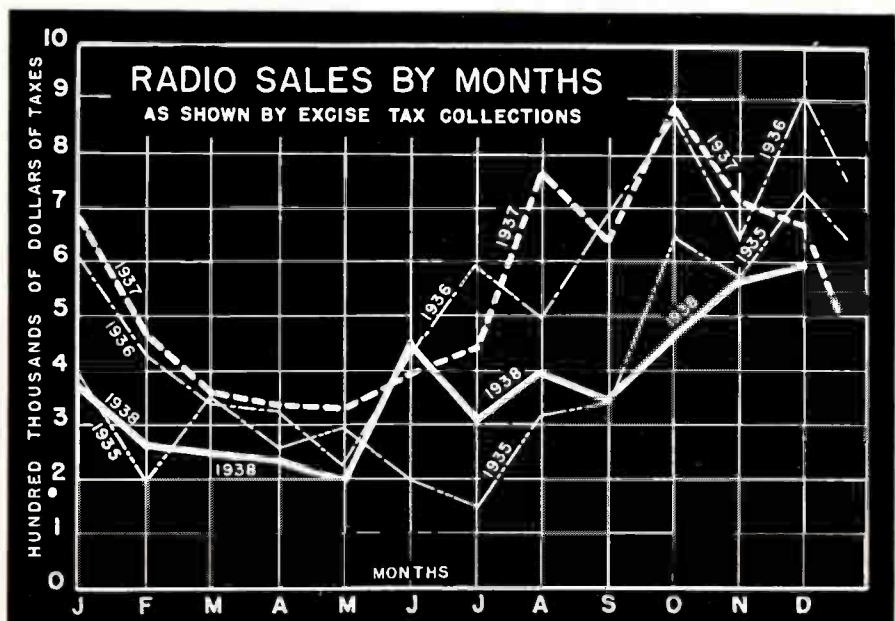
E. A. Nicholas, who has been head of RCA license division, becomes president of Farnsworth Television.

Yearly figures are given below:

Year	Tax collections	Units
1935	\$1,436,423.34	6,026,800
1936	6,514,898.45	8,248,000
1937	6,658,962.23	8,064,780
1938	4,431,614.20	unavailable

In 1935 the radio industry introduced new models in September instead of June as is now done. As a result the sales during the summer of 1935 were extremely low. Aside from this variation, the monthly percentages for each year are quite similar. At the end of 1937 there was a general business slump that shows its effect on the sales of sets for that period.

Donald MacGregor, who was pictured on page 10 of the January issue, is the new general manager of Webster-Chicago.



# CALLING ALL RADIO MEN

**Whole industry gets together on nation-wide drive to use radio to sell radio**

distributors in their areas to a meeting which will be held either in the station studios or at some other agreeable location. The local broadcaster will be asked to serve as chairman of the meeting, and to present the entire project.

Broadcasters will be given printed material outlining the campaign, and will be furnished with a transcription record dramatizing the drive, and containing messages from the presidents of NAB and RMA.

Radio networks will contribute one program a week to the campaign, and transcriptions will be furnished non-network stations every week. Stations also will be encouraged to contribute their own programs, calculated to sell their own operations, as well as American radio generally.

## **Retailers to help**

So much for the broadcasters. On the set selling end, retailers will be asked to distribute literature to their customers. Such booklets as "The ABC of Radio," which explains radio graphically and informally, will be used. Special window displays will be distributed to provide a tie-up with local stations. Newspaper and other advertising will be coordinated with the central themes of the campaign.

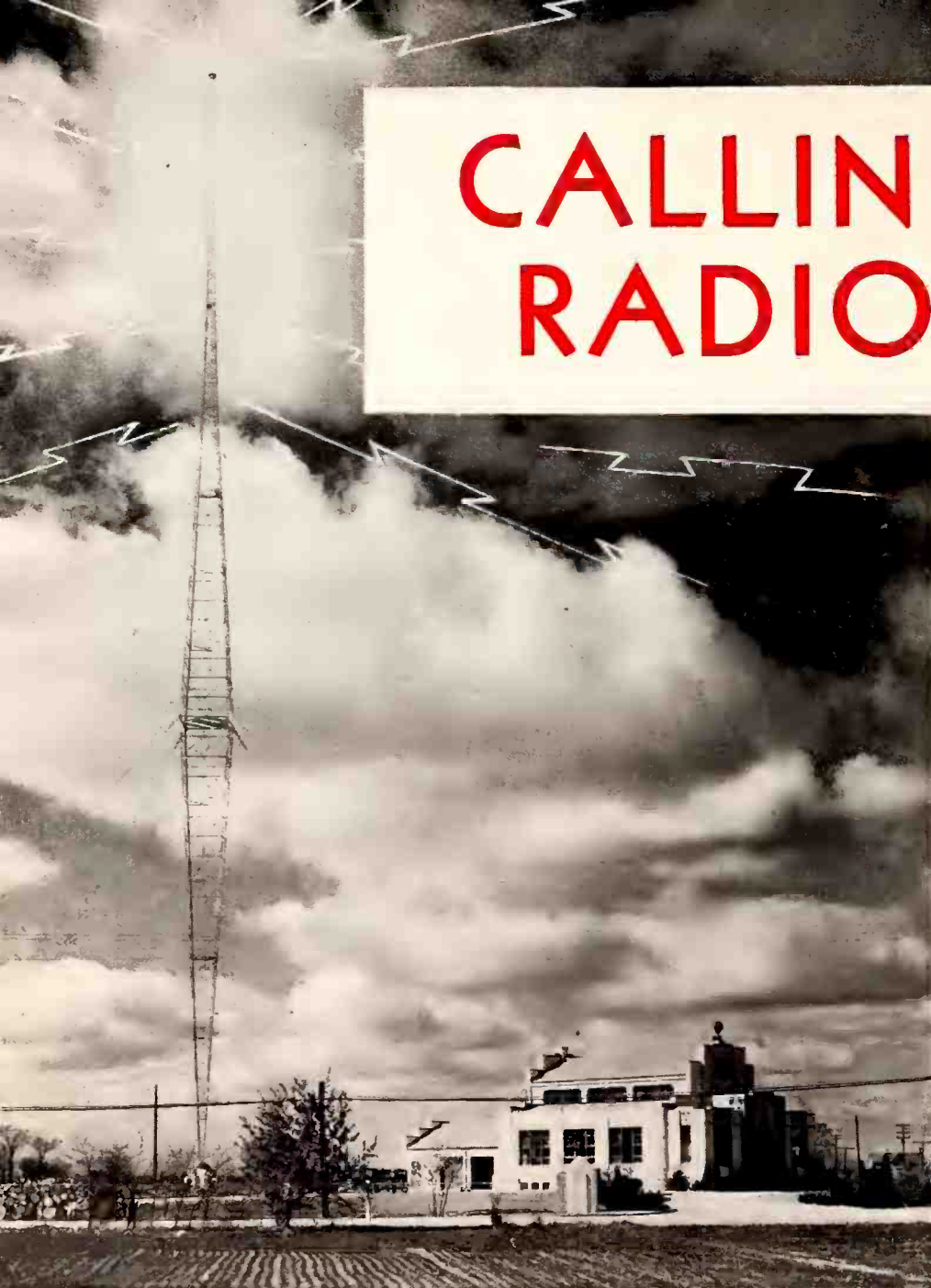
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## **AIMS OF THE DRIVE**

1. To increase the amount of listening.
  2. To improve the quality of home reception.
  3. To sell the excellence, variety and extent of American radio programs.
  4. To sell the American system of broadcasting.
- 

## **To be mutual effort**

Working through the NAB public relations department, the drive will coordinate efforts to sell more radio sets and improve reception. In each community, NAB broadcasters will be asked to invite radio retailers and



Certain now that their interests are the same, broadcasters, radio-set makers, and the radio trade are shortly getting together in a giant nation-wide drive "to use radio, to sell radio." Key man, however, is the radio dealer, who, it is hoped, will help put over the plan.

Aim of the campaign is to get more listeners and sell more sets. But it will shoot at this goal by glorifying the American system of broadcasting and promoting the idea that U. S. radio receivers are best in the world.

Keen minds of a joint committee named by Radio Mfrs. Assn. and National Association of Broadcasters, decided the drive should feature these points:

1. To increase the amount of listening.
2. To improve the quality of home reception.
3. To sell the excellence, variety and extent of American radio program service.
4. To sell the American system of Broadcasting and the contributions made by the individual stations.

## A CHECK LIST FOR 1939

### Ten Cardinal Points of American Radio Selling

- Go out and get the business.
- Demonstrate in the home.
- Follow up former customers for new sales.
- Cooperate with manufacturers in newspaper advertising.
- Use the mail to send out circulars, booklets.
- Have an attractive, clean store; courteous staff.
- Keep attractive displays in your show windows.
- Offer installment payments on higher-priced sets.
- Use service calls as openings for receiver selling.
- Sell programs, tone quality, convenience—not technical details.

and national advertising of manufacturers will also feature the drive.

Preliminary plans for the campaign were worked out by Sayre Ramsdell, Frank Mullen, and Bond Geddes of RMA and Neville Miller and Ed Kirby of NAB. Long-talked-of, this is the first concrete plan for boosting radio set sales and radio listening in mutual cooperation.

For the past several years, RADIO TODAY has employed a similar plan. Its editor, Dr. O. H. Caldwell has gone on the air with industry messages more than 150 times, outlining new models, new radio improvements, urging listeners to have their sets checked up so that they may hear programs better.

### Aids entire industry

Viewed from the broadcaster's, the manufacturer's or retailer's viewpoint, the cooperative drive is an important thing. It will stimulate interest in new radios, will make the public realize the value of the American system of radio, and will focus attention on outstanding programs.

Everyone in the radio industry of course benefits from this. Increased interest in programs means more set sales, and that means more listeners. All along the line, manufacturer, wholesaler, retailer will benefit. The serviceman will have more installations, and since the drive will stress quality reception, listeners will call in service experts to fix up their present sets. And this in turn leads to new sales.

More and better-satisfied listeners provide a stronger selling punch for broadcasting stations interested in stepping up the sponsor list. . . . And so it goes on the round robin, which radio folk have failed to realize for all too long.

But now, it's full speed ahead!

### 'A B C' OF RADIO

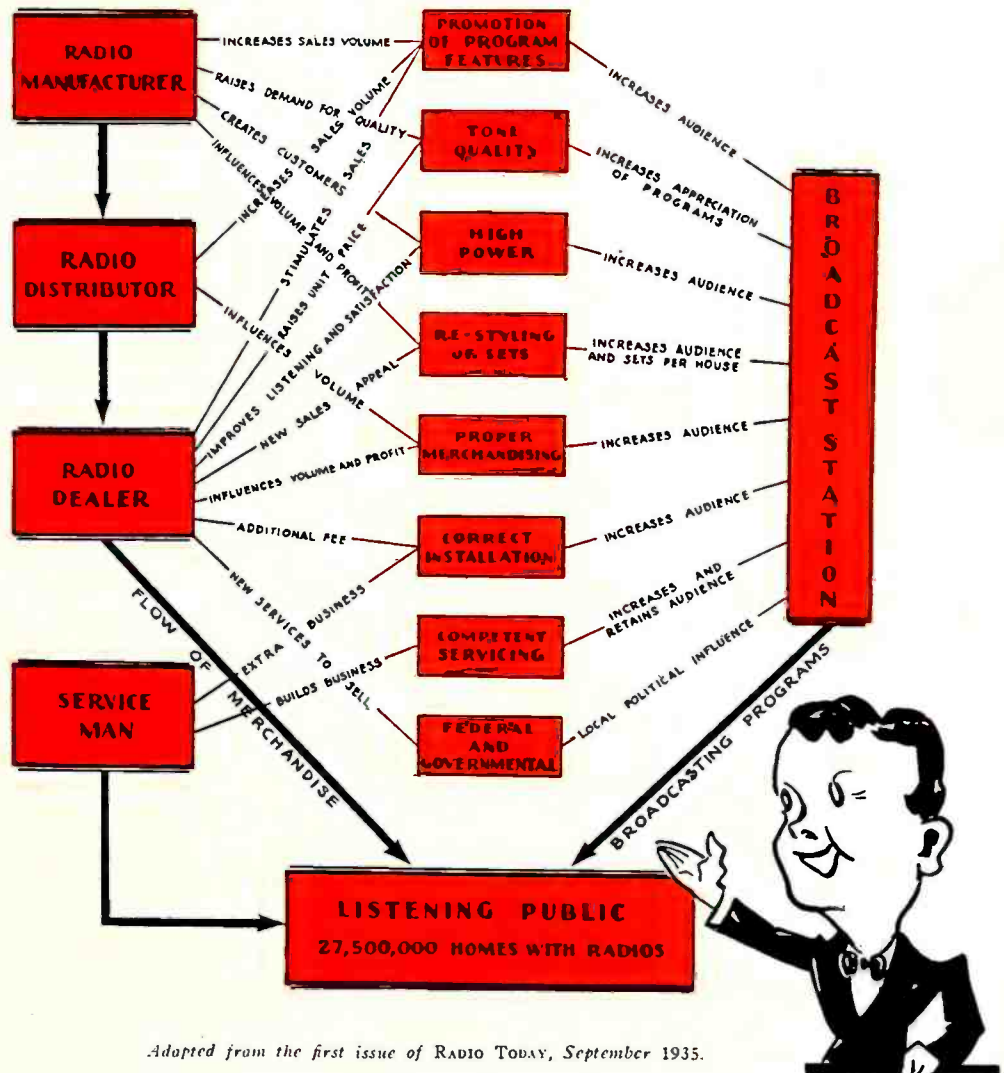
Entitled "The ABC of Radio," a brochure issued by the National Assn. of Broadcasters tells graphically and simply the story of American radio. It is designed as the first piece of literature in the drive by manufacturers and broadcasters "to use radio to sell radio."

Retailers will be furnished with this and other informative booklets for distribution to their customers. Beginning with a simplified explanation of the technical end of broadcasting and reception, the brochure describes the history of U. S. broadcasting, tells how wavelengths are allotted. It also includes a paean of praise for the freedom of American radio and points out the incalculable value a radio set is to the average family.

## FIT THE ROOM WITH A PERIOD RADIO

"When people of artistic discrimination buy a radio, above all be sure the cabinet stays in harmony with the room," is the advice of H. L. Weisburgh of Mersman Bros., makers of Brunswick radios. "It is important to match any room in an authentic design. This is easily done by remembering that if the customer's furniture is 18th century, any other 18th century cabinet will fit in perfectly, whether it be English or French. Swedish Modern is also being used with this group by many decorators this year."

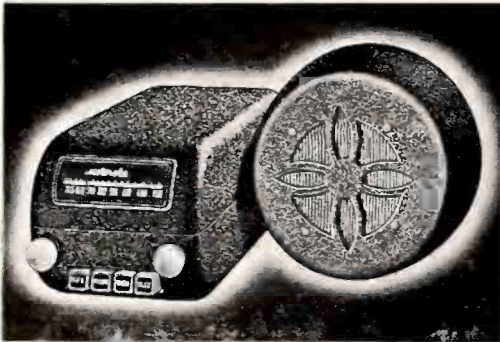
The best style sellers are Sheraton, Chippendale, Adams and French Provincial, counsels Mr. Weisburgh. Duncan Phyfe is always good. But beware of Early American pieces in the middle West or West, as they sell well only in the East, especially New England and Virginia. Many of the women's magazines are now featuring period radios in their columns, appealing to those who want their radio to be a fine piece of furniture. A tie-in here should be easily accomplished.



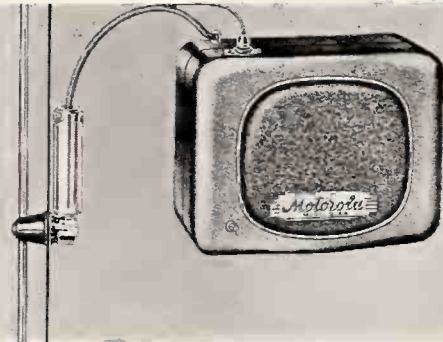
Adapted from the first issue of RADIO TODAY, September 1935.

# 1939 AUTO-RADIO OUTLOOK OPTIMISTIC

Increased buying power and demand for auto radio sets seen by industry leaders—New sets offer more per dollar



Motorola's 9-24 mounts on dash, has separate speaker and P. B. tuning.



Boost-o-matic model by Motorola features extreme sensitivity.



Mechanical push-button tuning and low cost are featured in RCA model.

Auto-radio sales for 1939 promise to exceed those for the previous year, if the upturn in business conditions and the increasing sales of automobiles are the slightest indication.

While an increasing percentage of sales are being made by the automotive dealers, the radio dealers still have the edge on the motor car outlets. First of all, the radio industry has introduced some strikingly new ideas; second, radio dealers can offer a greater choice of models over a wider range of prices; finally, the radio dealers have a better knowledge of the product from the sales angles and are in a better position to properly install the receiver.

"With both new and used automobiles selling in substantially greater volume this year, radio dealers should look forward to selling more auto radio receivers in 1939 than last year," states Henry C. Bonfig, Comm'l Vice-Pres. of RCA.

### Aggressive promotion by RCA

"Accordingly, RCA-Victor plans to promote the sale of its line of auto radio models aggressively during the coming year.

"Because of the yearly obsolescence of panel plates for each make of car, all our receivers this year are designed for installation under the edge of the instrument panel. This de-

cision is based on several outstanding advantages," Mr. Bonfig explains. "Some of these are as follows:

- "1. They fit any make of car.
- "2. They cost less to install.
- "3. The manufacturer is able to give the car owner more radio for less money.
- "4. Permits use of mechanical push-button tuning.
- "5. The sets may be transferred easily to other cars when purchased."

### Philco predicts all-time high

From Philco's vice-president Sayre Ramsdell comes an even more optimistic outlook. "Auto radio sales should hit an unprecedented high-water mark for 1939, because public acceptance of the auto radio has reached the point where it is considered as necessary to comfort and entertainment as the radio in the home.

"More and more motorists are progressively becoming more conscious of the full advantages of auto radio. Because the automobile has come to be called the second American home, there exists a billion-dollar market in this field, and a very fertile one for dealer enterprise.

"For one thing," continued Mr. Ramsdell, "the development of superior tonal quality and mechanical efficiency have taken auto-radio completely out of the gadget class. With car owners beginning to feel that auto radio is a necessity, with a tremendous market for auto radios in the used car market, 1939 figures will prove that auto radio has become another American institution."

Speaking only in terms of sets sold by radio dealers, Ross Siragusa, President of Continental, manufacturer of Admiral sets, states, "It is my



The 1939 Plymouth lady flicks a finger on her car's dashboard, and, presto! one of six stations answers the radio call in a flash.

## 1939 AUTO RADIO SPECIFICATIONS

Model No.	List price	No. of tubes	Watts audio power	Amps. batt. drain	Speaker		Tone control	Type tuning controls	Push button tuning
					Size	Location			
<b>Continental Radio &amp; Television Corp., 3800 Cortland St., Chicago, Ill.—“Admiral”</b>									
55	\$24.95	5-OM	3	5½	5	In set	No	Direct	Yes
69	39.95	6-OM	3½	6	6	In set	Yes	Remote	Yes
<b>Galvin Mfg. Co., 4545 Augusta Blvd., Chicago, Ill.—“Motorola”</b>									
9-24	24.95	6-L	NS	NS	8	Cowl	NS	Direct	Yes
9-29	29.95	6-G	NS	NS	5½	In set	NS	Remote	No
9-49	49.95	6-L	NS	NS	6	In set	NS	Remote	Yes
9-69	69.95	8-L	NS	NS	8	Cowl	NS	Remote	Yes
9-44	44.98	6-G	NS	NS	6	In set	NS	Remote	No
Ford† Special		6-G	NS	NS	6	Inst. panel	NS	Remote	Yes
Chevr. Special		6-L	NS	NS	6	Inst. panel	NS	Direct	Yes
Chrysl.* Special		6-G	NS	NS	6	Inst. panel	NS	Direct	Yes
Oldsmob. Special		6-L	NS	NS	8	Cowl	NS	Direct	Yes
Buick Special		7-L	NS	NS	8	Inst. panel	NS	Direct	Yes
†Also fits Mercury *Also fits DeSoto, Dodge, Plymouth									
<b>Howard Radio Co., 1735 Belmont Ave., Chicago, Ill.—“Howard”</b>									
HA-10	\$39.95	6-MO	2½	6.6	6	In set	No	Direct	Yes
<b>Noblitt-Sparks Industries, Columbus, Ind.—“Arvin”</b>									
7A	\$24.95	5-OM	3.2	6	5¼	In set	No	Remote	No
8A	29.95	6-OM	3.2	6	5¼	In set	No	Direct	Yes
44C	44.95	6-MO	4.5	7	8	In set	Yes	Remote	No
<b>RCA Mfg. Co., Inc., Front &amp; Cooper Sts., Camden, N. J.—“RCA-Victor”</b>									
9M1	\$24.95	5-M	4	6¾	5	In set	No	Direct	Yes
9M2	29.95	6-M	3½	7.4	5	In set	No	Direct	Yes
Additional models to be announced in March.									
<b>Troy Radio &amp; Television Co., 1144 S. Olive St., Los Angeles, Calif.—“Troy”</b>									
85	\$34.50	5-G	2	5½	5½	In set	No	Remote	No

belief that the peak in auto-radio sales has been reached, as the new car trade is rapidly diminishing. This situation is brought about by the combine of car manufacturers who are equipping their new models with radios.

“The bulk of the future auto-radio business lies in the used car trade calling for low-priced receivers. Our jobbers are in excellent position to service this class of trade, as well as the higher priced group, since we are making auto radios available in both the low and medium priced ranges.”

### Signal boosting

New tubes, new signal boosting circuits, more compact designs make the 1939 auto radio a sensational value. Generally, the auto-radio manufacturers are reducing the number of models in their lines, with the exception of Galvin who is making custom Motorola models to fit such cars as Buick, Chrysler, Chevrolet, DeSoto, Dodge, Ford, Mercury, Oldsmobile, Plymouth.

Both manual and push-button tuning models are available as shown in the accompanying auto-radio specifications tabulated on this page.

Push-button systems have been simplified and made more positive in operation. Trimmer, mechanical, and motor-operated types are offered.

Antenna matching and signal

Types of aerials that can be used with modern cars. No. 1 typifies the numerous roof-top models. Cowl and hinge antennas are illustrated by type 2. Running-board antennas of many different designs are shown as type 3, while 4 represents the insulated running board. No. 5 is typical of all fish-pole units.

boosting is provided by the Phantom Filter unit in the Arvin receivers that are designed to operate with cowl or hinge type antennas.

In order to provide maximum signal pick-up, Motorola has developed

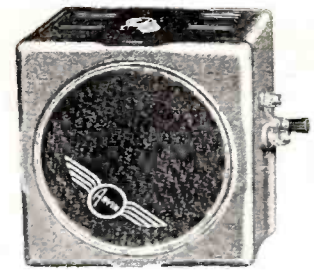


Separate speaker, compact dash-mounting unit are featured by Howard.

the “boost-o-matic” which gives 15 times greater sensitivity. In this receiver, an antenna coil at the aerial is automatically tuned through the movement of an iron core that is ganged to the variable condenser. Thus the antenna is automatically tuned for greatest pick-up efficiency.

Loktal tubes are used in some of the sets permitting more compact design and more dependable operation with varying battery voltages in the car.

Antennas are continually being im-



Top is the Arvin 44C using remote tuning controls. Model 8A is for dash mounting and features P.B. tuning.

proved. New types are available that require no drilling of the car. Special clamps hold them to the car without marring the finish. So far, the cowl and hinge types are the most popular. However, the latter type cannot be used on many of the newer models, since invisible hinges are being used on the doors, which means that the cowl type will soon be the best seller.

A few of the car manufacturers are still recommending insulated running boards. With these cars it is possible to have a truly invisible car antenna—running board insulators are available from several sources.

Another antenna type that is being used is the under car, which may take the form of running board antenna or a wire stretched under the car. Fish-poles for the rear can still be had. Other types are insulated trunk covers, insulated bumpers, insulated brackets on bumper, hood aeriels, etc.

Improved lead-in cables are found in the new aeriels and better shielding against external noise is obtained.





When the crowd gets tired of skiing, this Philco Portable will hit the spot with everyone.

rooms. Traveling salesmen and executives like them, too. For any place where a source of current is not available or convenient, the portable fills the bill. And that goes, too, for the swank skating pond at Rockefeller Center in New York City, as shown on our cover.

*Harper's Bazaar* used portables in a unique advertising stunt. To insure the leading fashion experts hearing new fashion notes broadcast via short wave from Paris by Harper's Carmel Snow, an already-playing portable, pre-tuned to the correct station, and wrapped in cellophane was delivered to each of the experts. A note to each expert said: "Listen to Carmel Snow on this RCA Victor, and read *Harper's Bazaar* March 1st, March 15th and April 1st." The delivery boys also informed each one that the set was a gift if they would listen to the broadcast.

#### Low operating cost

Cost of operating these new portables is estimated at about 2 to 3 cents an hour which includes both A and B power. This extremely low cost is accomplished through the use of the new low-drain 1.4 volt tubes and improved batteries.

Manufacturers announcing battery portables are:

Belmont	Mission Bell
Continental	Philco
Crosley	Pilot
De Wald	RCA
Emerson	Sentinel
Espey	Sonora
Fada	Troy
General Electric	Stewart-Warner
Grebe	Warwick
Halsol	Wells-Gardner
Howard	Westinghouse



Hotels are swell prospects for battery portable sets, suggests RCA. Initial investment is extremely low—operating cost reasonable.

# SPOTLIGHT PORTABLES!

Focus attention on these best sellers  
by taking them wherever there's a crowd

"Wherever you go, take a portable along and let 'em hear it."

That's a good slogan for this winter season. Good sales strategy for weekends and business days. Nothing sells the new type of set like a demonstration. People gape at the no-antenna, no wire-connection sets. They marvel at its compactness, its light weight, its swell tone.

Curiosity often leads to sales. And having a portable on the scene stimulates that curiosity.

On the ice-skating pond, at the ski slide, at parties, at lodge meetings, on a night-club table, in a Pullman compartment—portables attract attention and make sales.

Suggests Vic Mucher of Clarostat Mfg. Co. of Brooklyn, N. Y.: "Why don't dealers, distributors and manufacturers give out portables over the week-end to their employes who get around. Showing these sets to their friends will be A-1 promotion. With 40,000 to 50,000 servicemen and salesmen showing such sets in public over

week-ends, a tremendous exposure to the public would result, followed by many sales."

This is mighty good sales promotion. Loan portables to your workers and let them demonstrate. Let a skating or ski fan take one out to show his friends at the week-end fun. When you go to the Rotary, Lions or some other luncheon club or lodge meeting, take a portable along. During the social period you can thrill the boys with a demonstration. In your window displays and advertising, feature the many uses of this new, compact set with the low-drain tubes. Stress the fact that it is not just another portable, but a highly improved set that is just the thing for traveling.

Folks like bandmen are fine prospects. Recently, Tommy Dorsey bought all his boys portables. While hopping around to one-night stands, the bandmen tune in their sets to hear rival musicians. Variety folk find them swell for backstage dressing

# THE \$6.95 RADIO SET

## Its circuits and new tubes explained: New markets tapped by low price

Confirming rumors current throughout the trade for some weeks, the \$6.95 radio set is here.

