

IN TWO PARTS, PART ONE

# RADIO TODAY

JANUARY

*with television*

FEB 1 4 1938  
PERIODICAL DIVISION



**List 'em, — Phone 'em, — then GO SELL 'EM!**

Six ways to move stock, page 13

Eight ways to bring in buyers, page 18

TK 6-346  
.R 28

1938  Happy New Year 1938

OFF TO A  
FLYING START  
THE NEW 1938  
GENERAL  
ELECTRIC



*The Most talked about  
Radio of the Year.*

# TOUCH TUNING RADIO

TOPPING THEM ALL IN THE POPULAR PRICE CLASS  
The Sensational Model F-96

SELL THE LINE  
THAT LEADS IN  
AUTOMATIC TUNING  
G-E TOUCH TUNING

- ★ 9 TUBES
- ★ TOUCH TUNING Press a button—that's all!
- ★ AUTOMATIC FREQUENCY CONTROL
- ★ SILENT TUNING
- ★ LOUVER DIAL
- ★ TONE MONITOR
- ★ TWO STAGES OF INTERMEDIATE FREQUENCY
- ★ AUTOMATIC BAND INDICATOR
- ★ AUTOMATIC TONE COMPENSATION
- ★ PRE-SELECTOR R. F. STAGE
- ★ 12-inch STABILIZED DYNAMIC SPEAKER
- ★ VISUAL VOLUME AND TONE CONTROL
- ★ CUSTOM-CRAFT FULL-SIZE CABINET

*The  
New  
1938*



GENERAL ELECTRIC  
**RADIO**



ERB L26 Ja 43

The  
all-absorbing question  
every service man  
is asking

# What will MALLORY-YAXLEY do next?

For years Mallory-Yaxley has answered the question with innovations that amazed the industry. And every time Mallory-Yaxley answers the question, it means a step forward in better servicing, better products and better profits.

Mallory-Yaxley has met the service man's question in the past with answers such as  the Mallory-Yaxley Radio Service Encyclopedia  Condensers that are universal in application  Volume Controls that are really silent  with "a mere handful" of Vibrators that service over 3,000,000 automobile radio sets  with perfect portable power, in the Mallory Vibrapack.

Now the question for 1938 is about to be answered! . . .

What will Mallory-Yaxley do next?

You will know mighty soon!

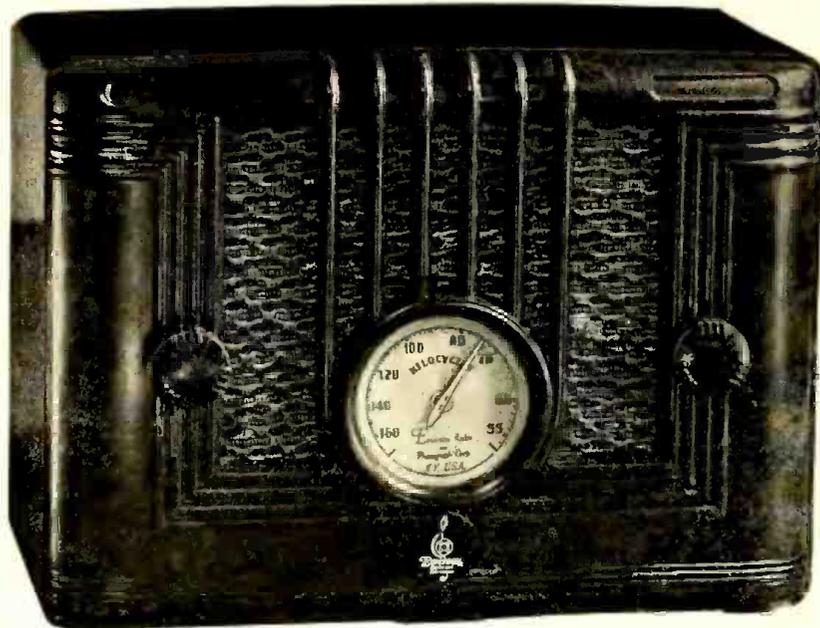
P. R. MALLORY & CO., Inc. • INDIANAPOLIS, INDIANA • Cable Address — PELMALLO

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

Use  
**YAXLEY**  
REPLACEMENT  
VOLUME CONTROLS

# Emerson

At Lowest Price in Emerson History . . . Sensational New

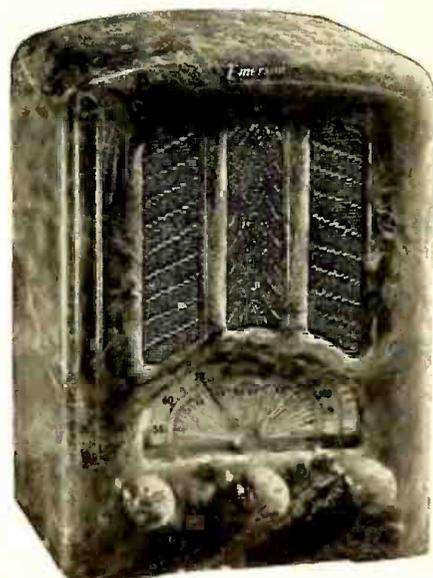


- 5-TUBE AC-DC  
*BA-199*
- STANDARD AMERICAN BROADCAST AND POLICE CALLS
- ELECTRO DYNAMIC SPEAKER for true, clear TONE.
- AUDIO OVERLOAD CONTROL
- WALNUT BAKELITE CABINET

# \$9.95

Same list price everywhere in U.S.A.

When the public can buy an EMERSON RADIO at \$9.95—that's NEWS! When YOU can feature a set . . . at \$9.95 . . . that bears the nationally known name of Emerson—that lives up to Emerson's QUALITY tradition—and make a good mark-up on it—that's NEWS that leads to SALES ACTION!

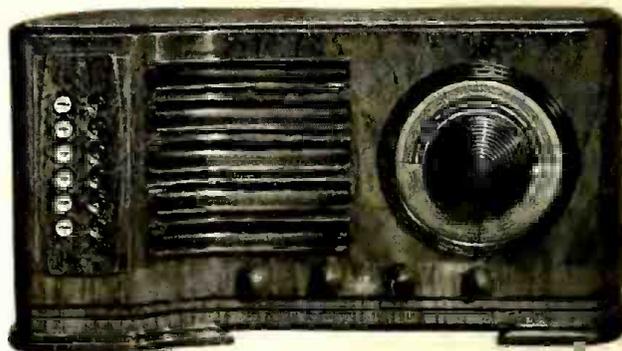


## EMERSON Model AU-190

Five-Tube AC-DC superheterodyne in a new, modern molded cabinet in choice of two colors — *Natural Onyx* and *Brazilian Onyx*. Gemloid Dial. Full size dynamic speaker. Standard Broadcast, Police Bands, Amateur and Aeroplane Stations.

# \$29.95

Same list price everywhere in U.S.A.



## EMERSON Model AY-195

“MIRACLE TUNING” — “MIRACLE DIAL” — “MIRACLE TONE CHAMBER” — 6-tube AC/DC superheterodyne. American, Foreign, Police. Dynamic speaker; automatic volume control; tone control. Band Indicator. Hand-rubbed walnut cabinet.

# \$59.95

Same list price everywhere in U.S.A.

### • ADVERTISING—DEALER PROMOTION HELPS •

The Emerson program of advertising for 1938 will be far more extensive than ever before. Plans for national and local advertising, radio broadcast, colorful literature are now going forward. Everything that will help to sell and make money is included in the new Emerson program.



48 EMERSON MODELS—TABLE SETS—COMBINATION RADIO AND PHONOGRAPH MODELS—

EMERSON RADIO & PHONOGRAPH CORP. • 111 Eighth Ave. • New York, N. Y.

Cable Address: Emphonoco, N. Y.

World's Largest Maker of Small Radios

# Presents

Miracle Dial ... Miracle Tuning ... Miracle Tone Chamber

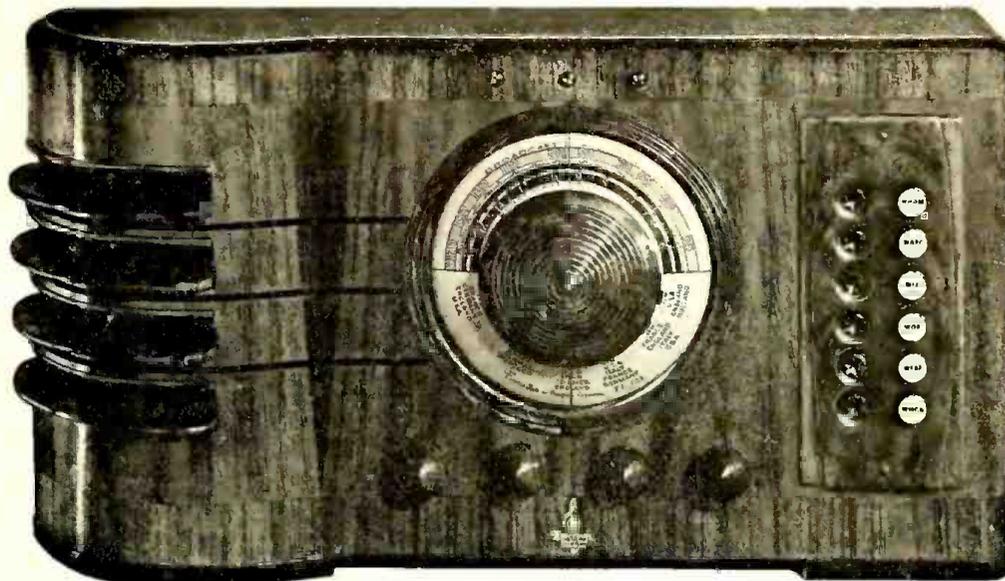


(Mechanical and Design Patents Pending)

**INTRODUCING—**  
Emerson "MIRACLE TUNING": push button tuning with a plus—six frequency ranges—easily changeable from the front of cabinet, over the entire broadcast band.

Emerson "MIRACLE DIAL": here is the modern table model tuning, visible from any standing or sitting position. The entire calibration surface is flood-lighted.

Improved "MIRACLE TONE CHAMBER"  
Ask for new broadside with all details.

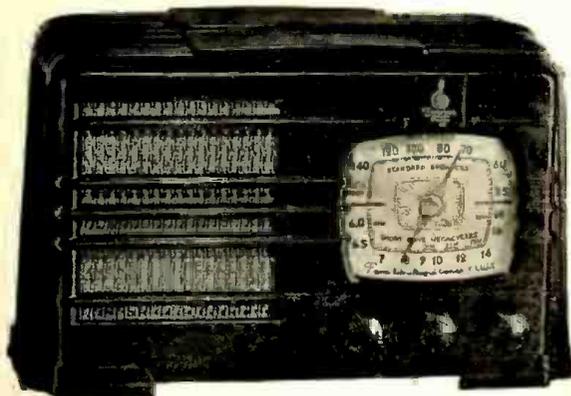


EMERSON Model AZ-196—

"MIRACLE TUNING" — "MIRACLE DIAL" — "MIRACLE TONE CHAMBER" — 6-tube AC superheterodyne. American, Foreign, Police. Dynamic speaker; automatic volume control, tone control. Band Indicator. Hand-rubbed walnut cabinet.

**\$59<sup>95</sup>**

Same list price everywhere in U.S.A.

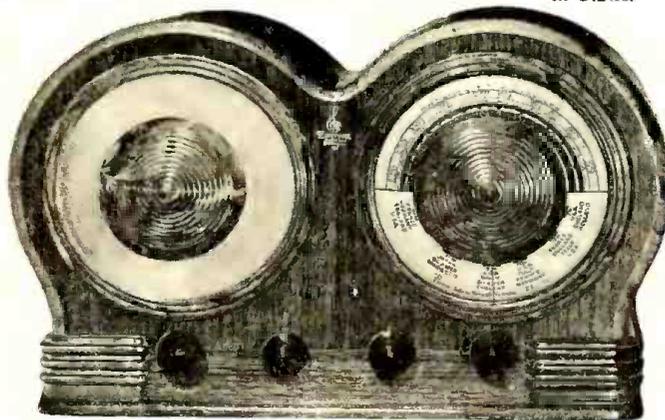


EMERSON Model BF-191

A six-tube AC-DC superheterodyne in a bakelite cabinet with artistic lines expressing the last word in modern day styling. For Standard American Broadcast, Police Calls and Foreign and American Short Wave. Automatic volume control; tone control; dynamic speaker. Choice of colors—walnut or ivory.

**\$25<sup>95</sup>**

(WALNUT)  
Same list price everywhere in U.S.A.



EMERSON Model BD-197—with Miracle Dial

Six-tube AC-DC superheterodyne Emerson achieves a new note in unique originality and exceptional beauty in radio styling in this model created by Count Alexis De Sakhnoffsky exclusively for Emerson. Bent pencil-striped American walnut. Lustrous hand-rubbed finish. American, Foreign and Police Bands. Dynamic speaker; automatic volume control; tone control. Band indicator.

**\$39<sup>95</sup>**

Same list price everywhere in U.S.A.

• CAPITALIZE ON THESE SENSATIONS NOW! •

As with all other Emerson Models, you make a substantial profit on these new creations. More than that, these sets are genuine advertisements in themselves. They will bring customers in and sell themselves. Write, wire or telephone your distributor or direct, for all details!

CONSOLES—PORTABLE MODELS—BATTERY SETS—FROM \$9.95 to \$139.95. (Uniform list prices everywhere.)

EMERSON RADIO & PHONOGRAPH CORPORATION • 111 Eighth Avenue • New York, N. Y.

Cable Address: Emphonoco, N. Y.

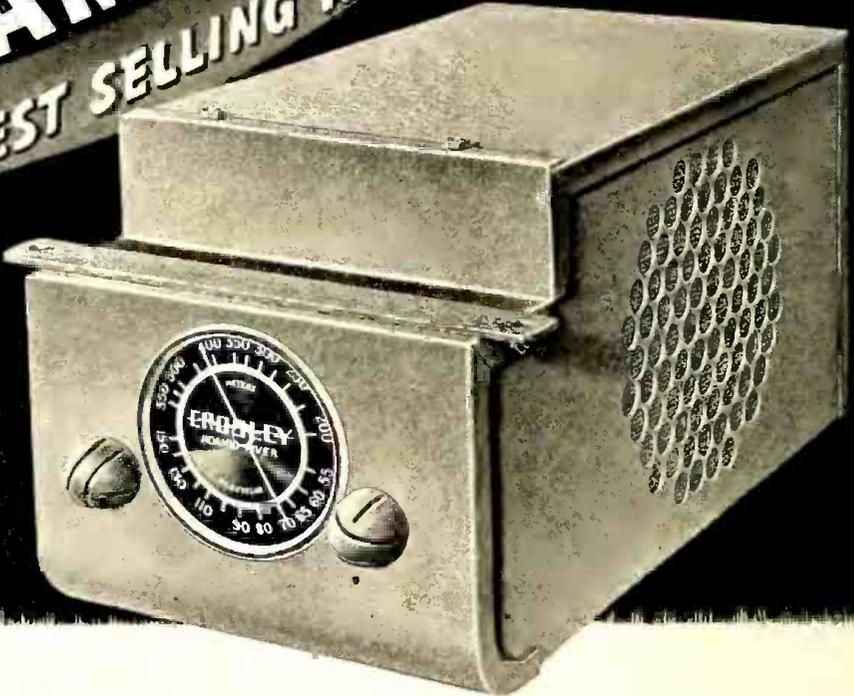
World's Largest Maker of Small Radios

**A YEAR 'ROUND SALES LEADER**

**CROSLEY FIVER ROAMIO**

**THE WORLD'S FASTEST SELLING AUTOMOBILE RADIO!**

**\$1999**



The year's "best seller" in the automobile radio field . . . a sure fire, year 'round business getter for every radio dealer—the sensational Crosley Fiver Roamio! Stock this remarkable receiver and make your radio "sales and profits curve" shoot up.

CROSLEY FIVER ROAMIO—5-tube superheterodyne . . . Octal base tubes . . . Full automatic volume control . . . strong clear volume . . . Large, easily-read, illuminated Mirro-Dial . . . One piece installation . . . Low battery drain.

*(Prices slightly higher in South and West.)*

**THE CROSLEY RADIO CORPORATION, CINCINNATI • POWEL CROSLEY, Jr., Pres.**

Home of "the Nation's Station"—WLW—500,000 watts—70 on your dial

**YOU'RE THERE WITH A CROSLEY**

# THE BIGGEST TUBE MARKET belongs to **PHILCO!**

**O**VER ten million sets bearing the Philco name have been sold in America. To every owner of a Philco Radio... Philco Tubes are the natural, inevitable first choice when replacements are needed. That means the biggest tube market in all the world belongs by right to the dealer who sells Philco Tubes!

But there's an even bigger market than that, wide open for Philco Tubes. Due to Philco prestige, Philco popularity, Philco advertising... owners of other makes of radio will accept Philco Tubes without hesitation.

With millions of tube sockets needing new tubes for better performance in 1938, the dealer who concentrates on Philco Tubes stands in an enviable position to make real money.



# PHILCO TUBES

*The Easiest Tubes in the World to Sell*

# The 3-time leader ... twice!

For the second consecutive year, the Columbia Network continues its leadership *in all three major phases* of network advertising:

*Columbia, in 1937, carried the greatest dollar-volume of advertising of any network in the history of radio.\**

*Columbia, in 1937, was the choice of more of the country's leading advertisers than any other network.\*\**

*Columbia, in 1937, continued as the world's largest radio network.\*\*\**

This record, of course, is not Columbia's alone. It was made by the most careful buyers of advertising in the world—who increased their average expenditure for Columbia Network facilities this year over last by 25.9%.

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\*And did so last year.

\*\*And has been for four consecutive years.

\*\*\*And has been for five consecutive years.

In the detailed record of the CBS advertisers is the answer to every basic question you can ask about radio and radio advertising: *What do listeners think of radio? Do they enjoy it?* The answers to these questions are written by the advertisers themselves; advertisers who, in a *single* medium, find the swiftest road to any market you can name! Obviously, before these advertisers can make sales, they must make friends of America's 86 millions of listeners—make friends through radio's programs—and Columbia. Interlocked with this selling—linked as strongly as the stations to the Network—are the sales of *radio sets* in 1937. For the same programs which do the selling furnish—in their entertainment—the incentive to the listener for buying a radio. But they're only half the reason!

Throughout the year, some 22,475 Columbia programs were broadcast to the nation. More than half of these were programs '*by Columbia*'—produced by the network in the living and challenging fields of Public Affairs, Education, Serious Music, Religion, Special Events and Sports. These programs round out the schedule of the world's largest network, bringing the world's *voice*, as well as its goods, home to the nation—wherever home may be.

*The* C O L U M B I A B R O A D C A S T I N G S Y S T E M



HARRY BOYD BROWN  
National Merchandising  
Manager of Philco

# "THE RECORD SPEAK FOR ITSELF"

**W**HEN the going gets tough, the radio dealers of America know they can depend upon the strong, steady public demand for Philco. They also know that they can rely on Philco Leadership. History proves it. And history is repeating itself in 1938—because Philco national advertising for this Spring Season will continue in tremendous volume without interruption.

The country is in the midst of a general business depression. It should be of short duration. At least most people think so, and all signs indicate it. The basic economic situation is good, and it seems possible for business recovery to be built up quickly.

However—depression or no depression, good times or bad—the radio dealers can depend upon Philco. The record speaks for itself. For more than 8 years—through days of national prosperity and on through the darkest days of business depression—Philco has carried on the most gigantic, the most consistent advertising program in radio history. And Philco is not changing from that program of action one iota today.

Remember also—that more than 30 million radios are in use in the United States today in home and automobile. They are an absolute necessity. The American public cannot live without them. And they are wearing out by the millions. They are becoming obsolete by the millions.

The replacement of these millions of worn out and obsolete squatter-type radios is inevitable. The less that are sold today because of business uncertainty, means the more will be sold tomorrow. Postponed purchases—millions of them—will rapidly blossom into sales as business recovery moves ahead.

That is why Philco advertising will carry on in ever increasing volume. And 7 out of every 10 people—who ask for any particular radio—will continue to ask for Philco—the radio with the Inclined Control Panel which means "No Squat! No Stoop! No Squint!"—the amazingly popular slogan that has put Philco on the tip of everybody's tongue.

Millions of people of all ages and in all walks of life, are absolutely sold today on Philco, and Philco will be their next radio whether they buy today—tomorrow—next month or next year.

*Harry Boyd Brown*

# PHILCO

JAN 20 1938

## Staff—

DARRELL BARTEE  
G. H. MAYORGA  
J. E. NEARY, JR.  
M. H. NEWTON  
B. V. SPINETTA  
VINTON K. ULRICH

LEE ROBINSON  
Sales Manager

# RADIO TODAY

ORESTES H. CALDWELL  
Editor

M. CLEMENTS  
Publisher

Copyright 1938  
Caldwell-Clements, Inc.  
480 Lexington Ave.  
New York, N. Y.

Tel. PLaza 3-1340

Vol. IV, No. 1.

## 7,700,000 RADIOS IN 1937

★ A dour December for radio took a brighter turn the last half of the month, and retail sales picked up, ending the year with a more cheerful trade attitude. Sales for December, however, ran 40 to 45 per cent behind a year ago, and this ratio prevailed during the final quarter of 1937, indicating that fourth-quarter radio-set sales would not exceed 1,700,000 sets. Added to the 6,000,000 radios sold during the first three quarters (see December issue, page 7), total sales for the year are now estimated at from 7,600,000 to 7,700,000 sets. This will represent a falling-off of about 7 per cent from the all-time high established in radio-set production and sales last year when the final official total was 8,248,755 sets.

## "WIRELESS REMOTE CONTROL" ON SPRING MODELS

★ Great interest has been manifested in the new "wireless remote control" coming for home radio sets. By means of carrier-controlled relays, a radio on the opposite side of the room or in another room, can be turned on, off, tuned to any of six stations, and have its volume adjusted up or down. No tubes need to be burning in the radio to be thus turned on. The control unit is a small box with push-buttons and a cord which can be plugged in to any nearby electrical outlet. All control is effected over the house electrical wiring, without any control cord leading from the push-button box to the distant set.

A number of leading manufacturers have indicated that they will bring out such "wireless remote-control" sets this Spring in their higher-bracket models.

With "wireless control" in the top-flight sets, and push-button tuning penetrating into the radio price range

as low as \$30, the new Spring models are expected to exert powerful obsoleting effect on home radios now in use.

## FACTORY STOCKS CLEAR; TRADE STILL TANGLED UP

★ Survey of radio-set inventories immediately after the first of the year, showed that the delayed Christmas business had been a factor in considerably clearing up the overstocked condition feared earlier. Factory stocks of sets on hand have by this time been pretty well cleared, largely as a result of drastic curtailment of production.

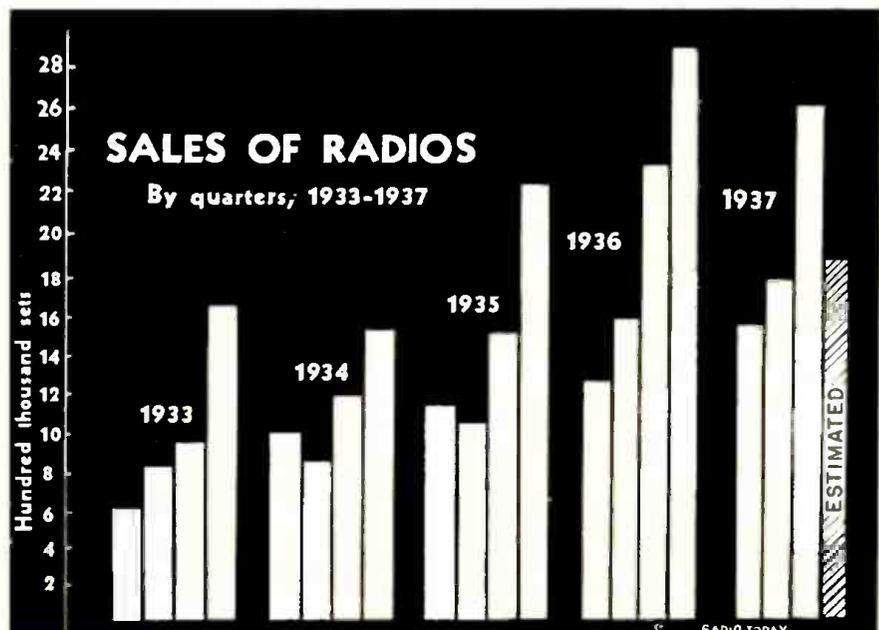
Stocks in the hands of jobbers, distributors and dealers are still heavy, and moving slowly. The test of the present situation will probably come at the end of January or the middle of February, though herculean efforts now being made to help retailers move sets into homes, may ease the threat of dumping in 1938. New items

being introduced to sweeten lines, will help interest the public. With radio listening now at an all-time high, and the majority of radio sets already past their retirement limit, the Spring outlook is encouraging, as the general business situation brightens.

## RADIO STATISTICS, WAVE-LENGTHS, IN PART TWO

★ For the convenience of our radio readers, a timely two-page chart of the complete radio and audio spectrums, embodying the new radio-frequency assignments issued by the Federal Communications Commission in its order of Oct. 13, 1937, is presented in Part Two of this January issue of RADIO TODAY.

Occupying other pages in Part Two, the editors of RADIO TODAY present the complete basic statistics of the radio industry for 1938, covering sales of receivers, tubes, replacement parts, and supplementary merchan-





Philco execs toss a surprise dinner for E. R. Alexander, second from left, on his wind-up of 20 years as Pennsylvania jobber. Otherwise, left to right, Philco's Harry Boyd Brown, Peter Kain, and President Larry E. Gubb.

dise, radio sets in use, broadcasting. Unfolded copies of the radio spectrum, suitable for framing, may be obtained by sending 10 cents in stamps to RADIO TODAY, 480 Lexington Ave., New York, N. Y.

### SUDDEN RUSH TO FACSIMILE

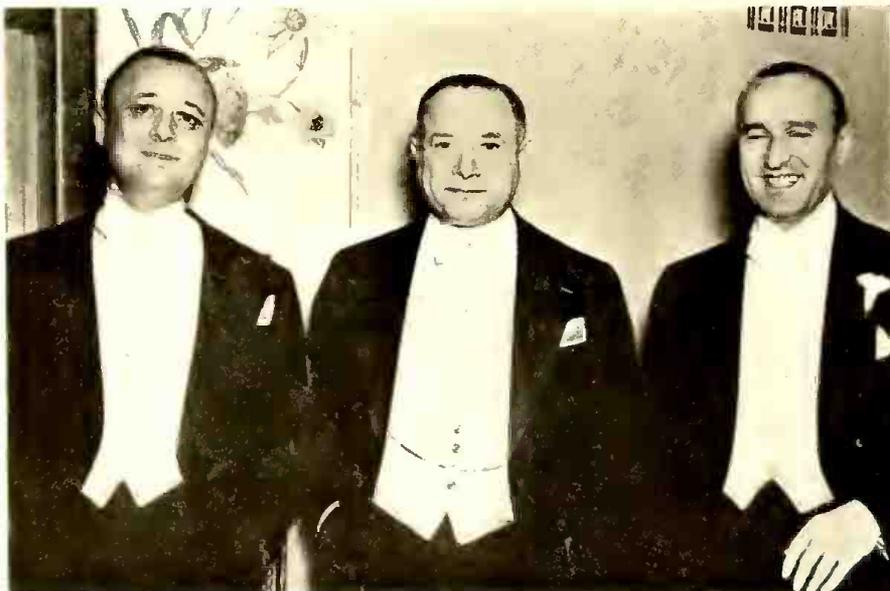
★ While television is occupying the headlines, without much happening in a commercial way, the long-languishing art of "facsimile" is making a sudden advance in the broadcasting field.

Facsimile is the process of transmitting pictures, type pages, musical scores, etc., by radio or other electrical impulses. Already widely used for the sending of news photos, over both leased wires and ordinary telephone sets, the adaptation of facsimile by radio stations would make

it possible to deliver complete tabloid newspapers, with headlines, cartoons, display ads, etc., to every home within range of a broadcast station.

During the past month or two some 25 U. S. broadcast stations have ordered facsimile transmitting sets, for experimental use. Each purchase includes 50 to 100 home facsimile receivers which will be farmed out in the community for test.

While most of these broadcasters plan to make their facsimile transmissions on their regular broadcast channels during the early-morning hours, when ordinary broadcasting is hushed, a few contemplate 24-hour short-wave transmissions. The facsimile receivers being supplied are complete with radio chassis, but facsimile attachments are already on the market which can be connected onto existing home radios in place of the loudspeaker.



