

RADIO TODAY

MAY 27 1938
PERIODICAL DIVISION

Radio's TUNE-UP TIME is Here
In the home—in the store

MAY

COMING

IN JUNE

THE *Scoop Line* OF

1939



RADIO

G-E Radio shows the way again with the most PRECEDENT-BREAKING and SALES-COMPELLING features in our history. More Value • More Features • New, Powerful Advertising • Soles-making Promotions • and a Great Merchandising Plan; providing a Generous Profit Opportunity for Dealers Everywhere.

**WATCH FOR ANNOUNCEMENT OF DEALER PREVIEW SHOWING
FROM YOUR GENERAL ELECTRIC RADIO DISTRIBUTOR**

GENERAL  ELECTRIC

HERE IT IS!
for the **FIRST TIME!**

ALL
the information
on every phase of
AUTOMATIC TUNING



*You cannot do
without it!*

Over 100
Illustrations

Schematics

Trouble-Shooting
Charts

All in the
Second Edition

MALLORY-YAXLEY

**Radio Service
Encyclopedia**

Any radio service engineer who intends to stay in business will vitally need this Second Edition MYE to guide him in the solution of Automatic Tuning problems. It gives final answers to every question you ever had on Automatic Tuning . . . not on one system but on every system. And it's just one section of the Second Edition MYE. Information never before published . . . on Alignment with the use of the Oscilloscope for "high fidelity" servicing . . . on Audio Degeneration and the modernization of old type receivers. New Tube Charts . . . with all about every make and type. **AND THAT'S ONLY THE BEGINNING!**

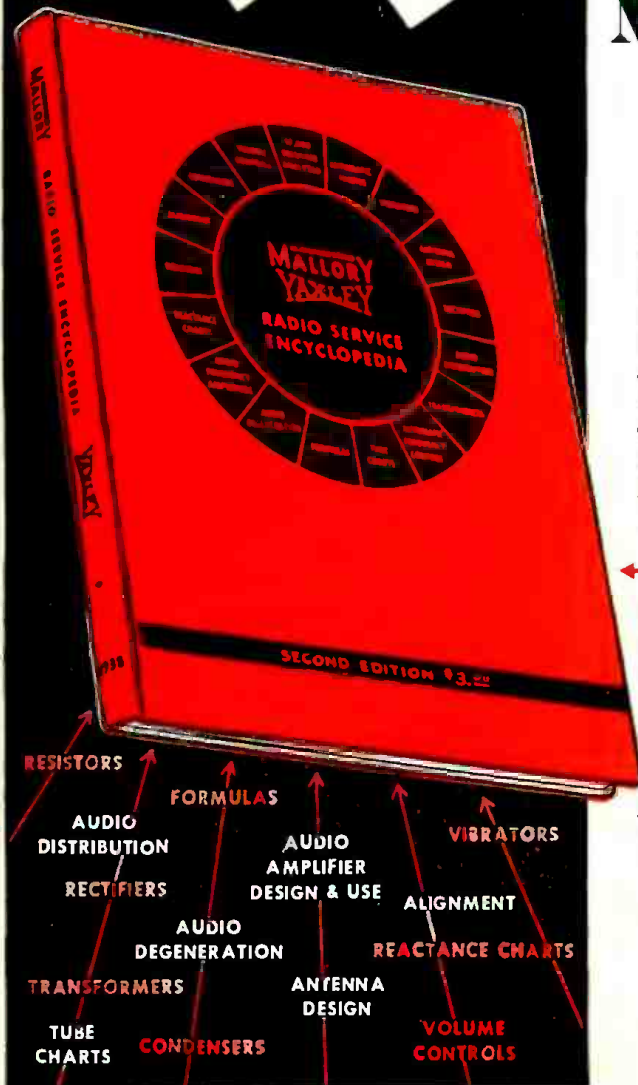
← 17,000 Receivers Analyzed! →

5000 more than the First Edition MYE . . . 336 pages packed with substantiated radio service data . . . so beautifully organized . . . so concise . . . it will give you split-second reference to everything a service engineer wants to know . . . in one book . . . on one page . . . on one line.

You'll pay for your copy with the extra profit on the first job for which you use it . . . and show an extra profit on every succeeding job. Your distributor can supply you . . . but remember his supply is limited.

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

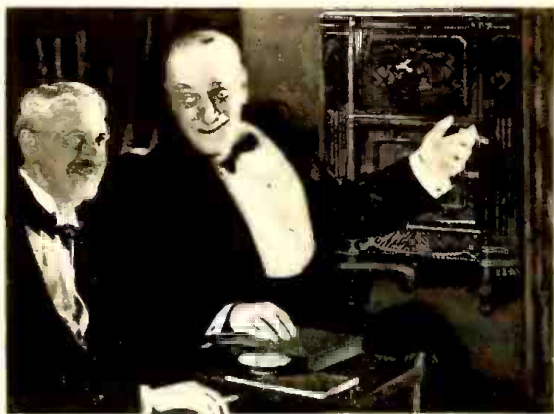
Cable Address—PELMALLO



Use
MALLORY
REPLACEMENT
CONDENSERS...VIBRATORS

Use
YAXLEY
REPLACEMENT
VOLUME CONTROLS

1,000,000 More Prospects Now Can Afford LABYRINTH RADIO



In **1934** a radical development, the Acoustical Labyrinth, came from Stromberg-Carlson Laboratories to startle the radio world with new tone quality. The first set with this revolutionary advance, the No. 70, sold at **\$495.00**



In **1935** so general was recognition of the superiority of Labyrinth Tone, that the Labyrinth was placed in many more Stromberg-Carlson models. It was discovered also, how to use it in a smaller cabinet. The lowest priced Labyrinth set that year, the No. 84, cost **\$285.00**



In **1936** the fame of Stromberg-Carlson "Labyrinth Tone" had spread so widely that the larger factory production it called for brought down the price sharply. A "Labyrinth" Stromberg-Carlson, the No. 145-L, could be had for **\$197.50**



In **1937** "Labyrinth" Tone was fascinating radio buyers everywhere. With no other method was it possible to get bass notes without "boom"; freedom from false sounds from the back of the speaker. Again larger output lowered the price. the No. 240-M, to **\$189.50**

Now the glorious tone which only the Labyrinth can give, is within the means of almost everyone who is ready to buy a new radio. What a chance for a Stromberg-Carlson dealer to do business this season . . . at the new prices of "Labyrinth" radio!

STROMBERG-CARLSON TELEPHONE MFG. CO., ROCHESTER, N. Y.



There is nothing finer than a

Stromberg-Carlson

*Every month is a good month
... when you sell*

PHILCO TUBES

SEASONS come and seasons go. New lines are introduced... new developments are presented... new sensations are launched. But all the year round... tubes keep wearing out... radio owners must buy new ones... and that's what makes every month a good month for the dealer who concentrates on Philco Tubes!

To the millions who have bought Philco Radios and enjoyed the perfection of Philco performance... no other tube but one bearing the Philco name will ever be considered. To millions of owners of other radios... the prestige of the Philco name carries enormous weight when replacement time comes around.

And with the coming of Summer... when radio tubes are beginning to show the effects of long-continued use during the Winter... there's a real opportunity for the dealer with a stock of Philco Tubes complete enough to take care of the replacement sales the season makes inevitable.



The Easiest Tubes in the World to Sell

Announcing a **NEW** **CROSLEY**

REFRIGERATORS TO FIT TODAY'S PURSES!

at startling low prices



**DELIVERED
and INSTALLED
3.1 cu. ft.**

99.50*

Crosley makes it in the great new million dollar plant at Richmond, Indiana, where low costs of manufacture give America the greatest refrigerator value of all time!

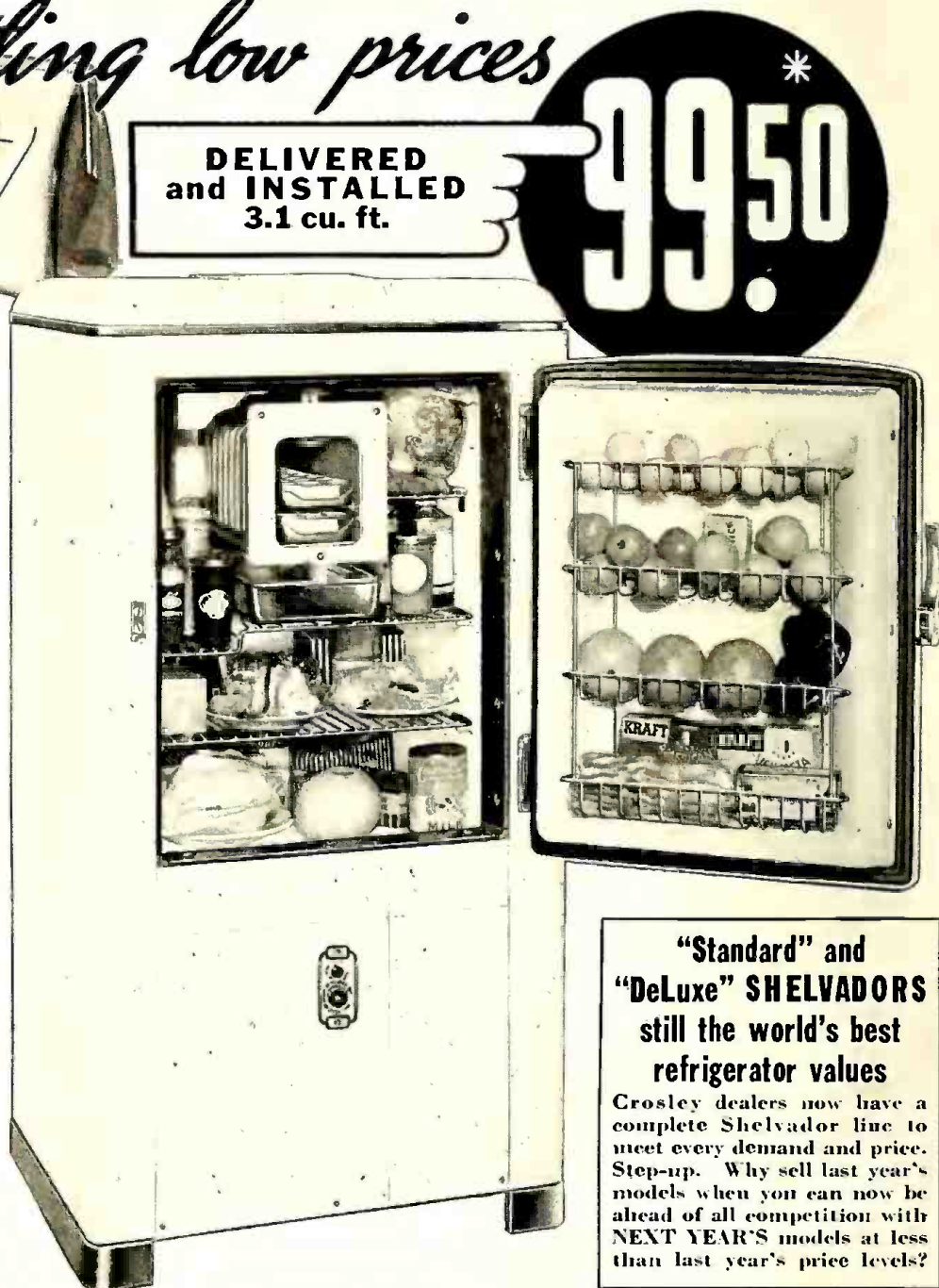
Crosley makes it sturdy—makes it efficient, makes it a thing of beauty and an article of service!

Crosley makes it with the famous SHELVADOR so that the easy, handy storage of small food items on the convenient shelves-in-the-door makes more usable room for foods than in ordinary refrigerators.

This new line gives Crosley dealers a powerful weapon for mail order house competition—for obsolete model competition and for selling tactics that creep into selling in these times.

Crosley tools up for a new line in the middle of the season—the first manufacturer to do so. New factory efficiency and economies make this possible!

Crosley dealers now have their distinct Shelvador selling advantage further strengthened and its lead lengthened by this NEW line at its LOW PRICE.



**"Standard" and
"DeLuxe" SHELVADORS
still the world's best
refrigerator values**

Crosley dealers now have a complete Shelvador line to meet every demand and price. Step-up. Why sell last year's models when you can now be ahead of all competition with NEXT YEAR'S models at less than last year's price levels?

THE CROSLEY RADIO CORPORATION

1939 "Regular Line" SHELVADORS



- with matchless economy of operation,
- with new savings in electric current,
- with heretofore unattained efficiency!



A TRIUMPH OF

CROSLEY engineering; CROSLEY economies; CROSLEY new factory; CROSLEY determination to give the world the most refrigerator for its money!

SAVE MONEY IN OPERATION

SAVE FOOD and STEPS and CASH with the SHELVADOR!

This is the refrigerator EASIEST to sell to women. Because it is the handiest. The SHELVADOR saves you steps and enables you to store food so much easier and conveniently. Little things like fruit and eggs and cheese go on the shelves in this door to leave free the space on regular shelves for bulky items, big bowls and such. This clever shelf planning enables you to actually get more food into the Shelvador. Leftovers won't get lost in the Shelvador Refrigerator. You keep them right in sight on the handy shelves. You don't keep the door open for long because there's no need to do a trunk-packing act after each meal—nor must you explore and search for things hiding on backs of shelves. That saves money by saving electric power.

Crosley freezing control enables you to get exactly the right degree of cold you need to preserve food properly, without waste of electricity. Foods are not frozen and ruined in cold weather—nor spoiled from insufficient refrigeration on hot days. Meats stay fresh for days. Milk stays sweet hours longer.

Music while you work

Women miss no more favorite programs because culinary duties keep them in the kitchen. Radio built into the new "Regular" Shelvador—same quality and performance as available in the standard and deluxe lines. In the new "Regular" line the radio—a five-tube superheterodyne—is built at the bottom.

Women like the feature of radio in their refrigerator because it is always handy—adds a smart note to their kitchen—and adds a note of cheer to household drudgery.

*Delivered and installed. 5-year protection plan \$5 extra.

New Sealed Electrosaver

It saves you money BECAUSE IT RUNS INFREQUENTLY AND USES LITTLE ELECTRICITY WHEN IT DOES.

Even greater savings are now developed in the famous Electrosaver sealed refrigerating unit which reduces operating costs to a new and welcomed low. Sealed in oil for a lifetime of performance it's powered to deliver plenty of ice and sufficient refrigeration regardless of weather. Silent as a cat—as constant in its duty as a strong heart! It's quality all the way—at prices folks can pay.



CINCINNATI ★ POWEL CROSLEY, Jr., President
Home of "the Nation's Station"—WLW—70 on your dial



HARRY BOYD BROWN
National Merchandising
Manager of Philco

ADVANCE INFORMATION ON THE GREATEST RADIO INVENTION IN 10 YEARS

WITHIN the next 10 days, Philco will introduce a radio invention so new—so different—so mysterious—so sensational that it is even greater than anything you can possibly imagine.

This amazing Philco development is almost as unbelievable, as uncanny as radio itself was 20 years ago. Everybody should have it. Everybody will want it. Anybody can use it, and it clicks with the prospective customer the very instant it is seen.

Yes, it will absolutely sweep the American buying public off its feet. Everybody will want to watch it work. Everybody will want to try it. And the demonstration of it will positively pack your store with floor traffic—with prospects.

It is such a marvelous thing that outside salesmen can *now* make home demonstrations anywhere they care to call. In fact, it is so good that the outside salesman will actually get "choosy" as to where he wants to demonstrate. No one can resist its mystery and fascination.

In addition, this Philco Radio invention is so intensely interesting—so almost incredible—that it makes the greatest advertising copy ever written. And as a window display, nothing ever before has even remotely approached it.

Naturally, it will obsolete radio receivers by the millions because this Philco engineering development will bring a *comfort, a convenience and pleasure* to radio users beyond their dreams and their imagination. It is something that will sell regardless of general business conditions.

In conclusion—the details of this great Philco invention must remain a secret for about 10 more days. However, I felt that you should have some advance information on it so that you can use good judgment in your present radio purchases—because during this coming Season—good times or bad—the radio dealers who concentrate on Philco will do a thriving radio business.

Harry Boyd Brown

PHILCO

MAY 17 1938

Staff—
 DARRELL BARTEE
 G. H. MAYORGA
 N. McALLISTER
 M. H. NEWTON
 R. NEUBAUER
 B. V. SPINETTA
 VINTON K. ULRICH

RADIO TODAY

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M. CLEMENTS
 Publisher

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MEMBER AUDIT BUREAU OF CIRCULATIONS

BIG DOINGS AT CHICAGO, JUNE 7-11

For the biggest huddle in many a year, all radio interests will take time out in June and like it.

Tentative programs for the annual RMA convention June 7-8, and the National Radio Parts Trade Show June 8-11 have been announced. The Chicago radio schedule for the Stevens Hotel looks like this:

JUNE 7

- 10:00 a.m.—RMA Board of Directors
- 10:30 —RMA Sound Engineers Committee
- 12:30 p.m.—RMA Membership Luncheon
- 1:00 —Registration, National Radio Parts Trade Show
- 2:30 —RMA Set Division
- 2:30 —RMA Tube Division
- 2:30 —RMA Parts and Accessories Division
- 2:30 —RMA Amplifier and Sound Equipment Division
- 4:30 —"Radio Special" train leaves New York

JUNE 8

- 9:00 a.m.—Show registration
- 10:00 —RMA Board of Directors
- 12:15 p.m.—RMA Credit Committee Luncheon
- 12:30 —New RMA Board Luncheon. Election of officers.
- 2:00 —Show opens
- 2:00 —RMA Volume Control Committee
- 7:00 —RMA Annual Industry Banquet
- 8:00 —RSA Technical Session
- 10:00 —Exhibits close

JUNE 9

- 9:00 a.m.—Show registration opens Radio Industries Golf Tournament
- 10:00 —Meetings, Sales Managers' Club with National Radio Parts Trade Show
- 2:00 p.m.—Exhibits open
- 7:00 —RSA Technical Session
- 8:00 —Sound Equipment Symposium
- 8:00 —IRE Engineering Session
- 10:00 —Exhibits close

JUNE 10

- 9:00 a.m.—Show registration opens
- 2:00 p.m.—Exhibits open
- 7:30 —RSA Technical Session

- 8:00 —IRE Engineering Session
- 10:00 —Exhibits close

JUNE 11

- 10:00 a.m.—RMA Service Section. Western Division.
- 2:00 p.m.—Exhibits open
- 7:30 —RSA Technical Session
- 8:00 —Session on the "Phasmajector" in Television
- 9:30 —Show closes

SELLING RADIO SERVICEMAN TO PUBLIC

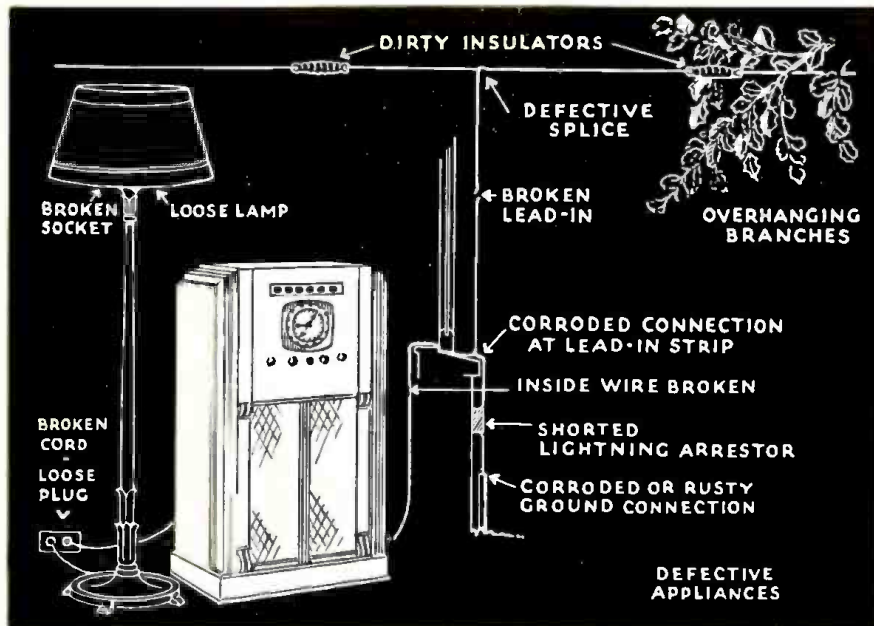
Three times during the month of May nation-wide broadcasting hookups will be used to remind the listening public to call in the nearest radio serviceman to put radios in shape for the big summer broadcast features ahead. As outlined on following pages, these "Spring Tune-Up" broadcasts by O. H. Caldwell, editor of *Radio Today*, will point the need for correct antennas, fresh tubes, parts replacements, and interference elimination. They are scheduled as follows:

"Spring Tune-Up" Broadcasts

- May 9, 11 P.M., E.D.S.T. WEAF and NBC Red Network
- May 13, 4 P.M., E.D.S.T. WABC and CBS Network
- May 27, 7:45 P.M., E.D.S.T. WJZ and NBC Blue Network

Another step to sell the importance of the radio serviceman to the general public was the full-page P. R. Mallory & Co. advertisement in April *Fortune*. "The radio service engineer is quite a fellow," says the text. "He has to be. . . . The radio has become such a part of the personal life of millions that interruption of reception has all the earmarks of a household calamity—a calamity which demands instant correction. Maintaining America's receiving sets in top notch running order is in itself a gigantic industry. It consists of two parts; the thousands of skilled service men and the replacement parts manufacturers who back them up with products and service." Copies were sent to radio men for posting in their windows.

"SPRING TUNE-UP"—PLACES TO LOOK FOR INTERFERENCE



AUTO MODELS TO BE RADICALLY CHANGED. WHY NOT RADIOS?

The automobile makers of the United States are known to have their designers feverishly at work developing radically different models for the 1939 cars—designs which will effectively *make obsolete* all cars now in use or in stock. Upon this strategy the auto makers are depending to boost 1939 sales!

Taking this as his theme before the RMA directors at New York April 21, Commander E. F. McDonald, Jr., president of Zenith, urged that radio manufacturers adopt a similar policy and bring out a wholly different type of radio to obsolete all present sets.

At the request of *Radio Today*, Commander McDonald has restated his views on the matter of radio-set styling as put before the RMA:

Women's wear, furniture

"The manufacturers of ladies' hats, coats, suits and dresses would do only a fraction of the business they now do if it were not for the fact that they consistently and continually change the style. This applies also to the manufacturers of furniture, lighting fixtures and automobiles," comments Commander McDonald.

"The automobile people have done an excellent job of styling bodies, fenders, general outlines—streamlining, if you please. They thereby put an obvious imprint on the current line they are producing, automatically obsolescing all earlier models. In my opinion more people buy new automobiles because their old car looks out-of-date than because of the fact that it is worn out.

"Now let's stand in front of the mirror and watch our own industry



Robert Shannon, vp and gm of RCA Manufacturing Co., has been named to board of directors.

go by," observes the Commander. "What have we, the radio manufacturers, done in styling to put the obvious imprint of age on the older models? Very little. The last major change was when we took the legs off consoles and put them down to the floor. It is true we have introduced short wave, electric tuning and automatic tuning, but these are not obvious *style changes*.

Few changes in radio

"There is a style change that the radio industry can make—a style change that not only is obvious from appearance but has real utility value. And few style changes have this added utility feature.

"A good illustration of change in style which also added utility value was the change from the old type of high, big front-wheel bicycle that had the little wheel trailing behind, to our present-day bicycle which, when the style change came, they called the safety bicycle.

"In my opinion the wall type of console radio is a monstrosity that should never have existed. It was originally copied from the old type of phonograph and we, the radio manufacturers, have persisted in producing it year after year. The radio never belonged against a wall—it belongs alongside a chair.

Automatic tuning

"Automatic tuning has double the value in an arm-chair model. Why? With a wall type of radio, even though it is automatic, if you are reading you must stop and lay down your book, walk to the wall and touch the button. With an arm-chair type of radio you continue your reading—it is unnecessary to take your eyes off the book. You simply reach out—you know where the buttons are—press the button, there is your change of station. So I say that this change has not only style value but utility value. I have found no one who has ever owned an arm-chair type of radio who will go back to a wall type of console.

"Pride of possession is a great factor, and with the whole industry behind this movement, I predict that within two years one will often hear this expression: 'Oh! You have one of the old-fashioned wall type of radio.'

"Let's take a page out of the automobile manufacturer's book, follow his example, and do styling that will obsolete early models."

RADIO IN COURT

Penalties have just been imposed upon two New York manufacturers of spurious radio sets. These are the two final cases to reach the courts as a result of a drive against retailers and makers of counterfeit receivers. One maker was turning out 200 sets a week, employing 20 persons. Some sets were sold with spurious labels and about 5000 fake labels of well-known names were found in stock. In certain cases, labels and sets were delivered separately to dealers, who could then attach the most popular labels of the moment.

Samuel Solat, whose company at 690 Broadway was called the Radio Tube Trading Co., Inc., was given \$500 fine or thirty days in jail, along



Tenth anniversary of quick-heating tube is celebrated by Arcturus officials: Engineer Feindel, gen'l manager J. A. Stobbe, factory sup't A. E. Lyle, and sales manager Jack Geartner. Quick-heating saves listeners 736,111 hours daily, estimates Jack.

with a suspended sentence of three months in the workhouse.

Edward Ehrlich, doing business at 16 Hudson St. as the Gillette Radio Co., Inc., heard the judge say "\$50 fine or 10 days in jail" and is also subject to a suspended sentence of 30 days in the workhouse.

Convictions were obtained by Bernard Phillips of the New York law firm of Scandrett, Tuttle & Chalaire.

WHAT A TUBE IS— DUMMIES OUT!

★ Dummy tubes, plug-in resistors, ballast tubes and dial lamps are all excluded from the definition of a tube, just approved by RMA. Under this definition cathode-ray tuning devices may apparently be counted as tubes. Here's the definition, developed by a special committee of which Meade Brunet was chairman:

"A radio tube is a device used in radio equipment in which an electric or magnetic field causes or controls the electronic or ionic conduction through a vacuum or a gas. This definition shall not be construed to include dial lamps used for illumination only, ballast or other resistance devices."

WEEKLY INDUSTRY STATISTICS

★ Prevention of over-production of receiving sets is the major object of a plan adopted by the RMA board of directors at its meeting, April 21, to provide for exchange between RMA members of weekly production and inventory statistics.

The statistics project was planned by a special committee of which Henry C. Bonfig of Camden, New Jersey, is chairman, and including James M. Skinner of Philadelphia, James S. Knowlson of Chicago, and S. T. Thompson of Long Island City, New York. Weekly statistics will be gathered, covering factory production periods from Saturday morning through each Friday night, inclusive. The statistics will include figures on weekly sales to retailers; wholesalers and branch inventory; factory finished goods inventory, and factory shipments to wholesalers and wholesale branches, together with total factory cabinet commitments. The figures will be broken down into four groups: electric and battery operated table models, and electric and battery operated console models, including phonograph-radio combinations. Also there will be separate statistics on automobile radio, factory shipments, inventories, and commitments.



S. N. Shure, president Radio Parts Manufacturers National Trade Show to be held at Chicago, June 8-11.

"FREE RADIO" VS. \$5 TAX ON SETS

★ "Canada is swinging distinctly to Government ownership of broadcasting and will have to tax listeners further to pay for new stations now building," reported Linton Wells, RCA's roving reporter, addressing the banquet of the new national dealers association at New York, March 21.

"Already in Canada plans are being made to boost the listener's license fee to \$2.50 per set, for each radio in the home."