Because many feel that these new low-priced units will tap new and greatly widened markets, and because of the intense interest in this new lowest-price development to date, RADIO TODAY presents full information on the new CF 255 set just announced by Emerson.

This 2-tube AC-DC receiver, built around two dual tubes, performs equally as well as previous 4-tube AC-DC tuned-radio-frequency receivers. A sensitivity of 300 to 600 microvolts is obtained with production receivers.

### Straight design

While the use of only two tubes suggests some trick circuits, the new "Emersonette" is straight forward in circuit design. A type 12B8GT tube has a pentode and triode unit in a single envelope. The remote cut-off type pentode is similar to a 6D6 tube, but is so designed as to produce 25 per cent more amplification. The triode section, especially designed for power grid detection, corresponds to the 6F5 type of tube.

A block diagram shows the circuit of this new receiver, and for simplicity the sections of the tubes are shown separately.

The 32L7GT tube combines a beam-power output tube and a half-wave rectifier. The beam-power section is equivalent to a type 25L6 except for 25 per cent less power output caused by a reduction in the size of the tube elements. The rectifier is equivalent to half of the 25Z5 tube.

### Novel dial

Several unusual features are found in this set. First is the use of an illuminated vernier dial. This dial is but part of the condenser mounting bracket, and the pointer is a small piece of metal attached to the drive cord. The set is held into the front of the cabinet by means of several molded projections that keep the chassis flush with the bottom of the cabinet. At the rear two screws fasten



Two-tube AC-DC radio having performance equivalent to 4-tube set. Being only 6½ inches wide it is easily held in the hand.

the chassis and the protective back to the cabinet.

A new 4-inch permanent magnet speaker of the magnetic type gives performance equivalent to that of a dynamic speaker, yet simplifies the set since an output transformer is not necessary.

Throughout the set, which has been in the design laboratory for many months, are a host of money saving ideas that have made it possible to produce the receiver for such a low price.

Measuring only 6½ inches wide by

4¾ high by 3¼ deep, the set fills a need for travelling persons. For an aerial, a hank of flexible wire is supplied.

### Ten million sets in '39?

"In the October issue of RADIO TODAY," explains Ben Abrams, president of Emerson, "I predicted an eventual sale of twelve to fifteen million sets a year in the United States. I believe today that we shall come very close to selling ten million sets in 1939, as compared to little more than half that number in 1938. At any rate Emerson is designing its models, and planning its advertising and sales promotion toward that end, and it is gratifying to note that our distributors and dealers have caught the spirit of this purpose."

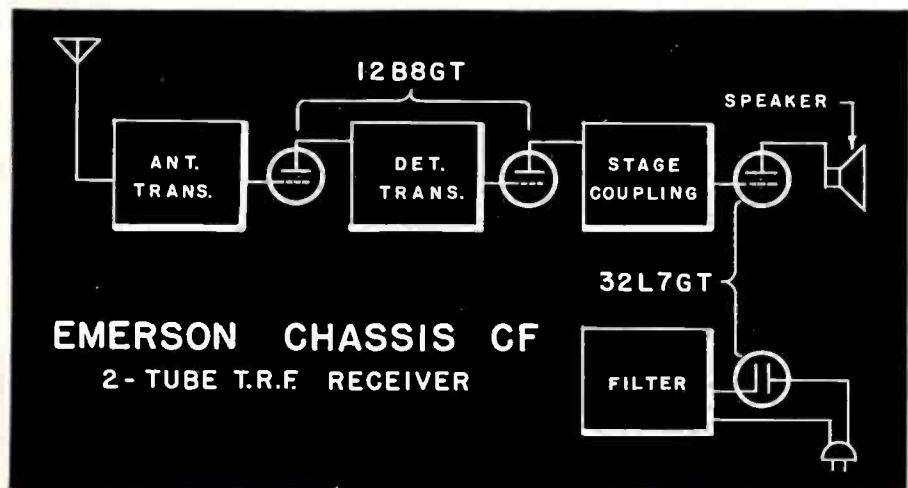
In announcing the new set it was explained that quantities would be offered to dealers only in proportion to purchases of standard Emerson models, thus preventing dealers from concentrating on only low-priced models. The Emersonette is supplied in walnut bakelite cabinet to sell at \$6.95; red, green and ivory are 50 cents extra.

### NETWORKS' BILLINGS GAIN

NBC set an all-time high for billings on its stations in January by selling \$4,033,900 worth of advertising time. This is a 6.3 per cent rise over January, 1938, and a 3.8 per cent rise over December, 1938.

CBS reports gross billings of \$2,674,057 for January, or a gain of 5.7 per cent over December, 1938. Last year's January sale were the largest in CBS history.

Mutual staged a 16.7 per cent gain in gross billings in January 1939 over last January, or \$315,078 compared with \$269,894 for total time sold.



Block diagram of new \$6.95 receiver using dual-type tubes.

# WHAT SIZE AMPLIFIER TO USE

## Effect of room size and noise level upon power required for sound installations

The amount of acoustical sound energy for a public address or sound installation depends upon the size of the room, the acoustical conditions in the room, and the noise level against which the sound system must compete. While sound level measurements in the room are desirable, it is possible, to obtain satisfactory results in most cases by using charts based on average sound installations.

The first step in using a chart for determining the sound energy required is to calculate the volume of the room based on dimensions. Next the normal background noise level should be estimated.

### Background noise levels

For the sake of simplicity, the noise level can be compared to levels with which almost everyone is familiar. The most quiet place where a sound system would be used is a church. The second step on the list is a quiet theater, third a moderately-noisy theater, and finally a very noisy room or auditorium. These four classifications are suitable for practically every possible installation, and are shown on the accompanying chart of acoustical watts vs. room volume.

For high-fidelity reception it has been found that 40 decibels above the noise level is desirable. It is on this basis that the curves have been developed.

So after calculating the volume of the room, the acoustical power for any stated noise level can be found from the chart. Values for a moderately-noisy room are read from the chart, using the line labeled "moderately-noisy theatre," etc.

The values given are for high-fidelity reception. If only speech reproduction is needed and the low frequencies are filtered out, it is possible to use an acoustical power of approximately one-half of that shown by the chart. Most sound men, however, prefer to install the full amount of power required, for later on high-fidelity music reproduction may be desirable.

### Speaker efficiency

To convert the acoustical power to electrical requires a knowledge of the loudspeaker efficiency. In other words, it is necessary for the amplifier to supply the losses in the speaker unit or units as well as the acoustical energy.

### AVERAGE SPEAKER EFFICIENCIES

Low-cost cone .....	3%
Good cone unit .....	5%
High efficiency cone .....	5-8%
Horn if used increases efficiency of cone speaker from 2 to 3 times	
Exponential type horns ..	25-45%

Loudspeakers, depending upon the baffle, the unit, and directional characteristics, have efficiencies that vary from 3 per cent up to 55 per cent. Assuming identical installations, the choice of speakers would have more than a 18 to 1 effect on the electrical power needed to provide the same acoustical energy. If the speaker efficiency is 3 per cent, then the electrical power must be 33 times the acoustical sound power. Or if a 50 per cent speaker efficiency is achieved, the electrical energy must be twice the acoustical energy needed.

### 3 to 5% efficiency usual

"The average electrodynamic speaker," according to Mr. Weibler of Operadio Mfg. Co., "delivers 3 to 5 per cent of its input when mounted on the usual-size flat baffle. If a horn is used, this is increased to as high as 40 to 45 per cent; the efficiency increasing as the horn approaches the exponential type, creating a more effective coupling to the air with a greater air column loading.

"The true exponential horn uses an electrodynamic unit differing from the usual paper cone reproducer.

"The figure of 5 per cent efficiency may reach as high as 8 per cent when a reproducer is a high-quality permanent magnet assembly. The higher figures of 40 to 45 per cent do not change materially, however, as the field input has much less bearing on the efficiency, inasmuch as the increased efficiency is obtained through better coupling to the media of sound."

Mr. Weibler adds, "Generally the efficiency ratings are only fairly reliable to one thousand or fifteen hundred cycles per second. The lower frequency efficiency is greatly determined by the effectiveness of the baffle used. Obviously, no figures can be given at the lower frequencies without considering specific cases.

"The enclosure type of baffle will increase the efficiency at the lower frequencies. The efficiency at the fundamental frequency of the enclosure will approach that of the true exponential horn. This condition will exist to a gradually decreasing amount at each multiple of the fundamental reinforcement frequency."

### Horns more efficient

Concluding, Mr. Weibler states, "The efficiency of horn type assemblies is generally based on figures obtained within the useful coverage angle of the horn and does not refer to the amount of sound received at the side or back of the horn. The horn type of unit, however, is most useful where sound is to be directed as in a theater. It enables the operator to somewhat control the distribution so as to obtain an equalization of intensity throughout a given area."

In order to help the sound man quickly determine the efficiency of different types of speakers, the accompanying table has been compiled. Because of numerous variables and different characteristics of speakers of various manufacturers, the figures are only average. Wide variations may be expected. Fortunately these variations in efficiencies are not too serious if the acoustical requirements are first obtained from the accompanying chart.

Special installations such as roller skating rinks, steel mills and the like have not been included on the chart. But since high-fidelity reception is never expected in such places, the sound man will be quite safe in using the figures given for an extremely noisy room. In a roller skating rink it is only necessary to have sufficient sound level so as to hear the recordings or orchestra. Likewise, in factories speech intelligibility is the only requirement.

### Church chimes

Outdoor installations offer special problems that cannot be discussed in this article. But in passing, a word about chimes is not amiss. Major Ranger of Rangertone states that 30 to 50 watts in an amplifier is desirable in churches. One or more amplifiers should be used depending on the number of directions that need to be covered.

Using a 35 to 50-watt amplifier with a single speaker, the chimes can be normally heard some half mile away



in the direction of the horn. Also a single horn can be heard a couple blocks away at the sides and the rear, because of sound reflections.

Since chimes are instantaneous in nature, a speaker with a 30-watt voice coil dissipation will easily handle the output of a 50-watt amplifier. This applies to both recorded and amplified chimes.

So for church tower chime installations the rule seems to be 50 watts power for each speaker of 30 watts capacity. Generally one to three speakers are used.

### Average reverberation

So far no mention of the reverberation time on auditoriums has been made. For outdoor installations reverberation is not a problem. Inside installations should take reverberation into account. But for the chart given, only an average of all conditions found is possible. In practically every instance, the chart will give power requirements that are on the high side. But this is a desirable condition, for it is poor policy to run an amplifier at its maximum output—a certain amount of power should be kept in reserve for peak requirements.

## PRESENT "SOUND" OUTLETS AND THEIR PROBLEMS

Editor, RADIO TODAY:

On numerous occasions I have been asked to express my views on the position of the radio jobber in the Sound industry today. I hope that the following comment will prove of more than usual interest to your readers.

It is common knowledge that the radio jobber is gradually losing his heretofore enviable position in the Sound Industry. In the interests of the radio trade at large, I would like to present my views on present-day Sound merchandising. Criticisms and suggestions are specifically invited.

### Public is "wise"

Members of the public today are "discount wise." They insist upon buying from sources which they believe are in the best position to distribute their requirements at the lowest possible prices.

Further, it is apparent that present-day outlets for sound equipment do not differentiate between types of customers. Servicemen, industrial engineers, night-club owners and unclassified P. A. users, are all treated in exactly the same fashion.

Anyone purchasing a sound system

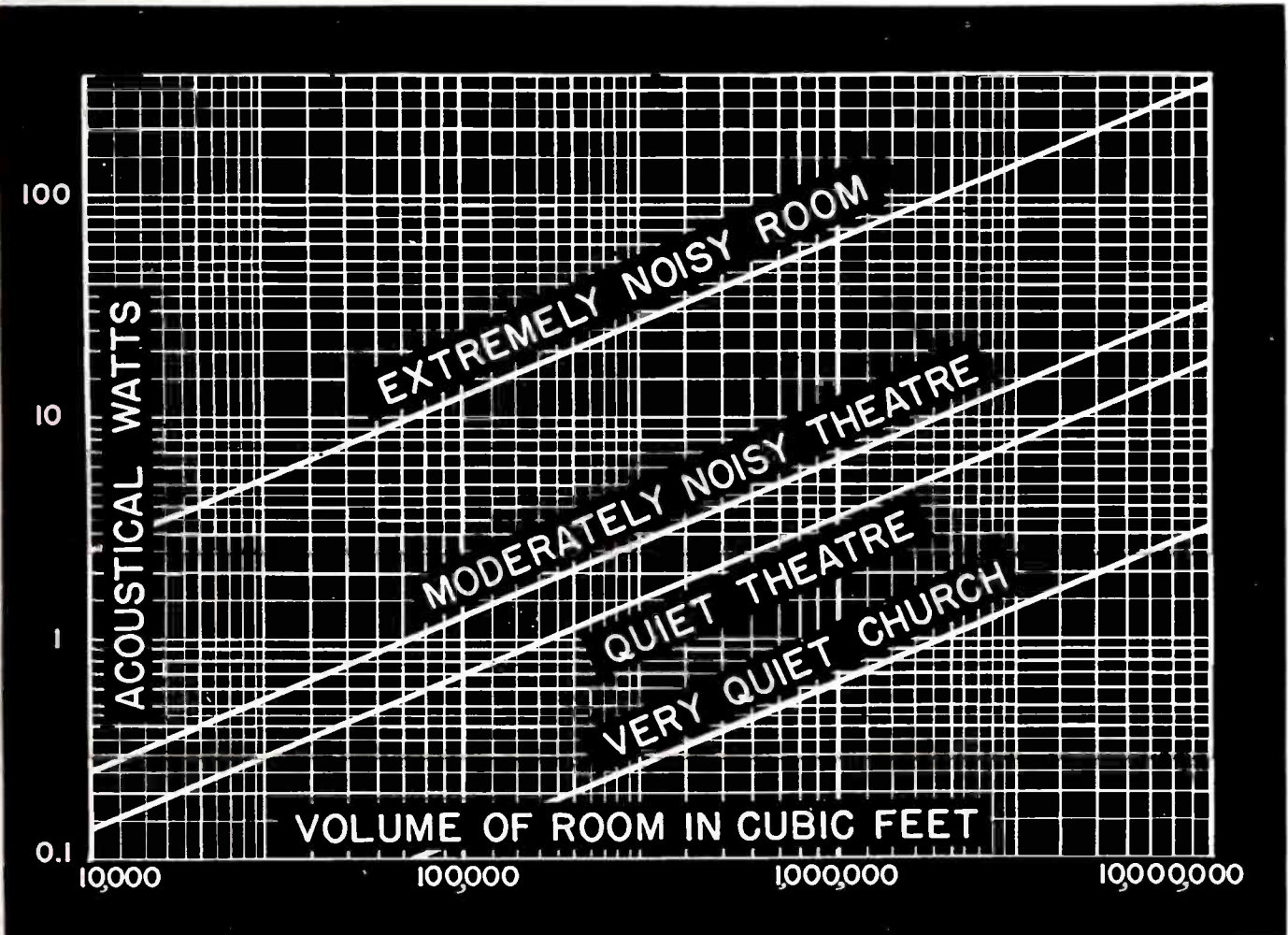
from a mail-order house buys at the dealer's price. In an effort to compete with these mail-order houses, parts jobbers are following this same procedure.

The mail-order house sells principally through the medium of its catalogue and local sales offices. Anyone desiring a sound system is sold at the catalogue price. Prices in general are lower, for the simple reason that a company of this type normally sells for cash. Further, its operating overhead is lower and the turnover greater.

First, the major portion of equipment sold by mail-order companies is bought by the ultimate consumer. Second, a considerable amount is purchased by individuals, who are able to sell this same equipment at a price higher than the mail-order resale. This is possible because the customers of these individuals know absolutely nothing about the trade and have no reason whatsoever to investigate this aspect of the business.

The third type of customer which is common to all sales agencies, is the party who buys for rental purposes only. In this case it doesn't matter who sells the equipment so long as it is satisfactory for this work. In most instances, the party who buys for rental work knows the trade well enough to purchase equipment at the lowest possible prices. (Continued on page 50)

CHART FOR DETERMINING THE NUMBER OF ACOUSTICAL SOUND WATTS REQUIRED



To calculate the amplifier output required, the sound (acoustical) watts must first be determined for the room size, calculated by referring to curve for the noise level encountered. Then using the efficiency of loud speaker, electrical power is determined.

# FACTS ON FACSIMILE

Radio's method of printing a newspaper in the home comes of age

Twenty-three radio stations are licensed to send out facsimile signals, and two manufacturers are now turning out receivers. Thus, another offshoot of radio shows definite signs of coming of age.

Two systems are now being used—that developed by W. G. Finch, and the system worked out by RCA engineers.

In the RCA facsimile, printing is accomplished by a narrow bar which pinches carbon and white paper against a single spiral turn of raised wire on a rotating drum. As the drum rotates, the point of intersection between the printer bar and the raised wire travels across the page in synchronism with the scanning light spot at the sending station, and, by means of dots and lines, reconstructs a facsimile of the original graphic material.

## Electro-chemical recording

In the Finch reception, a stylus moves back and forth across the paper emitting small electrical impulses synchronized with each dot as scanned and transmitted by the broadcasting station. Each dot penetrates the chemically-treated white coating on the paper, removing the white and allowing the black paper to show through in black dots. A specially prepared paper is necessary in the Finch system.

Using the Finch system, the Crosley Corp. is selling "for demonstration and experimental purposes" a facsimile receiver known under the patented name of "Reado". Complete with electric switching clock, printer and receiver, it costs \$150. If one now has a radio delivering an output of 5 watts or better, the printer may be connected to it, saving some \$60. To stimulate interest, Crosley is also selling its dealers a record player at \$36. Used in conjunction with the Reado, this player gives off sound impulses, which are translated into facsimile reproduction by the Reado.

## In 16 cities

RCA has not announced its sets for general distribution, but is using them in areas where facsimile transmitting licenses have been granted. On granting such a license, the FCC demands that 50 facsimile receivers be purchased by the station and distributed for experimental reporting. So far, twenty-three stations have received these experimental licenses—fourteen on the broadcast band and nine on the ultra-short waves. The latter permits broadcasting of facsimile at any time; but on the broadcast band, transmission is limited to the hours between midnight and 6 a.m.

A list of the facsimile stations is also on this page, and shows that al-



W. G. H. Finch scanning the news literally "hot off the press," via a Crosley "Reado" using his facsimile system.

most every principal city in the country has facsimile coverage. Broadcasts come from Fresno and Sacramento, Cal.; Des Moines, Ia.; St. Paul, Minn.; St. Louis, Mo.; Chicago; Detroit and Jackson, Mich.; Cleveland and Cincinnati, Ohio; Buffalo, N. Y.; New York City; Newark, N. J.; Newport News, Va.; Nashville, Tenn.; Sargents Purchase, N. H.

## Newspapers interested

In most cases, newspaper-owned stations have taken up facsimile. While not expected to displace newspaper, it is thought that facsimile will supplement it. Thus, papers are vitally interested.

Radio folk believe there will be a comfortable market in facsimile during 1939. Principal obstacles to be hurdled are: speeding up reception (now three feet per hour) and lowering the price. As the demand increases, it is expected that a speeding up of production will help cut the price.

## PRESS AGENT'S PAL

The much-maligned press agent has a new helper, facsimile. Comes WOR of the Mutual network with news that its daily handouts are being "peep swished" over 710 kilocycles at the close of the station's regular programs.

Under a specially designed masthead, "WOR RADIO PRINT," executed by WOR's chief engineer, J. R. Poppele, the facsimile-casts also include photos of the station's activities.

## FACSIMILE STATIONS

### Broadcast band—early morning hours only.

LOCATION	STATION	FREQUENCY	POWER	OWNER
Fresno, Calif.	KMJ	580 kc	1 kw	Mc Clatchy B'casting System
Sacramento, Calif.	KFBK	1490 kc	10 kw	Mc Clatchy B'casting System
Chicago, Ill.	WGN	720 kc	50 kw	WGN, Inc.
Des Moines, Iowa	WHO	1000 kc	50 kw	Central B'casting Co.
Detroit, Mich.	WWJ	920 kc	5 kw	Detroit News
St. Paul, Minn.	KSTP	1460 kc	25 kw	Nat. Battery B'casting Co.
Newark, N. J.	WOR	710 kc	50 kw	Bamberger B'casting Service, Inc.
Buffalo, N. Y.	WBEN	900 kc	1 kw	WBEN, Inc.
Cincinnati, Ohio	WLW	700 kc	50 kw	Crosley Corp.
Cincinnati, Ohio	WSAI	1330 kc	5 kw	Crosley Corp.
Cleveland, Ohio	WCLE	610 kc	500 w	Cleveland Plaindealer
Cleveland, Ohio	WHK	1390 kc	1 kw	Radio Air Service Corp.
Nashville, Tenn.	WSM	650 kc	50 kw	National L. & A. Insurance Co.
Newport News, Va.	WGH	1310 kc	250 w	Hampton Roads B'casting Co.

### Short Wave

Detroit, Mich.	W8XTY	8 metres	150 w	Evening News Assn., Inc.
Jackson, Mich.	W8XUF	8 metres	100 w	Sparks-Withington Co.
St. Louis, Mo.	W9XSP	8 metres	100 w	Star-Times Publishing Co.
St. Louis, Mo.	W9XZY	8 metres	100 w	Pulitzer Pub. Co.
Sargents Purchase, N. H.	W1XXM	8 metres	500 w	Yankee Network, Inc.
Long Island City, N. Y.	W2XR	150,8,3 m.	1 kw	Radio Pictures, Inc.
New York, N. Y.	W2XUP	8 metres	100 w	Bamberger B'casting Service
New York, N. Y.	W2XBF	8 metres	1 kw	W. G. H. Finch
Cleveland, Ohio	W8XE	8 metres	50 w	Radio Air Service Corp.

# FREQUENCY MODULATION STILL EXPERIMENTAL

**Lack of transmitting facilities and technical difficulties make immediate change-over impossible**

Staticless radio reception recently featured in the daily newspapers is not going to revolutionize our present radio broadcasting set-up overnight. Unfortunate publicity in the press has led consumers in some areas to expect that the new frequency-modulated radio transmissions will be common and outmode present amplitude-modulated broadcasts at once. Radio dealers everywhere should explain to their customers and prospects, that the new type of radio transmission is a long way in the future, and that for the present it will only supplement the standard broadcasts.

That frequency-modulated broadcasts are an improvement cannot be denied; that they eventually may be the primary source of reception is possible. However, with 40,000,000 radio sets in use and 765 broadcasting stations on the air, nothing will cause an immediate abandonment of our present system that has served so well for almost 20 years.

First of all the frequency modulation takes place on wavelengths shorter than ten meters (more than 30,000 KC). Use of these frequencies restricts operation to the limit of the horizon as with television. Antenna installations are absolute necessities and involve many of the problems found in television.

## **No programs available**

From the viewpoint of programs, there is very little yet available on the ultra-high frequencies. All transmissions to date are experimental—commercially sponsored programs are out. Even if all existing stations licensed for these wavelengths were to go on the air immediately with sponsored programs, most locations would have no reception because of the horizon limit. Persons living within range of a transmitter would have to be satisfied with but a single program, for there are few cities having more than one ultra-high-frequency transmitter.

Dipping into the future, we find that a chains of U-H-F transmitters could easily be built. Persons within the range of these stations will receive high-fidelity, static-free programs with a much wider volume

range than is now possible. Since the transmission range is definitely limited to the horizon, there will not be interference between various stations as now exists in some locations under the present broadcast set-up.

Engineers of the General Electric Company recently completed a long series of tests to determine the relative merits of frequency modulation and present methods on the ultra-short waves.

## **Increased coverage**

They find Armstrong's system of frequency modulation to be superior in every respect. They state that comparable service to a given area can be attained by Armstrong's system at one-sixteenth the cost of present methods, and conclude with the statement that "Frequency modulation is the only system worthy of consideration for use in an ultra-high frequency network."

Mountain tops offer a new possibility in broadcast coverage. In New England, for instance, the Yankee Network is constructing a 50 KW sta-

tion on a mountain near Worcester, Mass. Such a station can push clear, high-fidelity programs into Boston at all hours of the day and night without fading. Likewise the transmissions will extend westward beyond the Connecticut River, southward into R. I.'s densely-populated districts and northward to the southern N. H. manufacturing centers. Today there is no station on the broadcast band capable of such coverage.

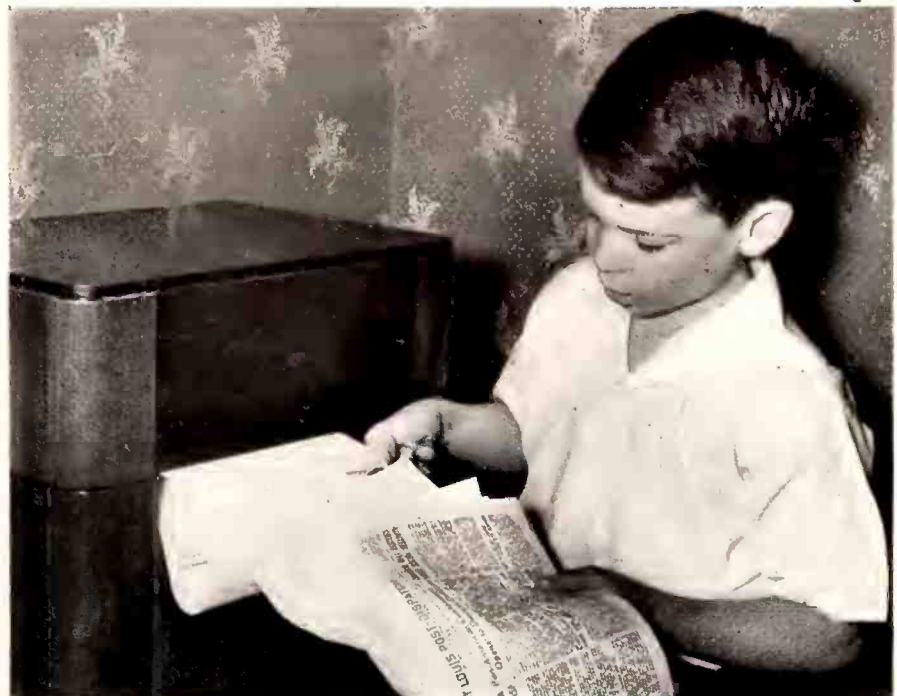
Another similar station is being built atop of New Hampshire's famous Mt. Washington, and it should bring fine reception to the northern New England states.

It has been stated that these two stations will bring 24-hour a day reception to many outlying districts for the first time.

It is possible that frequency modulation may be applied to the audio transmitters of television stations. Since few receivers are in the field, there is no reason why such a change would cause much difficulty at the present state of the art.

*(Continued on page 56)*

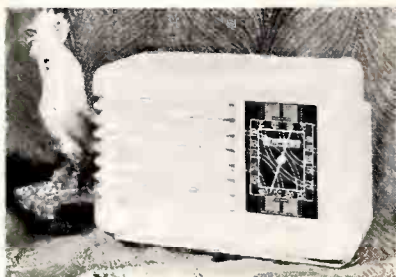
## **NEWSPAPERS BY RADIO FACSIMILE NOW AVAILABLE FOR HOMES**



This boy is making up his own newspaper from a facsimile broadcast, received and printed by an RCA set.