Radio leaders attend a white-front benefit at New York's Waldorf. Left to right, Ben Abrams of Emerson, David Sarnoff of RCA, and Henry Benjamin.

### TUBE-AMPLIFIED PIANO MAKES BOW

★ Several recent developments indicate that radio dealers may soon have a new form of radio-tube musical merchandise to sell—the tube-amplified piano. (See RADIO TODAY, July, 1937, page 30.)

Wanamaker's, New York, has been advertising its new Musette piano, employing "the resotonic scale to which radio principles of amplification have been applied. We used this amazing new instrument to help accompany our Christmas community singing and were deluged with inquiries," explains the ad.

The new instrument sells for \$695 and is described as "diminutive in



Lee Robinson, vice-president and sales manager of "Radio Today," greets R. L. Triplett, instrument king.

size, but has an enormous range in tone, from beautiful pianissimo to tremendous volume. It costs no more than a good grand. We believe that orchestra leaders, schools, clubs, churches, and private music-lovers will be extremely interested in it."

Meanwhile rumors are floating around that several leading radio manufacturers are considering making these amplified pianos and marketing them through their own distributing organizations. The pianos would be sold as separate instruments, or incorporated into expensive radio consoles, affording a combined master musical instrument for fine homes.

### AS OTHERS SEE US!

★ We've just had a fresh round with the experts in decoration and design on this matter of radio cabinets, and we hasten to print with the statement that *they won*. If you



Aerovox Corp.'s popular Charley Golenpaul has a smart hobby—collecting positively all the jobbers' catalogs.

so much as mention radio cabinets to them, they snort. (Favorite adjectives include atrocious, unthinkable, impossible, and God-awful.)

None of them seemed to be mixed up on it, either; they know precisely how to adapt authentic designs, and they seem to agree on the places where the radio manufacturers make their "flashy blunders."

Yet these artistic boys are quite human, for all their elegant notions. They say that if somebody builds a decent cabinet, the public will buy it right off. People won't be able to explain *why* they like it but they will.

So that's that!

## RECESSION TURNS PUBLIC TO RADIO

★ "If the recession continues, and money becomes scarcer," declares Philco's Ernest B. Loveman, "the public will turn more and more to radio. A restricted family budget means many more nights spent at home and the finest radio entertainment in the world is free to every one who owns a radio.

"When people have to watch their dollars, they become more and more dependent upon the radio. This has been proven in the past two months by the fact that theater attendance throughout the country has dropped more than 20 per cent and that night clubs everywhere are reporting a serious decline in volume. As radio entertainment becomes more and more the old standby, the public will demand a great deal more of their radio sets."

## DEALERS PRESENT BRIEF TO FTC, PLAN NATIONAL ASS'N.

★ A group of dealers have actually asked for lower discounts. "We get 45 to 60 per cent from the list prices," they say, "and we regard these discounts as unnecessarily and indefensibly high."

This attitude was recorded in a brief submitted to the Federal Trade Commission by William H. Ingersoll, fair trade authority, representing the radio and appliance dealers' associations of Manhattan, Bronx, Brooklyn and Queens boroughs, New York and Westchester County, New York. These dealers had regarded the trade regulations heard by FTC on Dec. 7 as OK "as far as they go" but suggested several additions in their own brief dated Dec. 13.

The extra wishes of these dealers were listed under six main heads:

1. It is the conviction of our members that list prices of radio sets are too high.

2. We submit further that lower prices to the public will prevail if trade-in allowances are held to sensible maximums.

3. We hold that each set should be explicitly marked with sufficient descriptive detail so that the consumer could not be deceived regarding the specifications of the set he is buying.

4. We prefer to see all sets marked with the names of the actual manufacturers.

5. We are agreed with the Better Business Bureau that the rules should prohibit the advertising of radio sets which are not sold without special equipment, such as antenna, at a



G. Hamilton Beasley, Utah president, has announced executive appointments.

price which does not include the required equipment.

6. We disapprove of a dealer's tampering with sets to impair their performance in demonstrations before customers for the purpose of diverting their choice to some other product that he prefers to sell.

Under the wing of the Brooklyn dealers' association a meeting was held recently of officials from the Home Appliance Dealers' Association, Philadelphia, and from a Southern New Jersey body. The plan of a national organization of radio and appliance dealers was strengthened.



Indianapolis Chamber of Commerce honors Stewart-Warner on the firm's 25th birthday. In section at the left, J. E. Otis, Jr., SW president; J. S. Knowlson, board chairman, and H. F. Shortemeier. At right, SW's J. F. Ditzell and friend.



# RADIO BEATS A RECESSION

## How dealers are attracting buyers and moving stocks

★ RADIO SALES have been nicked before, and by experts. No such a small-time "recession" as the current one will ever get radio men to admit that they're licked.

When there is a drag in sales, most dealers decide to breeze out and do something about it. Accustomed to doing a job, they pour in a lot of extra personal effort without hiking their advertising and promotional expenses to unsound limits.

The whole idea is to get radio merchandise to the attention of more folks, either by getting them into the store or by organized selling outside.

It means that dealers are more careful today about re-checking prospect lists, getting names from the service or appliance departments, and making an attack on all those who are known to have outmoded sets.

It also means that letters, cir-

lars and post cards for direct mail must be dressed up with a new appeal of 1938, based upon the fact that people are a little slow to buy right now. Window and store display must be re-vamped in a novel and striking manner, tied up with local newspaper advertising written as genuine radio merchandise news.

Experts agree that you can't sit around with a dull look in your eye and blubber about how rotten business is. You can't turn out half the lights and let the place get sloppy.

Your store must be cheerful and trim; your own attitude must be optimistic and aggressive, is what they're saying.

Specifically, dealers have taken a variety of steps to stir sales and to get under way with resourceful promotion in general. Following are some ideas from all parts of the U. S.

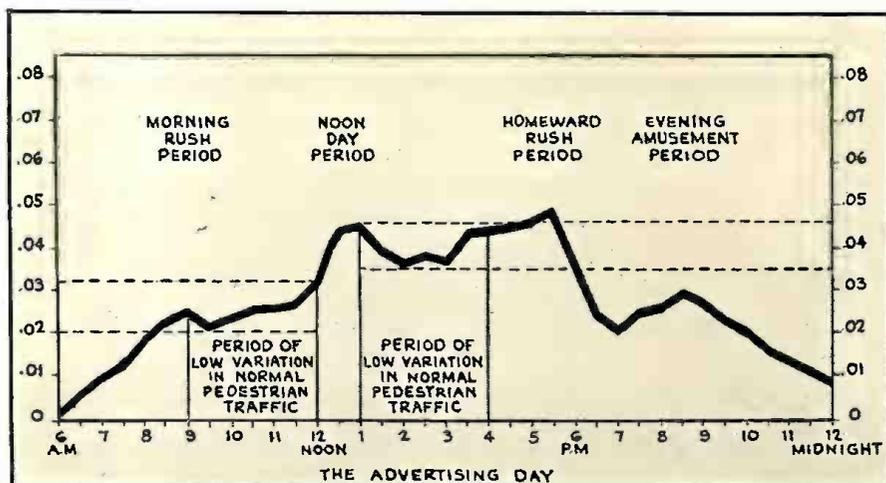
★ Hopper-Kelly Co., Seattle, Wash.—Young lady demonstrators appear in window displays and by means of a microphone and a speaker outside the window, create a "talking window" effect. The attractive girls take up the sales points of the new receivers displayed and explain to the street traffic why 1938 sets are good buys.

★ Radio dealers of Harrisburg, Pa., and local CBS station WHP cooperate in a 12-page radio supplement in the newspaper Harrisburgh Telegraph. The stunt was engineered by WHP's publicity director Dick Redmond.

The newspaper feature carries information about new sets, program material and general broadcasting information. Titled "Drawing the Curtains," it attracts wide attention to a series of dealer ads placed in the section.

★ Matheny's Radio Service, We-woka, Okla.—Hold a contest for the oldest radio in the community. The owner is awarded a new 7-tube table model set. No obligations are involved for entries, except that entrants are required to drop in and give the model and serial number of their set.

★ Wm. Doerflinger Co., La Crosse, Wis.—A unique window display is built with 38 sets. In the center goes an arm chair with an appropriate chairside model at each side of it. At each side of the chair display consoles are used with wings of



How window circulation varies from hour to hour. (Chart by ANA).

shelves going full height; thus the consoles are framed by 7 table models each. On the floor in front of all this are placed 19 table models of the smaller types, including plastics. Color to the rear is provided in the background, and color at the front is furnished by using colored sets.

★ Schafer's, Englewood, N. J.—Store salesmen are entered in weekly contests in which points are given for new customers added to the lists of acquaintances of the firm. Prizes are limited to appropriate articles of clothing, and a single competition is never allowed to continue over a week. Since each award is a strictly useful one, and prize winners decided every few days, interest is kept at a high pitch.

★ The Electrical Appliance Society of Northern California starts the sponsorship of a big campaign with over 300 radio dealers of the area based on the idea of "You're There in Person with a 1938 High Fidelity Radio." Sixteen stations of the Northern California Broadcasting System donate some \$18,000 worth of time on the air.

The drive includes space in 200 newspapers, 400 theatres, and billboard activity, in the interests of better radio receivers. The keynote is that dealers should "forget resistances, loudspeakers, and tubes—sell symphonies, comedians and drama."

★ Schwartz Furniture Co., New Brunswick, N. J.—A single-night sales event, staged for invited guests at an hour when the store was not usually open, helps to tonic radio sales.

Advertised as something special for a selected group of store friends, the affair is registered on Schwartz acquaintances as a courtesy to be extended between 7 and 9 p.m. on one night only. Attractive giveaways are featured and the event has the nature of a "party" where too much

At right, radio man finds that his display efforts, his telephoning, his careful advertising, his demonstration technique, adds up to a nice sale.

## SIX WAYS TO MOVE STOCKS

1. Mail out special announcements of advertised offers.
2. Contact customers who bought sets several years ago.
3. Telephone set owners who recently had radios repaired.
4. Feature human interest windows showing lines on hand.
5. Display all goods in 1938 style, with new descriptive price cards.
6. Offer salespeople a plus compensation for selling slow items.

serious sales talk was checked out and family groups relaxed.

According to I. A. Kenny, Schwartz executive, the stunt furnishes a valuable check-up on the current buying interests of all prospects and in general identified the store with a friendly merchandising policy.

★ Ray Haasch, Milwaukee, Wis.—A store celebration is staged, to which all former customers are invited. "They do not have to buy a single item—merely make an appearance at the store and register. If they are fortunate they win one of 17 prizes. These prizes are delivered to registrants even if they are not at the store when the prizes are awarded. The typical reaction to this is seen in the statement of one guest who said that a store which played square like that could have his business anytime, and proceeded to send us several customers."





Home demonstrations are welcomed by typical families.



Live models are used with Stromberg chairsides at Jenkins Music Tulsa, Okla.

# MORE WAYS TO BEAT A SLUMP



A salesman invites a prospect to outline all that she wants in a new receiver.



Novel market for auto radio, photographed by New Departure Coaster Brakes.



Servicemen, with eye for plus sales, take spare receiver along on repair jobs.



Neighboring stores are OK prospects and good pay; here, a cigar-store crowd makes friends with Philco.

# NEW AUTO RADIO LINES

New models feature improved tuning and push-button control

★ **PUSH-BUTTON TUNING**, which has been so successful in home radios, is now one of auto-radio's biggest features.

Introduced first by Chevrolet last November at the N. Y. Auto Show and manufactured by Crosley, push-button tuning for autos is made available to the radio industry for first time also by Motorola in models priced at \$59.95 and \$79.95.

## Sales up 25%

Despite a substantial drop in auto-radio sales the past two months, Philco's Transitone sales manager, March Fisher, states that their sales are up 25 per cent over the figures for a year ago. And it is expected that auto-radio sales will keep booming this season. Many car owners who have felt they couldn't buy a new car model this year, have the money to buy a radio and are doing so.

Auto dealers in an effort to clear a congested used-car market, are installing auto radios to attract prospective purchasers.

Now that the motor public is getting accustomed to consider auto radios a necessity, the demand is on the increase. And then, too, the radios themselves give much better performance—ignition and other electrical noises have been eliminated—tone quality greatly improved.

## Lower-priced models

During the first two weeks of January new auto sets were announced by Crosley, Motorola, Philco, and RCA. To eliminate remote controls, RCA and Philco have designed single-unit sets mounting behind the instrument panel. RCA's 8M, a 5-tube superhet, illustrated on this page, lists for \$19.95. And Philco's model 920, a 5-tube set with a pre-selector stage, lists at \$24.95. The Roamio Fiver made by Crosley is also an instrument-panel receiver—it sells for \$19.99.

In the higher-priced models improved tuning and reception controls are featured. The Motorola receivers have a dial mechanism which features "Spot Tuning." After station set-up, a slight click is felt while tuning when the station is accurately tuned in. As stated by Galvin—one just "feels" the correct position.

While auto radios will be the

greater portion of the dealers' income for the next few months, motorboats and yachts are sales opportunities not to be overlooked. Interest in boats is at its highest since 1929 as evidenced by the attendance at the N. Y. Motorboat Show.

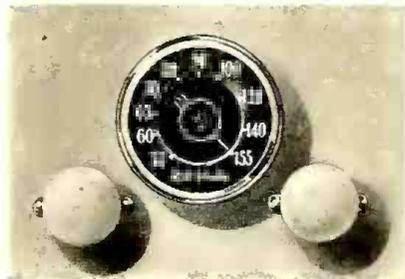
## Radios for boats

From the entertainment point of view, every pleasure craft should have a radio set. For broadcast reception any quality auto receiver is satisfactory; also many of the farm battery receivers will be suitable. Zenith manufactures some models especially designed for selling to boat enthusiasts. Special shielding of the engine may be necessary—it depends

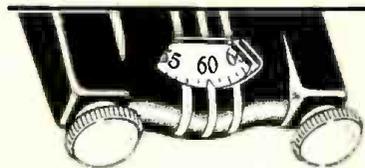
(Continued on page 33)



Motorola's push-button tuning controls.



RCA Victor instrument panel controls.



TUNING CONTROL

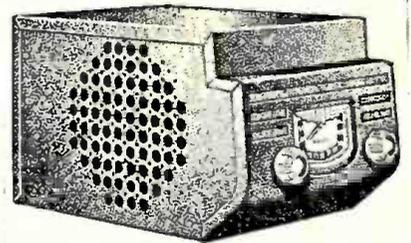


RECEPTION CONTROL

Philco features push-button reception control for varying conditions.



Six tubes in Motorola 8-50 featuring spot tuning and acoustinator—\$49.95.



A pre-selector and five tubes are included by Philco in this set for \$24.95.



RCA model 8M for instrument panel mounting has 5 tubes—lists for \$19.95.



Safety tuning with mechanical push buttons selecting five stations is featured by Crosley for less than \$25.

# FAKE RADIOS!

Counterfeit Sets, Faked With Dummy Tubes, Advertised and Sold By Some New York Stores, Exposed As Fraud By Radio Magazine!

New Rochelle radio dealers, mindful of the fact that some local residents have purchased one of these "fake" radio sets as advertised in New York City publish the astounding facts uncovered by the authoritative magazine "Radio Today," in the hope that prospective radio purchasers will realize the value of trading at home with a dealer who believes that fair and honest merchandizing always pays dividends.

## READ THESE FACTS Reprinted from "Radio Today"

But there are other racketeers besetting the radio buyers of New York. And Radio Today for the protection of the radio buyer.

practice of using more than the necessary number of tubes, which preys on the gullible radio set buyer. And Radio Today for the protection of the radio buyer.

**Play Safe, Purchase Your Radio From One Of The Reputable New Rochelle Radio Dealers Listed Below, Where You Can Buy With Confidence!**

### Librett--North Avenue

Authorized Philco Agency  
North at Winyah Open Evenings Hamilton 5050

### Linden Furniture Co., Inc.

Authorized Philco Radio Dealer  
607 Main St. Open Evenings Until Xmas N. R. 5722

### Goldman Electric Co.

Dealer for Zenith and Other Popular Makes  
230 North Avenue Open Evenings N. R. 2418

### Sterling Furniture Co.

Philco Radios and Others  
592 Main Street Phone N. R. 6960

### Westchester Radio Co.

Dealer in Philco, General Electric and Others.  
434 North Avenue Open Evenings N. R. 8751

This advertisement published by Radio Dealers listed above in the interest of all prospective Radio Purchasers

Advertisement which radio dealers of New Rochelle, N. Y., ran on Dec. 17, in local "Standard-Star". Credit for the move goes to Edward Lowe, of Lowe Electrical Co., also one of the group. Legitimate radio men are thus willing to pay for local publication of "Radio Today's" trade-shaking facts.

★ "YOUR corporation is fined \$500. Your salesman gets 30 days in the workhouse, and you, as head of the firm, are sentenced to four months in jail!"

Thus, in effect, spoke a New York court to the most recent of the radio racketeers to be brought to justice.

As the "call to arms" sweeps outward from Manhattan and through the rest of the nation, let's re-examine the elements of the situation as the radio business becomes decency-conscious all over again.

In the field of new receivers the dishonest merchant has three principal methods of plying his racket. First comes the sale of unknown, unadvertised brands at fantastic retail list prices. These sets not infre-

# GYPS, "PULLERS," TUBE-BOYS!

More tricks of metropolitan grafters, against which legitimate radio men must compete

quently carry euphonious name-plates—often attached to the set by the gyp dealer himself—with names that bear striking resemblance to the well-advertised, standard brands. Such sets are being sold to the gullible at full "list" or at substantial cash discounts. In either case, the dealer nets a handsome profit. Very few of these receivers are up to accepted engineering standards; they are usually assembled with inferior parts, and usually contain a number of "dummy" tubes that serve no useful radio purpose in any of the set's circuits. (See RADIO TODAY for November.)

## "Classy" cabinets

Next in line is the sale of standard-brand *midget receivers reinstalled* in cheap but sumptuous-looking cabinets. The manufacturer's distinctive escutcheon and name plates are attached to the "spiffy" cabinet and the buyer pays through the nose for the dealer's own "new model" and at the dealer's own fantastic retail list price.

Of course, in the metropolitan areas, where the buying public has had a liberal education in the devious ways of the unprincipled merchant, more subtle ways have to be used by the versatile "gyp artist." In such centers, at least, some buyers "know too much" and are shrewd enough, especially when buying for cash, to drive a hard bargain. In such cases the dealer is careful not to influence the buyer's choice. Subtle suggestion is used, but no actual recommendation is made. He does his own picking—usually selecting a good standard receiver—and in so doing literally "hangs himself."

The transaction completed, the dealer's delivery and installation men, and the so-called "service" department are instructed to see to it that the receiver is not satisfactory. A poor installation, a couple of

"cluck" tubes do the trick very nicely. Not many weeks pass before the disgruntled customer reappears in the dealer's emporium. He is now met by a suave fellow of the "hail brother—well met" school, who expresses himself as being quite willing to exchange the unsatisfactory machine for a different make or model, but this time at the dealer's own cash terms. Needless to say, the dealer manages to make the exchange a lucrative proposition for himself.

As for minor infractions against the most elementary honest business practices—and these are legion—we shall mention only a few.

## Small-time

There is the "service" promised, but never rendered; the sale of older sets as "the very latest current models"; the sale of used, repossessed, and trade-in sets as "demonstration" or "floor" models; and the substitution of cheap tubes in standard receivers at a gain of two to five dollars to the enterprising, if not too honest, dealer.

And while on the subject of tubes: From the very beginning of the radio industry racketeering in tubes has been a remunerative endeavor. Used, rejuvenated, and misbranded tubes for many years flooded the market. To eradicate some of these malpractices and to protect the consumer, the leading tube manufacturers finally designed a "sealed carton" package so that at least now one may be reasonably sure of getting new tubes for one's money.

But the day of the tube gyp is not over. Many chain stores and individual stores in shopping centers still employ so-called "tube boys." These are hired to test and sell tubes. They are paid a very small salary and a commission of five cents for each tube, but only if sold in quantities of three or more. What an incentive for dishonest tube testing and selling!

It is the neighborhood gyp dealer, however, who has developed the subtlest tube scheme of them all. This master of applied, if not too honest, psychology will test the customer's tubes and, even if one or more of them are sufficiently bad to stop or at least substantially affect reception, will tell him blandly that his tubes are all right. And, while he thinks: "Here, at last, is an honest dealer"—this master of deception gently purrs: "The trouble more than likely is in your radio. I'll send my mechanic over and he will put it in shape for you. . . ." It doesn't always work out the way the dealer anticipates; but when it does, it pays—handsomely!

### Service that smells

And so we come to the service and repair racket. To begin with, the dealer who both repairs and sells radios is not always particularly anxious to satisfy the customer with his workmanship. If the job is not entirely satisfactory, he puts on his best ingratiating manner and proceeds to sell the customer a new radio. "We'll give you an excellent allowance on your old machine; after all, we want our customers to be satisfied." In the sales end of radio one is at least subconsciously aware that the dictum of *caveat emptor* holds sway.

What some radio service racketeers lack in age and experience they more than make up in ingenuity. They are early taught by their employers or by other men in the business that the thing that makes a serviceman valuable is his ability to "pull" sets from the customer's house. Never mind what the trouble is, show them your pretty test meters, give them a spiel, sell them a "bill of goods"; but, whatever you do, pull that set! It is the puller who brings home the "bacon."

### Further tricks

Needless to say, the really expert radio man is more often than not a very poor "puller." He is, therefore, usually kept on the inside to "work behind the bench," and the "blarney artist," who knows little more than his pretty speech, is sent to the customer's house with instructions to "get that set." A "free service" or "50c service" sign or ad gets him into the customer's home. Once there, he is trained to get all the traffic will

Counterfeit "1938-model radios" are home-made by the gyp dealer, using an aeroplane dial, new cabinet, and ancient chassis, maybe four or six years old.

bear. And, just as often as not, all the customer gets for his money is a fuse (price five cents), a resistor (price ten cents), a condenser (average price twenty-five cents), or a tube (price one dollar or less).

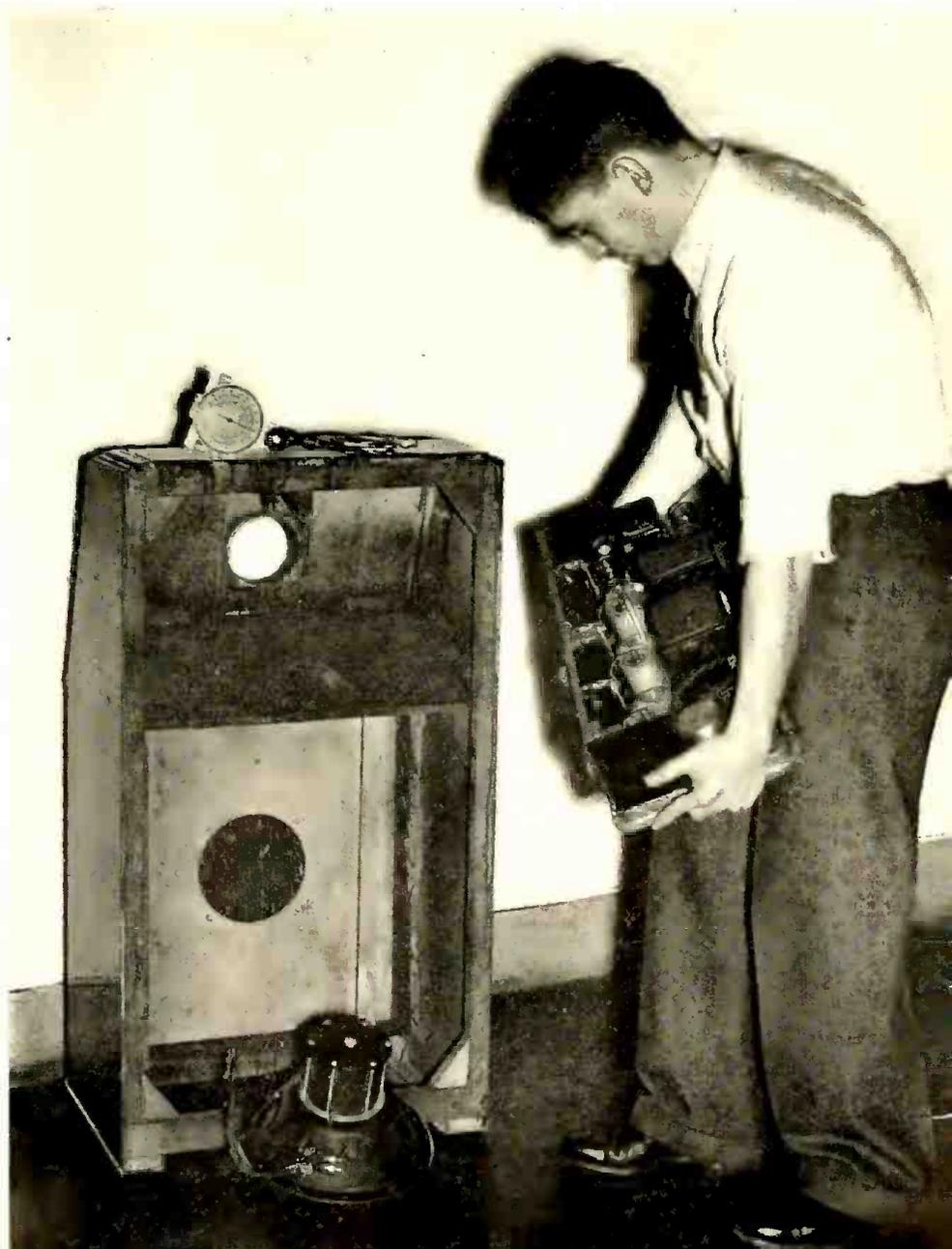
Suppose you discover that the fuse in your radio is burned out. The gyp is not at all discouraged. On the contrary, he expresses admiration at your being able to locate the trouble for yourself. And sells you a new fuse of about one-quarter of the required amperage. Unable to carry the load, such a fuse burns out the instant the radio is switched on, and then, baffled by this, there is a good chance that you may yet call on this gyp to "put your radio in good working order."

The tuning dial is usually secured to the tuning mechanism by means of "set screws." When these get loose the dial turns without actuating the tuning mechanism so that one either gets one station all over the dial or

gets no stations at all. Tightening the set screws repairs the set, but the racketeering serviceman will sell you a set of "new tuning condensers"—at a price.

The gyp serviceman, whether he works for himself or for a storekeeper, is full of tricks. He will cut down, ground or short your aerial and then solicit your work. He will "wash" tubes and tell you they are new. He will make you pay for tubes he never installed. He will sell you tube savers, static filters, aerial eliminators, and similar useless truck. And he will use inferior material.

He will even stoop to vandalism and clip a wire or two to make sure that the set is inoperative when he leaves your house. Truly, he trods rough-shod to garner his ill-gained dollars, and his only fear is that he may some day leave definite evidence by means of which an honest radio technician may expose him!



# TODAY'S PROMOTIONS

## HARD-BOILED SUGGESTIONS FOR NEXT FEW WEEKS

**Use bulletins,** pictures and short notices to stir up listener interest in the Jim Braddock-Tommy Farr heavy-weight battle on Jan. 21. Collect data on the significance of the bout, as well as presenting complete reasons for tube check-ups and personal receivers. See that your area knows the broadcast time and station.

**Leave new sets** in homes whose radios are being repaired. Choose receivers which will contrast strikingly with the old ones, in respect to appearance, tuning conveniences and reproduction. Install the radio so that it has the best chance to become an indispensable item of furniture and entertainment.

**Display a new console** just outside the front door of your shop, when weather permits. Select a hot 1938 feature to plug on a placard to be placed atop the instrument. Tune the

radio in on a musical program, or play records through the set. Face the console in the direction confronting the main stream of street traffic.

**Build a window** in which sound equipment is mixed up with your radio displays. Go heavy on the use of microphones and the items of public address which are most popularly identified with the processes of broadcasting yet arrange the set-up to interest sound prospects.

**Distribute a circular** with deliberate mistakes made in the copy. Make special offers to those who will bring in the corrected sheets, on combination specials or on trade-in allowances. Sample mistakes: "Konsoles," "orders filed," etc.

**Go after business men** who have a tendency to feel that most broadcasts are not hard-boiled enough. Remind them, for instance, that during a current week CBS presents, for their special benefit, (1) industrial studies, (2) trade convention reports, (3) reports on unemployment, (4) surveys

## DEALERS WHO HAD A HAND IN THIS MONTH'S LIST OF SALES IDEAS



E. H. Hasse's radio and electrical store of Englewood, New Jersey.



Gerald Evans, Ola, Arkansas.



Frank K. Loomis of Westwood, New Jersey.