"If such government ownership ideas ever gain favor in the United States," commented Mr. Wells, "we'll probably do the thing in an even bigger way with, say, a \$5 listener's fee. Then what will happen to the business of you radio dealers and service-

men, if every householder has to pay a tax of \$5 apiece on every set in use, including his auto-radio!

"Then indeed you and millions of listeners will appreciate what it means to have radio free, as we have it today."

RADIO DATES AHEAD SPRING CONVENTIONS

May 19-21—RCA eastern distributors convention, Atlantic City.

May 22-26—National Electrical Wholesalers' Association convention, Hot Springs, Va.

May 26-28—Philco distributors convention, Chicago.

May 27-30—Westinghouse distributors convention, Hot Springs, Va.

May 31-June 1—Stewart - Warner western distributors convention, Chicago.

June 2-4—RCA western distributors convention, French Lick, Ind.

June 6-7—Stewart - Warner eastern distributors convention, Atlantic City.

June 7-11—RMA convention, Stevens Hotel, Chicago.

June 8-11—National Radio Parts Trade Show, Stevens Hotel, Chicago.

June 8-11—Sonora display, Blackstone Hotel, Chicago.

June 9—National Association of Radio Parts Distributors convention, Chicago.

June 9—"The Representatives" meeting, Chicago.

June 9—Sales Managers' Club meeting, Chicago.

June 16-18—Institute of Radio Engineers convention, New York City.



Weston executives attend Fiftieth Anniversary of company's founding by late Dr. Edward Weston. H. L. Gerstenberger, sales manager; W. N. Goodwin, Jr., chf. elec. engr.; Edward F. Weston, president; E. R. Mellen, treasurer; and Caxton Brown, vice-president.



Radio Today leads drive to put listeners' sets in first-class condition for big summer programs

"TUNE UP — SELL UP"

Half the homes in your town—half the houses along the streets in your territory—are prospects right now for sales and service—money-making opportunities opened up by *Radio Today's* current "Tune-up—Sell up" campaign.

During the past winter and early spring, ice and high winds have impaired antenna efficiency; tubes have worn out and need to be renewed; vital parts of radio sets have "gone bad" and demand replacement; electrical appliances and wiring are causing annoying interference to listeners.

Now with warm weather weakening radio reception generally, these defects are showing up and seriously affecting radio listeners in millions of homes. If American listeners are to be able to hear and enjoy fully the big summer broadcasts and sports features coming on the air, the radio industry and radio trade must help listeners rehabilitate their home installations at once—rendering a vital service to both public and broadcasters, and thereby helping to pull the radio business itself out of the recession doldrums.

Five-fold purpose

Here are the specific aims in *Radio Today's* nation-wide "Tune-up—Sell up" campaign:

1. Put existing radios in first-class condition.
2. Replace antennas and tubes.
3. Eliminate interference sources.
4. Sell modern quality radio sets.
5. Get more radios into every home.

Radio manufacturers and broadcasters are cooperating with *Radio Today* in this timely drive to rebuild radio sales and replacement business, and to bring greater radio enjoyment to millions of listeners.

Helping in this campaign to rehabilitate American radio listening, the broadcasters are furnishing nation-

wide hook-ups to carry the "Tune-up" message to every listener, leaving to the radio industry itself the Sell-Up part in this campaign.

Nation-wide hookups

During May, over coast-to-coast networks comprising hundreds of stations, the Tune-Up message with practical demonstrations of radio troubles and how to correct them, will go to millions of listeners from the lips of O. H. Caldwell, editor of *Radio Today*, who has conducted nearly 200 similar broadcasts to educate listeners.

These broadcasts are scheduled as follows:

Monday, May 9, 11 P.M., E.D.S.T.; 10 P.M., C.D.S.T.; 9 P.M., C.S.T.; 7 P.M., P.S.T.: NBC—WEAF and Red Network.

Friday, May 13, 4 P.M., E.D.S.T.; 3 P.M., C.D.S.T.; 2 P.M., C.S.T.; 12 noon, P.S.T.: CBS.—WABC and CBS Network.

Friday, May 27, 7:45 P.M., E.D.S.T., 6:45 P.M., C.D.S.T.; 5:45 P.M., C.S.T.; 3:45 P.M., P.S.T.: NBC—WJZ and Blue Network.

In each of these broadcasts, listeners will be reminded to check over their home radio installations to see that their antennas are in proper condition, tubes are fresh and operating efficiently, and working parts in their receivers are in good shape. If listeners are having trouble in getting stations or are suffering annoyance from interference or noise, they will be advised to call in the nearest radio man to fix the difficulty. Electrical interference, often so baffling to the average listener, will be explained, and solutions indicated by which the listener can have his radio serviceman install protective filters on the offending electrical appliance or put up an efficient antenna which will pick clear signals out of the air and transmit them unimpaired to the receiver.

The theme of these various broadcasts will all be centered around the purpose "Tune Up Your Radio Now for the Big Summer Programs Ahead—Tune Up Your Set for 1938 Efficiency."

Each broadcast thus becomes a personal aid for you, Mr. Radio Man, in your servicing and sales work. It would cost \$15,000 to \$20,000 to put on these broadcasts, but through the cooperation of the broadcast networks, the broadcasting stations and *Radio Today*, all of this valuable promotional effort is made available to you without cost. On the dates given you have, in effect, your personal broadcast on the air, telling your customers and prospects in your neighborhood about your service, and urging them to call you in to put their radios in best possible shape for the important summer programs ahead—news, sports and music.

Tie in with this unique effort to build business for you, and better listening conditions for the broadcasters' programs. Use your window, your advertising, to link your name with the Spring Tune Up idea. Telephone your prospects and remind them to listen in to the next broadcast by *Radio Today's* editor. It will be an indirect selling talk and sales demonstration for the very services and merchandise you have to offer.

Sell sets, too

Cruise up and down the street looking at antennas, ask people how their sets are working—ask if they are getting as clear reception as they enjoyed early in the winter. Explain how a poor antenna, and worn-out tubes will cut down radio efficiency—how electrical appliances cause interference. Supplement the message of the broadcasts with practical advice of your own, based on local conditions and specific experience in clearing up neighbors' radio troubles.

Use these service calls as openings to sell new sets. For no listener can really enjoy 1938 reception unless he has an up-to-date quality receiver, capable of reproducing the full range of modern music, and sensitive enough to pick up all the stations he wants to hear. Show your prospect the conveniences of modern tuning. Remind him that really convenient listening requires extra radios in various rooms—radios for the bedroom, kitchen, nursery, sewing room, maid's room, game room, workshop, etc.

Use these broadcasts and this Spring Tune Up Drive to sell not only service and repairs, receiver adjustment and interference elimination—but also better quality receivers

and extra sets for other rooms in the home. "Tune-Up—Sell up."

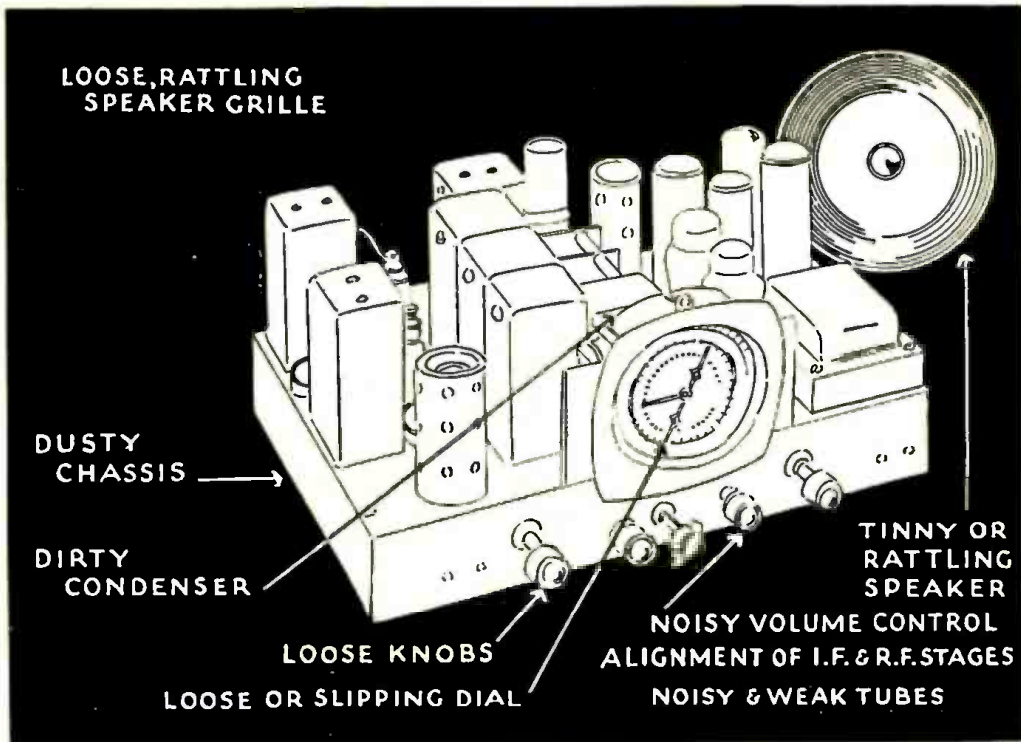
Others in line

Other industry forces are cooperating in putting on better reception efforts during May.

At Chicago, a cooperative Better Reception Week was held beginning May 2. It was sponsored by the Ra-

dio set. Over the winter, when radio listening is heaviest, tubes have worn out and loose connections may have developed. Poor reception is most apt to happen during the warm months unless the radio receiver is in tip-top condition.

"Spring is the logical time for a yearly overhauling of radio sets and is the motivating reason behind Radio Tune-Up Week."



"SPRING TUNE-UP"—SOURCES OF TROUBLE IN THE RECEIVER
When called in to put the radio set in shape for the big summer program features ahead, the radio man will want to check over carefully the points above enumerated. These are some of the most common causes of poor reception originating within the radio chassis itself.

dio Servicemen's Association, Chicago Section, and by local broadcasting stations. Messages concerning the campaign were carried in local newspaper radio pages and in broadcast announcements.

Meanwhile Philco announced a Radio Tune-Up Week for May, and issued radio and telephone sales promotions.

Get ready for summer

"The urge for 'spring cleaning' can apply to radio as well as to the housewife," declares Henry T. Paiste, Philco sales engineer. "The advent of spring means the period when the house gets a fresh coat of paint, the furniture gets new covers or re-upholstered, and the family car gets overhauled. There is no reason why it shouldn't be the best time of year also for overhauling the family's ra-

"DON'T ASK IF—ASK WHICH!"

"Never ask a prospect IF he wants to buy . . . but Which, When, Where and How! Always give him a choice between something and something—never between something or nothing," advises Elmer Wheeler, author of "Tested Selling Sentences."

And "Watch Your Bark," Mr. Wheeler adds.

"Consider how much a little dog can express with just one word and one tail to wag. What he can do with the tone of his 'woof' and the 'wag' of his tail in conveying his many messages is well worth emulating.

"Watch the 'bark' that can creep into your voice. Watch the 'wag' behind your words. Remember, it's as much in the way you say it as in what you say."

PULL TOGETHER TO "SELL UP!"

Broadcasters and utilities pitched in and helped radio dealers Remarkable results from California cooperative campaign

★ THAT cooperative campaign effort can be made to produce remarkable results in selling radios has been proved in a striking way by Northern California radio dealers and the local electrical utility company.

Through its first cooperative radio campaign, held Oct. 11-30—probably the most unique and successful ever conducted in the West—the Electric Society of Northern California increased Fall sales to a new peak. So successful was it that the plan now is to make such a Fall drive an annual event. During the 20-day period of the campaign, 13,639 radios were sold. Compare that figure with the previous three-month average for the same number of days—only 8,337 sets—and the following three-month average of 11,884 sets. Benefits definitely carried on far beyond the limits of the campaign.

Costs of the campaign were as follows:

\$17,579 of radio time donated by broadcasters.

17,065 spent by utility for campaign advertising.

4,462 donated by utility for society expenditures.

\$39,106 TOTAL

Formed four years ago, the Electric Society extended its efforts into the radio field for the first time in 1937. Results well justified the effort. While the radio campaign was financed by the Pacific Gas & Electric Company and the broadcasters, it was primarily a dealer promotion, worked out by representatives from all branches of the business. In general, plans are mapped out by a large committee made up of representatives from all groups involved in San Francisco, and of the officers of the various local units of the Electric Society. Every town in the large territory covered by the "P. G. and E." has a voice in the work. Date and nature of the campaign agreed on, the Society's advertising department is instructed to draft the campaign itself. This material is then submitted to the Society's board of directors in a meeting also attended—in an ex-officio capacity—by heads of the local units.

Sell "Hi-Fi"

Featuring the slogan: "You're There in Person With a 1938 High Fidelity Radio," last Fall's campaign featured *quality* radios from the following three standpoints:

1. Excellence and variety of today's programs.

2. Tremendous progress in broadcasting technique.

3. The necessity of having a new model radio for enjoying to the fullest extent the programs on the air. The importance of "selling up" was emphasized to the dealers.

A total of 16 radio stations all over Northern California joined with the rest of the industry, for the first time, in putting over the merchandising message. Each station donated three announcements a day during the campaign and one 15-minute program a week. The utility devoted the "commercial" phase of its Sunday program to the slogan throughout the campaign.

Newspaper ads

Colorful movie slides carrying the following message were shown in 115 theatres in 172 towns for two full weeks: "You're There in Person With a 1938 High Fidelity Radio. During



The California broadcasters contributed time-on-the-air equal in dollar value to the utilities' donation of newspaper advertising.

this month, your dealer will arrange a home demonstration."

Newspaper advertising, done by the utility but all carrying the signature—"See your dealer or the P. G. and E."—consisted of three insertions each in 285 daily and weekly papers. The ads ran 60 inches in the daily papers, 24 inches in the weeklies. Feature illustrations showed a huge microphone in the foreground, a background composed of famous radio personalities. Smaller illustrations featured broadcasting station improvements, precision tuning in new models and the fact that local stations now get the nation's best programs. Each ad also featured in a bottom box a prize contest on "The Electrical Standard of Living," in which a \$12,000 home, an \$8,000 home and ten smaller weekly prizes are awarded.

Cooperative displays featuring a complete showing of high-fidelity radios featured by local dealers were used by the P. G. and E. in 73 of its offices.

The Society furnished dealers and newspapers with free mats of specially posed photographs of radios, as well as other illustrations, including hand-lettering of the campaign slogan in various sizes. A mat illustration and a postcard order blank—with all illustrations keyed by numbers for simple ordering—were sent to every dealer and newspaper in the territory. Literally thousands of mats were used during the campaign.

Printed matter

Also sent to all dealers and newspapers were publicity clip sheets prepared for use in making up special pages of tie-in advertising on the radio campaign. A further series—in mimeograph form—was made available to papers needing more publicity than it was possible to include in the clip-sheet.

The utility's house organ, having a circulation of 550,000 consumers, ran a \$50 prize contest for the best essays on radios and also used colorful bill stickers on statements sent to all subscribers. The stickers carried the same "mike" and talent illustration used in newspapers and display cards.

The dealer display cards, which were delivered by P. G. and E. dealer contact men—providing an opportunity for enthusing dealers about the campaign—used the newspaper illustration in color. The cards were made in 20 in. x 30 in. size and were equipped with easel backs. Thousands of these were used.

Advance promotion work among dealers helped increase effectiveness of the campaign. Immediately general plans were completed, a four-page, folder-type letter was sent out to the trade by the Society, explaining the idea behind the campaign and listing in large type the participants, date, slogan and features. This was followed up shortly by a broadside giving full details, with which were included sample clip sheets, mat illustrations and newspaper ad proofs. Form letters were sent—in advance—to advertising managers of all newspapers.

Push home demonstrations

A special letter carrying the signatures of four leading dealers was sent to all dealers in the territory urging them to feature the home demonstration idea during the campaign. It said in part:

"We realize that home demonstrations, as a regular practice, have been considered undesirable and a source of profit leak and that steps have been taken in many communities, through mutual agreement, to stop the practice. This is very desirable, and normally should not be deviated from in any way, but in view of the remarkable support being given the campaign by broadcasters and others, and inasmuch as many people are well satisfied with the radio they have and home demonstration is the only means by which proof can be given that new radios are different and will do things claimed for them, it does seem advisable that all retail dealers advertise that they will make home demonstrations during this campaign."

It was recommended that such demonstrations be limited to high fidelity radios of the console and armchair types, in an effort to "sell up" in price brackets.

National results

In view of the recent discussion by RMA officials, of a nation-wide promotional campaign for radio, it is interesting to see what the California results would mean, applied on a national scale.

The California area involved represents about 3 per cent of our national sales quota. To apply the local figures

nationally would call for the use of \$570,000 worth of local newspaper advertising by the utilities, \$586,000 worth of broadcasting time, and \$134,000 for dealer promotion—or \$1,320,000 total. Radio-set sales for a 20-day national campaign would figure out at 455,000 receivers, an increase of 177,000 sets over normal. "After-campaign" stimulation would amount to a 42 per cent increase over normal, and if extended for six months would mean about a million extra sets sold as a result of the campaign, at a retail value of \$40,000,000. Utility income from these 1,000,000 additional sets would be \$6,000,000 annually, so it would make a pretty good investment for the utilities, as well as for all the other groups of the industry.

In the California drive, total expenditures in utility advertising, broadcasting time, and dealer promotion, taken altogether, seem to have run about \$1 per set of increased sales

(or 11 cents per set, spent on cooperative trade promotion alone), which will serve as a yardstick for national estimates of results to be expected.

"SELL UP" WITH A DEMONSTRATION BOOTH

To demonstrate quality radios or phonographs, the dealer should have a separate small demonstration room closed in with walls of plywood or wallboard. Special sound insulating material is better, but is not necessary.

The ordinary radio listening level is about 40 db. Street noises run from 70 db to 90 db, and this noise filtering into the average store, produces an inside noise level of 60 db. Inside a wallboard booth, this noise can be reduced to 30 db, above which the 40 db radio or phonograph can be heard satisfactorily.

YOU'RE THERE IN PERSON IF YOU LISTEN IN ON ONE OF THESE 1938 HIGH FIDELITY RADIOS



ARVIN Cut No. 1



GOSLEY Cut No. 2



FAIRBANKS-MORSE Cut No. 3



GENERAL ELECTRIC Cut No. 4



GRUNOW Cut No. 5



HOWARD Cut No. 6



PACKARD-BELL Cut No. 7



PRECO Cut No. 8



RCA VICTOR Cut No. 9



SPARTON Cut No. 10



STEWART-WARNER Cut No. 11



STROMBERG-CARLSON Cut No. 12

Order Free Mats of Any of These Illustrations by Number on the Attached Postcard



WESTINGHOUSE Cut No. 13



ZENITH Cut No. 14

COPY SUGGESTIONS
 For Illustrations and Mats
 SPECIALLY DESIGNED FOR THE HOME
 Buy a 1938 high fidelity radio on credit from Sears, Roebuck and Co. or Montgomery Ward. The price is for a limited time only.
 THERE IS A DIFFERENCE
 Buy a 1938 high fidelity radio on credit from Sears, Roebuck and Co. or Montgomery Ward. The price is for a limited time only.

TAILORED AUTO-RADIO

Motor season opens for
25,000,000 car owners

Millions of cars are being backed out of garages this month, to spend the summer spinning along the highways. This is a move which the radio dealer must set to music, via auto radio.

Receiver design, which is sales-tailored this season for extra performance and convenience is a matter that commands the attention of the dealer who is making his warm-weather promotion plans for car sets.

Who designs sets

Since many automobile receivers reaching the consumer market are at one time purchased by the car manufacturer or his dealers, it follows that the car manufacturer has a great deal to say about the design and performance of these receivers.

All receivers sold under contract to the car manufacturers are designed jointly by the engineering departments of the car and receiver manufacturers. Circuit design is of course pretty much the province of the receiver engineer, but his circuit design must produce the performance set down jointly by the merchandising and engineering departments of the car manufacturer.

Details of receiver dimensions, location and appearance are set down by the motor car engineer. He is the very important design coordinator who can bring together the efforts of

the body designer and receiver engineer toward the end of producing such interrelated devices as instrument panel receivers and dash-vented speaker installations.

In some cases receivers built on contract are installed on the automobile assembly line, just as are bumpers, windshield wipers, headlamps, etc. More frequently such receivers are installed at the factory, but only on special order and after the cars have come off the line. An equal or greater number are installed by the dealer at the point of sale of the new car.

Whereas figures for 1937 contract auto radio production are fairly accurately known, the actual number of factory installations is not so readily available. A rational estimate would be 160,000 sets, or a percentage representing factory installation of 13.9 per cent based on a contract receiver production of 1,150,000.

The total production of independent makes of receivers would materially drop the 13.9 per cent figure, since all of these are dealer installed.

Demonstration device

An example of how new designs may be brought dramatically to the attention of the buying public is supplied by one of the manufacturers. The procedure is described thus:

"Motorists who have been accus-

tomed to have refreshments served to them on a tray at wayside lunch stands are being given a new treat by automobile servicing stations so that they may be entertained by radio while having their cars refueled, oil put in the crankcase, tires filled with air, or any one of a number of similar services.

"The Crosley Radio Corp. devised this novel method of demonstrating how easily its new automobile radio operates. Two simple wire brackets covered with rubber where they touch the car door hold the receiver, and the driver presses the buttons to select the program desired.

"Chances are that the idea appeals to them so well that an order is given to install the radio on the spot. Being a completely contained unit, it is quickly and easily attached to the dash of the car, and the driver goes away happy with the added joy of radio for the trip.

"This novel sales presentation has the advantage of enabling the driver himself to demonstrate the set to his satisfaction in his own car without the annoyance of making an actual installation. It is a kind of self-selling plan, and takes advantage of the old maxim that 'seeing is believing,' with the addition that 'hearing is also believing' in the case of radio."

START SELLING RADIOS FOR VACATIONERS

Window displays of successful merchants in other lines are usually bright, colorful, and highly seasonal in nature. Such window trims usually anticipate by a couple of weeks the approaching season, be it Easter, spring planting, house-cleaning, or any of the other special periods during the year.

Why can't you do the same? Now is just the time to start plugging small portable sets for vacation or travel, in addition to car radios.

Trim a vacation window—get a few time-tables and maps, some sporting goods or vacation equipment and a suit-case or two, use these in conjunction with a good showing of small receivers along with carefully worded signs. To further carry out the idea of taking a midget set along on the vacation trip, fit one of the small sets in a corner of an open suitcase, showing how easily portable it is. Start your bid for vacation and tourist trade now.

While car stops for gas, auto-radio demonstrator is hung over side, so that driver can try out push-button tuning for himself.



WINDING UP THE RADIO RECESSION

Promotion ideas to put dynamite under the dealer's sales curve

LISTS NEWS PERIODS ON POSTCARD

Many people like to follow the news broadcasts, and tune from one station to another during the day, to hear the news of the world unfold. But such listeners usually find it difficult to locate news periods in ordinary newspaper radio listings—often because the newspapers omit or disguise these news periods, sometimes calling them merely "talks".

So to provide his customers and prospects with handy news programs, Jack Hoffman of Home Radio Service, 521 W. 48th Street, New York City, had all the local news periods listed up on a standard government postcard and mailed copies of these to his customers. With one of Hoffman's cards in hand, the lucky listener can usually pick up a news period within a few minutes, at any time of the day. And the card is carefully preserved near the customer's radio.

DEALER TAKES A FARMER ALONG

★ When Joseph Connor, owner of the Connor Battery & Electric Co., Baraboo, Wisconsin, wants to canvass a certain rural district to sell radios, he first gets a resident of that community to go with him and introduce him to other rural inhabitants. This idea has worked out well and has resulted in many satisfactory sales.

These farmers, of course, are not required to do any sales work; they merely vouch for the fact that Connor is a worthy dealer by the very fact that they are with him.

Even when a dealer has to pay a farmer for such service, the money is well spent, states Mr. Connor, for many prospects are usually gained. Such a farmer can also tell a dealer, while they are riding along, who has a radio and who hasn't in certain areas. He will also tell very frequently what the likes and dislikes of many farmers are concerning radios and electrical appliances.

Often some satisfied rural customer will go willingly on such an expedition, without asking pay, Mr. Connor reports, and when this is done some consideration can be shown the man when he is ready to buy his next radio set.

"I never go canvassing in rural areas where I am unknown without taking somebody along who knows those people," says Mr. Connor. "I may not even try to sell anything on that first trip, as farmers do not like to be rushed into buying. However, on my next trip around I go alone. My contacts are already established; these farmers feel they know me, and as a result, they are friendly and in a mood to talk business."

FOR BIG CITY RADIO RECEPTION



The words for this scene are "unlimited big city radio reception—electric lights—fans—shaver—electric fence." From Wincharger Corp's new farm radio movies produced by United Film Ad Service.

BUSINESS HOUSES AS PROSPECTS

Radio dealers are overlooking a good bet if they fail to push receiver sales—particularly small radios—to business houses, restaurants, stores, offices, plants, etc. For business concerns a radio set is a business asset in attracting customers and holding them while they look and buy.

What places in your town, listed below, are without radios:

Barber shops	Factories
Restaurants	Shoe-shine parlors
Candy stores	Beauty shops
Gas stations	Drug stores
Offices	Cigar stores

SMALL RADIOS FOR EVERY ROOM

Only one home in five now has a "second" or extra radio set. This field of second and third radios in the home is the one which now offers the greatest opportunity particularly for small radio sets. Every comfortably

equipped home should have at least as many radios as there are people in the household.

Check over with your customers the places where they still need radios:

Kitchen	Nursery
Dining room	Game room
Bedrooms	Maid's room
Sewing room	Chauffeurs room
Play room	Garage
Daughter's room	Workshop
Son's room	Attic

KEYS USED TO ATTRACT TEXAS PROSPECTS

★ Dealers in Houston, Tex., are working with the local jobber in a stunt involving Loew's State Theater and the giving away of 10,000 special keys. Radio displays were featured in the foyer of the theater, and during one week the keys were presented to those who wished to try for a free radio receiver.

Three of the keys were made to fit locks on one of three radios displayed at local Crosley dealers' stores, and the person having the right key would be awarded the set. These dealers have reported to the Houston jobber, Reader's Wholesale Distributors, that the plan had the instant result of drawing a large number of persons to their stores.

Hymen Reader, president of the jobbing firm, was convinced that he "had something" in the new "Prestotune" feature, and decided to give it the advantage of the showy atmosphere which is found in the finely furnished lobbies of theaters.

SELLS MORE ANTENNAS

★ Realizing the importance of an all-wave antenna system for the new sets, a Boston outlet ties on every set it sells a big 5½ by 8 inch tag calling attention to the need of a good aerial to pick up the signals.

The text of this tag is successful in selling new antennas; also it tends to put the blame for poor reception on the antenna instead of the set itself.

Records of large service organizations show that the majority of complaints of noise are caused by poor antennas.

Remember, *No Radio is better than its Antenna.*

"Within the past three months, tube business has exceeded all expectations and has been moving with a consistently upward trend. The percentage of increase in some regions of the country has been almost startling! The replacement tube business, like parts, bids well to have a banner year in 1938, from the first-quarter results."

Thus, the voice of one of the top executives in the tube business. With the figures before him, he reports this branch of the radio business to have profited by set-backs elsewhere.

Another tube firm took a look at the books and came out with the statement that "the first quarter of 1938 shows the quantity of radio tubes produced and sold to be in excess of any similar period since 1929."

This company declares that progress in recent months has been noted in export sales, initial equipment sales to domestic radio manufacturers, etc., and merchandising division sales for home radio replacement purpose. (Exports of U.S. radio tubes in January of this year totalled 388,363. In February the total was 410,503; March, 629,715.)

