

RADIO

FEBRUARY • 1940

*and
Television*

RETAILING



DESIGNING DEALERS

Describe

"PERFECT LINE"

*Other features
in this issue*

LATEST IN AUTO RADIO

WHERE CHAINS ARE WEAK

SERVICING F-M SETS

PROPER SOUND RATIO

COOLING FOOD AND HOME

CO-OPS GET RESULTS

STARTING WITH WASHERS

WHAT WILL THE PUBLIC BUY THIS YEAR?

A
McGRAW-HILL Publication
Price 25c

THE 3 R'S OF A VIBRATOR

REPUTATION OF THE MAKER
 RELIABLE PERFORMANCE
 REPEAT SALES FOR YOU



When you buy any radio replacement parts you generally measure their value by some standard. When you buy replacement vibrators it is well to consider these three "R's".

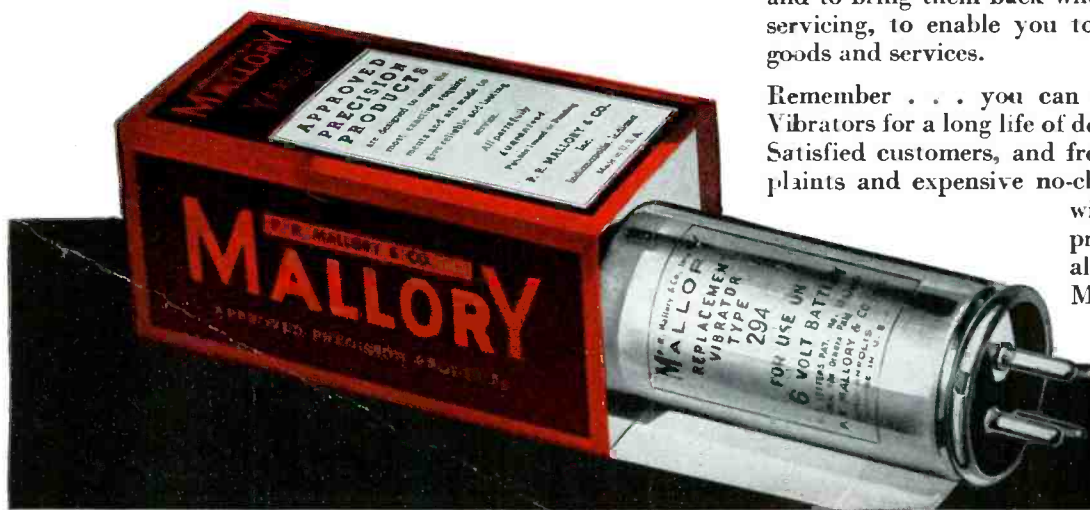
1. Reputation of the maker. Because Mallory has been associated with power supply vibrators from the very start, its engineers have the longest experience and broadest background in the industry on which to base soundness of design and quality control of production. That is why Mallory made Vibrators are original equipment in practically 80% of all auto and other battery operated radio receivers built today.

2. Reliable performance. The exceptional long life and trouble-free performance of

Mallory Vibrators result from the use of highest-grade tungsten contacts, fine mechanical balance, permanent alignment of component parts, positive starting, absolute freedom from broken reeds and general technical excellence. Long production experience on a few basic designs . . . long inspection experience in testing them . . . assure you uniform high quality.

3. Repeat sales for you. You are in business to make money . . . and Mallory Replacement Vibrators are profitable, even from a single sale viewpoint. But their real value to you lies in their ability to satisfy customers, and to bring them back when their sets need servicing, to enable you to sell them other goods and services.

Remember . . . you can rely on Mallory Vibrators for a long life of dependable service. Satisfied customers, and freedom from complaints and expensive no-charge re-servicing will bring you more profits. Be wise . . . always use genuine Mallory Vibrators.



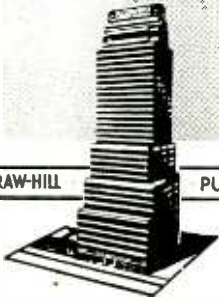
Use
P. R. MALLORY & CO. Inc.
MALLORY
 REPLACEMENT
 CONDENSERS . . . VIBRATORS

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

Use
YAXLEY
 REPLACEMENT
 VOLUME CONTROLS

RADIO

and Television RETAILING



A McGRAW-HILL

PUBLICATION

FEBRUARY 1940

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SALES STATIC . . . Madam, might I suggest you refrain from continually referring to the Magnesite Frequency-Locking Transformer as a "Whoosis"?

CONFUCIUS SAY...



"NEVER
BEFORE
COULD
BUY AT ONLY... **\$69.95**
SUCH BIG 9-TUBE RADIO CONSOLE"

One of a Dozen
NEW

Super-Values to Retail at
\$9.95 TO \$119.95

With a Full Profit to You
On EVERY Model



10-TUBE PERFORMANCE

STEWART-

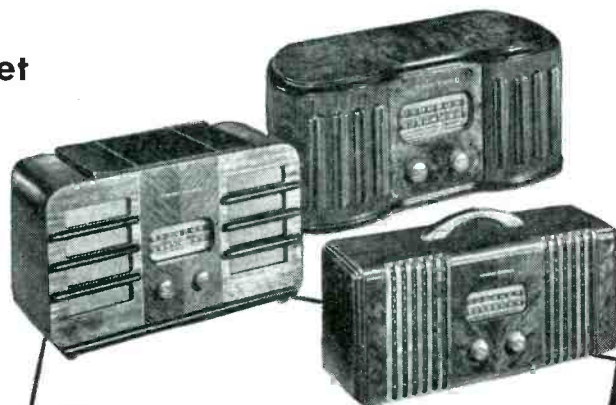
ANOTHER
STEWART-WARNER
PRODUCT
STEWART-WARNER CORP.

• 1828 DIVERSEY PARKWAY, CHICAGO

HERE are the greatest values in Stewart-Warner's whole history of radio super-values! Brand new models—superb in tone, alive with power, outstanding in size and styling

—and with price tags that are sensational. Just look, for example, at the record-breaking value you can offer prospects in that huge, 42-inch hand-rubbed \$69.95 console! . . .

- ✓ 9 Tubes including rectifier and 1 double-purpose tube
- ✓ Built-in Magic Antenna
- ✓ Magic Keyboard Automatic Electric Tuning
- ✓ Covers all bands from 540 to 18,000 Kc.
- ✓ Connection for record-player and television sound
- ✓ 12-Inch DeLuxe Dynamic Speaker
- ✓ AVC and Bass Compensation
- ✓ 3-Position Tone Control
- ✓ Massive hand-rubbed cabinet



7-Tube Performance! 5 tubes including rectifier and two double-duty tubes • Built-in Magic Antenna • AC-DC Superhet circuit • Covers 540-1725 and 2200-7000 Kc. • Available in choice of 3 highly finished wood and 2 molded cabinets.

Also . . .

"6-TUBE CONSOLE
7 PUSH BUTTON
ELECTRIC TUNING **\$39⁹⁵**
8-TUBE PERFORMANCE
PLENTY HOT
SEE DISTRIBUTOR
PLENTY QUICK!"

-WARNER

Also Makers of SAV-A-STEP Refrigerators and Electric Ranges

RADIOS AND TELEVISION

THIS FINANCE PLAN

PROTECTS YOUR PROFITS AND PROMOTES YOUR SALES

- 1 IT'S THE NEW DEALER RESERVE PLAN
- 2 IT DOES WHAT MOST PLANS FAIL TO DO—PROTECTS YOUR PROFITS ON TIME SALES
- 3 IT OFFERS A NEW LOWER RATE
- 4 IT REQUIRES ONLY ONE RATE SCHEDULE FOR ALL HOME APPLIANCES AND RADIOS
- 5 IT'S A PLAN YOU SHOULD BACK TO THE LIMIT BECAUSE—

IT'S A SALES-MAKING PROFIT PROTECTION PLAN

A BIG part of your profits should come from your time payment sales.

But will it?

Not if your finance plan is all shell and no meat. *Not* if it looks good but works badly—for you. *Not* if it fails to offer liberal terms and low charges to attract the buyer. *Not* if it fails to protect the dealer during the first six months, the period when most repossessions occur. *Not* if it leaves you to pay your re-selling costs out of your merchandise profits.

What is there about this new Commercial Credit Plan that makes it a stand-out—the safest plan—the one really practical plan for most dealers? *Because it is a profit protection plan.*

Compare these features with other plans.

Commercial Credit has again cut appliance finance charges. One simplified rate chart covers all appliances and radios.

The Commercial Credit Dealer Reserve Plan sets aside a cash reserve for the dealer running as high as \$5.40 a deal. Here's why—

Finance company experience proves that a certain number of appliances sold on time are afterwards repossessed. After paying repossessing, reconditioning and re-selling expenses, the dealer frequently realizes an amount that is less than the original selling price, thereby establishing a loss.

And why should a dealer lose this large part of his original profit on the merchandise? He shouldn't have to. Under this new plan, the customer charge, low as it is, includes a covering margin to protect the dealer.

* * * * *

As optional arrangements, Commercial Credit Financing Service offers at the same low rates the Limited Liability Plan—popular with many dealers—as well as the Purchaser Discount Plan—created to reward the prompt paying purchaser with a discount on each instalment paid within three days of coupon date.

Regardless of which plan the dealer may select, Commercial Credit never loses sight of one of its main responsibilities. It provides a sound, adequate, liberal credit and collection service.

The Commercial Credit Plan is a *merchandising* plan in every respect. Terms are liberal with payments small enough to minimize the price of the appliance. Special plans are offered for short-term financing; for quarterly payments by farmers; for combination and "add on" sales.

The liberal low-cost FHA Plan is offered through Commercial Credit service for the financing of eligible equipment.

* * * * *

Commercial Credit Companies offer a Floor Display Plan for financing a single unit or an entire display of new merchandise. Terms are liberal, and the charges extremely low. Dealers may also arrange to demonstrate this merchandise in the prospect's home. Ask your local office for full details.



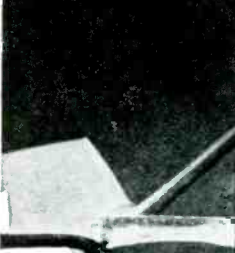
COMMERCIAL CREDIT COMPANIES

Serving Manufacturers, Distributors and Dealers throughout the United States and Canada

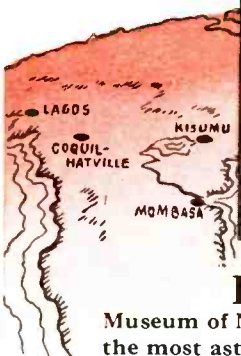
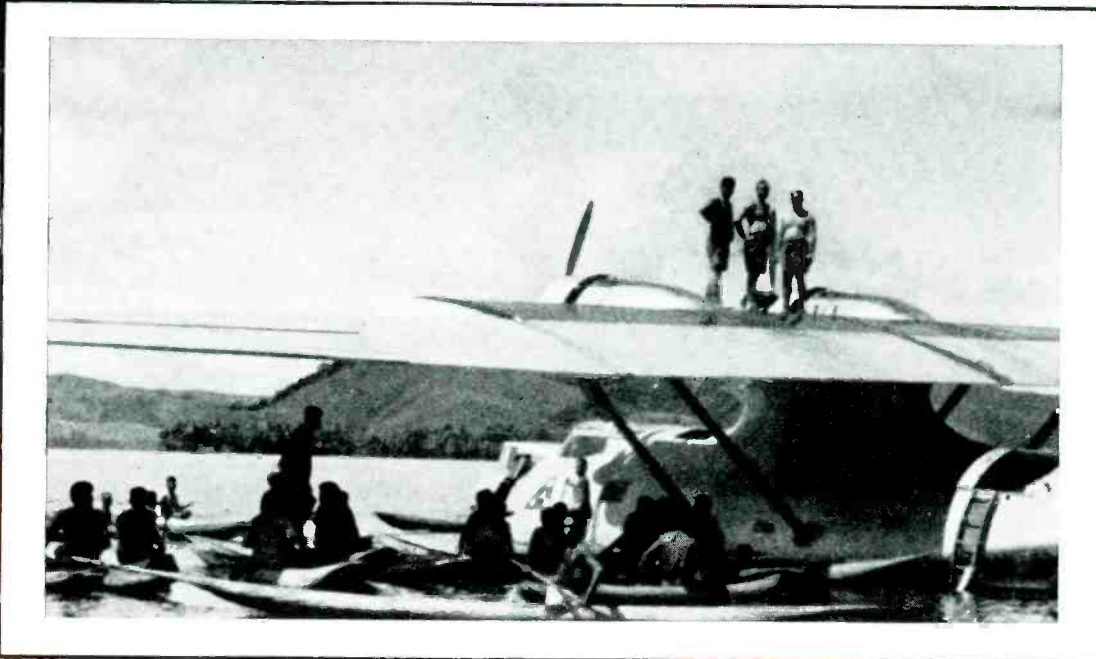
ARCHBOLD EXPEDITION

Circles the World

with **RAYTHEONS**



Richard Archbold (left) at Wake Island, enroute to San Diego, Hollandia.



Richard Archbold's seaplane at Ijar, Lake Sentani, New Guinea.

RICHARD ARCHBOLD, of the American Museum of Natural History, has recently completed one of the most astounding expeditions of modern times.

With his Consolidated Aircraft seaplane "GUBA," he was the first to follow the equator around the world, spanning the Pacific, Indian, and Atlantic Oceans. The first to fly a seaplane across Australia, Africa and North America. The first to explore the interior of Netherlands New Guinea where he discovered a new tribe estimated at 60,000 people. Hardships, privations, dangers, tests of skill, resourcefulness and courage 24 hours of every day for more than a year!

On such an expedition the equipment **MUST** be good . . . the **VERY BEST**. And so it was inevitable that **RAYTHEONS** were chosen for the communications system. And they *delivered* in the most grueling test imaginable.

Yet there was nothing *special* about these **RAYTHEONS**. They were the *one quality* product of **RAYTHEON** engineers, specializing exclusively on tubes . . . engineers anticipating fast moving radio circuit developments, and pioneering in tube design and constructions to meet these developments in advance, with the utmost of efficiency.