Paul L. Kemper, The Gas & Electric Shop, Dayton, Ohio.



W. Rosenberg Pioneer Radio Wichita, Kan.



J. G. Bradburn of "Lil' Pal" radio store, Houston, Texas.

## EIGHT WAYS TO ATTRACT BUYERS

1. Advertise special values and combination offers.
2. Telephone old customers, give them a new reason to visit the store.
3. Keep your window displays seasonal, newsy, eye catching.
4. See that your store front is striking enough to flag the attention of motorists.
5. Invite local clubs in for programs of particular radio broadcast or records.
6. Call up service department customers, give them broadcast news, ask them in.
7. Use streamlined letters and lively post cards on your prospect list.
8. Plan your store appeal so that all advertising and promotion is tied up to window and counter displays.

of business conditions, (5) labor discussions, (6) Congressional news from Washington, (7) tax discussions, (8) research reports, and (9) political developments.

**Try a splash** of promotion on the Arturo Toscanini broadcasts at 10 P.M. (E.S.T.) on Saturday nights. Parts of the stunt can be store concerts, displays of records with chair-side models, actual photographs of the conductor and the symphony, the use of newspaper reviews on the concerts, and persistent advertising of the NBC stations and the time.

**Start to make** an event out of the fight, Feb. 23, between Joe Louis and Nathan Mann. Follow the sports pages in local newspapers, and use a promotion style similar to the one developed on the Braddock-Farr brawl, with added emphasis on the fact that Joe Louis is the world's champ.

**Accent the gift angle** as Valentine Day approaches (Feb. 14). Drag out an extra supply of plastic models, colored sets and pee-wee styles. Try out the appeal of personal initials.

# RETAILING RECORDS



## PLAYING RECORDS THRU RADIOS

★ Splashed across the record news this month is the matter of the disc-playing instruments which can be hooked to radios. The merchandisers of records are busier than ever and greater sections of the public are interested in recorded music. And the fans have discovered that one of the simplest and cheapest ways to hear their favorite platters is to buy an instrument which plays through their home radio receivers.

Recently, in radio advertising in newspapers, there has been a definite trend among dealers to offer these instruments in special combination offers with new radios. The public is being convinced that these new record-players are efficient and handsome—interesting, popular-priced and important additions to the home scene.

At the moment, there are five manufacturers going to town with these instruments: Ansley, RCA, Recoton, Sonora and Stromberg-Carlson. The players are furnished in AC or in AC-DC models, and range in price from \$19.95 to \$55.

## COLLEGE SPEAKERS CLASH VIA WAX

★ Another use for transcriptions and for recording equipment is found in news from California. Two college debate teams decided to hold their contest through an exchange of recordings—both sides of the collegiate debate question were recorded on discs, and rebuttals were later transcribed.

College of the Pacific, Stockton, Calif., and the University of Redlands were the teams involved in the unique clash. Both of these institutions are using professional recording machines supplied by Universal Microphone Co., Inglewood, Calif.



College students are a cinch for new record titles; here, it's listening via Ansley.

## WAX WORTH WATCHING

CONNIE BOSWELL singing *Outside of Paradise*, from the Republic reproduction of the same name, and *You Took the Words Right Out of My Heart*, from the Paramount film, "Big Broadcast of 1938," with Harry Sosnick and his orchestra—Decca 1563.

RUDY VALLEE and his Connecticut Yankees playing *The One I Love* and *Melody Farm*, both from the MGM film, "Everybody Sing." Vocal refrain by Vallee—Bluebird B7342.

RICHARD HIMBER and his Essex House orchestra playing *Thrill of a Lifetime* from the Paramount film of the same name, and *I Live the Life I Love*. Both have vocal refrain by Stuart Allen—Victor 23742.

FREDDIE FISHER and his orchestra playing *Listen to the Mocking Bird* and *Washboard Man*, with vocal chorus—Decca 2537.

BENNY GOODMAN and his orchestra playing *Life Goes to a Party* and *If Dreams Come True*—Victor 25726.

DICK POWELL singing *You Can't Stop Me From Dreamin'* and *Roses in December*, from the RKO picture "Life of the Party," both with Harry Sosnick and his orchestra—Decca 1543.

GUY LOMBARDO and his Royal Canadians playing *Ten Pretty Girls*, with vocal refrain by male trio, and *When the Organ Played Oh Promise Me*, with vocal refrain by Carmen Lombardo—Victor 25702.

DOROTHY LAMOUR singing *True Confession*, from the picture of the same name and *The Moon*

of Manakoora, from the film "The Hurricane," both with orchestra under the direction of Cy Feuer—Brunswick 8027.

ROY SMECK and his Serenaders playing *You're a Sweetheart* from the Universal production of the same name, and *You Took the Words Right Out of My Heart* from the Paramount movie, "Big Broadcast of 1938," both with VC by Donald King—Decca 1571.

BELLE BAKER singing *Bei Mir Bist Du Schon* and *You're a Sweetheart* with orchestra under the direction of Gene Kardos—Brunswick 8042.

## U.S. RADIO FAVORITES

★ Radio listeners have voted all over again for their favorite air stars. Three new national polls have been finished, with NBC's Charlie McCarthy and Jack Benny definitely the tops.

But first is the survey made by the magazine *Fortune*, based on interviews among 5,000 representative men and women. They were asked about favorite pastimes—"listening to the radio" came out first, ahead of going to the movies or reading magazines and newspapers.

In this survey, radio personalities were ranked thus: Jack Benny, Boake Carter, Lowell Thomas, Eddie Cantor, Bing Crosby, etc.

The New York *Daily News* conducted a poll in 39 key cities, and found the winners to be: Charlie McCarthy (and Edgar Bergen), Jack Benny (and Mary Livingstone), Bing Crosby, Don Ameche, Eddie Cantor, etc. The first four of these winners are on NBC nets, the next two on CBS.

In another voting, sponsored by *Radio Daily*, among radio editors and critics radio personalities were ranked thus in favor: Jack Benny, Edgar Bergen-Charlie McCarthy, Fred Allen, Bing Crosby, Nelson Eddy, etc.



Kate Smith has just made a new record, "Bei Mir Bist Du Schon", for Victor, with "Gold Mine" on the other side.

# NEW THINGS

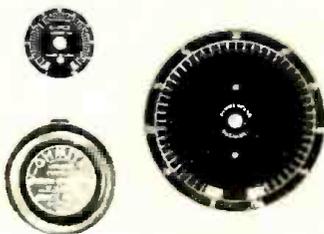
Latest news of radio products from the manufacturers



## Admiral sets

★ De luxe 6 tube table model with 6 button motor-drive tuning. AC super with two tone walnut cabinet, 2 bands American and foreign. 6 inch dynamic speaker, AVC, tone control and wave trap. Sells for \$39.95.

Model 102-6B—6 tube superhet, 2 bands, 6 inch dynamic speaker in laydown type cabinet, equipped with 6 button automatic tuner. Priced at \$29.95. Continental Radio & Television Corp., Chicago, Ill.—**RADIO TODAY**—see also advt. cover III.



## Ohmite rheostat dials

★ Dial plates for Ohmite vitreous enameled rheostats. A large  $5\frac{1}{2}$  inch size for Model N, R and U—smaller  $2\frac{3}{16}$  inch size for Models H, J, K and L. Plates are brass and etched black. Dials are calibrated numerically and read directly in percentages of resistance in the circuit. Ohmite Mfg. Co., Chicago, Ill.—**RADIO TODAY**.

## Center-tap resistor

★ Wire-wound center-tapped resistors having molded bakelite insulation. Metal strip across the top extended at ends serves as mounting bracket and assists in rapid heat dissipation. Unit will handle 5 watts when bolted to chassis— $2\frac{1}{2}$  watts in open air. 10 to 200 ohms. Type MW-2J. International Resistance Co., 401 N. Broad St., Philadelphia, Pa.—**RADIO TODAY**—see also advt. page 51.

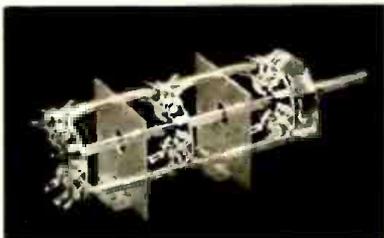
## Tobe weatherproof filterette

★ Weatherproof noise filter unit for outdoor installation on police call relays. Eliminates noise occurring from flashing lights used in police recall systems. Unit is contained in weatherproof, cast iron housing for installation in the outdoor conduit system and comprises the correct values of inductance and capacity to prevent the feedback of interference to the electric power supply line or its distribution along the wiring between the relay and the call lamp. Tobe Deutschmann Corp., Canton, Mass.—**RADIO TODAY**.



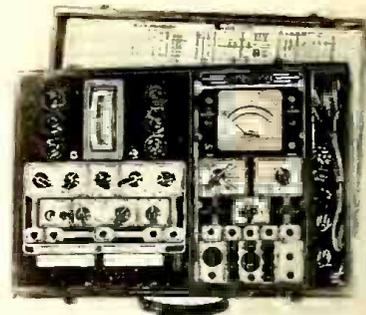
## Push button table radio

★ AC-DC five tube superheterodyne set with trimmer type push button tuning. Speaker and audio network are corrected for the cavity resonance occurring at about 1100 cycles. Has variable tone control and drift due to temperature rise is less than 2,000 cycles. Cabinet is protected from heat dissipated within the chassis by means of asbestos insulators. Wilcox-Gay Corp., Charlotte, Mich.—**RADIO TODAY**.



## Wave-change switch

★ Features of switch are double-wipe contact that gives positive contact with uniformly low resistance, staggering of clips permits mounting up to twenty-four clips on one stator—all insulated from each other. Elevated rotor contact substantially reduces the capacity between contacts—contacts rigidly held in place, cannot work loose. Centralab, 900 E. Keefe Ave., Milwaukee, Wis.—**RADIO TODAY**—see also advt. page 44.

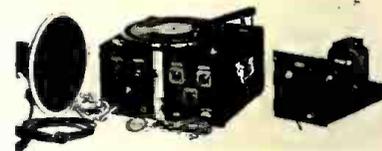


## Combination tester

★ Tester combines a complete tube checker with a wide range set analyzer. The tube tester section is of the dynamic mutual conductance type. Analyzer section has a built-in multi-selector with a complete set of leads and adapters for socket analysis. Batteries operate all except the highest range of ohms and capacity meter, which operate from built-in power supply. Hickok Electrical Instrument Co., 10614 Dupont Ave., Cleveland, Ohio.—**RADIO TODAY**.

## Celotex horn

★ Wide angle celotex horn with external framework of steel. Bass response superior to aluminum type horns, has less feed back. Made for 12 inch speakers, finished in weatherproof aluminum paint. Dimensions 24" long, bell 22" x 22", neck 12" x 12". For use indoors, where feed back is excessive. Radio Amplifier Lab., 59 Walker St., New York, N. Y.—**RADIO TODAY**.



## 25 watt amplifier

★ Operadio presents new 25 watt P.A. system, incorporating beam power tubes, electronically mixes one mike and one phonograph. Uses latest dual diaphragm crystal mike of the hand type, but also can be used with velocity, velofron or high impedance dynamic microphones. Employs two permanent magnet 12" speakers, interchangeable power packs for 6 volts DC and 110 volts AC. "Economizer" control for battery supply, heavy duty type generator and can be used in conjunction with radio set by using model A-3960 radio matching unit. Operadio Mfg. Co., St. Charles, Ill.—**RADIO TODAY**.

**IT'S  
A WOW!**

*RCA Victor*  
**ELECTRIC  
TUNING**  
**\$89<sup>95</sup>**

Here's a brand-new instrument, with radio's greatest selling feature, at a price so low you'll work overtime keeping up with sales!

IN ORDER TO SEND MORE PROSPECTS FOR THIS SENSATIONAL NEW RADIO INTO YOUR STORE, RCA VICTOR WILL

- 1 Feature Model 87K1 with strong selling commercials on all "Magic Key" programs.
- 2 Run sales-making advertising in such consumer magazines as SATURDAY EVENING POST, LIFE and COLLIER'S.
- 3 Tell the public the amazing news about the 87K1 with commercial announcements on 81 stations immediately following Metropolitan Opera broadcasts.
- 4 Smash home the story in a carefully planned newspaper campaign.

Hurry and place your order—the demand for this new model is going to be terrific! Put it right out where people can see it—and watch your cash register fill up with *profits!*

*RCA presents the "Magic Key" every Sunday, 2 to 3 p. m., E.S.T., on NBC Blue Network*



**RCA Victor**

RCA MANUFACTURING CO., INC., Camden, N. J. • A Service of the Radio Corporation of America

**OVER 300 MILLION**

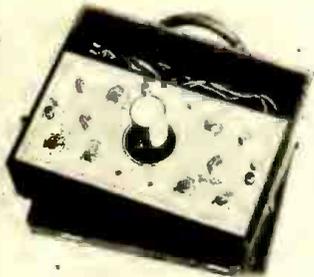
RCA RADIO TUBES HAVE BEEN BOUGHT BY RADIO USERS...IN TUBES, AS IN RADIO SETS, IT PAYS TO GO RCA ALL THE WAY!

# NEW THINGS — Cont'd.



## RCA auto antennas

★ Five new models of auto antennas are now made available by RCA. Monogram antenna is car-top type, but requires no holes bored in top. Has adjustable telescopic cowl bar which will fit any type car. Other models are the Cowlenna, Model No. 9825, and is permanently installed to the side of the cowl, Rodenna goes on the door hinge, pin is taken out and antenna put on and door hinge pin is replaced. The Dipole antenna is for under-car installation. R.C.A. Mfg. Co., Camden, N. J.—RADIO TODAY—see also advt. page 21.



## Turret-tube oscilloscopes

★ Oscilloscopes with two-inch and three-inch screens, both incorporating Triplett turret-tube mounting feature. Tube mounting permits easy adjustment of the tube up or down or to either side, so that the screen is always in direct view of the operator. Furnished either in DeLuxe leatherette or metal with black wrinkle finish. Triplett Electrical Instrument Co., Bluffton, Ohio — RADIO TODAY — see also advt. page 55.

## Ward streamline antennas

★ Made of natural white metal that will not rust. Require no drilling in the tip, nor the removal of headlinings when installed. Models available are the Quinlan streamlined side cowl aerial and the Statesman, a top antenna. Both are telescopic and fit all cars. Ward Products Corp., 1523 East 45th St., Cleveland, Ohio — RADIO TODAY — see also advt. page 56.

## Pacific automatic tuner

★ Automatic tuner for any superheterodyne can be connected by three wires to any set without automatic tuning. Tuner simple in construction and easy to install. No special knowledge needed. Full instruction given with each tuner. Has six station buttons and one disconnect button. Pacific Radio Corp., 844 West Adams St., Chicago, Ill.—RADIO TODAY.



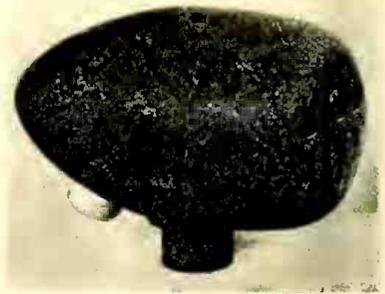
## Record changer

★ Record changer will play either eight 10" or eight 12" records. Features are as soon as the last record is played the changer automatically stops and switches off the current. Desired record may be repeated by turning knob to repeat position; records may be rejected by turning knob to reject position. Interference with radio amplification has been eliminated. Model R.C.1A for 100/130 volts or 200/250 volts 25/60 cycles. Also universal model R.C.2A for AC or DC. Garrard Sales Corp., 17 Warren St., New York, N. Y.—RADIO TODAY.



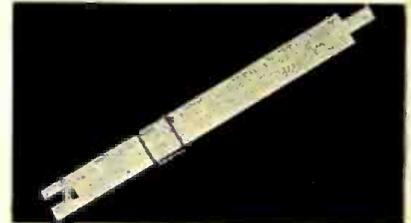
## Weston decibel meter

★ A rectifier-type power level indicator and voltmeter, in which a new circuit network provides improved uniformity of operating characteristics. Model 695 Type 11 has a constant internal resistance of 20,000 ohms, both into the instrument from the line under test, and from the instrument into the network toward the line. Meter has two voltage scales, one each for the two and five volt full-scale ranges and multiples thereof, to facilitate readings on the various voltage ranges. Weston Instrument Corp., Newark, N. J.—RADIO TODAY—see also advt. page 35.



## Bullet mike

★ Dynamic microphone housed in a "microscope finish" black metal case of bullet shape. 3" overall length, 2" in diameter, available in low impedance, approximately 200 ohms, or high impedance, about 50,000 ohms. Sensitivity—55 db. Supplied with cable connector and lists at \$19.50, model MK-20. Transducer Corp., 30 Rockefeller Plaza, New York, N. Y.—RADIO TODAY—see also advt. page 58.



## Radio slide rule

★ New radio slide rule for radio engineers, designers, amateurs and advanced servicemen. Available at a cost of \$3 to members of the radio industry, students and experimenters. Purposes of the rule are to permit the rapid termination of (1) capacitive reactance when capacity and frequency are known. (2) Inductive reactance when inductance and frequency are known and (3) Resonant frequency when capacity and inductance are known. The determination of the unknown quantity, when any two of the three quantities are known, may be readily accomplished. National Union Radio Corp., 570 Lexington Ave., New York, N. Y.—RADIO TODAY—see also advt. page 45.

## Electronic time-ometer

★ Time-ometer designed for accurately recording the operating time of electric refrigerators, air conditioners, oil burners and similar equipment. may be used by refrigerator dealers and service companies for demonstrating to customers the exact period of operation of the refrigerator or other electrical device during any three or four days of operation. Net—\$15. Electronic Laboratories, Inc., Indianapolis, Ind.—RADIO TODAY.



# PIONEER OF THE AIR

**F**OUNDED IN 1919, the Radio Corporation of America has completed 18 years of pioneering effort to develop and improve the uses of radio.

Starting "from scratch," RCA has created a world-wide communications system with direct circuits between the United States and 42 foreign countries, and with ships at sea. It has created a nation-wide broadcasting system of endless cultural possibilities, now rapidly expanding its services by short-wave to all the world. It has created essential instruments for the radio transmission and reception of sound, of code messages, and of facsimile reproductions, and for the recording and reproduction of sound on records and on

motion picture film. It has created countless radio devices indispensable to modern science, industry, medicine, telephony, and public safety. It has created the basis for a system of electronic television, forecasting the day when radio sight, added to sound, will perform a useful public service.

Today the Radio Corporation of America is owned by nearly a quarter of a million stockholders in 48 states. No one person owns as much as 1/2 of 1% of its stock. Achievements of the past 18 years are a tribute to the American tradition of service in the public interest through private initiative and ownership.

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



## RADIO CORPORATION OF AMERICA

RADIO CITY • NEW YORK, U. S. A.

NATIONAL BROADCASTING COMPANY • RCA MANUFACTURING COMPANY, INC.  
RCA COMMUNICATIONS, INC. • RCA INSTITUTES, INC. • RADIOMARINE CORP. OF AMERICA

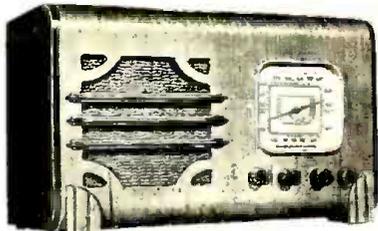
# NEW THINGS — Cont'd

## RCA model 87K-1



★ Seven-tube two-band receiver with trimmer push-button tuning, magic eye, straight line dial and metal tubes. Console cabinet—two bands, 530-1720 and 2300-22,000 KC, covering domestic and foreign broadcast. Has 4.5 watts output, 12" dynamic speaker, 20 to 1 vernier tuning, phono-connection, AVC, wave trap, automatic tone compensation and iron core I.F. transformers. Lists at \$89.95. RCA Mfg. Co., Camden, N. J.—**RADIO TODAY**—see also advt. page 21.

## Universal 110 AC—6-volt set



★ Knight 5-tube superhet for universal operation from 110 volts AC or from a 6-volt storage battery. Set designed to meet the needs of automobile-trailer travellers and of residents in rural areas. By using a circuit which incorporates a special type built-in vibrator unit and new type tubes, the receiver is operated just as efficiently from the storage battery as from regular 110 VAC. Allied Radio Corp., 833 West Jackson Blvd., Chicago, Ill.—**RADIO TODAY**.

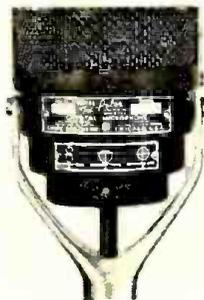
## Automatic tuning adapter

★ Adapter for any receiver to make it an automatic tuning unit. Installation instructions furnished with adapter kit. Each kit is furnished with complete mounting templates and all necessary small parts. Takes about an hour to install. Models 210 and 211 employ separate tuning circuits and tube. 210 adapter is for super-heterodynes and model 211 is a converter which may be used on either tuned R.F. or super-heterodyne sets. Howard Radio Co., Chicago, Ill.—**RADIO TODAY**.

## Simpson tube and set tester

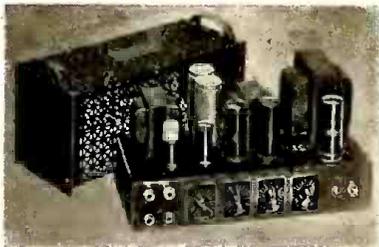
★ Model 440 tube tester—circuits incorporate double switching of filament terminals which permits testing of all types of tubes regardless of the location of filament terminals. Screen fluorescence and angle tests are provided for "magic eye" tubes. Tests of diodes, battery types and gaseous rectifiers under proper load. Set testing features are six AC and DC voltage ranges with all AC ranges available for output measurements. Three resistance ranges, four milliamperage ranges, six decibel ranges from minus 12 to plus 58 db. Simpson Electric Co., 5216 W. Kinzie St., Chicago, Ill.—**RADIO TODAY**.

## Directivity controlled microphone



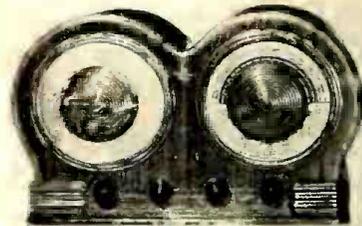
★ Feature in the microphone design is the "directivity control" switch found in the new "tri polar" model. Switch knob designed to appear as an integral part of the microphone case and permits instant selection of uni-directional, bi-directional and non-directional characteristics. As illustrated, the three available directional adjustments are indicated by the corresponding easily recognized polar patterns. Lists at \$39.50. Shure Bros., 225 W. Huron St., Chicago, Ill.—**RADIO TODAY**.

## Micro beam power amplifier



★ Amplifier employing a new anti-emitting heater circuit to provide for high gain and low hum level. Uses self-healing condensers, ceramic insulated resistors and tropically treated transformers. Three stages, power output 19 watts peak power 25 watts, gain 110 db., power consumption 75 watts—size 14" long 6" deep and 9" high. Amplifier Co. of America, 3745 West 20th St., New York, N. Y.—**RADIO TODAY**.

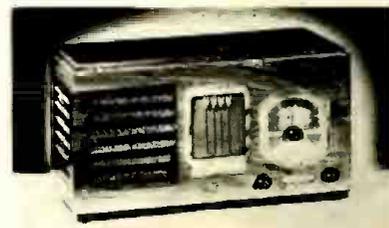
## Emerson receivers



★ Pictured at the top is a 5-tube AC-DC compact with bakelite cabinet tuning 530-1,700 KC. Beam power output tube, audio overload control, power line noise filter, electro-dynamic speaker. Model BA-199 listing at \$9.95.

Model BD-197 is a 6-tube AC-DC set with the miracle dial. Cabinet was created by the world famous designer Count Alexis DeSakhnoffsky. Cone shaped dial visible from any standing or sitting position. Tunes 530-1,700, 5,800-18,000 KC in 2 bands. List \$39.95. Model BF-191 is a 6-tube chassis tuning 530-1,700, 5,800-18,000 KC—has bakelite case—list \$25.95. Emerson Radio & Phonograph Corp., 111 Eighth Ave., New York, N. Y.—**RADIO TODAY**—see also advt. p. 2 & 3.

## Lever tuning radio

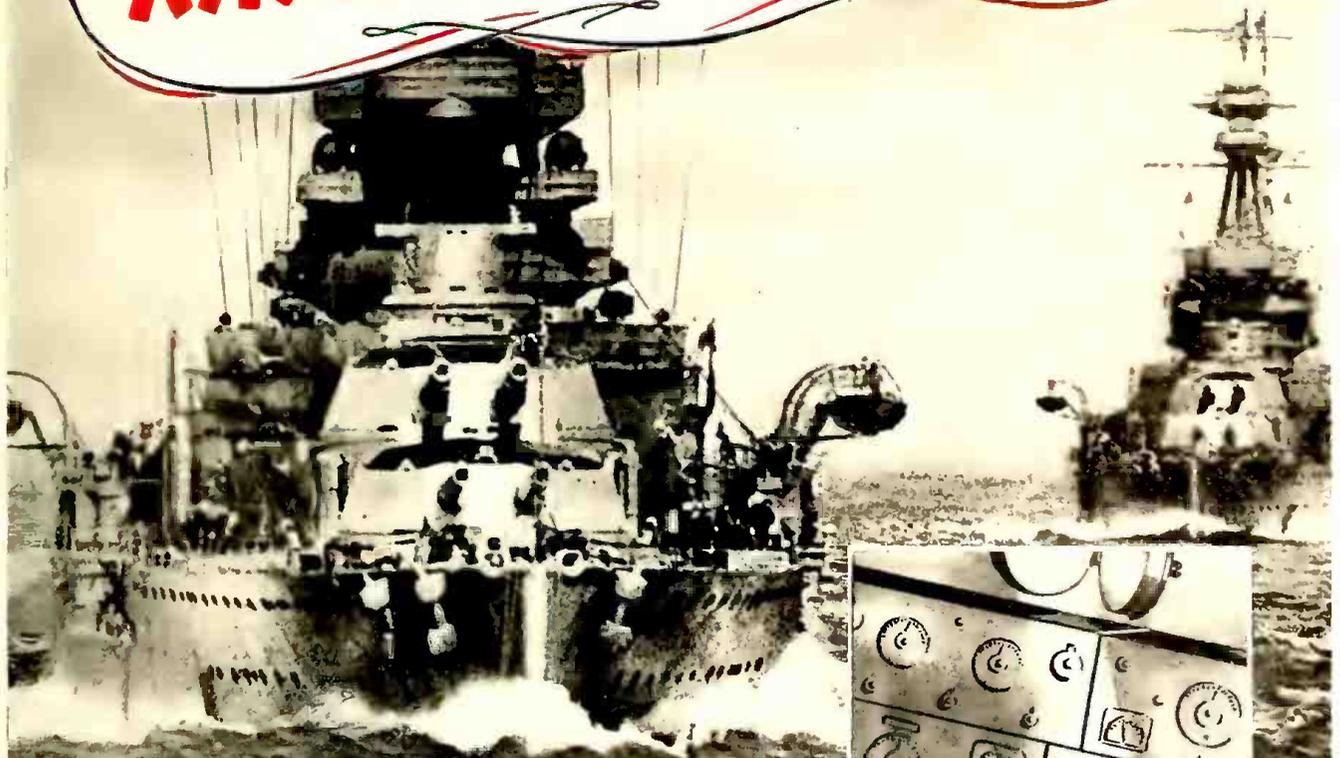


★ Six-tube single band receiver with automatic lever type tuning. Tunes standard broadcast band. Dynamic speaker, automatic volume control. List \$27.50. Ferguson Radio Corp., 745 Broadway, New York, N. Y.—**RADIO TODAY**.

## Radios in furniture

★ A novel line of radios installed in furniture has just been announced by Espey. Series consists of line of five models which include Chippendale end table, drop leaf end table, chest on chest, Queen Anne and Sheraton bureau cabinet. Cabinets finished in mahogany or walnut and contain standard chassis. Prices range from \$49.95 to \$155. Espey Mfg. Co., 124 East 125th St., New York, N. Y.—**RADIO TODAY**.