Dealers on the job

A prominent jobber says that his dealers have a new attitude toward the tube business:

"They're yelling for mailing pieces which will take their imprint and can be used on their customers as checkup reminders. I've noticed that they are using more of them

TUBES SELL FAST

"Sales consistently up"
and "best since 1929"
say sales reports.

lately and re-orders on the pieces are strong."

Cases like this one may explain how it happens that tube headquarters have noted a flourish in sales totals. If set sales are slow, tube replacements deserve an extra play and the retailers are aware of it. That's why the pick-up in the business is as general, nationally speaking, as the recession itself. Besides, there are some 3,800,000 more receivers in use in the country than were being dialed a year ago.

Another tube sales expert points

out that at this time of year the advertising and promotion on radio sets reaches one of the low points of the annual curve. Dealers are not represented in local newspapers or on the local radio station, unless they go to work on tube replacements. Many retailers are not willing to allow radio interest to lag during the summer because they lose the benefit of gilt-edged campaigns staged during the winter. Tube promotions are the answer.

It happens that there were some mighty effective tube sales campaigns last winter, too, so that summer work already has an advantage. And recently the dealer has been approached with deal after deal after deal; he certainly has the stock.

Summer prospects

To reach summer prospects, dealers find that this year the promotion items available from manufacturers are novel, inexpensive, varied and dramatic. The fact that merchandising aids are cheap this season is important to retailers whose volumes have been low. Advertising expenditures must be kept down, and tube makers have done the appropriate thing.

Among tube leaders, the sales aids are being tested before they are issued. Suggestions and ideas from the dealer who actually sells tubes to the consumer are invited and compiled. The result is that merchandising assistance is so carefully gauged that it is known to have wallop before it is released.

TODAY'S BROADCAST BILL-OF-FARE MERCHANDISED IN WINDOW



Passers-by are asked, by dealers Weis & Fisher, Rochester, N. Y., to name stars. Luxury note is stressed by armchair items at left, Stromberg Carlson at right.

VICTOR TUBES

Presented with the new RCA 1938-39 radio line is a new RCA Victor radio tube, which will be sold exclusively through the company's wholesalers handling similarly branded radios, RCA Victrolas and Victor records. The famous Victor dog trademark with the line "His Master's Voice" will appear on the tube package.

All of the new RCA radio products will henceforth be equipped with the new tubes, but they will not in any sense supplant either the Radiotron or the Cunningham tubes now being marketed through other channels. The new series will be available in all current receiving types in which other RCA tubes are now made, around June 1st. The company has planned a big advertising and merchandising program for the new product.

THE RECORD MONTH

Developments in the fast-growing disc business

RECORDS FOR SOUND MEN

One of the problems of the public address specialist is the selection of records for use in spots where amplifiers are sold. Dance halls, night clubs, amusement parks and swimming pools often want to play recorded music, and they expect the sound man to advise them on what records can be used without legal difficulties.

Where recorded music is used in a situation where live musicians might be replaced, the musicians' unions are likely to object. Record companies have adopted the practice of stamping each record package with a "restricted use" notice, which limits the use of the record to non-commercial purposes on phonographs in homes. This regulation of course does not apply to records played on coin-operated machines.

Positive positions cannot be taken by some of the record companies because they have not completed their agreements with the musicians' unions. Some of the manufacturers are saying that it is OK to use the records where they do not replace musicians, and others say flatly that their discs can be used only for coin machines and in homes. In any case it is up to the buyer of the amplifier to make the record selections. The sound man may only tell him what the general situation is.

Meanwhile, sound experts report in large numbers that their customers are playing whatever records they like, without being "called." One PA engineer says that he knows of dozens of amusement parks, sound trucks and swimming pools where the owners are playing records with no thought of restricted use.

TEST SET WITH RECORD-PLAYER, THEN SELL IT

An increasing number of radio servicemen have found a profitable means of increasing their income by taking along one of the new, compact little RCA record-players on service calls.

Many extra sales have resulted from impromptu home demonstrations. The most successful procedure is for the serviceman to connect the record-player to the radio receiver he has just repaired, presumably as a

test, and play a lively record or two. This technique never fails to interest the set owner. With public interest growing in recorded music it is usually a simple matter to clinch the sale.

BRUNSWICK RECORDS ABROAD

★ Beginning July 1 of this year, the Electrical & Musical Industries, Ltd., London, England, will handle the foreign distribution of all recordings of the Brunswick Record Corp. and the American Record Corp. in the British Isles and throughout



RCA-Victor record player

★ DeLux type record player. Uses crystal pick-up with true-tracking pick-up arm. Self-starting constant speed motor. Large turntable for 10 and 12-inch records. Housed in wrap-around cabinet of selected walnut veneers. Model R94-B—list \$32.50. RCA Mfg. Co., Front St., Camden, N. J.—RADIO TODAY.



Electric phonograph

★ Home and portable type electric phonograph with 3-tube amplifier. Crystal pick-up, self-starting motor. Plays 10 and 12-inch records at 78 r.p.m. Dynamic speaker unit. List \$35. Chicago Sound Systems Co., 160 E. Illinois St., Chicago, Ill.—RADIO TODAY.

practically the rest of the world except North and South America. Brunswick's distribution contract with Decca Record Co., Ltd., London, will expire in June.

According to an announcement by Brunswick president R. W. Altshuler, the new arrangement with EMI, of which Sir Louis Sterling is managing director, will give the company world distribution equal to that of any other domestic record firm. The move is part of Brunswick's current expansion, both here and abroad.

WAX WORTH WATCHING

ROY SMECK and his Serenaders playing Ti-Pi-Tin and A Gypsy Told Me from the 20th Century Fox film, "Happy Landings," both with VC by Donald King—Decca 1739.

EMERY DEUTSCH and his orchestra playing Joseph Joseph! and Who'll Buy My Bublikicki, both with VC by Nan Wynn—Brunswick 8409.

MYRON HANLY and the California Ramblers playing Cry, Baby, Cry, with VR by Kay Ray and College Humour with VR by the Rhythm Quads—Bluebird B 7505.

RAY NOBLE and his orchestra playing Vilia from "The Merry Widow" and Crazy Rhythm—Brunswick 8098.

JIMMY DORSEY and his orchestra playing At a Perfume Counter from "Casa Mamapa" and Love Walked In from "The Goldwyn Follies" both with VC by Bob Eberle—Decca 1724.

DICK ROBERTSON and his orchestra playing Oh! Ma! Ma! and Cry, Baby, Cry both with VC by Dick Robertson—Decca 1726.

MAXINE (Vocadence) SULLIVAN with Claude Thornhill and his orchestra singing Please Be Kind and Moments Like This from the Paramount film, "College Swing"—Victor 25802.

RUDY VALLEE and his Connecticut Yankees playing Oh! Ma! Ma! with VR by Red Stanley and the Gentlemen Songsters and Lonesome—That's All with VR by Rudy Vallee—Bluebird B7543.

HORACE HEIDT and his Brigadiers playing Bewildered with VC by Larry Cotton and A Gypsy Told Me from "Happy Landings" with VC by Charles Goodwin—Brunswick 8092.

JIMMY DORSEY and his orchestra playing The Week End of a Private Secretary with VC by June Richmond and Stop and Reconsider with vocal trio—Decca 1745.

NELSON EDDY singing Who Are We to Say and Sun-Up to Sun-Down with male quartet, both from the MGM film "Girl of the Golden West"—Victor 4388.

BENNY GOODMAN trio playing Sweet Lorraine and Goodman quartet playing Dizzy Spells—Victor 25822.

RDSE MARIE with orchestra singing I Got a Guy and This Time It's Real—Bluebird B7515.

BOB CROSBY and his orchestra playing Always and Always from MGM's "Mamouquih" with VC by Kay Weber and More Than Ever, with VC by Bob Crosby—Decca 1657.

BING CROSBY singing This Is My Night to Dream, from Major Pictures' "Dr. Rhythm" and The Moon of Manakora from Goldwyn's "The Hurricane," both with John Scott Trotter and his orchestra—Decca 1648.

HORACE HEIDT and his Brigadiers playing I'll Take You Home Again Kathleen, with VC by Larry Cotton and Heigh-Ho from "Snow White and the Seven Dwarfs," with VC by the Klugs and glee club—Brunswick 8074.

BENNY GOODMAN and his orchestra playing One o'Clock Jump and Don't Be That Way—Victor B25792.

GLEN GRAY and the Casa Loma orchestra playing You Have Everything with VC by Pee Wee Hunt and I See Your Face Before Me with VC by Kenny Sargant, both from "Between The Devil"—Decca 1608.

HAL KEMP and his orchestra playing Take a Tip from the Tulip with vocal refrain by Bob Allan, and Speak Your Heart with vocal refrain by Rosalind Marquis, both from the RKO film "Radio City Revels"—Victor 25732.

Selling Sound

★ Jobbers and dealers, who in the past have reluctantly accepted sound as an incidental, have suddenly come face-to-face with a fast-growing industry demanding new methods of distribution, comments Al Batis, Algene Sound & Radio Co., Philadelphia, Pa.

With the growth of the sound industry, radio service men, jobbers and dealers realize the inadvisability of building their own equipment, since the manufacturers have standardized complete units and are setting firm prices and establishing definite distribution policies. Such arrangements, creating a better understanding between dealer, distributor and manufacturer, also tend to gain public confidence in package merchandise and its reliability. With the standardization of units, the dealer does not necessarily have to be an engineer to intelligently promote the sale of this type of amplification equipment.

Sound equipment is a specialty item requiring specialized concentrated effort. Having selected equipment which merits confidence, the sound specialist should confine his sales to that line. Such loyalty along with continued plugging will result in sound sales.

Special ideas

Distribution through a sound specialist is warranted, since the sound specialist is constantly developing new ideas for furthering sales of the product which is the nucleus of his business. Having become familiar with the various sound problems from both the technical and sales angles, he is able to best supply the dealer with his ideas on how to solve sound problems and overcome sales resistance, also to supply the proper equipment backed by the technical knowl-

POLICIES FOR DISTRIBUTORS

Concentrated effort required.
Should stock complete line.

edge required in making successful installations. The sound specialist should be cognizant of the value of having a number of dealers pushing his product and in this respect should concentrate on the dealer trade with the view toward greater distribution.

The cooperation in sales promotion, which the sound specialist receives from the manufacturer, should be passed along by him to the dealer, even to the point of consummating a sale for the dealer, continues Mr. Batis. Making surveys for the dealers, assisting with specifications and placing at the dealers' disposal the necessary technical knowledge will gain dealer confidence and widen the scope of sound sales.

Sales promotion

Promoting sales through dealers will not be as remunerative as direct sales, but will eventually bear fruit by a greatly increased volume. A sound sale placed through a dealer will undoubtedly awaken him to the realization of the potential profits available and gain a booster for your sound products.

Direct mail advertising followed by a direct call of a good man, who has become familiar with the sound problem of the organization or institution on whom he is calling, is by far the best sales promoter. A sales representative, who is able to meet his prospect on an even footing and discuss intelligently his particular problem and show him how sound will increase or facilitate the operation of his business, is generally a welcome caller. Submitting an intelligent composite prospectus and constant follow up of the prospect is advisable.

The sound distributor should always bear in mind that he is the factory representative and as such should place the equipment in the most advantageous light. In this respect, since a large quantity of sound equipment is sold through recommendation, each sound installation properly installed is the best form of advertisement.

Ethical distribution, so that the sound distribution is not placed in the position of competing with his dealers, is essential in order that complete dealer protection is assured. Many sound distributors and dealers are guilty of approaching their prospects with stories based on the inferiority of their competitor's products and fail to acquaint the prospect with the merits of their own products. Such negative sales methods are not only unethical, but also suggest to the prospect the advisability of inquiring as to the relative merits of the various equipment available.

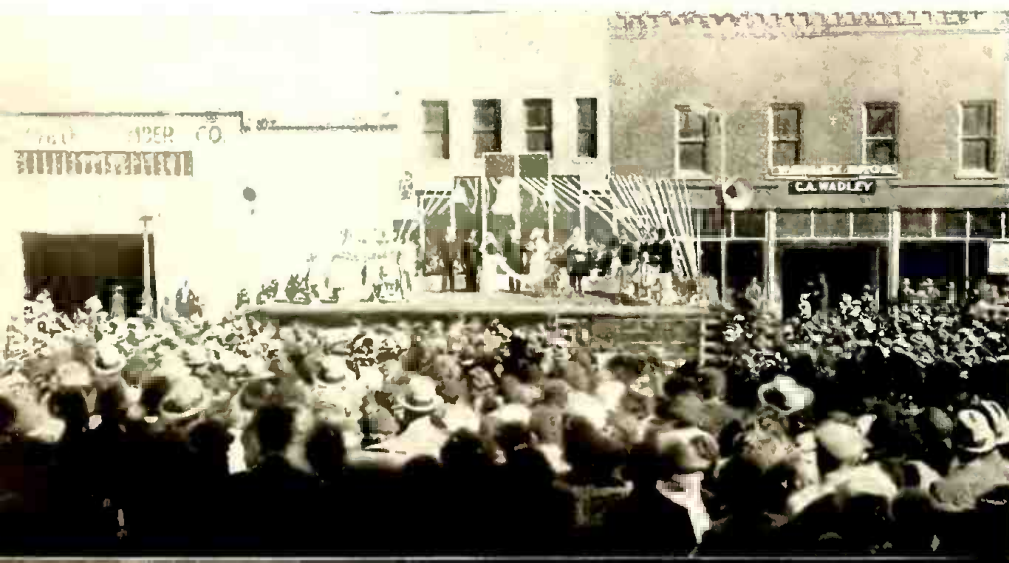
Sound specialists should sell confidence—confidence in the reliability of the firm and product they represent—confidence in their reliability and faithful performance of all promises.

Jobs best ads

Since each installation is the best form of advertising, the sound specialist should treat each case individually and try to visualize the requirements of his factor. Installations having a touch of individuality are difficult to duplicate and suggest the advisability of dealing with a sound specialist.

The dealer, having arranged his organization around capable assistants, can utilize the advantage of various forms of advertising and should bear in mind that most sound sales are contingent upon successful demonstrations. In order to satisfactorily demonstrate sound equipment, the sound specialist should maintain a complete line of sound equipment manufactured by the company he represents. In this manner he can readily demonstrate to his dealers and prospects the various types of equipment.

Many types of outdoor events are now being scheduled for the "town square"—fertile sales ground for PA men. Here's the annual public wedding in Maryville, Mo., staged with benefit of amplifiers.



NARAR ON THE MARCH

National headquarters for the National Association of Radio & Appliance Dealers have been established at 3930 Lancaster Ave., Philadelphia, Pa. Recently from executive secretary B. H. Poucher at that address came Bulletin No. 1, emphasizing the immediate need for national cooperative action among dealers and dealer associations, and outlining the 11-point working platform drafted by H. C. M. Capron and adopted by NARAR at the outset.

Next meeting of the organization is set for the first week in July at Chicago. Meanwhile, according to the first bulletin, "every local association of electrical appliance dealers and every individual dealer in cities where there is no local association is eligible for membership in NARAR and will want to become associated at once. We also solicit membership of retail dealer groups now allied with electrical associations and electrical leagues everywhere."

DEALER OUTSIDE-SELLS IRONS

Four salespeople, women, working on "cold" calling house-to-house, are stirring up plenty of iron business for the Lincoln Co., Brooklyn, N. Y. Manager J. J. Brecher points out that the stunt is opening up a nice series of accounts for radio and appliances, too.

Each saleslady carries a small black case containing a demonstrator iron, and a selection of materials, cut in small pieces. The iron being used is the new Steem Electric, and the ma-

ACTION ON APPLIANCES

terials used in the demonstration are those generally considered by housewives to be the most difficult to iron properly.

Ringling doorbells, the salespeople are encouraged by their employer to open the case and get the iron in sight as soon as possible after the housewife appears at the door.

CLEANERS, WASHERS, IRONERS, RAZORS

Latest monthly check-up on the sales of household electrical vacuum cleaners reveals that March totals were 135,543, an increase of 35 per cent over the February figure of 100,412, but a decrease of 32.37 per cent from the sales for March last year. C. G. Frantz, of the Vacuum Cleaner Manufacturers' Association, points out that "sales are running neck and neck with comparison months of 1936, second highest year in the industry's history."

From executive secretary Bohnen of the American Washing Machine Manufacturers' Association comes the news that washer shipments in March totalled 117,025, an increase of 23.54 per cent over February.

March ironer shipments were 10,-

727, compared to 10,823 in February.

On the subject of electric razors, the magazine *Fortune* made a check on the industry and reported 2,000,000 of them to be in use. Sales last year were set at 1,500,000, with a retail value of \$20,000,000.



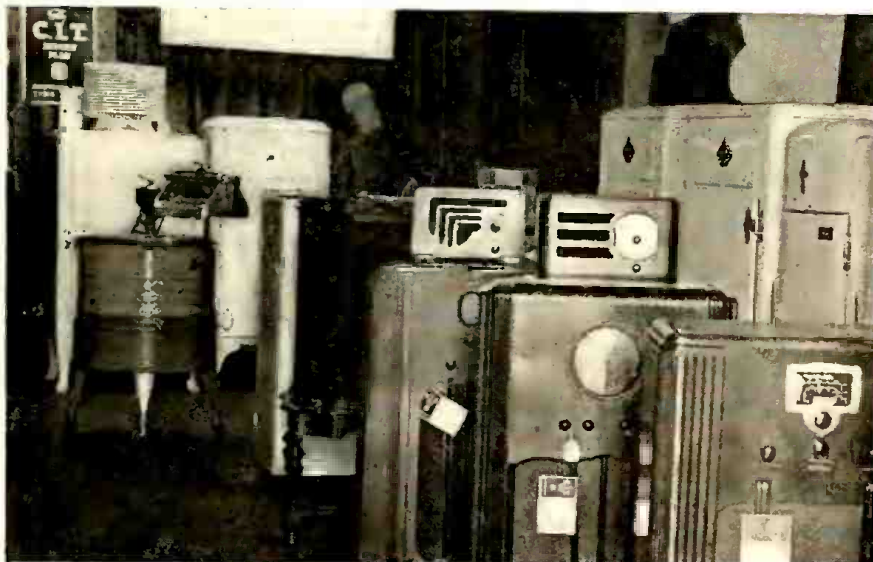
Crosley electric ranges

New line includes six models, from the deluxe type to kitchenette numbers especially for apartment use. One series is equipped with a combination of electric and coal or electric and oil burners. Model K853, illustrated herewith, has 3 Chromalox closed units and RE-30 Speedwell cooker. Convertible oven, low setting thermostat. Provision for time control. Three heat silver contact switches. Low simmering unit available. Other special features. Crosley Radio Corp., Cincinnati, Ohio—RADIO TODAY.

J. Howard Teagan has been appointed export manager for *Universal Cooler Corp.*, Detroit, according to recent news from Frank S. McNeal, president and general manager of the company. Mr. Teagan is a veteran in overseas business circles, and has already received inquiries from distributors in 35 foreign countries.

Two promotions within the headquarters staff of *Frigidaire Division*, General Motors Corp., were announced recently by E. G. Biechler, general manager. Edgar A. Fisher, manager of the appliance engineering department, has been appointed general budget director of Frigidaire Division. F. H. McCormick, chief engineer, electric range engineering department, has been appointed manager of the appliance engineering department to succeed Mr. Fisher.

Crosley's new million dollar refrigerator cabinet factory at Richmond, Ind., has been completed in record time and is in operation. It occupies a 90-acre tract of land in Richmond outskirts; the factory itself is 1,200 ft. long and 200 ft. wide, with a maximum capacity of 1,200 *Shelvardor* cabinets a day. Crosley declares that "the entire plant is clean enough to serve as a fine dining room; the unsurpassed production facilities are matched by the finest working conditions in any factory in the world."



An anti-recession move among alert radio and appliance merchandisers is a new emphasis on time-buying service. Here, the Sunrise Utilities Co., Rockville Center, N. Y., uses budget-plan displays.

AN ALL-PURPOSE MIKE FOR P. A.?

Velocity microphone's good points are presented, including its freedom from wind trouble

The article on "Better Sound Jobs" in RADIO TODAY for April has created a good deal of discussion. Sam Ruttenberg of Amperite took exception to two statements there made, and so the editors of RADIO TODAY have invited his frank comments in the paragraphs below, and also invite other readers to express their views on the points brought out in the original article and in the discussion. Mr. Ruttenberg's communication follows. EDITOR.

Dear Dr. Caldwell, Editor *Radio Today*:

Exception is taken to two remarks on page 31 of last month's RADIO TODAY. The two statements in question are: 1. A universal microphone with one set of fixed characteristics does not adequately satisfy the many problems of sound collection. 2. Ribbon microphones may give trouble when used out-of-doors in a strong wind unless shielded by a windbreak.

The latter is a popular misconception, because even a sixty-mile gale will not affect the ribbon of a well designed velocity mike. And as shown later the velocity microphone with an acoustic compensator is a universal microphone for P.A. work—or at least 99 per cent universal.

The wind misconception is probably due to the fact that the ribbon of the velocity is made of a light aluminum alloy and only 2 ten-thousandths of an inch thick—so light that its natural period is 10 cycles per second—and the reason for its freedom from annoying and tiring peaks. (The natural period or peaks of even the smallest and lightest diaphragm of any commercial diaphragm type microphone is within the audio range of 1,000 to 7,000 cps.) And

strange as it might seem the lightness and thinness of the ribbon has proven to be the reason for the ruggedness of the velocity microphone. Should such a microphone be accidentally dropped or subjected to severe mechanical shocks the light flexible ribbon is not permanently distorted. It merely flutters a little and then returns to the normal position. A heavier mass subjected to shocks would tend to distort permanently. About the only way to break a ribbon is to open the microphone and put your finger or a screw-driver through it. (The ribbon of the velocity is cheaper to replace than the moving element of any other microphone).

Mikes out of doors

When we talk of "microphone trouble out of doors" we mean two things 1. The microphone might be permanently damaged by the wind, and 2. Wind causes an audible noise in the speakers.

In the early days of the velocity, and to some small extent today, some people thought singing too loudly into a velocity or blowing a trumpet too near it would break the ribbon. As a matter of fact you can blow a trumpet into a velocity mike all day long without damaging the ribbon in any way. A sixty-mile gale would not damage it. As stated above the only way to damage the ribbon is to put your finger through it, or a high voltage directly on the microphone.

Now that we understand that even a sixty-mile gale would not damage the ribbon—Would it affect it? Yes. A sixty-mile gale would move the ribbon—not as much as you probably think—

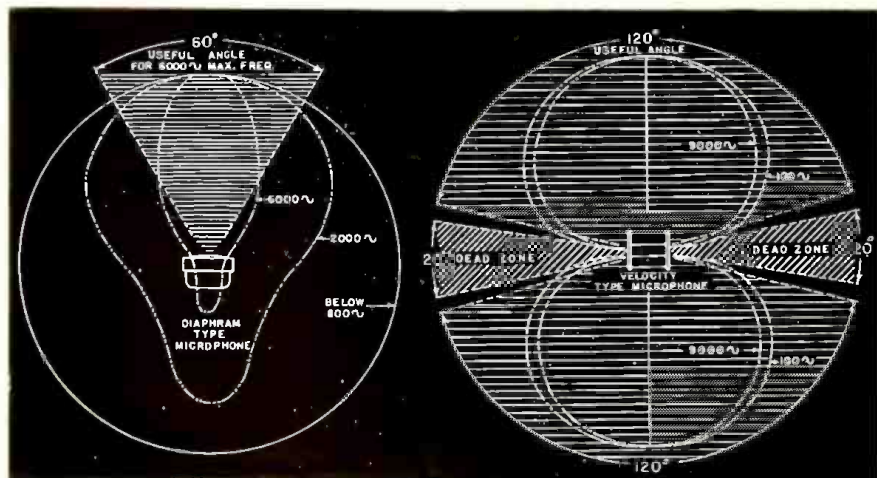
but only approximately .003 inch. The varying pressures of a gale will cause the ribbon to vibrate at the low frequencies of the air currents—this will be heard in the speakers. But such a gale pressing against a diaphragm instead of a ribbon would also cause it to vibrate resulting in a high pitched sound in the speakers. The high pitched sound is due to the fact that the diaphragm is pressed to a strained position by the wind, causing harmonic distortion and vibration at the peaked frequency of the diaphragm. The ribbon of the velocity is pressed in—but being so light and flexible—it is not strained and reproduces naturally in its new position. Incidentally, but most important for "public address," because the ribbon is never strained, the velocity is the only microphone free from harmonic distortion.

The only wind therefore that will be heard in the velocity is one strong enough to be audible. A mere breeze will not be heard. The protecting cloth of a well-designed velocity filters a strong wind, reducing the noise in the speakers to such a point as to make it negligible for all outdoor installations.

Wind screens—where do they come in? There are such things as wind screens and they consist of merely a perforated cylindrical screen backed with a very thin open-weave cloth—a very sheer silk stocking is about the weave. The space between the microphone and the perforated screen should be about 2 in. This is used in outdoor stadiums when an entire stage is to be picked up. The performer might be any distance up to 30 ft. or more from the microphone. The gain required for such a pickup is very high and naturally any extraneous sound near the microphones will be heard, including a stiff audible breeze. The wind screen breaks the stiff breeze but does not have any effect upon the sound production. Diaphragm microphones cannot be used in such installations because of feedback and also because the wind causes a high-pitched sound in the speakers even with wind screens. The high-pitched sound is due to the fact that the wind pressure, even after being filtered through a wind screen, tends to make the diaphragm vibrate at its natural or peaked frequency. In other words, for unusual outdoor installation where wind becomes a factor, the velocity is actually the best microphone available today.

Getting back to the first point—Is there a universal microphone? We will answer this by enumerating the vari-

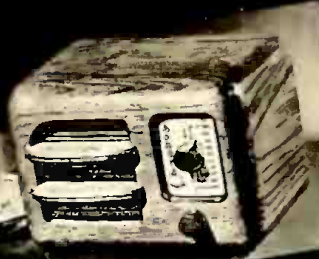
(Continued on page 34)



Field pick-up of a velocity microphone (right) compared with that of a diaphragm mike. Note velocity's useful angle of 120 deg. front and back. Zero response limited to only 20 deg.

Sonora The Complete "IN DEMAND" Radio Line for 1939

OFFERS PROFITABLE DISTRIBUTOR OPERATION



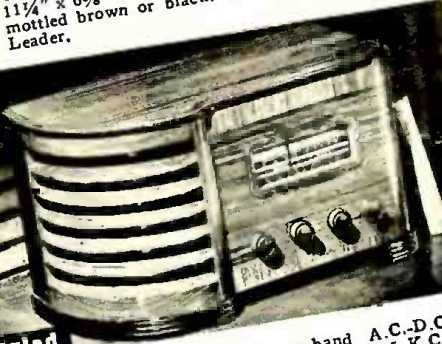
2 POPULAR-PRICED MODELS

THE "PETER PAN." A 5 tube A.C.-D.C. plastic molded receiver of beautiful design. Tunes 1720 to 535 K.C. Features: 2 Watts Output; Dynamic Speaker; Built-in Aerial; Beam Power Tube; Slide-Rule Vernier Dial. Size: 11 1/4" x 6 5/8" x 5 5/8". Available in ivory, mottled brown or black. A 1939 Radio Leader.