# NEW RADIO MERCHANDISE TO SELL

*Latest news of radio products from manufacturers*

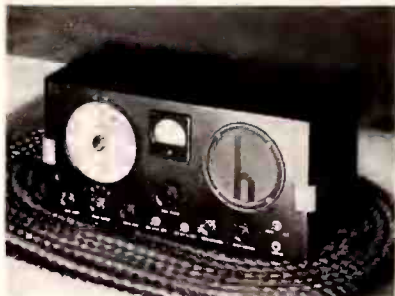


## Admiral receivers

★ 5-tube AC-DC superhet with single-band tuning from 535 to 1,730 kc. 5-inch dynamic speaker—beam-power output tube. Louvre-type tone diffusers. Aeroscope loop-type antenna does away with need for antenna and ground. Model 161-5L in walnut—list \$9.95, 162-5L in Ivory \$12.95, 163-5L in onyx \$15.95.



Portable-type combination AC operation. Uses 5 tubes in superhet circuit. 5-inch dynamic speaker. Airplane-type luggage case. Self-contained Aeroscope antenna. Compartment for records. Model 153-5L. Continental Radio & Television Corp., 3800 W. Cortland St., Chicago, Ill.—RADIO TODAY.



## 2-purpose marine radio

★ Marine receiver covering the long-wave marine and weather report channels. Tunes from 140 kc. to 18.5 megacycles. Receives code, voice and music. AC-DC 110 volts. 8 tubes, automatic volume control, beat-frequency oscillator. Hallcrafters, Inc., 2611 S. Indiana Ave., Chicago.—RADIO TODAY.

## Wireless record player

★ Record player using no wires to reproduce through radio. Walnut case, 13 x 10 $\frac{1}{4}$  x 6 $\frac{1}{2}$ . Crystal pick-up. Home broadcast mike on jack with built-in voltage supply. Handles 12-inch record. Wholesale Radio Service Co., Inc., 100 Sixth Ave., N. Y. City.—RADIO TODAY.



## RCA-Victor console

★ 8-tube 3-band all-wave receiver with straight-line dial. Electric tuning for 6 stations. Victrola push button and plug-in connections for record player. Magic eye indicator—vernier tuning. 12-inch speaker. Model 98K2. RCA Mfg. Co., Front & Cooper Sts., Camden, N. J.—RADIO TODAY.



## Record cabinet

★ Walnut or mahogany record cabinet holding 100 records or 8 12-pocket albums. Furnished with lock and key—drop type door. Schloss Bros., 801 E. 135th St., New York, N. Y.—RADIO TODAY.

## Short-wave preselector

★ 5-band regenerative preselector for use with all receivers. Tunes 1,600 to 64,000 KC. Uses regenerative stage with 1852 tube. Increases image rejection and signal strength. Filament transformer included. Sold in kit or assembled. Browning Labs., Inc., 750 Main St., Winchester, Mass.—RADIO TODAY.



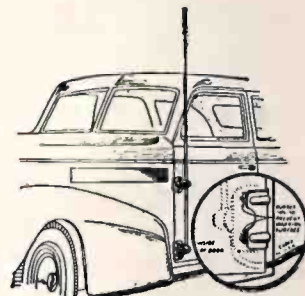
## Television receiver

★ Sight and sound receiver using short-necked 5-inch tube. 16-tube superhet circuit. Tunes to 44-50 and 50-56 megacycle channels. Table-type cabinet. Model 1-F-5—list \$189.50. Andrea Radio Corp., Woodside, L. I., N. Y.—RADIO TODAY.



## Lafayette sound systems

★ Line of sound systems from 5 to 70 watts output. Units available in economy, standard, and de luxe models. Attractive cabinets in platinum gray. Sloping panel offers maximum operating convenience. Wholesale Radio Service Co., 100 Sixth Ave., New York, N. Y.—RADIO TODAY.



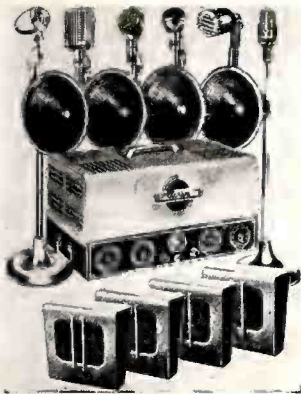
## Cowl antenna

★ Universal bracket cowl antenna that requires no drilling of holes in car. Will not mar surface of car. Installed in a minute with a screw driver. Chromium plated. Supplied in 5 models with lo-loss lead-in. Insuline Corp. of America, 25 Park Pl., New York, N. Y.—RADIO TODAY.



### Wireless record player

★ Model VA-20 wireless record player with crystal pick-up. Modulation type volume control, constant-speed synchronous motor. Pilot light. Plays up to 30-50 feet from radio. List \$17.95. RCA Mfg. Co., Camden, N. J.—RADIO TODAY.



### 70-watt sound system

★ Unified sound system with 70-98 watt output. Dual push-pull 6L6 beam power tubes. AVC and AVE, cathode-ray output indicator. Choice of 2 microphones. 4 heavy-duty 12-inch PM speakers with baffles. Clarion model C489A—list \$299.50. Amplifier only \$139.02. Transformer Corp. of America, 69 Wooster St., New York, N. Y.—RADIO TODAY.

### R. F. relay

★ AC-operated relay designed for switching antenna from transmitter to receiver. Handles up to one kilowatt power. Double-pole, double throw.  $\frac{3}{8}$  inch silver contacts. Alsi-mag 196 insulation. Model 1000—list \$15. Gordon Specialties Co., 1104 S. Wabash Ave., Chicago, Ill.—RADIO TODAY.

### Stancor antenna

★ Loop-type antenna for use in antennaless receivers. Automatically wound and is self-supporting—requires no coil form. Low in cost. Standard Transformer Corp., 1500 N. Halstead St., Chicago, Ill.—RADIO TODAY.

### Portable tube checker

★ Tubemaster tube tester that handles newly announced 10k1 and 35-volt tubes. Direct-reading meter marked good-bad. Meter scale and control panel indirectly lighted from below. Leatherette carrying case. Model 20-A—net \$34.50. John Meck Instruments, 164 N. May St., Chicago, Ill.—RADIO TODAY.

### Battery-portable combination

★ Phonograph-radio combination that is battery operated. Spring-type motor for phonograph. Plays 10 and 12-inch records. No aerial or ground needed—no external power supply. Luggage type case with storage space for records. Philco Radio & Television Corp., Tioga & C Sts., Philadelphia, Pa.—RADIO TODAY.

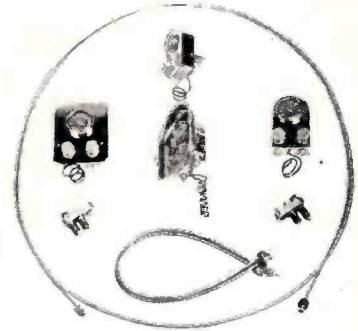


### Record carrying case

★ Carrying case for 10-inch phonograph records. Steel construction with re-inforced leather handles. Smaller size holding 45 records lists for \$3.50. Case for 100 records, \$4. Chicago Sound System Co., 200 E. Illinois St., Chicago, Ill.—RADIO TODAY.

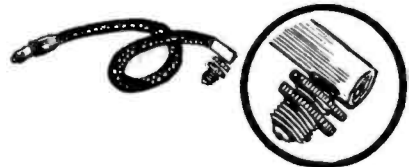
### Weather-resistant transformers

★ Transparent, elastic compound protects transformers from climatic conditions. Resists salt air, high humidity and excessive moisture. Known as "Tropex," adds 20 to 25 cents to cost of standard transformers. Thordarson Electric Mfg. Co., 500 W. Huron St., Chicago, Ill.—RADIO TODAY.



### Dual remote controls

★ Universal-type remote controls that permit operation and tuning of receiver from 2 different points. For autos, airplanes, yachts, etc. Single-unit, pre-assembled. Interchangeable gears. Back controls for flush, recessed, or surface mounting. Does not disturb regular dash installation. Dual Remote Control Co., 7228 Warwick St., Detroit, Mich.—RADIO TODAY.



### Trim-mast auto aerials

★ Line of cowl type antennas for auto radios. Chrome-plated brass construction. Lug and unit cord types. Improved lead-in with swivel mounting illustrated. Allows antenna lead-in to lie flat against side of wall. Charles Avnet Co., 156 Chambers St., New York, N. Y.—RADIO TODAY.



Smooth and automatic in operation, this Philco console wireless record player, through your radio, reproduces 8 records in succession. Requires no fuss or attention. Underneath, there's room for a complete record library.

# Uncovering

## PROFITABLE SERVICE JOBS

### with your tube checker

"The success of selling lies in sensing the psychological moment when the prospect is in a buying mood, and pressing home a sale at that moment," believes Bruce Burlingame, Supreme representative for New York and surroundings.

How can you discover that a prospect is a prospect? There are lots of ways, but I venture to say that many a radio dealer and service man completely misses as many or more service jobs per day, week, or month than he gets. And the sad part of it is that that sweet little lady "Opportunity" didn't bother to rap on the door; she opened it and walked right into your store!

#### Enter Lady Opportunity

How can you recognize her? Well, she usually comes in with some tubes to be "tested for free." This means just one thing: The radio at home doesn't play any more, or it sounds terrible. Naturally the public thinks first of tubes and out they come for a free test and a lot of shopping for price—unless you take "Lady Opportunity" by hand and steer her right back home—quick.

Let's look at it sensibly. Tubes may be bad—but the radio may be bad, too. Also, the best tube checker on the market may not catch the particular peculiarity of that tube in that socket of that radio. Also, any set that has been in service for any length of time is usually filthy dirty and may have

been the death trap of cockroaches, bugs, or even mice (it's happened lots of times). A dirty set is leaky all over and loss of gain and distortion can often be traced to dust and dirt.

In any event, the customer is in your store because the radio "She's a no seeing." And right here is a prospect for your service shop.

Test the tubes carefully, cull out those that are evidently bad and those that are doubtful. Then lay out the new tubes that seem to be required and go to work.

#### Explain tubes

Tell your prospect that there are some 14,000 different models of radios in use designed by thousands of engineers. Point out that every engineer has his own ideas about getting the most results out of a tube, and often uses tubes in a manner that is not standard; and hence for best results the tubes should get a final test in the set at home. Point out that possibly something beyond tubes may be wrong with the set, and it may be this defect in the set that caused the tubes to go bad.

Suggest and sell the idea that you can check the set and make sure it is correct in all respects if you take the new tubes to the home, that at that time you can give an honest opinion as to whether some service on the set won't put it in shape to play as sweetly as it did when new.

Remember that the customer owns that set and paid for it with his own cash. It is his, and at one time he liked it. He would like to like it again. So sell him the idea that you are the boy who can make it really perform if more than just tubes are at fault.

Practice this idea, starting right now on the next customer that walks in to have some tubes tested. You will soon develop a smooth sales story that will click, and I know you will be surprised how many shoppers you can turn into your customers—at a profit to yourself.

Bear in mind that a tube checker is just that: a checker. It is not an absolute test, no matter whether it is an emission type, a mutual conductance type, or what have you. All service men's and counter-type tube checkers are based on compromises due to the fact that the service man can only afford about \$50 tops for one. This cannot compare with lab and factory production testers running to hundreds of dollars.

However, a good standard tube checker has a high "honesty" factor. That is, it will give both the customer and you better than a 90 per cent break, and if all our problems came out that good we would all be Fords and Rockefellers.

#### Stop shoppers

So, bearing in mind that a good tube checker is honest, that your customer is in trouble when he calls on you, that any set is better for even just a cleaning, and the bulk of them do need some work done on them, go to work right there and sell a service job. Stop many a shopper from shopping, and not only sell that sale of tubes right there, but get that service job, too.

A tube checker properly worked with a well planned and developed sales story behind it has a crystal ball beat seven ways for turning hopes into present profits. Don't wish for the death of your chiselling competitor. It's up to you to stop the shopper, turn him into a customer while he is in your store and wants his radio to play. And you get some more work for the shop.

It can be done; it is being done.

#### Swell seller-upper

A tube checker is the swellest "seller-upper" there is if you will turn this suggestion into action.

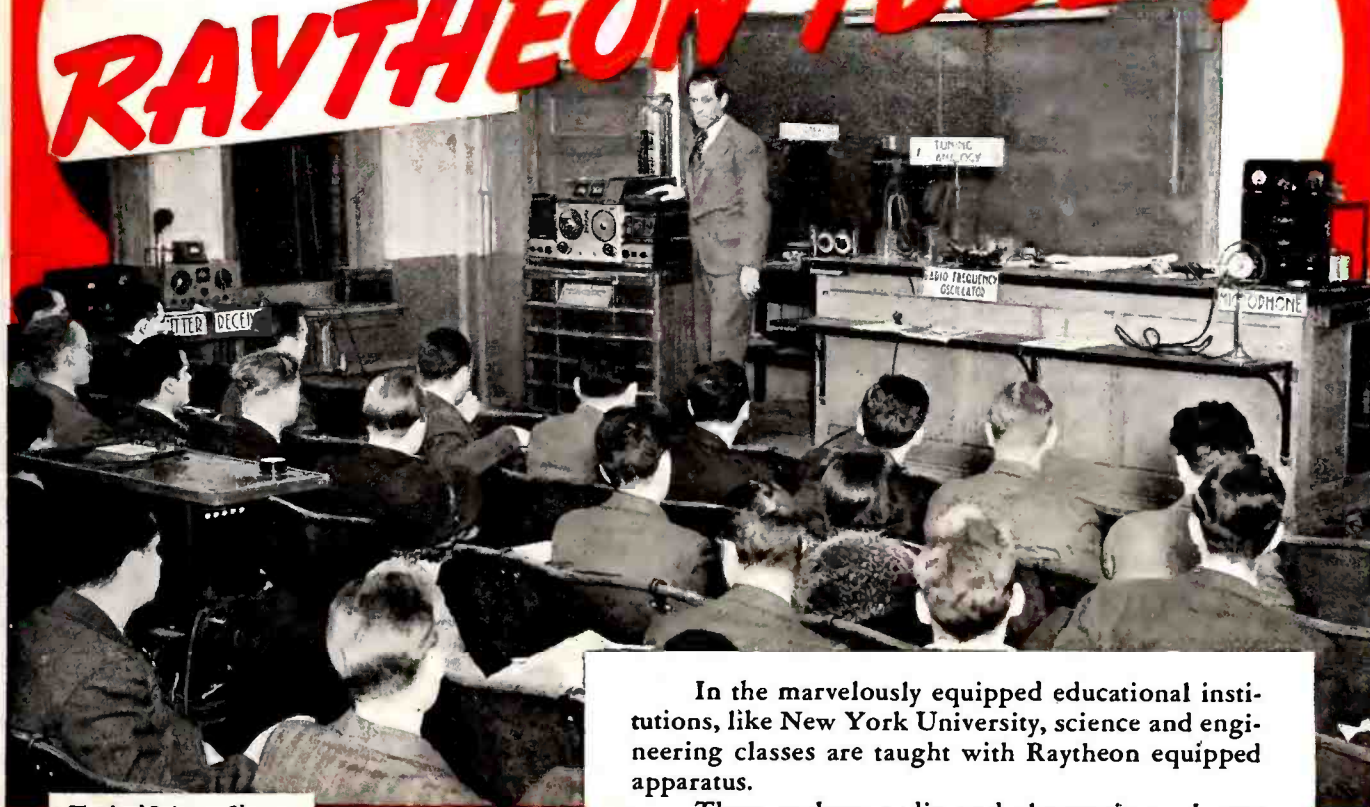
And take this as a red hot tip—never sell or replace a 25Z5 in an AC/DC set without first checking the first filter condenser in the power pack. The failure of this condenser accounts for nearly 50 per cent of the claimed defects in a 25Z5 or similar tube. Every time you get a call for a 25Z5, a service job is on tap. Grab it!

In concluding, Mr. Burlingame points out that a "wish" bone never replaced a back bone. You can't get business by wishing for it. You have to turn every sales opportunity into a sale, and your tube checker is really wired for sound. It announces to you the presence of "Lady Opportunity" every time she walks into your store for a "free tube test." Greet her, cultivate her, make her turn hopes into profits.



Take "Lady Opportunity" by the hand when she comes in for a free tube test. With customer in the shop, you are in a position to sell your ability, your fine equipment, and the need for inspecting the radio set. Shop pictured is that of Gilbert Titcomb, located in northern Maine at Fort Fairfield.

Radio Engineers of the Future  
**ARE TAUGHT WITH**  
**RAYTHEON TUBES!**



Typical Science Class at New York University attending lecture with demonstrations on Raytheon equipped receivers.

In the marvelously equipped educational institutions, like New York University, science and engineering classes are taught with Raytheon equipped apparatus.

These embryo radio and electronic engineers are instructed with only the finest of equipment, and such equipment deserves the stability and dependability of performance contributed by Raytheon.

At New York University, receivers used for demonstration before 21 science classes are equipped with Raytheon Tubes.

Your customer's radio deserves the same quality performance and you can provide it, without the penalty of higher price, by always equipping with RAYTHEONS.

Successful Dealers and Servicemen—those who are in business to stay, are finding that RAYTHEON tubes are their insurance of the best—for permanent tube profits. And a wise investment. Yet they *cost no more* than the second-best tube!



**RAYTHEON**

NEWTON, MASS. • NEW YORK • CHICAGO • SAN FRANCISCO • ATLANTA

**"WORLD'S LARGEST EXCLUSIVE RADIO TUBE MANUFACTURERS"**

# NEW THINGS



## Table-size radio

★ Model GF-500. 5-tube receiver with plastic cabinet available in six color combinations. AC-DC. Attached antenna. Covers standard and police broadcast bands. Has 4-inch permanent magnet dynamic speaker. General Electric, Bridgeport, Conn.—RADIO TODAY.



## Radio-phonograph

★ Model 101, 5 tubes, crystal pick-up, self-starting motor, radio-phonograph switch, tone control. Handles both 10 and 12 inch records. Hand-rubbed walnut cabinet. Philco Radio & Television Corp., Tioga & C Sts., Philadelphia, Pa.—RADIO TODAY.



## Triumph tube checker

★ Tube checker for all tubes including loktal and single-ended types with filament voltages from 1 to 35. Uses emission-type principle following R.M.A. recommendations. Push-button selection of tube elements. Individual tests for shorted elements. Stabilized line-voltage adjustment. Roller-type index chart. Model 430LX—counter or portable—net \$29.95. Triumph Mfg. Co., 4017 W. Lake St., Chicago, Ill.—RADIO TODAY.

## Cowl antenna

★ Telescope-type of brass and chromium-plated steel. Fits in car between kick pad and side cowl. Extends 50 inches. Shielded housing prevents motor noise. Installed by drilling one hole on top and opening kick pad. Antenna is inserted inside the car. Philson Mfg. Co., 156 Chambers St., N. Y. City.—RADIO TODAY.



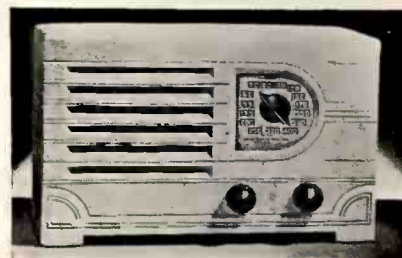
## Intensified cat-ray tube

★ Two metallic rings form an electrode that steps up the brilliance of the five-inch tube. Improved gun structure for better focus and modulating characteristics. Accelerating element cuts pattern size only 18 per cent, instead of 50 per cent when voltage is doubled. Allen B. Du Mont Labs., Inc., 2 Main Ave., Passaic, N. J.—RADIO TODAY.



## Push-button tuner

★ Two-deck oscillator and antenna condenser for six station buttons. Single-screw adjustment simplifies station tuning. May be used with permeability coil tuned or trimmer tuned oscillator circuits in three-circuit receivers. Greater stability, lower losses and minimum capacity. Model CX-52. Sprague Specialties Co., North Adams, Mass.—RADIO TODAY.



## Morocco finished radio

★ 5-tube AC-DC superhet tuning 540-1,730 kc. Automatic volume control—full-vision dial with 5:1 vernier. Beam-power output tube. I.F. wavetrap. Miracle tone chamber—metal tubes. Embossed designs in ivory, red, brown morocco. Model CH-253—list \$14.95. Emerson Radio & Phonograph Co., 111 Eighth Ave., New York, N. Y.—RADIO TODAY.



## Parasitic suppressor

★ Unit for suppressing ultra-high-frequency parasitic oscillations in transmitters. A non-inductive vitreous-enameled resistor is combined with a choke. Measures 1 3/4 inches overall. Introduces negligible power loss at fundamental frequency. Type P300. Ohmite Mfg. Co., 4835 Flournoy St., Chicago, Ill.—RADIO TODAY.

## 6-volt power supply

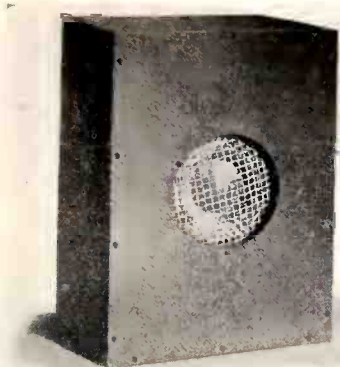
★ A-B eliminator for battery-operated sets which works from a 6-volt storage battery. Device supplies 1 1/2 or 2-volts for filaments and B voltages of 45, 57, 90, 135, 180 at 40 milliamperes. Operates 7-tube set for 50 hours on one charge of a 130 ampere-hour battery. Fits into any radio that will accommodate 2 B batteries. Model J—list \$19.95. Electro-Products Labs., 549 W. Randolph St., Chicago, Ill.—RADIO TODAY.



## Table combinations

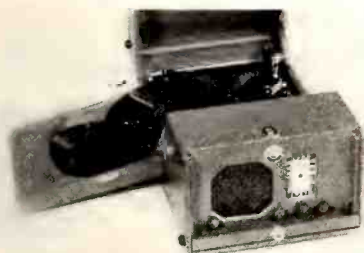
★ Model 149 AT-CB. 5 tubes, automatic tuning with 5 buttons. Covers 540 to 18,100 kc. Louvre-type speaker grille, self-starting AC one-speed phonograph motor. Crystal pick-up. Radio-phono motor switch. Lists at \$44.95. Without push-button, 1-band, \$39.95. Sentinel Radio Corp., 2222 Diversey Pkwy., Chicago.—RADIO TODAY.





### P.M. speaker

★ High-fidelity speaker unit for installations where quality reproduction is desired. Unit handles up to 20 watts. Permanent magnet type field excitation. When used with proper housing, the frequency response is substantially flat from 60 to 10,000 cycles. Resonance effects reduced by proper amount of mechanical damping. Unit 9½ inches in diameter. Model 751A in enclosure—model 750A unit only. Western Electric Co., 195 Broadway, New York, N. Y.—RADIO TODAY.



### De luxe portable

★ Three-wave band superhet for standard, short wave and European long wave up to 2,000 meters. For AC-DC 110, 160, 220 volts. Packard record changer on phonograph for eight 10 or seven 12 inch records. Carries 14 discs. Crystal pick-up, universal motor, built-in aerial. Model 250-f, fabricoid, \$165; 250-c, cowhide, \$179.50; 250-r, rawhide, \$199.50. Lehman Radio Salon, Inc., 1013 Madison Ave., N. Y. City.—RADIO TODAY.

### Sound system amplifier

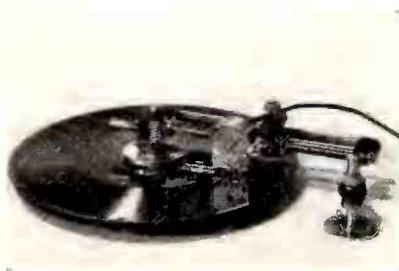
★ DX-18 amplifier, 10 tubes, 18 watts. Electronic tone corrector for varying tone response to compensate for room acoustics. Two high and two low gain inputs, remote control optional. Output impedances of 2, 4, 9, 15 and 500 ohms. David Bogen Co., Inc., 663 Broadway, N. Y. City.—RADIO TODAY.

### 27-Inch dynamic speaker

★ Specially designed for World's Fair. Handles 85 watts. Voice coil impedance 16 ohms at 400 c.p.s. Outside diameter 16 in., depth 18 in. Weighs 455 lbs. List price \$500. Cinaudagraph Corp., Stamford, Conn.—RADIO TODAY.

### Radiart auto aerial

★ Cowl antenna that mounts under the hood, thus eliminating objectionable drilling of body panels. Telescopic and made of chrome-plated rust-proof admiralty metal. Plastic insulators. Model CB-1. Radiart Corp., Shaw Ave. at E. 133rd St., Cleveland, Ohio—RADIO TODAY.

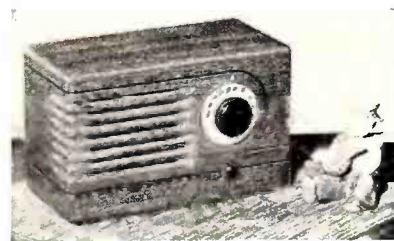


### Recording attachment

★ Recording assembly designed for use with phonographs and combinations. Cuts standard acetate discs. Operates with as little as 2-watts driving power from amplifier. Cutter impedance of 8 ohms matches secondary of output transformer. Rek-o-kut lists for \$39.50. Upco Engineering Labs., 254 Canal St., New York, N. Y.—RADIO TODAY.

### 150 mil bantam tubes

★ Line of glass bantam tubes with half the usual current drain. Used with small wire-wound resistance in the chassis to replace plug-in resistor or line-cord resistances. Tubes the same as standard types except for filament rating. New types are 12A8GT, 12J7GT, 12K7GT, 12F5GT, 12Q7GT, 35L6GT, 50L6GT, 35Z4GT, 25X6GT. Arcturus Radio Tube Co., Newark, N. J.—RADIO TODAY.



### Personal radios

★ Models WR165 M-I-W with five tubes, super-heterodyne. AC-DC. 540-1720 kc. range. 6-1 vernier dial. WR165-M in solid mahogany cabinet, maple finish. 165-I in ivory plastic, scarlet control knobs. 165-W in walnut plastic. Size, 8¾ x 5½ x 4¼. Westinghouse Electric Supply Co., 150 Varick St., N. Y. City.—RADIO TODAY.



### Loktal tube adapters

★ Molded sockets and adapters for new loktal tubes. Black bakelite or tan low-loss mica-filled bakelite. With molded-in-plate, retainer ring mounting or an adapter plate for replacement work. Adapters for tube testers, wired and unwired. Socket tops in different colors for identification. American Phenolic Corp., 1250 Van Buren St., Chicago.—RADIO TODAY.



Chairside radio with modern flair in styling with convenience of operation. Model 96E-2 by RCA-Victor is a 6-tube 3-band set selling for \$69.95.

*The BIG News Is Out!*  
**PHILCO ANNOUNCES**  
**NEW PRODUCTS and PLANS**  
*to put profits in every month  
for the Appliance Dealers of America!*

Philco distributors have just heard the full details of the new Philco All Year 'Round program—sensational profit news for the Radio and Appliance Dealers of America. A new, unified, twelve months plan of advertising, merchandising and sales. A plan that creates new economies and new profit opportunities that have never been possible for dealers before! Your Philco distributor is on the way home now bursting with the news . . . the news of the radio models, the refrigerators, the air conditioners and all the other products now brought together into one profit family. You'll hear it all soon. Before you complete your plans for Spring profits, stop, look and listen to his story!