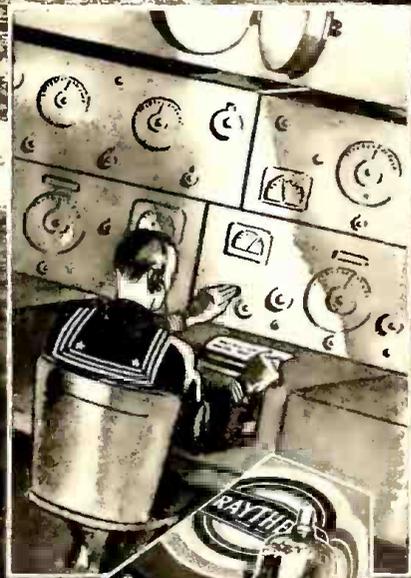
WHEREVER TUBES PLAY A VITAL PART  
**... YOU'LL FIND  
 RAYTHEON ON THE JOB!**



It is just as important for *you* to use top quality tubes as it is for the United States Navy. *They* use Raytheon because it is the tube that can be depended on to work smoothly in any circuit... and stand up under the roughest usage and thundering vibration of a battleship under fire. The Navy can't stop in the middle of a battle to find which tube has blown!

Leading licensed set manufacturers, too, prefer Raytheon because of their sturdiness and uniformity. And when *you* make a replacement in a receiver you must be just as confident. That is why thousands of Servicemen and Dealers depend on Raytheon.

Order Raytheon for greater permanent tube profits.



**RAYTHEON**

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

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

# OBSTACLES TO SOUND SALES

Manufacturer's sales exec blames "inferiority complex" and lack of knowledge as drawbacks in selling sound equipment.

★ DEALERS' fear of quoting more than \$50 or \$75 for a sound system is the main reason why many radio dealers are not successful in their sound sales, believes the sales manager of one of the prominent sound and interphone manufacturers.

In addition the radio dealer has the "mousetrap complex." However, Emerson was wrong about the public beating a path to one's door to get a good mousetrap. Sound systems and interphones are used by business organizations who have been trained to have the salesman call upon them. Seldom is it that a sound prospect will go out of his way to buy a sound system—yet many do, showing that if the dealer were sales-minded he could sell plenty of equipment.

After all, for many years business has managed to get along without sound and interphone systems—why should it all of a sudden start demanding them? Frankly there are many good reasons—increased profits through speedier and more efficient execution of duties is but one. However, there are very few business executives who understand what sound will do for them—and that's why the rush for sound has not been greater than it is.

## Stocks on hand

In the case of interphones the radio dealer should have some units in stock so that he can give a demonstration when he makes his calls on prospects. Greatly handicapped is the dealer who must make a second call for a demonstration after borrowing some units from his jobber. And then, too, it's unfair to expect the jobber to maintain a complete stock for the use of the various dealers. As a result some jobbers have curtailed their stock, having only the simpler systems on hand. Result is that the dealer in many cases must demonstrate with a unit which will not fulfill the prospect's requirements, and consequently he loses the job, while at the same time creating the impression that interphones will not provide adequate performance.



This Bogen wireless interphone provides communication between the elevators and gives better service in the absence of a starter. Unit installed by Thurow Radio of Jacksonville, Fla., attracted wide attention and pleased the tenants of the building.

Another way the dealer burns his fingers is by trying to sell a 2-unit or master type system costing from \$50 to \$100, when a fully intercommunicating type of system costing \$250 or more is needed. Seems that the dealers are fearful of selling such a large installation since they are accustomed to handling \$50 to \$100 radio sets and cannot think in larger terms. An adequate system will usually be rejected with the comment that it won't work—the prospect really meaning but not understanding that it doesn't fulfill the requirements. And this is an inferiority complex—for the dealers can sell equipment costing hundreds of dollars when it fulfills the requirements.

Anticipating the needs of the prospect, talking over the requirements, and making suggestions and getting

the reaction will help the radio man determine what is necessary. Then the dealer should quote a price for well-constructed equipment that will give him a fair profit. Furthermore, well-constructed and well-designed units are essential. The use of shoddy units will destroy the dealer's reputation quickly.

## Bigger opportunities

In selling interphones and other sound systems, remember that it is the large organizations that need sound most. This is another reason why emphasis should be placed on larger type of systems. In addition, the larger outfits will appreciate the value of sound systems more readily and they have less reluctance to spend the necessary money.

At present much of this business is being handled by the radio jobber and specialty sales organizations because the dealer is not alert to opportunities. We've heard of cases where schools needed equipment and wrote to the manufacturer. Yet when the dealer was informed by the manufacturer, he did nothing about closing the sale, so the manufacturer had to handle the sale direct.

Dealers who are established in their community have an excellent opportunity to sell centralized sound systems. They can easily contact the members of the school committee and local politicians, as well as keep an ear to the ground for news of developments.

Actual installation of system is usually handled by local electrical contractor under the direction of the radioman selling the system.

Some dealers complain because they cannot finance such an installation. But usually the money can be raised at the bank.

As related by the sound experts, most of the failures to get this business are because the dealer is not alert and sales-minded. Then, too, again and again we hear of the radio man who goes out to sell sound while dressed as a mechanic—no wonder

(To page 33)

*Selling Sound*

Consistent Leadership by  
**AMPERITE**  
 achieves another new development...  
**THE ACOUSTIC COMPENSATOR** (Pat. Pend.)

An exclusive Amperite feature available in new Models RBHk (High Impedance) and RBMk (200 ohms)



SLIDE UP TO INCREASE HIGHS  
 SLIDE DOWN TO INCREASE LOWS



### 3 IMPORTANT USES

1. The Acoustic Compensator enables you to lower or raise the response of the microphone by the mere flip of the finger! Not a volume control—operation is similar in principle to the sliding panels in broadcast studios.
2. Makes the Velocity immediately adjustable to close talking or distant pickup.
3. Immediately adjustable to any room condition... or any type of job or occasion.

Increasing the quality, without increasing the price, is the keynote of the Amperite sales policy. In the new Amperite Velocity, with the Acoustic Compensator, the P.A. Industry has the last word in microphone perfection at a competitive price.

**MODELS RBHk, RBMk, with acoustic compensator.** Frequency range 40 to 11,000 CPS. Output, —65 db. Complete with switch, cable connector and 25' of cable. **\$42.00 LIST**

**MODELS RBHn, RBMn, without acoustic compensator** **\$42.00 LIST**

#### NEW! AMPERITE CONTACT MICROPHONE

A contact mike without distortion. Ideal for use on all string instruments. Flatters an ordinary fiddle by giving it the volume and depth of a "Strad"; makes a small piano sound like a "Grand". Unusual high output—can be used on radio sets. No string changes, no drilling. Attached without tools. Operates with either high or low gain amplifiers. Frequency response, 40 to 9000 cps. Output, —40 db. 25' of cable. MODEL KTH (Hi-imp); KTL (200 ohms).....\$22.00 LIST  
 KTH or KTL with foot-operated volume control... \$30.00 LIST

#### NEW! AMPERITE "HAND-I-MIKE"

The smallest velocity made... but has an output equal to larger types, —68 db. Frequency range 60 to 7500 cps. Excellent for close talking, and can be used as hand, desk, or stand microphone. Unusually rugged. Size of head, 1" x 3/8" x 2 3/4".  
 MODELS HDH (Hi-imp); HDL (200 oms); with switch. **\$22.00 LIST**

#### AN EXCELLENT VELOCITY AT \$22.00 LIST

P.A. Men, you do not have to sacrifice quality on a "low-cost" job. This fine velocity, built to Amperite standards, is excellent for both speech and music. Gives flat response without peaks over entire audible range. Reduces feedback. Frequency range 60 to 7500 cps. Output, —68 db. Unusually rugged, not affected by temperature, pressure or humidity. Triple shielded, fitted with shock absorber and swivel bracket. MODEL RAH (Hi-imp.) with 12' of cable; MODEL RAL (200 ohms) with 8' of cable.....**ONLY \$22.00 LIST**

#### BROADCASTING STUDIOS, please note New Output, —56 db.

The new Amperite Studio Velocity, model SR80n, has —56 db. output, highest in studio velocities available today. The SR80n is now accepted as the finest microphone for studio and recording: (Two weeks' free trial to established studios). Frequency range 40 to 15000 CPS. Triple shielded, fitted with switch (optional), cable connector, and 25' of cable. MODEL SR80Hn (Hi-imp.); SR80n (200 ohms).....**\$80.00 LIST**

#### SALES AIDS FOR THE P.A. MAN

Amperite offers the following co-operation to P.A. Men

1. FREE: Window Decal advertising your Sound Service. Size 5 1/4 x 9 3/4, finished in 4 striking colors.
2. FREE: Window Display, 11x17.
3. Special Sound Equipment Letterheads. Samples and prices on request.

Write for these valuable sales helps, and new Illustrated Bulletins, today!



"Better Systems  
 Specify Amperite"  

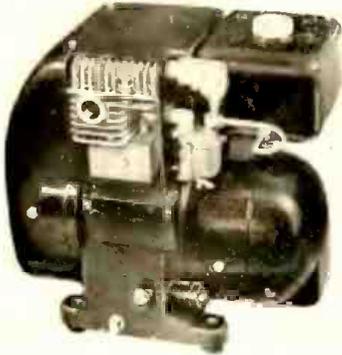

**AMPERITE** 561 BROADWAY, N. Y. U. S. A. CABLE ADDRESS ALKEM, NEW YORK



VELOCITY **AMPERITE** MICROPHONES

# NEW THINGS—Cont'd.

## Gas-electric generating plants



★ Six new models now available—350 watt AC model in the manual started type, self-starting model of the same capacity which produces both 110 AC and 12 v. DC for battery charging, remote control self-starting unit, 350 watts, started from any remote switch, which also produces both AC and DC. Other models are 12 volt, 400 watt—32 volt 500 watt and a high output light weight unit of 600 watts, 110 DC capacity. D. W. Onan and Sons, 43 Royalston Ave., Minneapolis, Minn.—RADIO TODAY. See also advt. page 57.

## Amperite AC-DC regulators



★ New regulators equipped with starting resistor which prevents overloading of pilot lights when the set is first turned on. Model KL-25H will replace all ballasts starting with K, L, M or BK and having numbers between 11 and 26, and ending in F, G or H. Model KL-75H will replace all units starting with K, L, M or BK with numbers 67 to 105. Amperite Co., New York, N.Y.—RADIO TODAY—see also advt. page 46.

## Television tubes

★ Specially designed cathode-ray tubes for use in television sets. Unique design prevents de-focusing of spot when video signal is applied. Type 54-10-T has a 5-inch diameter and 3,000 volt rating. Type 144-10-T is a 12-inch tube with 6,000 volt rating. Allen B. Dumont Labs., Upper Montclair, N. J.—RADIO TODAY.

## Safety soldering stand

★ Soldering stand controls iron heat automatically and thereby gives the user three safety features, protection against fire, against burning the iron, and against excessive current cost. Heat control is entirely automatic, stand is plugged into the current socket and iron is plugged into the stand. G-M Laboratories, Inc., Chicago, Ill.—RADIO TODAY.

## Ultra-sensitive DC meter



★ Self-contained battery operated DC multimeter. 8 ranges from .1 to 500 volts with 5 meg meter resistance. Resistance ranges from .1 ohm to 1,000 megs with less than ½ volt across resistance. 122 microampere scales from .02 to 10,000. Automatic stabilization—meter cannot burn out. RCA Mfg. Co., Front & Cooper Sts., Camden, N. J.—RADIO TODAY.

## Parts kits

★ Volume control kit containing 24 different controls—takes care of 95 per cent of the Philco models. Part No. 45-2488—list \$33.15.

Electrolytic condenser kit containing an assortment of 10 mid-gate type units in those capacity values most commonly used. All condensers rated at 450 volts. Part No. 45-1324—list \$11.80. Philco Radio & Television Corp., Tioga & C Sts., Philadelphia, Pa.—RADIO TODAY.

## Bell interphone



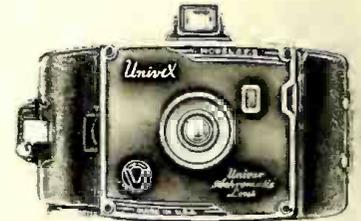
★ Model 315-C interphone has been added to Bell line of equipment. New unit has a confidential ear-receiver placed on the side of the unit so that the raising of the receiver cuts out the loud speaker and makes the communication confidential. Bell Sound Systems, Inc., Columbus, Ohio—RADIO TODAY.

## Stromberg-Carlson sets



★ Eight new models, including a horizontal table radio, three labyrinth radios, two standard consoles, a decorator's half-round console, and a combination radio and automatic phonograph. Electric flash tuning used is an improved trimmer type of push-button automatic tuning. Covers six stations. Stromberg-Carlson Telephone Mfg. Co., 100 Carlston Rd., Rochester, N. Y.—RADIO TODAY.

## Universal snapshot camera



★ New model AF-5 camera—lens is new type Achromar individually focused and adjusted on each camera, negative size 1½ x 1½", camera size 2-5/16 x 3 15/16 x 1 15/16ths, weighs 6½ oz. Camera takes Univex No. 100 Ultrachrome film, 10c per roll—6 exposures. Universal Camera Corp., 32 W. 23rd St., New York, N. Y.—RADIO TODAY.

## Supreme oscilloscope



★ Oscilloscope contains 2" tube and power supply, intensity and focus controls, input jacks to vertical and horizontal plates and internal sinusoidal sweep supply with gain control. External linear sweep and amplifiers may be used. Supreme Instruments Corp., Greenwood, Miss.—RADIO TODAY.

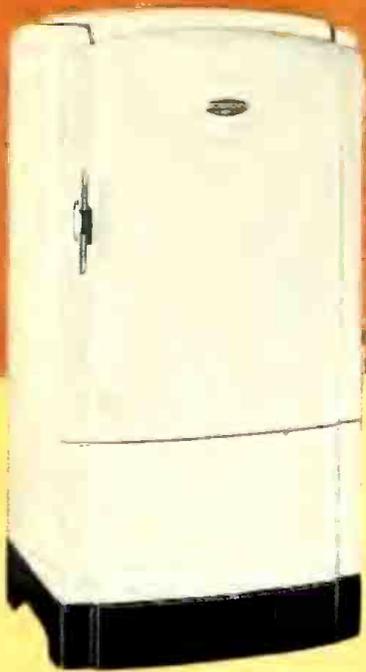
Size is an indication of something important to you as a buyer of radio components. However, we take far more pride in Sprague's consistent record of engineering supremacy than in the world's largest condenser factory which came as its natural result.



# SPRAGUE

GOOD CONDENSERS—EXPERTLY ENGINEERED—  
COMPETENTLY PRODUCED

SPRAGUE SPECIALTIES COMPANY, NORTH ADAMS, MASS.



You need not pass up a single prospect, with the Fairbanks-Morse line. There is a model, a size, and a price to meet every requirement. In addition, models without the Conservador offer sparkling beauty plus every desirable feature found in other refrigerators. The new Fairbanks-Morse "E" line goes one step farther and offers the exclusive *Conservador*, the greatest of all features in any refrigerator. No other refrigerator line can offer its dramatic demonstration possibilities. No other line has as many salable features. More prospects ask for a demonstration, and you close more sales, when you have the Fairbanks-Morse refrigerator with *Conservador* on your floor.

**Models with the  
CONSERVADOR**



*Act Now...*

The Fairbanks-Morse Home Appliance Franchise is backed by the hardest-hitting sales promotion and advertising you have ever seen . . . and 108 years of manufacturing experience. It can include refrigerators, radios, and home laundry equipment . . . one or all three. There is real profit in it for you if you can qualify. Investigate . . . write, wire, or phone

**FAIRBANKS, MORSE & CO.**  
Home Appliance Division  
2060 Northwestern Ave., Indianapolis, Indiana

# FAIRBANKS-MORSE

# Refrigerators

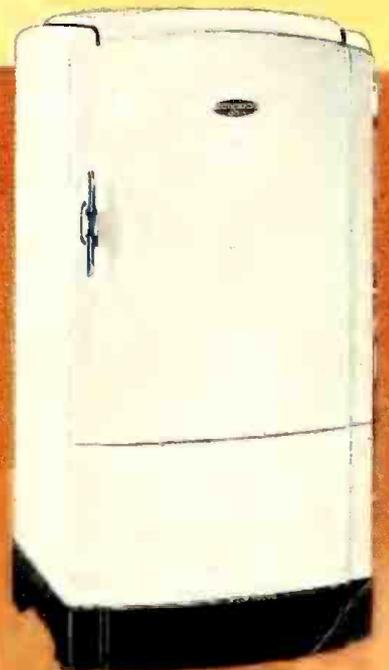
## have real selling FEATURES



Three new lines meet every prospect's demands, in every selling classification. A Super De luxe line with the *Conservador* . . . a price-leader line . . . and a De luxe line without the *Conservador*. The new "EL" line without *Conservador* embodies all the engineering skill that has typified Fairbanks-Morse manufacturing for more than a century.

With this new De luxe line, dealers have an opportunity to supply the requirement of exacting prospects who demand the utmost in quality and performance at a price they would expect to pay for ordinary refrigerators. In addition, there is startling eye appeal and scores of advanced features. Your customers will at once recognize any refrigerator in this De luxe line as an outstanding value!

**Models without the  
CONSERVADOR**





*Make your  
tube turnover  
more Rapid!*

For a tube turnover that's swift as a mountain brook . . . for an endless stream of profit that pours right into your cash register . . . sell Sylvania's!

—•—

If the shelves in your shop are jammed with "sluggish," slow-moving tubes . . . if your customers complain about the quality of the tubes you sell them . . . **YOU'D BETTER WAKE UP!** Switch to Sylvania's before it's too late!

A 6-month written factory guarantee back of every Sylvania tube you sell is your insurance against business-killing kickbacks. Sylvania's reputation for quality—coupled with the fact that the public appreciates this quality—is your guarantee of a faster, more constant tube turnover . . . and the quicker profit-realization on every lot of tubes you buy.

Let us show you how Sylvania can make your tube turnover more rapid. For full information on Sylvania's complete line of sales and technical helps, write today to Hygrade Sylvania Corp., Emporium, Pa.

**SYLVANIA**

SET-TESTED RADIO TUBES

# SOUND

(From page 26)

poor impressions are made.

When specialty sales organizations who know nothing about sound and interphone systems can sell them, the radio dealers with aggressive selling can make this sound business bigger and better with increased profits for themselves.

## THEATERS NEED MORE SOUND

★ Bank Night, newest of American institutions, has spread from one end of the United States to the other, covering more than 7,000 movie theaters throughout the country. An estimated \$500,000 a week is added to the movie patrons' income through Bank Night, but that isn't the only income materially boosted by its advent.

The sale of Philco sound amplifiers, Model 905, has been remarkably increased by the widespread use of Bank Night. Small movie theaters, which before had no need for amplifying apparatus, discovered that need for drawings and announcement of Bank Night winners from the stage. A new market for sound amplifiers was opened up and sound dealers have been quick to take advantage of it.

## AUTO RADIO

(From page 15)

largely on the locations of the antenna and engine.

And as a safety device, a radio cannot be excelled. Storm warnings can be picked up soon enough so that the skipper can hurry back to shelter.

Numerous sales aids and displays are being offered to the dealers by the auto radio manufacturers. Using these helps combined with aggressive selling, the 1938 auto-radio year will be the biggest yet.

★ A new catalog, describing and illustrating 21 models of microphones and 7 types of microphone stands, has been released by Amperite Co., 561 Broadway, New York City. Complete specifications are given and assorted accessories are listed.

★ Issued by the South Bend Lathe Works, 520 Niles Ave., South Bend, Ind., is an elaborate new catalog on "The New 1938 Model South Bend 'Workshop' Precision Lathes." Complete accessories are also listed.

# Reproduction of WEBSTER-CHICAGO Ad In Leading Industrial Publications



**WHERE IS ELMER** . . . Find Him Instantly

locate any executive or factory personnel  
increase efficiency  
speed up service  
with . . .

## AMPLICALL

A complete sound system that can be economically installed in any size plant. Webster-Chicago engineers have perfected a sectionalized system that can be added to without loss of efficiency by plugging in additional units.

This modern system sweeps away all previous objections to sound installations, giving fine reproduction and speakers with adjustable volume to suit any location. Unit construction makes mass production possible and greatly lowers previous conceptions of cost.

Don't be without this modern business aid . . . Increase your plant efficiency. Please your customers with improved telephone service. Write for More Information.

**AMPLICALL Gives Control—and it's IN-EXPENSIVE!**

★ The importance of Labor Relations points to the great need for closer contact between executives and employees. With a Webster-Chicago Sound System, you can talk to all employees at any time, no matter what size factory.

## WEBSTER-CHICAGO

One of the Oldest Manufacturers of Public Address Systems, Sound Equipment & Accessories

**WEBSTER-CHICAGO SOUND EQUIPMENT MAKES MORE MONEY FOR DEALERS.** Direct Advertising creates direct leads and excellent sales promotion material makes it easy for dealer to solicit.

**WEBSTER-CHICAGO . . . The Complete Line of Public Address Systems, Sound Equipment and Accessories . . . Popular Priced Leaders in the Sound Field for Over 12 Years!**

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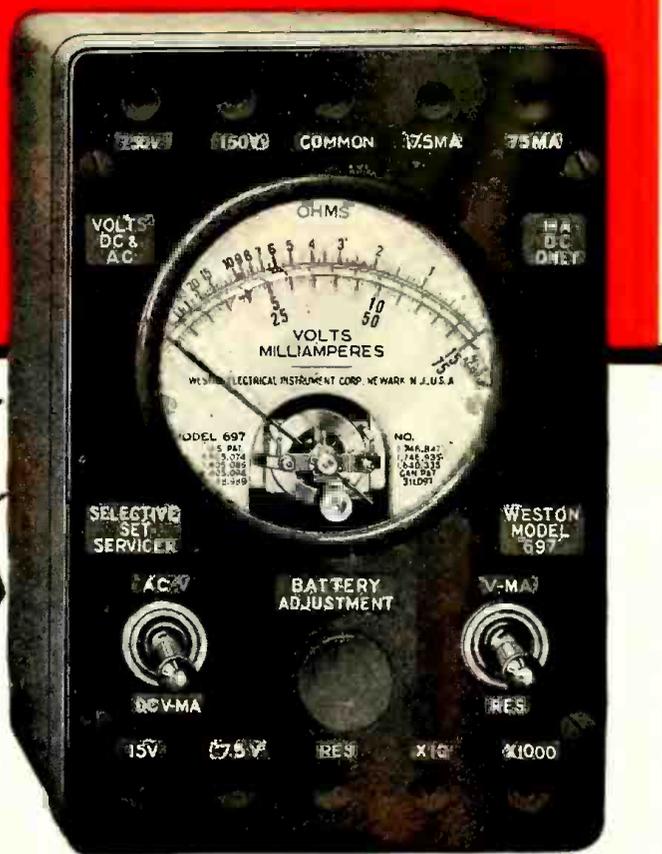


*Pocket Size... Yet Precise!*

**WESTON**

MODEL 697

**VOLT-OHM-  
MILLIAMMETER**



Here's a convenient, pocket-size radio test instrument . . . but one that is made to the same standards of accuracy and dependability as the larger WESTON instruments. *Nothing has been sacrificed to achieve this small size.* The ranges provided, too, are complete for radio servicing:

- Voltage Ranges: AC and DC—0-7.5; 0-15; 0-150; 0-750.
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# UNDERSTANDING PUSH-PULL AMPLIFICATION

A simplified technical explanation of how push-pull audio circuits operate and of the benefits derived

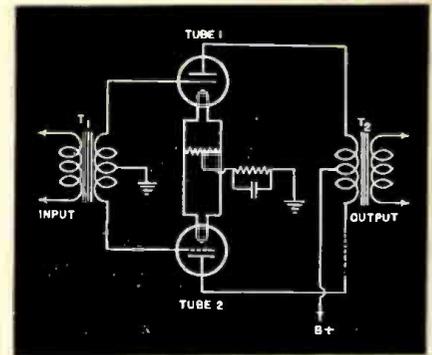
★ In most audio power amplifiers where large power output and high quality of reproduction are required, a push-pull circuit is used. A schematic diagram of a push-pull audio amplifier is shown in Figure 1. It is well to briefly review the operation of the push-pull circuit. As an alternating current is passed through the primary of the input transformer  $T_1$ , an alternating voltage is developed across the secondary, at any instant one end of the secondary being positive and the other end negative. Since the secondary of  $T_1$  is center-tapped and the center-tap connects through the bias circuit to the filament, the grid of one tube will be negative when the other is positive. (This statement of course neglects the bias voltage.) In the tube the grid of which is made nega-

tive by this alternation, the plate current will decrease; in the other tube where the grid at the same instant is positive, the plate current will increase.

It will be observed that the primary of  $T_2$ , the output transformer, is center-tapped for the +B connection, the plate currents for the two tubes flowing in opposite directions through their respective halves of the primary; that is, in both sections the current flow is toward the center tap. The plate current and the load voltage go through their cycles 180 degrees out of phase; that is, when the plate current increases the voltage at the plate decreases, and vice-versa. With no excitation the plate voltages of Tube 1 and Tube 2 are identical. As one grid is made negative the plate current decreases and  $E_p$  increases; as the grid of the other tube is at the same time driven positive its plate current increases with a corresponding decrease in  $E_p$ .

## Opposing voltages

Since the plate potentials of the two tubes were originally identical, so far as the center tap is concerned, the decrease in voltage at one plate adds to the increase of voltage at the other plate and the actual voltage developed across the entire primary of  $T_2$  is twice as great as that across one-half of the primary. In other words, if the plate voltage of each tube is caused to vary 150 volts above and below its normal value of 250 volts, the peak value of alternating voltage developed across the primary of  $T_2$  will be 300 volts. Thus the actual alternating voltage developed across the primary of the push-pull output transformer, with the plate impedance correct for maximum output and with identical tubes, will be twice that which could be developed from a single tube with the same individual grid excitation voltage. Op-



erated Class A, since one tube  $I_p$  increases in the same proportion as the  $I_p$  in the other tube decreases, the current from the power supply does not vary during the cycle.

The push-pull amplifier has two principal advantages: First, it reduces or practically eliminates any noise due to voltage variations, hum component, etc., in the main power supply or in the grid bias circuit. The reason for this is simple. Assume that the voltage of the plate supply is suddenly decreased; this will decrease the plate current of both tubes simultaneously. The normal plate current flows in opposite directions in the two halves of the primary winding of  $T_2$ . Thus a simultaneous and equal increase or decrease in both currents will result in like changes in opposite fields which balance out and produce no voltage across the secondary winding of the output transformer. Therefore, a ripple in the power supply will not produce a hum in the output of such an amplifier. In a similar manner any irregularities in the grid bias voltage will affect both grids equally, the consequent variations in the output thus balancing out. This makes the push-pull amplifier much less noisy than an amplifier of equivalent gain using single tubes per stage or employing tubes in parallel.

## Reduced distortion

A second, and probably more important, advantage of push-pull operation is the elimination of even harmonic distortion. When a tube is operated beyond the linear portion of its  $E_g I_p$  characteristic curve, harmonics are produced in its output, the second harmonic usually predominating. If the tube is biased so that it operates around the exact center of the linear portion of the curve, distortion due to non-linear operation will be produced when the excitation voltage is too high, that is, when the tube is overloaded and the grid voltage swings into the upper or lower

(Continued on page 42)

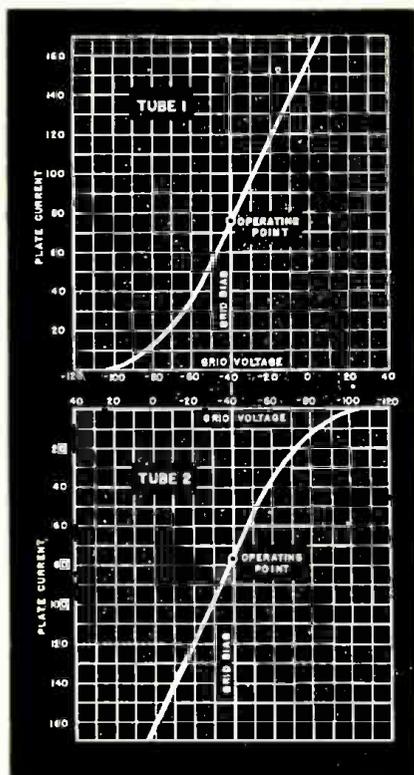


Fig. 2—The  $E_g I_p$  or grid-voltage plate current characteristic of push-pull tubes.

\*Excerpted from the Basic Advanced Radio Course conducted by the Capitol Radio Engineering Institute of Washington, D. C.



# APPLIANCE DIVIDENDS

## APPLIANCE SALES IN 1937

	Units	Value
Refrigerators . . . .	2,365,200	\$400,000,000
Washing machines	1,650,000	114,000,000
Ranges . . . . .	400,000	50,000,000
Vacuum cleaners.	1,094,000	59,400,000

★ Blessed with a batch of new models which are the last word in convenience, beauty, roominess and accessibility, but troubled with trade-in problems and Fair-Trade law enforcement, the refrigerator forces wound up 1937 with a sales total of some 2,365,200 units.