THE "TEENY-WEENY." A 4-tube gem-like radio that will fit in the palm of the hand. Tunes 1720 to 550 K.C. 2 Watts Output; Beam Power Tube; Dynamic Speaker; Illuminated Square Dial; Built-in Aerial. Size only 6 3/4" x 4 1/8" x 4 1/8". Weighs only 4 lbs. Available in walnut, ivory, pearl-grey, turquoise, red or black.

SONORA for 1939 presents the trade with a powerful, *complete* Radio Line—with the style, the snap, the timely appeal, the extra "something" that makes sales efforts click! SONORA'S prices are tuned to the times—lists are appealing and right—and net prices assure the most profitable distributor operation in years! SONORA for 1939 has features that pack appeal! There's plenty of sales ammunition in the 34 magnificent models, ranging all the way from a gem-like 4 tube "Teeny-Weeny" to a built-to-sell 12 tube console—peerless A.C. models with a winning emphasis on the table types—incomparable A.C.-D.C. radios—outstanding farm sets! And only SONORA can match this line and its smashing low prices with the background of a potent nationally-known trade-mark that has millions of dollars of advertising back of it and top-ranking acceptance. SONORA is "all there" for 1939!

Sonora Engineered



Sonora Styled

6 TUBE MODEL D-12. A two-band A.C.-D.C. Superhet of brilliant styling. Tunes 1720 to 535 K.C.; 2200 to 7000 K.C. Features: 2 Watts Output; Beam Power Tube; Tone Control; A.V.C.; 6" Slide-Rule Vernier Dial; 6" Dynamic-Speaker. Size: 16" x 7 1/4" x 9 3/4". The new type table cabinet has the exclusive SONORA louvre grille. Delivers tone "Clear as a Bell."



6 TUBE MODEL C-22. An amazing A.C. Radio Value typical of SONORA Leadership for 1939! One of the most brilliant plastic-molded designs ever created. Tunes 1720 to 535 K.C. Features: exclusive SONORA Dyna-Boost Circuit; 2 Watts Output; Full Dynamic Speaker; Slide-Rule Vernier Dial; Actual 7 tube Performance. Available in ivory, mottled walnut, back, ivory face with black body. Mottled walnut model lists at only.....

\$22⁹⁵



Sonora Built

7 TUBE MODEL FA-55. A Three-Band A.C. Superhet with outstanding features in a thrilling new 1939 cabinet. Tunes 535 to 18100 K.C. continuously. Has SONORA Automatic Push-Button Tuning; 6" Slide-Rule Vernier Dial; Tone Control; A.V.C.; Wave Trap; 5 Watts Output; 6" Dynamic Speaker; exclusive Dyna-Boost Circuit, etc. Size: 18" x 10" x 8".

Sonora

Clear as a Bell

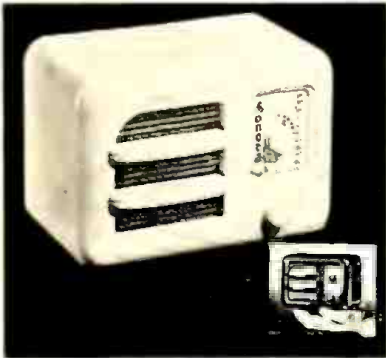
RADIO & TELEVISION CORP.
MERCHANDISE MART • CHICAGO

SONORA is open for qualified distributors for territories not yet adequately represented. Write, phone or wire for complete details.

SINCE 1914 — THE LEADING NAME IN THE MUSIC REPRODUCING WORLD

NEW THINGS

Latest news of radio products from the manufacturers



Sonora radio sets

★ First of the 1939 sets are a 7-tube AC table superhet, a 5 tube AC-DC plastic molded table set, and a 4-tube AC-DC "Teeny-Weeny" model (illustrated). The 4-tube set can be held in the palm of the hand. Tunes 550-1720 KC. Dynamic speaker unit. Weighs only 4 pounds. Choice of walnut, ivory, gray, green, and red and black cabinets. Sonora Radio & Television Corp., Merchandise Mart., Chicago, Ill.—RADIO TODAY.

Tobe "pluggin" condensers

★ New type condenser plugs into standard four prong UX socket and allows experimenters and builders of original equipment to design and incorporate in their chassis a construction that requires no servicing of the condenser installation for the life of the equipment. Condenser has safety factor when operated at 475 volts continuously. It will stand peak surges of 600 volts and higher. Tobe-Deutschmann Corp., Canton, Mass.—RADIO TODAY.



Push-button remote control

★ Remote control for use with any radio set. Connects to antenna and ground posts of receiver. Operates on AC-DC power—has its own power unit. Uses iron-core type tuning. Also provides remote volume control. Choice of 7 stations. Model 9-1000—list \$26.50. Meissner Mfg. Co., Mt. Carmel, Ill.—RADIO TODAY.

Philco noise eliminator

★ Noise filter for cutting down radio noise produced by electric razors and other small appliances. Unit has 3 fixed condensers. Inserted between appliance plug and wall outlet. Requires ground connection. Part No. 45-2600. Philco Radio & Television Corp., Tioga St., Philadelphia, Pa.—RADIO TODAY.



U-H-F converter

★ Ultra-high-frequency converter for use on any good broadcast receiver. Tubes 25 to 63 megacycles. Switch connects antenna to BC set or converter. Operates on AC-DC with internal power supply. Bakelite cabinet 6 inches wide and 4 7/8 high. Model 207—list \$12. Detrola Corp., 1501 Beard Ave., Detroit, Mich.—RADIO TODAY.

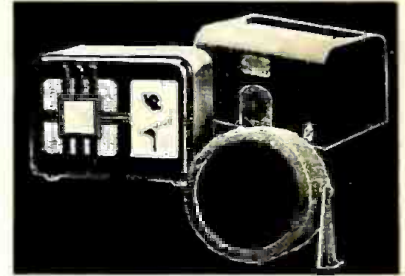


Stancor universal transformers

★ Line of 14 universal type power transformers for replacement use. Services majority of existing sets. Brackets permit horizontal or vertical mounting. May also be used in half-shell type of mounting. Black finish—conservatively rated. Standard Transformer Corp., 1500 N. Halsted St., Chicago, Ill.—RADIO TODAY.

Radio City tube checker

★ Low-cost tube tester for use with all tubes, including ballast. Short and leakage tests between all elements. Individual tests of each section of rectifiers and multi-purpose tubes. Uses emission principle. Three-inch square meter. Counter type model—net \$16.95. Radio City Products Co., 88 Park Place, New York, N. Y.—RADIO TODAY.



Paging and interphone system

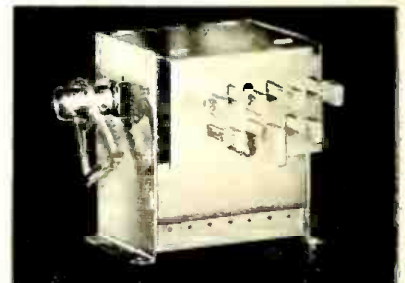
★ 7-watt paging and inter-office intercommunicating system. For use in factories and other places where the sound must overcome a high noise level. High-sensitivity permits talk-back over great distances. Amplifier separate from desk unit. Model 305-7. Webster Co., 5622 Bloomingdale Ave., Chicago, Ill.—RADIO TODAY.

Mallory mica condensers

★ Compact type mica condensers using best grade of India mica. Treated to resist moisture. Low-resistance connection between lead and foil. Molded bakelite case—soft tinned leads. P. R. Mallory & Co., Inc., Indianapolis, Ind.—RADIO TODAY.

Bantam type tubes

★ Line of extremely small radio tubes for use in compact receivers. Short lead construction. Available in types corresponding to the AC-DC octal line of tubes. Use octal bases. Hytron Bantams are 2 1/4 x 3 1/4 inches overall height. Hytron Corp., Salem, Mass.—RADIO TODAY.



Utah push button tuning unit

★ Motor-driven automatic push-button tuning unit. Extremely compact—size only 3 1/2 x 2 3/4 x 2 inches. Turns 180° in one second. Available in 4, 6, 8 button units. Stations set up from front of set. Free from drift. Utah Radio Products Corp., 820 Orleans St., Chicago, Ill.—RADIO TODAY.

40 YEARS YOUNG!



Wait until you see how
RCA Victor cuts you in
on its 40th Anniversary
Celebration...It'll be a
Profit Surprise!



RCA Victor

RCA MANUFACTURING CO., INC. • CAMDEN, NEW JERSEY
A SERVICE OF THE RADIO CORPORATION OF AMERICA

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

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

MORE NEW THINGS



Pee Wee transmitter

★ Crystal-controlled transmitter kit for all-band operation. Input of 25 watts. May be used as an exciter for a hi-power transmitter. Compact unit complete on single chassis with power supply. Complete with crystal, meter, tubes, coil, form and wire—net \$19.95. General Transformer Corp., 1250 W. Van Buren St., Chicago, Ill.—RADIO TODAY.

Aircraft microphone

★ Single-button carbon type microphone designed especially for aircraft use. Hand type unit which operates in any position. Press-button switch. Shielded cable. Weight of entire unit is 8 ounces. Universal Microphone Co., Inglewood, Calif.—RADIO TODAY.

Hi-voltage keying relay

★ Relay designed for keying in high-voltage circuits. 5000-volt rating from contacts to ground. Operates on 6-8 volt battery. Silver-to-silver double-break contacts. Handles keying speeds up to 50 words per minute. Model 507-516—list \$7.50. Ward Leonard Electric Co., Mt. Vernon, N. Y.—RADIO TODAY.



Plug-in air condensers

★ Fixed type air condensers with plug-in mountings. Used to increase minimum capacity in circuits using a small variable condenser. Available in 80 and 45 mmfd. sizes with .125 and .25 inch air-gaps respectively. Alsimag insulation. List \$5.50. Allen D. Cardwell Mfg. Corp., 81 Prospect St., Brooklyn, N. Y.—RADIO TODAY.

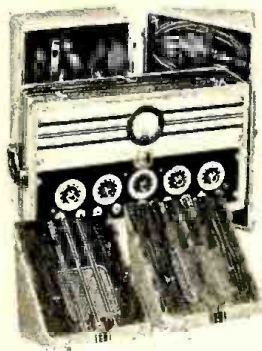
Fada Coloradios

★ AC-DC type table radios in plastic cabinets. Uses 6 tubes including ballast unit. Tunes 535-1720 KC in one band. Beam power tube gives 2-watts output. Over-load control. Built-in antenna. Series 20 in walnut, ivory and ivory with gold trim. Fada Radio & Electric Co., 30-20 Thomson Ave., Long Island City, L. I., N. Y.—RADIO TODAY.



Automatic voltage stabilizer

★ Automatic voltage regulator for holding an AC voltage constant at 115 plus or minus 1 per cent with line variations from 95 to 130 volts. Magnetic device without moving parts or adjustments. Available in capacities up to several thousand watts. Raytheon Mfg. Co., 144 Willow St., Waltham, Mass.—RADIO TODAY.



30-watt sound system

★ Portable type sound system with 30-watt output. Dual 12-inch speakers with infinite type baffles. 4 input channels for use with all mikes. Cathode ray output indicator. Master volume control—individual tone controls. Lafayette model 825-T. Wholesale Radio Service Co., 100 Sixth Ave., New York, N. Y.—RADIO TODAY.

Coil cores

★ High-frequency iron cores for use with coils. Available in shell and cross-type cores. Trimming pins for variable inductance coils. Provides circuit Q of 360 at 1000 KC. Morrill and Morrill, 30 Church St., New York, N. Y.—RADIO TODAY.



45-watt amplifier

★ Triode type amplifier using 4 2A3 class AB output amplifiers for a 45-watt output with less than 5 per cent distortion. Frequency response from 40 to 10,000 cycles with ½ db. variation. Output meter gives power in watts. Phono and mike inputs. Thomas B. Gibbs & Co., 900 W. Lake St., Chicago, Ill.—RADIO TODAY.

Johnson generator

★ 32-volt 800-watt generator for lighting and power plants. Single-cylinder air-cooled gas engine develops 2 h.p. Fly-ball type governor. Complete with control panel and automatic cutout. Use of 200 ampere-hour 32-volt battery suggested. Generator model EG-800—list \$198 less batteries. Johnson Motors, Waukegan, Ill.—RADIO TODAY.

Radio furniture

★ Living suite with built-in radio. Table type radio fits in compartment in the arm of the divan. 3-piece suite costs \$89.50. Diamond Parlor Furniture Co., 76 Traverse St., Boston, Mass.—RADIO TODAY.



Metal-clad insulated resistors

★ Wire-wound resistors on special heat-resistant core imbedded in moisture-proof bakelite which in turn is encased in a metal jacket. Excellent heat dissipation due to positive contact between jacket, bakelite, and resistance wire. Pig-tail connections. Available from 10 to 100,000 ohms at 3 watts rating. Type MPT. Clarostat Mfg. Co., 285 N. Sixth St., Brooklyn, N. Y.—RADIO TODAY.



The Best Known Name and the Oldest Trademark in the Business

CAPITALIZE on the definite sales advantages of the RCA Victor name and famous trademark.

Authorized RCA Victor Radio Tube franchises are available only through RCA Victor Instrument Distributors.

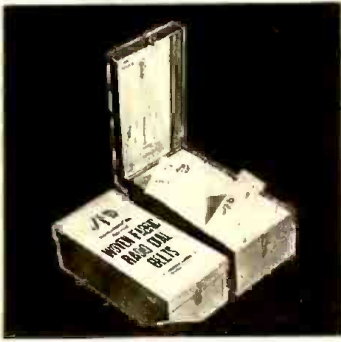
RCA presents the "Magic Key" every Sunday, 2 to 3 P. M., E. D. S. T., on the NBC Blue Network.



RCA Victor RADIO TUBES

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

MORE NEW THINGS



Kit of radio dial belts

★ Assortment of 100 belts in enameled steel kit-box, with measuring chart. Belts are woven fabric, same as originally used on all sets having this type of drive. Proof against moisture, heat and stretching. List, \$25. J.F.D. Manufacturing Co., 4111 Fort Hamilton Parkway, Brooklyn, N. Y.—RADIO TODAY.

Safety seals

★ Pig-tail type fuses for use in the B— circuit of radio sets. Installed in a few minutes—protect power transformer and rectifier tube from shorts. Designed to prevent replacement of parts at the expense of the serviceman. Available in all current ratings. Price \$1.25 per box of 10 assorted sizes. Acro Tool & Die Works, 1401 Wilson Ave., Chicago, Ill.—RADIO TODAY.

Metal finish for rubber

★ Bronze lacquer for rubber has been developed by Maas & Waldstein Co., Newark, N. J. Rubber lacquer makes it possible to cover semi-stiff rubber with a strongly adherent, durable finish resembling brass, copper, bronze, aluminum, steel or other metals.—RADIO TODAY.



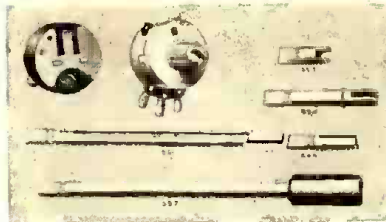
Record player cabinet

★ Mahogany and walnut cabinets to fit the RCA-Victor 93B record player unit. Cabinet has cover which can be closed while playing

10 and 12-inch records. Cups for new and used needles. Model 93 cabinet list \$7. Table to match with shelf large enough to hold record albums. List \$4.75. Schloss Bros., 801 E. 135th st., New York, N. Y.—RADIO TODAY.

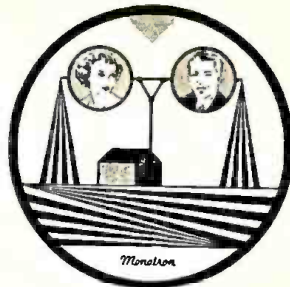
Film type sound recorder

★ Recording device to be used with ordinary 16 mm. motion picture projector as a power source. Output of radio or amplifier drives attachment which scratches sound track on film. Up to 28 tracks on 1 film. Instantaneous recording and play back. Uses old and exposed films as records. Type A—list \$98.50. Type AA listing at \$150 automatically changes from one track to another. Miles Reproducer Co., 812 Broadway, New York, N. Y.—RADIO TODAY.



Yaxley midget controls

★ Universal type midget volume controls for all circuits. Available in plain, single and double tap, and dual type units. 5,000 ohms to 3 megs in all necessary tapers. 17 plug-in shafts give 56 controls a range of over 1,000 exact duplicate replacements. P. R. Mallory & Co., 3029 E. Washington St., Indianapolis, Ind.—RADIO TODAY.



Television tube

★ Tube designed for generating television image for experiments and servicing. Does not require a television transmitter. Tube generates image portrayed in illustration above. Image designed so as to be a check on the quality of the received image. Image fixed for any one tube, but tubes may be made with any desired image. Tube is designated as the Monotron. National Union Radio Corp., 570 Lexington Ave., New York, N. Y.—RADIO TODAY.

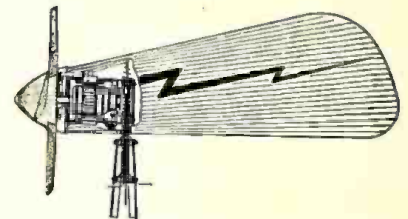


Replacement type vibrators

★ Vibrator units for farm and auto radios. Have 3/16 inch tungsten contacts which assure increased life and reliable service. Complete listing of types in new replacement guide which is available on request. American Television & Radio Corp., 128 E. 10th St., St. Paul, Minn.—RADIO TODAY.

Monarch signal generator

★ All-wave signal generator with output calibrated in microvolts (1/2 to 100,000). Tunes 100 to 27,000 KC. Vernier dial and calibration gives maximum accuracy of calibration. Each of 5 bands calibrated at 12 points—accuracy better than 1 per cent over long periods of time. 400 cycle audio modulator available for audio tests. Ratio of maximum to minimum output over entire range about 2:1. Electron-coupled oscillator circuit. Model 12-N—\$47. Monarch Mfg. Co., 3341 Belmont Ave., Chicago, Ill.—RADIO TODAY.



Stream-liner windcharger

★ 32-volt 1,000-watt wind driven generator for charging farm battery plants. Direct drive to generator which is housed in hood. Pull governor protects battery from overcharging. Positive, self-aligning stop brake. Hood and vane in one piece and streamlined. Model 1000—list \$170. Wind-Impeller Electric Works, Ellsworth, Iowa—RADIO TODAY.

Upco phono pick-up

★ Magnetic type phonograph pick-up for combinations and P.A. systems. Ball-bearing mounting—2 oz. needle pressure. Free from rattles and distortion. Output of 1 volt. Plays up to 12-inch records at 33 and 78 r.p.m. Black crystalline finish. Model M-1 without volume control—list \$7.25. M-2 with control \$8. Upco Engineering Labs., Inc., 254 Canal St., New York, N. Y.—RADIO TODAY.

Follow the Crowd...

WESTON



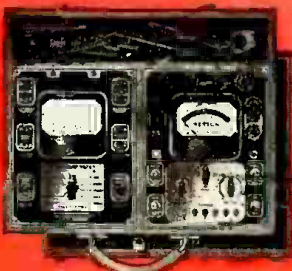
WESTON Model 776
Oscillator



WESTON Model 773
Counter Tube Checker
(also available in portable type)



WESTON Model 772
Super Sensitive Analyzer



WESTON Model 775
Servisot

WESTON
Radio
Instruments

AT CHICAGO

Don't fail to visit the WESTON Booth at the Radio Trade Show, Stevens Hotel, Chicago, June 8th to 11th. (Booth No. 109-111 Marconi Boulevard.)

SEE the very latest in WESTON test equipment . . . take this opportunity to examine the equipment inside and out and *see for yourself* why WESTON equipment leads in accuracy, dependability and length of service.

GET full particulars about the 50th Anniversary announcement WESTON is making at the Show in celebrating a half-century of instrument leadership . . . an announcement which presents an unusual opportunity to every serviceman.

If you are unable to attend the Show, however, full particulars on the "50th Anniversary Announcement," and on all WESTON test equipment, will be mailed to you. Just return the coupon today.

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Weston Electrical Instrument Corporation
597 Frelinghuysen Ave., Newark, N. J.
Send the "50th Anniversary Announcement," and literature
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Name _____
Address _____
City _____ State _____

MORE NEW THINGS



Light-weight transformers

★ Series of audio transformers weighing approximately 1 ounce. $\frac{7}{8}$ -inch diameter by 1 $\frac{3}{16}$ overall. Available for inputs, interstage, output, mixing uses. Suitable for hearing aids, aircraft sets, and portable equipment. United Transformer Corp., 72 Spring St., New York, N. Y.—RADIO TODAY.

Tops-all auto aerials

★ Line of door-hinge, bumper, and cowl type auto antennas. Lengths up to 100 inches available. Guaranteed rustproof. Prices range from \$1.50 up. Complete line of connectors, shielded wire, etc., available. Burton Rogers Co., 857 Boylston St., Boston, Mass.—RADIO TODAY.

5-inch cathode ray oscilloscope

★ Cathode ray 'scope with single sweep for facilitating the study of transients. Grid modulation permits the use of the unit for television demonstration. In addition a beam switch has been added. Unit has all the other features of the previous 5-inch model 168. Type 171 is the new designation. Allen B. DuMont Labs., Inc., 2 Main Ave., Passaic, N. J.—RADIO TODAY.



Modulation indicator

★ Gas-filled percentage modulation indicator for amateur transmitters. Fluoresces green when modulation is less than 100. As percentage raises, green column rises in tube. Tube flashes red when modulation exceeds 100 per cent. Connects to tank coil through a small variable condenser. Modulate lists at \$4. Acoustic Consultants, Inc., RKO Bldg., Rockefeller Plaza, New York, N. Y.—RADIO TODAY.

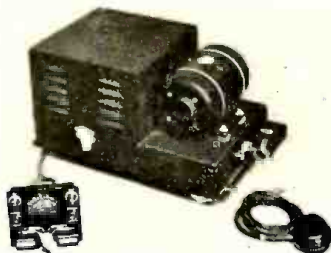
Gas engine charger

★ Motor type battery chargers for 6, 12, 32 volt power systems. Push-button type starter eliminates cranking. Generator shaft on ball bearings. Charging rate adjusted by varying speed of motor. V-pulley to drive external machines. Operating cost about 1 cent an hour 200-250 watts output. Midwest Mfg. Co., S. 13th and Kentucky Aves., Sheboygan, Wis.—RADIO TODAY.



Automatic soldering iron stand

★ Transformer-operated automatic soldering iron stand. Cuts down power loss during idle time. Prevents oxidation of tip. Pilot light indicator. Switch operates automatically when iron is placed on stand. For irons up to 150 watts. List \$11.50. Cole Radio Works, 86 Westville Ave., Caldwell, N. J.—RADIO TODAY.



Aircraft transmitter

★ Six-frequency transmitter for aircraft. Weighs only 27 pounds complete with dynamotor. For phone or 1000-cycle modulated telegraph use. 100 per cent modulated. Output of 20 to 30 watts. Frequencies selected from a single switch. Lear Developments, Inc., Building 31, Roosevelt Field, Mineola, L. I., N. Y.—RADIO TODAY.

Animated display

★ Each spell-o-tex display comprises glass panel, holder, reflector and electrical unit with attachment cord, ready for use. Special vacuum letters and figures are merely pressed in place on the glass panel. Letters are available in one inch and 1 $\frac{1}{2}$ " sizes, in different colors, and come in scientifically selected fonts mounted in permanent file books. Besbee Products Corp., Trenton, N. J.—RADIO TODAY.

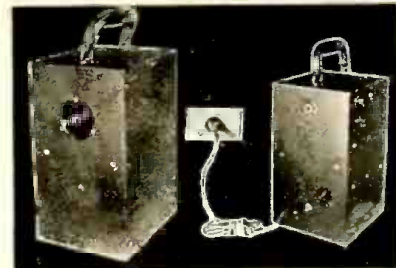


Photo-cell electric alarm

★ Portable electric eye burglar alarm. Installed easily. Complete in 2 units. Cannot be shut off by pulling out electric cord. Light unit operates up to 50 feet away from eye unit—invisible light beam. Teletouch alarm—list \$74.50. Teletouch Industries, Inc., 37 W. 54th St., New York, N. Y.—RADIO TODAY.

Aerovox auto radio noise condenser

★ Condenser unit designed for mounting on car generator for suppressing commutator noise. Grounded bottom bracket and top terminal lug. $\frac{1}{2}$ mike capacity with 100-volt rating. Type 1122—list 40 cents. Aerovox Corp., 70 Washington St., Brooklyn, N. Y.—RADIO TODAY.

60-watt amplifier

★ Five-channel input amplifier having 60 watts output. Uses 4 6L6G output tubes. Volume range compression and expansion. Bass and treble compensators. Inverse feed back. Gain of 140 db. Output impedances 50-500 ohms. Model 460. Bell Sound Systems, Inc., Columbus, Ohio—RADIO TODAY.

Universal sound system

★ AC and 6-volt sound system with phonograph turntable. Power output of 25 watts. Beam power output tubes. Acorn type crystal mike. Dual 12-inch P.M. speakers. Two mike and two phono inputs. Dual tone controls. Allied Radio Corp., 833 W. Jackson Blvd., Chicago, Ill.—RADIO TODAY.



U-H-F transmitting condensers

★ Split-stator type condensers for ultra-high-frequency use. Rotor connection placed at center of rotor. Closed circuit loops in frame avoided by insulating tie rods from frame. In all popular sizes used in transmitter operating above 10,000 KC. Bud Radio, Inc., 5205 Cedar Ave., Cleveland, Ohio—RADIO TODAY.

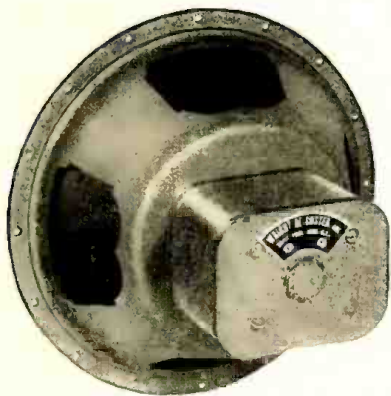


Centralized sound system

★ Low-priced sound system for schools and institutions. All-wave radio tuner, master and emergency announcement switch. Visual volume level indicator. Class A amplifier—tone compensator. Provision for up to 32 classroom switches. Talk-back feature from all rooms. Model S-82 comes with PM speakers for 8 classrooms. Mounts in metal cabinet with door and lock. David Bogen Co., 663 Broadway, New York, N. Y.—RADIO TODAY.

Telescopic view finder

★ Telescopic view finder for use on the Univex Cine "8" camera. Attaches to the camera between the lens and lens mount. Gives a brilliant, clear view of the subject being photographed. Universal Camera Corp., 32 W. 23rd St., New York, N. Y.—RADIO TODAY.



Nokoil P.M. speaker

★ Permanent magnet dynamic speaker unit with exceptionally high efficiency. 12-inch size—capable of handling 20 watts continuously. Low-freq type covers 50-3,500 cycles, standard type 60-5,000, wide range unit 60-7,500 cycles. Model N12HL. Wright-DeCoster, Inc., St. Paul, Minn.—RADIO TODAY.

Electronometer tube tester

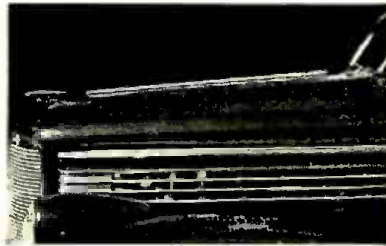
★ Emission type radio tube checker. Proper loads to all types of tubes. Shows up leakage and tests. Noise-test pin jacks for headphones. Line voltage check

and adjustment. Free-point tube analysis system. Fused plug. Large square meter with English reading scale. Portable, counter, panel type mountings. Model 510—net \$29.95. Precision Apparatus Corp., 821 E. New York Ave., Brooklyn, N. Y.—RADIO TODAY.