**PHILCO ALL**

## PHILCO RADIOS

New radio models . . . engineered and styled to put new life into the Spring business of every Philco dealer . . . priced to meet every purse. Stunning consoles in impressive new cabinets. New Transitonees in attractive table models . . . every one approved by Underwriters' Laboratories. SAFE for your customers' homes and children, SAFE to sell. New portable radio and radio phonograph combinations—*naturals* for Summer selling! New wireless record players

—a complete new line of sensational values in Philco Auto Radios—yes, a *ream of news* for Spring radio profits!

And the Philco radio advertising campaign continues! Full page ads in the nation's leading magazines, ads that tell the news of the new models as well as the quality message of Philco engineering. New promotional material is ready for Spring sales campaigns. Your Philco distributor will give you all the details.

## CONSERVADOR REFRIGERATORS

Philco, the quality name in over 11 million American homes enters the field of refrigeration! That, alone, is sensational news! But not with just "another" refrigerator, not with hidden features and laboriously created sales arguments . . . a refrigerator that is NEW, DIFFERENT and BETTER . . . with a feature that is *instantly* seen, *instantly* demonstrated and *instantly* appreciated. The new Conservador Refrigerator with the Inner Door . . . 26% more

quickly usable space . . . twice the convenience . . . and the first refrigerator ever made where you *really use*, easily and naturally, *all the space you buy!* A quality product with every worth while feature of any good refrigerator—PLUS the Conservador. And it's all backed with a complete, aggressive national advertising, merchandising and promotional campaign. It's part of the Philco All Year 'Round plan. Your distributor will give you the whole story!

## YORK COOL-WAVE AIR CONDITIONERS

York, leaders in air conditioning, and Philco, leaders in appliance merchandising, combine to bring a new industry to the Appliance Dealers of America. Now, at last, portable air conditioning, *as low in price and as easy to install as a good radio!* No technical knowledge required, no complicated installations, no plumbing, no wiring, no alterations. And now a complete line that fits any size room—enables you to sell genuine air conditioning as low as \$15 down.

It's the most sensational profit opportunity that has come to the appliance dealer in years. Full profits . . . NO TRADE-INS. A vast, untouched market is waiting, eager to buy. The dealer that just *skims the cream* this season will pocket a handsome profit. The plans are all ready . . . York Cool-Wave is a big part of the Philco All Year 'Round program. Get the full details from your distributor and get into this profitable business NOW!

## PHILCO DRY BATTERIES

Store Traffic—that's what you want! And that's what Philco brings the Radio and Appliance Dealers of America with a COMPLETE new line of Philco Dry Batteries FOR EVERY PURPOSE. Radio batteries, as always; but now, in addition, dry cells for flash lights, door bells, ignition . . . for every purpose. There is a tremendous demand for dry

cell replacements. They are quick, easy sales . . . they bring repeat business . . . attract people to your store and give repeated opportunities to sell higher-priced merchandise.

Remember—Philco brings to this field more than a quarter-century of experience in building quality batteries. Ask your Philco distributor for a catalog giving full details.



# YEAR 'ROUND

# ELIMINATING HUM IN AUDIO AMPLIFIERS

Practical step-by-step method for tracing source of hum in radio sets and amplifiers

By VINTON K. ULRICH, *Managing Editor*

When there is too much hum in the output of a radio set, the dynamic method of tracing it to its source is most effective. Actual hum voltage measurements in various parts of the circuit are often misleading since the serviceman seldom, if ever, knows just how much hum voltage is normal.

Hum is introduced into a receiver in several manners. The most common is insufficient filtering of the B power supply. Next on the list is a hummy tube—generally with a leak from cathode to filament. A third source is the induction of hum voltages into the signal circuits of the set. This latter type often occurs when leads in low level circuits are in close proximity to the AC leads. While the actual induced voltages may be low, after amplification through several stages the hum reaches tremendous proportions. In amplifiers having audio stage coupling transformers, it sometimes happens that AC hum voltages are induced into the windings of the transformers—this is particularly true with high-gain P.A. amplifiers using an input transformer.

How to reduce or eliminate the voltages naturally depends upon the way in which the hum is introduced into the receiver. If there is insufficient filtering of the power supply, the obvious answer is to improve the filtering, generally by increasing the capacity of the condensers. Other times a nominal amount of filtering is used in the

power supply, and hum bucking between the stages is employed to cancel the small amount of remaining hum.

Hummy tubes generally are discovered on the tube checker, although in some instances it might be necessary to substitute new ones.

### Principle of hum bucking

Fig. 1 illustrates the principle of hum bucking in the stages. A small amount of hum from the filter (after the field or choke) remains and is fed into the plate circuit of the first audio stage. This hum is passed on to the grid of the output stage as shown in 1-A. As an example, the induced voltage via the plate circuit of the first audio stage is one volt. The voltage amplification of the output stage being five, means that an output hum voltage of 5 volts is produced by the tube.

However, the plate supply for the output tube is not filtered so well as that fed to the first audio tube—in this instance 5 volts hum is introduced into the plate circuit of the output tube.

Both the 1 volt and 5 volt hums are in phase when they leave the power supply. But when the 1 volt hum is amplified to 5 volts as shown in Fig. 1-B, the phase of the voltage is changed by 180° because of vacuum tube action.

In Fig. 1-C the two 5 volt hums are shown 180° out of phase. Note that when they are added, the resultant hum is zero. This method of hum

canceling is used quite often—although actually, the cancellation is seldom complete. By employing such circuits, the cost of the filter is reduced since a less effective one is needed.

Hum bucking coils as used in dynamic speakers operate on a similar principle. The hum introduced by the field cancels that introduced to the voice coil via the output stage.

### Stage-by-stage analysis

The first step in the stage-by-stage hum chasing is to short the input of the output stage. Push-pull stages are quickly shorted by connecting the grids together, if transformer coupled. Or both grids may be grounded directly if the grid is at ground potential for DC. If the grid is at a negative DC potential, the grounding for AC voltages may be effected by connecting a large condenser across the grid input circuit. Single-ended stages are likewise grounded as shown in Fig. 2-A and 2-B.

If when the input of the stage is shorted, the hum decreases, it means that the source of hum is previous to that stage. If the hum increases, then hum cancelling (of insufficient value) is being employed in two or more stages. If the hum remains the same, the hum source is in the same stage. Hum in the same stage may be caused by insufficient plate supply filtering, insufficient grid filtering if negative bias is used as in 2-A, or improper poling of the speaker circuits.

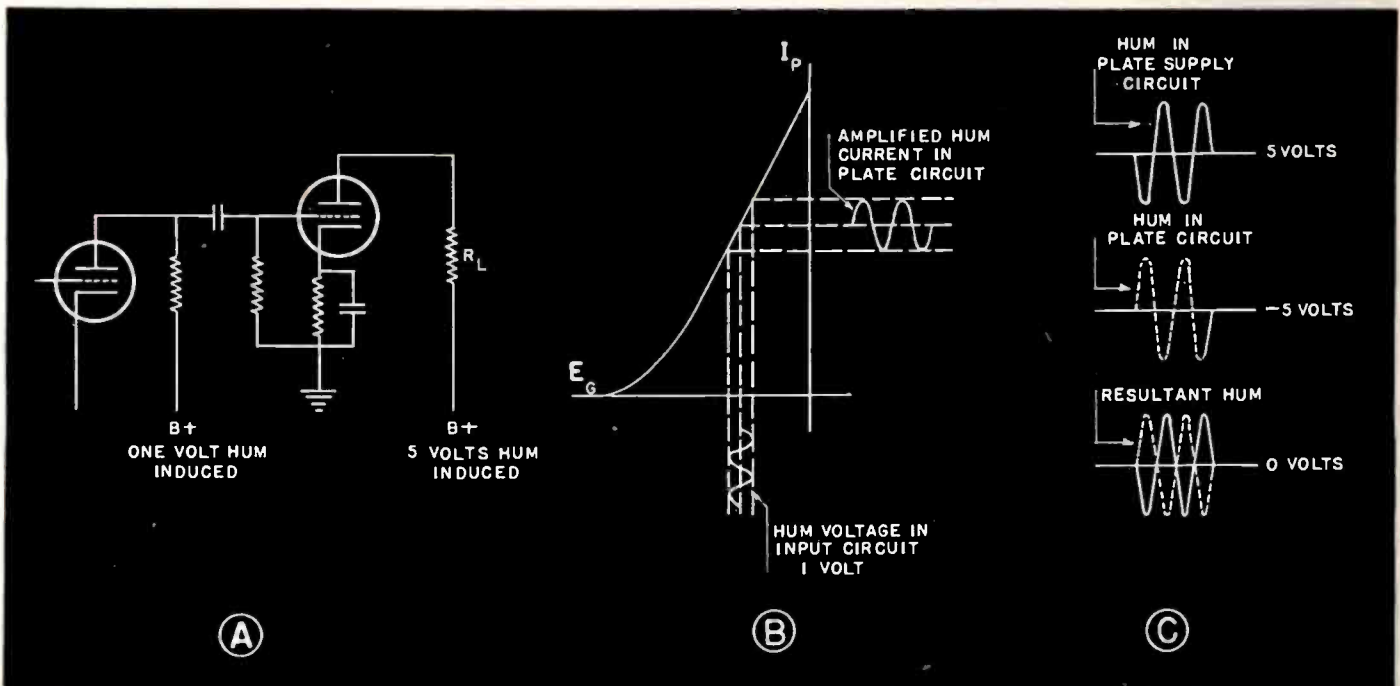


Fig. 1. In A the hum introduced in the grid and plate circuits cancels out when hum voltages are in proper relationship.

In B the process of hum amplification by the tube is shown. When amplified the hum is reversed 180° in phase.

Part C shows how the amplified grid hum which is 180° out of phase with the plate hum, reduces hum to zero.

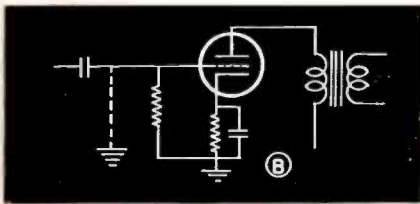
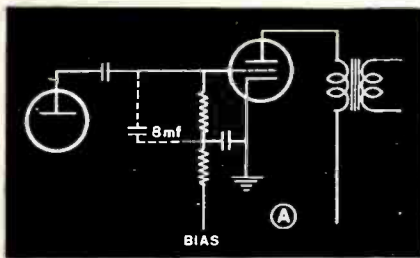


Fig. 2. If the hum decreases when the input is shorted, then the hum is in a previous stage. If the hum level remains the same, it is being introduced in the stage under consideration.

A quick method of checking proper polarity of the voice coil and field coils is to short the primary of the output transformer as shown in Fig. 3-A. Where pentode tubes are used, merely connect the screen and plate together at the socket. When the primary is shorted, the hum output of the set should increase or remain the same, when the coils are properly poled. If the hum decreases, it means that either the field or the voice coil connections should be reversed. Often a substantial reduction in hum output can be obtained by properly poling the field and voice coils. This is of particular importance when replacing the speaker, cone, output transformer, or field coil. (Naturally, if no objectionable hum is present, it is rather useless to make such a test.)

Hum due to insufficient filtering of the grid bias supply is checked by connecting additional capacity across the bias supply source as illustrated in Fig. 3-B. A decrease in hum means that more filtering should be employed. Either an increase in the filtering resistance or condenser, or both, may be necessary. Care should be taken that the total grid circuit resistance does not exceed that recommended by the tube manufacturers for the tube employed.

### Checking hum-bucking circuits

Should it be found that the hum is in the previous stages, the same tests are made for these stages as have been outlined for the power output stage, except for the poling of the speaker.

When hum canceling is employed, it may be necessary to adjust the amount of induced hum stages to effect a more perfect balance. If it has been determined that hum bucking is employed, and it is of insufficient value in the previous stages, it can be increased by decreasing the value of the plate coupling resistor in a resistance-coupled stage. Also the filtering to the stage might be made less effective so as to increase the hum bucking voltage.

On the other hand, too much hum bucking voltage introduced in the voltage amplifier stages, is evidenced

by a decrease in the hum when the input to the output stage was shorted as in Fig. 2. This is treated similar to the case where no hum-bucking is used, but when the hum is introduced in a previous stage. The plate coupling resistor can be increased or the filtering of the power supply can be increased.

In many sets hum is kept at a low level by restricting the bass response of the receiver. Servicemen can employ this same method that the manufacturers sometimes use. Of course, the tone of the set will be affected.

### Induced hums

Induced hum by coupling of circuits or components is traced to the stage in the manner described previously. Hum picked up by a transformer is determined by opening the primary at the B plus connection. When hum voltage from the power supply is isolated from the transformer as stated above, the hum will decrease if it comes from the power supply. If the hum does not decrease, it means that it is being magnetically induced into the transformer. This induction may be reduced by relocating the transformer or turning it at an angle. Sometimes magnetic shielding is a satisfactory solution.

Hum that is induced into the wiring may be cured by moving the hot leads to a position where the induction is reduced. Or the hum induction can be decreased by shielding the leads. Generally speaking induced hum is not obtained in a receiver unless major changes have been in the receiver.

One receiver that was brought into RADIO TODAY's laboratory had a bad hum that was caused by induced voltages into a stage coupling transformer. It seems that a universal replacement had been used and the core was in a different position than that originally used. Since the transformer was near the speaker field coil, a large amount of hum was picked up by the transformer. Changing the angle of the transformer reduced the hum, but it was impossible to mount it in such a position. Simplest and cheapest solution was to use an exact duplicate unit, which proved satisfactory.

If hum chasing is done on a stage-by-stage basis, listening to the output as various parts of the stage are shorted out or changed, it will be found quite simple and quick. On the other hand, absolute measurement of hum voltages may be found to be confusing. As in the other tests described in dynamic testing, a check under actual operating conditions is most practical.

### FIRST AID FOR SICK RADIOS

Lee Houseman of the Dallas Radio Hospital has sent a snappy red and white "ambulance" whirling through the Texas city's streets for the past five years and has found it a smart business builder. Replete with medical cross, instruments, but racks instead of the usual stretcher, the first aid wagon arouses lots of comment.

A smartly-dressed "doctor" leaps out, diagnoses the ills of the ailing receiver. If nothing serious is wrong, the medico gives first aid on the spot.

Otherwise the "patient" is hauled off to the hospital for a major operation. The ambulance can't be confused with one for humans because it is simply a sedan painted and doctored up appropriately.

### SERVICE COST RECORDS IMPORTANT

The need for keeping accurate records of expenses and income is far more important than most servicemen realize. If every serviceman figured out how much it costs him to do business, it is likely that much of the cut-throat price competition would cease. No man wants to do business at a loss, but many servicemen in their anxiety to get the work quote prices far below a fair profit, only because they do not know they are losing money.

Everyday we hear experiences of how servicemen quote a price about half of their actual cost—and these same servicemen after being shown how they are losing money, are willing to charge a fair price—what's more important, they get it.

In order to help the serviceman keep acquainted with his operating costs, RADIO TODAY is conducting a survey of service costs and profits. Each questionnaire that is submitted will be individually figured and the participant given pertinent data concerning his business. A questionnaire form was printed on page 35 of the January issue. If you wish to participate, please do so at once.

Serviceman Robert Leslie of Ontonagon, Mich., wrote us as follows when he submitted the operating figures for his business: "I run a one-man business and would have been in the red badly, if I had not followed your advice in RADIO TODAY. I now sit down and keep track of every hour and charge \$2 an hour on every radio I service. And had I taken RADIO TODAY five years ago, I would be able to have a nice little bank account now."

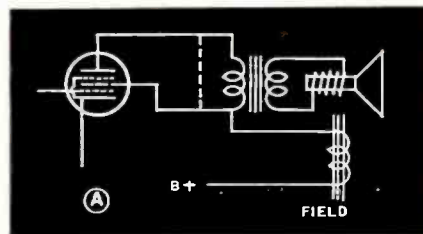


Fig. 3-A. If the speaker field and voice coil are properly poled, the hum will increase when the primary is shorted.

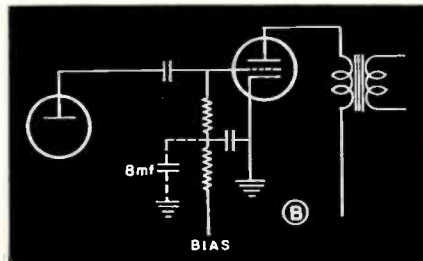


Fig. 3-B. If the hum decreases when the bias supply filter capacity is increased, then the hum occurs in that circuit.

Only RCA Makes  
and Does Everything  
in Radio and  
Sound

**IT PAYS TO GO**  
*RCA All the Way!*

Only RCA offers the  
Public Acceptance  
that means bigger  
profits for you

# RCA Victor

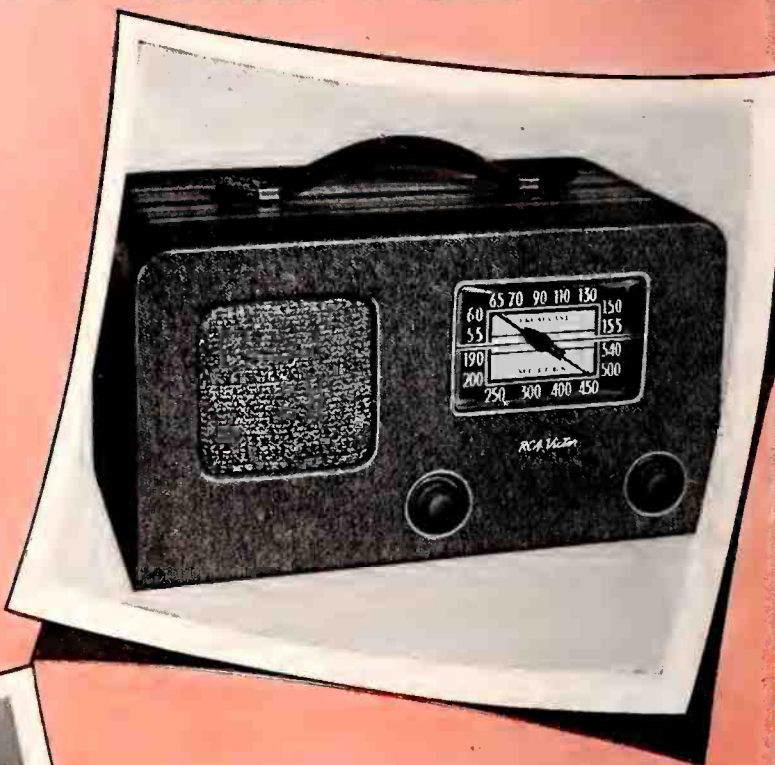
## THE STANDOUT LINE FOR '39!

Here are two proofs that this year it's RCA Victor for volume. The "Pick-Me-Up" is the perfect answer of RCA Victor to the universal wish for a really portable radio. The table model below is another standout. Every one of the new RCA Victors is a standout for styling... for performance... for prices... for features. More than ever it will pay you to push RCA Victor in 1939.



(Right) RCA Victor "Pick-Me-Up" Model 94BP4 literally sells on sight. People go for the idea of a set that plays anywhere, without any wiring. Has a powerful Superheterodyne circuit. Smartly styled, airplane luggage type cabinet. Covers complete domestic band. Easy-reading clock dial. Price includes batteries . . . . .

**\$33.50\***



(Left) RCA Victor Model 96T4 offers you many standout sales features including Electric Tuning, Domestic and Foreign Reception, Police Calls, 2-band Clear Vision Illuminated Dial, 6 RCA Victor Tubes, Magnetite Frequency-Locking Transformers and Automatic Volume Control. Works on both AC and DC. Has handsome ultra-continental style cabinet in dark, hand-rubbed lacquer finish.

**\$29.95\***



\*All prices f.o.b. Camden, N. J. subject to change without notice. Listen to the Magic Key every Sunday, 2 to 3 P. M., E. S. T., on the NBC Blue Network. For finer radio performance... RCA Victor Radio Tubes



# RCA Victor

RCA Manufacturing Co., Inc., Camden, N. J. A Service of the Radio Corporation of America

Only RCA Makes  
and Does Every-  
thing in Radio  
and Sound

**IT PAYS TO GO**  
*RCA All the Way!*

Only RCA offers  
the Public Accep-  
tance that means  
bigger profits for you

Now everybody can listen with  
**THE LITTLE RADIO**  
**WITH THE BIG NAME!**

...at the lowest price in RCA Victor history!



5 Beautiful, New,  
Brilliantly Colored  
Models...

Illustrated is Little  
Nipper Model 9TX1,  
molded plastic cabi-  
net, walnut finish,  
tan knobs, \$9.95\*.  
Other models in a  
variety of colors at  
\$12.95\*, \$14.95\*,  
and \$17.95\*.

**RCA Victor**  
**LITTLE NIPPER**

**\$9.95\***

**STANDOUT SALES  
FEATURES**

- 1 Powerful Superhetero-  
dyne Circuit
- 2 Five RCA Victor Tubes  
(two double purpose,  
providing better perfor-  
mance than many 7-tube  
radios)
- 3 Electro-dynamic Speak-  
er
- 4 AC-DC Operation
- 5 Built-in Antenna
- 6 Automatic Volume Con-  
trol

The desire for a little radio is sweep-  
ing the country! People want a *good*  
little radio—that's why it will pay  
you to sell RCA Victor Little Nip-  
pers—the little radio with the big  
name—offering outstanding per-  
formance—at amazingly low cost!

\*Prices f.o.b. Camden, subject to change  
without notice. For finer radio per-  
formance—RCA Victor Radio Tubes.

**RCA Victor**

RCA Manufacturing Co., Inc., Camden, N. J.  
A Service of the Radio Corporation of America



"It Sells  
tubes for me"

*says a service man about*

**NEW RCA  
TUBE TESTER!**



**COSTS ONLY**  
**\$37.95**  
**NET**  
Stock No. 156-A

Counter type RCA Tube  
Tester, Stock No. 156-A,  
net price, \$37.95. Also  
available in carrying case  
for portable use as Stock  
No. 156—net price, \$39.95

This great new RCA Tube Tester  
helps you sell tubes! Proof of this is  
seen in the statements made by a  
service man in a recent letter to us:

"As one of the first to receive a new RCA  
Tube Tester I have noticed a very substan-  
tial increase in my tube sales... without  
the usual sales talk. Every customer is  
personally interested in the true condition  
of his radio tubes and since the average  
radio owner can easily understand the ac-  
tion of the RCA Tube Tester, he is entirely  
convinced that his tube is either bad or  
good, as the case may be. Actually he sells  
himself new tubes."

Amazingly simple to work, the new  
RCA Tube Tester offers a score of out-  
standing features at low cost. Full details  
from your RCA parts distributor.

**RCA Test Equipment**

RCA Manufacturing Co., Inc., Camden, N. J.  
A Service of the Radio Corporation of America

Only RCA Makes  
and Does Everything  
in Radio and  
Sound

**IT PAYS TO GO**

**RCA All the Way!**

Only RCA offers the  
Public Acceptance  
that means bigger  
profits for you

# RCA Victrolas...and Victor and Bluebird Records — **The Fastest Growing Field for Your Sales Activities**

## Stock Victor and Bluebird Records for Fastest Turn-over!

National sales increases in RCA Victrolas, Victor and Bluebird Records are among the most sensational in the entire merchandising world... but it's only the beginning! Here's one field that has only been scratched... that offers all the room in the world for expanding sales! The rapidly growing vogue for Victor Record music throughout the country is putting millions of people in the market for record playing instruments and records. Learn all you can about this field from your RCA Victor distributor.

### VICTOR RECORD SOCIETY OFFER

**\$25.95 Value— in RCA Victrola Attachment and Victor or Bluebird Records—for \$14.95!†**



More than 100,000 people have already taken advantage of this offer. Offer provides \$14.95 (list price) RCA Victrola Attachment, \$9.00 in Victor or Bluebird Records customer chooses, \$2.00 subscription to Victor Record Review, and Victor Record Society membership. RCA Victrola Attachment can be connected to any modern AC radio at little or no expense; plays Victor and Bluebird Records with full tone of set.

† This offer subject to change without notice.

## Everything music lovers want is in this RCA Victrola U-134A — Price includes \$9 worth of Victor or Bluebird Records!

Combines Victor Record and radio entertainment. Has new Gentle Action Automatic Record Changer, Feather-touch Crystal Pick-up with top-loading Needle Socket... 16-tube Radio has Electric Tuning for 8 stations. Price includes \$9.00 worth of any Victor or Bluebird Records, \$2.00 subscription to Victor Record Review, Victor Record Society membership, and RCA Victor Master Antenna. In Mahogany, \$365.00\*. Walnut... **\$355.00\***



### RCA VICTROLA U-112

An outstanding value, that combines Victor Record and radio entertainment. This handsome table model has Feather-touch Crystal Pick-up, and a powerful superheterodyne radio. Price includes \$4.50 worth of any Victor or Bluebird Records customer chooses, \$2.00 subscription to Victor Record Review, and Victor Record Society membership. \$39.95\*.

\*Prices f.o.b. Camden, N. J., subject to change without notice.

Listen to the "Magic Key of RCA" every Sunday, 2 to 3 P. M., E.S.T., on the NBC Blue Network.  
**FOR FINER RADIO PERFORMANCE—RCA VICTOR RADIO TUBES**



# RCA Victrola

COMBINES RECORD AND RADIO ENTERTAINMENT

A SERVICE OF THE  
RADIO CORPORATION  
OF AMERICA



Only RCA Makes  
and Does Everything  
in Radio and  
Sound

IT PAYS TO GO

*RCA All the Way!*

Only RCA offers the  
Public Acceptance  
that means bigger  
profits for you

# TOPS!

*...in Quality  
...in Performance*



It pays to sell a product that insures high quality and fine performance. Because then you need not worry about expensive call-backs or dissatisfied customers.

Get behind RCA Radio Tubes — take advantage of the excellent quality built into these tubes by the world's most famous tube engineers — take advantage of the fine promotional helps and advertising that RCA offers. You will make more money.

*Listen to the Magic Key of RCA every Sunday, 2 to 3 P. M., E. S. T., on NBC Blue Network.*

Over 325 million RCA Radio Tubes have been purchased by radio users. In tubes, as in radio sets, it pays to go RCA All the Way.



# Radio Tubes

RCA MANUFACTURING CO., INC., CAMDEN, N. J.  
A SERVICE OF THE RADIO CORPORATION OF AMERICA

# PROFITS IN DISCS

## Specialized promotion on records highly successful

Consistent promotion of records and combinations has made it possible for the Hamman Music Shop, 206 N. Liberty street, Baltimore, to develop and build up a large record and combination business. It has become a recognized retail leader in the record field.

At first a small section on the first floor was given over to record activities. But with the recent growth in record activity, the Hamman store decided to open a new department in which would be featured records, such accessories as needles, and also lower-priced combinations.

The record department was constructed in the basement and air-conditioned by a three-ton Carrier weathermaker having a duct system leading to each of the six sound-proof demonstration booths. Customers can adjust a manually-operated exhaust and intake grill to suit themselves. The exhaust completely eliminates smoke in the booths.

### 100 sales a day

Since the opening of this department about a year ago, the store transacted more than 25,000 cash sales, or an average of more than 100 a day. These sales do not include the larger combinations which are sold through the radio department located on the first floor. Such a volume of over-the-counter sales in a year is an enviable record to hang up.