Ranking this figure with others, the recent years pile up the following total sales of "boxes":

Refrigerator Units	Value
1933 . . . . . 1,016,000	\$172,720,000
1934 . . . . . 1,284,000	220,848,000
1935 . . . . . 1,568,800	260,420,800
1936 . . . . . 2,000,000	328,000,000
1937 . . . . . 2,365,200	400,000,000

Sales of electric ranges for 1937 are set at 400,000 units, with a value of \$50,000,000.

The value of air-conditioning systems and equipment sold during the past year will be almost ten times what it was five years ago. Here are the figures as collected on all types of equipment by the Department of



James J. Schneer is the new president of Electrical Appliance Dealers' Association, Brooklyn, N. Y.

Commerce: 1933—\$7,816,780; 1934—\$13,014,078; 1935—\$17,276,678; 1936—\$43,566,678. The latest figure for 1937 includes only January to September of that year; the 9-month total was \$52,650,203.

A separate set of figures is now being made up for self-contained unit air-conditioning systems. As reported by 125 manufacturers in 1936, the value of these was \$2,060,563; for January through September, 1937, the total value of this equipment was already \$5,372,044.

## APPLIANCES FOR FARMS

★ A new approach to the farm market, in terms of home appliances and appropriate power for them, has been presented by L. I. Archer of the marketing specialists Klau-Van Pieterson-Dunlap Associates, Milwaukee.

Says Mr. Archer: "There is no need for farm homes to be without the advantages and conveniences of new appliances and equipment now available for farm use.

"There is practically no difference between an electric washer and a gas washer. The main difference is whether powered by an electric or a gasoline motor. The same is true of many other appliances and equipment used on farms. There is no reason why farmers should hesitate to buy these items right now—even if there is the possibility of a hi-line within the next year or two.

"If that hi-line does come, merely substituting a small electric motor for a gasoline motor changes such equipment into electrics. Small electric motors, of the power desired, can

be purchased for just a few dollars. "And when the gasoline motor is removed from such equipment, it is still available right on the same farm—as a portable power unit—to be used for a great many odd tasks."

## LIST-BUILDING IDEA

★ New Jersey dealer his hit on a plan to keep his data on home ownership of radio and appliances up to the minute. Terlizzi Bros., Bloomfield, use the services of a woman surveyor to collect dope on all households in the area.

From these records, the sales managers at the store take lists of prospects daily and divide them into groups of twenty. The firm's outside salesmen are given these groups to call on, day by day.

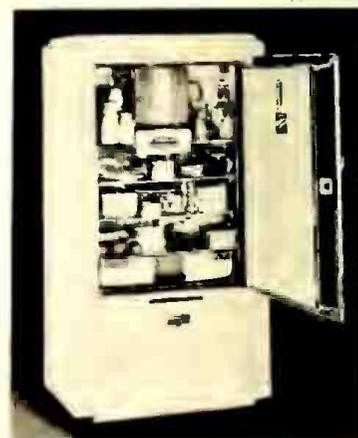
Terlizzi believes that the system removes wasted effort on the part of canvassers, who not only know definitely whom to call on, but what to say when they call.

## Kitchen-proved Westinghouse

★ New 1938 line includes 15 models: HP-95, HD-95, HP-72 and HD-72 in the Emperor series; HP-62, HD-62 and HD-52 in the Aristocrat series; HPS-72, HDS-72, HPS-62 and HDS-62 in the Hostess series; HPS-52, HDS-52, HDS-42 and HDS-32 in the Patrician series. Model HD-62, illustrated here-with, has dulux finish, food storage space of 12.24 sq. ft. (6.25 cu. ft.), and an ice capacity of 108 cubes or 13 lbs. Features include big-size humidrawer, meat storage compartment, temperature regulator with finger-tip dial control, kitchen thermometer with zones marked to correspond with regulator, eject-o-cube ice release trays, flexible food storage



Frank W. Greusel, Milwaukee jobber, making Fair Trade history as head man of Wisconsin Radio, Refrigeration & Appliance Association.



space, etc. Westinghouse Electric & Manufacturing Co., Mansfield, Ohio—RADIO TODAY.

★ Recently appointed as Norge distributors in the State of Oregon and in western Washington is the big Portland and Seattle jobbing firm, F. B. Connelly Co. Kenneth Connelly.

(To page 40)



CHAPTER 1—Recall embarrassing experiences with old models. CHAPTER 2—Mention name of a mutual friend "who owns one."



# THE STORY OF A SALE

*Photos from a new Fairbanks-Morse film, "Mrs. Nelson Wins a Wager."*



CHAPTER 3—Sell housewife on "easy to clean."

CHAPTER 4—Sell the husband on operating cost.

CHAPTER 5—Get the wife to try a new feature personally.

CHAPTER 6—Do all the talking yourself in a summary.





IN TALKING UP the "ease" and "accessibility" features of 1938 models.

## KEEP YOUR HANDS BUSY

Photos from Easy's new show produced by Vocafilm.



IN POINTING OUT the trim appeal of this year's progress in styling.



IN SHOWING exactly how the product has been engineered for safety.

(From page 38)

president, has announced that warehouse facilities will be increased and personnel hiked to handle the complete Norge line. Special ad campaigns and a series of dealer shows have been planned, with the Connelly sales manager, W. R. McCurdy, acting as general sales manager for the Norge line. Lee O. Cox is district manager in the area.

★ General sales manager Carl A. Copp of Frigidaire Division, General Motors Sales Corp., has announced the establishment of a company-owned branch at Nashville, Tenn., where Fred M. Davison has been appointed district manager.

From San Francisco comes the news that E. L. Williams, Pacific regional household sales manager for Frigidaire, has been named manager of the Los Angeles district.

★ The annual *Electrical Exposition* to be sponsored in Philadelphia has been set for April 18-23 inclusive, at Convention Hall.

★ At the last meeting of the *Electrical Appliance Dealers Association* of Brooklyn, N. Y., officers were elected for the coming year: James J. Schmeer, president; Max J. Zimmer, 1st vice-president; Percy Peters, 2nd vice-president; Albert H. Bernhard, secretary; A. H. Grafenstadt, treasurer, and Sam Klein, sergeant-at-arms. Special guests at the meeting were representatives from other dealer organizations. From the *Home Appliance Dealers' Association* of Philadelphia came B. H. Poucher, exec. sec., J. R. Shryork, Sam Goldberg and Louis Sanza. From Queens, N. Y.: Joe Dorsey and Jim Hardy. Representing Manhattan were Jack Shaneck and Boris Shatman.

★ Charles E. Wilson, who has been vice-president in charge of *General Electric's* appliance and merchandise department since 1930, has recently been named vice-president of the company. Mr. Wilson is a native New Yorker, has worked with GE and one of its constituent companies, Sprague Electric, since 1899. He is chairman of the board of the *General Electric Contracts Corp.*, *Monowatt Electric Corp.*, *Electric Vacuum Cleaner Co.*, and *Houses, Inc.* He is also a director in the *Edison General Electric Co., Inc.*, Chicago; *Trumbull Electric Mfg. Co.*, Plainville, Conn., and *General Electric Supply Corp.*, New York.

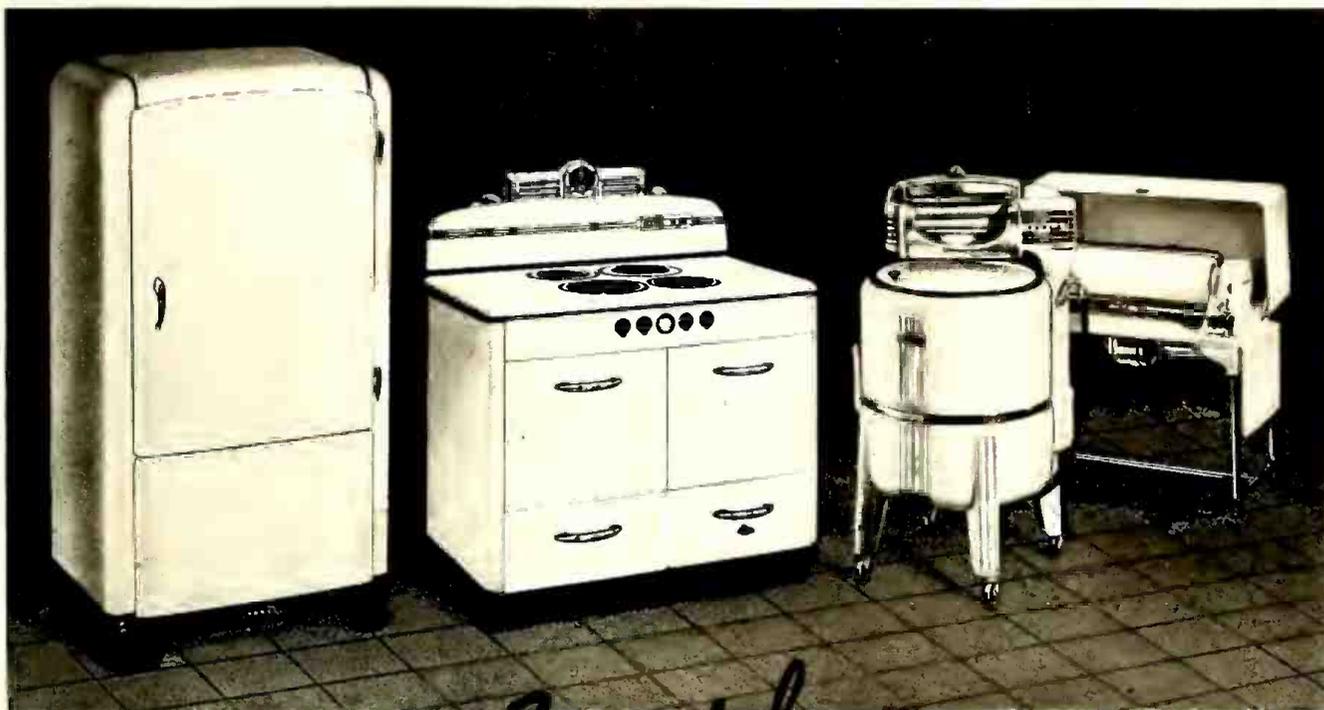
Announced at the same time was the election of Philip D. Reed as assistant to the GE president, Gerard Swope.

★ Field crews for *Frigidaire* have been organized to take the firm's 1938 sales plans into all key marketing centers of the nation, late this month and next. Activity is supervised by Frank R. Pierce, manager, household division, who has named 3 crew leaders: Lee A. Clark, W. I. Buchanan and Ellsworth Gilbert, headquarters execs.

★ *B and O Radio, Inc.*, Norge jobbers, of Newark, N. J., recently had an official opening of their new building at 620-634 Market St.

# NORGE

DEALERS ARE ALREADY BREAKING "Profit Quotas"  
WITH *Products* DESIGNED TO MEET PUBLIC DEMAND



*Norge offers all 3  
essentials for a successful  
Dealership*

## BETTER PRODUCTS . . .

Every survey proves Norge appliances lead in customer satisfaction. Norge *consistently* ranks among the first three in public acceptance. The smashing new advertising and sales promotion program dramatizes exclusive features that you can demonstrate in your showroom.

## YEAR-'ROUND PROFIT . . .

There is always sales activity in the Norge line of Rollator Refrigerators, Concentrator Gas and Electric Ranges, Autobuilt Washers, Duotrol Ironers, and package heating and commercial refrigeration equipment. Every month is a profit month for Norge Master Merchants.

## FREE TO APPLIANCE DEALERS!

A full volume on appliance selling and promotion. Describes a complete plan of store operation. Tells how to get the most out of advertising and sales promotion. Shows you how to make more money in the appliance business.

## TURNOVER . . .

High product turnover and liberal finance plans keep your capital working for you all the time. Low dealer and salesman turnover proves men have found it profitable to sell Norge and *stick to Norge*. You owe it to yourself to get full details of the Norge franchise without delay.



TP-3

NORGE DIVISION *Borg-Warner Corporation, Detroit, Michigan*

## MAIL TODAY!

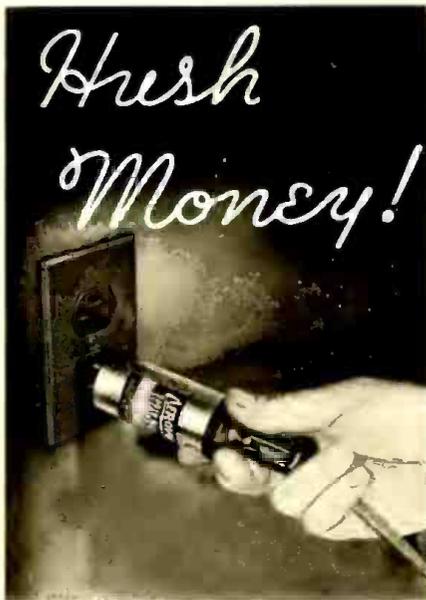
NORGE DIVISION *Borg-Warner Corp.*  
660 E. Woodbridge St., Detroit, Mich.  
*I would like to receive a copy of your new  
book for appliance dealers.*

NAME .....

ADDRESS .....

CITY .....

STATE .....



● There's money in those radio noises. On service calls or over the counter, you can sell AEROVOX Line-Noise Filters to most set-owners. So cash in with . . .



Six types of filters to take care of any kind of line noise.



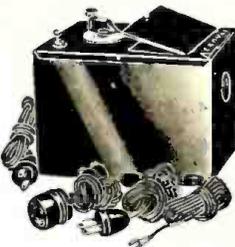
● Consumer folder, "Clear Reception", tells the story of radio noises and works up consumer interest.



● Handy plug-in design. Units plug in between noisy device and line, or between set and line.

● Thoroughly engineered. Really do a noise-suppressing job. Customer satisfaction assured.

Select correct filter and connections with the AEROVOX Noise Analyzer. Handsome. Steel case. Sturdy. Impressive. Only \$7.50 (Dealer's Net Cost)



## Ask . . .

Local AEROVOX jobber has these filters and line noise analyzer in stock. Ask to see them. Or write us for literature.



# PUSH-PULL AMPLIFIERS

(Continued from page 36)

bend of the curve, or swings positive with a consequent flow of grid current. Similar distortion will be produced if the bias voltage is too high, thus causing the tube to be operated at or near the lower bend of the  $E_G I_P$  curve.

When distortion such as this occurs it results in the production of a great number of harmonics in the output. The amplitude of the second harmonic is greatest (in a triode) with the other harmonics following in decreasing amplitudes. Unless the overloading of the tube reaches very large proportions the second harmonic is the principal source of noticeable distortion, except in the case of pentodes where the third harmonic is large. The arrangement of tubes in push-pull as shown in Figure 1 eliminates the second and all even harmonics from the secondary of the output transformer. Since the push-pull grid excitation voltages are 180 degrees out of phase, the plate output voltages are also 180 degrees out of phase, therefore they add in producing the output in the secondary of  $T_2$ . In the case of the second harmonic there is one complete cycle for each alternation of the fundamental. Therefore, the second harmonic outputs of the two tubes will be 360 degrees out of phase or *in phase*. It has been shown that all in phase components of the two outputs are balanced out. This applies to *all* even harmonics.

## Odd harmonics

This does not mean that tubes in push-pull can be overloaded to an unlimited extent without objectionable distortion. When the overloading reaches a certain point the third or even the fifth harmonic will assume serious proportions and cause noticeable distortion. However, two tubes in push-pull can be worked considerable harder, individually, than can a single tube, so that it is possible to obtain more than twice the output from two tubes in push-pull than from a single tube using the same percentage distortion in the output as a limiting factor.

It should be observed that since the two plates are at equal potential with respect to the center tap so far as the direct current component is concerned, there is no D. C. difference of potential between them and they could be short circuited without a

flow of direct current. This is not true of the alternating component and the A.C. voltage developed between plates can be almost twice the D.C. voltage of each plate.

While the use of power pentodes, due to their high value of power sensitivity, often enables sufficient output to be obtained from a receiver without the necessity for a first stage of audio amplification and thus simplifies and reduces the construction cost of a receiver, the disadvantages of the tube may outweigh the advantages.

## Load impedances

When power pentodes are operated in push-pull and the load impedances properly adjusted, (each load impedance equal to about 1/5th the tube impedance), the tubes may be operated so that practically no rectification due to the bend of the characteristic curve occurs, even when the grids are pushed considerably positive and large output is obtained. However, under this condition, where the distortion due to non-linear operation is the same on both alternations of excitation and the load is properly adjusted, the third harmonic distortion will be high. If the load impedance is not correct, being either too high or too low, the second harmonic rises rapidly with variation of load.

When using a single tube a comparatively small variation in the load impedance will result in the introduction of very bad second harmonic distortion. This variation in load impedance could be caused by resonant peaks in the dynamic speaker, frequency variation, etc. In other words, since the impedance of an inductive load varies as the frequency, the load impedance will not be correct over the entire frequency band and variations in the load impedance will result in much greater harmonic distortion than in the case of the triode. Of course if the pentodes are operated in push-pull the second harmonic distortion will be balanced out but the third harmonic may still assume serious proportions.

## Degenerative feed-back

This development of large odd harmonic voltages in the output has always been the most serious disadvantage of the power pentode. However the quite recent development of "degenerative feed-back" has provided

**Cunningham**  
STANDARD SINCE 1915  
**Radio Tubes**

# THE SERVICE MAN'S SPECIAL!

Here it is! The tube made to order for the service man. Cunningham Tubes are the service man's special—and here's why.

They are sold *only* for replacement service work. They're priced so you get the profit you've always wanted . . . they're made and guaranteed by the world's largest manufacturer of radio tubes!

Add to this the sales-making array of selling aids we offer for 1938—and you'll see why Cunninghams will pull in more profits for you!

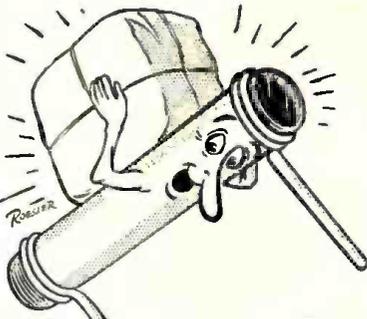
#### SALES AIDS FOR 1938

Window displays; streamers; posters; direct mail pieces; decals; radio check-up posters; newspaper ads; sales and service meetings. Ask your distributor for full details.



**Cunningham Radio Tubes**  
STANDARD SINCE 1915

# SERVICE NOTES



## Overloads don't worry me

In fact, "I can take it," whether it is heat, cold, or the ceaseless humidity of the tropics... all the headaches that confront the set builder. In this particular field I answer this problem of resistance with a fixed resistor whose characteristics are so constant that they oftentimes form the standard by which all others are judged. Which is why so many set builders and service men turn to Centralab for the satisfactory answer.



Centralab Resistors are a solid rod, hard as stone throughout, and not just a delicate resistor placed in a tube. That is why Centralab resistors will carry loads of many times their rating without damage. By the patented Centralab process only the central portion of the ceramic is conducting. Externally the resistors are fully insulated.



Type	rating	watt	size
510	1/2	"	1/8 x 5/8
514	1	"	1/4 x 1"
516	1 1/2	"	1/4 x 1 1/4
710	1/2	"	1/8 x 5/8

### Centralab

Milwaukee, Wis.

Division of Globe Union, Inc.

BRITISH CENTRALAB, Ltd.  
Canterbury Road, Kilburn  
London, N.W.6, England

FRENCH CENTRALAB CO.  
118 Avenue Ledru-Rollin  
Paris XI, France

a means of reducing all harmonics, odd and even, and of compensating for variations in load impedance with frequency. Briefly, it consists of feeding back into the grid circuit a part of the plate output voltage, in such polarity that inverse distortion voltages are deliberately introduced at the grid to neutralize the distortion developed in the amplifier itself. This circuit makes practical the use of power pentodes and the "beam" type power amplifier tubes for the development of large audio power with relatively small tubes.

The push-pull amplifier has another advantage. Due to the fact that the D.C. plate current components flow in opposite directions in the two halves of the primary winding, the two D.C. fields cancel and there is no transformer core saturation. Thus the effective magnetic permeability of the core is greater and the transformer cost may be reduced by the use of a smaller core, of fewer turns, or both, without sacrifice of inductance in the windings.

### Impedance matching

In all vacuum tube power work the necessity for impedance matching is encountered. At radio frequencies impedance matching can usually be accomplished by changing taps on a coil, varying the coupling, adjusting a variable condenser, or in some other relatively simple manner. At audio frequencies this is not so easy to do. Here large values of fixed capacity and iron core transformers are used. It is evident that the impedance matching requirements must be calculated before construction and the apparatus designed accordingly. Impedance matching is usually accomplished by means of a transformer. Just what is meant by "impedance matching"?

As an example, assume that it is desired to couple a single Type 2A3 power amplifier triode to a dynamic reproducer. The plate resistance of the tube is 800 ohms; assume that the reproducer has an impedance of 16 ohms. Since to obtain the maximum undistorted output the tube must operate into a load impedance equal to twice the internal tube impedance (for triodes), the primary winding should be designed to have an impedance of  $800 \times 2$  or 1600 ohms at its lowest operating frequency. (Actually a higher load im-

pedance is recommended for this tube, the manufacturer recommending 2500 ohms.)

The turns ratio of the transformer to match these impedances can be calculated from the equation.

$$\text{Turns Ratio (Step Down)} = \sqrt{Z_P/Z_S}$$

where  $Z_P$  is the impedance across the primary and  $Z_S$  is the impedance across the secondary. With the values assumed above,

$$\text{Turns Ratio} = \sqrt{2500/16} = \sqrt{156} = 12.5$$

Now assume that this same reproducer is to be operated from two Type 2A3 tubes in push-pull, the two tube impedances thus being in series presenting a total load across the primary of 1600 ohms. Then,

$$\text{Turns Ratio} = \sqrt{1600/16} = \sqrt{100} = 10$$

### ARVIN MODELS 818 & 828

★ The 8-tube home type Arvin receivers use a rather conventional superheterodyne circuit with a 2-gang condenser. (See circuit chart on page 34.)

Since separate trimmers and coils are used for each of the bands, there are no interlocking trimmers. First the oscillator, then the antenna circuits are aligned. Frequencies and location of trimmers are shown on the chassis layouts.

Self bias is used on all the amplifier except the 1st audio stage and 1st I.F. amplifier which derive their bias from the voltage divider circuit. Sensitivity can be controlled by changing the bias resistors on the I.F. and 1st detector tubes.

### MOTOROLA MODELS 9Y, 9R, 9A CHASSIS 9-1, 9-2, 9-3

★ The 9-tube Motorola receivers employ a pre-selector antenna circuit using a 3-gang condenser when receiving on the standard broadcast band. Antenna secondary is inductively coupled to the grid coil of the first detector. (Circuit shown on page 34.)

The AVC section of the 6H6G diode is capacitively coupled to a tap on the primary of the 3rd I.F. transformer.

Fixed bias is employed in both of the audio stages. While not shown in the schematic, an electrostatic shield is used in the power transformer.

An auxiliary drawing gives the trimmer location and chassis layout. The I.F. is first aligned at 465 KC. The BC oscillator is then aligned at 1700 KC and the antenna and pre-selector trimmers at 1400 KC. Oscillator series padding is done at 600 KC while rocking the dial.

Oscillator trimmer for the policeband is adjusted at 7,000 KC and the antenna trimmer at 5500 KC while rocking the condenser gang. Shortwave band aligned at 22,000 KC for the oscillator and 18,700 for the antenna.

### FAIRBANKS-MORSE CHASSIS 8A

★ Three Fairbanks-Morse models, namely the 8AC2, 8AC3, and the 8AT8 use the 8A chassis. Difference between the models is the cabinet and speaker size. (Circuit on page 37.)

An S-tube superhet circuit, employing a tuned R.F. amplifier on all bands, is used in these models. Circuit employed is quite usual. In the audio stages fixed bias from the power supply is used. In the oscillator stage a single plate winding is used for both the BC and police bands.

Auxiliary diagram shows the chassis and trimmer layouts. The I.F. amplifier is aligned at 456 KC. Since there are no trimmers interlocking from one band to another, there is no special alignment order except that the oscillator is the first trimmer to be adjusted on each band. Frequencies and location of trimmers shown on the circuit diagram.

### RCA VICTOR 810 SERIES

★ The 810K, 810K, 810T RCA models have similar chassis but are housed in different cabinets. Nine metal tubes and a tuning eye are used. (Circuit on page 37.)

An R.F. amplifier is employed on all bands. On the BC band the antenna coil is the bottom section while the other sections are used as a secondary with the tuning condenser. On the police band the bottom section is shorted out and the next section up becomes the antenna coil and the other two sections the secondary winding. Similarly, on the shortwave band, the two bottom sections of the coil are shorted out.

The coil system for the 1st detector is quite similar to the antenna. On the BC band the plate winding at the bottom is most effective. On the po-

*"The World's Best Value"*



# KADETTTE RADIOS

INTERNATIONAL RADIO CORPORATION, ANN ARBOR, MICHIGAN, U.S.A.

# GET READY TO CASH IN ON 1938 RADIO SERVICE BUSINESS . . . the easy National Union way!

Get the equipment you need  
**FREE** with purchases of  
National Union radio tubes  
and condensers.

What do you need to make yours the "finest radio service lab in town"? Whatever it is, National Union is ready to give it to you. Thousands of service engineers are cashing in on the National Union free equipment plan. They're building their reputation . . . they're growing, making more money.

Now, with National Union condensers it's twice as easy as ever before because condenser purchases and N. U. tubes all help to earn the things you need. Get in on the N.U. proposition for 1938. Get in on it now! Ask for name of nearest N.U. distributor.

## QUALITY! NATIONAL UNION'S BY-WORD

So many thousands of Radio Service Engineers have proved National Union quality in the field that it is taken for granted. Due credit should be given to the large staff of research engineers who are constantly at

work in the National Union Laboratories striving to improve N.U. Products and develop new and finer merchandise. The N.U. research staff is your assurance that National Union Products will never let you down.



### THE ROAD TO BETTER BUSINESS

1. Full guarantee on highest quality radio tubes.
2. Cut price business not solicited.
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4. N. U. jobber stocks are complete...No hunting for odd types.
5. Timely business building aids.

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**AMAZINGLY  
SIMPLE**

- Servicemen, with only 4 standard types of Amperite AC-DC Regulators you can replace 90% (over 100 types) of AC-DC Ballast Tubes now in use! Consult your jobber.
- Amperite Regulators are equipped with a potentiated Automatic Starting Resistor to prevent untimely burnouts and save pilot lights.
- New Low Price on Amperite AC-DC Regulators: \$1.00 LIST  
Amperite Replacements for 2V Battery Set ballasts \$1.25 list

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Company  
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NEW YORK



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FOR  
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AR

**AMPERITE**  
AUTOMATIC REGULATORS

## Is Your INVENTION making income for you?

Valuable inventions often fail to produce income for the inventor, because of his inability to protect them properly or to contact and interest manufacturers who can make and sell them in a big way.

Management of inventions for profit is a specialized business, requiring the cooperation of market analysts and production engineers, and wide experience in manufacturing, sales and contract negotiation.

This organization accepts, without fees or advances, the management of inventions that can pass our rigid tests of marketability and profit possibilities.

We have the necessary contact channels and acquaintances to pick and approach the right manufacturers, and can place licenses on royalty basis, on more favorable terms, with more responsible companies, and more promptly, than most individual inventors could hope to do.

Correspondence invited. Ask for free folder on "Getting Your Invention to Market." It may lead to substantial income for you.

**EBY INVENTIONS, Inc.**  
Commercial Trust Building  
PHILADELPHIA, PA.

# SERVICE NOTES

lice band the central tap of the secondary is grounded and the bottom two coils act as a primary which is capacitively coupled through a .00056 condenser to the lower plate coil.

On the shortwave band the two bottom detector coils are shorted and the lower plate coil is capacitively coupled to the coil next to the top which acts as a primary with respect to the top coil. The junction of these two coils is grounded. The top plate coil winding also is inductively coupled to the short wave winding of the secondary.

The oscillator circuit is the conventional type using a coil tapped for the cathode of the tube.

I.F. alignment of the set is done at 460 KC. Next alignment takes place at 20,000 KC—oscillator, detector, antenna trimmers in the order given. On the police band there is only one trimmer—the oscillator which is aligned at 600 KC. On the BC band the parallel oscillator is aligned at 1500 and the series at 600 KC.

## ELECTRONIC ORGANS A SERVICE OPPORTUNITY

★ While to date only some 6,000 of the electronic organs are in use, each unit employs at least ten tubes which should be replaced at yearly intervals, according to the manufacturer, Hammond Clock Co., Chicago. Since the owners have critical ears and since the organ tones must always be pure, perfect tubes are a necessity.