Executone interphone

★ 10-station fully interselective interphone system which permits up to five simultaneous conversations. Talk-listen switch optional. Uses headphone for confidential conversations. Automatic busy signal indicator. Can call station whether or not power is on at remote point. Model 1000—list \$45 per station. Executone, Inc., 415 Lexington Ave., New York, N. Y.—RADIO TODAY.



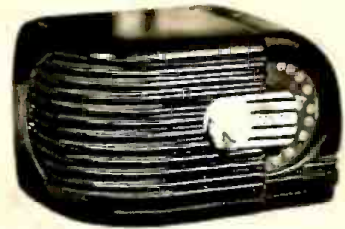
Hi-fi hood aerial

★ Auto radio antenna designed for mounting on top of hood. Not affected by rain, snow, sleet, etc. Wheel and motor static eliminated. No exposed wires or connections. Chrome plated. Four sizes to fit any car. American Injector Co., Detroit, Mich.—RADIO TODAY.



Lug and terminal assortment

★ Package of 400 assorted lugs and terminals for radio service and experimental work. Hot tinned for easy soldering. Contains all types of stampings used in radio work. Priced at \$1 postpaid. Zierick Mfg. Corp., 385 Gerard Ave., New York, N. Y.—RADIO TODAY.



Zenith table set

★ Six-tube AC-DC table type receiver in moulded cabinet. Tunes broadcast band. Tuning and volume control arranged on concentric shafts with dual knobs. Dynamic speaker. Model 6D311 illustrated. Other models available with push button tuning in table, console and chairside cabinets. Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.—RADIO TODAY.



Clarion sound system

★ 20-28 watt universal sound system for 6-volt and 110 AC operation. Available with or without phono turntable and pick-up. Uses two 12-inch speakers with parabolic reflectors supplied with 50 feet of cable. Hand mike. Inverse feedback, mixing and fading facilities. Model C-159—list \$168 less phono attachment. Transformer Corp. of America, 69 Wooster St., New York, N. Y.—RADIO TODAY.



Operadio sound system

★ 14-watt sound system with remote volume control. Illuminated controls. Beam power output stage. 3-channel input. Two 12-inch heavy duty P.M. speakers. Lightweight and compact. Attractive gray carrying cases. Model 414. Operadio Mfg. Co., St. Charles, Ill.—RADIO TODAY.

Flexo-fiddler tool

★ Insulated tool with flexible shaft for starting hard screws, picking up objects in inaccessible places, etc. Also will grip tube prongs, socket contacts, etc., and provide a self-holding contact. Insulated lead taken off at top of prod. List \$1. Atlas Sound Corp., 1451 39th St., Brooklyn, N. Y.—RADIO TODAY.

BASIC PRINCIPLES APPLIED TO DYNAMIC TESTING

How harmonic distortion is caused by radio tubes

By VINTON K. ULRICH,
(Service Editor, RADIO TODAY)

In anything as complicated as radio testing and servicing, it is essential that the repair man always know what he is doing and why. Working in the dark or just following a set of established rules without knowing what is behind them usually results in a loss of time and money.

In dynamic testing a test procedure will be developed for the serviceman, but it is also our intention to show the radioman why such tests will be helpful and why certain symptoms are the result of certain conditions in the radio set.

Types of distortion

Aside from cases where the radio set is dead, many of the radioman's problems have to do with correction of distortion introduced in the radio set. This distortion takes two distinct forms—one is harmonic distortion which has the characteristic of introducing notes or sounds (frequencies) not present in the original sound. The second form of distortion is known technically as amplitude or frequency discrimination. The

serviceman knows it better as audio frequency response of the radio set. This form of distortion is the opposite of harmonic since it eliminates or attenuates some of the frequencies which were present in the original sound.

Since the human ear has a tendency to supply the frequencies even though they are not present, frequency discrimination is not very serious. But on the other hand harmonic distortion is extremely annoying to the human ear when it exceeds a certain value. (There is a third form of distortion known as phase distortion, but in radio reception it is of little consequence—although in television it becomes very important.) Other radio set difficulties such as noise (internal) and intermittents will be dealt with in the series of articles at a later date although they will be omitted from this discussion.

Harmonic distortion

Harmonic distortion in a radio set can usually be traced to the vacuum tube and its associated circuits. When the circuits are not properly handled or get out of adjustment, the radio tube is a prolific source of harmonic

distortion because it is a non-linear device under such conditions. Resistors, condensers, and air-core coils themselves do not introduce distortion for they are linear circuit elements. Iron-core coils and transformers may introduce harmonic distortion because of the non-linear characteristics of the magnetic materials.

A linear device or circuit element may be defined as one which reacts in direct proportion to the applied current or voltage (for any single frequency). In a resistor, the voltage drop is always proportional to the current. Double the voltage and twice as much current flows through it. If we were to plot (Fig. 1) the voltage-current characteristic of a resistor, a straight line (linear characteristic) would result.

On the other hand, radio tubes have curved characteristics if a large range of voltages are considered and are therefore non-linear as shown in Fig. 2. When used in a radio set, it is essential that the vacuum tube be operated on the linear or straight-line portion of its characteristic—it is in this way that distortion-free amplification and detection is achieved. And when a radio tube starts distorting, it means that either the tube is overloaded or that it is operating on a curved portion of its characteristic.

Before going into the actual dynamic radio servicing procedure, the operation of the vacuum tube from a theoretical angle will be discussed, since it will aid understanding dynamic testing.

Linear characteristics

Vacuum tubes used for amplification and detection are operated on linear portions of their characteristics. This operation is determined by the applied voltages and load resistance (or impedance). In Fig. 3 a set of tube curves is given for various values of load resistances. Note that for a given plate voltage, the optimum grid bias value to get operation on the linear portion is dependent upon the plate load resistance. The linear portions of the curve are drawn in heavy lines while the non-linear are shown in dotted lines.

When a tube is employed as an amplifier, the grid is normally fixed at a certain negative DC voltage. The AC signal to be amplified is superimposed on the negative bias value—thus the grid swings about the bias point in accordance with the AC voltage variations. This is shown in Fig. 4.

Usually the negative and positive peaks of the AC signal are about

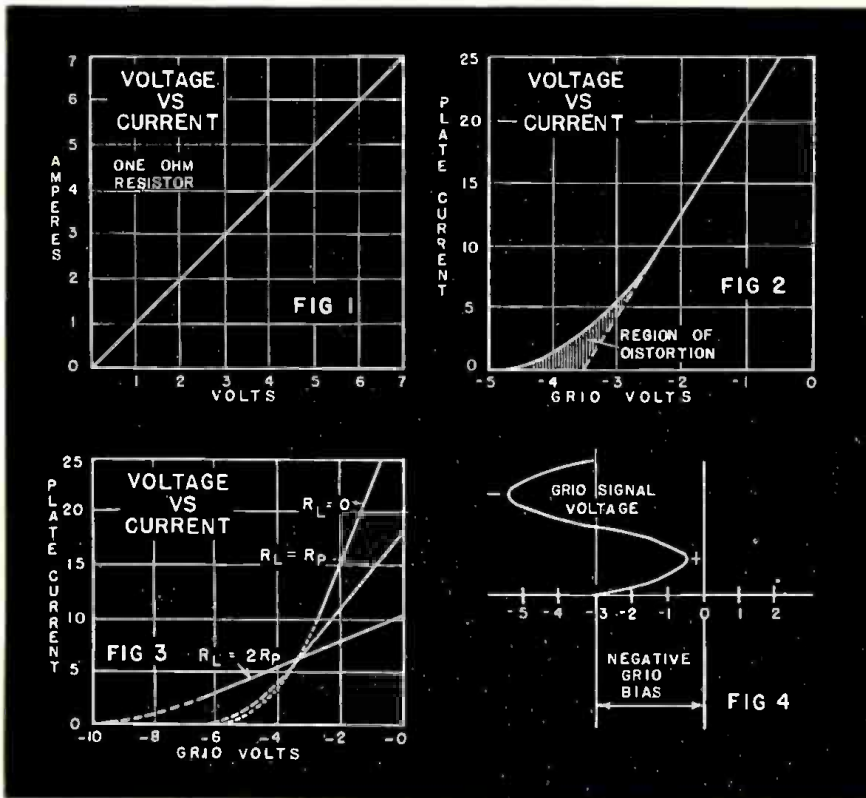


Fig. 1 shows linear or straight-line characteristic. Fig. 2 is a curved or non-linear characteristic. Fig. 3 illustrates how increasing the load resistance increases the linear portion of curve. Fig. 4 is the application of a signal voltage to the grid of a negatively-biased tube—instantaneous voltage is sum of the signal and bias.

equal in magnitude. This means that if the maximum possible voltage handling capacity is to be obtained from an amplifier, it should be biased in the middle of its linear characteristic (neglecting that portion which lies in the region of positive grid voltages). This should be quite obvious, for if a bias point other than the center of the linear portion is used, the maximum voltage capability of the tube is limited by the shorter section of the linear part of the curve. If the tube operates on the curved section distortion results.

Actually the linear portion of a tube characteristic is less than shown in the diagrams, but for all practical purposes the tube is linear over the range indicated. Generally speaking, when an amplifier tube is operated at the center of its linear characteristic, the distortion introduced by the tube becomes less as the signal voltage becomes less. This means that if the tube is biased for minimum distortion with a large signal, the bias is okay for small signals. This principle will be widely employed in the dynamic testing procedure.

The amplification characteristic of a tube is shown in Fig. 5 for a tube operated at various biases and signal swings. In 5-a the tube is biased in the mid-point of the linear characteristic and the signal swing is equal to the bias voltage. 5-b shows the

signal applied when the grid bias is decreased one-third and 5-c shows the case where the bias is increased by one-third. In both b and c, distortion is the result. Fig. 5-d, e, and f are for the same biases but the grid swing is reduced to one-half of its original value. Note that there is no distortion of the smaller grid signal.

Overloading

In addition to harmonic distortion introduced by the tube, often the tube when operating with too high a voltage swing causes distortion to occur in other stages of the set. If the grid swing is great enough to cause the tube to draw grid current, distortion may occur in the preceding amplifier stage because of the loading effect of grid current during the peaks when the grid is positive. Also if the tube following the stage is driven too hard, it may overload the driving stage and cause it to distort. These cases will be taken up in later articles to appear in RADIO TODAY.

So far no mention has been made of the power output capability of an amplifier. The discussion has been in terms of both voltage and power outputs. When it is desirable to have the maximum power output, the voltage output is not considered. In any electrical device maximum power output is obtained when the internal (plate resistance) is equal to the ex-

ternal load (load resistance). In radio tubes this condition usually causes considerable distortion. In fact with triodes, the maximum undistorted power output is obtained when the load is equal to twice the plate resistance of the tube—this is contrary to the erroneous assumption of many servicemen that the resistances should be equal.

Referring back to Fig. 3, it can be seen that as the load resistance is increased, the linear portion of the tube characteristic becomes greater. Therefore, when the load resistance is twice the plate resistance, a greater voltage swing is possible before distortion occurs. This larger voltage gives a greater undistorted power output even though the tube and load resistances are not equal.

MASTER AERIAL INSTALLATIONS

Servicemen everywhere should investigate the possibility of selling and installing master aerial systems in both private residences and apartment buildings. The saturation in this field is negligible—only a small fraction of apartment houses have suitable antenna systems and none of the private residences use master systems.

In this day of two or even more radios per home, the antenna situation becomes rather involved. No home owner wants a number of aerials clut-

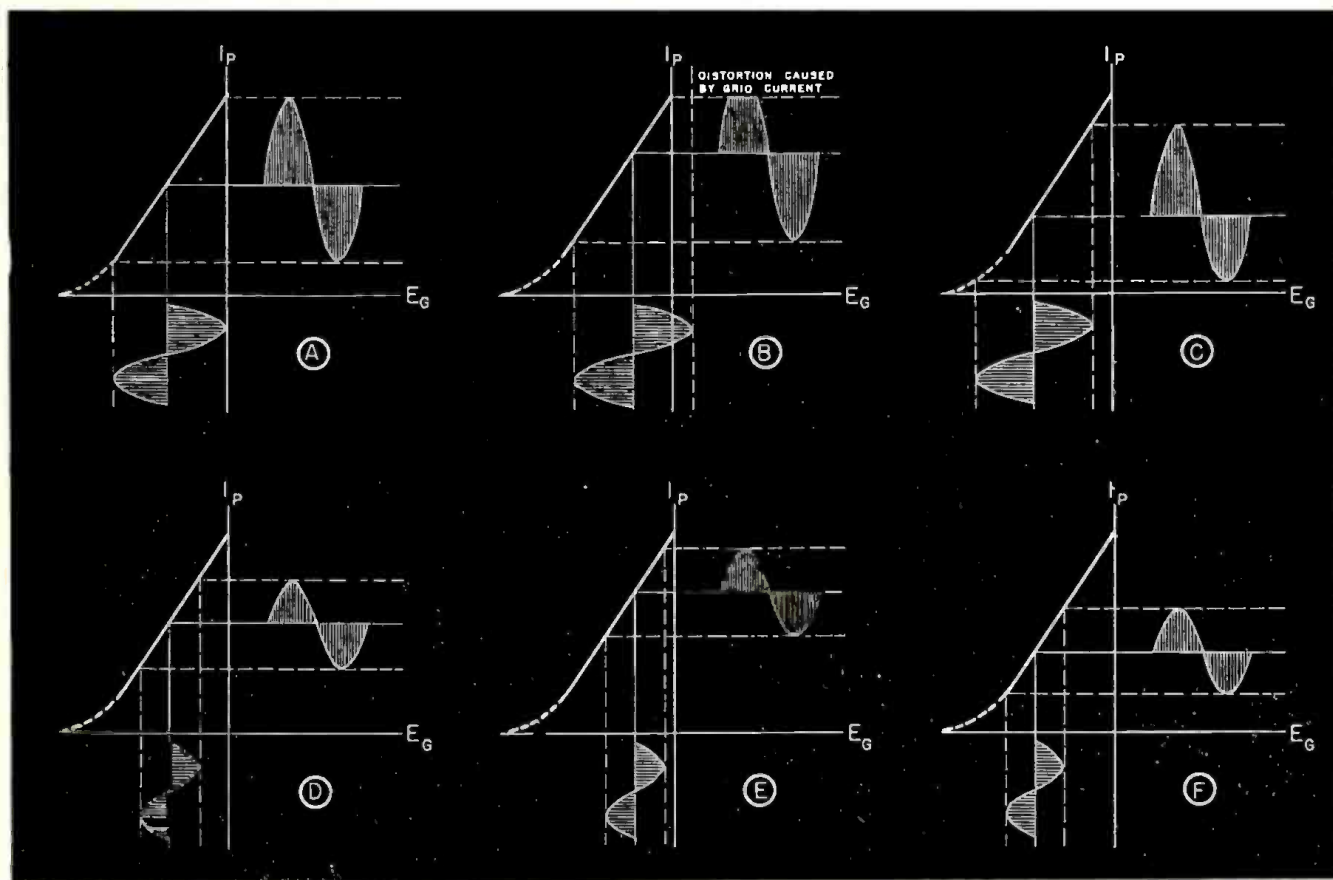


Fig. 5—"A" represents the operation of a tube over the entire linear portion of the characteristic. "B" and "C" illustrate distortion resulting from operation on non-linear part of curve. "D," "E," "F," "G" show that with small signals distortion is usually absent.

SERVICE NOTES

tering up his residence. Yet unless each radio has a satisfactory antenna, it is impossible for the sets to perform at peak efficiency. A master aerial system is the logical answer to such a situation.

Master aerials for private homes

And even if the home has but one radio, a master aerial system with outlets in each room will provide maximum service from the set since it can be moved from room to room and always have proper aerial connections. And if the radio dealer has sold a master system, he has an excellent argument to sell additional sets for the customer already has solved the antenna problem and is ready for expansion.

To tell the radioman of the advantages of a master aerial system in apartment buildings would be mere repetition of already-known facts. Unfortunately, but a few radiomen know how to estimate the cost of installing the systems although they may have sufficient knowledge to do a good installation job. And to make a profit, the serviceman must know what the costs will be—particularly from the labor viewpoint.

The engineering department of Amy, Aceves and King has supplied *Radio Today* with the following data concerning the installation of their Multicoupler master antenna system. And for systems employing similar components, the time requirements will be about the same.

In order to provide suitable pick-up and conform with the law, masts 10 to 15 feet high should be used. Erection of one 10-foot, 2-inch outside diameter galvanized-iron pipe standard on a flat roof, that is fastened to a

parapet wall will take about 2 hours' time. The erection of a 15-foot pipe on an irregular roof or penthouse wall will consume about 3 hours.

Stringing the aerial wire and inserting the antenna transformer will normally take about an hour. Dropping the download on the outside of the building, installing a 3-inch stand-off insulator should be figured at about 20 minutes per outlet.

Installing set couplers

Installation of one multicoupler next to a riser through a wooden window frame takes about one-half hour. If steel or casement windows are encountered the time is increased to three-quarters of an hour.

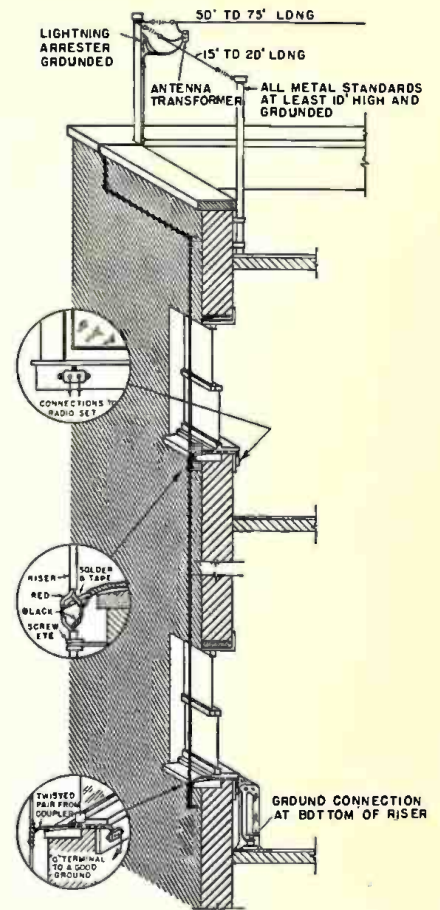
Usually the customer wants to have the radio set connected to the coupler which is located just below the window sill. About half an hour should be figured for this task since it is also necessary to test the receiver and see that all is okay.

After the job has been installed, there is bound to be a small amount of service which must be given without additional charge. Good business principles dictate that this charge be incorporated in the original estimate.

An examination of the job will quickly determine the proper amount of materials which must be allowed for. Be sure to allow for an ample amount of transmission line.

Sample estimate

The following is a sample estimate for a single system on one side of a 10-story building having wooden window frames providing connections to 10 apartments and allowing 12-foot per story.



View showing the simplicity of master antenna installations using outside wiring.

Time required for installation

	hours
Installation of two 10-ft. masts..	4
Installation of download (10 apts)	3½
Installation of aerial and transformer	1
Installation of couplers.....	5
Connections to radio sets	5
Subsequent free service	5

Total time charged..... 23½

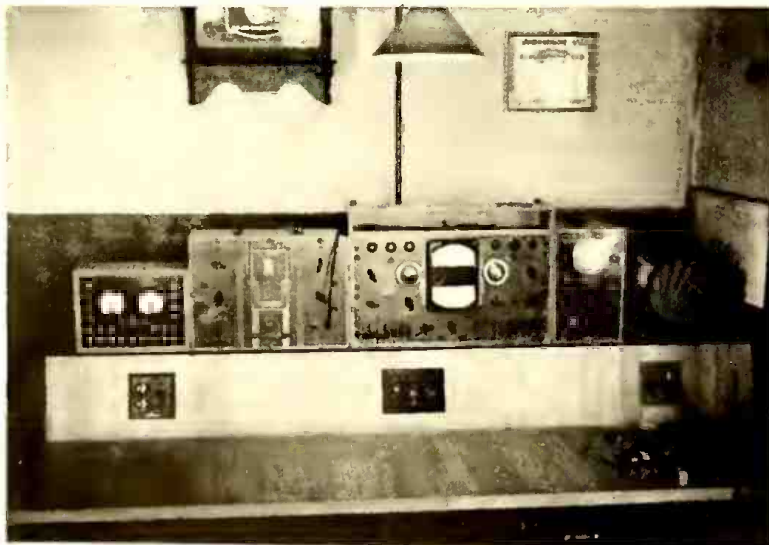
Materials

- 150-ft. weather-proofed trans. line
- 10 radio set couplers (noise reducing)
- 1 antenna transformer (noise reducing)
- 1 doz. 3-inch stand-off insulators
- 30 ft. 2-in. iron pipe and fittings
- 100 ft. No. 14 or heavier antenna wire
- 4 antenna insulators
- Guy wire for masts if required
- 150 ft. twisted telephone wire for connections to sets
- 1 lightning arrester (approved by underwriters)

This 23½-hour charge is figured at the labor rates for the locality where the work is done. Naturally there is a mark up to allow for overhead, selling expenses, profit, etc. In addition the materials should be charged for at a suitable profit.

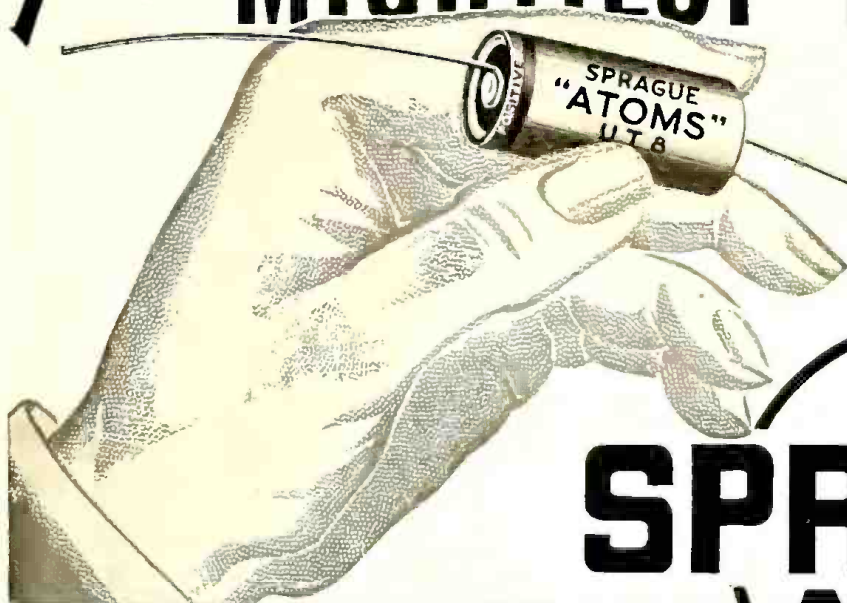
Generally speaking where 10 or more couplers are installed for each aerial the prices range from \$4.00 to \$5.00 per outlet. Because of the difference

(To page 36)



Bob Andre of the Gulfport (Miss.) Battery Shop believes in keeping a neat shop. Note Supreme certificate on the wall showing that the shop is adequately equipped.

The MIGHTIEST MIDGETS of all!



SPRAGUE ATOMS

(Etched Foil Dry Electrolytic Condensers)

Unconditionally Guaranteed!

**EXTREMELY LOW LEAKAGE—HIGH SURGE VOLTAGE
EXCEPTIONALLY GOOD SHELF LIFE**



**HOOT MON!
AND WILL
YE LOOK AT
THESE PRICES**

FIVE YEARS AGO, Sprague brought out the first small 2½" 600-Volt Condensers

Today, Sprague scores again with a revolutionary new "midget" development—Sprague **ATOMS**. These are unquestionably the smallest, most reliable and the most complete line of tubular dries on the market.

ATOMS are guaranteed to have low leakage, exceptional shelf life and to withstand high surges. Use 'em without fear of failure. You don't need any manuals. All you have to know is the correct capacity and voltage.

The unusually small size and amazing durability of Sprague **ATOMS** are made possible by an exclusive Sprague etched foil process. They are hermetically sealed—yet are absolutely protected against "blow-ups" by an exclusive Sprague design feature.

Sprague engineering supremacy as maintained for years in the set manufacturing trade is now brought to bear in full force in the jobbing business. Cash in on it! Use **ATOMS** universally!

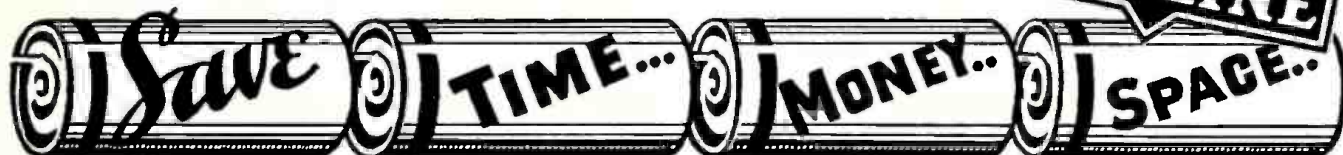
SPRAGUE PRODUCTS COMPANY
NORTH ADAMS · MASSACHUSETTS



Cat. No.	Cap. Mfd.	Working Voltage	List Price	Metal Diameter	Tube Length
TA-10	10	25	\$0.40	9/16"	1-5/8"
TA-25	25	25	0.50	9/16"	1-5/8"
TA-525	25	50	0.55	5/8"	1-5/8"
UT-41	4	150	0.40	5/8"	1-5/8"
UT-81	8	150	0.45	5/8"	1-5/8"
UT-121	12	150	0.50	5/8"	1-5/8"
UT-161	16	150	0.55	11/16"	1-5/8"
UT-201	20	150	0.60	3/4"	1-5/8"
UT-401	40	150	0.65	7/8"	1-5/8"
UT-42	4	250	0.45	9/16"	1-5/8"
UT-82	8	250	0.50	5/8"	1-5/8"
UT-122	12	250	0.65	11/16"	1-5/8"
UT-162	16	250	0.75	3/4"	1-5/8"
UT-43	4	350	0.50	5/8"	1-5/8"
UT-83	8	350	0.55	11/16"	1-5/8"
UT-123	12	350	0.70	3/4"	1-5/8"
UT-4	4	450	0.55	5/8"	1-5/8"
UT-8	8	450	0.60	3/4"	1-5/8"
UT-12	12	450	0.75	7/8"	1-5/8"
UT-16	16	450	0.90	13/16"	2-1/8"
UT-20	20	450	1.00	7/8"	2-1/8"

DUAL CARDBOARD TUBULARS, TOO!

TA-100	10-10	50	\$0.65	5/8"	2-3/8"
TA-212	12-12	200	0.95	13/16"	2-3/8"
TA-216	16-16	200	1.05	7/8"	2-3/8"
TA-816	8-16	200	0.95	13/16"	2-3/8"
UT-88	8-8	450	1.00	15/16"	2-3/8"



For quick, easy replacements "You Can Get At 'Em With SPRAGUE ATOMS"

ALL-PURPOSE MIKE?

(Continued from page 20)

ous properties that a microphone is required to have for various P.A. jobs, and see how thoroughly the velocity with acoustic compensator fills the requirements. A well-designed velocity without an acoustic compensator fills all the requirements below—except the acoustic adjustment feature in point 1. The properties will be given as closely as possible in their order of importance for P.A. installations.