Hamman's Music Store always effects a tie-up with the frequent RCA Victor record promotions and advertising. In addition the store has arrangements with two of the major broadcasting stations in Baltimore for "plugs" during morning spot programs. In these "plugs" the listeners are informed that the newest and latest in records such as they have been hearing can be obtained at Hamman's Music Store.

### Complete stock

The store sells all leading makes of records, including Decca, Brunswick, Columbia, Vocalion as well as the RCA Victor line of albums, Red Seal and Bluebird records. A complete stock of popular recordings and classics is carried, particularly the "Hit Parade" numbers, which are in greatest demand. A daily check is kept on the stock to make sure that the store is not out of any favorite record. The perpetually complete inventory enhances the good will of the store, for at all times they have just what the customer wants.

### Custom-built combinations

Hamman's carries leading makes of combinations, including the Magnavox and Ansley. The latter can be had in custom-built cabinets and of special woods.

Many customers, particularly women, desire a combination in special

woods and colors or color schemes to harmonize, blend or match with the furniture in the room for which the instrument is intended, states Fred B. Hamman, Jr., record manager. This service we can render with the Ansley, and we enjoy an appreciable volume, which supplements our large sales in leading brands.

The special air-conditioned department has been a big help in boosting sales, particularly of records. The six sound-proof booths, each of which has comfortable accommodations for four persons, makes it possible for customers to spend as much time as they wish hearing the newest recordings without feeling rushed in any way. The major portion of the record business enjoyed by Hamman's is with the youth of today, who have gone "swing" in a big way.

### "NEVER'S" FOR RECORDS

The newcomers among the record fans are asking dealers for advice on how to keep their discs in good shape. Here's a set of practical rules:

1. Never handle the recorded part with your fingers. Your hands have perspiration on them at all times and this should never get into the grooves.
2. Never leave your records in a damp place. They are subject to mildew.
3. Never leave them near a fireplace or a heater, as they will warp easily.
4. Never keep them where they can collect dust.

These rules are suggested by Peter Grey, Inc., Thirteenth Ave., at 2029, Oakland, Calif., maker of Kacti needles.

### TOUR SELLS DISCS

RCA dealers are urged to time their record promotion with the musical tour of Benny Goodman's swing band. Appropriate newspaper and program advertising, window and store displays, and spot radio announcements are being used to cash in on the "King of Swing" publicity.

Half of the tour is already completed. Other dates are: Philadelphia, Feb. 10-16; Newark, Feb. 17-23; Detroit, Feb. 24-March 2; Indianapolis, March 3-9; Pittsburgh, March 10-16; Washington, March 17-23.

Paul E. Southard, formerly an RCA-Victor merchandise specialist, was put in charge of distributor and dealer operations for American Record Corp. Mr. Southard entered the record field 14 years ago with Brunswick-Balke-Collander Co.



Hamman's stream-lined record department; 100 sales a day cross this counter, as part of the new boom for recordings throughout the country.

# ELECTRICAL FLASHES

Optimism runs high — Many boxes need replacement  
Crosley, Frigidaire, Gale, Philco announce refrigerators

## PREDICT 25% RISE IN '39 FOR ELECTRICAL INDUSTRY

In 1939 the electrical manufacturing business will be up about 25 per cent, predict W. J. Donald and E. C. Hughes of the National Electrical Mfrs. Assn.

Low inventories in appliances, increasing replacement sales and the trend to more business in every line are among the contributing factors. More export trade to South America and Europe is expected, and the new defense program is certain to help the industry, NEMA points out. Also, many plants have stalled off modernization as long as possible. Now, they must buy.

## MANY 'BOXES' NOW OBSOLETE, RESEARCH MAN DECLARES

There is a very good market for the replacement of obsolete refrigerators, Arthur Hirose, director of research for McCall's Magazine, told a Stewart-Warner convention in Chicago recently.

Mr. Hirose pointed out that a Scripps-Howard survey of 16 U. S. cities showed 26.4 per cent of the automatic refrigerators to be five or more years old, and almost 15 per cent to be seven or more years old.

No national figures exist on this situation, but an estimate at the beginning of last year fixed 11,271,000 electric refrigerators in use. Since 12,

## 1939 GALE REFRIGERATOR



New name, new improvements and features of the 1939 Gale refrigerator.

398,476 refrigerators have been sold since the beginning of the industry, this indicates that only 1,127,476 replacements have been sold.

The McCall man cited the drawbacks of the older boxes; small capacity, waste of electricity, in some cases amounting to 2 to 7 times as much as present models; inconvenience of arrangement, noisy operation. Any one of these is sufficient reason for a replacement, Mr. Hirose concluded.

## LOW-PRICED SHELVADOR ANNOUNCED BY CROSELEY



New, low-priced Shelvadors, aimed at the small income bracket, were introduced by President Powel Crosley, Jr., at Crosley Corp.'s recent convention in Cincinnati.

Known as the special line, the new models augment the regular and de luxe 1939 Shelvadors. At the same time an 8-cubic foot model and a 7-ft. super de luxe two-temperature model were announced as additions to the regular and de luxe lines.

The new special models come in four sizes. They are priced at \$99.50 for the 3-ft. model; \$112.50 for the 4-ft.; \$122.50 for the 5-ft.; and \$132.50 for the 6-ft. All have the Crosley Shelvador feature, and are powered with the hermetically-sealed Electro-saver unit.

The Special Line rounds out the picture for the Crosley dealer by giving him four complete series of feature and price brackets.

## FRIGIDAIRE'S 'COLD WALL'

An entirely new principle to keep vegetables and other perishables better is incorporated in the new 1939 Frigidaires. Known as "Cold Wall," the device permits a humidity of 85 per cent, and as high as 97 per cent when the hydrator pans are used.

Not only does it keep food without drying it out, but left-overs can be placed uncovered in the refrigerator,

Frigidaire claims. Tests have proved that this makes it possible to keep the most delicate vegetables for days without end, Frigidaire's engineers say.

Other features are a new meat



Frigidaire's Cold Wall is divided into 2 sections by a glass shelf.

tender, designed to keep meat better, and a simplified control known as Unimatic. Improvements in the compressor and in cabinet insulation have cut operating costs 3 to 15 per cent, the maker states.

## MORE "QUICK SPACE" IN NEW PHILCO REFRIGERATORS



From a nation-wide survey Philco found the housewife's most pressing need to be more space, quickly available with no groping. Evinced by this fact, is the Conservador's new "inner-door" which gives 26 per cent more quickly-usable space by separating the front and back of the refrigerator. This places the foods the housewife uses most often within easy reach. The survey also showed the most common foods stored in the refrigerator, and suitable space was provided for these.

The G-E 1939 spring road show "Get Over Into Clover" will play one night stands for jobbers and their dealers in 50 key cities. The show is made up of scenes played by professional actors and a motion picture.

# CROSLEY is

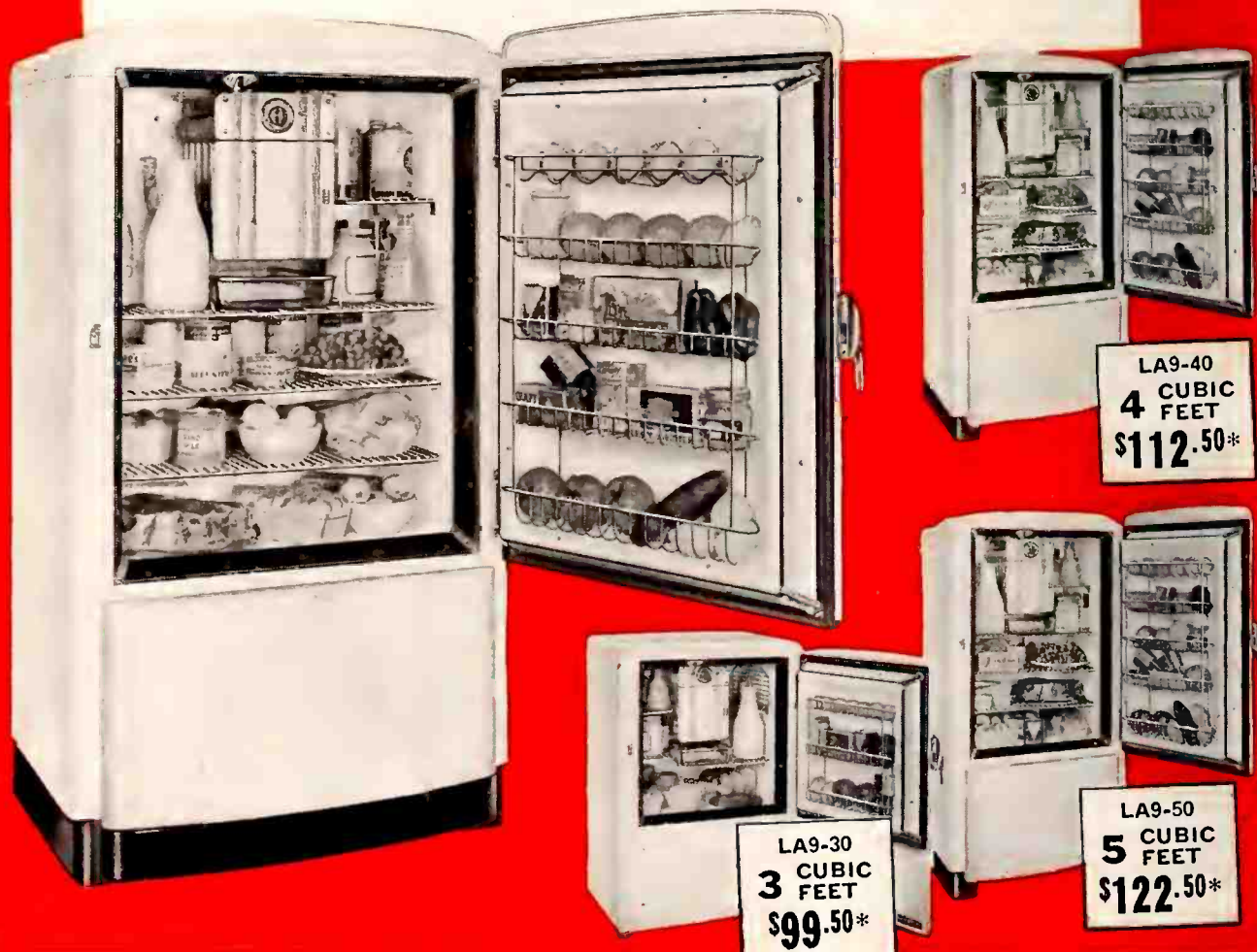
## 6 Reasons for profit

- 1 Shelvadors provide larger sizes in all competitive price levels.
- 2 Shelvadors provide lower prices for equal competitive sizes.
- 3 Shelvadors provide 12 price steps of from \$10 to \$20 a step.
- 4 Shelvadors match or better *all* 1939 electrical refrigerator refinements, improvements, features and design advances.
- 5 Shelvadors match or better *all* material specifications and craftsmanship in fabrication.
- 6 Shelvadors match or better *all* operating costs, load ratios and freezing performances.

PLUS that uncontroversial, unmatched, exclusive, top appeal to all women—the SHELVADOR!"

**"SPECIAL" LINE** OF 4 QUALITY MODELS ON PRICE BASIS ONLY POSSIBLE IN NEW MILLION DOLLAR EFFICIENCY PLANT

**6 cubic foot Shelvador \$132.50\***  
Built to an acknowledged high standard of construction and performance, Hermetically sealed "Electro-Saver" unit—welded, bonderized all steel cabinet finished in durable DuPont Dulux.



# the line for '39

## ... 12 ways to make it

### "REGULAR" LINE

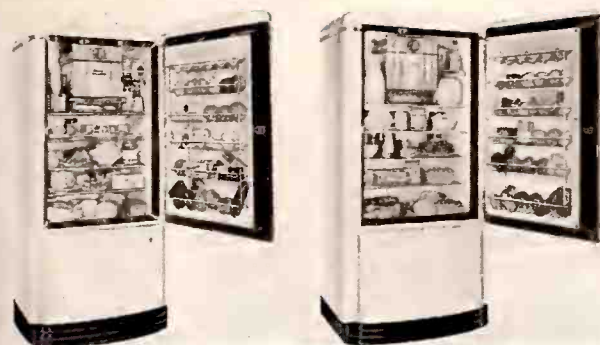
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COMPLETE REFRIGERATORS  
MATCHING IN PRICE  
THE "STRIPPED" LINES  
OF COMPETITION



LB5-45  
4½ CUBIC FEET  
\$127.50\*

LB5-55  
5½ CUBIC FEET  
\$147.50\*

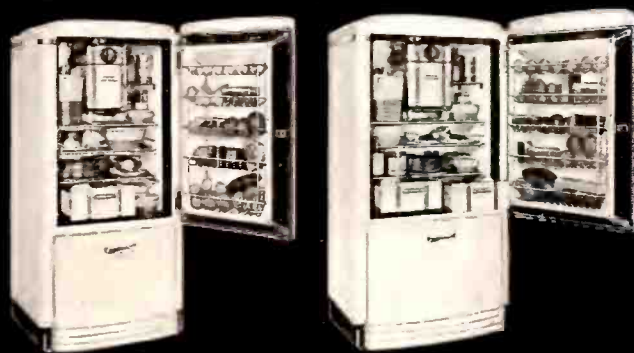


LB5-65  
6½ CUBIC FEET  
\$167.50\*

LB5-80  
8 CUBIC FEET  
\$194.50\*

### "DELUXE" LINE

EQUIPPED WITH  
LUXURY FEATURES THROUGHOUT  
INCLUDING OVEN-PROOF POTTERY AT  
WORLD'S  
LOWEST  
PRICES



LL5-45  
4½ CUBIC FEET

LL5-55  
5½ CUBIC FEET



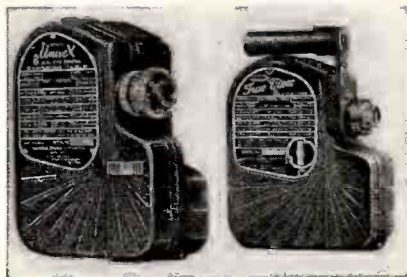
LL5-65  
6½ CUBIC FEET

LL5-80  
8 CUBIC FEET

\*DELIVERED AND INSTALLED . . . 5-YEAR PROTECTION PLAN \$5.00 ADDITIONAL . . . PRICES SLIGHTLY HIGHER IN SOUTH AND WEST

**THE CROSLY CORPORATION** POWEL CROSLY, Jr., Pres. **CINCINNATI**

# NEW THINGS



## Univex cameras

★ Two 8-mm home movie cameras Model C-8 features f:4.5 lens and built-in optical view finder. Equipped with sunshade—optional interchangeable lenses. List \$15. The True-View model listing for \$9.95 has permanently mounted brilliant view finder. Easier loading, uninterrupted operation. Powerful, quiet-running motor with governor. Universal Camera Corp., 46 W. 23rd St., New York, N. Y.—RADIO TODAY.



## Philco batteries

★ Complete line of dry batteries for every purpose. Units for flashlights, doorbells, lanterns, electric fences, radios. Special units for portable radios and mystery control. Standard, heavy, super-heavy duty types. Philco Radio & Television Corp., Tioga & C Sts., Philadelphia, Pa.—RADIO TODAY.



## Mica capacitors

★ Transmitting-type mica condensers with very-low radio-frequency resistance and losses. Current range extended to include 30 megacycle band. Available in 17 capacities at voltages from 2,000 to 12,500. Cornell-Dublier Electric Corp., S. Plainfield, N. J.—RADIO TODAY.

## Uni-directional mike

★ Microphone for all installations requiring uni-directional characteristics. Increased sensitivity through use of alnico magnets. Frequency range of 40-10,000 cycles. Impedances of 50 and 250 ohms. Back cancellation of -14 to -20 DB. Output -61 DB. Model 77B—list \$130. RCA Mfg. Co., Front & Cooper Sts., Camden, N. J.—RADIO TODAY.



## High-fidelity receiver

★ High-fidelity radio receiver in kit form or completely wired. Tone quality and flexibility of assembly are featured. Speaker, tuner and audio system may be located at different points and remotely operated. Furnished with Cinaudagraph speaker. Paent Engineering Corp., 79 Madison Ave., N. Y. City.—RADIO TODAY.

## Diversity coupler

★ 3-tube unit. Selects strongest signal combination of two aerials through relay. Anti-fade benefits on short waves. Kit form, \$16.80; wired, \$19.95. Edwin I. Guthman & Co., Inc.—RADIO TODAY.



## I.F. transformers

★ Iron-core double-tuned band-expanding I.F. transformer. Moisture-proofed treatment of windings. Other types for all purposes available in both air and iron cores, permeability and condenser tuned. Consolidated Wire and Assoc. Corps., 516 S. Peoria St., Chicago, Ill.—RADIO TODAY.

## 4-inch speaker

★ Electro-dynamic speaker for compact radios. May be used in interphones as combination mike-speaker. Unusually fine tone response. Available with or without output transformer. Model 45Y-4T. Operadio Mfg. Co., St. Charles, Ill.—RADIO TODAY.



## Enclosed relay rack

★ Type "C" deluxe single unit cabinet for studios, broadcast stations and installations for sound and radio equipment. Parmetal Products Corp., 3529 41st St., Long Island City, N. Y.—RADIO TODAY.



## High-range multi-meter

★ Pocket-sized meter with ranges up to 3,000 volts. AC readings accurate with 5 per cent, DC within 2 per cent. Internal battery for ohmmeter. Completely cased in bakelite—test cables insulated for 5,000 volts. Weighs only 20 ounces. Hammeter. Simpson Electric Co., 5218 W. Kinzie St., Chicago, Ill.—RADIO TODAY.

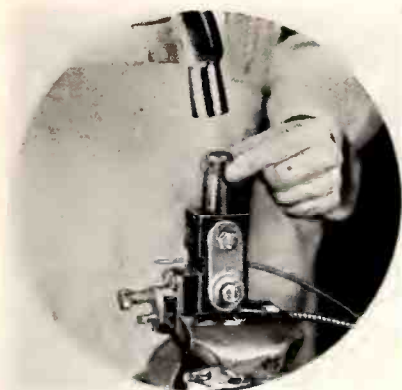
## U.H.F. transmitter

★ Crystal-controlled ultra-high frequency transmitter for use in 141 megacycle aviation band. 10-watt carrier rating. Crystal-controlled superhet receiver available for use with transmitter. Lear Developments, Inc., Roosevelt Field, Mineola, L. I., N. Y.—RADIO TODAY.



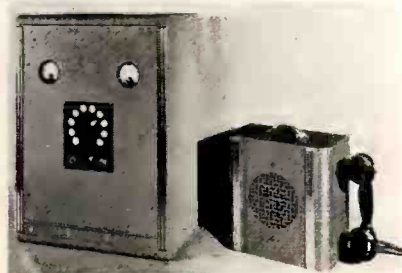
## Meter cases

★ Housings for 2 and 3-inch meters. Cases formed of crackle-finished steel—ceramic feed-through insulators. Panels slope at 60° for easy meter readings. List \$1.50. Bud Radio Co., 5205 Cedar Ave., Cleveland, Ohio—RADIO TODAY.



### Cable replacing tool

★ Auto-radio remote cable tool. Swedges .13 and .15 flexible shaftings. Removes and replaces fittings. Net only \$7.50. Star Machine Mfrs., 1371 E. Bay Ave., Bronx, N. Y.—RADIO TODAY.



### Marine radio

★ Two-way radio telephone outfit for yachts and other small craft. Capacity of 10 channels for Coast Guard, shore, and ship-to-ship communication. Operates merely by lifting handset. Frequency selected by single switch—no tuning required. Model 95. Jefferson Travis Radio Mfg. Co., 198 Milburn Ave., Baldwin, L. I., N. Y.—RADIO TODAY.

### AC motor controller

★ Multi-step speed controller for AC motor permitting use of thermostat or automatic switch. No moving parts. Custom built to motor needs. Raytheon Mfg. Co., 144 Willow St., Waltham, Mass.—RADIO TODAY.



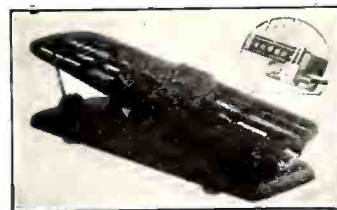
### Webster-Chicago mikes

★ Crystal-type microphone with output level of -52 DB. Reproduction range from 40 to 10,000 cycles. Model 1236.

Dynamic mike with Dural diaphragm. Output level -56 DB. Frequency response from 50 to 9000 cycles. High and low impedances. Model 1245. Webster-Chicago, 5622 Bloomingdale Ave., Chicago, Ill.—RADIO TODAY.

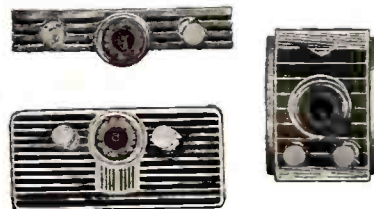
### Irwin cameras

★ Imperial line of 16 mm. motion picture cameras. Magazine loading. Single and 4-speed models available. Convenient pocket size. Footage indicator on magazine. Built-in view finder. Supplied with F:3.5 and F:4.5 lens. Priced at \$22.50 to \$34.95. Irwin Corp., 27 W. 20th St., New York, N. Y.—RADIO TODAY.



### Foot volume control

★ Foot-pedal type of volume control for use with high impedance contact microphones. Unit wired as a "T" pad—up to 5 mikes and controls can be paralleled and fed into a single amplifier input without interference between units. Model FK—list \$12. Amperite Co., 561 Broadway, New York, N. Y.—RADIO TODAY.

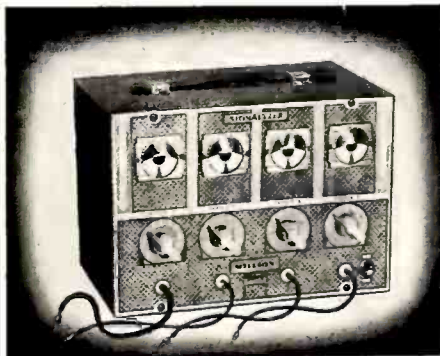


### Custom escutcheon plates

★ Line of plates to match all cars from 1934 to 1939. 1939 special Chevrolet plate permits installation of any 1936-7-8 Delco or Chevie radio in the 1939 cars. Plate is heavy die-casting. Plates illustrated are 1939 Ford, Pontiac, Chevrolet. Star Machine Mfrs. Co., 1371 E. Day Ave., Bronx, N. Y.—RADIO TODAY.

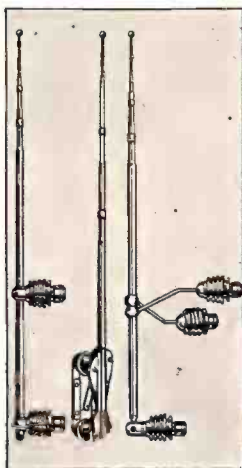
### Million signalyzer

★ Device for indicating presence of signal throughout all sections of receiver. 4 input connections. Input capacitance of approximately 5 micromicrofarads. Three inputs on AC and the 4th on DC. 4 6E5 tubes as indicators—other tubes are 2 6F8 dual triodes, and one 76. List \$24.50. Million Radio & Television Labs., 685 W. Ohio St., Chicago, Ill.—RADIO TODAY.



### Auto antennas

★ Two new antennas provide mechanical and electrical "sound-proofing" for the first time. Metal shields cover two mounting bolts to eliminate noise pickup. Lists \$3.35. Hinge-type mounted antenna permits tilting to harmonize with car lines. 69 inches for increased pick-up. Lists \$3. RCA Mfg. Co., Camden, N. J.—RADIO TODAY.

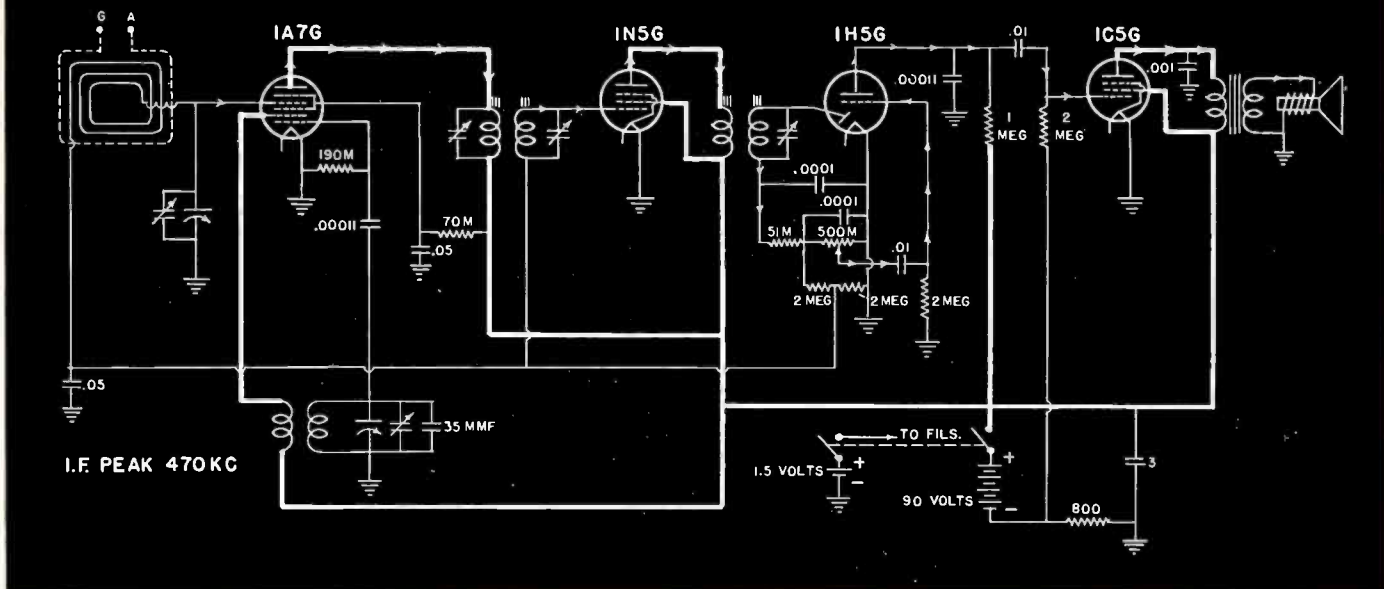


### Police radio antennas

★ Auto antennas for police and amateur short wave transmission and reception. Side, cowl and trunk mountings have low-loss porcelain insulators and ceramic bushings. Bumper type uses hard rubber. 4-section telescoping antenna extends from 3¼ to 10½ feet. Non-adjustable type has height of 8½ feet. Ward Products Corp., Cleveland, Ohio.—RADIO TODAY.

At the right Wendie Barrie, RKO screen star adds the feminine touch to Stewart-Warner's Magic Keyboard receiver.





Schematic diagram of new Philco battery portable set. Loop aerial is normally used for reception, but external antenna, if needed, is coupled by a single turn to the tuned loop.

## SERVICE NOTES

### FORGET COMPETISH

Forget about your competitor and his price cutting, advises serviceman A. E. Rhine of New York City. Let him take losses on his work if he wishes—and soon he'll be out of busi-

ness. Rhine was very emphatic in stating that the present low-income level in radio servicing was not due to lack of business, but due to servicemen doing jobs without obtaining a profit. In fact, even if a serviceman doubled his business, it would not be possible to make a profit if he were losing money to begin with. This is because practically every cost in the list of overhead expenses will increase almost in proportion to the business handled.