To the serviceman, the amplifying equipment is similar to that found in usual sound systems. Output tubes are push-pull parallel 2A3's operated class A for a 20-watt output. When greater powers are needed, power amplifier units are connected in parallel; sometimes as many as 25 or 35 are employed, utilizing some 200 or more tubes.

The Madison Square Garden installation has 32 amplifiers, employing 228 tubes, of which 128 are 2A3's and 32 5Z3 rectifiers. List price of tubes involved is almost \$450. But even in the smallest set-ups the tubes list around \$15—which is more than twice that of the average radio set. Another thing, the owners have the money to replace the tubes, and will not expect discounts, since the Hammond organization extends none.

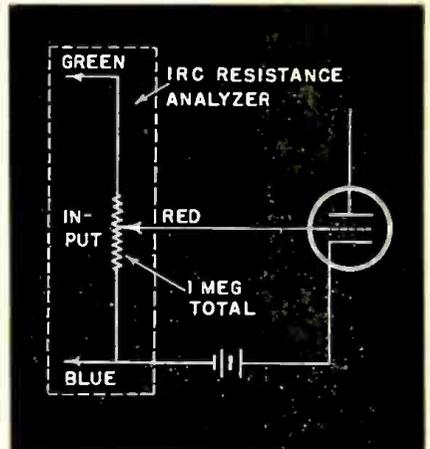
In some areas we understand that Hammond Company is anxious to contact skilled servicemen with a

knowledge of amplifiers to help handle its service calls. Company gives three years' unconditional guarantee (tubes excepted) and is looking for qualified servicemen to handle service calls on a fee basis. If you feel you are qualified, why not contact the nearest Hammond representative?

While this electronic organ hasn't reached mass-production proportions, for the wide-awake serviceman with a good knowledge of amplifiers, it represents a new source of income.

## CALIBRATED RESISTOR AS A CALIBRATED GAIN CONTROL

★ The I.R.C. resistor analyzer unit may be used to control the gain of an amplifier in terms of decibels, when employed as a calibrated voltage divider as shown in the accompanying diagram.



The calibrated voltage divider would work into the grid circuit of the first or second stage of the amplifier. Below is given a table showing the proper setting of the dial pointer to effect a desired gain in decibels from an insertion loss of minus 30 db., or to effect a desired loss in db. when used as an attenuator.

Decibels		Dial Pointer
Gain	Loss	setting
0	30	32M ohms
3	27	45M
6	24	64M
9	21	90M
12	18	125M
15	15	180M
18	12	250M
21	9	350M
24	6	500M
27	3	700M
30	0	1 megohm

# YOU'RE SURE OF YOUR PROFITS



## UNDER THE TUNG-SOL CONSIGNMENT PLAN

You don't buy Tung-Sol Tubes, and then wait until they're sold to get back your investment. They're put in your custody without payment. After they move, you report your sales, pay at your cost price and keep the profit. No cash investment—no dead stocks. And our ability to finance is extended to you without any premium whatsoever.

It's a straightforward, simple, business proposition by a concern financially able and willing to give this co-operation to dealers who can qualify for the Tung-Sol franchise. Naturally, Tung-Sol dealers must be responsible, ethical business getters.

Write today. Perhaps you can qualify for a Tung-Sol Consignment franchise in your neighborhood

## TUNG-SOL

*Tone-flow Radio Tubes*

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Dept. C Radio Tube Division

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THAT *Tiny Motor*  
YOU'VE BEEN LOOKING FOR

# Utah has it!

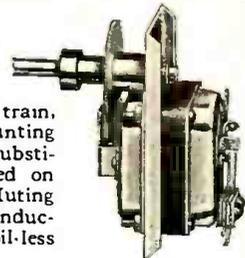
65,349 DELIVERED TO THE RADIO  
INDUSTRY IN THE LAST 60 DAYS!



1/3 ACTUAL SIZE

A. C. Here is the 3-wire brushless reversible motor Utah pioneered for the electric tuning of radios. Other branches of industry are finding countless applications for this versatile little motor. It can be supplied for any A. C. voltage from 6 to 115.

Here is an arrangement that demonstrates the adaptability of these motors to a variety of applications. This Utah motor has an automatic clutch, a gear train, manual control shaft and mounting plate. Other gearing may be substituted. Silver contacts are used on the Thermostatic Switch and Muting Switch. Motor is squirrel cage induction type with self-aligning oil-less bearings.



1/3 ACTUAL SIZE

D. C. Here is the 3-wire universal brush type, for D. C. and A. C., 25-50-60 cycles. Automatic clutch and driving pinion are standard equipment. All Utah motors are easily adapted to a variety of layouts. Though exceptionally compact, they are built to take the rigorous starting, stopping and reversing required by many applications.



1/3 ACTUAL SIZE

Send your specifications  
for prices and details.  
Address Dept. RT1

PATENTS ISSUED AND PENDING  
ON ABOVE MOTORS

## UTAH RADIO PRODUCTS CO.

CHICAGO, U. S. A.

TORONTO BUENOS AIRES  
ONTARIO, CANADA (UCOA RADIO PRODUCTS CO.)

# "16 YEARS OF LEADERSHIP"

# SERVICE

## SERVICE HEADACHES

★ I've separated the service industry's headaches into three groups, writes Richard Mattison, general manager for Casa Radio Co., Brooklyn, N. Y..

1. The "football mechanic," I named so because of the scientific way he kicks a radio around until it starts to play (maybe).

2. The "corkscrew mechanic," so crooked, he uses bootleg parts in a radio he repaired for his mother (and charged her plenty).

3. The "nut" that repairs sets for glory (and is forced to eat in a dump because he's broke).

## SERVICE TEST PROCEDURE USED BY FACTORY TROUBLE-SHOOTERS

★ One of the best ways that a serviceman could learn to improve his speed in locating the causes of trouble in a radio set would be to take a few pointers from the trouble-shooters in a radio factory, states recent issue of *Philco Serviceman*.

The trouble-shooters are the men who take the sets that have failed to pass final inspection and, from a few quick tests, determine just what is wrong with the sets. These men are all expert, practical and theoretical radio servicemen who must be good enough and fast enough to work on a production basis.

Naturally, their method of attack and procedure in locating troubles must be orderly and scientific. We list below the condensed procedure which is followed in the Philco factory by the men who do trouble-shooting work on Philco sets. The serviceman who follows this procedure carefully will find that he can do his work in much less time and with a far higher degree of accuracy than he ever did before.

1. Set signal generator for audio.
2. Connect lead through a small-capacity condenser to grid of the first audio tube and note if signal comes through.
3. Change signal generator to I.F. of set and connect to grid of I.F. tube.
4. Check padders of second I.F. transformer for alignment.
5. Connect signal generator to detector oscillator grid and check for increase in signal. Also check first I.F. transformers for alignment.
6. Change signal generator to 1,000 KC.

7. Tune in signal on broadcast band of set.

8. If signal is tuned correctly at 1,000 on receiver, oscillator is correctly padded. If not—

9. Connect signal generator to antenna post of set and correct dial reading, with high-frequency padder, using 1,500 KC from signal generator. Change oscillator to 600 KC and check location of signal at low-frequency end of dial. If off, roll in signal at 600 KC for maximum reading in output meter. This means alternately adjusting the low-frequency padder and retuning the set until the maximum reading is noted on the output meter.

Conclusion: As the signal generator is moved back through the receiver from grid to grid of the tubes in the set, operation of the various stages is being checked. Failure of succeeding stage to increase the gain of signal indicates trouble in that stage. This should be checked first by trying the padding of the stage and then by investigating with the Philco circuit tester to determine which voltage or resistance structure is at fault. This type of circuit analysis will save much time in repairing receivers returned to dealers.

## CLEARING-HOUSE FOR INVENTIONS

"Many of RADIO TODAY's subscribers know what it is to develop inventions and then to be unable to interest any substantial company in marketing them in the way they deserve," comments Hugh H. Eby, well known radio manufacturer. "Realizing the need, Eby Inventions, Inc., has been formed to 'give the inventor a break' by taking over the management of new devices and getting them on the market.

"It is a natural outgrowth of many years' experience in handling and licensing valuable inventions, and this experience, the wide business connections, and the national reputation for responsible dealing so built up, are now available to the individual inventor on a cooperative basis," explains Mr. Eby. "The company is located at 1200 Commercial Trust Building, Philadelphia, where any inventor can address a letter and get full details."

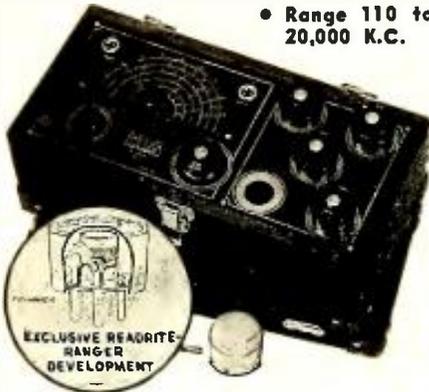
## IF YOU CHANGE YOUR ADDRESS

... Will you please send us both your old and new address ... and allow us 30 days to make the correction ... Thank you.

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New York City

Bill - the  
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RADIO SERVICE INC.  
Oscillator  
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CITY  
I spoke to you about  
you also  
It's a honey  
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- 1% Accuracy to 3,000 K.C.
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SIGNAL GENERATOR

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Model 557 Direct Reading Signal Generator uses plug-in type coils. Five frequency bands are covered from 110 to 20,000 K.C., all fundamentals. Completely shielded for static and magnetic fields. Attenuation and stability are outstanding features. Strong signals both modulated and unmodulated are furnished.

Each individual coil is separately calibrated by an exclusive method of peaking with trimmer condensers. Furnished complete with batteries and accessories.

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

# NEW BOOKLETS

★ Andrea Radio Corp., 48-20 48th Ave., Woodside, N. Y. (formerly F. A. D. Andrea, Inc.), have issued a new export catalog, bringing the firm's radio line listings up to date.

★ A List Price Catalog, with discounts listed at bottom center of each page, has been released by Spokane Radio Co., Inc., distributors, 611 First Ave., Spokane, Wash. The big publication is presented to dealers as silent salesmen, radio reference book, and encyclopedia.

★ Supplied free upon request through jobbers handling Sylvania tubes is a revised edition of the Sylvania tube characteristic sheet, containing characteristic data on all tube types now available in the Sylvania line. Data on 15 new type and 4 new base views have been added. Data on older types have been revised to bring the characteristics up to date. Hygrade Sylvania Corp., 500 Fifth Ave., New York.

★ Now available from Cinaudagraph Corp., Stamford, Conn., is a new catalog illustrating this firm's line of speakers. Of special interest are the frequency response charts given for many of the speakers. Sheet illustrates speakers for all uses. A line of infinite baffle cabinets is also illustrated.

★ Just released by Clarostat Mfg. Co., Inc., 285 North Sixth St., Brooklyn, N. Y., is a 9-page bulletin in which are listed 1200 exact duplicate controls in numerical order. This is the latest Clarostat servicing data. Copies may be had by writing the company.

★ The aviation radio section of RCA Mfg. Co., Camden, N. J., has just released a 132-page book for professional and sport pilots. Book contains information on planning flights, blind flying, aircraft radio, radio bearings on broadcast stations, obstruction lighting and heights of towers, as well as lists of U.S. radio-beacon weather stations and others connected with aviation. Limited copies are available at 25c each from the company.

★ General Radio Co., 30 State St., Cambridge, Mass., has just released another copy of the "Experimenter." Booklet deals largely with the use of the sound-level meter. Appliances listed are: in acoustical fields, vibration sound analysis of heavy machinery, noise elimination in factories, offices, etc. Details of background noise corrections in the measurement of machine noise are given along with a chart to make it easy.

★ Free to those writing to American Radio Hardware Co., Inc., 476 Broadway, New York, is a new catalog of up-to-the-minute radio hardware, cabinets, containers and display boards.

## The World's Fastest Selling Line of DRY ELECTROLYTIC CAPACITORS

WHEN you order C-D electrolytics you KNOW that, whether it be an "8 mike" or a "16 mike," it will be absolutely the best obtainable in the industry.

If you could step behind the scenes at the Cornell-Dubilier plant and witness the careful selection and inspection of raw materials, the extreme precautions taken by C-D engineers to insure positive sealing, (C-D dry electrolytics are triply sealed), against corrosion and humidity, and the endless test and inspection of the finished electrolytic, you would understand why these condensers are the world's fastest selling line of electrolytics.

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"TOKFONE," Jr.

Consisting of Master,  
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The Biggest Buy in Communication Systems  
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**.. CRASH THIS FERTILE MARKET!**

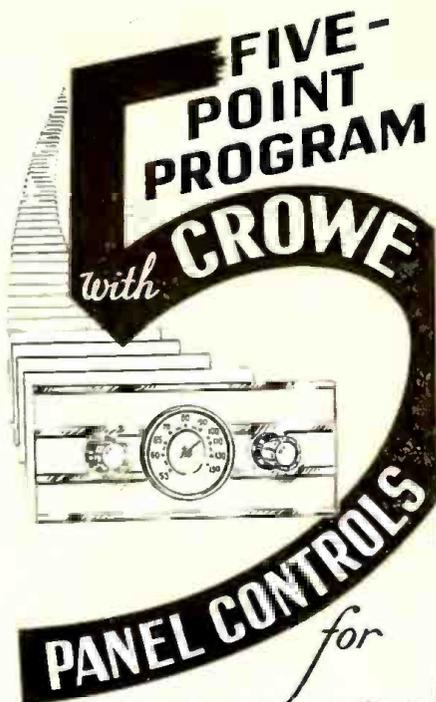
If you're in a position to "CASH-IN" with FAST MOVING-  
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TOKFONE SYSTEMS—adaptable to meet all requirements—from 2 to 40 stations—beautifully hand-rubbed cabinets—NO PREFERENCES—NO TRICKS—No Makeshifts—All New Merchandise—Special Units if Necessary—No Quotas—No Contracts—Buy as You Need Them—Manufactured in our own factory—we stock them.

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# SALES REINFORCEMENT

## MORE BOOKLETS

★ The complete discussion of "Radio Receiver Power Supplies," prepared by the engineering dept. of Aerovox Corp., 70 Washington St., Brooklyn, N. Y., is found in two booklets—The Aerovox Research Worker for Aug.-Sept. and the issue for Oct.-Nov.

★ A new bulletin on multi-range test equipment has just been issued by the Weston Electrical Instrument Corp., Newark, N. J. The bulletin illustrates 6 standard models of the multi-range test instruments, and contains complete descriptions of their uses, ranges, electrical specifications, dimensions and prices. Among the instruments discussed is the Type I analyzer which measures AC and DC voltage, direct current and resistance over a total of 33 ranges.

★ To be sent free to those writing Trav-ler Radio & Television Corp., 1036 W. Van Buren St., Chicago, is a new catalog listing the complete Trav-ler line for 1938, including the 16 automatic tuning models and the 10 others.

★ A new bargain flyer, listing several hundred items in rotogravure, all of interest to the serviceman, amateur, public address specialist and experimenter, has been published by Wholesale Radio Service Co. Copies of the flyer, C5, will be sent upon request from headquarters at 100 Sixth Ave., New York City; 901 W. Jackson Blvd., Chicago; 265 Peachtree St., Atlanta, Ga.; 110 Federal St., Boston, Mass.; 90-08 166th St., Jamaica, L. I., N. Y.; 219 Central Ave., Newark, N. J.; or 542 Fordham Road, Bronx, N. Y.

## RICHNESS IN SALES AID

★ A new series of illuminated displays, banners, circulars, backgrounds and direct mail cards, to use in the promotion of the 1938 interim models, have been prepared by Stromberg-Carlson.

One display, photographic style, is illuminated and has a silver foil background with 5 associated foil receiver identification cards telling the story of electric flash tuning. It is silk screened in red and black and features a figure of a girl touching a button.

The new banner is large, heavy, silky and red with gold fringe, cord and tassel. The circulars, for customer distribution, have been revised in gold and black. A new window display is also in the series, with gold columns, green side curtains, semi-circular pedestals for table models. Stromberg also offers a new post card series, four of them done in original cartoon style.

## MORE POWER TO YOU



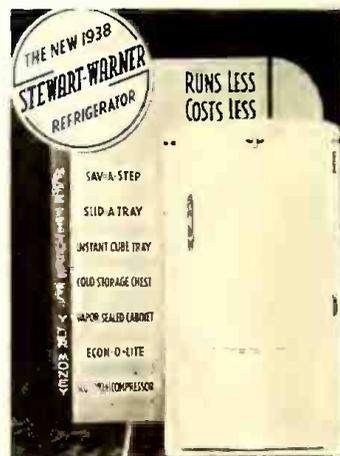
★ A modernistic metal figure printed in red, green, silver and black is featured in a new display released by National Union Radio Corp. A new sales phrase is accented as a shop message for guaranteed radio service. The display is equipped with an easel stand, and is designed for either show-window or store-counter use.

## SINGLE MODEL BACKGROUND

★ With a circle in powder blue and other soft colors to accent the whiteness of the product, Stewart-Warner has released a new display piece to be used with a single model. Simplicity is featured, although main features of the refrigerator are graphically lettered.

The company has also issued a 7 in. x 10 in. display for two models, with red letters in cut-out plywood, lit up by a row of lights.

While these displays are being used in dealers' stores, Stewart-Warner is



erecting big outdoor posters all over the nation, plugging the Sav-a-step as "King of the Kitchen." These are part of the firm's more-than-doubled sales promotion plans for 1938.

# HARD NUTS EASY TO CRACK



Operations Peculiar to  
New and Complicated  
1938 Sets Easily Under-  
stood if you have

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**RIDER BOOK**  
explaining  
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FREQUENCY  
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With AFC circuits in most higher priced models, knowledge of "AFC" means money in your pocket. Learn the practical facts from these easily understood explanations. Hard covers, 144 pages, \$1.00.

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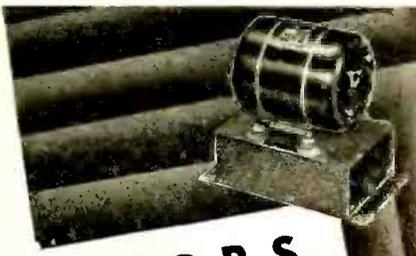
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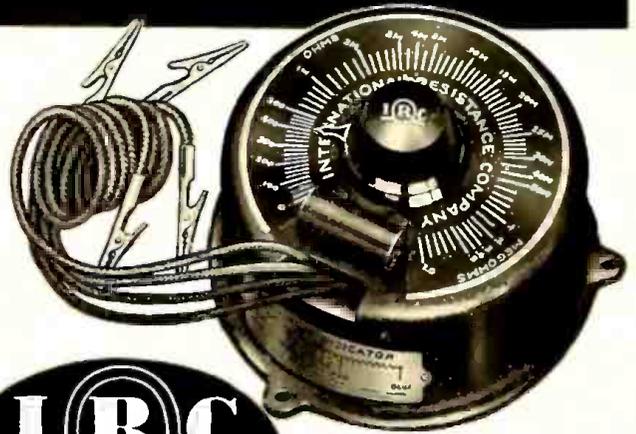
"PINCO" dynamotors, gen-e-motors and rotary converters provide the last word in power supply units for air craft, police, marine and auto radios; also for public address systems. Now widely used by leading air lines and municipal and federal agencies throughout the world. Available in a wide range of capacities for every requirement. Compact, light weight. Sturdily constructed to assure long dependable service. Write for complete information.

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# RESISTANCE ANALYZER and INDICATOR

NEW IMPROVED TYPE

(4 3/4" diameter by 3 1/4" high)

A Calibrated Variable Resistor Instrument for General Use In All Types of Resistance Measurements

- Valuable to
- Servicemen**
- Amateurs**
- Radio & Electrical Engineers**
- Manufacturers**
- Experimenters**
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... And to Every-  
one Who Has Any-  
thing to do with  
Resistance Meas-  
urements

Unquestionably the finest instrument of its kind, the new IRC Resistance Analyzer and Indicator has countless uses wherever fixed and variable resistances are involved. Among these are:

For determining by the substitution method proper values for resistors and standard Volume Controls; estimating required Volume Control tapers; voltmeter multipliers; wire wound rheostat or potentiometer; calibrated gain control or attenuator; voltage divider, etc. Complete instructions included in 16-page folder.

The Analyzer is direct reading. It has only the one adjustment knob to vary the resistance continuously from 0 to 1.0 megohm. Circuit consists of heavy duty wire wound rheostat type element from 0 to 30,000 ohms and special Metalized type resistance element from 30,000 to 1.0 megohm.

Case of molded Bakelite. Three fuse sizes included. **\$4.95**  
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*will tell your story all  
year long to the buying  
power of the industry*

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Classified lists of manufacturers of all sets, sound equipment, transmitters, inter-communicators and testing instruments. Also manufacturers of tubes, parts, accessories, equipment and raw materials.

Trade names, firm names, and addresses.

All U. S. broadcasting stations.

Servicing charts, diagrams, specifications.

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Auto radio installation data.

Charts of decibel ratios and power levels.

Socket analyses, with tube voltages.

Fair trade regulations of Federal Trade Commission and RMA.

Statistics of the radio industry.

## **Circulation Assuring the Greatest Possible Buying Power**

Purchasing agents, engineers, production men, jobbers, service men, merchandisers—all who need a quick and dependable source of trade and technical information.

### **SPECIFICALLY:**

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Every manufacturer of tubes, parts, accessories, equipment and radio materials.

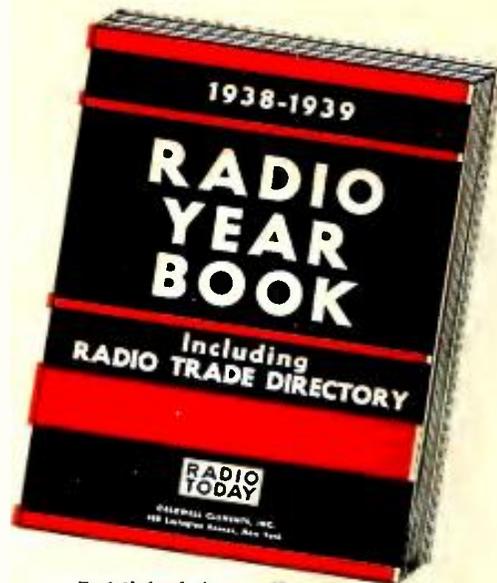
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DIRECTORY  
DIRECT MAIL SERVICE**

# JOBBERSON THE JOB

★ From *Fada Radio & Electric Co.* comes the announcement that the *Ott-Heiskell Co.*, Wheeling, W. Va., have been named as wholesale distributors for Wheeling and adjacent area.

★ The *Howard* radio trailer, which carries 20 models, including home, battery, amateur and auto sets, has now started an extended trip through the Southeast, according to *Charles B. Shapiro*, general sales manager for Howard. The famous trailer has already covered some 12,000 miles in 6 states, working for 14 jobbers. *Dick Laycock* pilots the outfit and, according to *Howard Briggs*, Howard vice-president, the first question usually asked by the distributors is "How soon may we have the trailer back?"

★ *Stromberg-Carlson's* recent contest among distributors' salesmen netted a 15 per cent increase in the number of SC dealers signed up by jobbers. Top man among the contestants was *T. A. Pringle, Graybar Electric Co.*, Minneapolis, Minn. Next 10 high men were: *Walter D. Ament, Robert F. Clark Co.*, Denver; *W. T. Sutherland, Jenkins Music Co.*, Kansas City; *Roy Cunningham, Graybar Electric Co.*, Pittsburgh; *H. H. Wimple, Farrar-Brown Co.*, Portland, Me.; *J. H. Farber, Jenkins Music Co.*, Kansas City; *C. E. Noonan, Graybar Electric Co.*, Buffalo; *H. C. Gruber, Hudson Valley Asbestos Corp.*, Albany; *Burt Dorris, Electric Supplies Dist. Co.*, San Diego; *J. W. Fetsch, Hughes & Co.*, Spokane; *F. X. Cain, Graybar Electric Co.*, St. Louis, and *R. E. Shenk, J. J. Pocock, Inc.*, Philadelphia.

★ More than 400 *Motorola* distributors and their staff members went to the big annual *Motorola* convention Jan. 6 in Chicago. The company's new 1938 auto set line was introduced, got a reception unparalleled in the history of this pioneer manufacturer of auto radio receivers. *Paul V. Galvin*, *Motorola* president, and his associates were assured by jobbers that the coming season would be a banner one for the line.



Illustrating a modern trailer service successfully offered to dealers by Baird Hardware Co., Fada distributors, Gainesville, Fla.

★ *Philco* has announced a group of winners in the recently closed "10,000,000th *Philco*" contest among distributors' salesmen. Winners of wrist watches and their jobber connections are: *J. E. Hardwick*, of *C. R. Rogers Co.*, Pittsburgh, winner in Group No. 1; *Jack Carney, Philco Sales and Service, Inc.*, Louisville, Ky., winner in Group No. 2; *Hal Heaton, E. C. McKelvey Radio Co.*, Salina, Kan., winner in Group No. 3, and *L. R. Moore, Allen and Jemison Co.*, Tuscaloosa, Ala., and *E. C. Schmier, Schmier's Radio Shop*, Rock Island, Ill., who tied in Group No. 4 and therefore received duplicate watches.

★ Two new distributors for *Fairbanks-Morse* are *H. I. Sackett Electric Co.*, 173-175 Elm St., Buffalo, N. Y., for the surrounding area, including 8 counties in New York and 3 in Pennsylvania; and the *Adamson Supply Co., Inc.*, 315 W. Campbell Ave., Roanoke, Va., to cover Roanoke and 16 Virginia counties. *H. I. Sackett* heads the former firm; *John Q. Adamson* is president of the latter.

★ *Bloch Bros.*, wholesale hardware company of Selma, Ala., announce that they are discontinuing the sale of broadcast receivers and will accent the sale of amateur apparatus and serviceman's supplies and parts. A new 1938 catalog has just been issued.

★ *Herrlinger Distributing Co.*, distributors for *Tung-Sol* radio tubes, have recently moved to new and larger quarters at 1518-1520 Race St., Cincinnati, Ohio. They were formerly located at 1714 Vine St., Cincinnati.

★ Novel Christmas party was given this year by *W. Bert Knight, Inc.*, of 115 West Venice Blvd., Los Angeles. Instead of having customers come to their place of business, *Knight's* visited their various good customers, traveling in a bus with suitable music and appropriate Christmas carolers.

★ *Goshorn Hardware Co.*, Charleston, W. Va., have been named exclusive distributors for *Howard* radio in the central and southern West Virginia area.

# ARCTURUS

Radio's finest tubes plus radio's fairest equipment deal spell double profit to you.

## Mail the Coupon!

- If you need new service or shop testing equipment...
- If you want to get it at almost no cost to yourself...
- If you are interested in the fairest, easiest Equipment Deal in the history of radio...
- ...Then you owe it to yourself to get the facts without delay. Let *Arcturus* help you modernize!

**ARCTURUS RADIO TUBE CO.**  
Newark, N. J.

Without cost or obligation on my part, send details of your new equipment deal.

Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

I am a dealer  I am a serviceman

My Jabber is \_\_\_\_\_

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

# CHECK

## STANCOR

### QUALITY

Any way you wish . . . you can check Stancor and the answer is always the same—"It's quality that counts."

Sometimes Stancors cost a few cents more than other transformers of the same characteristics . . . BUT THEY'RE WORTH IT.

**NOTE**  
CHECK THESE POINTS  
AGAINST THE FIELD .

1. Cores of highest grade, laminated silicon steel. ✓
2. Windings checked after each operation. ✓
3. Positive vacuum - impregnation with special equipment. ✓
4. Triple Tested on dummy loads for perfect performance. ✓
5. The most modern factory in the industry. ✓
6. Finest appearance. Newest finishes, embossed name-plates, concealed connections. ✓



Then You'll  
**BUY**  
**STANCOR**

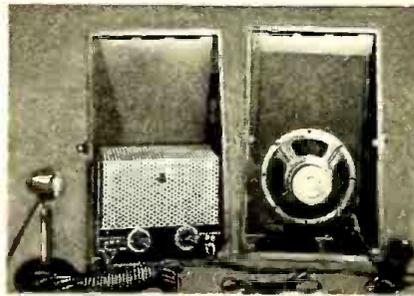
## STANDARD TRANSFORMER CORPORATION

850 BLACKHAWK STREET • CHICAGO

## A NEW EDITION OF RCA'S FAST-SELLING POPULAR PRICED *Portable Sound System*

There are loads of prospects in your community for this equipment! Small auditoriums, bus terminals, restaurants, small night clubs, department stores, and many others all have use for it. And sales to these places mean handsome profits for you.