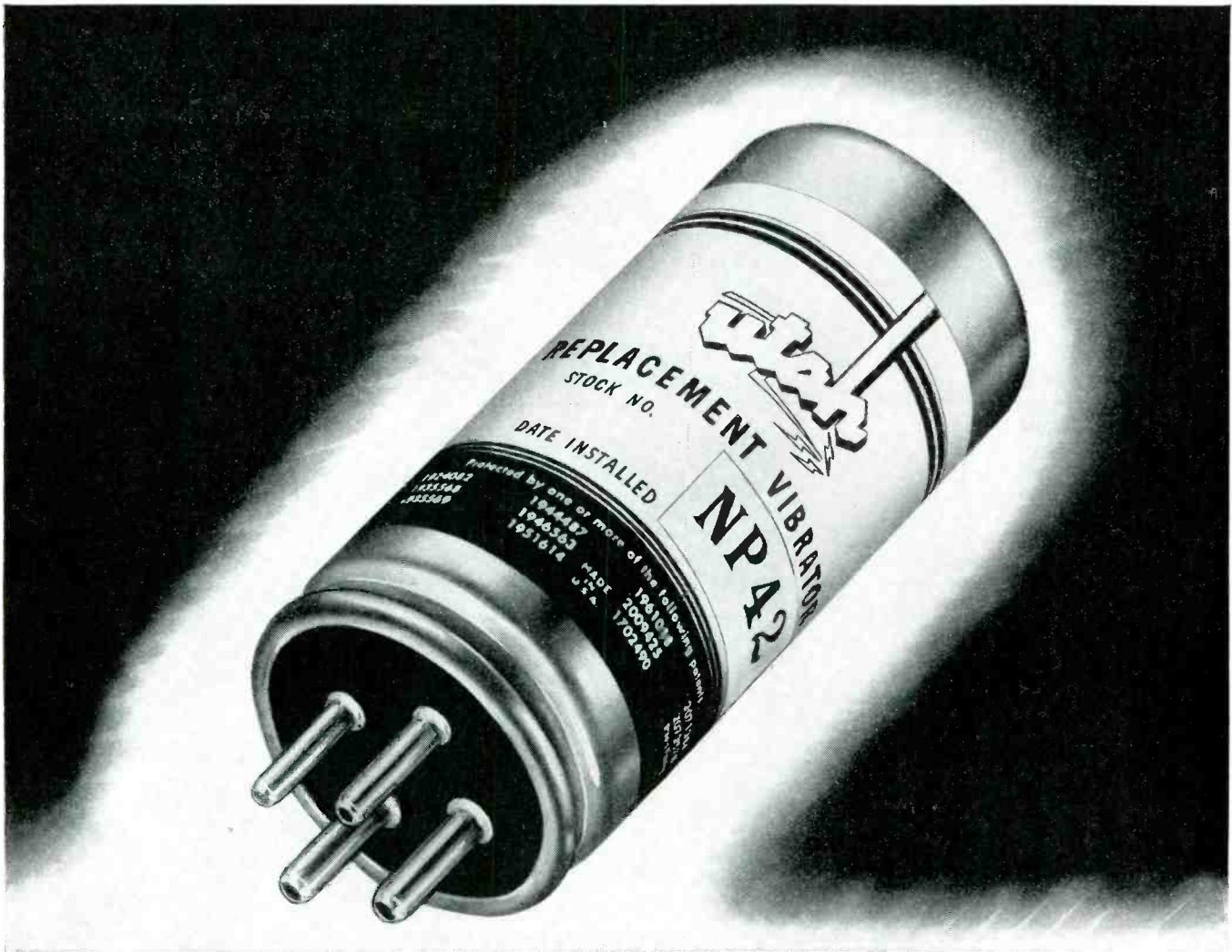
So today there's a **RAYTHEON** for every tube requirement, whether for the ordinary or for the most exacting of needs such as the Archbold Expedition demanded.

If you want to be fortified against every tube replacement emergency, remember that Raytheon is the one manufacturer that makes them all. And they cost no more.



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

"WORLD'S LARGEST EXCLUSIVE RADIO TUBE MANUFACTURERS"



5 REASONS WHY THE DEMAND FOR UTAH VIBRATORS INCREASED 63%

The preference for Utah Vibrators has grown with the industry, because most of the important vibrator developments have originated in the Utah laboratory. Outstanding design and advanced engineering have maintained their leadership. In 1939 the demand for Utah Vibrators increased 63% because:

- 1 Complete exact replacements can be made with the Utah line.
- 2 Absolute dependability is assured by Utah's rugged, time-proved construction.
- 3 Finest materials obtainable are used in the manufacture of Utah Vibrators.
- 4 "Life Tested" in Utah's laboratory—the industry's most versatile and best equipped.
- 5 12 months guarantee—against defective workmanship and materials.

The assurance of complete satisfaction has led thousands of users to standardize on Utah Vibrators. You, too, can be sure of all these advantages by insisting on Vibrators that carry the Utah label. For Vibrator information, write Utah Radio Products Co., 810 Orleans Street, Chicago, Illinois. Canadian Sales Office: 414 Bay Street, Toronto, Ont., Canada. Cable Address: *Utaradio*, Chicago.



V I B R A T O R S
 SPEAKERS • TRANSFORMERS • UTAH-CARTER PARTS

Admiral

BRINGS YOU WAR NEWS

DIRECT FROM EUROPE

AT THE UNHEARD OF PRICE OF

\$1295

LIST

(Slightly higher in
Far West and South)



Model 12-B5—5 Tube AC-DC Superheret • Band coverage: 540-1730 KC (Broadcast) and 5.65-17.1 Meg. (Gets all the 19-31-49 Meter Foreign Reception) • Special Built-in Antenna • Black Plastic Cabinet • P.M. Dynamic Speaker • Television Sound Connections • Other Models from \$9.95 and Up • See Your Jobber.

CONTINENTAL RADIO & TELEVISION CORP.

3800 WEST CORTLAND ST., CHICAGO, ILL.
Export office: 116 BROAD ST., NEW YORK, N. Y.

Sentinel backs RCA Preferred Type Tubes Program



"A step forward that will greatly benefit dealers, distributors, and manufacturers"

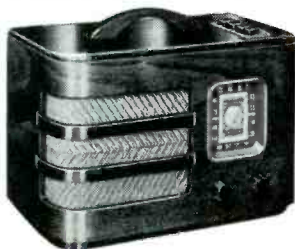
... says

E. ALSCHULER,
President Sentinel Radio Corp.

"Standardization of tube types has been a crying need of the radio industry. RCA's suggested 'preferred type tubes program' is an excellent solution to this serious problem. It will materially aid dealer and distributor in lowering inventory and warehousing costs. It includes tubes that enable the manufacturer to efficiently engineer any type of radio set. In my opinion, it should lead to more uniform designs and more concentrated production. These definite advantages can be gained without sacrifice of quality or value in the product brought to the ultimate consumer."

Model 195-ULTWD—Outstanding Sentinel Radio Features Preferred Type Tubes

A sensational leader in the Sentinel line is this attractive table model. A super-heterodyne, it has 5 full working RCA Preferred Type tubes. It is a splendid example of the practical results skillful engineering can create within the plan.



LESS THAN ONE TYPE IN TEN of the 470 types of radio receiver tubes now on the market is actually needed to design practically every type of radio receiver at the lowest ultimate cost. RCA has outlined a list of 36 RCA Preferred Type Tubes which adequately cover every function for any type of receiving set circuit.

Consensus of opinions reported by manufacturers, distributors and dealers is that RCA has made the most progressive step in years in announcing its Preferred Type Tubes Program.

Sentinel Radio has backed its judgment with actual production of sets using tubes selected from the preferred list. Distributors and dealers are anticipating a greatly simplified renewal market when the effects of this plan are felt.

No one is going to be hurt . . . everybody will benefit if the number of tube types can be reduced from 470 to 36.



Radio Tubes

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

Take the Royal Road to Profits with **NORGE** ROYAL ROLLATOR REFRIGERATION

**Here's the refrigerator
in which**

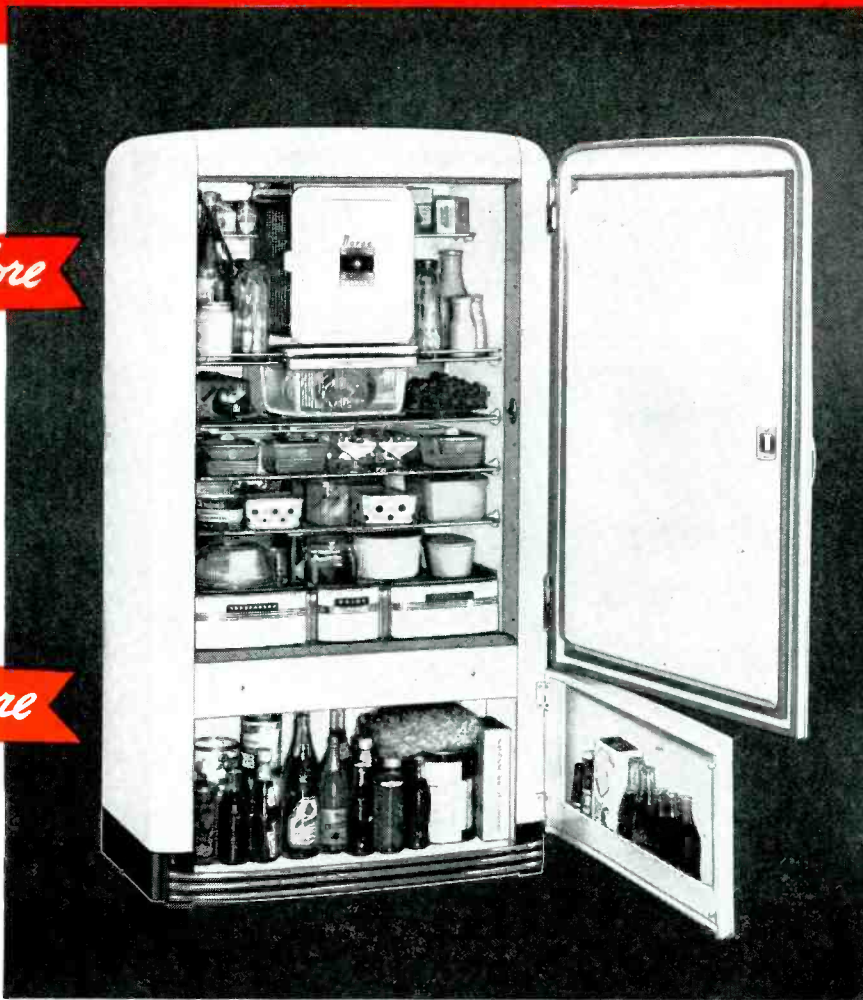
*From top to floor—
There's space galore*

To the women looking for today's best buy, Norge dealers can say: "Help yourself to an extra shelf . . . at no extra cost." By offering extra food capacity without extra size, Norge dealers have a *buying* appeal that registers immediately with women.

And, then, the

*Rollator Cold-Maker
Sells Still More*

To refrigerate this extra capacity, Norge provides the famous Rollator Cold-Maker . . . so widely imitated . . . *but only in part*, because here is the only Rollator unit permanently oiled and sealed for long, trouble-free life . . . the only domestic unit refrigerant cooled for easy going under heaviest loads in hottest weather.



A Norge for every Customer . . .

There's a Rollator-powered Norge for every home . . . the right size at the right price. Yet, the Norge line is a simple one to stock . . . and its new appeals make it a fast one to move. Because of all the great features Norge has combined to create unusual salability, many new dealers are

taking the Royal Road to Profits with Norge in 1940. You, too, are invited to join with Norge . . . provided, of course, there is still an opening in your community. Why not write today for complete information while there is still time to get lined up for a profitable new season?

NORGE DIVISION BORG-WARNER CORPORATION, DETROIT, MICH.
In Canada: CANADIAN RADIO CORPORATION, FLEET STREET, TORONTO

Write today for details!

_____ 1940
NORGE DIVISION BORG-WARNER CORP.
670 E. WOODBRIDGE, DETROIT, MICH.
 Please give me details of the new Norge line, the merchandising and financing plans and the greater advertising support given Norge dealers.

Name _____
 Firm _____
 Address _____
 City _____ State _____

RR-102

Washers and Ironers • Gas and Electric Ranges • Commercial Refrigeration

The Greater **NORGE** *for* **1940**

Kelvinator's New 1940 Program

TAKES CONVENTION BY STORM!



GETS ROUSING RECEPTION Frank R. Pierce, presiding over the Kelvinator Convention, creates furor with the announcement of a sweeping new Low Price Program that bids to make refrigerator history.

NEWS FLASH: Buzzing telephone and clicking telegraph wires followed Kelvinator's convention announcements as distributors, zone managers and their wholesalers relayed the good news of lower prices and better margins to dealers all over the country. From the staid *New York Times* headline story down through thousands of daily papers in every part of America, the news has spread... been seen and discussed in millions of homes. As one prominent industry leader said, "*This is the beginning of a new era in electric refrigeration!*"

KELVINATOR ORGANIZATION AND DEALERS ENTHUSIASTICALLY ANTICIPATE 1940 SALES INCREASES

Every 24 hours sees interest mounting in Kelvinator's new 1940 Program. Dealers expect sales increases as high as 200%.



"Busy Man"

C. T. Lawson, Sales Manager Household Appliance Division, faces a battery of ringing phones all day, as news about Kelvinator's New Program sweeps through the industry.

THE NEWS IS OUT!

AND ALL OVER AMERICA, dealers are making their plans. Literally, thousands of them are now in touch with Kelvinator.

They're talking about the price reductions of \$30 to \$60, translating those figures into new business in their communities.

They're planning a *real* attack on the vast low-income market—because, for the first time, they've got the goods to get it! Big 6¼ cubic-foot models of highest Kelvinator quality for as low as \$119.95* for Model SS-6!

Everyone who has seen the Kelvinator line has unanimously agreed that it is the *finest* in the industry. They look upon the new Moist-Master System models as a real wedge into the big and fast-growing replacement unit market, because they have been designed specifically for that market.

The ideal "step-up" in prices . . . the advertising of prices, including freight, in nation-wide magazine advertising . . . the limiting of dealers . . . every single factor in Kelvinator's startling, New 1940 Program has been enthusiastically O.K'd.

To everyone's surprise, this entire program has been accomplished without reduction in dealers' retail mar-

gins . . . and without any sacrifice in the high quality for which Kelvinator has always been famous.

How was it done?

Kelvinator officials have given the answer: a broad-gauge program, based on years of study, accompanied by sweeping changes in policy.

1. Concentration of 96% of production on the big 6 cubic-foot models, and larger (the size people really need)—permitted a lowering in price.
2. In anticipation of greatly increased sales, Kelvinator doubled production schedules and passed the manufacturing savings on.
3. Kelvinator has cut the cost of selling. And in addition, cut the manufacturing profit per unit.

It's revolutionary—yes. Radical? Yes—but everyone who has seen the whole program agrees it's the answer to the dealers' problems.

Naturally, it will be limited to a certain number of dealers in each locality. For your own protection, find out *fast*. Write or wire your nearest distributor or factory branch, or direct to the sales department.

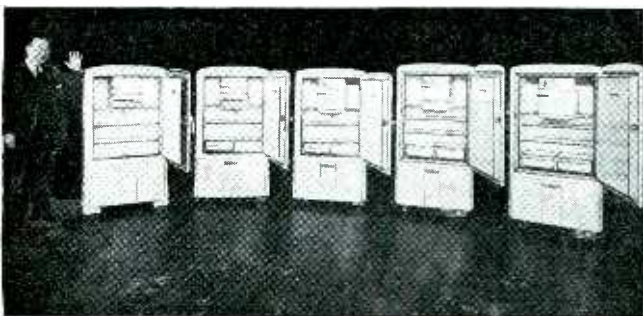
KELVINATOR DIVISION
NASH-KELVINATOR CORP., DETROIT, MICH.