### SERVICEMEN SELL HIGH-FIDELITY SETS

New market for servicemen and technically-inclined dealers exists in the concealed installation of high-fidelity chassis in homes and the replacement of existing chassis when the owner wants to keep the old cabinet. The concealed installations are ideally suited for new homes under construction. Speakers can be built into walls, amplifier hidden in a closet,

**WANTED!**

**Model 440 "Test Master"**  
An all service tube and set tester. Double-filament switching; screen fluorescence and angle test; hot cathode leakage test; high sensitivity neon short-check; noise test; percentage scales; "good" and "bad" scales. As set tester has six A.C. and D.C. voltage ranges; resistance ranges from 1 ohm to 100 megohms; four milliamp ranges; six decibel ranges; 0-15 amp scale; neon leakage test, noise test, etc. Your price.... **\$5900**

the critical inspection of the hard-to-please serviceman

- Are you the kind of man who makes the air blue when equipment is not built right? If so, you are the kind of a man who will appreciate Simpson quality.

One inspection is all we ask. In any Simpson Testing Instrument you will see that added touch you have been looking for—in design, in workmanship, in sturdiness, in finish, in practical consideration of your on-the-job needs.

The Simpson line includes instruments covering every requirement, but from the simplest to the most elaborate you will find that every detail expresses the practical insight and engineering background of Ray R. Simpson and a group of associates who have devoted their entire engineering careers to instrument development.

Some of the many types are illustrated here. Ask for bulletins describing types in which you are interested. See them at your jobber's.

**Model 333 Tube Tester.** Small (only 7 1/2 x 10 1/2"). Light in weight (only 7 lbs.) ... at a remarkably low price. Tests all tubes, including new Loctal and other recently developed types. Has double filament switch. **\$2650** Your price.....

**Model 220 "Roto-Ranger"**  
A finer tube and set tester with convenient Simpson Roto-Ranger feature. Your price.... **\$6275**

# SIMPSON

**INSTRUMENTS THAT STAY ACCURATE**

SIMPSON ELECTRIC CO., 5202 Kinzie St., Chicago

**Model 230**  
The smallest A.C.—D.C. instrument on the market, yet it contains a sufficient number of ranges for the experienced man to do a complete servicing job. Your **\$1425** price....



and the tuning unit located at a convenient point.

Pacent Engineering Corp. of New York has just brought out a high-fidelity receiver designed expressly for this type of work. Using a band-pass tuner of extremely compact dimensions, separate from the amplifier, it is possible to have it in a small cabinet about the size of the usual remote-control unit or build it into any desired piece of furniture.

For modernization work, the entire receiver can be installed in the old cabinet. These high-fidelity chassis are the answer to the public's question, "where can I get a new set for the old cabinet?"

A tuned-radio-frequency receiver of the band-pass type is available from the J. W. Miller Co. of Los Angeles in kit form. This set features high fidelity with sensitivity more than adequate for local reception.

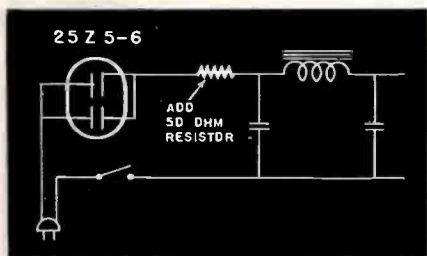
The Pacent receiver is obtainable in either wired form or a kit to be assembled by the serviceman. The kits give the radioman an opportunity to make an additional profit for the assembly, which is quite simple.

While the market is not large in numbers, those installations that exist are generally very profitable.

## PREVENTING FILTER AND RECTIFIER FAILURE IN AC-DC RECEIVERS

Reports from the field show that there is a tendency for filter condensers and the rectifier tubes in AC-DC receivers to fail prematurely. As a result, the engineering department of Stewart-Warner has investigated this condition in collaboration with the manufacturers of the tubes and the electrolytic condensers, and has developed a simple remedy.

It has been found that all makes of AC-DC receivers are more or less subject to this trouble which is due to a peculiar power line condition. This difficulty is not due to high line voltages nor is it due to any fault in either the tube or the condenser.



With certain line impedances, it has been found that extremely high surge voltages are developed across the filter condenser, and as a result the condenser will puncture and thus this causes the rectifier tube to fail. The instantaneous surge voltages which are developed may be as high as 300 volts, and occur only if the set happens to be turned off on a particular part of the cycle.

Since this difficulty is due to a power line condition, it is very likely to happen repeatedly in any one location. In other words, if it happens once in a certain customer's home, it is very likely to happen again.

The remedy for this trouble is to connect an inexpensive 50-ohm 1 watt

**COMING**

10 BILLION TO 1

**ANOTHER SENSATIONAL INSTRUMENT**



## From The Successful Servicing Laboratories of JOHN F. RIDER

A Really New Instrument. New in Design—New in Performance. Unequaled by any existing piece of equipment now available to the servicing field!—A device as sensational in performance as The Rider Chanalyst! Announcement of this new Rider instrument will be made in next month's magazines. It will headline the news—it will be talked about wherever two servicemen get together—don't miss it.

*This New Device WILL NOT Take the Place or Do the Work of The Rider CHANALYST*

So—if you do not already own a Chanalyst get the facts on this proven instrument which will cut your trouble-shooting time to an absolute minimum. Find out how simple and easy it is to use the Chanalyst for the location of defects in receivers of all types and makes. Send for the new illustrated 80 page (8½ x 11") book. Get the facts which will enable you to go to your jobbers and demonstrate the Chanalyst to yourself. Send the coupon at right NOW!

Don't buy any Instrument until you have all the facts. Send coupon for complete story on

**The RIDER CHANALYST**

Service Instruments, Inc.  
406 Fourth Ave., New York City

Enclosed find 25 cents (in stamps or coin) for the 80-page book completely explaining the Rider Chanalyst and True Dynamic Testing.

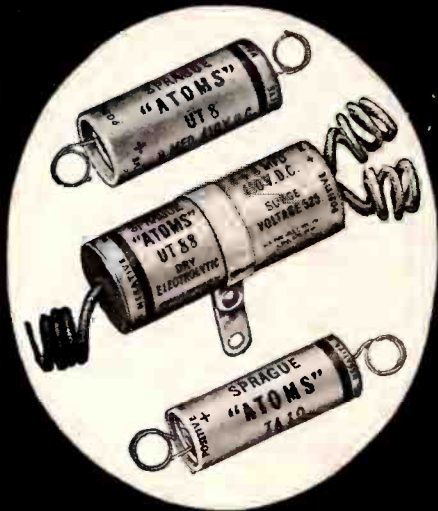
Name.....

Address.....

### SERVICE INSTRUMENTS, INC.

410 Fourth Avenue, New York City  
Foreign Division—147 W. 45th Street, N. Y., Cables—"Servicin"

THE CONDENSER  
*Sensation*  
OF 1938...



THE MIDGET  
*Standard*  
OF 1939!

No wonder Sprague ATOMs—the sensational new midget dry electrolytics—broke all previous sales records in 1938!

ATOMs are the smallest midgets on the market. They bring you the most honest-to-goodness features at the lowest possible cost.

ATOMs build up to higher surges than any similar units. They have lower leakage and power factor. They're UNCONDITIONALLY GUARANTEED against blow-ups. They're made in more capacities than any other midgets, more voltages plus a complete assortment of dual capacity units with common negative leads.

ATOMs are self-supporting—you mount 'em just like paper tubulars. You use 'em for any replacement where you want real efficiency coupled with real economy. Sold singly or in handy kits of 6 or 12 units.

An 8 mfd. 450 Volt ATOM lists at only 60c. A dual 8-8 mfd. lists at only \$1. Think of the money you save!

WRITE for the SPRAGUE CONDENSER CATALOG detailing our complete line for every radio requirement.

SPRAGUE PRODUCTS CO.  
North Adams, Mass.

**SPRAGUE**  
**ATOMs**  
*"Mightiest Midgets of All"*



Putting a repair bench in his store window, where all may see what goes on when a non-working radio is brought to him, has helped the service business of David Landa's Universal Radio Service, Oakland, Calif.

## SERVICING SETS

resistor in series with the connection from the rectifier tube cathodes to the electrolytic filter condensers. The proper connection of the resistor is shown in the accompanying diagram.

It is suggested that the serviceman install such a resistor in all AC-DC sets which come in for repair with either the rectifier tube or the electrolytic condenser requiring replacement. This resistor is being added to all future production of Stewart-Warner AC-DC radio receivers.

### REPAIR BENCH IN WINDOW INCREASES PROFITS

During the twelve years he worked at other shops, David Landa noticed that an obscure repair department weakened the customer's confidence and offered considerable sales resistance. So when he opened his own shop, Universal Radio Service, in Oakland, Calif., Dave placed his neat, orderly repair bench in the front of the store behind a spotlessly clean window, for the following reasons:

1. To attract attention to the shop

by supplying so-called "action display." This decision was made after observing window shoppers' reaction to action displays and demonstrations.

2. People could see that there was neither mystery nor secrecy to repair work, but that it involved certain definite operations, all of which take time.

3. To individualize the shop and fix its location and business definitely in radio owners' minds. With a clean radio bench in plain sight, and a service man at work, a definite picture is presented that the window shopper recalls when his radio needs repair.

4. To remove any poor impressions set up by shops with unsightly work benches and test panels. Also to create more confidence in the shop and to elevate the trade to a higher level.

5. To make it possible for the customer who waited for a repair job to see that the many tests and operations required much time—this to remove objections for charges that might otherwise seem excessive.

The "experiment" is no longer that; it is a proven fact that such a "work window" is a powerful magnet for service sales.

## Janette Rotary Converters



### FOR CONVERTING D.C. TO A.C.

● Built especially for radio and sound apparatus—capacities 110 to 3250 volt amperes—with or without all wave filters. Dynamotor construction—economical to operate—ruggedly built for years of trouble-free service—used or recommended by the largest manufacturers of radio and sound apparatus throughout the world ●

WHY EXPERIMENT — INSIST ON A JANETTE

ASK FOR BULLETIN 13-1

Janette Manufacturing Company  
556-558 West Monroe Street Chicago, Ill. U. S. A.

# Last Call!

—for advertising copy— for new  
subscriptions starting with

**the Big Double Issue in  
MARCH**

## **RADIO TRADE DIRECTORY** *combined with* **WORLD'S FAIR NUMBER**

*featuring*

**RADIO TODAY and TOMORROW**—An article of historic importance giving facts about the **FUTURE** that every man in radio wants to know.

**RADIO TRADE DIRECTORY** — Radio's only complete Buyers' Guide. Used daily. Has year-round life.

**TELEVISION** and other trends, impartially discussed.

**WORLD'S FAIR**—An impetus to radio and general business.

**MANUFACTURERS' ANNOUNCEMENTS**—Latest products in home sets, portables, auto radio, combinations, sound systems, parts, accessories and servicing equipment.

**EXTRA CIRCULATION**—Coverage of all radio markets, including dealers and service dealers, jobbers, manufacturers and broadcast stations.

**RATES AND POSITIONS**—No increase in advertising rates. Positions alongside or close to directory listings if reserved at once.

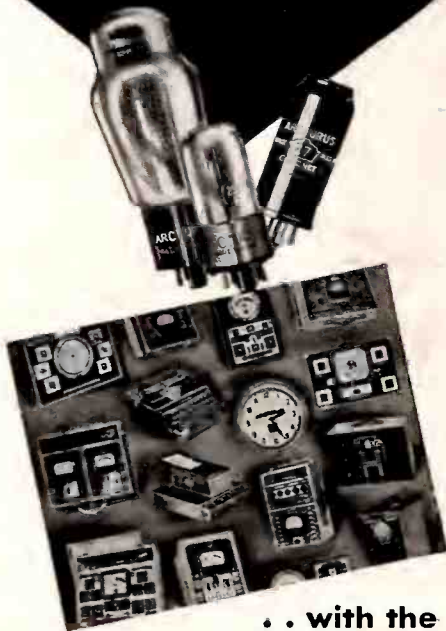
**MAKE  
RESERVATION  
NOW**

ENYWF

The big March Double Issue will be the time and place for inserts, spreads and color advertisements showing the achievements of individual companies, their records of development, engineering advances, merchandising policies, strong personalities, etc.—facts seldom covered by field salesmen but which nevertheless enable the dealer to make a wiser choice of products or do a better job.

**CALDWELL-CLEMENTS, Inc.**  
480 Lexington Avenue  
New York, N. Y.

**THESE TUBES  
PAY FOR THE  
EQUIPMENT  
YOU NEED!**



**... with the  
ARCTURUS  
EQUIPMENT DEAL!**

The Arcturus Equipment Deal brings you an almost unlimited variety of the newest store and shop equipment . . . practically FREE! It enables you to make your shop more efficient, absolutely up-to-the-minute . . . it actually gives you EXTRA PROFITS in the form of valuable equipment!

**NEW EQUIPMENT . . . PRACTICALLY FREE!**

You'll find the Arcturus Deal gives you more for your money than any other. Lower Down Payments, Low Tube Requirements, Immediate Delivery—and only Standard Prices for tubes!

Send for details, and your FREE copy of the ARCTURUS DEALER HELPS folder. See how simple it is to get new equipment—how your purchases of Arcturus Tubes actually pay for it—how Arcturus Cooperation helps you sell!

**NEW TUBES . . . NEW PROFITS!**

Arcturus recently introduced several new tube types . . . more are on the way! These, and the famous Arcturus GT "MIDGETS", will further increase the huge replacement market now open to Arcturus dealers. Cash in on it! "Go Arcturus!"

**MAIL THE COUPON!**

**ARCTURUS**

ARCTURUS RADIO TUBE CO., Newark, N. J. T-16  
Without cost or obligation, send my copy of the ARCTURUS DEALER HELPS Folder and details of the ARCTURUS EQUIPMENT DEAL.

Name.....

Street.....

City.....State.....

I am a dealer  I am a serviceman. My

jobber is.....

For your convenience this coupon can be pasted on a penny postcard.

**SERVICEMEN'S GROUPS ACTIVE**

Business methods improved  
Definition of a serviceman advanced

**RSA CHAPTER NEWS**

New RSA chapters were formed in Fort Wayne, Ind., and St. Joseph, Mo., and a foundation laid for one at Pekin, Ill.

The Oklahoma City chapter, to keep local members up-to-date, is sponsoring a short course at Oklahoma U., conducted by manufacturers' engineers, on new circuits.

Staten Island, N. Y., to furnish complete stock facilities for all members, has adopted a cooperative plan, each stocking certain types of special parts and drawing on each other when these parts are needed.

From Detroit, Mich., comes the definition of a qualified RSA member. He must: Be a full-time serviceman, have a business set up, pay the taxes imposed on businesses, have commercial phone listings, and pass an oral and written business and technical examination.

Philco "Mystery Control" lectures were given at New Hampshire by Mr. Morse, and at Binghamton, N. Y., by local Philco distributor, while the Rider Chanalyst was explained at Boston, Mass., Hartford, Conn., Jamestown, N. Y., Tulsa, Okla., and Steubenville, O., meetings.

Speakers were active at other RSA chapters with Mr. Mohaupt speaking at Detroit on "Signal generators and frequency modulation" and at Lansing, Mich., on "The construction and use of the oscilloscope." Mr. Hicks, of Thordarson, addressed Pontiac, Mich., and Springfield, Ill., servicemen on transformers.

RSA publicity was furthered at Greenbay, Wis., by plans for cooperative advertising by members through press and radio, while the Chicago, Ill., chapter is now publishing a house organ. Mr. Miller of New Jersey also made a publicity talk over WHBI Newark.

Bert Eilers of Duluth and Noel

Granger of St. Paul, Minn., reported to their chapters on visits to the national office of RSA.

St. Paul decided to continue their poor credit lists, and fixed a scale of prices for auto radio installations.

Washington, D. C., discussed the possibility of standardizing all service prices and doing away with free service and estimates.

Newark, N. J.—Radio servicemen here have just warred on a firm advertising "Any radio repaired for only 75 cents, one year guarantee." Newspaper ads, handbills placed in mailboxes and billboards were used by this advertiser. A strong letter of protest to the newspaper publisher brought a satisfactory change in copy, and a complaint was next made to the postal authorities. Chairman Carl Rauber also lodged a complaint with the police department racket squad. As a result, the matter will be presented to the Essex County grand jury.

**INDEPENDENT ASSOCIATIONS**

Servicemen of Fresno, Cal., have formed the Associated Radio Servicemen in an attempt to rid themselves of non-profit services and to increase their technical knowledge. Jack Schiefer was elected president, and information about the organization can be obtained from Earle Bancroft, 151 Howard St., Fresno, Cal.

Hudson County Radio Servicemen's Assn., 22 Liberty Ave., Jersey City, N. J., has organized with Martin Seel as chairman; Joseph Potocki, sec'y; Charles Wolf, treas., and Edward Turnier, publicity. The public is being educated to use only qualified servicemen. The members of the organization no longer extend discounts to unqualified servicemen for the repair of tough jobs.

**"PINCOR" Rotary Converters**



Provide the most dependable means for converting direct current to alternating current. Particularly well adapted for operating radio receivers, public address systems, power amplifiers, signs, A.C. motors, etc. Available in two standard classifications "DA" and "TR"—both with or without filter—engineered for converting 6, 12, 32, 110 or 220 volts D.C. to 110 or 220 volts A.C., 40 to 2,000 watts. There is a "Pincor" converter for every requirement. Write for complete descriptions and data.

**PIONEER GEN-E-MOTOR CORP.**

Dept. R-2B

466 W. Superior Street

Chicago, Ill.

# NEW BOOKLETS

International Resistance Co., 401 N. Broad St., Philadelphia, Pa.—IRC Volume Control Guide, in an easy-to-read revised edition. Covers standard and special replacement controls for every requirement, including many short cuts and money savers. Can be obtained at IRC jobbers or from the company.

J. F. D. Mfg. Co., 4111 Ft. Hamilton Parkway, Brooklyn, N. Y.—descriptive material on the new vertical home antenna, ballast tube testers, wire, coils, cord, auto antennas, suppressors, test prods, etc.

Thordarson Electric Mfg. Co., 500 W. Huron St., Chicago—amplifier guide No. 346-D with complete dope on amplifiers from 8 to 120 watts output. Circuits are complete with diagrams, parts lists, etc. Available from any Thordarson jobber or from the factory at 15 cents.

Precision Apparatus Co., 821 E. New York Ave., Brooklyn, N. Y., offers free supplementary tube charts, test data on how to test the new Loctal, single-ended or other new tubes on present Precision meters 500, 500-A, 510, 600, 700, 800, 815, 900. Mention model and serial number when writing.

Charles Avnet Co., 156 Chambers St., N. Y. City, has issued a 1939 catalog, featuring telescopic aerials for autos and the noise-reducing type for home receivers. Copies free.

RCA Victor, Camden, N. J.—recordings of university and fraternity airs, from the Victor and Bluebird lists, collected in handy form.

Carron Mfg. Co., 415 S. Aberdeen St., Chicago—1939 catalog of cones, field coils, i.f. transformers, antenna and oscillator coils, duraluminum diaphragms, directional baffle horns, crystal sets, head phone sets, inter-office communicators, etc.

Oxford-Tartak Radio Corp., 915 W. Van Buren St., Chicago, Ill.—Covers loudspeaker selection and placement, and number of speakers to use, fully diagrammed. Different needs for extra speakers are given to help boost sales. Featured in Oxford Techni-Talks.

The Federal Communications Commission, Washington, D. C., now has available official lists of radio stations in Canada, Cuba and Mexico. Contain locations and power rating of stations.

Tobe Deutschmann Corp., Canton, Mass.—twelve pages of capacitor information for daily use of dealers and servicemen. New model Lab type condenser bridge and analyzer included.

**14 WATT or 35 WATT or any POWER**  
**SOUND SYSTEM** *Select the*  
**ECONOMICAL • DEPENDABLE...**



● Portable System Model PX-714 includes one Model 1236 Crystal Microphone, mounted on a banquet stand, complete with 25 feet of rubber covered shielded cable and plug; one No. 714 Amplifier, two No. 3810 10" P.M. Speakers with 25-foot cables and polarized plugs. All is contained in one moderate sized carrying case.



● 35-Watt Model FD-35 includes Model 4L35 12-tube, 35-watt amplifier, remote control with 25' of flexible cable, Model 1245 Dynamic Microphone with 25' of shielded rubber covered cable and plug, one No. 1122 microphone stand, 2 Model 3813 speakers, 2 Model 2824 wall baffles.

★ Webster-Chicago manufactures a complete line of sound equipment and accessories.

Ask Your Jobber or Write

For 14 Watts . . . 35 Watts . . . or any size  
 Sound System . . . The Natural Choice Is  
**WEBSTER-CHICAGO**

**Webster-Chicago**

## 14 WATT SYSTEM Model PX-714

- Underwriters' Laboratories Approved
- High Gain (123 D.B. 14 Watt Beam Output Type Amplifier)
- Improved Multi-Stage Inverse Feedback Circuit
- Two Individual Electronic Input Circuits
- Variable Output Connections for Additional Speakers
- For Portable or Permanent Installations

## 35 WATT SYSTEM Model FD-35

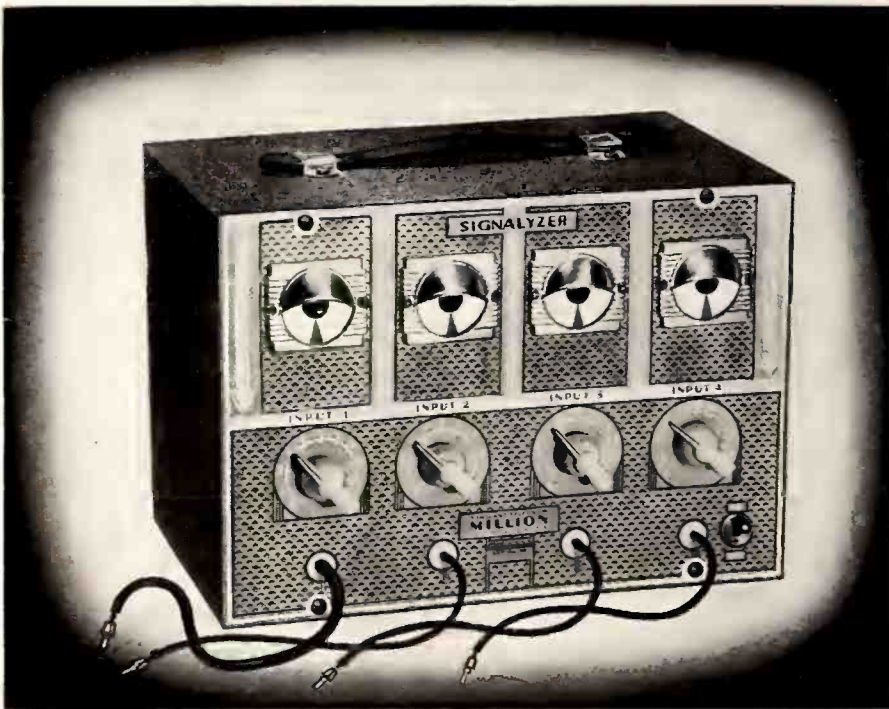
- High Speed Expander
- Multi-Stage Degeneration
- 4-Input Mixing Circuits
- Dual Tone Compensation
- Underwriters' Laboratories Approved
- Remote Control
- For Permanent Installations

*Economically  
 Priced.*

Manufactured under license arrangements with Electrical Research Products, Inc., subsidiary of Western Electric Co., Inc., and American Telephone and Telegraph Co.

# WEBSTER-CHICAGO

5622 Bloomingdale Ave., Chicago, Illinois



FOR MODERN  
**CHANNEL TESTING**  
 YOU CAN'T BEAT THIS NEW  
**• MILLION •  
 SIGNALYZER**

- RADICALLY NEW CIRCUIT
  - CHECKS ALL CIRCUITS
  - ELECTRONIC "EYES" GIVE DIRECT VISUAL READINGS
  - CHECKS BOTH AC AND DC
- DEALERS' NET COST ONLY**

**\$2495**

•  
 The Complete  
**MILLION Line**  
 Includes  
 Vacuum Tube  
 Voltmeters  
 Signal Generators  
 Tube Checkers  
 Multimeters  
 Sound Systems

**MODERN SERVICING DEMANDS MODERN TEST EQUIPMENT**

• This new Million SIGNALYZER provides you with a quick, positive method for modern CHANNEL testing—for checking singly or simultaneously the RF, IF, AF and power circuits of a receiver without affecting its operation. Simplifies the servicing of "dead" or intermittent sets. Checks AC and DC voltages. Infinite input impedance using a co-axial cable. One dial is calibrated for approximations of bias, detector plate and oscillator voltages, simulating the functions of a vacuum tube voltmeter. The electronic "eyes" give full deflection on less than .1 volt AC or DC. Unit is furnished complete with SEVEN tubes, ready to operate. The 1939 "BUY" in the test equipment field. Available for panel mounting.

Complete Literature on Request

**MILLION RADIO AND TELEVISION LABORATORIES**

697 W. OHIO STREET

CHICAGO, ILLINOIS

**MR. SERVICEMAN**

**Make the Most of Your Time in '39!**

**MAIL THIS COUPON**

**RADIO SERVICEMEN OF AMERICA, INC.**  
 304 S. Dearborn St., Chicago, Ill.

Gentlemen:  
 I hereby make application for membership in the Radio Servicemen of America.

Name .....

Mailing Address .....

City ..... State .....

I am enclosing \$4.00 for Dues and Initiation.  
 (Does not include Local Chapter Dues where  
 Local Chapters are organized.)

★ *Make progress this year by using your time to the best advantage. Tie-up with the only national independent servicemen's organization in the industry and enjoy its benefits! The RSA is cooperative—run by and for its members—uncontrolled by any outside interests. You elect your representatives—all responsible officers are bonded.*

*Here's what RSA gives you:*

- ★ Monthly Advanced Circuit Notes for Members each month.
- ★ Technical Help on Service Problems.
- ★ Access to its National Speakers' Bureau.
- ★ Advanced Service Courses to Members at slight cost.
- ★ A Monthly RSA Publication.
- ★ Annual Convention.
- ★ And many other benefits now being planned.

Join up with your fellow servicemen and be "in." Send the Coupon Today!

**National Yearly Dues . \$3.00**  
**Initiation Fee . . . . . 1.00**

**Let's Grow Together in 1939**

**RADIO SERVICEMEN OF AMERICA, INC.**

Joe Marty, Jr., Executive Secretary, 304 S. Dearborn Street, Chicago, Ill.



# RADIO EXECs ADVANCED

C. J. Burnside, formerly manager of radio engineering of the Westinghouse Electric & Mfg. Co., has been appointed manager of radio sales. He is succeeded by Donald G. Little, former chief radio engineer. John W. McNair, formerly assistant to the works manager of the Westinghouse merchandising division at Mansfield, Ohio, has been named assistant manager of the radio division.

Herman Haas is the new district manager in central Ohio for Crosley Radio Corp., according to news from general sales manager Thomas W. Berger.

Sydney Nesbitt has been named sales manager of Lear Developments, Mineola, N. Y., makers of aircraft radio equipment. Mr. Nesbitt has been in aviation and radio for more than 15 years, and recently was associate editor of Canadian Aviation magazine.

## TOM JOYCE AND FRANK WALKER GET RCAM VICE-PRESIDENCIES, FINN ADV. MANAGER

George K. Throckmorton, president RCA Manufacturing Company, announces that the board of directors has elected Frank B. Walker to be vice-president in charge of all record activities, and Thomas F. Joyce, vice-president and advertising director.