The RCA PG-111 Portable Sound System is easy to sell! First, because it provides many fine features. Second, because its price is very low. The sooner you start aggressively selling this equipment, the sooner you'll make more money.



RCA PG-111 Portable Sound System . . . features include Beam Power Output Tubes, Permanent Magnet Speaker of high sensitivity, Tone and Volume Control, RCA Aerodynamic Microphone, Phonograph Connection. Weighs only 25 lbs. Comes complete in one sturdy, compact case, attractively finished. List price \$99.50.



### RCA Junior Velocity Microphone

Here's a swell value for you to offer your P. A. customers! Exceptionally low in cost, the RCA Junior Velocity Microphone has all the splendid features once available only in the velocity-actuated type. List price, less stand, \$43.50.

### RCA Aerodynamic Mike

So small you can hold it in your hand, this streamlined microphone is one of the greatest values you'll ever be able to offer your P. A. customers. Costs only \$26.50 list, less stand. Is of rugged construction, provides excellent performance. A fine microphone for close talking. Requires no external excitation or power.



### GET FREE BOOKLET

This new booklet "Sound by RCA" is worth while having. Contains full details about RCA's complete line of sound equipment. See your nearest RCA commercial sound distributor or write direct to us in Camden, New Jersey.

Any sound system sounds better equipped with RCA radio tubes.

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



## Commercial Sound

RCA MANUFACTURING CO., INC., CAMDEN, N. J.  
A Service of the Radio Corporation of America

# JOBBER NEWS



Long and short of the recent Crosley jobber convention. Robert Hall, Steel City Appliance Co., Birmingham, Ala., and Hymen Reader, Houston, Tex.

★ From the office of *W. Paul Jones*, Fairbanks-Morse home appliance division general manager, comes news of the appointment of *Peaselee-Gaulbert Corp., Inc.*, Atlanta, Ga., as a new FM jobber for the entire state of Georgia (except 9 counties) and 6 counties in South Carolina. *Collier W. Helms* will be in charge of operations for the area.

★ Now to distribute *Crosley* products in Washington and Oregon is the recently appointed *North Coast Electric Co.*, of Portland and Seattle. According to *P. W. Bialkowsky*, Crosley Pacific coast manager, North Coast has a lively series of plans for promotions on the line.

★ The new sales promotion manager for *Westinghouse Electric Supply Co.*, 150 Varick St., New York City, is *A. M. Sullivan*.

★ *Meissner Mfg. Co.* have named *Bill Carduner* as representative in lower New York State, including Albany, New Jersey, Maryland, Delaware, eastern Pennsylvania, including Harrisburg, and Washington, D. C. His offices are at 17 Warren St., New York City, where he has a complete Meissner line for emergency orders; regular stock requirements for the area will be shipped from the factory as usual. Mr. Carduner opens this office with a long period of radio selling experience behind him.

★ *Harry H. Moll, Inc., Philco* distributors of Denver, Colo., have recently added *Gibson* refrigerators to lines jobbed. Personnel at the company now includes *Harry Moll*, president; *Joe Rhuda*, sales manager, and salesmen *Bill Newton*, *Leland Carter*, *Louis Gohm* and *Bill Wells*.

★ *Jensen Radio Mfg. Co.*, Chicago, have recently concluded arrangements with *Canada Wire and Cable Co.*, Toronto, for the manufacture of Jensen products in Canada. Under the supervision of *K. M. Clipsham*, Jensen speakers will be manufactured and shipped by Canada Wire and Cable Co. The new Jensen sales office, with *C. A. Savage* in charge, is to be located at 45 Richmond St., West Toronto.

★ *Norge* has announced the establishment of a new educational division to aid distributors and dealers in training retail salesmen, according to vice-president *P. B. Zimmerman*, vice-president in charge of sales. *E. R. Lovegren* will head the new division, and *William P. Burruss* of New York will be special sales advisor.

New appointments at *Norge* include: *R. E. Densmore* to the position of general field sales manager; *Paul H. Puffer* as domestic refrigeration sales manager; *George McIntyre* to head a new department to cooperate with utilities; *Jack Seekamp* to the post of department store sales representative; *Charles H. MacMahon* to the position as national sales manager for the range department.

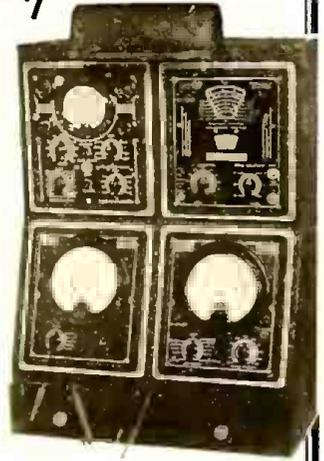


A new parts distributing company with all the earmarks of success—Walker-Jimieson, Inc., 311 S. Western Ave., Chicago. Left to right, Ralph Walker, Paul Chauncy, and "Russ" Jimieson.

## NEW Standardized Test Bench Panels

by  
**TRIPLET**  
Model 1404  
(Complete as Shown  
Less Lamp)  
**\$95.50**

Standard Size Panels  
Accommodate Any Master or DeLuxe Models  
Panel Cabinets Can Be Bolted Together if Desired  
Handy Lamp Diffuses Light Over Complete Front Panel

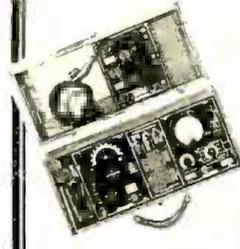


### MODEL 1404 AS SHOWN CONTAINS THE FOLLOWING MODELS

	Single Unit Price
1210-A Tube Tester	\$22.00
1209-D D.C. Volt-Ohm-Milliammeter	20.00
1209-A A.C. Voltmeter	16.00
1232 Signal Generator	27.50

Triplett offers for the test bench the same kind of standardization that has made Triplett Master Models outstanding among portable testers. You can start with cabinet and one tester and build up as circumstances dictate.

Testers are held firmly in the panel compartments by flexible rubber grommets with compression fit. Testers are in regular metal cases and can be removed for portable use when necessary.



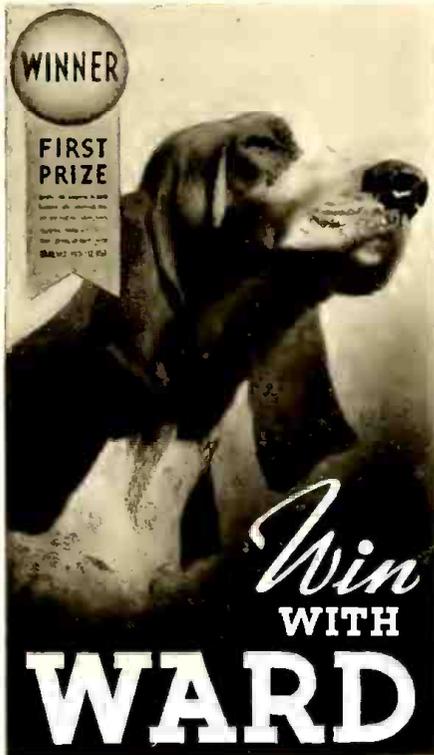
Model 1181-E Portable Laboratory combines: Models 1125-A Volt-Ohm - Milliammeter, 1151 All-Wave Oscillator, 1166-A Free Point Auxiliary Set Tester. Quartered oak case size 16 1/2" x 7 1/2" x 4 3/4" deep. Cover is removable. Complete with necessary batteries and accessories.  
DEALER NET, \$41.83



THE TRIPLET ELECTRICAL INSTRUMENT CO.  
191 Harmon Dr., Bluffton, Ohio

Please send me more information on  
 Model 1404     Model 1181-E

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



Thorobreds perform better, show better—and so do the thorobred 1938 WARD automobile aeriels, featuring Mol-en-ac, a natural white metal that cannot rust. WARD aeriels give more power, greater reception, smarter lines, less static—are easy to install.



The QUINLAN (at left) Model QR—a streamlined side cowl aerial; telescopic in two sections. Extends from 28½ to 49½ inches. Patent No. D106,487. One of the many new Ward side cowl antennae.

The STATESMAN (right) Model ST—a new Ward top aerial. Top bar extends from 21 to 35½ inches. Cowl bar is telescopic, fits all cars. No drilling in top. Patent numbers D106,048; D106,049; D106,922

WRITE FOR ILLUSTRATED CATALOG

**The WARD PRODUCTS Corp.**  
WARD BUILDING CLEVELAND, OHIO

# RADIO TRADE FLASHES

## "THE REPRESENTATIVES" ELECT

★ New officers and committees for the year 1938 have been elected by "The Representatives," the very active organization made up of the representatives of radio parts manufacturers. Perry Saftler is president, Dan Bittan vice-president and David Sonkin secretary-treasurer. Mr. Sonkin's office is at 220 E. 23rd St., New York City.

On the Board of Governors are Jack B. Price, chairman; Dan R. Bittan, David Sonkin, Adolph Friedman and Martin Camber. Membership committee includes John Forshay, chairman; Adolph Friedman, Julius Kaelber, Percy Mack and Irving Golden. Entertainment committee consists of Martin Camber, chairman; John Koepple, Marvin Roye and Jack Scharf. On the publicity committee are Dan R. Bittan, chairman; Leo Freed and Sam Eggert.

★ Writes Arthur T. Murray: "I have resigned as president of the United American Bosch Corp. in order that I may become associated with the Moore Drop Forging Co., Springfield, Mass., in an official capacity. My interests in United American Bosch are in no way lessened by this move, as I will continue as a director and as a member of the executive committee of this corporation. My successor has not yet been chosen and it is impossible at this time to say when this decision will be made."

★ Pacific Radio Co., Chicago, have now opened their own export department and shipping warehouse at 4615 Ravenswood Ave. and are offering directly to foreign distributors their extensive Pacific radio line.

★ Cornish Wire Co., with factories at Paterson, N. J., and office at 30 Church St., New York City, have enlarged their facilities and now have complete manufacturing operations under one roof. The firm now makes *Cornico* radio, hook-up and public address wires, etc., in a single, modern plant. Literature on the many types of Cornish wire will be sent on request.

★ V. T. Rupp, who for the last 11 years has been responsible for the supervision of the sales of the Burgess Battery Co. in 11 western states, will gladly connect with other manufacturers seeking distribution in the California trade area. Mr. Rupp is establishing his own business as a manufacturer's agent at 1101 W. Olympic Blvd., Los Angeles, has a wide acquaintance built up in radio, electrical and hardware fields, will discuss matters with manufacturers wanting dependable and reliable distribution in his area.

★ W. G. "Bill" Many, who has been in radio for almost 24 years, has been appointed sales and advertising manager for Kenyon Transformer Co., Inc., 840 Barry St., New



O. F. Jester is the new general sales manager for Utah Radio Products Co.

York City. Known in the trade as an expert in radio sales, advertising and editorial activity, he has been for the past 6 years advertising manager for Aerovox.

★ Harry Alter, president of the General Household Utilities Co., has announced a convention of distributors, called for the world premiere showing of the new *Grunow Thermeme Refrigerator* at the Hotel Sherman, Chicago, on Jan. 25th and 26th. A complete line of models will be on display for the inspection of the jobbers, and sales, advertising and merchandising plans will be presented by Mr. Alter and his associates.



Now he's the sales and advertising manager for Kenyon Transformer Co. —W. G. (Bill) Many.

# JIM QUAM Says



If you like yellow neckties, that's the color you buy!

But business purchases aren't so simple. Aside from performance and price, you want to know "who makes it?" Will this source of supply be reliable? Is the maker FINANCIALLY and MORALLY capable of giving you the most your money will buy?

You can bet your yellow necktie that the manufacturer who meets these requirements is building a reputation for his product you can lean on. And if you are in business for the long pull, it's a good idea to tie-up with the manufacturer who will always be able to pull with you.

We take pardonable pride in the fact that many of our present customers were also our first.

**QUAM-NICHOLS CO.**  
33rd Place & Cottage Grove CHICAGO      1674 Broadway NEW YORK




Export manager Al Stewart of Wincharger Corp. is confronted with globe-circling orders.

★ Big radio event in Chicago recently was the presentation of 5 new Kadette models by W. Keene Jackson, general sales manager, International Radio Corp. Mr. Jackson introduced the new receivers as "in the quality class, yet at relatively low prices." Also at the showing were division sales managers Al Raffogel, Cleveland; Jimmy Woods, New Orleans; Jack Hursch, Denver; Glenn Kuffer, Chicago and Gere Burns, Kadette sales promotion manager.

★ Pierson-De Lane, Inc., Los Angeles, recently organized to take over the manufacture and distribution of the PR 15 communications receiver, have taken elaborate quarters at 2345 W. Washington Blvd. Charles Weinberg is general sales and sales promotion manager. The list price of the PR 15 has been changed to \$22.50 complete.

★ J. W. Dunbar has been appointed assistant to General Electric's advertising manager, C. H. Lang. Mr. Dunbar has been with GE since 1918, has edited several company publications and was most recently in charge of magazine advertising for GE's incandescent lamp department.

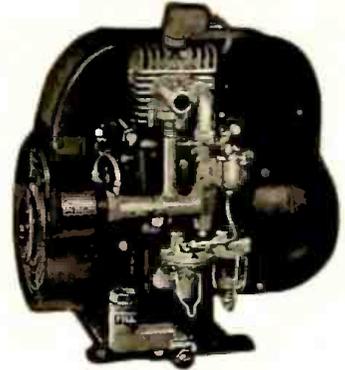
★ Sales manager Leon L. Adelman of Cornell-Dubilier has started out on what may be another territory-covering record. Last year the fast-moving executive covered over 15,000 miles in 3 weeks; recently he has made a series of quick bops to Chicago, Washington, Pittsburgh, Detroit, etc.

★ J. J. Ross, president of Detroit Corp., Detroit, Mich., recently sailed for Europe on an important business trip. England, France and Belgium are included.

★ Sales representatives of the Continental Radio & Television Corp. got together in Chicago recently for an informal meeting at the Lake Shore Athletic Club. Merchandising and sales promotion plans were outlined for the two new Admiral automatically tuned models. Ross Siragusa, president, and J. H. Clippinger, vice-president, were in charge.

## ONAN ALTERNATING CURRENT PLANTS

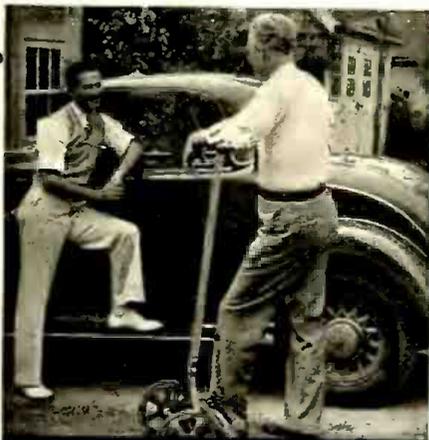
operate AC RADIO, PUBLIC ADDRESS, SOUND CAR and MOTION PICTURE EQUIPMENT . . . . .



These PLANTS supply electricity for Domestic and Commercial places where current is not available. Operate Water System, Refrigerator, Household Appliances.

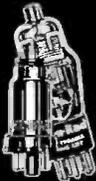
**SIZES TO SUIT EVERY PURPOSE**  
Operate on Gasoline, Gas or Distillate. Sizes 350 to 50,000 watts, 8110 and up. Also 6, 12, 32 and 110 volt, DC Models. All Models furnished complete, ready to run. Write for Details.

**D. W. ONAN & SONS**  
587 Royalston Ave. Minneapolis, Minn.



## ONE CUSTOMER TELLS ANOTHER

The "good word" about Ken-Rad Tubes spreads, and you make more money. Take the first step to building better business



Manufacturers of a complete line of Standard Glass Types, G Series, and Genuine All-Metal Radio Tubes.

# Ken-Rad Radio Tubes

KEN-RAD TUBE & LAMP CORPORATION, Inc., Owensboro, Ky.  
(Also Manufacturers of Ken-Rad Electric Light Bulbs)



● Everything you need in radio. It's all in this new RADOLEK RADIO PROFIT GUIDE. Every repair part for every receiver. Newest radio receivers. New 1938 model public address amplifiers, outputs for 5 to 100 watts. New model public address speakers. Test instruments. Technical books. Special equipment. Leading standard brands. Every item guaranteed. It must be right or we make it right.

And everything under one roof. You get what you want promptly, and exactly what you want. Radolek's immense stock plus Radolek's efficient organization insures you fastest service. 25,000 service men depend on this service and benefit by Radolek's Radio Profit Guide. It will help you make more money.

## ---RADOLEK---

601 W. Randolph, Chicago, Dept. D-15

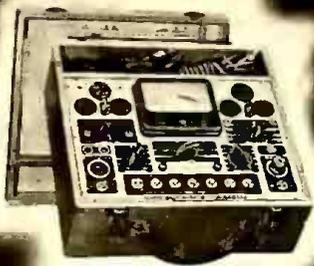
Send me the 1938 Radolek Radio Profit Guide FREE

Name .....

Address .....

Serviceman?  Dealer?  Experimenter?

## ... MODERN EQUIPMENT



### ELECTRONOMETER SERIES 700 \$49.95

A complete laboratory of compact size for thorough tube analyzing and point to point set testing. Incorporating 22 ranges for measurements of A.C. and D.C. voltages, current resistance, decibel and output.

Accuracy guaranteed by use of wire wound shunts of 1% tolerance and matched resistors of 1% tolerance.

Endorsed and used by leading engineering concerns, broadcast stations and institutions.

See "PRECISION" instruments at your distributors or write for literature.

## PRECISION APPARATUS CORP.

821 EAST NEW YORK AVENUE  
BROOKLYN, NEW YORK

## ASK FOR FREE MICROPHONE COMPARISON CHART!

Learn About the New 'Bullet' MK Higher Fidelity Dynamic Mikes!

The New 'Bullet' microphones challenge comparison. Each microphone in the new 'Bullet' line is definitely superior to any other microphone in its price class. Every model is engineered and made to exacting quality standards comparable only to rugged telephone equipment. 'Bullet' microphones are technically superior, acoustically correct; they are streamlined for sound reasons. Write for a copy of the free microphone comparison chart with complete data on the new 'Bullet' line now!



Model MK 50 Priced from \$19.50 to \$90.

'BULLET' MICROPHONES  
Made only by  
TRANSDUCER CORPORATION  
30 Rockefeller Plaza, New York, N. Y.



Ross C. Siragusa, president, Continental Radio & Television (right), and Harry Clippinger, vice-pres., on a hunt in wilds of Northern Canada, which bagged two 1,200-lb. moose.

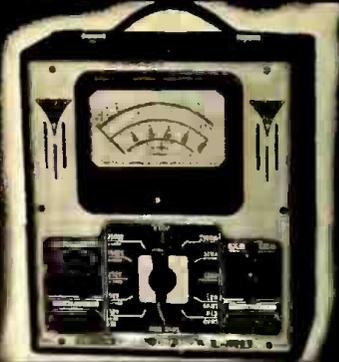
★ C. A. Verschoor, president, International Radio Corp., and Mrs. Verschoor have recently returned from a tour of high spots in South America. The trip also included stops in Kingston, Havana and several days in New York City before the couple returned to Ann Arbor, Mich. Mr. Verschoor is said to be working on brand new ideas with which to startle the trade.

★ Several promotions in the sales department of Thordarson Electric Mfg. Co., Chicago, have been announced by Charles P. Cushway, general sales manager: Roy E. Davy, formerly chief sales engineer, now holds the newly created position of industrial sales engineer. Jerome H. Kleker becomes chief sales engineer, in addition to his duties in the sound division. Douglas "Doug" Fortune, W9UVC, is promoted from the engineering staff to the sales engineering dept., in charge of amateur activities. Leland S. Hicks is sales engineer in the replacement transformer division.



Thordarson's general sales manager, Charles P. Cushway, has announced promotions in sales dept. of the company.

## FOR EFFICIENT TESTING...



### SERIES 840 L -VOLT-OHM-DECIBEL - MILLIAMMETER

including a  
2500 VOLT A.C. and D.C. RANGE  
and a 1000 M.A. RANGE

Specifications  
★ 5 A.C.—D.C. VOL. TAGE RANGES from 0 to 2500 volts at 1000 ohms per volt.  
★ 4 D.C. CURRENT RANGES from 0 to 1 amp.  
★ 5 OUTPUT RANGES  
★ 3 RESISTANCE RANGES from 0 to 10 megs. (provision for self-contained batteries).  
★ 5 DECIBEL RANGES from -10 to plus 63DB

Net price less batteries and test leads \$19.95

## PRECISION APPARATUS CORP.

821 EAST NEW YORK AVENUE  
BROOKLYN, NEW YORK

Be One To PROFIT



Install CHANGERS

Phonograph Record Sales  
In '37 Were HIGH

In '38 They'll Be HIGHER

RELIABLE yet inexpensive record changers are largely responsible for it. Equip your phonographs and combinations with General Industries record changer units. They are ready assembled, easy to install, and come within the price range of most of your customers. Each unit contains a silent, smooth-running Flyer electric motor with turn-table, the latest flat-type balanced pickup, and an improved simple and accurate changing mechanism.

Send For Samples To Test

Latest improved Model M plays and changes eight 10-in. or seven 12-in. records. Model K plays and changes seven 10-in. records, plays 12-in. records changed by hand. When ordering samples please specify exact voltage and frequency of current you use.

The GENERAL INDUSTRIES CO.

3838 Taylor Street, Elyria, Ohio

• Equip with GENERAL Changers •

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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.

★ *Charles B. Shapiro*, vice-president and general sales manager for *Howard Radio Co.*, Chicago, announced recently that the Los Angeles Board of Education has purchased a series of Howard models 368—8-tube jobs for use in school rooms throughout the city. Mr. Shapiro is now spending a few weeks among Howard jobbers in greater New York, New Jersey, and Eastern Pennsylvania. *Howard Briggs*, company vice-president, is landing substantial orders for Howard push-button converters from jobbers in the Middle West.

★ *Pleasantaire Corp.*, 1623 Connecticut Ave., Washington, D. C., have announced a new "package merchandising plan." To those dealers who request information on it, the company will send (1) a new handbook, (2) announcement of a new Built-in-the-wall Pleasantaire, (3) details of a "sure-fire sales plan," (4) copies of inspection report plans, (5) cost of sales analysis, (6) a survey of the summer air-conditioning industry.

★ Rush of orders has been noted at *J. F. D. Mfg. Co.*, 4111 Fort Hamilton Parkway, Brooklyn, N. Y., for the kit of *Woven Fabric Dial Belts*. Acceptance on a national scale was indicated by orders for some 350 kits in six weeks.

★ *Westinghouse Electric & Mfg. Co.*'s radio division will be moved to Baltimore, Md., from the present location at Chicopee Falls, Mass., according to *Walter C. Evans*, manager, radio division. The firm has purchased a new plant in Baltimore and will build executive offices adjacent.

★ *H. A. Marsh*, well known among advertising agencies and identified with radio activities for many years, has opened the *H. A. Marsh Advertising Agency*, with headquarters at 307 Fifth Ave., New York City. Among the accounts to whom Mr. Marsh will give advertising and merchandising counsel are the following: *American Communications Corp.*, *Birnback Radio Co., Inc.*, *Radiofone Corp.*, *Sun Radio Co.*, *Transmitter Equipment Mfg. Co.*



Here's George Turney of General Products, Houston, Tex., who is going to town with his radio club chair with cocktail bar, etc.



## RADIO FABRIC BELTS

More than half a million modern radio sets now in use are equipped with Woven Fabric Dial Belts. . . Every one of these, sooner or later, will require replacement and this replacement will be repeated again and again.

The Fibre Board Display Kit illustrated contains 300 assorted radio dial belts exactly the same as originally used on Zenith, Emerson, Grunow, Sparton, Crosley, R.C.A., Fada, Stromberg-Carlson, Detrola, Silvertone, (Sears, Roebuck), Airline (Montgomery Ward), and every other popular radio set manufactured.

The attractive kit will last a lifetime and should be prominently displayed by every jobber and distributor. Send for complete detailed schedule.

**J. F. D. MANUFACTURING CO.**  
4111 Ft. Hamilton Pkwy, Brooklyn, N. Y.



## Lafayette RADIOS AND SOUND SYSTEMS

The talk this year is all about LAFAYETTE—about the great 1938 series of advanced public address sound systems—its brilliant new line of 70 radio models and the latest in "ham" equipment, test instruments and parts. Learn about them in the Wholesale Radio catalog. See the amazing features LAFAYETTE offers. Look at the prices. Nowhere else can you enjoy such tremendous savings. It's all in the



**FREE CATALOG!**  
SEND FOR YOUR  
COPY AT ONCE

### WHOLESALE RADIO SERVICE CO. INC.

NEW YORK, N. Y. • CHICAGO, ILL. • ATLANTA, GA.  
100 B'WAY AVENUE • 901 W. JACKSON BLVD. • 345 PEACOCK ST. (1937)  
BOSTON, MASS. • BRONX, N. Y. • NEWARK, N. J. • JAMAICA, L. I.  
(10 1101044) (11311) 342 E. 100th St. 710 Central Avenue (10 10 1101044)

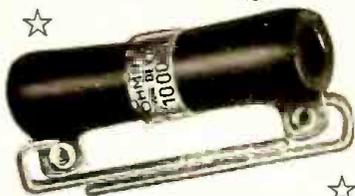
WHOLESALE RADIO SERVICE CO., Inc.  
901 W. JACKSON BLVD., CHICAGO, ILL.

Rush FREE 1938 Catalog No. 69-12A8

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

PASTE COUPON ON PENNY POST CARD

# GUARANTEE THE JOB with Ohmite Brown Devils



End replacement resistor failures—eliminate call-backs—do a service job you can safely guarantee—use OHMITE Vitreous Enamelled BROWN DEVIL Wire Wound RESISTORS. They're tough, extra-sturdy units—built of the same materials and to the same rigid standards as the big Ohmite industrial resistors. The wire is accurately space-wound over a porcelain core and coated with Ohmite Vitreous Enamel—the coating that has been proved by many years of service to give the best possible protection against extreme humidity and other severe operating conditions. 10 and 20 watt sizes. Resistance values through 100,000 ohms.

Do the job right with Ohmite!  
Ask your Jobber or Write for Catalog 16  
**OHMITE MANUFACTURING CO.**  
4847 West Flournoy Street, Chicago, Ill., U.S.A.

## OHMITE

RESISTORS TAP SWITCHES

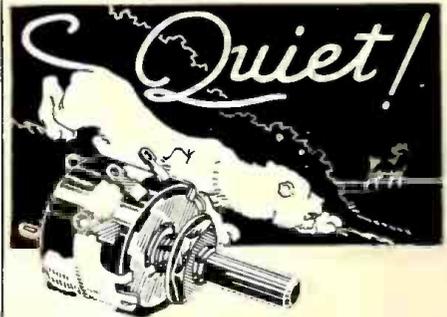
## TRADE FLASHES

★ Better Salesmanship Campaign and Prize Contest for dealers and their salesmen opened the first of the year and will close Feb. 28. This is the fourth such event staged by *Stromberg-Carlson*, under the supervision of *Jack Kennedy*, sales promotion manager. Each salesman in the contest will have a chance at attractive prizes worth \$80, as well as the grand prize of an SC 245M console. Prizes will be given for points earned by sales of receivers.

★ *J. E. Armes* has recently joined the firm of *Johnson Motors*, refrigeration division, Galesburg, Ill., to direct the promotion of the company's new Room-Cooler.

★ *Stephen Anderson*, lately with *David Bogen Co.*, now celebrates his 25th year in radio and allied industries. Back in 1912 an article on how to make an electrolytic detector from an old electric light bulb was the bug that first bit Steve and started him off with an amateur station in the days before the need for a license. His simple schematic diagram on "A Portable Audion Receiver" was published in 1913 by *Modern Electrics* magazine. After years of building "loose couplers," etc., on a custom-made basis, he served *Western Electric*, then brought out some of the first B eliminators under his own name and for *Freshman*.

★ To make it easier for radio service engineers to earn, through the progressive purchase of *National Union* products, a complete supply of radio servicing equipment, the firm has extended its free equipment program to include NU condensers as well as tubes. According to an announcement by general sales manager *H. H. Kunkler*, servicemen will be given "points" for purchases of tubes or condensers, to apply on shop equipment by the company as premiums. *National Union* has adopted the trade name of "*Videotron*" for its cathode ray tubes, following an increase in research and production facilities in that department.



● There's ample reason why **CLAROSTAT** Controls are outstandingly **QUIET**. The one-piece sliding contact with proper pressure and correct choice of alloy; an entirely **NEW** composition element; positive conduction throughout; smooth resistance changes in tapers—these features spell **QUIET**.