*Prices suggested are for delivery in the kitchen with 5 Year Protection Plan. State and local taxes are extra. Prices are slightly higher west of the Rockies.

"Can't Miss"—say Seasoned Veterans



"The good old days are coming back again," says Mr. Steinert, Boston Kelvinator distributor, in a double-barrelled handshake with Mr. Cron (left) and Mr. Maloney (right). "Those prices are the answer to a dealer's prayer," answers Mr. Cron, "and the quotas are a cinch." "Looks like the first real program the industry has had that will really stabilize dealer prices and profits," says Mr. Maloney.



"IT'S QUINTUPLETS!" says Pierce. There are five big Kelvinator "sixes" for 1940. Complete price coverage in the ideal size, to meet America's demand for a bigger, finer refrigerator at a lower price. "And that's not all," says Pierce, "Look at the easy step-ups . . . feature by feature . . . from that sensational low-priced SS-6 at \$119.95* to the "Moist-Master" HD-6 for \$209.95**! Three big 8s, priced at \$189.95*, \$209.95* and \$239.95* round out the 1940 Kelvinator household line.



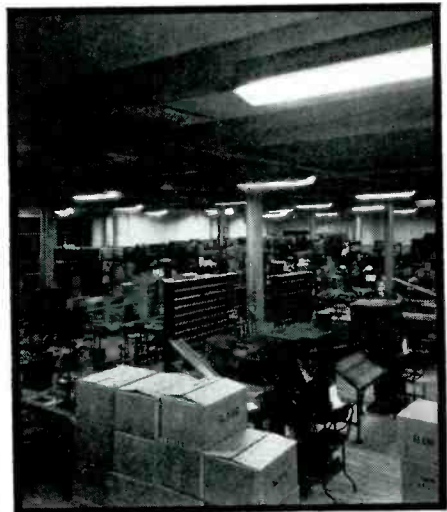
"LOOK THREE TIMES!"—says Stuart. J. Nelson Stuart, Kelvinator Advertising Director, presenting Kelvinator's 1940 challenge. "Look at the Size! Look at the Name! Look at the Price!"—a battle-cry which will be spread throughout America in mammoth-sized newspaper ads. Full magazine spreads in color, billboards and local radio programs will carry the good news about "a finer, better refrigerator at a lower price" to America's buying millions in 1940.

INCREASE YOUR PROFIT IN 1940 WITH KELVINATOR'S ASSOCIATED LINES

We honestly believe that Kelvinator's new Electric Ranges, Washers, Ironers and Water Heaters will make Kelvinator the "standard" name of 1940.

Every one of these great Kelvinator products has the looks, the features, and the fine engineering of a real quality line. Why not find out about this chance to enlarge your profits?

**YOU'RE GETTING
EVEN BETTER
SYLVANIA TUBES
because...**



Our new Tube Plant is 100 percent lighted by the sensational Hygrade Fluorescent Lamps.

FLUORESCENT light reduces reflected glare, is easy on the eyes and casts no shadows because it gives a multiplied light that is literally present everywhere!

With Fluorescent* light, the eyes of Sylvania employees are keen to detect any variation from perfection. Not only is working efficiency increased, but precious human eyesight is safeguarded.

That is why the new wing of the Emporium factory boasts Fluorescent* lighting . . . why this is just a prelude to the program of trans-

forming all Sylvania factories from yellow incandescent to clear daylight illumination.

Putting in Fluorescent* lighting is only one of the hundreds of special operations that help to make Sylvania Radio Tubes better. To you who sell Sylvania, this care and precision means **SATISFIED CUSTOMERS**—the kind that give you **Profitable, Repeat business!**

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

**We are very proud of this installation, which is Hygrade Fluorescent throughout; and is produced in our Salem, Mass., plant.*

SYLVANIA
SET-TESTED RADIO TUBES

The RADIO MONTH

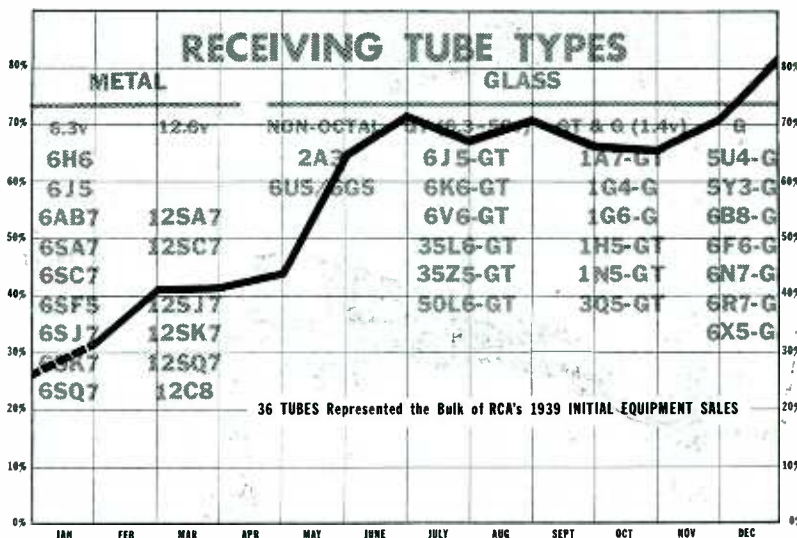
FEBRUARY

1940

SUGGESTED in all seriousness as a 1940 platform plank, by a member who had the floor the other night at an eastern dealer meeting, was the following jewel of naïvete: "When a customer comes in the door this year, don't offer him a discount. *Wait until he asks!*" . . . **Tube Type Limitation**, laudably urged upon set designers throughout 1939 by one big bottle maker, is at present an understandably touchy topic in other plants. Most realize that the retail and wholesale trade favors moves which may reduce stock required a few years hence, when receivers now being sold require socket refills, so there is little resistance to the broad idea of limitation. There is, however, much honest difference in both economic and technical opinion when it comes to the number and types of tubes included in recommended lists. And not a little speculation concerning the ability of tube makers in general to sell set engineers the idea of foregoing special type demands. Cooperative effort therefore seems unlikely at this time but it is probable that several tube makers will work toward limitation, each in their own individual manner. Price disturbances in the initial tube equipment picture, inevitable corollaries to standardization programs, somewhat complicate the problem . . . **Cooperative Spirit**, so difficult to generate in the tube business because of competitive factors only Utopians minimize, seems to be thriving in other branches of the radio industry. Cooperation is, in fact, one of the things that distinguished 1939 and, as we write, directors are meeting to discuss continuance of the NAB-RMA-RSA joint committee promotional effort. We hope this effort will be not only continued but effectively strengthened . . . **Delivery charges** slapped on dealers in one of our largest cities two months ago by

radio distributors, ran smack into a stone wall of organized protest (one retail group even threatening to form a distributing organization of its own, actually pledging \$11,000 for the purpose) with the result that they were eventually withdrawn . . . **Personal Embarrass-**

needle a distributor who said last year he didn't think he could sell many combos, and didn't. Pointed out across the aisle was another distributor who ordered with enthusiasm, sold the same way, clicked off a 12-month total that represented a startling percentage of the factory's entire combination business. And while we are on the subject of combinations it comes to mind that this column predicted last June early inclusion of home recording in more lines. Fallible though we are, we nevertheless have since wondered why this prediction failed to come true, feel better now that we know design of suitable motors held up the parade and that the next month or two will really see the idea spread out . . . **Some Com-**



ment resulted when a bigshot from the broadcasting business asked us the other day if we knew how many radio dealers had modern sets in their homes, was told that no one exactly knew and then innocently asked what audio frequency range our own receiver covered. We took the hint, said we'd slug the question in these columns and see how many retailers would tell us how old their own sets actually were, guess at the audio response range. Point of the story is the obvious fact that every really good set in a home gets itself talked about by the neighbors, decoys replacement business . . . **Phonograph Combinations**, speaking about good sets, are best sold by men who believe in them themselves. At a convention last month we heard a sales manager effectively though anonymously

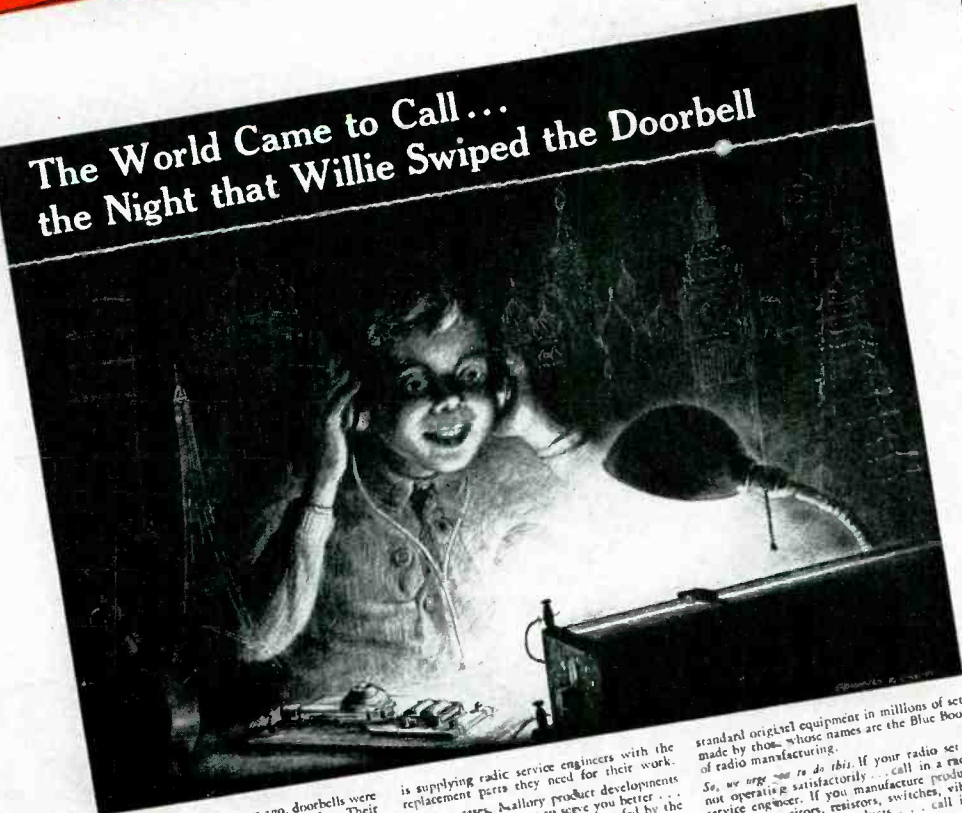
ment has been received calling attention to the advertising of a popular make of radio featured in a California ad. It seems that the ad featured several models labelled "For Mother," "For Dad," "For the Best Girl," etc. Writes one cynical female critic: "The set suggested for 'the best girl' was the cheapest of the lot, costing \$9.95, while the one for the 'boy friend' was tagged at \$24.95. Is the young man supposed to be marrying for money? Or is he *Scotch?*" . . . Which reminds us that the day is o'er, so . . . until next month . . .

Mac
W. MacDonald
EDITOR

P.R. MALLORY & CO. Inc.

MALLORY Applauds Radio Service Engineers in FORTUNE MAGAZINE through Advertisements Like This—

The World Came to Call... the Night that Willie Swiped the Doorbell



NOT so very many years ago, doorbells were a fair game to any "wireless" fan. Their innards formed a vital part of a gimmick called a de-coherer. It was the "daddy" of the crystal and "cats whisker" — the "granddaddy" of the vacuum tubes that you use in your radio set today. Certainly, these de-coherers were make-shift, erratic, undependable, but it wasn't long until doorbells were safe again. A great army of enthusiasts and experimenters (they affectionately call them "hams" now) soon found better ways to bring the world to their homes.

Today, a good many of those old time "hams" are the radio service engineers you call on when your radio fails. They have given radio much of its growth. Mallory is proud to have been associated with them for so many years. You see, one of Mallory's most important functions

is supplying radio service engineers with the replacement parts they need for their work. In many cases, Mallory product developments have helped these men to serve you better... at lower cost. But even this is dwarfed by the complete score of Mallory's work in the replacement parts field. The 3rd Edition Mallory-Yaxley Radio Service Encyclopedia, just published, gives radio service engineers split-second reference to the service requirements on over 22,000 makes and models of radio receivers.

Naturally, Mallory Precision Products are not confined to the replacement field. They are

standard original equipment in millions of sets made by those whose names are the Blue Book of radio manufacturing.

So, we urge you to do this: If your radio set is not operating satisfactorily... call in a radio service engineer. If you manufacture products that use capacitors, resistors, switches, vibrators or other similar products... call in a Mallory engineer.

P.R. MALLORY & CO. Inc.

MALLORY

Serves the Electrical, Automotive, Radio and Industrial Fields with Welding Electrodes, Electrical Contacts, Non-Ferrous Alloys and Bi-Metals, Rectifiers and Vibrators

MALLORY YAXLEY
RADIO REPLACEMENT PARTS

include such important items as Volume Controls, Switches, Condensers and Vibrators

Cable Address
PELMALLO

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

Use

P.R. MALLORY & CO. Inc.

MALLORY

REPLACEMENT
CONDENSERS... VIBRATORS

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

Cable Address—PELMALLO

Use

YAXLEY

REPLACEMENT
VOLUME CONTROLS

RADIO *and Television* RETAILING

FEBRUARY, 1940



FRENCHMEN Can't Be Wrong

ALREADY HOT because war news direct from Europe gave it a new and much needed lease on life as a potent sales feature, shortwave tuning gets still another welcome boost from New York University's Professor Henry C. Olinger.

The Professor teaches French, supplements textbook instruction with compulsory classroom listening periods during which a Philco tuned directly in on "Paris Mondial" turns out language truly "spoken like a native." *Voila!* Out go bugs in students' pronunciation.

For homework (and here the Professor earns the

sincere gratitude of the radio trade) he urges tuning in on shortwaves again at home.

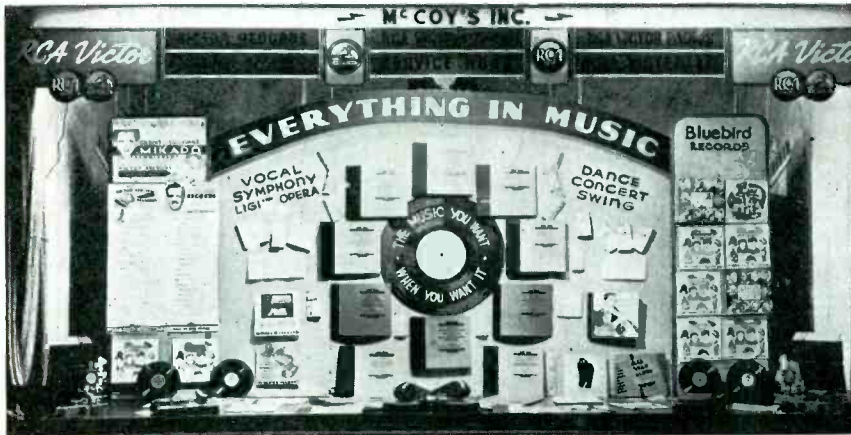
If you like to juggle astronomical figures consider how many colleges teach French, multiply by the number of other languages most of them teach, multiply again by the number of high schools in this country that also teach languages and then throw in business schools for good measure.