At the same time, Mr. Throckmorton also announced: Jay D. Cook has been made manager of the International Division, covering all of the company's activities in export.

David J. Finn has been elevated to the post of advertising and sales promotion manager. Edward W. Butler has been appointed manager of the radio and victrola division, in which his former duties in connection with small radios will be consolidated.

Paul C. Richardson, formerly manager of the radio and victrola division, will head a new educational sales division.

### Tom Joyce

At 34 years of age, Mr. Joyce is the youngest vice-president of the company. His spectacular rise from a factory job through progressively higher positions to become an officer of the world's largest radio organization and a member of its management committee, has been a source of inspiration to all who have been associated with him.

In 1922, he went to work in the General Electric Company's Pittsfield, Mass., plant calibrating electric meters. After six months, he applied for and got the job of reporter for the Company's employee publication for \$2.50 per week less than he was getting in the factory. Two years later, he asked



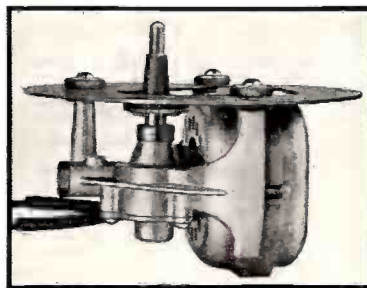
Dave Finn, newly-elected advertising manager for RCA.

for a transfer to the Harrison, N. J. plant so that he could study at New York University at night. The transfer was made, and he went to work as a clerk in the advertising department. Four years later he was graduated with honors from the university.

By 1934 he was head of a consolidated department handling the adver-

(Continued on next page)

## TEST THIS New LIGHT CX CONSTANT SPEED PHONOGRAPH MOTOR



TRY out the new Flyer CX. Latest General Industries development, for portables and table models. Self-starting. Quickly reaches running speed. Free ventilation and fan-cool operation. Ample oil reserve in sealed chamber. Patented-drive turntable (not shown) is included, gives positive insulation.

### Order a Sample CX Flyer

Get it now, for testing in your own case or cabinet. Specify frequency and voltage of current, and size of turntable. Catalog sheet and prices on request.

The GENERAL INDUSTRIES CO.  
3938 Taylor Street, Elyria, Ohio

*it's like finding money....*

Dealers are amazed when they discover how easy it is to sell Presto sound recording equipment. Recorders have a personal appeal to the customers, not found in any other line of equipment. When your prospect hears the beautifully clear, noise-free reproduction obtained from Presto recordings, he realizes that, at last, he has found a real recorder at a price he can afford. A short demonstration is usually all that's needed to close the sale.

### LET US PROVE THIS TO YOU

At your request a Presto factory representative will call at your store. He will demonstrate the Presto recorder to you and to as many of your customers as you care to invite to hear it. He will show you how to operate the machine and how to sell it. The demonstration won't cost you a cent and you're under no obligation to buy.

Take advantage of this unusual offer today. Write for literature and the name of your nearest Presto representative.



### The New Presto Model K Recorder

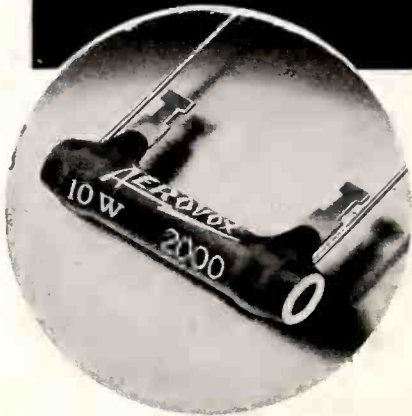
moderately priced at \$189.00, is now the fastest selling recorder on the market. Hundreds have been sold in the last two months. Smartly designed, manufactured economically in large scale production, the model K is the greatest value offered today. And its performance is guaranteed by PRESTO... world's largest manufacturer of sound recording equipment.

**PRESTO RECORDING CORPORATION**  
244 W. 55th STREET, NEW YORK, N. Y.

WIRE-WOUND POWER

# Resistors

...truly fit companions  
for **Aerovox Condensers**



● Try these *new* **AEROVOX** power resistors along with **AEROVOX** condensers for servicing old equipment or when building new equipment. Give them the toughest jobs. You'll be pleasantly surprised with their performance—and likewise with the cost, first and last.

## PYROHM JR.

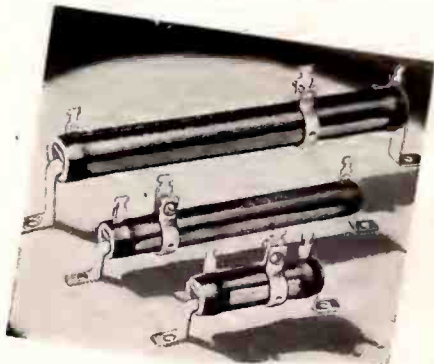
● A lot of power resistor in mighty small size. Due to selected materials—quality wire; crackproof refractory tube; powdered glass enamel fired at red heat; vitreous enamel tightly fused to wire, terminal connections, tubing. 10 and 20 watts. Popular values.

## SLIDEOHM

● Same as above but with adjustable slide contact. Any resistance value and tap within unit's range. Additional contact hands at slight added cost. 25, 50, 75, 100 and 200 watt ratings.

## Ask to see them . . .

● Local jobber should have these **AEROVOX** resistors. Ask to see them. Buy them. Use them. Latest catalog on request.



**AEROVOX**  
CORPORATION  
NEW BEDFORD, MASS.  
IN CANADA: AEROVOX CANADA, Limited Hamilton, Ont.

## MORE TRADE FLASHES



"Chief engineer" now is E. G. (Perk) Perkins' title at Supreme Instrument Corp.

tising and sales promotion activities for all of the RCA Manufacturing Company's products in both the foreign and domestic fields.

Mr. Joyce is known throughout the radio industry as one of its ablest public speakers. Throughout his career he has derived his greatest effectiveness from his ability to couple selling and advertising fundamentals together. He was one of the first, several years ago, to foresee and predict the remarkable comeback of recorded music to popular favor. He authored the highly successful Victor Record Society Plan, which is nearing its hundred thousandth membership. He makes his home in Haddonfield, N. J.

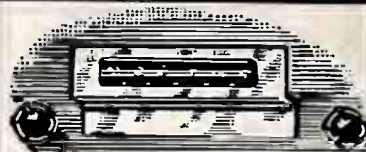
David J. Finn, new advertising manager, is a native of Natick, Mass. He received his education at Little Rock College, in Arkansas, and at Texas A. & M. College. He joined the lighting division of the Edison Lamp Works in 1923, later transferring to Atlanta. With the formation of the RCA Radiotron Company, he was appointed sales promotion chief of a large midwestern district, with headquarters in Chicago. In 1934, he was appointed assistant advertising manager, and later became assistant to Mr. Joyce in the larger duties of the consolidated advertising departments.

## PILOT BIDS FOR AMERICAN MARKET

Doing most of its past business in the export field, the Pilot Radio Mfg. Co., of Long Island City, N. Y., announces its entrance into the American market by redesigning its line. Two popular-priced sets will be pushed by three weekly broadcasts over WOR and newspaper advertising.

*Cornell-Dubilier* executives were active speakers recently, with *William M. Baily*, chief engineer, speaking on paper and dykano capacitors, and physicist *Stanley Walters* discoursing on application of wet and dry electrolytics before the New York Chapter of RSA. *Frank Taylor*, sales engineer, showed pictures of the Cornell-Dubilier plant in operation to both Philadelphia and New York Associations.

• FADA • FIRESTONE • STEWART-WARNER • KARADIO • SPARTON • ADMIRAL • TRAVLER •



**BUICK '39**

# CROWE

*Custom-Styled Remote Controls*

## For AUTO RADIOS



**PLYMOUTH De Luxe '39**

**CROWE** again leads with an outstanding line of **CUSTOM-STYLED Remote Controls** and Panel Mounting Kits for Auto Radios in 1939 cars. These Controls and Kits are officially styled to provide individual matching of specific car designs.

### Flexible Stock

With their interchangeable feature, which fits the instrument panel of almost any car. Crowe Controls and Panel Kits make the dealer's stock of radios much more flexible. Crowe Controls and Kits are equally suited for new jobs, replacements or transfers.

### Official Styling

True Custom Styling is a feature for which Crowe Controls and Kits are noted. They complete the panel design and provide correct appearance. Escutcheon plates perfectly match the design ensemble.

### Crowe Controls Span Five Years

Taking in a span of five years, Crowe Controls and Kits can be used for '39, '38, '37, '36 and '35 cars—carrying out the designer's official styling. Thousands of radios, still in use after years of service, offer a profitable service business.

*Ask for Bulletin 230*

**Crowe Name Plate & Mfg. Co.**  
1771 Grace St. Chicago, Ill.

• HORN • TROY • MISSION-BELL • PACKARD-BELL • TIFFANY TONE • SPARTON OF CANADA •

• ARVIN • PHILCO • DELCO • EMERSON •



## SEES MORE SALES FOR '39

Improvement in business will be reflected in increased radio parts sales during the next twelve months, states John J. Mucher, who heads the Clarostat Mfg. Co., Inc., Brooklyn, N. Y.

"Better business in 1939," says Mr. Mucher, "must mean more radio sets sold, which in turn will call for more parts to manufactures. More people employed will mean sets in a better state of repair, calling for more replacement parts.

"Also, there is definite promise of scheduled television programs in the New York metropolitan area before spring, which will give the necessary impetus to television set production. Whether factory built, kit assembled, or just plain home made, the television set is going to mean a lot of parts required.

"The total of sales will run higher during 1939. It may even equal the pretty good year of 1937, the first half of which was very good."

Chief engineer *Bill Schnell* of *Sentinel Radio Corp.* got some surprises recently when he agreed to take a "leisurely" trip West with the company's sales manager *George Russell*. The pair wound up by covering over 500 miles daily, and making dozens of calls on scattered Sentinel jobbers. Report also is that distributors and dealers are having a profitable time with the new 1½-volt farm models, which feature extremely low operating costs.

An amateur television club which successfully builds and operates its own video transmitting and receiving apparatus, has been organized by the Indianapolis, Ind., YMCA, with the help of *National Union engineers Marshall P. Wilder* and *F. M. (Ray) Paret*. Transmissions to club members are now limited to still illustrations, but live subjects will be used soon. *Robert Thompson* is president of the club.

Mutual Network will have a total of 110 affiliations when WBRK, Pittsfield, Mass., joins on March 1.



R. E. Potts, energetic sales manager for Bell Sound Systems.

# RADIO DEALERS

Don't let this chance go by!





SOUND SALES CAN BE PROFITABLE

## TIE IN WITH THE C.I.S.E. PLAN!

To wide awake radio dealers, Clarion Institute of Sound Engineers offers the greatest opportunity, to profit on sound sales, in the history of the industry. The C.I.S.E. Plan crushes every bone of contention the P.A. equipment dealer ever had! Closes the profit leaking gaps! Sets the dealer up on a really competitive basis!

Wrote one dealer who is profiting from the Plan: "You are doing us fellows in the field a favor"—"just what I've been looking for a long time," said another, and "one of the best Christmas presents I received this year was the renewal of my agency contract." These are statements from letters on file at C.I.S.E. headquarters. Enthusiastic praise from *recognized dealers*.\* But right now, we are talking about *YOU*. We want *YOU* to join this *BIG PARADE* to "sound" PROFITS under the C. I. S. E. banner. Membership in C.I.S.E. costs nothing except your wholehearted cooperation. Our aim is to help you make more money in sound. Read what else membership in C.I.S.E. does for you. Then mail coupon TODAY for complete information.

\*Names on request.

WHAT FREE MEMBERSHIP  
IN THE C. I. S. E. GIVES  
TO THE RADIO DEALER



### Factory Purchasing Power

Direct from the factory to you. No middleman to split the profits with.



### Exclusive Selling Territory

Only one C.I.S.E. agent is appointed to a territory. You automatically become the sole representative in your locality.



### Complete Line Competitively Priced

A complete line of P.A. equipment, dependably engineered. Clarion is not only competitively priced, but priced to outsell the lowest!



### Protected Profits

The C.I.S.E. plan offers factory purchasing power, exclusive territory, a complete line, dependably engineered and competitively priced. You can't fail to profit by being a C.I.S.E. agent! C.I.S.E. gives you real PROFIT PROTECTION!

## TRANSFORMER CORPORATION OF AMERICA



CLARION INSTITUTE  
OF SOUND ENGINEERS  
69 WOOSTER ST., N.Y.C.

CLARION INSTITUTE OF SOUND ENGINEERS  
69 WOOSTER STREET, NEW YORK CITY  
Please send me a C. I. S. E. application immediately. This, in no way obligates me, of course. RT-239

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

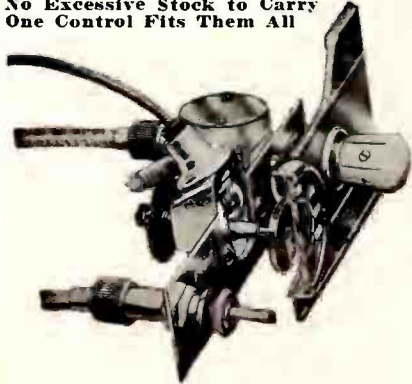
PASTE COUPON ON PENNY POST CARD

# STAR

## AUTO RADIO CONTROLS

**Simplest of All to Install  
THE ONLY CONTROL WITH ALL  
RATIOS SELF-CONTAINED**

Works Clockwise or Counter Clockwise With Same Dial  
Absolutely No Back-Lash  
No Cord, No Cable, Positive Gear Drive  
No Mutilating of Instrument Panel  
100% Universal in Every Way  
No Excessive Stock to Carry  
One Control Fits Them All



### COMPLETE LINE OF

1934-35-36-37-38 and

**1939** Custom Matched Escutcheon Plates with Edge Illuminated Non-Glare Glass Dials.



1939 CHEVROLET SPECIAL

To re-install any 1936, 1937 or 1938 DELCO, UNITED MOTORS or CHEVROLET custom-built radio into a 1939 CHEVROLET car, only this plate is necessary UTILIZING ORIGINAL CONTROL. Plate is heavy die casting—exact duplicate of original dummy plate on dash of 1939 CHEVROLET. Makes excellent custom-matched installation.



1939 CHEVROLET



1939 FORD



1939 PONTIAC

The season for this business is now at hand. With a reasonably priced STAR Control and STAR Escutcheon Plate, a profitable business can be done.

### CASH IN ON IT NOW!

Mail this coupon for complete illustrated catalog No. 391.

STAR MACHINE MANUFACTURERS, INC.  
1373 East Bay Avenue, Bronx, New York, N. Y.

Send catalog offered in February RADIO TODAY.

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

## TRADE NOTES

"The 1939 Radio Parts Trade Show will be the biggest in its history," reports managing director Ken Hathaway, "if present booth bookings are any indication."

The first two days of the show, June 14, 15, will be open only to jobbers, and manufacturers and their engineers and agents. The last two days, June 16, 17, will be for servicemen. In this way, claims Mr. Hathaway, more specialized attention can be paid to the problems of jobbers and servicemen.

Gen. sales man, Charles B. Shapiro reports that west coast sales of Howard Radio Co., Chicago, were better in January than any similar month in the firm's history. For the eastern territory, Howard Briggs reports with equal optimism. The new battery sets with low-drain tubes have sold well, they state, while console set sales are also above par. Says Mr. Shapiro: "The large console field proves that the American public is still very much interested in the purchase of radios as a piece of furniture."

Robert Barr, of Electronic Design Corp., discussed problems of sound amplifiers for public address work at a meeting of more than 100 radio dealers held at the Wedemeyer Radio Co., Ann Arbor, Mich.

A new Los Angeles airport is being built at Inglewood, Calif., near the plant of the Universal Microphone Co. President James R. Fouch of Universal says that "those in the industry who notify our factory in advance will be met at the airport and taken through our plant."

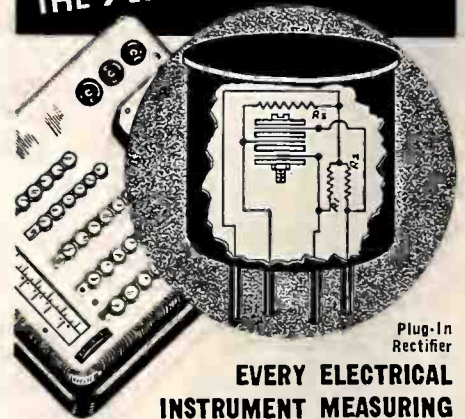
RCA Mfg. Co. has shifted its district 4 offices to 811 Clark Bldg., Pittsburgh, Pa., effective Jan. 30. James W. Cocke is in charge.

Presto Recording Corp. has moved offices and equipment plant to new, larger quarters at 242 W. 55th St., N. Y. City. Discs will continue to be pressed at the Newark, N. J. plant. The change is due to a rise of 48 per cent in business for 1938.

Rockford Chapter of RSA joined the Freeport chapter recently for dinner and a lecture by Leland S. Hicks, Thordarson Electric Mfg. Co., on "Practical Transformer Applications in Servicing Receivers."

A television testing laboratory has been launched by the National Union Radio Corp., Newark, N. J., to assist, free of charge, radio set makers in the design and manufacture of their sight receivers. W. M. Perkins and M. G. Nicholson are in charge of the television "proving grounds" which are available to receiver firms desiring to gauge the efficiency of circuits and equipment. All facilities are gratis.

THIS Little DEVICE  
HAS CHANGED  
THE Radio Tester World



Plug-In Rectifier

**EVERY ELECTRICAL  
INSTRUMENT MEASURING  
A.C. VOLTAGES AT HIGH  
RESISTANCE SHOULD HAVE IT**

### • Previous Problem:

Deactivation of copper oxide rectifiers caused by overloads, caustic gases or humid atmospheric conditions prevalent in every locality at some period of time has heretofore necessitated the complete recalibration of the tester circuit in which the rectifier was incorporated on insertion of a new copper oxide rectifier. In most cases this meant return of the complete tester to the factory, with its attendant delay and expense.

### • Triplet's Answer:

A plug-in unit incorporating a new copper oxide element precalibrated to a factory standard and thus when plugged into the tester gives you factory calibration. As simple as plugging in a tube. Obtainable through jobber or direct. Rectifier elements are the best obtainable—completely sealed for maximum protection against humidity and caustic gases. The greatest practicality of this little device has in truth changed the Radio Tester World.

THESE and OTHER **TRIPL**ET MODELS have Plug-In RECTIFIERS



MODEL 1601  
DE LUXE  
SET TESTER

Complete in Leatherette Case . . .  
DEALER NET  
PRICE \$49.33. In  
Metal Case. DEALER  
NET PRICE \$45.33.

MODEL 1611  
PUSH-BUTTON  
TUBE-TESTER  
AND VOLT-OHM-  
MILLIAMMETER

Complete in Metal Case . . . DEALER  
NET PRICE \$49.50

SEE YOUR JOBBER—  
WRITE FOR CATALOG!

THE TRIPLET ELECTRICAL INSTRUMENT CO.  
192 HARMON AVE., BLUFFTON, OHIO

**TRIPL**ET  
Precision  
ELECTRICAL INSTRUMENTS



*can you match this man?*

John Doe has a reputable radio service business.

Have you?

His location is free from interference with already established Tung-Sol agents.

Is yours?

He has the necessary background and equipment to service radio.

Check?

He turns over his tube stock at least every three or four months.

How about you?

His facilities lend themselves to prominent display of attractive advertising material.

Do yours?

He has a reputation for maintaining standard prices.

What about yourself?

He could render prompt monthly reports of consigned stock with remittance for tubes already sold.

Would you?

*IF YOU CAN MATCH HIM . . . there's the "greatest" deal in radio waiting for you. Write for details.*



TUNG-SOL LAMP WORKS Inc., Dept. C. Radio Tube Division

SALES OFFICES: Atlanta • Chicago • Dallas • Denver • Detroit • Kansas City  
 Los Angeles • New York • General Offices: Newark, New Jersey

## FOR 1939 — It's ATR Vibrators! FULLY GUARANTEED FOR 1 YEAR

A Complete Line of Replacement Vibrators for Auto and Farm Radios Featuring:

- Large Oversized  $\frac{3}{16}$ " Diameter Tungsten Contacts having Full Wiping Action— for greater reliability and Longer Life.
- Perforated Reed of Highest Quality Swedish Spring Steel— for uniform flexibility and prevention of reed breakage.
- Highly Efficient Magnetic Circuit with Formed Base— for greater accuracy and more uniform operation on both high and low voltages.
- Mica and Metal Stack Spacers with Two-Bolt Stack Construction— for adjustment permanency under any operation condition.
- Extra Flexible Leads with Tinned Clamp Supports— for good low resistance connections and freedom from lead breakage.
- Highest Precision Construction and Workmanship— Practically all parts used are held to within a tolerance of 0.0005 of an inch.



**New descriptive catalog No. 139 now ready, covering New Products, Models, Prices — everything in Vibrator-operated and Rectifier Power supplies. Write today for your free copy.**

**FREE** To win new customers and friends, ATR will give absolutely Free one No. 1240 Vibrator (Competitive 4-prong non-synchronous type listing at \$1.75) to every dealer or serviceman purchasing any 6 Vibrators shown on the ATR Vibrator Guide. Merely send to the factory six "order reminders" taken from ATR Vibrator cartons (there is one on each) with your jobber's name written or stamped on and date of purchase. For each group of six ATR Vibrator "order reminders," one No. 1240 ATR Vibrator will be given free, postpaid. All purchases must be 1939. This offer good until May 1, 1939. Act Now! Remember — insist on ATR Vibrators; there are none better!

**ATR Vibrators are VALUE PLUS—and Prices, 25% Lower!!**

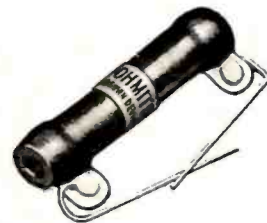
Write for your FREE Copy of the ATR Vibrator Guide and Equivalent Chart. Your ATR Vibrator Distributor will be Happy to Serve You.

### AMERICAN TELEVISION & RADIO CO.

World's Largest Manufacturer of Vibrators, Vibrator-Operated and Rectifier Power Supplies

ST. PAUL, MINNESOTA, U. S. A. Cable Address: "Likex" New York

*Way Up North — Way Down South*



## IT'S OHMITE

In the bitter cold of the Arctic and Antarctic—or in the humid, sweltering heat of the tropics—Ohmite Resistance Units deliver unfailing, trouble-free service day-in and day-out. That's why they are so widely used by Servicemen, as well as Engineers and Manufacturers, in every climate in every part of the world. Ask your Jobber for Ohmite Brown Devils, Dividohms, Chokes, Cordohms Rheostats, etc.

wire-wound replacement resistors. Extra-sturdy all-porcelain construction with the permanent protection of Ohmite Vitreous Enamel just as in the big Ohmite industrial units. Resistances from 1 to 100,000 ohms.

Send Coupon Today for FREE CATALOG 17

OHMITE MANUFACTURING CO.  
 4876 Flournoy Street, Chicago.

Please send me free Catalog 17.

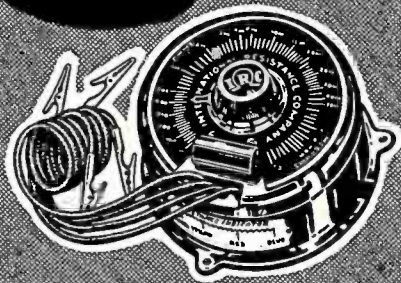
Name .....

Address .....

City .....

Occupation .....

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

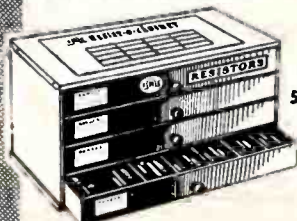


## RESISTANCE ANALYZER and INDICATOR

FOR USE WHEREVER  
RESISTANCE MEASUREMENTS  
ARE MADE

An indispensable radio instrument for every ham, serviceman and experimenter. Fuse protected, fool-proof, guaranteed. Dozens of uses. Determines resistance values; estimates tapers and values of controls; serves as voltmeter multiplier, rheostat or potentiometer; voltage divider; calibrated gain control or attenuator, etc., etc. Direct reading dial. Only 1 knob adjusts resistance from 0 to 1.0 megohm. Bakelite case 4 3/4" x 3 1/4". Three fuses. Interesting 16-page instruction manual supplied with each Analyzer.

Net Price (complete) . . . \$4.95



All Metal  
11" long x  
5 1/2" deep x  
5 1/2" high

## RADIO'S HANDIEST PARTS CABINET

This new All-Metal IRC RESIST-O-CABINET contains the first really balanced resistor assortment. Supplied complete with 59 famous IRC Resistors in practically every type and range commonly used in service work. You pay only the standard prices for the resistors. The cabinet is yours at not one cent of extra cost. The 59 resistors include popular ranges in 1/2- and 1-watt Insulated Metallized Resistors; also 10-watt fixed and adjustable wire wounds, the latter giving every range from a few ohms up to 10,000 ohms. Cabinet contains four large drawers with seven compartments in each. Designed to stack solidly, one atop the other.

List Value of Resistors \$15.16  
(The Cabinet is included)

NOTE: Resist-O-Cabinet not sold empty.

INTERNATIONAL  
RESISTANCE CO.

401 N. Broad St., Phila., Pa.



By the makers of  
INSULATED  
*Metallized*  
RESISTORS

STANDARD OF QUALITY EVERYWHERE

## PRESENT "SOUND" OUTLETS AND THEIR PROBLEMS

(Continued from page 15)

Those parts jobbers who have made a success of sound selling are the ones which have established sound departments isolated from the regular replacement division. Contact salesmen have been put into the field for the purpose of selling sound equipment to industrial concerns, amusement centers and anyone requiring this type of merchandise.

Wherever it has proven feasible to operate with the serviceman as a contact party, this procedure has been adopted. In cases where a serviceman or individual can sell at the list price, or the list price less a small discount, the jobber has handled this sale on a direct-to-dealer basis. When keen competition has arisen from other sources, the jobber has assumed the responsibility of the sale, paying the serviceman, or individual supplying the lead, a small commission.

### Other outlets

#### Companies Specializing in Sound Only.

—This type of organization is usually an extremely localized affair, whose business consists of both rental and direct sales. They have never considered any form of dealer business. Such sales agencies inform us that their major competition comes from the local parts jobber or mail-order house who sells direct to the consumer.

**Class A Radio or Refrigerator Dealer with a Sound Dept.**—Class A radio concerns have problems which are almost identical with those of companies specializing in sound only. These people, however, have had considerable experience already along these lines in their radio-set sales activities. The importance of proper purchasing power is immediately recognized and secured, otherwise they don't attempt to go into the P. A. business.

**Music Dealer with a Sound Dept.**—This is a new sales agency which has become of great importance during recent years. The music trade has suddenly realized that one of the biggest P. A. consumers lies within their scope, i.e., the musician. More and more of these outlets are establishing sound departments every day.

Other remaining outlets for sound equipment are not entitled to special consideration. Individuals having an opportunity to sell sound equipment by virtue of their special position must work with one of the above mentioned concerns.