### You're the Judge!

Put today's **CLAROSTAT** Control on trial. Even give it the third degree. Then write your own verdict. Meanwhile, be sure you have our new pocket-sized (208-page) Service Manual in your working library. Free for the asking.

## CLAROSTAT



MANUFACTURING CO.  
Incorporated

285 North Sixth St.  
Brooklyn, N. Y.

# TRIAD

## RADIO TUBES

Insure  
SATISFACTION

Used by Leading Set  
Manufacturers, and  
Preferred by Expert  
Servicemen.

A PROFITABLE LINE  
TO HANDLE

## TRIAD

MANUFACTURING CO.  
INCORPORATED

PAWTUCKET RHODE ISLAND

The Quality Name in Radio Tubes

## JANETTE ROTARY CONVERTERS

### FOR CONVERTING DIRECT TO ALTERNATING CURRENT



● Built in capacities from 35 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 sound apparatus—in use in all countries of the world—Send for prices and data.

Janette Manufacturing Company

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

BOSTON - NEW YORK - PHILADELPHIA - CLEVELAND - MILWAUKEE - LOS ANGELES  
DETROIT - SEATTLE

IN TWO PARTS  
• PART TWO •

# RADIO TODAY

JANUARY  
• 1938 •

## BASIC STATISTICS OF RADIO, AS OF JANUARY 1, 1938

### UNCLE SAM'S ANNUAL BILL FOR RADIO

Sale of time by broadcasters, 1937	\$125,000,000
Talent costs, 1937	40,000,000
Electricity, batteries, etc., to operate 31,000,000 receivers	150,000,000
7,700,000 radio sets sold in 1937	450,000,000
40,000,000 replacement tubes	40,000,000
Radio parts, supplies, etc.	47,000,000
Servicing radio sets	60,000,000
<b>U.S. Public paid for radio in 1937</b>	<b>\$912,000,000</b>

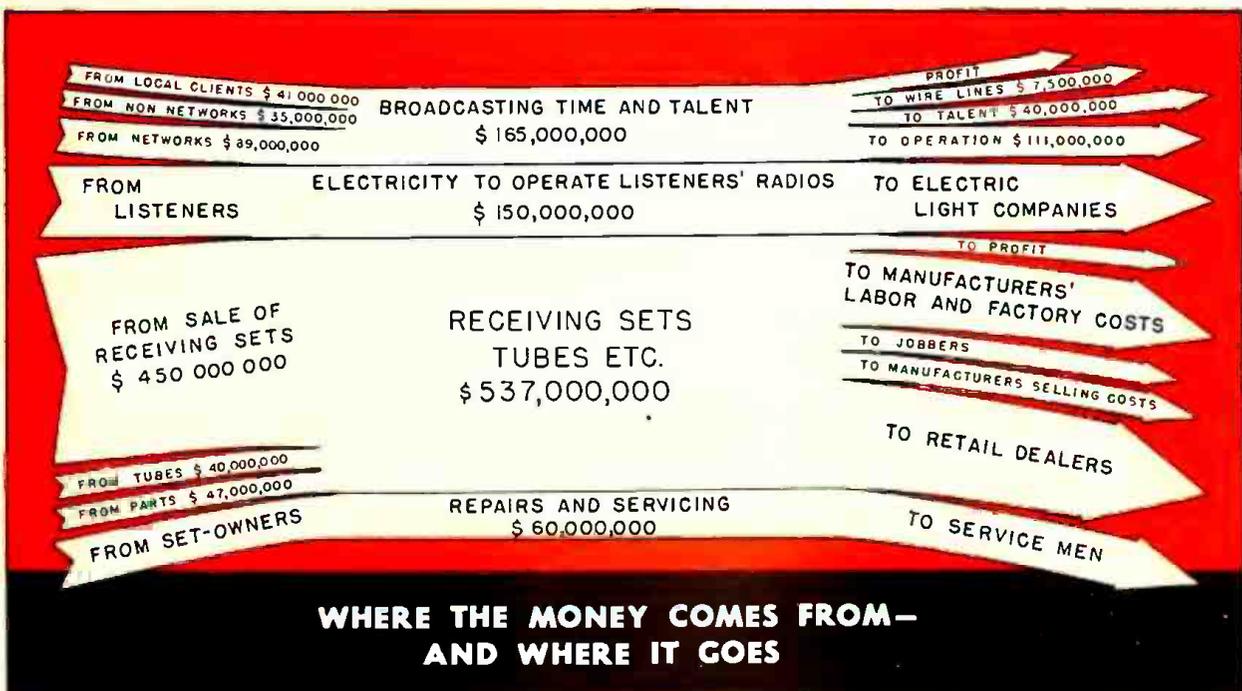
### RADIO SETS IN USE

	Jan. 1, 1937	Jan. 1, 1938
U.S. homes with radios	24,500,000	25,800,000
Extra and "second" sets in above homes	4,500,000	6,000,000
Automobile radios in use	4,000,000	5,000,000
<b>Total radio sets in use, U.S.</b>	<b>33,000,000</b>	<b>36,800,000</b>

### RADIO-SET AND TUBE SALES, FOR YEAR 1937

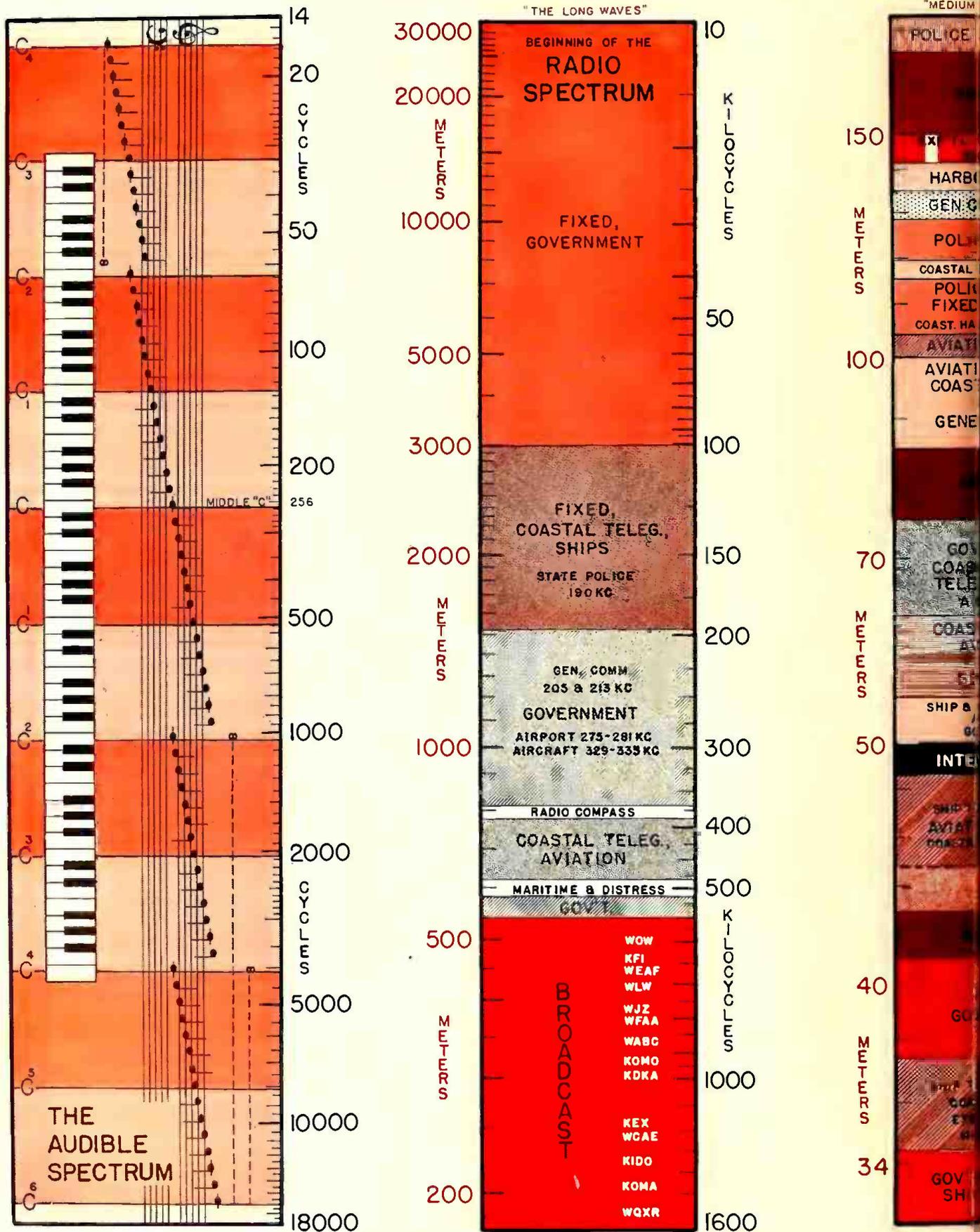
	Number	Retail Value
Total radio sets sold during 1937	7,700,000	\$450,000,000
Radio Sets exported	680,000	
Automobile radios	1,800,000	90,000,000
Home radios sold in U.S.	5,220,000	304,000,000
Consoles	2,100,000	167,000,000
Table models	3,000,000	120,000,000
Combinations	70,000	11,000,000
Home sets sold as replacements	2,920,000	170,000,000
Home sets sold to homes previously without radios	1,300,000	75,000,000
Home radios sold as extra sets	1,000,000	58,000,000
Battery sets	900,000	45,000,000
Tube replacements	40,000,000	40,000,000
Tubes, initial equipment	51,000,000	51,000,000
Total tubes sold 1937 including exports	101,000,000	
Parts, supplies, etc.		47,000,000
Phonograph records	31,000,000	16,000,000

## THE FLOW OF DOLLARS THROUGH RADIO—912 MILLIONS YEARLY

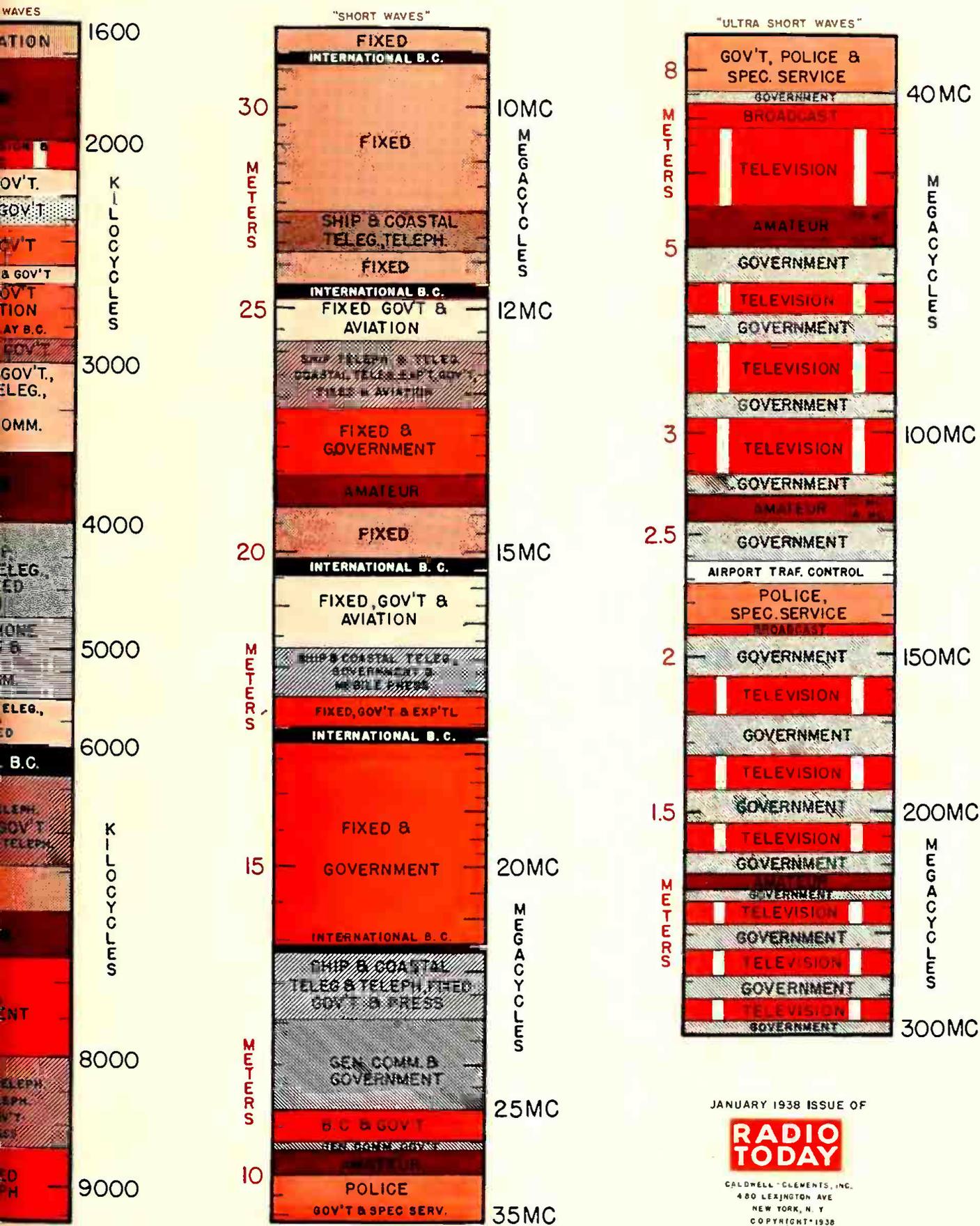


**WHERE THE MONEY COMES FROM—  
AND WHERE IT GOES**

# RADIO TODAY -



# The Audible and Radio Frequencies and Wavelengths, including the New F. C. C. Radio Assignments.



JANUARY 1938 ISSUE OF

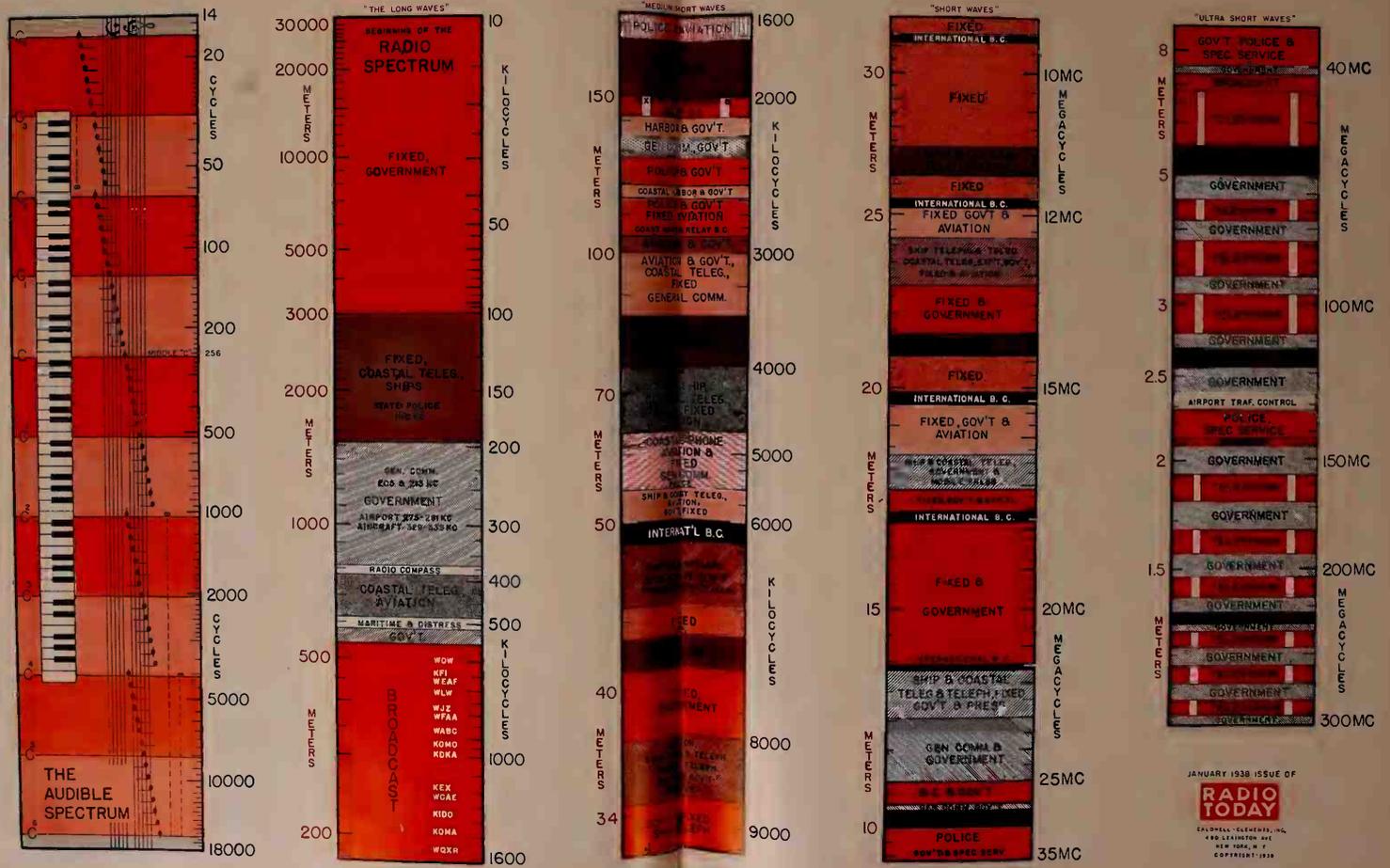
**RADIO TODAY**

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480 LEXINGTON AVE  
NEW YORK, N. Y.  
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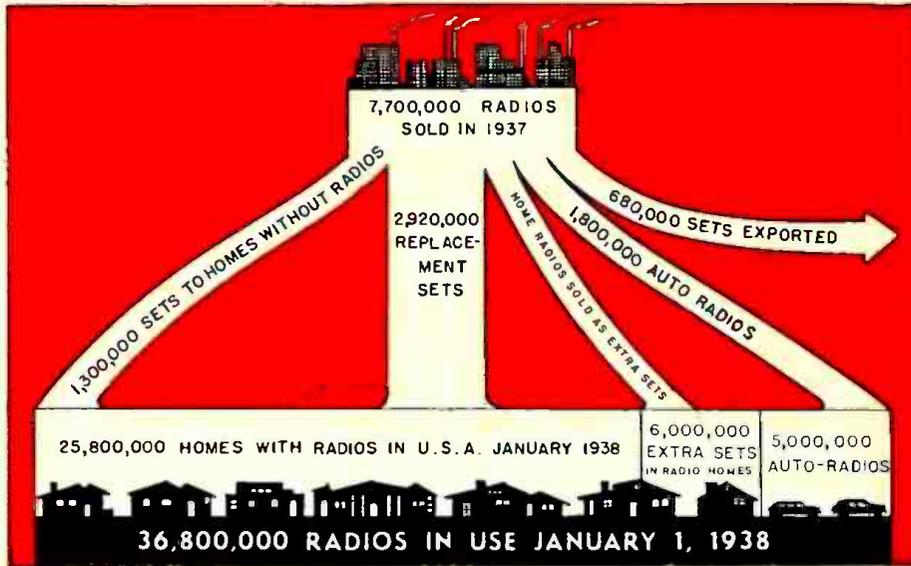
# RADIO TODAY

The Audible and Radio Frequencies and Wavelengths, Including the New F. C. C. Radio Assignments.



JANUARY 1938 ISSUE OF  
**RADIO TODAY**  
 PUBLISHED BY THE RADIO TELEPHONE NEWS, INC.  
 480 LEXINGTON AVE. NEW YORK, N. Y.  
 COPYRIGHT 1938

# WHERE 1937 OUTPUT OF RADIO SETS WENT



## ROLL-CALL OF RADIO INDUSTRY, JAN. 1, 1938

Manufacturers of radio receivers.....	140
Manufacturers of radio tubes.....	14
Manufacturers of radio parts.....	625
Manufacturers of test equipment.....	60
Manufacturers of broadcast and amateur equipment.....	110
Manufacturers of sound equipment.....	115
Radio-set and parts distributors.....	2,088
Manufacturers' agents.....	245
Retail outlets selling radios.....	61,000
Dealers doing 85% of radio business.....	16,000
Servicemen, including dealers' servicemen.....	40,000
Radio amateurs and experimenters.....	81,000
Broadcasting stations, Jan. 1, 1938.....	701

## SALES OF REPLACEMENT PARTS, 1937

### At Manufacturers' Selling Prices

Transformers.....	\$1,700,000
Condensers.....	1,750,000
Vibrators.....	1,000,000
Resistors.....	700,000
Volume Controls.....	360,000
Speakers.....	350,000
Service Instruments.....	\$4,300,000

## SOUND SALES, 1937

	Units	Value
Sound Systems.....	40,000	\$8,000,000
Intercommunicating Systems.....	50,000	2,000,000
Microphones.....	110,000	2,200,000

## ELECTRICAL APPLIANCES, SALES, 1937

	Units	Value
Refrigerators.....	2,365,200	\$400,000,000
Washing machines.....	1,650,000	114,000,000
Ranges.....	400,000	50,000,000
Vacuum cleaners.....	1,094,000	59,400,000

## HOMES WITH RADIOS BY STATES

Ala.....	291,000	Neb.....	300,000
Ariz.....	70,600	Nev.....	24,400
Ark.....	211,000	N. H.....	113,000
Calif.....	1,580,000	N. J.....	1,010,000
Colo.....	233,000	N. Mex.....	54,500
Conn.....	420,000	N. Y.....	3,370,000
Del.....	53,000	N. C.....	384,000
D. C.....	141,000	N. Dak.....	130,000
Fla.....	263,000	Ohio.....	1,570,000
Ga.....	388,000	Okla.....	387,000
Idaho.....	85,300	Ore.....	244,000
Ill.....	1,880,000	Pa.....	2,190,000
Ind.....	696,000	R. I.....	169,000
Iowa.....	565,000	S. C.....	196,000
Kan.....	392,000	S. Dak.....	120,000
Ky.....	354,000	Tenn.....	370,000
La.....	293,000	Texas.....	970,000
Maine.....	184,000	Utah.....	95,900
Md.....	360,000	Vt.....	81,500
Mass.....	1,060,000	Va.....	344,000
Mich.....	1,055,000	Wash.....	390,000
Minn.....	602,000	W. Va.....	270,000
Miss.....	187,000	Wisc.....	650,000
Mo.....	795,000	Wyo.....	50,000
Mont.....	103,500	Total, U.S.....	25,804,300

	Jan. 1, 1937	Jan. 1, 1938
Total homes with autos.....	18,000,000	18,500,000
Total residence telephones.....	11,500,000	12,000,000
Total homes with electricity.....	21,800,000	22,500,000
Total homes in U.S.....	31,471,000	32,000,000
Population U.S.....	128,853,000	129,500,000

## RADIO SETS IN USE

### Homes with radios, extra sets, auto radios

1929.....	10,000,000	1933.....	22,000,000
1930.....	13,000,000	1934.....	25,000,000
1931.....	15,000,000	1935.....	28,000,000
1932.....	18,000,000	1936.....	33,000,000
1937.....	36,800,000		

NOTE: Figures on radio-set production for 1937 subject to final revision on completion of official 4th quarter reports.

**now!**

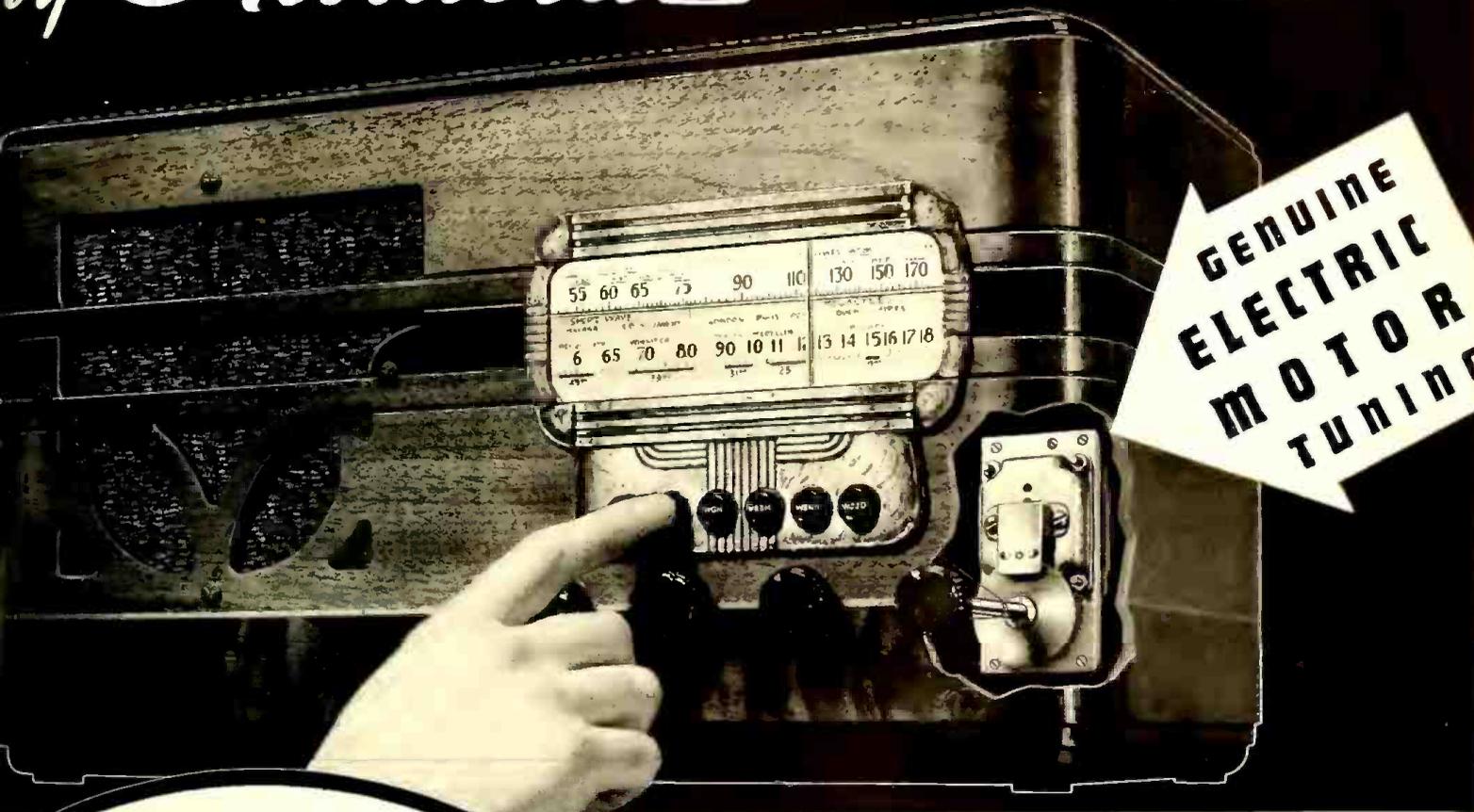
**ELECTRIC \$29.95**  
LIST

**TOUCH-O-MATIC MOTOR TUNING**

*by Admiral*

**AT ONLY**

**29.95**



**GENUINE  
ELECTRIC  
MOTOR  
TUNING**

**“STEP-UP”  
PROFITS AT \$39.95**

At \$39.95 this new 6-tube Admiral De Luxe Table Model with 6-button foolproof motor driven tuning is a real bargain. Yet it is priced to allow you an extra generous profit—you can offer a liberal trade-in allowance and still make your usual margin. A real opportunity to “step-up” profits now.

Specifications: Model 103-6B—6-tube AC superheterodyne in streamlined de luxe two-tone walnut cabinet (18 in. long, 10¼ in. deep, 9 in. high). 2 bands. Tunes American broadcast and 19, 25, 31 and 49 meter foreign bands, police, amateur, aviation, ships at sea. Full vision 6¼ in. dial; 6-button electric Touch-O-Matic tuner; 6 in. electro-dynamic speaker; automatic volume control; tone control; special wave trap.

*Ask Your Jobber or Write Us*

**CONTINENTAL RADIO  
& TELEVISION CORP.**

3800 W. CORTLAND ST., CHICAGO, ILL.

**A PRICE LEADER TO “BRING 'EM IN”!**

Now—electric touch-o-matic tuning at a price to keep sales sizzling in winter months. At only \$29.95 this new 6-tube Admiral Table Model No. 102-6B in handsome walnut cabinet has touch-o-matic electric motor tuning. Just touch any one of the six buttons—in comes a station as swiftly and simply as switching on an electric light. Chassis specifications same as No. 103-6B.

**\$29.95**



**AGAIN**

**Motorola**

**LEADS**

**With Manual-  
Automatic  
Tuning**

*at* **\$39<sup>95</sup>**

**THE HOTTEST FEATURE IN AUTO RADIO**