Here, *mes amis*, is a story that should be spread far and wide among educators for the good of American youth . . . and the radio business.

PHOTOShorts

Pictures FROM THE NEWS

To Help You SELL



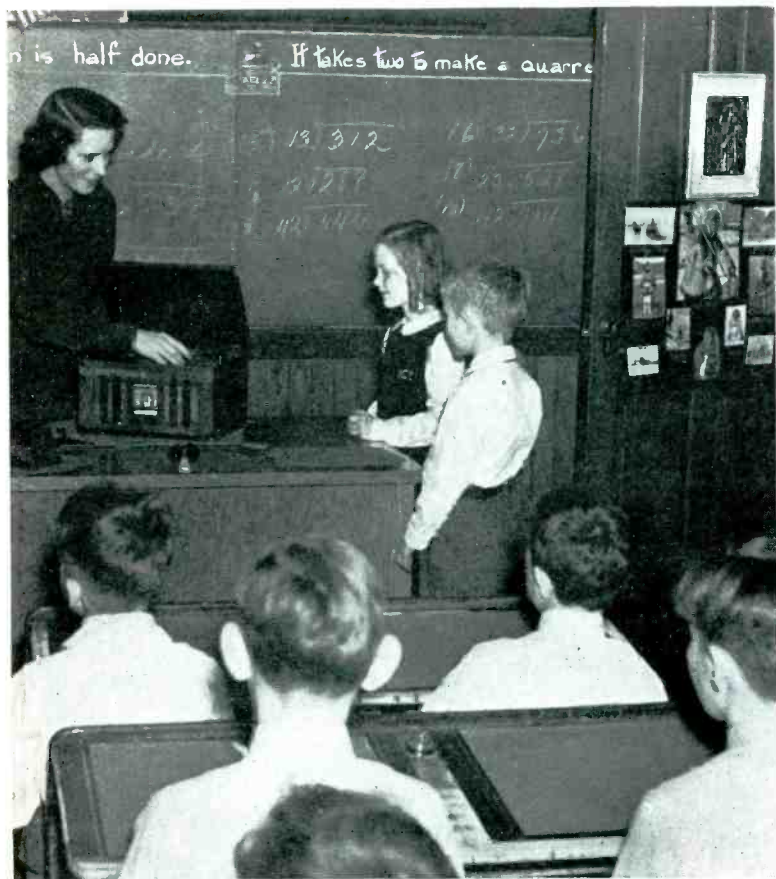
RADIO, RECORD, TELEVISION WINDOWS

Effective display (top photo) used by McCoy's of Torrington cost little to do, plugged records and particularly new record albums. To the Jury-Rowe store in Lansing the second window pictured drew 13,000 visitors when the factory's mobile television unit performed



PORTABLES LOVE A PARADE

When a parade of automobile models up through the years was staged in Philadelphia salesman Harry J. Lewis stole the show by planting one car with three pretty girls and a playing Detrola portable



ONE-TWO PUNCH FOR EDUCATION

Double knockout for schools and inexpensive enough for individual classrooms are table-type radio-phono combinations, now tickling the fancy of many educators hitherto no pushovers for salesmen and even opening up a replacement market. For via the air come news broadcasts invaluable when teaching current events and via records come practical lessons in musical appreciation

WE'LL BET YOU DID TOO

Burlington, Iowa's Wes Ewinger "accidentally on purpose" posted this bill upside down, within 24 hours got 87 telephone calls advising him of the "error." The posting company got 23 more and next day an additional hundred from people who had apparently stood on their heads to read



RADIO and Television RETAILING, FEBRUARY, 1940

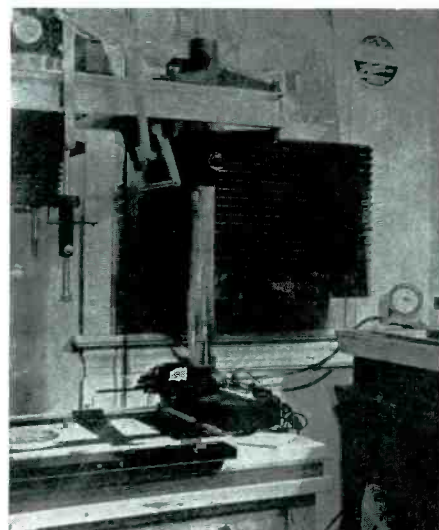


ONE DISTRIBUTOR STAGES A SHOW

To the enlarged showrooms of Chicago's Allied Radio flocked 9,623 potential customers in December. Attractions included exhibits by 36 manufacturers (direct selling was prohibited), free voice recordings (a hit with the feminine guests), a model radio service shop in action (technicians were dazzled by modern instruments), lectures illustrated by means of a dynamic demonstrator, tricks with photo-cell apparatus and a "ham" confab

GOD'S GIFT TO PHOTOGRAPHERS

Window unit air conditioner in normally stuffy darkroom lets in and cools air, keeps out disastrous dust



PAGE 19

What the PUBLIC Wants For Its Money

By W. MacDONALD*

RACKING THEIR BRAINS in radio receiver factories as this is written are designers who must shortly tell salesmen what they will have to sell along about the middle of the year when new lines break.

Now most of these boys are pretty hot stuff at their chosen profession. They have to be to stay on the payroll of a fast-moving business. So it is a good bet they will turn out merchandise embodying practical balance between competitive needs, design that plants the seed from which future profits may grow and *what the public at present appears to want for its money.*

On the last, italicized, point it is our pleasure and privilege (in this, the first of three articles) to give designers "a leg up." For since early January our entire field staff has been calling on dealers all over the country for the express purpose of asking what *they* think the public will want. (Letters supplementing field work went into hundreds of remote small towns.) And while the dealer's judgment is not infallible, he is in closest contact with men and women who ultimately lay their money on the line for radio and has a pretty shrewd idea.

Conventional Models

Over on the right hand page is a white-on-black "box" that presents a quick picture of what the average

* Editor



dealer thinks he can best sell. Close study of this box is about the easiest way to get the general idea so we avoid repeating the figures here in the text, using the space instead to comment and interpret to the best of our ability what we think they mean.

First engaging fact is that while many dealers with whom 1940 design was discussed said: "For gosh sakes, get manufacturers to limit models to about 15 this year" they wound up specifying about twice this number when we asked them to outline a "perfect" line.

Small compacts were specified as necessary, of course. The only reason why not quite all dealers will stock them is because a few are conscientious objectors to rock-bottom prices. We doubt that many will "follow their heart" in this respect due to practical merchandising considerations.

Larger table models embodying quality performance appeared to be

in even greater demand and it seems likely that in this classification there is much room for line expansion. Dealer comment leads us to stress the trade demand for such sets. Designers would do well to cater to it.

Small consoles and large consoles, as type terms, evidently caused some confusion. Backtracking over many calls, we found that while a higher percentage appeared interested in smaller sizes, this seemed due to a desire for sets which more readily fit modern homes than for low prices. Quality consoles in new and more compact styles, therefore, seem like a good bet.

Record playing devices came in for such diversified attention among dealers talked to that it seems obvious this branch of the business is headed for even more of a rise than it enjoyed last season.

Surprise was the number of dealers who continued to want record-playing accessories, a good

“DESIGNING DEALERS,” in closest contact with the consumer’s varying tastes, speculate about probable preferences for the benefit of manufacturers now at work on new models

The TRADE’S Idea of a “PERFECT” 1940 Radio Line*

- 4 COMPACTS from \$10 to \$21
(98% will stock such models)
- 4 LARGER TABLE TYPES from \$20 to \$48
(100% will stock such models)
- 2 SMALL CONSOLES from \$41 to \$60
(99% will stock such models)
- 4 LARGER CONSOLES from \$64 to \$119
(79% will stock such models)
- 2 “FURNITURE” STYLES from \$83 to \$169
(46% will stock such models)
- 2 COMPACT RADIO-PHONOS from \$32 to \$52
(76% will stock such models)
- 2 CONSOLE RADIO-PHONOS from \$73 to \$154
(74% will stock such models)
- 2 AUTOMATIC COMBINATIONS . . . from \$105 to \$204
(77% will stock such models)
- 1 STRAIGHT PHONOGRAPH from \$32 to \$55
(20% will stock such models)
- 2 RECORD-PLAYING ATTACHMENTS . . . from \$18 to \$23
(72% will stock such models)
- 1 BATTERY PORTABLE from \$19 to \$31
(72% will stock such models)
- 2 BATTERY-LINE PORTABLES from \$24 to \$34
(72% will stock such models)
- 3 AUTO-RADIOS from \$24 to \$55
(61% will stock such models)

* Feb. 1 survey. Number of models, prices, are averages of figures suggested by contacted dealers.

buildup for both disc sales and, later, more elaborate instruments.

Even more interesting was the fact that more dealers, actually, specified that they would stock automatic record changing radio-phono combinations than manual change combos. Unless all the signs are wrong combinations with automatic record changing are in for a boom. It may even be that they may dominate the console combination market and make manual change machines somewhat more difficult to move.

Battery portables operating from their own internal power alone and those working either from batteries or from power lines will obviously

both be stocked by most dealers. It seems apparent, however, because of the number of models specified in the “perfect” line that emphasis will be on the triple-powered varieties to a somewhat greater extent, which will be no surprise to designers. Straight battery sets, dealers point out, however, do have their adherents and should by no means be sidered passé!

Automobile radios, it will be noted, came in for perhaps more attention among radio dealers contacted than many would suppose. We think this means that ease of installing new types, and the very moderate prices at which they can be purchased through radio trade

channels, have induced dealers hitherto hesitant about bucking automotive salesrooms to get back in the business with both feet. This may be wishful thinking but, you will admit, the figures seem to prove it.

Not So Conventional

Dealers planning to stock “*furniture*” types, which in most instances was taken to mean sets having period-design cabinets, were (as the percentage under this type in the “box” in these pages indicates) sufficiently numerous to warrant the attention of designers. Naturally, they weren’t as numerous as those specifying conventional cabinets for demand is just building up for period stuff.

Period design had two different types of dealer adherents, those that visualized such sets at top prices for the swank market and those looking at it from the middleman’s angle. Judging from comment, we would say that decent period designs at moderate prices for the average consumer would be the best bet of the two from the standpoint of volume in the months ahead.

Also included in discussions of “*furniture*” types were sets such as *chairsides*. While such convenient types, according to dealers interviewed, would not overnight divert the average customers attention from more conventional styles, more could be sold if more manufacturers made them. Moderate promotion in this direction seems indicated.

Greatest receiver type need uncovered by field work (and this information alone makes the whole difficult job very much worthwhile) is for a full line of *battery type receivers* really up to snuff with respect to modern refinements and performance for the rural markets.

Dealers in the rural areas have made it very, very obvious by their responses to our questions that they feel this field has been woefully neglected, considering set manufacturers in general. It is realized that turning out of a complete line of

models just for rural areas is a problem not easily met by the factories, getting most of their volume in line-operated types. But that's what rural dealers want. Some specify straight battery types having low drain. Others, in the minority but important, say they want sets that can be converted to 6 volts dc. or 110 volts ac. if required.

Here is a market too many set manufacturers have been "throwing over their left shoulder." Rural dealers are positively crying for the right kind of merchandise.

Other type suggestions included: "Table model for foreign shortwave reception alone." (Many dealers apparently haven't heard of "communications" types receivers or consider them too complicated for the general consumer to operate.) "Real small set that can be carried in the pocket." (A perennial but so far impractical dealer suggestion.) "A good chairside combination with separate speaker." (What about two unit sets, designers?) "Fair sized table model with top quality but without shortwave bands." (We think dealers "have something here.")

Frequency modulation receivers, specifically brought up when talking to dealers, were commented upon by a few in cities where the new system has been publicized. Elsewhere few opinions regarding it indicated quite clearly that dealers in general know too little about possible consumer reaction to contribute much at this early date. Manufacturers will have to decide how and when and where to include it. Reactions to questions regarding television were similar. (We'll have more to say about this in the second article of this series scheduled for publication in March.)

Price Suggestions

We asked dealers to tell us the lowest, and the highest, prices at which they would like to sell the various types of receivers this season and the dollar figures in the box to which we have already referred indicate the *average* of suggested "lows" and suggested "highs" for each type.

Naturally, some dealers suggested lower and some dealers suggested higher type prices than our printed averages but these represent a useful composite.

Studying these figures, it seems to us that dealers in general want prices stepped up on practically all

types but have tempered their well known desire for more profitable unit sales to fit practical market needs. If these averaged prices have any one outstanding significance we would say they indicate a strong retail desire for prices that run right down the middle of the road. Neither very low nor very high. Which seems to be good business judgment in 1940.

Cabinet Styles, Materials

We've analyzed dealer preferences regarding cabinet styles, materials

R.F. Stages?

Quality or Price?

Foreign Reception?

Push-button Tuning?

Tone Control?

More or Fewer Knobs?

These and other important design questions will be discussed in the March issue.

and colors (or finishes).

If the following tabulation doesn't warrant close reading on the part of any designer we'll eat it:

On *Compacts* 72 per cent of all dealers prefer cabinet styles "modern," 28 per cent "conservative." 65 per cent prefer plastic, 31 per cent wood, 4.2 per cent combinations of both materials. 71.5 per cent prefer assorted colors, 23.5 per cent walnut, 2.6 per cent maple and 2.6 per cent mahogany.

For *Larger table models* 63 per cent prefer modern, 28 per cent conservative, 9.3 per cent "period." 87 per cent like wood, 9 per cent plastic, 3.8 per cent combination materials. 74 per cent suggested walnut, 12.2 per cent assorted colors, 10.9 per cent mahogany and 3.1 per cent maple.

For *Small consoles* 71 per cent suggest modern, 22 per cent conservative and 6.7 per cent period cabinets. 98.4 per cent like wood, 1.6 per cent wood and plastic combinations. 77 per cent want walnut, 15.4 per cent mahogany and 7.7 per cent assorted finishes.

For *Large consoles* 63 per cent say modern cabinets, 27 per cent conservative and 9.7 per cent period.

98.3 per cent like wood, 1.7 per cent wood and plastic. 75 per cent want walnut, 17 per cent mahogany, 6.4 per cent assorted and 2.1 per cent maple.

For "*Furniture styles*" 42 per cent prefer modern, 35.5 per cent period and 22.5 per cent conservative cabinets. 96.4 per cent say these should be wood, 3.6 per cent combination. 67.5 per cent like walnut, 23.5 per cent mahogany, 5.9 per cent assorted and 2.9 per cent maple.