Natural reproduction

1. Natural reproduction—natural period of moving ribbon element—10 cps. Harmonic distortion zero (only type microphone without harmonic distortion). Frequency response of microphone flat over entire audio range. Acoustic compensator permits simple adjustment to suit various tastes, performers, speaker equipment and room conditions. No peaks, harmonic distortion or any other undesirable effects are introduced by the acoustic compensator. (Even best dynamics have a decided peak in the audio range. Lower priced dynamics have tremendous peaks. Lower priced crystals have decided peaks—only higher priced crystals have small peaks. Velocity is the only P.A. microphone without any peaks.)

2. Feedback—A minimum in velocity microphones, because (a) its zero pickup over 20° angle in plane of ribbon (not whole side) and (b) flat response without peaks—microphones usually feedback on peaked frequencies.

3. Angle of pickup—Contrary to popular conception, the velocity has the widest angle of useful pickup, as shown in diagram. Useful pickup angle is the angle having a frequency

discrimination of less than 50 per cent. The velocity useful pickup angle is 120° front and back. Diaphragm microphone has useful angle of 60° in front for 6000 cycles. By swinging the velocity with the ribbon parallel to the ceiling, angle of pickup is 360°. Because of the wide pickup angle of the velocity, only one velocity was used to pickup an entire symphony orchestra at Carnegie Hall. No special arrangement of instruments because of frequency discrimination of the microphone was required.

4. Output impedance and cable lengths—Obtainable in high impedance for cable lengths up to 75 ft. and operating into high impedance input. And in low impedance for cable lengths up to 5000 ft. Can be fed into high impedance through cable-type transformer. The combination of the low impedance velocity and cable type transformer permits operating into low or high impedance input and any cable length in their case up to 5000 ft. (Crystal microphones available in only high impedance and therefore limited in cable length. Better grade of dynamics usually only available in low impedance.)

Parallel mikes

5. Microphones in parallel or series—Any number up to four velocities can be connected into one input either in series or parallel. Especially important for stage pickup, etc. As many as twelve velocities can be fed into one amplifier. (Crystal microphones require a separate input tube for each microphone.)

6. Effect of temperature, pressure, humidity. The velocity is not affected by any climatic conditions.

7. Ruggedness—Due to the lightness designed velocities will stand very rough handling and abuse. Typi-

cally, Station KVOL, Louisiana, writes, "The Amperites have broadcast in the rain and the hot sun. They have even been dropped, but they always came through in fine shape." (Crystals are affected by temperature—dynamics affected by quick changes in pressure.)

8. Grounding—Not essential to ground in all cases with a velocity. This is an especially important feature in portable disc recorders, when it is not always convenient to get a ground connection. (Crystals must be grounded.)

9. Output—The velocity is as high in output as any other type microphone with even nearly comparable frequency response. Microphones with large diaphragms have slightly—5 db—more output. Large diaphragms however cause very large peaks. The better microphones of any type have smaller diaphragms and less output than the velocity.

10. Adjustable frequency response—When the performer is three feet or more from the microphone, as in entire stage pickups, a microphone with an increased low frequency response is most desirable. For close talking the lows should be attenuated. The lows can be accentuated or attenuated in the velocity without introducing any undesirable peaks or harmonic distortion. This can be done with either acoustic compensator or in the design of the microphone transformer. (Difficult to change the frequency of crystal or dynamic to properly take care of the above two conditions.)

There might be a few unusual problems that are encountered by the P.A. man, but we believe the velocity microphone described above is 99 per cent universal.

Sincerely,

S. RUTTENBERG

Amperite Company, New York, N. Y.

SPECIFICATIONS OF MICROPHONES CONTINUED FROM APRIL RADIO TODAY

Model No.		List Price	Type	Directional Char.	Mounting	Freq. Range Cycles	Output + or - DB	Ohms Imped.	Cable Length
Astatic Microphone Lab., Inc.—Youngstown, Ohio									
D-104	\$22.50	Cry	U	Std	30-7½M	*	-48	5 Meg	8
D-104-H	24.50	Cry	U	Hd	30-7½M	*	-48	5 Meg	8
D-104-HS	25.50	Cry	U	Hd	30-7½M	*	-48	5 Meg	8
D-2	25.00	Cry	N-D	Std	30-10M	5	-61	5 Meg	8
D-2-H	27.00	Cry	N-D	Hd	30-10M	5	-61	5 Meg	8
D-2-HS	28.00	Cry	N-D	Hd	30-10M	5	-61	5 Meg	8
K-2	27.50	Cry	N-D	Std	30-10M	3†	-60	5 Meg	8
L-1	25.00	Cry	N-D	Lpl	30-10M	3	-62	5 Meg	25
T-3	25.00	Cry	S-D	Std	30-10M	5	-52	5 Meg	8
218	22.50	Cry	S-D	Clip	30-5½M	*	-46	5 Meg	8
*Rising characteristics above 500 C.P.S. †Rising characteristics above 6,000 C.P.S.									
Bruno Laboratories, Inc.—30 West 15th St., New York, N. Y.									
A	\$19.50	Sv	B-D	Std	30-14M	NS	-50	to grid	none
HA	23.00	Sv	B-D	Hnd	30-14M	NS	-50	to grid	none
SP	13.50	Sv	B-D	Lpl	30-14M	NS	-55	to grid	none
SP-C	14.50	Sv	B-D	Lpl	30-14M	NS	-55	to grid	none
WS	30.00	Sv	B-D	Std	30-14M	NS	-45	to grid	none
WS-S	31.50	Sv	B-D	Std	30-14M	NS	-45	to grid	none
WS-CS	32.50	Sv	B-D	Std	30-14M	NS	-45	to grid	none
VD-HP	21.00	Vel	B-D	Std	80-10M	NS	69	to grid	none
VD-HF	22.00	Vel	B-D	Std	50-10M	NS	69	to grid	none
VD-CT	23.00	Vel	B-D	Std	80-10M	NS	69	to grid	none
VD-LI	23.00	Vel	B-D	Std	80-10M	NS	69	to grid	none
VR-HP	31.00	Vel	B-D	Std	80-12M	NS	67	to grid	none
VR-HF	32.00	Vel	B-D	Std	50-12M	NS	67	to grid	none
VR-CT	33.00	Vel	B-D	Std	80-12M	NS	67	to grid	none
VR-LI	33.00	Vel	B-D	Std	80-12M	NS	67	to grid	none
WM-HP	39.00	Vel	B-D	Std	80-12M	NS	65	to grid	none
WM-HF	40.00	Vel	B-D	Std	50-12M	NS	65	to grid	none
WM-CT	41.00	Vel	B-D	Std	80-12M	NS	65	to grid	none
WM-LI	43.00	Vel	B-D	Std	80-12M	NS	65	to grid	none
OR-HF	47.00	Vel	B-D	Dsk	50-12M	NS	65	to grid	none
OR-LI	49.00	Vel	B-D	Dsk	50-12M	NS	65	to grid	none
PR-HF	90.00	Vel	B-D	Std	30-14M	NS	61	to grid	35
PR-LI	90.00	Vel	B-D	Std	30-14M	NS	61	to grid	35
Universal Microphone Co., Ltd.—424 Warren Lane, Inglewood, Calif.									
W	\$ 3.00	Carb.	S-D	Lpl	200-2M	5	-38	200	None
A	15.00	Carb.	S-D	St	100-3.5M	3	-45	200	None
XX	10.00	Carb.	S-D	St	100-4M	3	-50	400	None
XI	7.50	Carb.	S-D	St	100-4M	3	-50	400	None
BB	25.00	Carb.	S-D	St	50-5M	3	-50	400	None
200	10.00	Carb.	U-D	Hd	150-3M	3	-40	200	6
201	15.00	Carb.	U-D	Hd	100-4M	3	-55	400	6
CS	18.50	Cry	S-D	St	50-5M	3	-63	5 Meg	10
202	18.50	Cry	U-D	Hd	50-5M	3	-70	5 Meg	10
203	22.50	Cry	U-D	Hd	50-5M	3	-60	5 Meg	10
15MM	24.50	Dyn	{N-D S-D	{SW St	{50-8M 50-8M	{2 2	{-66 -64	{*Optional *Optional	{25 25
E	100.00	Cond	S-D	St	35-10M	2	-32	{200 500}	25
G	84.00	Cond	S-D	St	70-7M	2	-32	{200 500}	25
5MM	24.50	Vel	B-D	St	40-10M	2	-64	*Optional	15
RH	22.50	Vel	B-D	St	40-10M	2	-63	*Optional	20
AV	44.50	Vel	B-D	St	30-12M	1	-60	*Optional	25
Lapel	25.00	Carb	S-D	Lpl	50-1.5M	3	-55	400	6
Ar-1	35.00	Carb	U-D	Hd	200-4M	5	-30	200	4
*Impedances of 50, 200, 500. Direct to Grid.									

ALMOST PERFECT..



*Yet into
"the crusher"*
they go*

*"The crusher", a huge, electrically-driven machine, is used to destroy defective Sylvania tubes . . . grind them into harmless bits of metal and glass.

EVEN the slightest defect—a twisted wire . . . a loose top cap . . . a broken guide pin—is enough to doom any Sylvania tube. For Sylvania will not risk quality by making even minor repairs on imperfect tubes.

This rigid "no repair" policy assures Sylvania of uniform, high quality radio tubes . . .

See Us at 204-06 Ampere Ave., National Radio Trade Show, Hotel Stevens, Chicago

freedom from "duds". It assures you of satisfied tube customers—and repeat business.

Remember this: *You can't buy a second-quality Sylvania tube . . . so you can't lose a customer by selling him one!* Hygrade Sylvania Corp., Emporium, Pa. Cable address: HYSYLVANIA, New York.



SYLVANIA

SET-TESTED RADIO TUBES

HYGRADE SYLVANIA CORPORATION ALSO MANUFACTURES THE FAMOUS HYGRADE LAMP BULBS.

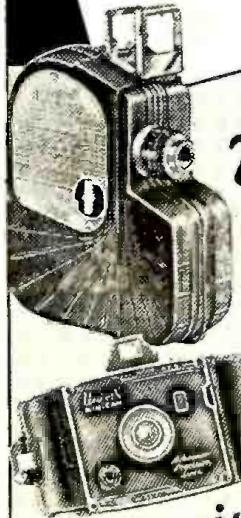
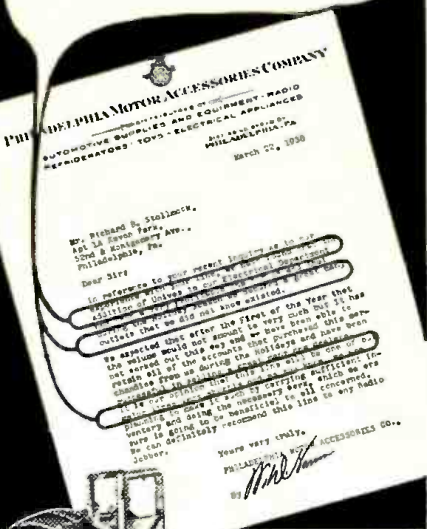
RADIO JOBBERS

SAY:

Univex

MEANS TREMENDOUS PLUS VOLUME

"... we have found that the addition of Univex... has been very profitable... we secured a great many outlets that we did not know existed... It is our opinion that this line will be one of our major lines very shortly..."



THE CINE #8
Univex
AT \$9.95

AND THE Univex
MINICAM
AT \$3.50

Sweeping the Country!

WRITE, WIRE OR PHONE FOR PARTICULARS

UNIVERSAL CAMERA CORP.
New York . . Chicago . . Hollywood

SERVICING

(From page 32)

In the ability of various workers, the above time figures are approximate and new ones should be arrived at from the serviceman's personal experience. Since the chief variable item cost is labor, extreme care should be taken in surveying the premises, noting difficult work to perform, etc. And in the case where work is difficult to do, changes should be made if at all possible, to effect lower labor costs.

In both apartments and private residences, the cost of a master aerial system will be lower than the total cost of separate high-quality noise-reducing antennas. And most master systems work just as satisfactorily on the shortwaves as on the broadcast band.

With the summer bringing ideal weather for outside work, servicemen everywhere should concentrate on aerial installations.

PRACTICAL POLICIES IN SERVICING. BUSINESS ACUMEN.

A number of questions reflecting practical business problems in service work were asked during a recent meeting of the Philadelphia Radio Servicemen's Association. Charles Golenpaul, general sales manager of Aerovox Corporation, was present and the task of answering these queries of practical policy was put up to him, with the interesting results below:

Guarantees on repairs

I'm given a job to service a radio set but first have to submit an estimate of the cost. I check the receiver and find that the electrolytic condensers are defective and require replacement, for which I quote \$3. The customer then asks: "How much would it cost to repair the radio set and put it in shape so as to be able to guarantee the performance and service for six months?" After my examination, I find that to agree to this I would have to charge \$6 so as to cover the six months' guarantee. The customer instructs me to go ahead. I do the job, deliver the set, and collect \$6. The set plays okay for three months. Then something happens and I'm called again. I examine the radio and find that this time the transformer is defective. Now the question I ask is: should I replace the transformer at no charge or have I the right to charge for same?

Answer: In the first place, you had no right to guarantee a set for six months unless you replaced all the parts, because the original manufacturer when he sold that set may have received \$200 but he didn't guarantee the set for more than 90 days, and he knew more about the parts that were used than you. So my advice to you

is—always explain how impossible it is to guarantee your work because of the many complications involved, due to parts becoming defective from causes such as heat, dampness, overload and so on. As to whether or not you should replace the transformer no charge, the fact that you made a promise, and also that your reputation locally is worth something, should compel you to replace the transformer without charge. And charge it up to experience.

Keep trade secrets

What should I do when I'm called in to estimate the cost of a repair and when I quote what I consider a reasonable price, the owner of the set is surprised at the amount? In my desire to convince the owner that I am reasonable, I point out that I must replace an 8-mfd. condenser, a 400-volt 0.25-mfd. tubular condenser, and a 10,000-ohm carbon resistor. The set owner then advises that he will think the matter over. After waiting several days, I follow this up because I realize this set owner is deprived of the use of his set. When I visit this prospective customer again, I find that the set is operating. Then I discover that the job was done by the set owner himself. What I want to know is whether it is fair to me for this customer to go direct to the jobber, buy the parts, and make his own repairs, naturally at a considerable saving, after I went so far as to tell him what was wrong and what he needed to fix it up.

Answer: This one is easy. The answer is: Don't give away your trade secrets. Remember, the diagnosis of the trouble is at least half the job. If you tell a set owner what the trouble is and what it takes to make the set right again, you've given away most of your value to him. As another indication of servicemen giving away trade secrets, some go so far as to write out the items on their own business card. It is then a simple matter for the would-be customer to walk into a jobber and present the card, posing as a serviceman, and getting the necessary parts at trade discounts.

Tube checking

What can I do about the chaps who come into my shop to get their tubes tested or checked, free of charge in keeping with my advertisements, but after they have found out which tubes are no good, they buy the replacements from some gyp auto-supply store?

Answer: Your advertisements offering to test or check all tubes free are in keeping with general practice. However, it might be well in your shop to have a sign stating that tubes are tested or checked free, provided tubes are bought in your shop. Otherwise, a small service charge must be made. You or your employee should be able to make a sale in replacing those defective tubes.

(To page 38)

EVERY RADIO DEALER

Can and Should Sell 1 to 10 Room Coolers This Summer



NO NEED to suffer from heat or humidity this summer, when the Pleasantaire Room Cooler offers relief at such low cost. This self-contained, portable air conditioner is powered by a refrigeration plant many times larger than a household electric refrigerator—yet it is so compact that it fits in the window, and may be installed in a few minutes. It is entirely adequate for the average bedroom or small office of 200 square feet or less.

For hot weather relief, nothing can do the job as well as an electric refrigeration Room Cooler. In this field, Pleasantaire leads because it is the only time-tested, low cost unit on the market.

- IT COOLS by electric refrigeration
- DEHUMIDIFIES
- FILTERS and VENTILATES
- CIRCULATES, Quietly
- REMOVES STALE AIR
- KEEPS OUT INSECTS

Pleasantaire Conditioning is Healthful Air Conditioning

PLEASANTAIRE

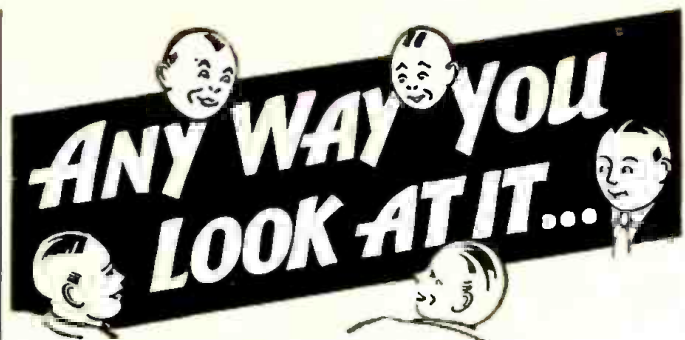
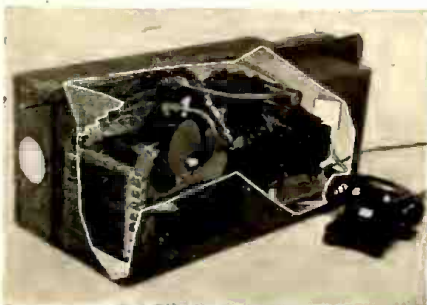
CORPORATION

1623 Connecticut Ave.

Washington, D. C.

Pleasantaire lists at \$199.50 f.o.b. factory. Sales are direct to dealers at liberal profit-making discount.

Write today for The Pleasantaire Package Plan, complete story of Room Cooler merchandising for the appliance dealer.



... the ARCTURUS EQUIPMENT DEAL IS THE ANSWER TO YOUR SHOP EQUIPMENT PROBLEM!

And here are the answers to your questions about the Deal itself . . .

WHAT DOES THE DEAL MEAN TO ME?

It means that now you can have your choice of the finest shop equipment **ALMOST FREE!**

HOW MUCH DOWN PAYMENT?

LESS than any other deal ever offered! On some items, the down payment is as low as \$3.00! ARCTURUS down payments average only about **ONE-SIXTH** the amounts required by other deals!

WHEN DO I GET THE EQUIPMENT?

Immediately!—no waiting until your deal is completed. You have the use of this efficient, modern equipment right away.

WHAT IS MY ACTUAL TOTAL COST?

Actually, the down payment is all you pay for the equipment you get. Your purchases of Arcturus Tubes take care of the rest. There are no hidden costs here!

HOW MANY TUBES MUST I BUY?

Tube requirements are kept at an absolute minimum. We don't load you up with more tubes than you can use. Many Arcturus deals require *less than one tube per day!*

DO TUBES COST MORE?

No! . . . and that's important! Not one cent has been added to standard Arcturus Tube prices. Your purchases, *not your cash*, pay for your equipment.

WHAT ABOUT TUBE QUALITY?

You'll never have to worry about that! Radio engineers and servicemen everywhere agree that ARCTURUS are the best engineered tubes that money can buy. For dependability . . . long life . . . for all-round brilliant performance—you couldn't offer your customers better tubes!



FREE!

Just off the press . . . the new ARCTURUS DEALER HELPS folder, showing a brand-new line of sales builders available to Arcturus dealers. Many new and unusual items—every one designed to help you increase your tube and service profits. Send for your copy . . . it's FREE!



YOU BE THE JUDGE!

Don't take our word for the superiority of the Arcturus Equipment Deal. Send the coupon . . . NOW! See how easy it is to make yours "the best equipped shop in town"—at almost **NO COST** to you! Compare the Arcturus Plan, point-for-point, with any other deal. Then you be the judge!

Mail the Coupon!

ARCTURUS

ARCTURUS RADIO TUBE CO., Newark, N. J.—Without cost or obligation on my part, send details of your new equipment deal. T-7

Name.....

Street.....

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

I am a dealer I am a serviceman My jobber is.....

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

**Free BUSES to
AMERICA'S LARGEST
and FINEST "SOUND"
FACTORY**

Every Serviceman Should Investigate How to Make More Money in the SOUND BUSINESS



**SEE and HEAR the
BRAND NEW 35
WATT SYSTEM**



**Introducing
"Elimination
of *E. S."**

Remote Control

**3 Microphone Input
Circuits**

**1 Phonograph Input
Circuit**

**Multi-Stage
Regeneration**

Volume Expansion

**Speaker Impedance
Matching Control**

***E.S.—Ear Strain**

**WEBSTER-CHICAGO Cordially
Invites You For a Guest Tour of Their
Modern Sound Plant When You Are
In Chicago at the JUNE RADIO
PARTS SHOW ...**



**Factory
Assembly**

Laboratory: Showing a most unusual collection of fine radio measuring instruments.



Display Room: Demonstrating a full and complete line of all types of Sound Equipment.



**Just Register at WEBSTER-CHICAGO
Booth No. 202 - Marconi Blvd. For FREE
Bus Ticket and Pass!**

WEBSTER-CHICAGO

WEBSTER-CHICAGO
Section MY-9, 5622 Bloomingdale Ave.
Chicago, Illinois

Please send me New 1938 Catalog.

Name

Address

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



SERVICING

Several servicemen write in, presenting the problem of department stores advertising that they will service any set for say \$1.75 flat. One serviceman presents a particular case in which he estimated the cost of a repair job at \$3.50. Customer thought the price entirely too high so took the set to the department store. When the department store service department examined the set, they estimated the cost at \$14 to put it back in shape. So the woman called back the serviceman and asked him to fix the set for \$3.50, at which price there was a good profit in the job. Now the question is: What can we do about such tactics?

Answer: You can't stop the department store from advertising a flat service charge of \$1.75 or any other rate. However, news travels fast. As the department store uses this bait to get service calls and then jacks up the price even beyond anything a serviceman might ask, you can be sure that people will pass the word around. Especially the women. The situation is bound to work itself out to the satisfaction of the serviceman. It may take time, of course.

BOOK REVIEWS

MALLORY-YAXLEY RADIO SERVICE ENCYCLOPEDIA

★ The new second edition of the Mallory-Yaxley encyclopedia contains 50 per cent more pages than its predecessor. In addition to an expansion of previous material to include the 1938 model receivers, chapters have been added which discuss alignment, automatic frequency control, automatic tuning of all types, audio amplifier design and use.

Numerous charts and tables of value to the radio serviceman and engineer have been included in the second edition. List price of the book is \$3.00. Published by P. R. Mallory & Co., Indianapolis, Ind.—**RADIO TODAY.**

SOUND WAVES, THEIR SHAPE AND SPEED

By DAYTON C. MILLER

★ The shape and speed of sound waves which is discussed in Dr. Miller's book of the same title is supplemented by detailed descriptions of apparatus used in obtaining these records. Part I is devoted in part to the "phonodeik," a device which is used to photograph the shapes of sound waves. There is also a chapter on electric spark photography.

Of particular interest are the photographs of the tones of various musical instruments and vocal sounds. The author shows how the various overtones combine to determine the

(To page 40)

SWING OUT IN FRONT

with New Ideas, New Contacts, New Developments



Let's Go to the National Radio Parts Trade Show

★ It's your one opportunity of the year to meet the complete Parts Industry—face to face. It's the only time and place you can get a full, complete picture of the "service" business and your part in it. Make personal contact with manufacturers and their factory men—with Jobbers, and fellow-Servicemen, with Engineers and Amateurs—from all parts of the country—all parts of the world. Get the "dope" on all the latest developments in Radio Parts and Service Equipment. Learn at first hand what's ahead for you. Collect ideas you can apply profitably to your own business—your job—your work. And have a good time doing it, too!

There'll be 35,000 square feet of displays—a complete Radio Parts City in itself with streets full of new, timely developments. There'll be Technical Lectures and Demonstrations packed with vital information for you! Four full days of important activity at Radio Parts City, Stevens Hotel, Chicago, Wednesday, Thursday, Friday, Saturday, June 8, 9, 10, 11.

This is the Annual Homecoming for everyone in the Industry. You owe it to yourself to be there. Don't let anything stop you—just pick up and Go . . . it's the only National Radio Parts Trade Show of the year. Ask your Jobber for further details or write us. Cut out the coupon now, paste on a Post Card and drop in the mail for your Advance Registration. Our Personal Service Bureau will be glad to make all the arrangements for you.

*Sponsored by Radio Manufacturers Association
and Sales Managers Club*

National Radio Parts Trade Show

*Radio Parts City, Stevens Hotel, Chicago
Wed., Thurs., Fri., Sat., June 8, 9, 10, 11, 1938*

On the Program

35,000 Sq. Ft. of Displays — *Radio Parts and Test Equipment, Ham Sets, Meters, Mikes, Crystals, Tools, Gadgets.*

Technical Lectures — Modern Devices and Apparatus, Touch Tuning, Remote Tuning, Tube Applications, Sound-Equipment Installation Methods.

Demonstration of Facsimile Apparatus—Friday Evening, June 10, Under Auspices of I. R. E.

Movies of Pitcairn Island—Saturday, June 11. (Subject to arrival of Films from the Island.)

Lecture on the DuMont Phasmatron (Television) Saturday Evening.

All Service Lectures are a part of the R. S. A. Convention

MAIL THIS COUPON TODAY

National Radio Parts Trade Show,
Personal Service Bureau,
53 W. Jackson Blvd., Chicago, Ill.

Please send Advance Registration Blank.

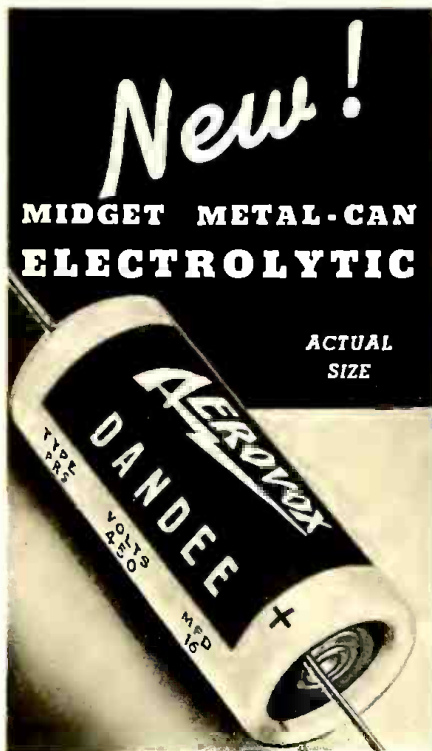
I am a RETAILER
 SERVICE SHOP OWNER
 SERVICE EMPLOYEE

NAME _____

ADDRESS _____

CITY _____

STATE _____



- ★ The DANDEE is the ideal general-utility electrolytic for servicing midget AC-DC sets or for by-pass functions.
- ★ Small—fits anywhere. No larger than usual paper tubular. Yet it packs from 4 to 40 mfd., depending on voltage. 150, 250, 350 and 450 v. d.c. w.
- ★ And it's genuine, full-rated, long-life capacity and D.C. working voltage. Positively no cheating.
- ★ Dry electrolytic section. Hermetically sealed can. Protected and insulated by paper jacket. Provided with vents.
- ★ Ends of jacket span over aluminum can rim. No chance of "shorts" if leads are bent close to can. Jacket can't slip off.
- ★ Polarity - indicating red and black end discs. Corrosion-proof. Thoroughly aged. Individually tested. Yet costs only 40c to 90c list, depending on capacity and voltage.

Ask Your Jobber . . .

- ★ Ask him to show you these DANDEE midget electrolytics. Better still, order an assortment and have them on hand for those midget set jobs.



(From page 38)

tonal quality of specific musical instruments.

Part II of the volume is devoted to pressure, waveform, and velocity of sounds from large guns. While interesting, this latter material is quite remote from the radio and sound fields.

While recommending the book for

NEW BOOKLETS

★ "School Sound Systems by Stromberg-Carlson" is the title of a new booklet issued by the Rochester, N. Y., firm. Printed in blue and black, and illustrated, it is recommended by SC for distribution to school board members.