### All sound sellers

Our conclusion is that the selling of sound equipment must be handled on the same basis as automobile sales, regardless of what we may choose to call this new plan. For the sake of convenience and attractiveness, we felt that an organization with a name like the Clarion Institute of Sound Engineers would enable us to combine into one unit all concerns spe-

**Readrite**  
**RANGER**

**Always UP-TO-DATE**

**KEPT COMPACT**

**NEW MODEL 432**

**ATTRACTIVE TUBE TESTER**

**only \$21.60**

**COMPLETE IN QUARTERED-OAK CASE**

**Checks All Types Radio Receiving Tubes**

Including the New 1.5 and 50-Volt Series: Loctal Base Types and the OZ4 and other Gaseous Rectifiers.

- Separate Plate Tests on Diodes and Rectifiers
- Neon Short and Leakage Tests
- Ballast Tube Continuity Test
- Uses Attractive Triplett Direct Reading Instrument 3" Size. (GOOD-BAD) Scale.
- Line Voltage Adjustment
- New Improved Low Loss Switch

Suitable for counter or portable use. Sloping etched panel of silver and black. Model 431, . . . . . \$15.90  
Checks all receiving tubes. (No ballast or gaseous rectifier test.) Tester uses dependable Readrite Meter. Quartered-Oak case same as for Model 432. Write for Catalog—Section 219 College Dr.

**READRITE METER WORKS, Bluffton, Ohio**

**CHECK YOUR OIL, SIR!**

When you make this your service station there's no need to use the old "oil" on your customers. With real values to offer you can forget the high-pressure stuff. And it's real values you get when you order from Wholesale Radio Service Company. We stock only top-quality equipment — all nationally advertised goods. We carry a complete line of more than 50,000 radio items. You can't beat the prices. Shop here and watch your business step on the gas!

**WHOLESALE RADIO SERVICE CO. INC.**

**100 SIXTH AVE., NEW YORK, N. Y.**

CHICAGO, ILL. • ATLANTA, GA. • BOSTON, MASS.  
BRONX, N. Y. • NEWARK, N. J. • JAMAICA, L. I.

cializing in sound systems, regardless of their official status in other fields. Hence, the C.I.S.E. plan.

To summarize, we contend that the local parts jobber is in a better position to make a success out of selling sound than any of the other types of outlets mentioned. However, if the parts jobber wishes to accomplish this feat, a modern approach must be employed, i.e., he must establish a sound department and sell direct to consumer whenever necessary, and where it is possible, work with the serviceman or contact individual on a commission basis. Maintain a representative stock for display purposes at all times. Order bulk requirements direct from the factory and thereby create a large turnover.

By adhering to these fundamental business principles, and handling the right type of product, he must succeed. (Signed) HUBERT L. SHORTT, Pres.

Transformer Corp. of America,  
New York, N. Y.

## SALES AIDS

### PLUG-IN RESISTOR MERCHANDISER

Three adjustable plug-in resistors that will replace 99 per cent of the 1,000 different types now in use, made available in a compact and attractive serviceman's kit containing five units—2 type A's, 2 type B's and 1 type C. They are made by the J. F. D. Mfg. Co., 4111 Ft. Hamilton Parkway, Brooklyn, N. Y.

### TRANSITONE DISPLAY



Philco has just brought out a new silk-screened fabric display for dealer use in showing their new line of Transitone radios. The display stands 5½ feet high, is handsomely colored in blue, gray and gold, and is capable of accommodating from 6 to 8 sets, placed to permit self-demonstration by the prospective purchaser.

On the top of the display a large blue circle carries the words in gold lettering, "Transitone, Sold and Guaranteed by Philco."



Flashing display sells interference filters.

### ANIMATED INTERFERENCE FILTER DISPLAY

In a newly announced campaign, Cornell-Dubilier is pushing the sale of Quietone interference filters. Radio-



consumer advertising will be used to help jobbers and dealers sell the units. Powerful dealer helps and startling flashers displays will be furnished. Flasher illustrated tells story of how Quietone filters provide clear reception.

# Yours free! a new SIMPSON Tube Tester

## BUY ONLY 19 NATIONAL UNION TUBES AND/OR ELECTRO CONDENSERS PER MONTH—ASK YOUR N. U. JOBBER

It's a little beauty, this new Simpson Tester! Light weight, small size, compact, great big easy reading meter. Just the kind of instrument you need for all 'round work. In addition to tubes, it tests pilot lamps, Christmas tree bulbs, ballasts, gas rectifiers. Tests for noise and shorts.

For complete technical data consult your National Union jobber. He's ready to GIVE YOU one of these testers on an amazingly attractive N.U. offer. Small deposit refunded as merchandise credit when your contract is complete. Get details NOW!

TESTS SINGLE ENDED AND LOKTAL TUBES

You can always use an EXTRA tube tester . . . let your N.U. Jobber give you one of these new SIMPSONS!



**Come on!**  
**BUILD CUSTOMER CONFIDENCE**  
with  
**NATIONAL UNION RADIO TUBES**  
and **CONDENSERS**

NATIONAL UNION RADIO CORP. RT-239  
Newark, New Jersey

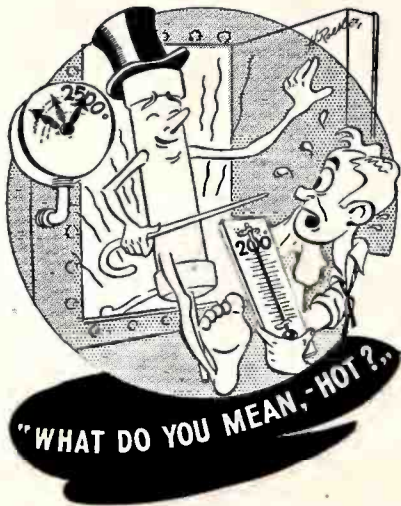
Who is nearest Nat. Union Jobber?

Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

# WITH THE REPRESENTATIVES

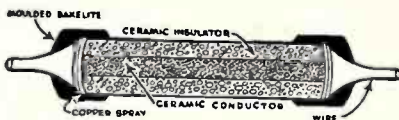


• Old Man Centralab took his baptism in a furnace at 2,500 F.

He laughs at such temperatures as 200 degrees . . . the sort of heat he has to take sometimes when he is parked near a ballast resistor or a transformer in a radio receiver.

Even where chassis temperatures ARE elevated the Centralab resistor, with its complete ceramic construction baked at 2,500 degrees, laughs at a mere 200 degrees. Where ordinary fixed resistors break down under temperatures of 200 or even less, Centralab is positively unaffected.

Join the thousands of Centralab addicts . . . specify Centralab for original equipment or replacements.



• Baptized in fire at 2,500 degrees . . . hard as stone. Center ceramic core, and ceramic jacket fired together to form a single shock-proof unit. Pure copper covers resistor end for wire lead contact.

CENTRALAB: Div. of Globe Union Inc.  
MILWAUKEE, WISCONSIN

## Centralab FIXED RESISTORS

"The Representatives" are planning their annual shindig for an earlier date this year, but no time or place will be set until the Social Committee can find out what sort of a good time the members want.

Sec't.-Treas. *David Soskin*, of *Aerovox* will stay at his old business address, despite his company's moving to larger quarters.

*Ed Kolman* claims a riot of new ideas upon returning from the Automotive Service Industries Show and the annual sales meeting of the *Kester Solder Co.*, held in Chicago.

*Bert Knight*, of the *W. Bert Knight Co.* in Los Angeles, announces new quarters for his company at 908 W. Venice Blvd.

*Norman B. Neely*, another West Coast member, announces his appointment as western distributor for an acetate shaving collector, made by the *Lakeside Supply Co.*

*Saul Shapiro* of Los Angeles, has been appointed California representative of *Nash Radio Products, Inc.*, of St. Louis.

*Jim Kay*, Tulsa, Okla., has been made factory representative for the *Universal Microphone Co.*, in Oklahoma, Kansas, western Missouri, and Arkansas.

*Howard Radio Co.*, 1735 Belmont Ave., Chicago, has appointed *Richard A. Hyde*, 4253 Quitman St., Denver, to represent them on amateur receiver sales for Colorado, Utah, Wyoming, and New Mexico. *H. E. Walton* has been named representative for Michigan and Indiana with headquarters at 1014 Francis Palms Building, Detroit.

*Miss Helen Staniland*, jobber sales manager, *Quam-Nichols Co.*, announces the appointment of *William E. McFadden*, 256 E. Gates St., Columbus, Ohio, as representative for Indiana.

*Monarch Sales Co., Inc.*, representatives of *Kadette* and *Freed-Eisemann* radios and *Casco Products, Inc.*, are now located in larger quarters at 230 Fifth Ave., N. Y. City.

*Dr. Ralph L. Power*, 407 I. N. Van Nuys Bldg., Los Angeles, has been ap-

pointed American representative of newly-formed *Stannage Pty., Ltd.*, makers of radio equipment.

*William E. McFadden* has opened an office at 256 E. Gates St., Columbus, Ohio, and will act as manufacturers' representative in Ohio, Indiana and Kentucky for *Standard Transformer Corp.*, *The Ohmite Mfg. Co.*, *E. F. Johnson Co.*, *Carron Mfg. Co.*, *Crowe Name Plate and Mfg. Co.*, *The Hallcrafters, Inc.*



## C-D Quietone RADIO INTERFERENCE FILTERS

Like all C-D products—Quietone Radio Interference Filters were tested under exaggerated "life" conditions before being introduced to the industry. That's why we can say with confidence . . . "THEY ACTUALLY WORK."

Don't overlook this opportunity to increase your sales with little or no effort. Extremely simple to install, unobtrusive in appearance and available in three colors to match room interiors, C-D Quietones were designed for minimum sales resistance. On your next call demonstrate Quietone—and see how easy it is to increase your profit on each and every call.

Remember—for new profits demonstrate C-D Quietones, the interference filters backed by the twenty-nine year C-D seal of quality. Attractively priced to retail from \$1.00 up. Cat. No. 166A on request.

Product of the world's largest manufacturer of capacitors.



### CORNELL-DUBILIER ELECTRIC CORPORATION

1022 Hamilton Blvd., So. Plainfield, N. J.  
Cable Address: "CORDU"

## A GOOD NAME GOES A LONG WAY



Ken-Rad Radio Tubes maintain their good name because of a thoroughly sound foundation of engineering skill and unexcelled manufacturing facilities.

KEN-RAD TUBE & LAMP CORP.  
OWENSBORO, KENTUCKY  
Export Dept., 116 Broad St., New York  
Cable Address: Minthorne, N. Y.

# ★ KEN-RAD ★

DEPENDABLE RADIO TUBES

## MEN WHO ARE STABILIZING RADIO-PARTS SALES

(One of a series)

The history of Robert F. Herr, manager of the parts and service division



Robert F. Herr

of Philco Radio & Television Corporation, is very much like the history of Philco itself.

Though only 38 now, Bob Herr's career began more than twenty-one years ago with the Philadelphia Storage Battery Company. He has been identified with Philco batteries or Philco radios ever since. However, his first stay with Philadelphia Storage Battery was very brief. He joined the company in March, 1917, but left as soon as he was 18 to enter the Army.

After seeing service at the front in France, with the anti-aircraft forces, Bob returned directly to Philadelphia and resumed what he had been doing before the World War had interrupted him—working in a testing laboratory for storage batteries.

Philco's parts and service division started with Bob Herr, and Bob has been the dominating force ever since.

After serving an apprenticeship in the lab, testing storage batteries, he moved on to radio batteries when they became important commercially. From that point, he soon took charge of testing of socket powers when Philco moved into that field.

During the interim, Bob had been continually studying at night, both at home and at school.

### Educational work

When Philco moved into the radio field, Bob Herr found his knowledge stood him in good stead. He spent five years traveling into every nook and cranny of the U.S.A., engaged in "educational" work with Philco distributors. In fact, he and Sayre Ramsdell, now vice-president, and Harry Boyd Brown, now national merchandising manager, were the trio who took the first Philco radio set, the old Model 511, around the country for presentation at dealer meetings.

From these years of traveling, Herr discovered the parts requirements and service needs of the radio retailer.

When he returned to Philadelphia, dealers and distributors began to write in, asking for parts and information on service. Philco's parts and service division rapidly began to form around this flood of inquiries until it now does an annual business totaling millions, with almost 15,000 different parts in stock and 125 men working on some phase or another of parts merchandising.

Completely directing all this activity is Herr, the original parts and service division.

Bob's second and third biggest interests in life are ocean fishing during the summer, and indoor tennis during the winter.

What's his biggest interest? You guessed it—radio.

## TESTIMONIALS TELL ALL

Almost every radio dealer has listened to grateful words after he licked interference on a receiver. But it remained for the Sico Electric Radio Co., 258 Lexington Avenue, New York City, to get it in writing.

In the front of their window, Sico displays six impressive testimonials from thankful Murray Hill residents. The framed letters feature Sico's ability to analyze purely local conditions that play hob with Gotham reception. One puff mentions a check for \$225 in payment of a job, which is sure to impress prospective service customers.

The Utah Service-Pak consists of this cabinet plus a stock of 79 essential replacement parts.

## ANNOUNCING THE NEW

# Utah SERVICE-PAK

YOU SAVE 33%



EVERY active service man should have one of the new Utah Service-Paks—for building bigger profits and maintaining a normal stock of essential parts economically.

The new Service-Pak provides important economies—it saves time and space—it reduces costs—it safeguards parts—it permits a perpetual inventory to be kept easily.

Ask your jobber to show you the attractive kit—it is 17" x 39" x 10". In one convenient, complete, easy-to-keep-up miniature stock room you can stock practically all your replacement parts essentials. The following high-grade Utah parts are included: 35 Assorted 10-Watt Vitreous Resistors, 6 Assorted 25-Watt Adjustable Vitreous Resistors, 16 Assorted Volume Controls, 6 Volume Control Switches, 3 Assorted Chokes, 5 Assorted Audio Transformers, 3 Assorted Universal Output Transformers, 4 Assorted Power Transformers, 1 5" Electrodynamic Speaker. The Utah Service-Pak also accommodates condensers, vibrators, etc., to complete the stock of essential parts.

No service man should be without this kit of minimum stock essentials. The Utah Service-Pak is Priced So Low You Can't Afford to Be Without It.

Tear this page out as a reminder to ask your jobber to show you the new Utah Service-Pak. If he doesn't have one, write us direct for complete information.

Sold only through recognized jobbers.

## UTAH RADIO PRODUCTS CO.

CHICAGO, ILL. • Cable Address, UTARADIO-CHICAGO

DEALER NET PRICE

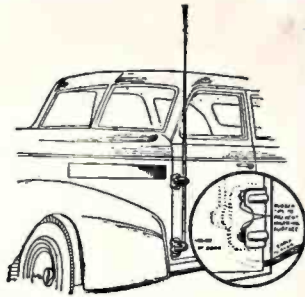
**\$29.95**  
Including Cabinet



**AUTO ANTENNAS**

**NEW!**

**DIFFERENT!  
PATENTED!**



**No DRILLING... NO  
MARRING OF CAR!**

Antennas are made of ALL BRASS STAINLESS STEEL, and guaranteed rustproof for the life of the car. Last word in value... good looks... and easy installation. No drilling. And there are 8 more powerful reasons why you should demand ICA Universal Bracket Cowl Antennas. WRITE FOR 8-PAGE ILLUSTRATED FOLDER now while you think of it.



**INSULINE CORP.  
OF AMERICA**  
25 PARK PLACE  
NEW YORK, N. Y.

# BOOK REVIEWS

## RADIO TROUBLE-SHOOTER'S HANDBOOK

By ALFRED A. GHIRARDI

The new Ghirardi handbook features 274 pages of receiver case histories for over 3,300 models. The most likely difficulties are listed for numerous symptoms for each model.

Almost 50 pages are devoted to I.F. peaks for practically every known receiver model. And to aid the serviceman in spotting defects, there are trouble-shooting charts for both auto and home sets.

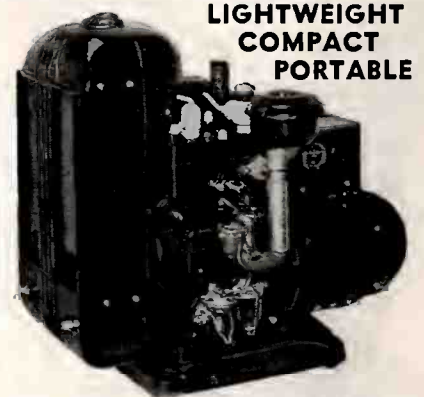
Other sections deal with auto-radio installation, elimination of ignition interference, and wiring diagrams of automotive electrical systems. Resistor charts, color coding, conversion charts, radio formulae, tables, and tube characteristics are handily arranged.

518 pages, 8½ x 11 inches, go to make up the book which is priced at \$3. Published by Radio & Technical Pub. Co., New York, N. Y.—RADIO TODAY.

The third edition of "Photoelectric Cell Applications" is now available from Pitman Publishing Corp., 2 W. 45th St., N. Y. City, cost \$4. Written by R. C. Walker and T. M. C. Lance, it deals with technical and industrial uses of the cell.

**NEW MODEL AC-DC DUAL VOLT**  
**350 to 50000 WATTS**  
**PRECISION WORKMANSHIP**  
**STURDY COMPACT LIGHTWEIGHT**  
**MORE THAN 40 TYPES IN STOCK**

### COMPLETE ELECTRIC PLANTS



**LIGHTWEIGHT  
COMPACT  
PORTABLE**

THOUSANDS of ONAN ELECTRIC PLANTS are supplying ALTERNATING CURRENT all over the World, for Lighting, Operating All Appliances and Powering RADIO TRANSMITTERS and RECEIVERS for Amateur and Commercial Operators. PORTABLE ONAN PLANTS are Operating Public Address Systems, Sound Truck Apparatus, Moving Picture Projectors, etc. Others are installed in Public and Private Buildings, to provide Electric Service in case of Power Line Failure. Many of these have prevented financial losses and even loss of life in such Emergencies.

ONAN ELECTRIC PLANTS are Dependable, Economical and Long-lived. Types from 350 to 5,000 Watts carried in stock. Models include 110 or 220 Volt, AC—12, 32 and 110 Volt DC—also Dual Voltage AC-DC Units. Furnished in either Manual, Full Automatic or Self-Starting Types. Shipped READY TO RUN. Prices start at \$99.

WRITE FOR DETAILS AND PRICES  
**D. W. ONAN & SONS**  
596 Royalston Ave. Minneapolis, Minn.



**MISS JONES**

*is married now . . .*

She'll tell her husband how good your service has always been and he too will have you do their radio repairs. That's the way business grows. Use dependable Ward Leonard Replacements. They stand up, thus help make satisfied customers. Send for Price List 507.

WARD LEONARD ELECTRIC CO.  
40 SOUTH STREET, MOUNT VERNON, N. Y.

Please send me Price List 507.

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

## "DYNAMIC CONDUCTANCE" TUBE TESTER

★  
Tests  
Loctal  
and  
Single  
Ended  
Tubes  
★



★  
See  
Your  
Jobber  
Today!  
★

● Consolidated is proud to offer the new, up-to-the-minute Model 9000 "Dynamic Conductance" Tube Tester. Engineered to give top performance. Built to take full advantage of greater accuracy afforded by dynamic mutual conductance circuit. Sells for only \$37.50. See your jobber today!

**CONSOLIDATED**  
WIRE AND  
ASSOCIATED  
**CORPORATIONS**

516 S. PEORIA ST. CHICAGO, ILL.



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While every precaution is taken to insure accuracy, we cannot guarantee against the possibility of an occasional change or omission in the preparation of this index.

# JOBBERS

LOUISVILLE, Ky.—Peerless Sound Equipment Co. moved to 912 S. Second St., and added Aerovox condensers to its lines. The new location triples Peerless' room and provides for adequate parking facilities.

MEXICO CITY—Famed night club El Patio was turned into a convention hall for 75 Philco dealers at a recent meeting sponsored by Philco-Bush, S.A. and American Steel Export Co. Carlos Bush was toastmaster.

Farver Radio Supply Co., 534 Second St., Portsmouth, O., announces the recent modernization of their store and the addition of new lines of stock. They are soon to bring out a complete new winter and spring catalogue.

The Chicago Musical Instrument Co., 30 E. Adams St., Chicago, Ill., has been made distributor for a new line of sound recording equipment and discs made by the Presto Recording Corp. The selling price is \$275 to \$595.

Herbert H. Horn, 1201 S. Olive St., Los Angeles, is now exclusive distributor in Southern California for Admiral radios.

Presto Recording Corp. has named Chicago Musical Instrument Co., 30 E. Adams St. to handle its new recording equipment and discs.

American Record Corp., new CBS affiliate, has chosen the Roycraft Co., 1625 Hennepin Ave., Minneapolis, as its northwest distributor, covering Minnesota, Iowa, North and South Dakota and western Wisconsin. E. T. Christman has been named manager of the new department, which will handle Columbia, Brunswick and Vocalion discs.

## SOUTHERN JOBBERS STIR INTEREST IN RECORDS

The merchandising of records in the Baltimore and Washington areas got a boost recently when Southern Wholesalers, RCA distributors there, held a big dealer meeting on the subject of promoting Bluebird records.

Tom Joyce, RCA Victor advertising manager, appeared at the meeting with a dramatically illustrated talk on "the scientific and technical contributions which have greatly improved the quality of recording and reproduction." Mr. Joyce also pointed out that radio was the friend, and not the enemy, of the phonograph, declaring that "Millions of people daily hear fine dance music, opera, symphony, etc.; thousands of those who listen will want to hear the music again and again. And that means more record sales."

Also on the program were J. M. Williams, H. P. Brightman, William E. O'Connor, William J. Kelley, Edward Denham, Joseph Camp and A. J. McGettrick.



## Dramatically New! Astatic MIKE-LITE

Designed to Meet the Modern Demands of Orchestras, Dance Bands, Entertaining Artists and Speakers.

• This is a beautiful, high quality, Astatic crystal microphone with two adjustable spotlights that throw a flattering halo of soft, warm, shadowless light upon the features of entertaining artists and speakers. Complete with Model I-3 Crystal Microphone, as illustrated, stand, transformer and cables, ready to plug in any light socket, \$62.50. Prices with other Astatic Microphones on request. Lamp assemblies may be purchased separately if desired.

See Jobber or Write for Literature



Astatic Microphone Laboratory, Inc.  
830 Market St. Youngstown, Ohio  
Licensed Under Brush Development Co. Patents  
Astatic Patents Pending

## SERVICEMEN BOOST YOUR SERVICE PROFITS



• Radio is rapidly becoming more technical. Competition demands that you know your "stuff." You must have a better-than-average technical knowledge to do more jobs quicker and with greater efficiency.

That's why SPRAYBERRY ADVANCED "MASTER SERVICE TRAINING" was developed. It was the first training (established 1932) of its kind for men already in the Service business, and it is still by far the finest, most practical and most complete. Includes over 50 new lessons, clear and simply written, on almost every essential Radio repair subject, including latest TELEVISION instruction. It's a compact, "all-meat" type of Training in Set Testing, Repairing, Parts Testing, Trouble Shooting, etc.

### DO BETTER JOBS . . . QUICKER

It is not a beginner's course, it is written for men already in the Service business. It shows you the easiest ways of doing the hardest jobs. Shows you time-saving shortcuts besides training you in actual business-getting methods. Many Servicemen have easily paid for this splendid Course out of increased earnings. Sold on terms as low as \$2.00 down—\$3.00 per month with iron-clad MONEY-BACK Agreement.

Don't fall into the rut of being satisfied with your present earnings. Self-improvement is the surest way to greater usefulness and bigger pay. Let me send you complete information at once. For your own sake, don't put it off.

### RUSH Coupon for FREE Facts

SPRAYBERRY ACADEMY OF RADIO  
1400-B University Place, N. W.  
Washington, D. C.

Please send, without obligation, complete details of your MASTER SERVICE COURSE.

Name .....

Address .....

City..... State.....

(Paste on penny postcard or mail in envelope.)

# Rider

announces the most extensive and elaborate program of publishing in the history of Radio

## for 1939

John F. Rider, recognizing the difficulty presented by the many developments in Radio will, during the year, release a long list of new books especially written for the serviceman. Know Theory! Keep Ahead of a Fast Moving Industry.

## Television

Books on this timely subject will cover all phases — including Light — Photo-Electric. Cells — Synchronization.

## Radio Facsimile

The high state of development in this field makes it necessary that you know its theory. Rider will give it to you.

## Radio Servicing

There will be SIX new books that will tell, in the easy to understand Rider style, how to save time in servicing.

## And of course

Rider Manual Volume X will be issued in the Fall—covering 1939-40 sets. Many New Features!

**John F. Rider**  
PUBLISHER  
404 Fourth Ave.  
New York City



Leon Adelman, popular Cornell-Dubilier sales executive, whose smiling countenance is known to parts-jobbers and radio men in every state in the U. S.

United Transformer Corp. took possession of a new and larger plant at 150 Varick St., N. Y. City, as of Feb. 1. Offices are there, too, and the set-up is thirty times bigger than UTC original home, opened in 1934.

## FREQUENCY MODULATION EXPERIMENTAL

(Continued from page 17)

Major Armstrong states that there will be but little increase in the cost of producing a radio set that will handle both frequency and amplitude modulated broadcasts on the ultra-high frequencies. So from the economic angle there is nothing to fear.

With the frequency-modulated transmissions the dealers will be in a position to demonstrate real high-fidelity and static-free reception. With better reception, it is very likely that the public will again turn to higher-priced sets capable of receiving the full benefit of the possible higher fidelity. But all this is in the future.

Also these U-H-F receivers can be used to receive the audio part of the television broadcasts, so when these sets for frequency modulation come of age, they will fit perfectly into the tele set-up.

But all these optimistic possibilities about frequency-modulated transmissions are not going to buy today's bread and butter. Smart dealers will recognize it only as something for the future—they will sell today's present receivers and broadcasting system. They will explain to the public that they should buy a radio set today, for they will continue to use it for years to come—that before it becomes obsolete because of changes in the broadcasting system, they will want a new set.

## Plug-In RESISTORS for any set



CLAROSTAT pioneered this handy type of voltage-dropping resistor for AC sets.

Largest line of exact-duplicate replacements.

Comprehensive listings including cross-index of different type numbers.

Minimum number of universal types for servicing most sets.

Handy Plug-In Resistor Tester. Indispensable. Only \$7.45 dealer's net cost.

Ask local jobber to show you the new Plug-In Resistor Tester and complete line. Ask for latest listing. Or write direct.

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Write for new catalog of Ward's complete line of low-priced manufacturers - approved aerials for car and home - also get on mailing list for free magazine packed with selling and service tips.


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## Dry Batteries

*for every purpose*



**S**TORE Traffic — *that's what you want!*  
And that's what Philco brings the radio and appliance dealers of America in a **COMPLETE** new line of Philco Dry Batteries **FOR ALL PURPOSES**. Radio batteries, as always; but now, in addition, dry cells for every conceivable purpose—flash lights, door bells, ignition, *everything!* There is a tremendous demand for dry cell replacements. They mean quick, easy sales—good related items to attract people to your store . . . Big Repeat Sale items!

For over a quarter-century, Philco has been identified as a leader in the battery field. The name **PHILCO**—in the battery industry as well as in the radio industry—always has been synonymous with the highest standards of design, manufacture and dependable service. Today, in its new, complete line of Dry Batteries, Philco offers the advantage of special formulas and improved construction developed in the great Philco research laboratories. Ask your Philco distributor now for a catalog giving full information.

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SENSATIONAL  
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