For *Compact combinations* 62 per cent recommend modern, 34.5 per cent conservative and 3.4 per cent period cabinets. 97.5 per cent prefer wood, 2.5 per cent combination materials. 76 per cent specify walnut, 13.5 per cent mahogany, 8.1 per cent assorted finishes and 2.7 per cent maple.

For *Console combinations* 60.7 per cent like modern, 30.5 per cent conservative and 9.1 per cent period. 97.5 per cent suggest wood, 2.5 per cent combination materials. 74.5 per cent like walnut, 14.8 per cent mahogany, 8.8 per cent assorted finishes, 2.9 per cent maple.

For *Automatic combinations* 44 per cent suggest modern styling, 30.5 per cent conservative and 25 per cent period. 97 per cent specify wood and 3 per cent combination materials. 66 per cent want walnut, 25 per cent mahogany, 6.8 per cent assorted and 2.3 per cent maple.

For *Straight phonographs* 54.5 per cent say use modern lines, 41 per cent conservative and 4.5 per cent period. 95 per cent specify wood cabinets, 5 per cent combination materials. 78 per cent think the best bet is walnut, 13 per cent mahogany, 8.7 per cent assorted finishes.

For *Record playing accessories* 58 per cent like modern styling, 41.7 per cent conservative. 81 per cent advise the use of wood, 16.2 per cent plastic and 2.8 per cent combinations of both.

For *Battery portables* 67 per cent specify modern lines, 33.5 per cent conservative styling. 51 per cent like wood, 41 per cent cloth-covered wood, 5.4 per cent material combinations and 2.6 per cent plastic. 58 per cent say they prefer walnut, 26.5 per cent assorted and 15.8 per cent assorted finishes.

For *Battery-line portables* 65 per cent specify modern cabinet styling, 35 per cent conservative. 51 per

(Continued on page 75)

WATCH FARNSWORTH FOR 40

WHEN Farnsworth Radios were first introduced last Fall, radio distributors and dealers *expected* big things from this alert new organization. They were not disappointed.

The set-up was right! Key men of the radio industry had teamed up to form the Farnsworth organization. Their combined experience created the fast-selling Farnsworth Line. Tremendous manufacturing and financial resources backed their efforts — assured success.

Of even greater importance, Farnsworth established sound and sensible policies of protecting the distributors' and dealers' interests that have become the basis of all Farnsworth activity.

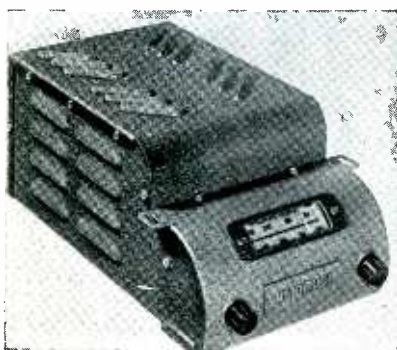
The Farnsworth organization plans to continue these policies and to institute an even broader program for Farnsworth dealers during the next few months. Get the complete story from your Farnsworth distributor. You will find his name among the outstanding radio distributors listed on this page.

FARNSWORTH TELEVISION & RADIO CORPORATION . . . FORT WAYNE AND MARION, INDIANA

We Proudly Present

- | | | |
|---|--|--|
| ADAMS WHOLESALERS, INC.
Waterloo, Iowa | THE GIBSON COMPANY
Indianapolis, Indiana | SOUTHERN BEARINGS & PARTS CO.
Charlotte, North Carolina |
| ARMACOST-NORGE COMPANY
Kansas City, Missouri | GOOD HOUSEKEEPING SHOPS
Providence, Rhode Island | SOUTH TEXAS APPLIANCE CORP.
San Antonio, Texas |
| B. & O. CORPORATION
Newark, New Jersey | JENSEN-BYRD COMPANY
Spokane, Washington | SPENCER AUTO ELECTRIC, INC.
Tampa, Florida |
| BERTRAM MOTOR SUPPLY CO.
Boise, Idaho | M. H. KIRCHBAUM
Sioux City, Iowa | B. H. SPINNEY COMPANY
Springfield, Massachusetts |
| BIRMINGHAM ELECTRIC BATTERY CO.
Birmingham, Alabama | LAPPIN ELECTRIC COMPANY
Milwaukee, Wisconsin | Albany and Syracuse, New York |
| BUFFALO NIPPLE & MACHINE CO., INC.
Buffalo, New York | MIDLAND ELECTRIC COMPANY
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| CHARLESTON ELECTRICAL SUPPLY CO.
Charleston, West Virginia | MONROE HARDWARE COMPANY
Monroe and New Orleans, La. | STRAUS-BODENHEIMER COMPANY
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| THE COMPTON-KNODEL DIST. CO.
Cincinnati, Ohio | MORY SALES CORPORATION
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| CREST, INCORPORATED
St. Louis, Missouri | NELSON AND COMPANY
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Denver, Colorado |
| W. C. DANCE, INC.
Oklahoma City, Oklahoma | J. L. PERRY COMPANY
Nashville, Tennessee | TEXAS NORGE SALES COMPANY
Dallas, Texas |
| FRANK EDWARDS COMPANY, INC.
San Francisco, California | PIXLEY ELECTRIC COMPANY
Columbus, Ohio | TRILLING & MONTAGUE
Philadelphia, Pennsylvania |
| ELECTRIC PRODUCTS CORPORATION
Pittsburgh, Pennsylvania | RADIO DISTRIBUTING COMPANY
Grand Rapids, Michigan | UNION HARDWARE & METAL CO.
Los Angeles, California |
| FARRAR-BROWN COMPANY, INC.
Portland, Maine | R. C. K. DISTRIBUTING COMPANY
Louisville, Kentucky | VALIER SALES COMPANY
La Crosse, Wisconsin |
| E. GARNICH & SONS HARDWARE CO.
Ashland, Wisconsin | REPUBLIC SUPPLY CORP.
Detroit, Michigan | VIRGINIA-CAROLINA ELECTRICAL
SUPPLY COMPANY, INC.
Danville, Virginia |
| GATHRIGHTS, INC.
Richmond, Virginia | THE SACKS ELECTRICAL SUPPLY CO.
Akron, Ohio | WARREN-NORGE COMPANY
New York, New York |
| GENERAL EQUIPMENT CORPORATION
Boston, Massachusetts | SAMPSON ELECTRIC COMPANY
Chicago, Illinois | WASHINGTON REFRIGERATION CO.
Washington, D. C. |
| GERLINGER EQUIPMENT CO., INC.
Toledo, Ohio | SMITH AND HIRSCHMANN, INC.
Rochester, New York | THE STEVE WISE COMPANY
Wichita, Kansas |
| | W. B. DAVIS ELECTRIC SUPPLY CO., Memphis, Tennessee; Little Rock, Arkansas | |
| | CHARLES S. MARTIN DISTRIBUTING CO., INC., Atlanta and Athens, Georgia | |

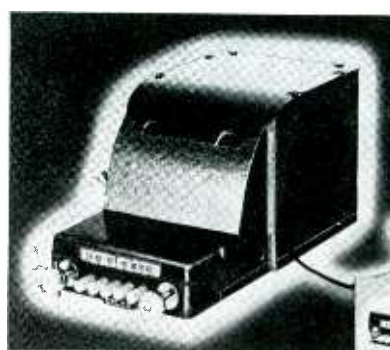
AUTOMATIC M77 boasts a novel inclined scale



MOTOROLA 500 has a streamlined case and automatic tuning



DELCO R-685 pushbuttons may be set without tools



SONORA universal-mount midget is extremely compact



AUTO RADIO *for* 1940

PREVIEW of early sets and accessories
to aid dealers plan Spring campaigns

OUT OF A TOTAL passenger car registration of 26,250,000, statistics show that 6,800,000 are equipped with radio.

Approximately three-fourths of all cars now on the road thus are prospects for auto radios and accessories. (Important replacement business is "extra").

Manufacturers, realizing that a good part of the market is in older cars, have streamlined not only their wares to fit this market, but in many cases, prices as well. This should in no way detract from new car installations, simply means that prices and ease of installation make auto radios even more interesting to the used car owner.

Prices released so far start at \$14.95 list for compact models and climb to the usual \$69.95 or so for de luxe types. New midget models create an overall effect of price lowering.

Set Features

Foremost among the departures from usual design is the addition of short waves, previously ignored by manufacturers. This probably will be an attraction to many who use cars often and prefer to listen to war news direct, should aid replacement set sales.

Special antennas and controls have been designed for these sets to facilitate all-wave reception. To date, 2 manufacturers have an-

nounced such models as these.

Compact new auto radio types show possibilities of fast sales due to their universal mounting features. Measuring about 6 or 7 inches square, they fasten to the steering column or dash of any car. Whether you own a Maxwell or a Packard, one of these midgets can be conveniently tucked away in half a dozen or so places. A small wide-vision dial further simplifies placing such sets for handy tuning.

The largest line analyzed has 8 separate models. On the average there are four sets per manufacturer.

Automatic tuning, still an important feature, was included in 11 models. Since tuning auto sets while driving is more difficult than tuning home receivers, pushbuttons are quite popular. Most large models have automatic tuning, whereas it is omitted in cheaper types for price reasons. Three compact receivers in the medium price range do have pushbutton tuning, however.

At least one manufacturer is using permeability type automatic and manual tuning. This is a comparatively new departure for auto radio. Tuning condensers are replaced with a dial string and iron slug passing through the inductances. Greater accuracy and stability on automatic tuning is claimed for this

system. In addition, the ease at which pushbuttons may be set up, without the use of tools, is an additional feature.

Motor driven and mechanical tuning types comprise the remainder of the automatic tuning models. These are similar to systems used previously.

Dials

Dials this year appear more elaborate than heretofore. In many cases they are larger to accommodate pushbuttons. Escutcheons, as usual, are available to match the dash finish. Some are entirely chrome finished while others are chrome trimmed. A total of 16 of the sets analyzed permitted optional dials and escutcheons. These, naturally, were of the bulkhead mounting types.

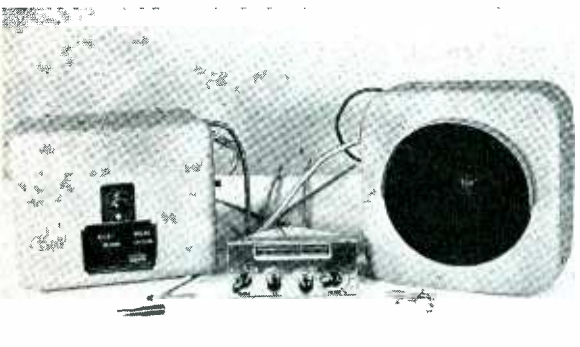
The familiar under-dash set, with built-in dial and controls, introduced a few years ago, accounted for 9 additional models.

Custom models have optional dials combined with or separate from dash speaker grilles.

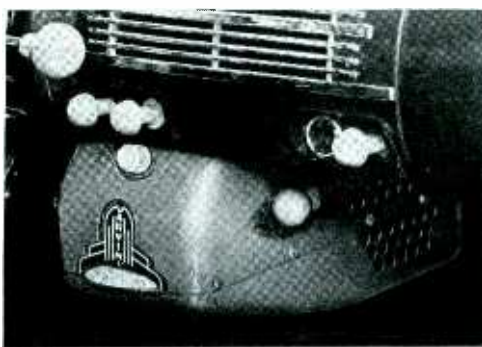
Tone controls still are a feature in 16 models, which leaves 12 that have no provision for altering tone. In some cases this control is made conspicuous and convenient for the listener so that "bass" response may be used for city driving and "full" response for noise free areas.

Meager information is available

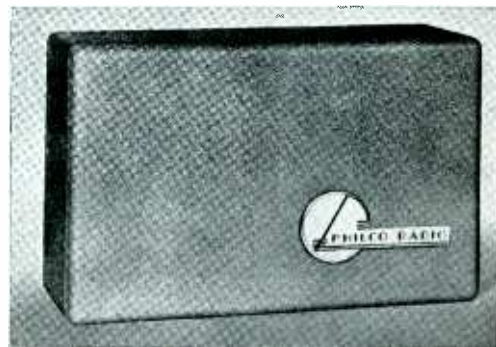
KARADIO makes this set for regular or commercial allwave work



ARVIN 510 admirably fits difficult to handle spaces



PHILCO AR-9 tunes shortwaves as well as the broadcast band



NOT YET, BUT SOON—Within a few short weeks in many areas listeners will once again take to the roads for pleasure. When they do, modern car receivers should go with them

Many changes have taken place in the accessory field to make auto radio more convenient and universal.

Accessories

In antennas, new wind-up fish-pole types have been introduced by *Radiart* and *Delco*. Constructional details are not yet available, but it is known that the antennas may be raised or lowered simply by turning a small crank or knob on the dash. This apparently rotates a spool which winds up or releases an insulated string connected to the antenna tip through the hollow fish-pole.

A simple mounting bracket by *Ward* makes one of their new antennas mount inconspicuously on alligator-hood cars.

J. F. D. comes forth with a noise-free antenna made up of fluted tubing which provides good contact between sections without the use of special contactors. In addition, 25 to 50 per cent more pickup surface is claimed for the fluted surface.

Telescopic antennas which extend several feet when open but collapse into the cowl almost out of sight when desired are available from *Philson* and *J.F.D.*

RCA and *Pioneer* make similar models actuated by the motor vacuum, raised or lowered by a control on the dash.

New cars with streamline bulges will probably present some difficulty on antenna installations. Adapters and special fittings are available from most accessory manufacturers.

on audio output of the new sets but we do have figures showing a minimum of 3 watts, increasing to 7 watts and higher on the larger models.

In the majority of cases single tube audio output stages are used. This accounts for 22 sets while 6 models have a pushpull output system.

A total of 9 sets are two-piece models, that is, with external speaker. The 19 remaining receivers use built-in speakers of various sizes. One model in particular is constructed so that the speaker may be used in the cabinet or mounted behind the instrument panel.

In bulkhead models, speakers

mount in the cabinet front, while dash mounting models more consistently mount speakers on the side.

A decline in the average number of tubes is evidenced by the value of 5.8 per set. This is slightly lower than usual and probably results from greater concentration on lower priced models and the reduction of de luxe models in several lines.

Looking into the power supply, we find that 9 sets use synchronous vibrators while 19 employ interrupter types in conjunction with a tube rectifier.

Of all sets analyzed, 14 have interference filters of one type or another. Certain models have built-in, or provision for, antenna resonators and boosters.

AGAIN RCA VICTOR GIVES YOU A PROFIT-WINNER!

HERE'S a radio set that bids fair to set the country aflame—that's how hot it is!

Called "The Opera Box" because it's a distinguished little *big* radio, this sensational new RCA Victor model will prove to be the feature attraction in your store. It will create new business for you, not only because its beauty, its performance and its features set it apart from usual small type models, but also because RCA Victor is backing it up with a powerful radio and newspaper advertising campaign.

Tie in with this campaign. Use the newspaper mats on "The Opera Box" that are available to you. Big profits will be your reward!