★ The annual catalog of Universal Microphone Co., Ltd., Inglewood, Calif., will be issued this month, and will contain illustrated data on their microphones, recorders and accessories. New section on airplane mikes will be included.

★ Regal Amplifier Mfg. Corp., 14 W. 17th St., New York City, have issued a new 4-page booklet on the firm's "Tokfone" intercommunicators. Eight models are shown, and sales prospects are listed.

★ Teletran Products Co., 2233 University Ave., St. Paul, Minn., have issued a new 20-page booklet on public address, accessories and kits, intercommunicators, centralized radio, and specialized systems. This is catalog No. 25.

★ Janette Mfg. Co., 556 W. Monroe St., Chicago, Ill., have issued a new specification and price sheet, bulletin 13-25, and a new folder bulletin 13-10, on rotary converters for radios, amplifiers, phonographs, sound pictures, etc.

★ Auto Radio Manual for dealers is now being issued by Philco. It features the company's 1938 line of auto radios, aerials and accessories and gives details on the advertising and promotion units as well as the new sales helps.

★ Four new booklets, of interest to engineers, are forthcoming from General Electric Co., Schenectady, N. Y. There are numbers GEA-2003B on Automatic Oil Circuit Reclosers, GEA-2170A on Directional Distance Relays, GEA-2426A on Outdoor Oil-Blast Circuit Breakers, and GEA-627 on Outdoor Power Switching Equipment.

★ "In the Groove with Victor Records" is the title of a new booklet being issued by RCA Victor. It is filled with dope on swing bands and their personnel and takes the form of a handy reference book to be distributed through dealers to "jitterbugs," "ickies," and other types of swing music fans.

the broadcast engineer, sound equipment designer and radio engineer, we feel that it will also be found enlightening to others who are interested in what the wave characteristics of various sounds are.

The book is written mainly in non-technical language. Price \$2.75. Published by the MacMillan Co., 60 Fifth Ave., New York, N. Y.—RADIO TODAY.

Isolantite, Inc., 233 Broadway, New York, N. Y., have issued two new booklets. Bulletin No. 103 has complete data on stand-off insulators; No. 104 covers Isolantite bushings.

New developments in public address, such as the new "Storm-Proof" Marine Horn, are described by the Spring and Summer catalog just released by the Atlas Sound Corp., 1451 39th St., Brooklyn, N. Y. This Catalog F-38 lists parabolic deflector baffles; speaker enclosures, and housings; P. M. horn type driver units; aluminum bell trumpets; "Velvet Action" microphone floor and desk type stands, etc.

"Facts and Hints" on transcription and phonograph needles is the subject of a feature folder released by H. W. Acton Co., Inc., 370 Seventh Ave., New York, N. Y. The Shadowgraph process for Actone needles is illustrated and explained.

Latest edition of the Taco Master Antenna System Manual has appeared, with information for surveying buildings, estimating, installing, testing and servicing. Copies are available to servicemen addressing Technical Appliance Corp., 17 E. 16th St., New York, N. Y. Likewise a new window poster on the master antenna system.

Transformer Corp. of America, through the Clarion Institute of Sound Engineers, have released the 1938-39 catalog of Clarion "Unified" sound systems and accessories. The two-color booklet describes and shows the complete new line, portable systems, mikes and speakers, intercommunicating systems, the new "Nemotrol" distant control unit, and other specials. Copies come from the Clarion Institute at 69 Wooster St., New York, N. Y.

An engineering bulletin, Form R-18, on Magnavox Molanode capacitors will be sent to readers who address the Magnavox Co., Ft. Wayne, Ind. Ease of assembly to the chassis is emphasized.

Burton-Rogers Co., 755 Boylston St., Boston, Mass., have released a new leaflet on "Tops-All" aerials, illustrating and describing four types of auto antennas, along with accessories.

General Transformer Corp., 1250 W. Van Buren St., Chicago, Ill., present two new booklets: (1) a sale of Sales catalog on transformers giving specifications on all superseded numbers, offered at a bigger scale of discounts, and (2) 1938 catalog for amateurs and sound engineers showing the Progressive III transmitter nucleus for all bands, a 5-10-20 meter streamliner, and a complete set of Multi-tap units.

RADIO TUBES and COD LIVER OIL



The radio service man who finds drug stores, stationery stores and a dozen others featuring tubes might try selling some of their lines—but, we wouldn't advise it. We doubt if he'd make any more money on cod liver oil than they do on cut-price radio tubes.

Here's a better suggestion. Sell the tube that protects the dealer with a sound merchandising plan. The tube proposition that guarantees full profit on every sale—without investment. Under the Tung-Sol Consignment Plan reputable dealers, who can qualify, receive a stock of dependable tubes without paying a cent—they sell the tubes, collect the profits and then remit once a month.

Think of the benefits this practical plan holds—freedom from losses through price reductions and obsolescence—no price-cutting competition—and what is more, you pay no premium for the financing of your tube stock.

Write our nearest sales office for details and necessary qualifications.

Dept. C.

TUNG-SOL

Specialty Radio Tubes
TUNG-SOL LAMP WORKS, INC.
Radio Tube Division

Sales Offices: Atlanta, Boston, Chicago, Dallas, Kansas City,
Los Angeles, Detroit, New York. Gen'l Office: Newark, N. J.

RCA Victor TIME-SAVING, PROFIT-PACKED Phone SYSTEMS!



Two types are available—a wireless system for instant 2-way inter-office communication... a wired system for 1 to 5 channel communication! Both sell at reasonable cost—assure you worth-while profits.

Designed to meet the time-saving requirements of modern business, these RCA Victor phones will appeal to a tremendous market—a market you can sell.

Practically every place of business is a prospect. Auto dealers, banks, dentists, doctors, factories, hospi-

tals, police stations, schools, and dozens of others!

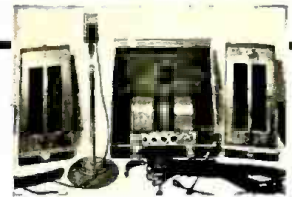
Not only do these two RCA systems offer many excellent sales features, but both are moderately priced. Order your supply now—and climb aboard this plus-profit wagon!

FOR 2-WAY COMMUNICATION REQUIREMENTS RCA VICTOR WIRELESS PHONE—JUST PLUG IN—AND TALK



Model MI-6350 illustrated above, is as simple as it is effective. Your customer simply plugs into the light socket (110 volt AC or DC) presses a button, and talks. No wires, no batteries, no installation at all. Works perfectly at all times.

In addition to the wireless system illustrated, RCA Victor also offers a master phone system for 1, 2, 3, 4 and 5 channel communication, which will be particularly popular in business offices. Speech is clearly heard up to 25 feet from the loudspeaker. Further information from distributor.



RCA PG-112 PORTABLE P. A. SYSTEM

... another money-making item!

Illustrated above, this system is universally adaptable. Operates from 110 AC or 6-volt storage battery and dynamotor. Permanent or mobile installation, 12 watts output. Two powerful dynamic speakers with RCA Velocity Microphone. This highly efficient system is excellent for scores of locations where good sound is paramount. Besides its many selling features, the PG-112 is low in price—only \$199.50.

Have you secured your copy of RCA's new sound catalog? If not, be sure to get it from your distributor, or write direct to us in Camden, N. J.

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

Any sound system sounds better equipped with
RCA Radio Tubes



Commercial Sound

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

Servicemen!

HERE'S WHAT THE R.S.A. WILL DO FOR YOU!

Give **YOU** a monthly Advanced Extension Course on the current developments in radio servicing. **THIS INFORMATION IS AVAILABLE ONLY TO RSA MEMBERS!**

Give **YOU** monthly Advertising and Business Promotion ideas to increase your business and make it *more profitable*.

Include **YOU** as a "REGISTERED AND QUALIFIED SERVICEMAN" in the big advertising and publicity campaign going on in newspapers and being broadcast over the air!

Give **YOU** a subscription to "The Radio Serviceman"—the Association's monthly magazine.

Give **YOU** a Certificate of Merit to hang in your shop.

Give **YOU** a pocket card of credentials.

Give **YOU** our big expert technical staff as a department in your service business. We will give you the *right* answer to your "impossible" service problems.

Give **YOU** (if you belong to a local servicemen's club) access to our National Speakers' Bureau—famous speakers for your meetings.

Give **YOU** advance technical information on new circuits.

\$75 Worth of Material and Service *Free*

The RSA is an independent organization, owned and operated—*not for profit*—by its members. It has the backing of the entire Radio Industry in its aim to make servicing a real business, with regular hours, and with a *real profit* at the end of each week!

The RSA is already the largest and most powerful group the service business has ever seen. **JOIN NOW** and get in on all its benefits!

RADIO SERVICEMEN OF AMERICA

JOE MARTY, JR., Executive Secretary, 304 S. Dearborn St., Chicago

----- MAIL THIS COUPON -----

RADIO SERVICEMEN OF AMERICA, INC.

304 South Dearborn St., Chicago, Ill.

Gentlemen:

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

Name

Home Address

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

Firm Name

Address

...I am enclosing \$2.00 National Yearly Dues.

...Bill me \$2.00 National Yearly Dues.

SALES AID

DISPLAY BOARD FREE



Added to the complete kit of sales helps available to dealers handling Ward auto aerials is a new wall hanger point-of-sale display unit just released by Ward Products Corp., Cleveland, Ohio. Lithographed in orange and blue, the display includes a set of price stickers so that any of 11 different models of aerials may be featured.

TUBE BUSINESS-GETTER

Giant canvas banner, with large letters saying "Radio Service by Radio Technicians" is now available to Tung-Sol dealers. Complete with hanging gadgets, the banner is 3 x 6 feet, in black, white, yellow, red and blue.

PILOT LIGHT MERCHANDISER

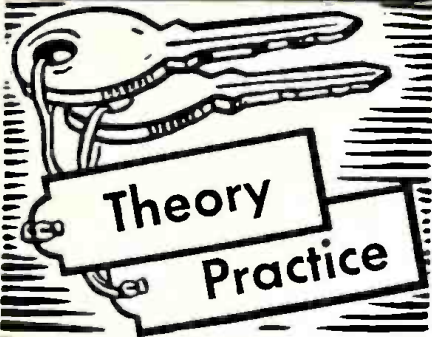
Flasher display board for pilot light assemblies is being offered free to jobbers by the Dial Light Co., 136 Liberty St., New York. The sparkling and colorful nature of the jewel in the assemblies is used to make the flasher effect an eye-catcher. The finish is black crackle with yellow lettering. Jobbers are required to pay for only the 8 or 10 light sets on the board itself.

IRON DISPLAY

★ A window and counter display, in colors, is now available free to dealers, from The Steem Electric Iron, Inc., 11 W. 42nd St., New York, N. Y. The main piece dramatizes the "Evolution of Ironing" from 'way back, illustrates the Steem Electric product in use, and carries a catchy outline of sales points. Smaller, single display placards are also available.

"The 1938 Mastercraft Line of Quality Pads" is the title of a booklet released by Bearse Mfg. Co., 3815 Cortland St., Chicago. It describes pads and carrying harness for radios, phonographs, refrigerators, washers, etc.

YOU NEED THEM BOTH



LIKE TWIN KEYS—both of which are required to open the safe deposit vault—THEORY and PRACTICE are both necessary if you are to get the most from your efforts.

Whether you are a serviceman whose profits depend upon the speed of your work—or an amateur whose pleasure depends upon the performance of your instruments—you know the value of a thorough grounding in theory and the importance of having factual information constantly at your fingertips. Know "how" and "why" a set performs. Order the Rider Books you need—RIGHT NOW!

RIDER BOOKS BANISH

Bewilderment

AUTOMATIC FREQUENCY CONTROL SYSTEMS

With Automatic Frequency Control Circuits in most new higher-priced models, knowledge of "AFC" means money in your pocket! Learn the practical facts, from these easy-to-understand explanations. Get your copy today. Cash in on profitable "AFC" work. Hard covers. 144 pp. \$1.00.

THE CATHODE-RAY TUBE

Written especially so you can understand the subject. With introduction of new, cheaper Cathode-Ray Tubes, this book is even more indispensable for its complete practical information on Oscillographs, etc. 336 pp. 450 illustrations. \$2.50

SERVICING SUPERHETERODYNES

Changes, changes, changes! That has been the history of the superheterodyne circuit. Make repairs quickly by analyzing the different parts of the circuit quickly. Rider shows you how in this revised edition which has 288 profusely illustrated pages. \$1.00

"AN HOUR A DAY WITH RIDER" BOOKS —60¢ each

ON AUTOMATIC VOLUME CONTROL will speed up your AVC work. 96 pp. 65 illus.
ON RESONANCE & ALIGNMENT. You need this! 96 pp. 48 illus.
ON D.C. VOLTAGE DISTRIBUTION IN RADIO RECEIVERS. How d.c. voltages are led to tube elements, etc. 96 pp. 69 illus.
ON ALTERNATING CURRENTS IN RADIO RECEIVERS—with drawings and diagrams.

JOHN F. RIDER, PUBLISHER
404 Fourth Ave., New York

Remember

YOU NEED ALL 8
Rider
MANUALS

RSA GAINS MEMBERSHIP

Despite the current general business recession, the RSA continues to show substantial membership gains. Local groups in Buffalo, N. Y.; Houston, Tex.; Jamestown, N. Y., and Rockford, Ill., have affiliated with the RSA in the last thirty days. Thirty-one local associations have affiliated with the RSA to date.

The RSA is embarking upon the first step of its program to acquaint the public with the desirability of having good radio servicing by sponsoring a Better Radio Reception Week. This program is being run in cooperation with local broadcasting stations in Chicago and the Chicago Chapter of RSA. Accurate tabulations are being kept of results and some very interesting facts will be released to the trade shortly.

Chicago—The Chicago Chapter had the pleasure of hearing John F. Rider at which time Mr. Rider took the boys to task for their lack of business ability as well as their failure to take advantage of many aids offered by the industry, in order that they might improve their business. He stressed the fact that regardless how good they were technically, it is necessary to be business men in order that they may succeed in the radio servicing business.

Houston—The National Radio Service Association of Houston, Tex., voted to affiliate with RSA and join with other groups of servicemen throughout the country who are determined to improve both the business and technical efficiency of radio servicing. Mr. T. F. Stephenson, a member of the organizing board of RSA, is a member of this group. The group is under the direction of C. L. Robertson, Chairman; and J. L. Stone, Secretary-Treasurer.

Rockford—The Rockford, Ill., Chapter RSA was officially established on Thursday, April 7 at which time all of the radio service dealers in town voted unanimously to form the Rockford Chapter of RSA. This is one of the strongest groups yet to affiliate with RSA. Officers elected were: Mr. Frank N. Welden, Chairman; Mr. E. S. Ary, Secretary; and Mr. A. L. Hisson, Treasurer.

Buffalo—The Associated Radio Service Engineers of Buffalo, N. Y., one of the oldest and most progressive groups of servicemen in the country, voted on April 5, 1938, to become affiliated with the RSA. This fine group of servicemen have done much to raise the standards of servicing and servicemen in the Buffalo area, and is under the able leadership of Anthony Schreiber, Chairman; Vincent E. Ball, Treasurer; and Frank Bestine, Secretary.

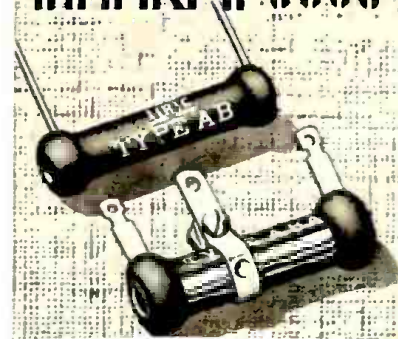
Jamestown—The Jamestown (N. Y.) Association of Radio Service Engineers, who attended a meeting held in Buffalo on April 5, voted to affiliate with RSA. This able group of men is under the leadership of Lawrence Babcock, Chairman; Richard L. Bonsteel, Treasurer, and C. Leonard Johnson, Secretary.

Johnstown—The Johnstown Chapter RSA is devoting quite a bit of time to its current meetings for the discussion of noise interference elimination.

(To next page)



SERVICE HINT.....



... for hundreds OF RESISTOR REPLACEMENTS

... up to 10 Watts

... No need to keep complete stocks of 1/4, 1/2, 1, 2 or 3 watt resistors! No lost time or lost motion! Just carry a few IRC 10-watt fixed and adjustable Cement Coated Power Wire Wounds and you'll be prepared for hundreds of replacements—almost anything up to 10 watts. A small stock of IRC Type ABA Adjustable units gives you dozens of ranges. Simply set the adjustable slider on the exposed track of wire to tap off any desired resistance value up to the maximum range of the unit. Additional taps can be used to make one resistor do the work of two or more.

FREE! Write for the new IRC Resistor and Volume Control Catalog listing the complete IRC line for radio service, amateur, engineering and "lab" work.

"They Stay Put"



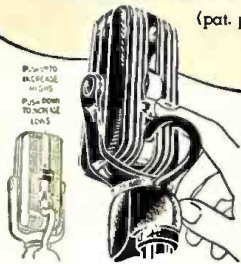
INTERNATIONAL RESISTANCE COMPANY

401 N. Broad St., Philadelphia, Pa.
In Canada, 187 Duchess St., Toronto, Ont.

AMPERITE offers "ADJUSTABLE RESPONSE"

... made possible by
THE ACOUSTIC COMPENSATOR

(pat. pend.)



Higher or lower pitch with the same microphone.

With the flip of a finger you can now (1) lower or raise the response of the microphone. . . (2) adjust the microphone for most desirable response for close talking or distant pickup. . . (3) adjust the system to any "taste", room condition, or equipment.

MODELS RBHk. RBMk. with Acoustic Compensator. frequency range 40 to 11000 cps. output, -65 db., complete with switch, cable connector and 25' of cable. \$42.00 LIST

NEW LOW-PRICED CONTACT "MIKE"

\$12.00 LIST



The new popular-priced Amperite Contact Microphone can be used on most radio sets made since 1935 and on all P.A. systems. It "makes an ordinary violin sound like a Strad" . . . gives a small piano the tone of a Grand. And yet, there is no distortion. No unnatural effects. No "fingering noises." No changes in strings or instrument. Attached without tools.

Operates with either high or low gain amplifiers. Has frequency response of 40 to 9000 cps. Output, -40 db. 20' of cable.

MODEL SKH (Hi-imp); SKL (200 ohms), \$12.00 LIST
Professional Model KTH (or KTL) . . . \$22.00 LIST

NEW COMPACT "MIKE"



A new velocity microphone of compact size, having a head only 1 1/4" x 2 3/4" x 1 3/8". Good for speech and music. May be used as hand mike as well as for stand mounting. Complete with output transformer, cable connector and switch. Output, -70 db. into open line. Frequency response 60 to 7500 cycles.

MODEL ACH (Hi-imp.); ACL (200 ohms) \$25.00 LIST

MODEL RAH... \$22.00 LIST

P.A. Men, you can improve those "price" jobs by using the popular Amperite Model RAH (or RAL). You will get better results because (1) it is excellent for both speech and music; (2) has flat response without undesirable peaks; (3) reduces feedback; (4) stands up under rough handling and changes in temperature, pressure or humidity. . . . Frequency range 60 to 7500 cps. Output, -68 db.



MODEL RAH (Hi-imp); with 12' of cable; RAL (200 ohms) with 8' of cable.
ONLY \$22.00 LIST

Write for Complete Illustrated Bulletins and Valuable Sales Helps

AMPERITE Co. 561 BROADWAY, N. Y.
Cable Address: Alkcom, New York

AMPERITE Velocity MICROPHONE

RSA GAINS MEMBERSHIP

A thorough check is being made throughout the Johnstown area to determine the offenders in this respect, and prompt and vigorous action has been promised in order that radio reception may be aided thereby. Mr. K. A. Vaughan, the newly elected director of the RSA is a member of the Johnstown Chapter and is aiding in this work.

Metropolitan, N. Y., Chapter RSA—The Metropolitan, N. Y. Chapter devoted its last meeting time to hearing Mr. A. E. Rhine speak on "Costs Relative to the Service Business." Very accurate data was presented and will be used in the house organ in the near future for the information of all members of RSA.

Abilene—The Abilene Chapter RSA devoted their last meeting to a discussion of Business Methods and Business Ideas. The consensus of opinion was that a great deal of business was lost in not using salesmanship to sell their services. The Abilene Chapter is taking steps to remedy these defects in the Chapter. This work is under the supervision of C. L. Gentry, Secretary.

Rio Grande Valley—The Rio Grande Valley Radio Servicemen's Association holds regular meetings the first and third Wednesdays of each month. The program consists of technical talks and discussions by the members with speakers from manufacturers whenever possible. At present they are working toward a study course for their members.

STOCK SMALL RADIOS NOW

With average customer purchasing power shrunk as it is today, the radio dealer (who is the backbone of radio) will be making a mistake if he fails to stock small radios, declares Ben Abrams, Emerson president. If the radio dealer has not a sufficient stock of small radios, he will have to stand by and see customers drift away to

department stores and other non-radio outlets for their small sets. The present is a time of buying on price, and the wise retailer is the one who recognizes this trend of the moment and will go along with it, rather than fight against the inexorable economic factors that are in control for the time being.

PARTS JOBBERS' PRESIDENT STATES CREDIT TERMS

★ "The present trend of radio dealers and service men is towards slowness, with many extending into periods of 90 days and more," comments Leslie C. Rucker, president, National Radio Parts Distributors Association. "Apparently one of the general trends of the parts jobbing business is towards being banker for the average dealer one sells to, as well as being 'father confessor'."

"Through our local chapter of the National Association, we are setting up very definite credit terms which will shortly be completed. The purpose of this arrangement will be to keep service men and dealers from playing one distributor against another. We feel very definitely that a business as large as radio and as unclean as radio has become, is in need of all the cleaning up and adjusting of policies possible. Our purpose is not to limit or exclude, but to definitely let the service man understand that a credit bureau is set up and that unless he abides by the code of ethics adopted by all of the distributors, he cannot run up a bill from one distributor and buy from the second to pay the first, and so on, as far as he is permitted to go.

"We feel that this will give the reliable dealer and service man encouragement to invest his money in his business and to pay his bills on the 10th of each month. We feel that such an operation as this can only be handled through a local credit association and on this subject, we highly recommend that all distributors team up with their local credit bureau for their own protection."



Crisp \$100 bill goes from Emerson president Ben Abrams, right, to Louis Sobel, Sobel Electric Co., Brooklyn, N. Y., whose salesman was that lucky in a recent prize drawing at a big dinner staged by Emerson in New York



Hotel Stevens, Chicago, location of National Trade Show, June 8-11

RADIO TODAY

SHOW and ANNOUNCEMENT NUMBER

JUNE 1938 ISSUE

**SHOW
EDITION**

For distribution
at the show

**ISSUED
JUNE 8**

Final closing date, June 1

**FINAL
EDITION**

Including all contents
of Show Edition

**ISSUED
JUNE 15**

Final closing date, June 8

23,000 GUARANTEED

MEMBER ABC

CONSOLIDATED

A COMPLETE LINE

for the Serviceman

RADIO WIRES • BY-PASS CONDENSERS • RESISTORS • AUTO ANTENNAE • HOME ANTENNAE • KITS • TEST EQUIPMENT, ETC., ETC.

• Radio Servicemen the country over have come to depend upon Consolidated products for all their replacements. Their confidence has been earned through consistent quality—an ever constant policy of giving more for less. Today the Consolidated line is more complete than ever—and priced throughout to the tempo of today's economy.

AUTO "WHIP" ANTENNAE

Outstanding in style, quality and efficiency. In solid or telescoping models, for door hinge, cowl or bumper mounting. Chrome finish with specially designed insulators.



From Your Jobber

CONSOLIDATED
WIRE AND ASSOCIATED
CORPORATIONS

512 SO. PEORIA ST.
CHICAGO ILLINOIS

DISTRIBUTORS



E. L. CHAMBERS
CINCINNATI

Sketches of prominent jobbers presented this month are the work of Lew Merrell and appear through courtesy of National Union Radio Corp.

Gross Sales, Inc., New York and New England representative for Stromberg-Carlson, have named M. Dribbon their sales representative for their Long Island, N. Y., area. Dribbon is a seasoned expert in radio retail and wholesale work; now, he will contact dealers in Queens, Nassau and Suffolk counties. President Benjamin Gross of Gross Sales points out that Dribbon will be able to give special service to dealers' retail problems.

Atlas Sound Corp., Brooklyn N. Y., now maintains warehouse stocks in key cities such as Cleveland, Chicago, Seattle and San Francisco, to speed up the delivery of sound equipment. Atlas sales director R. C. Reinhardt states that the company makes a point of being prepared for immediate and economical delivery to distributors.


Sales manager James J. Davin of Detrola Corp., has announced the appointment of Hall-Young Co., 2018 Commerce St., Dallas, Tex., as distributors for Detrola products. Lively promotions on the Pee Wee and the Super Pee Wee are under way in Dallas and new dealers are interested.

Electro Sound Products, Inc., distributors, have opened offices and display rooms at 620 N. Michigan Ave., Chicago. Vice-president V. G. Geisel will be manager. Recording equipment made by Radiotone, Inc., Hollywood, will be sold at the start; other sound lines will be added.

Harry A. Losure, pioneer manufacturers' agent of Los Angeles, Calif., will leave for his annual trip East about June 1. During the Parts Show he will be at the Stevens Hotel, Chicago.

Bill Hitt, Los Angeles, who is the West Coast representative for Aerovox Corp., is beginning the fifteenth year of his connection with Aerovox.

JIM QUAM
Says




Every year about this time I get a feeling of anticipation, something like a small boy just before Christmas, as I look forward to the Radio Parts Show here in Chicago. Because that's one time when we can meet so many of our old friends in the radio industry, and greet a lot of new friends that Quam Speakers have made for us during the past years, and it's really gratifying to know how many of these new friends there are.

We'll be on hand again as usual, and we'll have some new things to show you, so we want you to stop in and see us at the Quam-Nichols booth. Make a note of the address now, please—it's 210 Bell St. We're looking forward to seeing you.

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

QUAM
SPEAKERS

NEW REPLACEMENT GUIDE & CATALOG



Complete down-to-date replacement guide . . .

FREE! Get Your Copy . . .
USE COUPON

• Halldorson engineers have just completed this study. Saves time and effort to servicemen. Shows the correct Halldorson model to use. Relatively few models take care of practically all sets; in fact, catalog shows 8 models will handle over 90% of replacement demands on both power and audio transformers.

Haldorson
Vacuum Sealed Transformers

THE HALLDORSEN COMPANY RT-538
4500 Ravenswood Ave., Chicago, Ill.

Please send me
 Free Catalog and Replacement Guide.

Name

Address

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

SELL CROWE
Remote Controls for Auto Radios



INTERCHANGEABLE

NEARLY four million auto radio sets, new within the last three years, offer you an unusual opportunity. Sell Crowe On-the-Panel Controls to reinstall these still-serviceable radios in new cars. Sell them to replace old-fashioned under-dash or steering column controls in owners' present cars.

All Cars . . . Most Radios

Crowe Controls are interchangeable for all cars and most makes of radios. Airplane or porthole dials make it easy to exactly match manufacturer's car styling. Easy to install. Economical to stock. Standard equipment on leading makes of radios.

See Your Jobber

Go after your share of this replacement business. Get a stock of Crowe Controls from your Jobber.