TOMMY DORSEY Victor Recording Artist

Tommy Dorsey is one of the world's greatest artists whose performances are on Victor Records. And because Victor offers your customers such top-notch talent, it is the leading name in the recording field—just as RCA Victor Radios and RCA Victrolas, too, are leaders. An important selling feature of all AC-operated RCA Victor Radios is the Victrola Plug-in. This makes possible the attachment of an RCA Victor Record Player with which your customers may enjoy all the great artists on Victor and Bluebird Records.



"The Opera Box"

Master Voice Quality in a New Type Radio
Big in Performance...Generous in Size...Low in Cost

"The Opera Box," a *big* radio in *convenient* size, is RCA Victor engineers' answer to the problem of finding the *right* way to put the quality characteristics of a big radio into a compact set. It has 5 preferred type RCA Victor tubes, plus plug-in ballast resistor, which provide 7-tube performance. It also has built-in Magic Loop Antenna; operates on AC-DC; receives standard broadcasts, police calls. Its walnut and mahogany cabinet, 8 $\frac{3}{16}$ " high, 14 $\frac{1}{2}$ " wide and 7 $\frac{1}{16}$ " deep, is finished front and back, may be viewed in all its beauty from any side. This radio is Model 46X3.

For finer radio performance—RCA Victor Radio Tubes.
Trade-marks "RCA Victor" and "Victrola" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc. Ask your music merchant about the new RCA Victor Long Life Needle.



RCA Victor

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

COOPERATION

Gets Results



CLEVELAND—RSA servicemen contribute own time, repair sets donated by public in response to WGAR charity appeal

EIGHTY-ONE radios were distributed to orphan asylums, social settlement houses and the homes of needy shut-ins during the Christmas holiday season "Give-A-Radio" campaign conducted by Radio Servicemen of America's Cleveland Chapter and National Association of Broadcasters affiliated station WGAR.

A series of nine cooperative programs brought 123 pledges of sets, donated by listeners asked over the air to give used or extra radios, regardless of mechanical condition. For an entire week, as many as 20 servicemen gave their time at a central shop to the job of repairing receivers, utilizing parts from some to put others in shape, installing parts and tubes donated by jobbers.

To worthy recipients went the sets through Goodwill Industries, agency of the Welfare Federation supplying trucks, providing storage facilities.

Deemed highly successful as one means of promoting general consumer interest in radio at the peak of the gift season, the campaign is to

be repeated in 1940 on a still larger scale.

Pittsburgh Too

In Pittsburgh, a similar campaign was conducted on an even more elaborate basis. Here, another RSA Chapter, stations KDKA, WWSW, KQV and WJAS, 18 radio jobbers, the newspaper "Post-Gazette," the Pittsburgh Milk Company (supplying trucks) and the Federation of Social Agencies cooperated.

On December 12 the four stations, newspaper, appealed for donated radios, setting a goal of 500. Five days before Christmas 1,000 had been received and new offers were coming in so fast it was necessary to appeal to the public to let up. (At the rate offers were pouring in, 2,000 sets could have been obtained. 2,500 will be set as the goal in 1940's drive).

One interesting feature of the promotion was "Santa's Radio Workshop," a decorated booth in the lobby of the Grant Building in which crews of servicemen remained on duty 16 hours daily, rehabilitating sets in full view of the public. More

space was later taken in a vacant window fronting on Fourth Avenue and, still later, in a large store-room in the basement of building.

Jobbers supplied a fund, in this instance, to finance the payroll for unemployed servicemen engaged in the work. (The RSA Chapter itself contributed 1,000 tubes as well as much free labor).

Eye-Opener

Basically philanthropic, cooperative campaigns of this kind (Cleveland and Pittsburgh are just two examples on which facts and figures were readily obtainable) yet are of considerable practical value to the entire radio industry.

Aside from the creation of much public goodwill, consider the following more specific benefits to the trade alone accruing when old radios are so removed from homes: (1) Helps alleviate *trade-in* situation (2) Paves way for *new* second or third set in home, (3) Focuses consumer attention on the *age* of sets in use and (4) Dramatically illustrates the importance of good radio *service*.

How to MATCH WITS

With the

FOR FIFTY YEARS independent retailers have been alarmed at, and complained of, chain store competition.

Chains *are* important factors in retail distribution.

Why?

First, because they feature one thing which the public wants—low price.

Second, because independent dealers do not take enough advantage of their *own strength*, and the *chain's weakness*, personal service, which people also want, and will pay for.

No form of distribution can long endure if it does not have public support. The constant growth of chain store distribution proves conclusively that low prices enjoy public demand. But it is *also* true that much of this growth of the chain stores has been because many independent retailers offered their customers little alternative. Selling essentially the *same* merchandise, at *higher* prices, with *no better service*, less conveniently, in *poorer* stores, certainly is no inducement for people *not* to buy from the chains.

Price Not The Answer

Yet chains are *not* all powerful. They have some *marked* weaknesses.

The independent dealer is *not* impotent. He has some very pronounced *advantages*.

Chain store competition is no

LESS THAN 25 PERCENT of the retail business in this country is done by chain stores. So at least 3 of every 4 people are influenced by factors other than price. Here is the dealer's cue

more serious than you make it.

Compete on the basis of *price*, and you will *lose every time*, because chains *do* buy cheaper, operate more economically, sell for less.

But why fight on competitors own ground? Compete on the basis of *your* store's *personality*, friendly service, personal guarantee of satisfaction, and you have actually little to fear.

Here the chains are *weak—and vulnerable*.

And why haven't more dealers done this?

Why, because they have become so *price* conscious they have become *price fearful*. The growth of the chains has put *fear* in too many hearts. Fear is the most devitalizing of all human emotions. And we fear most, what we understand least.

How Chains Operate

Let's see if we can understand chains more and fear them less.

The objective of every chain is to buy and sell wanted merchandise at a trading profit.

That's exactly the same as the objective of every retailer in the land.

The appeal of every chain is price.

Chains generally buy for less, operate for less, and sell for less. How?

They buy for less because of three factors—

1. Large volume purchases
2. Direct from the producer
3. They pay cash.

Those are natural buying advantages of a chain.

They operate for less, because of these factors—

1. Eliminate every service, every person not an absolute essential.
2. Standardize stock, displays, and selling methods.
3. Keep all stock turning fast by eliminating slow sellers, narrowing assortments.
4. Closing every transaction when the customer walks out of the store.
5. Reduce public relations to the contact with the public, in the store, at time of sale.

In other words, in order to keep operating costs low, *chains make their stores an impersonal merchandising mechanism*. That is their weakness.

Less than 25% of the retail business in this country is done by chain stores. And *half of that* independent dealers have handed them on a silver platter. But accept that, if you wish, as the measure of the customers to whom price *is* the dominant factor.

That means that at least 3 of every 4 people are influenced by factors *other* than price alone. They are the people for you to *cultivate*.

Dealer Has Powerful Antedotes

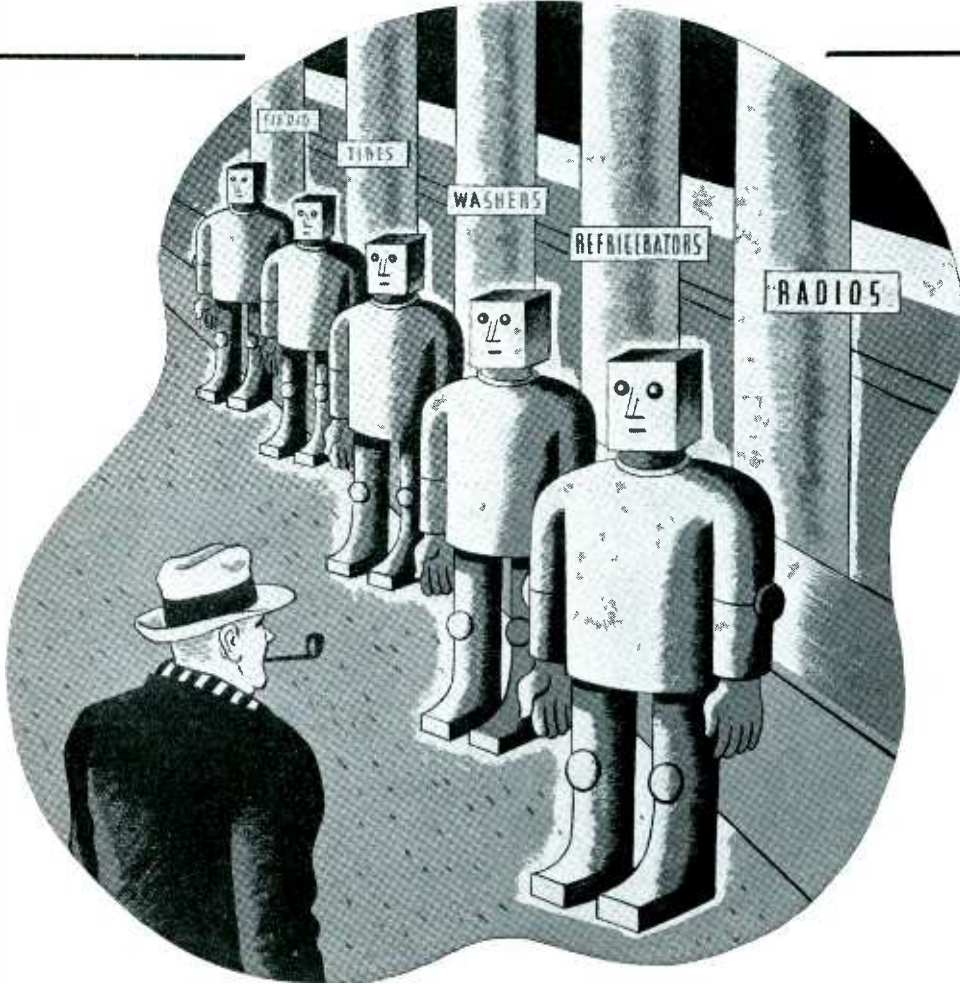
Now let's see how the independent dealers can *keep* these 3 of 4 customers from the chains, and get

Third of a Series about
**MODERN
MANAGEMENT METHODS**

Next Month:
"Business On A Budget"

CHAINS

Chains Make Their Stores an
IMPERSONAL MERCHANDISING MECHANISM
That Is Their Weakness



back some who have gone to the chains.

It should be plain, that you must emphasize factors *other* than price. And what are these factors?

First—compare your store's appearance with chains.

Chain stores are usually clean, bright, modern, with inviting displays. *Is yours?*

You can't afford to modernize?

That's where you're wrong. If your store suffers by comparison with the chains you can't afford *not* to modernize.

Second—every chain store is a merchandising machine, to which each customer and employee can be but a cog. But *your* store is *you*. It

can have *your* personality, *your* friendly greeting, *your* unflinching courtesy, *your* personal assurance of customer satisfaction.

No chain can so personalize their service. *Do you?*

Third—chain stores can take little or no part in civic affairs, can show little civic interest. In this important phase of public relations, of good-will creation, the chain store is negative. *Do you* capitalize on this good will building advantage?

Fourth—chain stores close each transaction when the customer leaves the store. They make little or no attempt to follow up their customers, to see if they are satisfied, to sell them another radio or

appliance, to get a lead for a new prospect. *Do you?*

And Fifth—chain stores are *order takers*. They do no creative selling, they serve the public only after the decision to buy has been made. The whole field of *constructive merchandising*, of *creative selling* is open for your use, to sell *your* products and *your* store, to *create* business. *Do you* cash in on this chain weakness—or say “me too” and follow the “easy way.”

Choose Your Own Battleground

Truly in *personalized chain selling* lies the most potent weapon in matching wits with the chain stores.

It is not enough that you have many merchandising advantages over the chains. You must *use* those advantages—*constantly*.

In a calm and reasoned manner, every dealer should *stay away* from the *strength* of the chains (prices) and play strong to their *weakness*. Plan it *that way*.

In every community, independent dealers will get mighty close to the share of the business they merit.

Every smart merchandising executive knows that when he gets his competition worrying, he has him at a disadvantage.

Every hour you spend *worrying about the chains* is an hour you *can't* spend *running your own business*, to compete with the chains.

Chain managements are smart. *They* plan to keep *your* attention focused on *their* strength, knowing full well that when you worry about *their* strong points you'll do little about their *weak* ones.

And that is a vital viewpoint all dealers should recognize, and do something about.

Chain store competition is only as serious as *YOU* yourself make it.

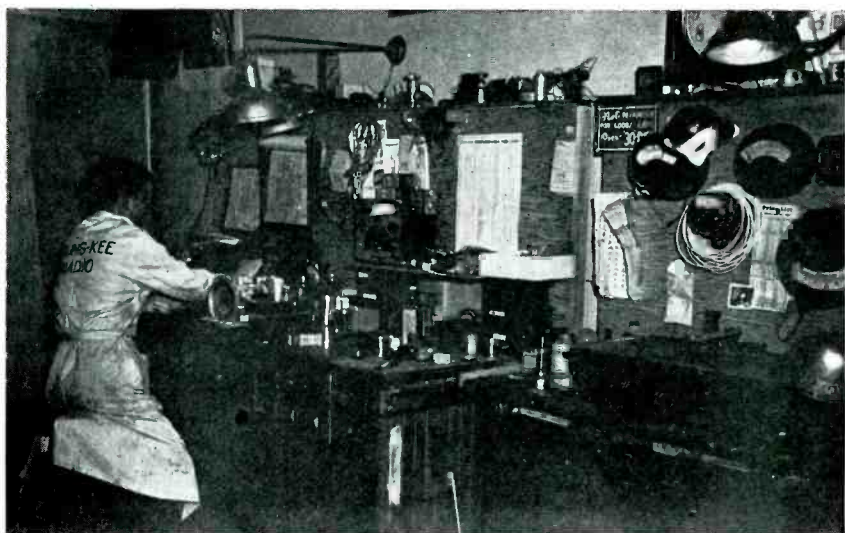
20,000 Chinamen



SOUND—Young Kee sells it, rents it, advertises with it, uses the truck for delivery



They move from this store in the heart of San Francisco's "20 square blocks" — **SETS**



Oriental do it all in the basement of the shop, and do it very well indeed — **SERVICE**

IN THE HEART of San Francisco's famed Chinatown, twenty square blocks containing 20,000 orientals (of whom 70 per cent own one or more very occidental radios) thrives a compact little business with a unique grip on its neighborhood trade . . . For *Young Kee* and brother *Wan*, themselves of Chinese blood, have concentrated seven years of selling in their own backyard.