ASK FOR BULLETIN

CROWE NAME PLATE & MFG. CO.
1745 GRACE STREET CHICAGO
CABLE ADDRESS: CRONAME-CHICAGO

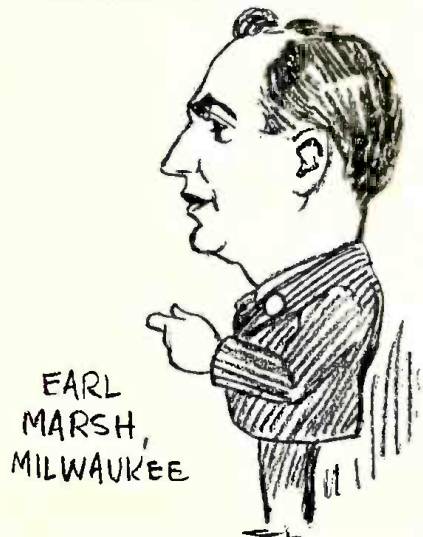


Olsen Radio Supply, parts jobbers of 412 Pereida St., San Antonio, Tex., have issued a big new catalog, a 1938 buying guide with list prices. It may be used as a selling medium without disclosing trade prices.

Sun Radio Co., veteran parts jobbers of New York City, have moved to their own new 2-story building at 212 Fulton St. Special departments are provided for amateur supplies, P.A. test equipment, besides a huge set department and a section for appliances. Modern soundproof booths are featured, and a phonograph-and-record department has been added.

Arcturus distributors throughout the country recently received pieces of an enormous birthday cake which had been a feature of company's celebration of its 10th anniversary of its development of the quick-heating radio tubes. The cake was 6 ft. square, lighted with 10 quick-heating blue tubes of a decade ago. Arcturus sales manager Jack Gearner figured up that the firm, with the quick-heating feature, saves approximately 84 years of radio listening time each and every day.

J. M. McNamara has been named Detroit divisional manager for an area bounded by a line running from Buffalo to Pittsburgh to Albany and from Bridgeport to Bangor, Me., and to Burlington, Vt.



May, 1938

"TOKFONE"—The 1938 Sensation!

PEP • PUNCH • PRICE



TOKFONE, Jr. Master Station

"TOKFONE" JUNIOR

Consisting of Master, Remote Station and 50 ft. of wire.



TOKFONE, Jr. Remote Station

\$10⁷⁵

The Biggest Buy in Communication Systems
NOTHING CAN TOUCH IT!
GET YOUR SHARE!
• • CRASH THIS FERTILE MARKET!

If you're in a position to "CASH-IN" with FAST MOVING-LOW PRICED intercommunication systems then you owe it to yourself to get in touch with REGAL—NOW!

• Note These Facts •

OTHER 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—Manufactured in our own factory.

We also Manufacture P.A. Equipment in the following sizes: 6, 12, 15, 30, 60 Watt—Amplifiers—Parts used are: Aerovox-Thordarson—I.R.C.—Parmet-Rola—Clarostat-Eby and Holyoke—Nothing but the best.

SEND FOR CATALOG SHOWING COMPLETE LINE!
REGAL AMPLIFIER MANUFACTURING CORP.
 14 WEST 17th STREET Cable address "Ramcoamp" NEW YORK CITY

FOR TODAY'S BEST BUY...

• COMPLETE SHOWING •
 1938-1939 METERS & TESTERS
 Booth 215—Steinmetz Ave.
 JUNE PARTS SHOW—CHICAGO

Get this combination
VOLT-OHM-MILLIAMMETER AND FREE POINT TESTER

PRECISION BUILT
 ONLY **\$28³⁵**

Precision built throughout, yet designed to withstand rough field work. That's why you find Readrite-Ranger testers used by so many leading service organizations. Volt-Ohm-Milliameters, Tube Testers, Free Point Testers, Oscillators, available in combinations or in single units. No extra cases to buy. Today's biggest values in Precision Testers.

The Readrite-Ranger Model 640 Free Point Tester has eight automatic switch type and ten single action jacks. Five sockets will handle any type radio receiving tube. Model 740 Volt-Ohm-Milliammeter has 3" Square Triplett Precision Instrument. Scale readings: 10-50-250-500-1000 AC and DC Volts at 1000 Ohms per Volt (DC Accuracy 2%; AC 5%); 1-10-50-250 DC M.A.; 0-300 Low Ohms; High Ohms to 250,000 at 1 1/2 Volts. (Rheostat adjustment for 1 1/2 Volts for Ohms readings to 2 1/2 Megohms. Batteries may be added, permitting such readings in 250,000 Ohms steps.) Low Ohms to 1/2 Ohm with 25 Ohms in center of scale. Backup circuit used. Current draw is only 1 M.A. Batteries, accessories and instructions included.



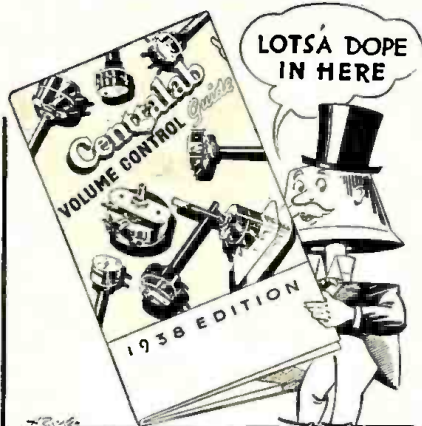
ALSO AVAILABLE IN SINGLE UNITS

NO EXTRA CASES TO BUY Model 640-740



READRITE METER WORKS
 519 College Avenue, Bluffton, Ohio
 Please send me more information on Model 640-740;
 I am also interested in
 Name
 Address
 City State

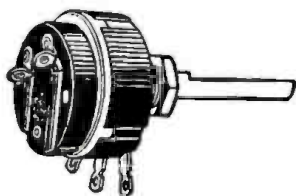
TALK OF THE TRADE



Ask Your Jobber for the NEW CENTRALAB Volume Control Guide

Again . . . the servicemen's most popular guide . . . now available . . . bigger and better than ever.

Lists 10,000 models! . . . 240 pages . . . more than 400 types of radios . . . complete line of midget Radiohm Replacements . . . Also a complete listing of all other Centralab products: switches, resistors, sound projection controls, and the new Centralab wire-wound Radiohm.



FREE: At your jobber . . . or send 10c. to cover handling and mailing to Centralab

Meet Centralab at the
National Radio Parts
Trade Show
Chicago - June 8-11

Centralab

Milwaukee, Wis.
Division of Globe Union, Inc.

Allen B. DuMont Labs., Inc., are now established in their own factory building at 2 Main Ave., Passaic, N. J. New quarters have space for future plant expansion and having spent several months on improvements at the site, DuMont Labs now have much needed space for their growing production of cathode-ray tubes, oscillographs and associated equipment, as well as for laboratories and general offices.

Vice-president M. H. Kranzberg of Wholesale Radio Service Co., Inc., has announced the appointment of William Tiger as manager of the firm's new camera division. Mr. Tiger has had wide experience with department stores, camera clubs and photo magazines.

Gere Burns, pioneer radio sales and advertising executive, is now director of sales and advertising for the Lifetime Corp., sound equipment manufacturers of Toledo, Ohio. Mr. Burns has acquired an ownership interest in Lifetime and with president William H. Manoff, has planned a new schedule of promotion and sales.

Floyd W. Bell, president of Bell Sound Systems, Inc., 61 E. Goodale St., Columbus, Ohio, has announced the appointment of R. E. Potts as sales manager. Bell firm manufactures a complete line of public address, amplifying and inter-communicating equipment, with a full U.S. representation operating through jobber and dealer channels.

Extra large order of custom built dials has been placed by S. W. Gross of Emerson, with vice-president Philip Richland of Gemoid Corp., makers of decorative processed dials. Brand new designs and effects will be used by Emerson in the 1939 radio line.

Radio Servicemen of America recently held an open meeting at the Radiart factory, Cleveland, Ohio. Featured subjects were new high-frequency vibrators, and engineering design of auto aerials.

Crosley Radio Corp. has a new chief engineer for its automotive radio division, Clarence G. Felix. His connection with Crosley dates back to 1927 and during that period he has held various key engineering positions with the company, with notable results.



New chief engineer for Crosley auto radio, C. G. Felix.

Utah Radio Products Co. recently held an annual meeting of stockholders, and re-elected eight of nine Board Directors. Robert M. Felsenthal was elected the ninth director. These officers were re-elected: G. Hamilton Beasley, president; John A. Snyder, first vice-president; E. L. Barrett, vice-president in charge of engineering research; W. Dumke, vice-president in charge of production; and H. S. Neyman, secretary-treasurer.

H. W. Acton, of H. W. Acton, Inc., who market the Actone "Shadowgraphed" transcription and phonograph needles, reports increased acceptance for the product among broadcast stations of the country. "Shadowgraphing" is the Actone process by which a greatly enlarged shadow of each needle point is measured and checked before shipment.

JANETTE ROTARY CONVERTERS

Are Recommended by

Philco Radio and Television Corporation
who is one of the many internationally known radio manufacturers recommending Janette Rotary Converters.

TO ALL PHILCO DISTRIBUTORS

"We have had a lot of experience with rotary converters for use with radios and we recommend that you use Janette rotary converters . . . PHILCO models will give entirely satisfactory performance with these converters" . . .

WHY EXPERIMENT—INSIST ON A JANETTE



Janette Manufacturing Company

556-558 West Monroe Street Chicago, Ill. U. S. A.
BOSTON - NEW YORK - PHILADELPHIA - CLEVELAND - MILWAUKEE - LOS ANGELES
DETROIT - SEATTLE

The new vice-president in charge of engineering for the radio division of *Sonora Radio & Television Corp.*, Chicago, is *Ben Freund*, according to



Sonora Radio's new engineering vice-pres., Ben Freund.

news from president *Joe Gerl*. Mr. Freund has been in radio since 1920; he was recently with *Continental Radio & Television Corp.* and formerly worked with *Columbia Radio Corp.* and with *Bremer-Tully Co.*

After 21 years at the same address, the jobber firm *J. H. Burke Co.*, Boston, have taken bigger and better quarters at 674 Commonwealth Ave. Increased activities and maintenance of Burke service to dealers made the move necessary.

Frank Harris, formerly with *Emerson*, has been appointed *Detrola* export manager. His assistant is *Rhudy Blanck*, who just returned from a long tour of *Detrola* European outlets.

Presto Recording Corp. reports an increase of 78 per cent in sales of sound recording equipment for the first quarter 1938, compared with the same period last year. Dealers at the rate of two a day have been adding the line, and report it a sure-fire traffic builder, according to headquarters news. Repeat business in sales of blank discs during a recent month are 123 per cent over the same month last year.

Radio Doctors, Inc., radio dealers of Urbana, Ill., recently staged a series of high fidelity demonstrations at the local *University of Illinois' Electrical Show*. Tonal tests were presented at five shows at which guests averaged 3,000. Messrs. *Nolan* and *Price of Stromberg-Carlson's* Chicago office were the showmen, while the dealer found hundreds of new prospects among the guests.

President *R. L. Triplett* of the *Triplett Electrical Instrument Co.*, Bluffton, Ohio, returned recently to his offices from a 2 months' vacation and business trip across the continent to the West Coast. He returned via the Panama Canal, Cuba and New York City.

Weston Electrical Instrument Corp. have moved their New York office from 50 Church St. to additional space and facilities at 11 Park Place. The office remains under the management of *L. C. Nichols*.

National Union Radio Corp. have consolidated their sales headquarters, formerly located at 570 Lexington Ave., New York City, with the NU research and engineering headquarters at 57 State St., Newark, N. J. Move was made in the interests of better and faster company and customer relations. At the new and larger Newark offices will be located these National Union execs: *S. W. Muldowny*, *R. H. Van Dusen*, *J. H. Robinson*, *G. E. DeNike*, *F. M. Paret*, *J. J. Clune* and *Le Roy Schenck*. Other execs will be located at 45 Spring St., Newark, among which are *H. R. Peters*, president, *H. G. Butterfield*, *Andrew A. Priest* and *R. E. Booth*. NU also conducts extensive manufacturing operations at 1181 McCarter Highway, Newark.

One of the feature sound installations of the month has been made by *Wholesale Radio Service Co.* with *Lafayette* equipment at the New York Academy of Medicine. In handling the job for this famous lecture hall, *Lafayette* engineers concealed all components except the mike; the remote control unit was installed on the back wall of the auditorium, and the amplifier located close to the mike.

When Should
VIBRATORS
Be Replaced*?



GIVE YOUR CUSTOMERS BETTER SERVICE with
MODEL 1670 VIBRATOR-TESTER
An Approved DeLuxe Model

DEALER PRICE (METAL CASE) **\$24.00**

- Tests All Types 6 Volt Vibrators
- Three Scale Triplett Instrument
- Uses Approved 5000 Ohms Load

*Vibrators should never need replacement until the contacts are worn to the extent that the output of the power packs is unsteady or the vibrator fails to start properly on a low "A" battery.

This new Triplett Vibrator Tester has been constructed with the engineering cooperation of leading manufacturers of vibrators. It will test all types and makes (6 volts) as used in automotive and home battery receivers. A load of 5000 ohms recommended by vibrator engineers is applied. The 3-meter scales are: 0-10 volt scale shows voltage input to the vibrator; the 6000-BA0 scale shows output; scale marked 0-100 per cent shows per cent of output voltage as reflected by change in input voltage. Low damped meter permits needle to follow voltage fluctuations caused by faulty vibrator contacts. Sold with complete instructions on how to test.

MODEL 1670 in Portable Metal Case with Black Wrinkle Finish . . . Attractive Etched Panel
DEALER NET \$24.00

MODEL 1670 in Portable Leatherette Case with Removable Cover and Compartment for Accessories.
DEALER NET \$28.00

SEE THE NEW TRIPLETT 1938-39 LINE
AT THE
CHICAGO JUNE RADIO PARTS SHOW
BOOTHS 213-15 — HENRY AVENUE



THE TRIPLETT ELECTRICAL INSTRUMENT CO.
195 Harmon Or., Bluffton, Ohio

Please send me more information on

Model 1670 Vibrator-Tester

I am also interested in

Name

Address

City

State

A GOOD NAME GOES A LONG WAY

The Good Name, Ken-Rad, attracts customers. For dependable radio reception and complete customer satisfaction, handle Ken-Rad Tubes.

KEN-RAD TUBE & LAMP CORP.
OWENSBORO, KY.

KEN-RAD

DEPENDABLE RADIO TUBES

TRADE FLASHES

First models of the 1939 *Sonora* line are released to the trade on May 15, according to *Joe Gerl*, president of *Sonora Radio & Television Corp.*, Merchandise Mart, Chicago. Production lines are running full capacity on the firm's new push button tuning, the Dyna-Boost circuit and the Battery Sentry. Mr. Gerl returned recently after an extended trip East and reports extra enthusiasm among jobbers for the completeness, the styling, and the plus features of the line.

A policy of prompt delivery for both counter and mail order trade is currently being emphasized by *Federated Purchaser, Inc.*, at 25 Park Place, New York City, and at 343 Boulevard of the Allies, Pittsburgh, since *Dave Ormont* took over the reins of the com-

pany. The firm also continues its policy of stocking parts for very old sets.

Curt Wessel, who was for 23 years a prominent figure in radio trade publishing, died suddenly of a heart attack at Shippan Point, Conn., on April 29.

Arthur C. Ansley of *Ansley Radio Corp.* has returned to New York from a long trade trip through the middle West and South. He went to Kansas City, south to Texas and New Orleans. Mr. Ansley reports a tendency among dealers to stock fewer lines and to favor those products which have price protection.

Marconiphone, Inc., 679 Madison Ave., New York City, have announced nation-wide promotions on a new radio-phonograph portable combination to retail under \$100. Orders are now being taken for this recently an-

nounced Marconiphone model, D6, an AC-DC instrument finished in brown imitation leather.

Sales manager *James J. Davin* of *Detrola Corp.* has made a sales report in which he found that on May 5 last *Detrola* shipped 75 per cent more radios than on any day during their 1937 holiday season. The report indicates strong acceptance for *Pee Wee* sets among jobbers and dealers.

Distributors *M. A. Hartley & Co.*, formerly of '18 Middlebrook Ave., Staunton, Va., recently held a feature opening of their new store at 387 Central Ave., Staunton. On the program were Prof. G. M. P. Fitzgibbons with a demonstration of hypnotism, and Mr. Westbrook of Westinghouse with a lecture on sodium light, black light and the sterile lamp. Featured also were manufacturers' exhibits, door prizes, refreshments.

Amplifier and Sound System Specifications — Corrections to listing in April issue, page 42.

Amp. model No.	S. S. model No.	Amp. list price	S. S. list price	Rated watt	% distortion	Max. watts	Gain		No. of inputs	No. of mixers	No. of tone controls	No. of tubes	Output		Line watts	Power source	Speakers		Type mike	Phono turn-table	
							DB	Input resist					Tubes	Class			No. & size	Type			
Operadio Mfg. Co., 13th & Indiana, St. Charles, Ill.—"Operadio"																					
813	106	\$ 36.50#	\$ 86.50#	8	5	15	126	2 1/2	Meg.	2	2	1	4	6L6G	A	75	AC	1-10"	EE	C	No
1010	410	55.00#	110.00#	14	5	20	130	2 1/2	Meg.	3	2	1	7	6V6G	A	90	AC	2-8"	PM	SV	No
1010	414	55.00#	125.00#	14	5	20	130	2 1/2	Meg.	3	2	1	7	6V6G	A	90	AC	2-12"	PM	SV	No
822P	124W	83.00#	207.00#	22	5	40	131	2 1/2	Meg.	3	3	1	7	6L6G	A	125	AC	2-12"	EE	SC	No
835		120.00#		35	5	52	134	2 1/2	Meg.	3	1	1	7	6L6G	AB	130	AC				No
870		123.00#		70	5	104	28	1000	ohms		3		7	6L6G	AB	210	AC				No
855		184.00#		55	5	80	139	2 1/2	Meg.	4	5	1	13	6L6G	AB	150	AC				No
Pre-Amp 660		81.00#					65	2 1/2	Meg.	2	2	1	4	76	A	25	AC				No
162	172	180.00#	255.00#	25	5	35	130	2 1/2	Meg.	2	2	1	6	6L6G	A	100	6V. DC	2-12"	PM	D	Yes

The above prices do not include tubes.

"PINCOR" POWER SUPPLY UNITS

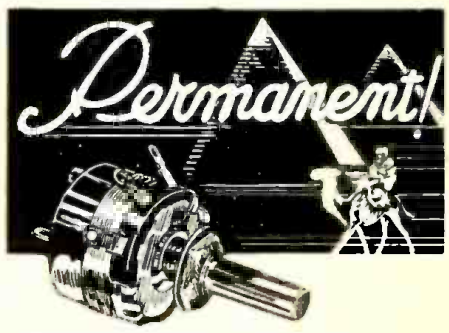
DYNAMOTORS GEN-E-MOTORS CONVERTERS

"PINCOR" 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.

PIONEER GEN-E-MOTOR CORPORATION
 Manufacturer of "PINCOR" Products
 Dept. R-2E
 400 W. Superior Street, Chicago, Illinois

OTHER "PINCOR" PRODUCTS

REO TOP and GOLD CROWN gas-engine driven electric light and power plants, 100 to 2000 watts; alternating or direct current; air or water cooled; remote control. Send for literature.



- The new CLAROSTAT Midget Controls "stay put". Can be installed and forgotten. Longest service life.
- Negligible resistance change after cycling 10,000 times. Antenna and C-bias control still perfect after 28,000.
- Controls remain quiet from first to last. Shafts turn freely and snugly. Power switch remains O.K.
- Jobbers and servicemen most enthusiastic over these new CLAROSTAT Midgets.

See Us at the Show!

- Get our story first hand—Booth at 208 Steinmetz Ave. Otherwise, write for new 208-page pocket-sized service manual.

CLAROSTAT
 MANUFACTURING CO.
 Incorporated
 285 North Sixth St.
 Brooklyn, N. Y.

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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.

STARTLING



Illustration Exact Size.

**8 MFD . . . 100 VOLTS WORKING
SMALLER METAL SEALED**

SOLAR MINICAP Dry Electrolytic Capacitors mark much more than an advance in an art. They mean that filters now occupy less space, cost less, have longer life because of permanent sealing, are used in single units to simplify both production and stock-keeping, and are "standard" parts.

Solar engineers have been the pioneers in advanced methods of making radically smaller dry electrolytic capacitors. "little giants", introduced three years ago, were the original ultra-compact dries. Now we announce further size reduction, superior characteristics and outstanding utility in the new Minicaps. You will find them in thousands of radio sets—and they will *stay there*.

Details upon Request.

SOLAR MFG. CO., 599 Bway., New York

CORWICO
ANTENNA SYSTEMS
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HOOK-UP WIRES

MADE BY
Engineers FOR
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Write for Complete Catalog
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1938 RADOLEK
the Most Complete Radio
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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 will help you make more money.

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Send me the 1938 Radolek Radio Profit Guide FREE.

Name

Address

Serviceman? Dealer? Experimenter?

**AMERICAN RADIO ASSN.
 AT CHICAGO, SEPT. 30-OCT. 2**

★ Marcus W. Hinson, secretary of the American Radio Association, 500 North Dearborn Street, Chicago, has outlined some of the aims of his organization of radio servicemen as follows:

"An educational program is being started to provide members with fundamental facts about merchandising and the effect such principles have on net income. To begin with, members will be informed about companies that use more than one list price on the same item in different parts of the trade.

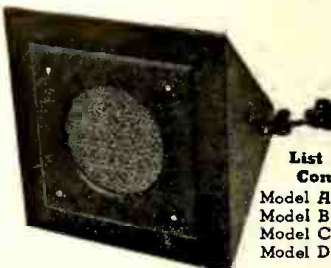
"Standards of quality will be recommended by the American Radio Association so that members will have a means of protecting themselves in regard to ratings of condensers, transformers, volume controls, tubes, resistors, etc. An engineering laboratory is being retained to check the reliability of ratings. A file on the financial responsibility, integrity, reliability and business habits, of replacement merchandise manufacturers will be kept for the benefit of members only. Many reliable manufacturers are giving valuable assistance in the shaping of our program on merchandising. Others are invited to keep in contact with national headquarters."

The date for the National Convention of Radio Service Engineers and Radio Laboratory Owners, sponsored by the Association, has been changed to Sept. 30, Oct. 1 and 2. In conjunction with the convention will be a big National Radio Service Equipment Show, to be held on the 19th floor of the Hotel LaSalle, Chicago, instead of at the Sherman House as originally planned. Keynote is "Profits"; an estimated 5,000 will attend.

★ According to I. Finkel, of Star Machine Manufacturers, Inc., makers of auto radio controls, two new sales representatives for the company have been named. These are B. L. MacPherson, 1919 Wells St., Ft. Wayne, Ind., for the states of Indiana and Kentucky, and the H. E. Walton Co., 2111 Woodward

Ave., Detroit, Mich., for the state of Michigan.

★ J. H. Clippinger, vice-president in charge of sales of the Continental Radio & Television Corp., in Chicago, announced this week several expanded territories for members of the Admiral sales organization. Maurice Despres and Lou Dorfman will be in charge of Admiral activities in all of New York State, including Metropolitan New York territory and Connecticut. Sid Gatty, in addition to handling Eastern Pennsylvania, Virginia, Maryland and the District of Columbia, will also be in charge of Admiral activities in Scranton and Wilkes-Barre.



List Prices Complete
 Model A \$25.00
 Model B \$40.00
 Model C \$75.00
 Model D \$175.00

FIDELITY! TONE RANGE! DISTORTIONLESS POWER! BEAUTY OF DESIGN and EASE OF INSTALLATION! IT'S ALL THERE IN A VIBRALOC . . .

Studio or Stadium coverage with the same reproducer . . . "if you're doubtful . . . we've got the proof . . . just write."

Patented Acoustical features incorporated in the new VIBRALOC REPRODUCER reveal, for the first time, brilliant definition in tone blending at any volume level. The usual beam or searchlight effect is not present in the VIBRALOC method of sound distribution, resulting in freedom from reflection distortion and other acoustical troubles.

Locking mechanical vibrations at the source of audio sound distribution eliminates disturbance of the original wave form, permitting movement, into free space, minus pressure re-shaping or the effects of resistance to coil movement.

Order Direct Until Your Jobber Is Stocked.

JOBBERS!! DEALERS!!

Exclusive Territories Available! Catalogs & Proposition Upon Request.

VIBRALOC
 PAT. Electro Acoustic Products
 MANUFACTURING CO.
 3691 MISSION ST., SAN FRANCISCO, CALIF., U.S.A.



D7T High Imp. LIST \$22.50
 D7 Low Imp. LIST \$20.00

The NEW "CLIPPER" DYNAMIC

Another American Moving-Coil Microphone, Featuring

HIGH OUTPUT—SMALL SIZE

RUGGEDNESS—FIDELITY

TRIM—EFFICIENT DESIGN

LONG LIFE—STABILITY

D7 and D7T Microphones come complete with 12½' R/S cable and Amphenol plug. Chrome finish. ¾-27 Connector. Over-all height, 2½". Diameter, 1½". Net Weight, 8½ ounces.

Request Catalog No. 27 for Complete Details.

AMERICAN MICROPHONE CO., Inc.
 LOS ANGELES, CALIF.



NEW YORK AND CHICAGO POLICE *FIGHT CRIME WITH RADIOS* 100% RAYTHEON EQUIPPED!

Where absolute dependability of a radio for the protection of lives and property is as important as in a police squad car—why do the two largest metropolitan cities in the United States choose Raytheon tubes?

The answer is in Raytheon's outstanding record of performance—in ruggedness and long life! That's because Raytheon auto set tubes are especially designed and constructed for maximum life under adverse conditions and over the wide range of voltages in an automobile battery—and to withstand the jarring and pounding on the roughest of roads.

The more efficient police forces in hundreds of smaller cities, too, have Raytheon-equipped radios in their squad cars.

Play safe, too! Insure more efficient operation of the sets you service. Replace with these same Raytheons—and enjoy greater *permanent* tube profits!

Visit the Raytheon booth at the Radio Parts Show, Booth 207 Henry Avenue, Stevens Hotel, June 8, 9, 10 and 11, Chicago.

RAYTHEON

CHICAGO • NEW YORK
ATLANTA

NEWTON, MASS.
SAN FRANCISCO



"WORLD'S LARGEST EXCLUSIVE RADIO TUBE MANUFACTURERS"

Motorola HOME Radio ANNOUNCEMENT

FAST SELLING LINE

The 1939 Motorola Home Radio line will be *short*, with only a concentrated selection of the fastest selling models in the most popular price brackets.

NO PRE-SEASON LOADING

Motorola will utilize no high-pressure methods to obtain pre-season loading. No driving tactics to make you buy in May what you won't sell until September.

TABLE MODELS IN JUNE

New Motorola Table Models will be ready in June for summer selling. Plenty of time to catch the baseball and outing season consumer market.

CONSOLES IN JULY

Motorola's line of Consoles will be available in July. Right when you need them for planning your Fall selling activity.

SOMETHING MORE THAN PUSH-BUTTONS

The 1939 Motorolas will have features that intrigue the public and make them want to buy. New, advanced, clever, desirable features—something more than just Push-Buttons or Remote Control. The last word in radio convenience.

NEWEST STYLING

Motorola will present new, salable merchandise for 1939. Up-to-the-minute, new and beautiful styling with plenty of eye appeal.

BUY WHAT YOU NEED WHEN YOU NEED IT

Motorola urges dealers to adopt a safe, sane and sound buying policy. No need to be stampeded into buying "futures." There is a *real* profit in quick turn-over.

Bank On.. and With.. Motorola

GALVIN MFG. CORPORATION • CHICAGO