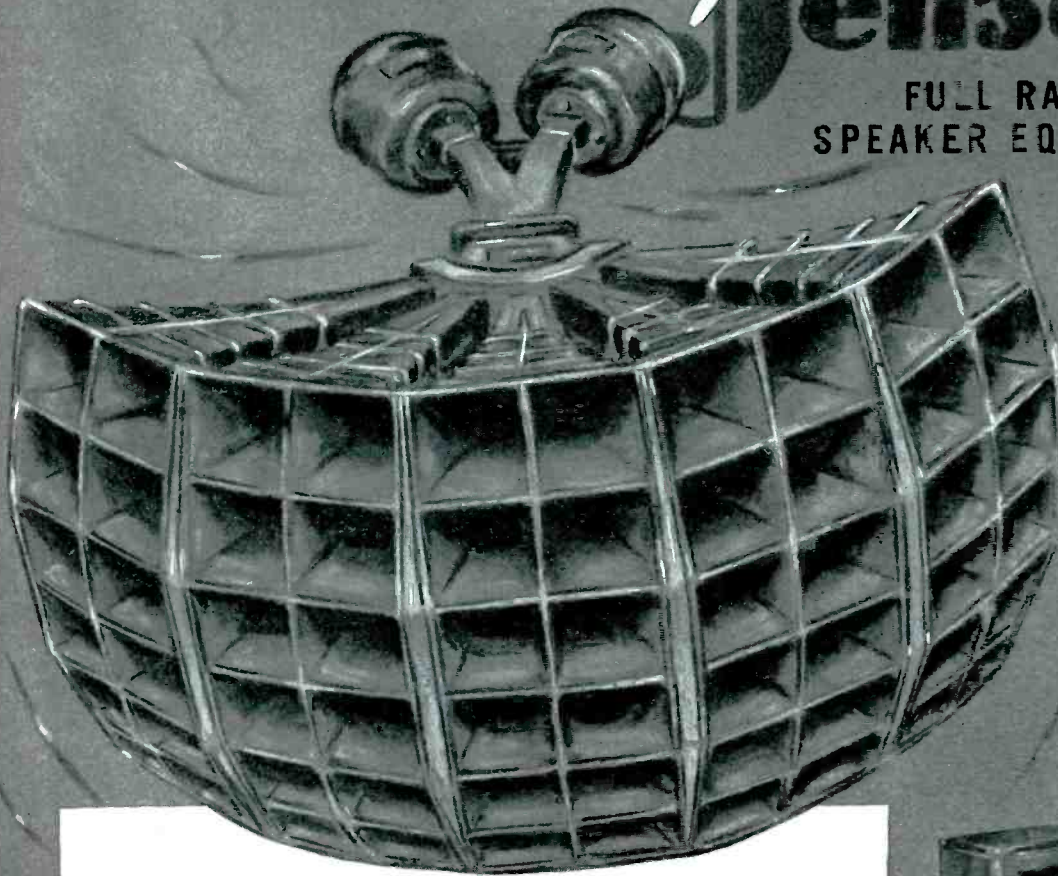
Mainspring of the business (which so far as we know has no counterpart in the United States) is a very excellent sound truck. The Kees sell sound. They rent it. They advertise themselves with it.

In the store, at 772 Jackson, radios, electrical appliances and a few novelties (which the boys simply cannot resist) are sold, frequently to customers in native Chinese dress. In the upper right-hand corner of the second photo on this page you will note (if you can read Chinese) that a sign within the store also indicates acquisition of an American vice. It reads: "Nothing Down." And, going occidentals one better, the Kees even rent phonographs.

Service work, done in the store basement, is handled entirely by technicians of Chinese extraction. Checkup in Chinatown indicates that it is done extremely well and, if the Kees needed more than their location and understanding of the oriental mind to build a successful operation (which they do not) the fact that they are particularly insistent upon rendering good, prompt service would undoubtedly turn the trick.

WHERE *Quality* IS ESSENTIAL
Jensen

FULL RANGE
SPEAKER EQUIPMENT



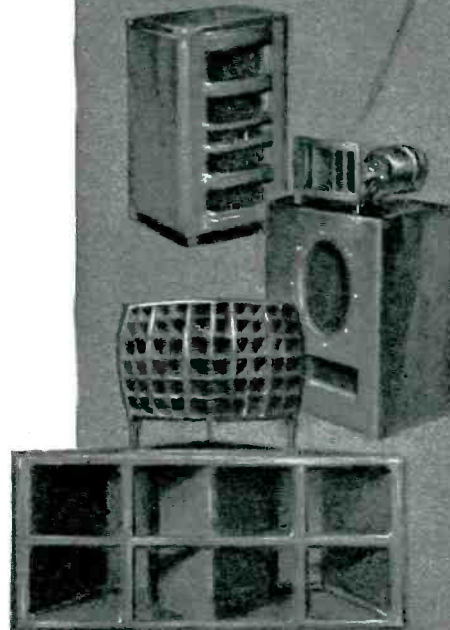
**A Complete New Line
of Jensen Products of Commanding
Character and Magnitude**

NEW • High Frequency Speakers • Low
Frequency Speakers • Multicellular Horns
Dividing Networks and accessories
Combined into 3 Basic Systems:

Type B . . . For largest audiences. Type G and E . . . For smaller audiences.

NEW CATALOG

A Technical Catalog describing these new
developments is now available. Ask your
Jensen Distributor or write for your copy.



Jensen
6601 SOUTH LARAMIE AVE., CHICAGO

TYPICAL 1940 BOX — Big enough to take a *full-size automobile radio receiver* are frozen food compartments of many models. Modern features such as cold “zones” in several makes help dealers sell up and stimulate replacement business



Hot COOLERS for FOOD

KEEN COMPETITIVE PRICE battle among electric refrigerator makers giving consumer best box values in history. Packaged air conditioners, on road toward major volume, likely to make first deep dent in market this year

THE YEAR 1940 will be the most competitive makers of domestic electric refrigerators have experienced since the beginning of the business.

Competition will be nearly as intense among distributors.

Dealers will encounter enough of it to keep sales sporting but under less pressure than the firms from which they buy.

The American consumer will get the best box values in history.

Refrigeration unit sales will probably reach new heights.

So, at least, think men who have attended national conventions at which 1940 models were unveiled. For the conjunction of new low prices aimed primarily at mail-order

merchandisers and planned heavy consumer promotion intended to maintain or improve brand position seems certain to produce this kind of picture.

Leaders

Prices at which “leaders” were originally released amazed retailers familiar with what has gone before. Even more startling were those announced in subsequent revisions as manufacturers learned about competitive tags.

Frank to admit that such leaders, while embodying a profit for all concerned, were primarily designed to bring people into stores were several factories urging their dealers to “sell up” in every possible in-

stance. Automatically assuring that this would be done in other cases were sliding scale discounts skating on thin margin ice. (Leaders in most instances, use interior finishes, insulation and other constructional materials insuring service in keeping with past standards of the business, are priced low through cuts in other directions. Dealers are urged to check such things closely, however, when attempting to make comparisons.)

Significant tendency noted in many instances and likely to move much merchandise in the middle-range was concentration by several factories on box sizes considered most generally in demand. (Just the reverse of “fudging,” some

"WE SAY THE RCA FRANCHISE IS A *Natural*"
Declares Joe Burstein, Burstein-Applebee, Kansas City



"Just as it's natural to run when you're in a hurry, so it's natural for us to go for our RCA Franchise in a big way. We need test equipment, receiving tubes and power tubes in order to operate. And test equipment doesn't come any better than RCA...there are no other tubes with comparable public acceptance...and in power tubes RCA runs rings around everyone else!"

This Profit-Natural will make money for you!

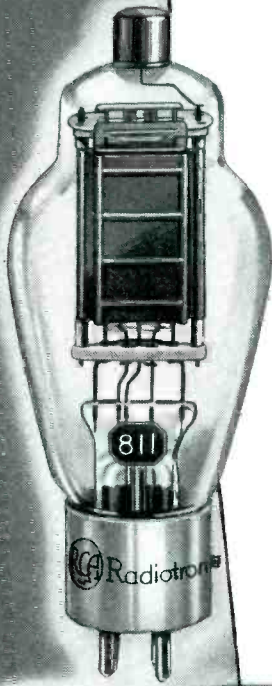
Joe Burstein is an ace parts jobber—and just about everybody in the business knows it. When he says something's good you can bet it is. And he thinks RCA's Big Three is swell. And leading jobbers everywhere agree that RCA is tops in these profitable lines. It only stands to reason that RCA Test Equipment is outstanding. It is backed by more actual service experience in every field of radio and sound. RCA receiving tubes have acceptance without equal. And no one questions the superiority of RCA in the field of power and special purpose tubes.

You get the best in all three with the RCA Franchise... and Joe Burstein is only one of the many leading jobbers who is glad to say what he thinks about RCA's Big Three.

Over 335 million RCA Radio Tubes have been purchased by radio users. In tubes, as in parts and test equipment, it pays to go RCA All the Way.

- Only RCA Offers You All Three**
- 1. TEST EQUIPMENT**
 - 2. RECEIVING TUBES**
 - 3. POWER TUBES**

(Transmitting, Cathode Ray, and Special Purpose Tubes)



Tubes and Test Equipment

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

Getting Started with . . .

HOME SPECIALTY goes best at the prospect's own door but demonstration in the home is not at first necessary

PERHAPS we cannot actually sell a washing machine at the door, except in rare cases, but we can do what amounts to the same thing. We can sell a woman the idea of allowing us to come in and talk about it.

In this respect, the washer even has a slight edge on the easy-to-talk-about refrigerator. And a still greater edge on radio. So selling plans that involve much contacting at the consumer's door are plainly indicated.

However, where we may, when we first enter the business, put radios in on home demonstration right and left, sell what we can and pull the others, we should put a washing machine in on trial only where we are quite sure we'll sell it—and equally sure we'll not sell it in any other way.

There are sound reasons why this is a good way to start.

(1) *A washing machine cannot as readily be delivered by a salesman or a supervisor as the smaller radio, and deliveries are therefore an added expense to the dealer.*

(2) *The radio is most frequently a replacement proposition; and, being that, the best way to sell it is by a side by side comparison with the old radio. With the washing machine, the woman is more often buying her first.*

(3) *We have a very tangible sales talk with the washing machine, in nearly every case, and therefore—just as with the refrigerator—it is possible to sell one from a picture.*

* Salesman, Philadelphia



STARTS WELL WITH PICTURES—Women are easy to talk to about laundry equipment. So it can be initially promoted from photographs

In other words, we don't need the sales assistance that the demonstration would give us—as urgently as we need it with the radio.

Now that we see why a washing machine can, while we are getting a toe hold in the business, be promoted from a picture, there remains nothing to do but sell one.

Three Kinds of Women

Before we can talk intelligently about selling the washing machine, we must divide the women of this country who do not have washing machines into three classes. The women who *do washing by hand* we'll call "dwbh's." We'll call the ones who *send washing out*, but wouldn't mind doing it with a machine, "*swo-thrifties*." And we will call women who *send washing out*, and wouldn't do it themselves even with a washing machine, "*swo-lazies*."

Let's get rid of the *swo-lazy* woman first. She's not a prospect. She wouldn't have a washing ma-

chine as a gift. We see a bag of laundry on the porch, so we point to it and ask her if she ever thought of buying a washing machine. She says no, because she doesn't want one.

We explain very gently that what she's paying the laundryman will easily buy the washer, but she tells us she wouldn't do her own washing, even with a washing machine, no matter how much it cost her to send it to the laundry.

We explain, still more gently, that there's not much work attached to doing the laundry—with a washer. But she says it's still too much work for her.

As a last resort, we make some reference to the strong chemicals that laundries use, and how they tear clothes to pieces, but that doesn't interest her either. She says that when her clothes wear out she simply buys new ones.

How do we sell this woman? We don't. We forget her. Fortunately, for the washing machine salesman,

... WASHERS

By CASWELL ODEN*

these women are not very numerous. I'd say they represent only about 25 per cent of the *swvo* women.

Swvo-thrifty

Now let's take the *swvo-thrifty* woman.

She is an excellent prospect, and easy to sell. The moment she gives us the "can't afford" argument, she has cooked her goose. Because we give her an "irresistible sales talk." What she pays the laundryman will buy the washer for her.

And there isn't any long, drawn-out story here. We have the story on the tip of our tongue. This is why we have even more success (at the door) than we have with the box. There is no "invisible" saving on the food bill to explain. The woman knows what she pays the laundryman, she sees it go out every week. And, what's more, because she pays it once a week instead of every day (if she's buying ice) it seems like more to her than the ice bill even if it isn't.

For example, in a case where the laundry bill is \$1.00 a week and the payments on the washing machine will approximate that, many of these women can see without much assistance from you where the economy lies.

We ignore the cost of operation; it isn't enough to take into consideration—and seldom will the woman herself consider it. It is strictly a "break even" proposition, with the saving on the longer lasting clothes offsetting the cost of operation, if the woman should mention it.

Of course, some of these *swvo-thrifty* women, even in a breakeven case, will tell you at first that they can't afford the washer. I have never been able to understand this, but it is true. However, we don't have any serious trouble on this score. We simply get a piece of paper, mark down the figures, and

then look at her with a dumb stare.

These figures are somewhat complicated, so I give them to you to use in selling such a woman:

Laundry bill	\$1.00
Payment	1.00
	<hr/>
	0.00

It is in the cases where the laundry bill is less than the payments on the washer would be, that we usually have some talking to do. We have to explain that buying the washer, under such circumstances, is just like putting money in the bank. We notify the lady that the payments on the washing machine cease as soon as it is paid for—whereas the payments to the laundryman do not cease, until she buys the washer. This fact seems quite obvious, to us, but we explain it time after time.

DWBH Type

This brings us to the *dwbh* woman, and she is quite often our best prospect. Because, while we can't give her an "irresistible sales talk," we certainly can go to town on the convenience, saving of time, and saving of work.

Maybe you think there are not many women scrubbing clothes every week? Maybe you know that there are only about fourteen and a half million washers in use in this country but believe that most

of the other washing is done by public laundries?

If we picked out the right neighborhood, we could in the course of four or five hours contact one hundred who *dwbh*. Now this, in itself, doesn't mean so much. It means merely that there is a big need for washing machines. Maybe they can't afford them.

So we could peep through the window, if we didn't go inside, and we would discover that, in about ninety of these homes, there is an expensive radio. Does that mean anything?

It means, as I have often said, that people will buy entertainment before they will buy anything else.

How do we sell these *dwbh* women? Honestly, there's very little to tell you. We sell them something they've got to pay for, but something they sorely need, and something that every one of them wants. It isn't very hard to sell under those conditions—if the woman actually can get the thing paid for. We show her a picture, make the rates as low as possible, get the contract signed, and get the down payment.

And after we've sold it to her we go back and show her how to operate it, how not to put in fifteen blankets at one time. And we get two more sales in the same block, for which we give her whatever we promised her.

The salesman has an irresistible argument with the *swvo-thrifty* woman and a terrific argument with the *dwbh* woman, and the dealer . . . he doesn't have to take the bath tub for a trade-in. He gets the profit to which he is entitled. The profit, the whole profit, and nothing but the profit, so help me—!

The NEXT IMPORTANT STEP

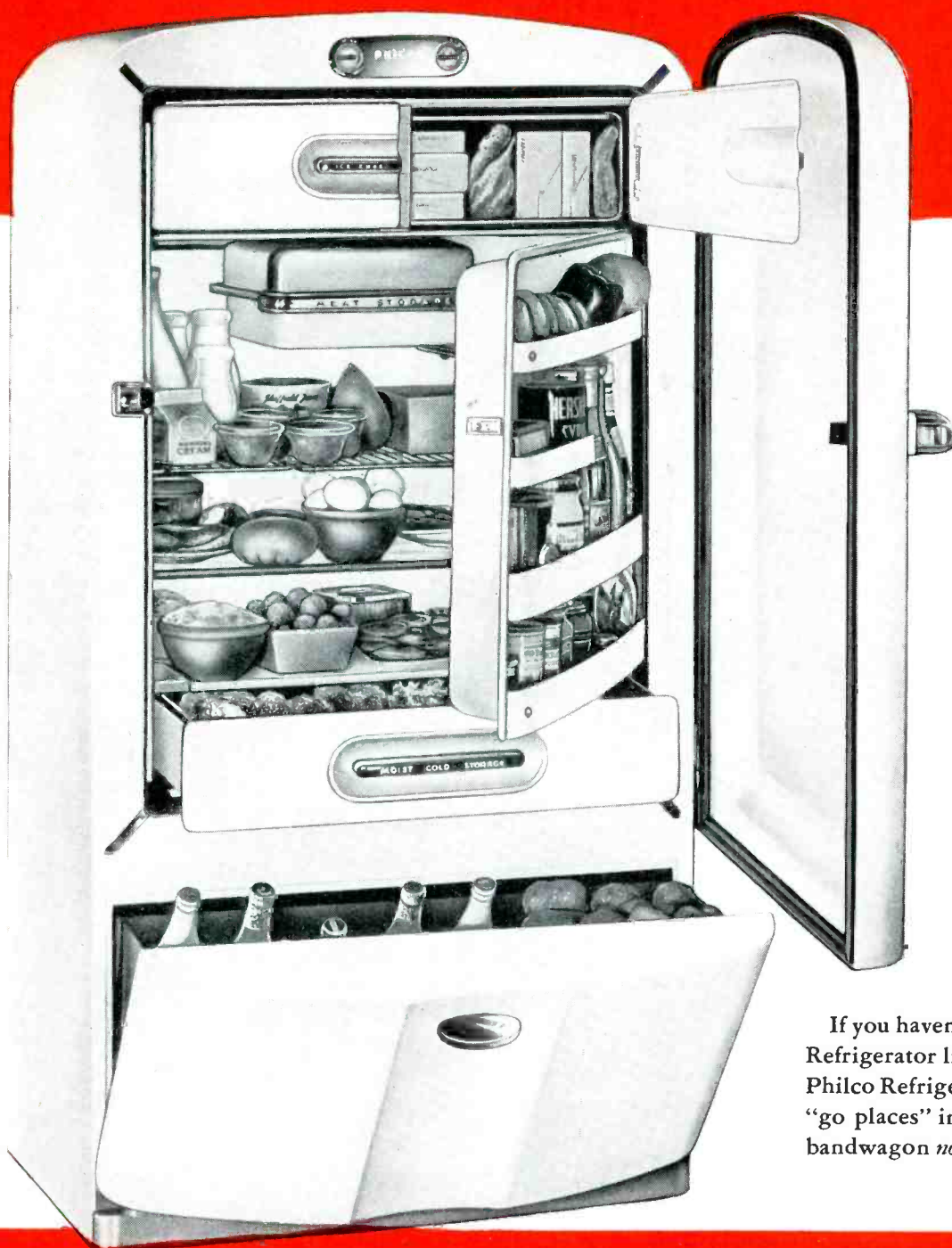
IN THE WASHER business, just as in radio, the real profit "gravy" often goes to those with initiative and experience enough to "sell up."

Radio dealers who already stock washers (76 per cent) have started to apply technique learned from their more difficult experience with consoles and combinations, are selling women buying their first washers deluxe types through comparative demonstration.

Further expanding their potential prospect list, radio dealers who now have a "toe hold" on the washer business are also getting replacement volume by showing women with older machines the greater convenience, better appearance and improved efficiency of modern laundry equipment. . . . ED.

In Sales Features, PHILCO

is the



DURING the past few weeks, appliance dealers from coast to coast have flocked to see the sensational new 1940 Philco Refrigerator . . . to get the full story of the most profitable franchise in the entire industry. And what a reception they have given it! Never before such interest . . . such enthusiasm . . . such wholehearted endorsement of *any* refrigerator!

Everyone agrees that Philco has "done it again"! At last, a product that offers conveniences and economies never before combined in a single refrigerator . . . at prices that give a new meaning to the word *value!* A complete line of models, with the greatest selling features in the industry. A complete merchandising program that includes tremendous *national* advertising, plus every kind of *local* advertising and promotion to bring you quick, profitable sales. And . . . a dealer *contract* that means a permanent *All Year 'Round* source of profits!

If you haven't yet seen the thrilling new 1940 Philco Refrigerator line, by all means get in touch with your Philco Refrigerator distributor *at once!* Philco is out to "go places" in refrigeration . . . and by getting on the bandwagon *now* you will travel farthest and fastest!

Philco All Year 'Round for Profits All

Value and Price, the Refrigerator SENSATION of 1940!

Only PHILCO gives you the Conservador . . .
plus Dry, Moist and Frozen Food Compartments



THE FAMOUS CONSERVADOR

This patented shelf-lined Inner Door gives you 26% more quickly usable space. $\frac{2}{5}$ of all food at your finger-tips without opening main compartment. No crowding in front, no wasted areas in back. That's why the Philco Refrigerator *holds more food!* Acts as a "storm door"—cuts electric bills.



DRY COLD COMPARTMENT

Some foods *must* have dry cold to preserve their purity. That's why *no modern refrigerator is completely safe and healthful unless it offers dry cold.* The Philco Refrigerator has this *complete, separate* Dry Cold Compartment that furnishes the one best *single kind* of food protection.



MOIST COLD COMPARTMENT

Now, *you don't have to cover foods* to keep them from drying out! This Moist Cold Compartment preserves the flavor and color of cooked "left-over" meats and vegetables . . . without the bother of covers and wasted space of special dishes. Cooled by the Freshener Shelf—*only Philco has it!*



FROZEN FOOD COMPARTMENT

A huge *separate* chamber, specially designed for frozen storage. Yes, a *giant-size* space, as large as 13½" wide, 11" deep and 7" high, *in addition* to the regular ice-cube chamber. Plenty of room in this Frozen Food Compartment for packaged frozen foods, ice cream and delicious frozen desserts.

And, in addition, every other worthwhile feature you need to make quick sales, more sales and greater profits!

There's a Philco Refrigerator to fit every need and purse 12 models from
\$119⁹⁵ to **\$257⁵⁰** (F. O. B. Factory, Including
5-Year Protection Plan)

Year 'Round

HOME RADIO • AUTO RADIO • TELEVISION • PHONOGRAPHS • RADIO TUBES
PARTS • REFRIGERATORS • AIR CONDITIONERS • DRY BATTERIES

UNIVERSAL'S

Superheat Unit

breaks Electric Cooking

SPEED RECORDS



FASTEST BY TEST!
 The Universal Superheat Unit lets you sell on proof! Simple, dramatic Stop Watch Test proves new unit speed . . . proves new oven speed. Customers convince themselves.

The Nation's

ELECTRIC RANGE

**FASTEST...
 MOST AUTOMATIC...
 MOST ECONOMICAL**

NEW Universal Superheat Units are fastest—BY TEST.

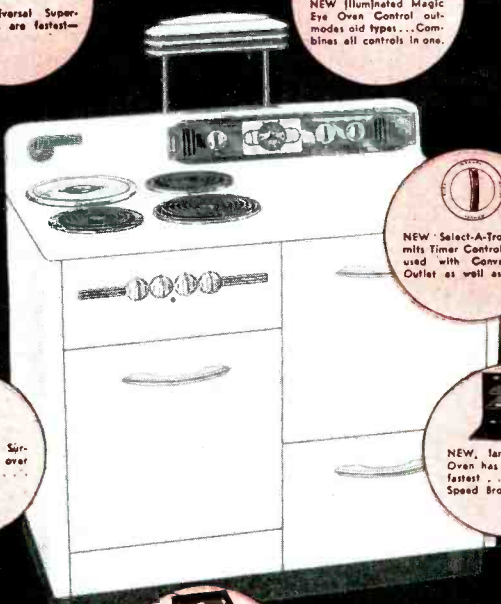
NEW Illuminated Magic Eye Oven Control out-modes old types... Combines all controls in one.

NEW Select-A-Trol permits Timer Control to be used with Convenience Outlet as well as oven.

NEW Multi-Heat Surface Controls dial over 101 different heats . . .

NEW, larger Bake-Fast Oven has been PROVED fastest . . . PLUS Quick-Speed Broiling.

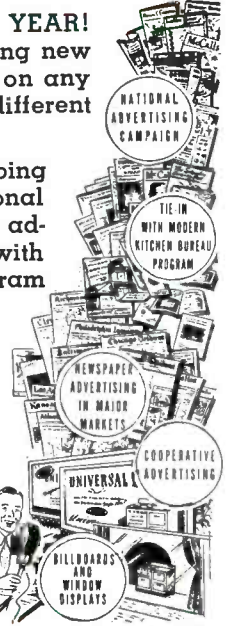
NEW Serv-A-Drawer with Serv-A-Tray automatically keeps foods hot and serves direct from range to table.



RANGE SENSATION OF THE YEAR!
 Breathless new beauty. Thrilling new speed. And—for the first time on any electric range—over 101 different heats for surface cooking!

Here's more! Universal is stepping out with a smashing promotional campaign: National magazine advertising . . . PLUS a tie-in with Modern Kitchen Bureau's program and coast-to-coast newspaper advertising.

Universal's got the range for '40. Universal's got the program. Wire or write for full details today.



PICTURE FILMS AND VISUALIZERS

RADIO AND DIRECT MAIL CAMPAIGNS

UNIVERSAL UNIVERSITY SALES TRAINING COURSE

BILBOARDS AND WINDOW DISPLAYS

Universal ELECTRIC RANGE

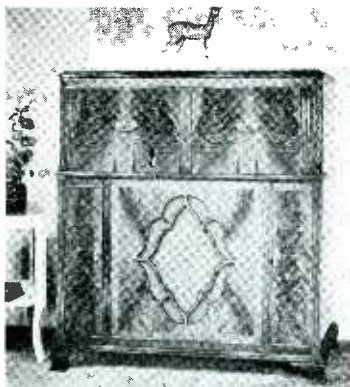
Made by LANDERS, FRARY & CLARK, New Britain, Conn.

Product Preview



STROMBERG-CARLSON

MODEL 455-PL—Frequency modulation Labyrinth radio and automatic phono. Shifts and plays 10 or 12 inch records. Includes standard broadcast, short wave and frequency modulation bands. Housed in walnut cabinet. 6 pushbuttons; automatic drift compensator; bi-focal tuning indicator; Carpinchoe leather speaker; 12 tubes.



MODEL 460-PF—Labyrinth radio and automatic phono. Has 3 tuning ranges; motor tuning with provision for remote control; 8 pushbuttons; provision for television. Eight new models have just been added to 1940 line. These include frequency modulation and standard receivers. Stromberg-Carlson Tel. Mfg. Co., Rochester, N. Y.



WESTINGHOUSE

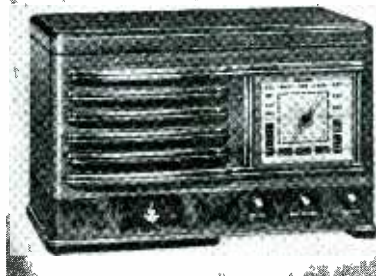
PORTABLE—Model WR-475, radio-phonograph combination, covered and lined with durable airplane cloth in tones of brown; detachable lid;

soft felt turntable; self-starting phonograph motor; plays 10 and 12-inch records. Features automatic volume control; electro dynamic speaker; built-in loop antenna.



CONSOLE—Model WR-375, a handsome 6-tube superhet receiver, has automatic volume control; 6 station pushbutton tuning; 12-inch dust-proof electro-dynamic speaker. Cabinet of heart-walnut, trimmed with a darker shade of walnut around base, sides and top. Measures 25 3/4 wide, 38 high, and 14 1/2 inches deep. Westinghouse Electric Supply Co., 150 Varick St., New York.

EMERSON



MODEL 332—An a.c.-d.c. superhet with Miracle Tone Chamber; 8 inch p.m. speaker; automatic volume control; tone control; Eye-Ease dial. Tunes short waves as well as broadcast. Price \$39.95. Emerson Radio & Phonograph Corp., New York, N. Y.

FARNSWORTH



TABLE MODEL BT-22—Newly designed striped walnut cabinet with four pushbuttons and large rectangular slide-rule dial; features attractive grille bar openings; 5-inch electro-dynamic speaker; automatic volume control; 6-tube superhet; built-in loop antenna.



CONSOLE MODEL BC-81—Eight tube superhet; 6 pushbuttons; built-in antenna; automatic volume control; cabinet of butterfly figure American walnut; measures 40 3/4 high, 28 wide, 15 inches deep. Farnsworth Tele. & Radio Corp., 3700 Pontiac St., Fort Wayne, Indiana.

ADMIRAL



TABLE-TYPE—Model 17-85, a five tube superhet, has an attractive wood cabinet with horizontal louvre grille openings; features a well-designed, easy-to-read dial and a convenient handle for carrying about. List \$19.95.



TABLE-TYPE—Model 20-A6, a six tube superhet with built-in loop antenna, is modernistically designed in a walnut plastic cabinet. Features a large square dial and corner louvre grille openings. List price, \$16.95. Continental Radio & Tele. Corp., 3800 Cortland St., Chicago, Ill.

LAFAYETTE

CONSOLE—Model 88-11 receiver features 11 tubes and tunes from 13.7 to 568 meters in 3 bands. Has built-in loop for broadcast and short waves; 6 pushbuttons; 4 point tone control; 12 inch dynamic speaker. Radio Wire Television, Inc., 100 Sixth Ave., New York, N. Y.

SONORA



RADIO-PHONOGRAPH—"Serenade" model presented in plastic molded table cabinet, available in ivory or walnut; features a 5-tube superhet with built-in antenna; 5-inch dynamic speaker; plastic molded full vision tuning dial; plays 10 and 12-inch records; snap-on pickup arm-rest molded into cabinet. Sonora Radio & Phonograph Corp., 2626 W. Washington Blvd., Chicago, Ill.

ALLIED



MODEL A10845—Cabinet attractively designed in a new modern trend with sloping dial panel of vertically striped walnut veneer and curved side pilasters in two-tone finish. Provides for television connection; features an automatic volume control; 12 pushbuttons for tuning, tone control, "on-off," and phono, or television connection; 12-inch dynamic speaker. Allied Radio Corp., 833 W. Jackson Blvd., Chicago, Ill.

ARVIN



COMBINATION—Model 302A, a radio-phonograph, finished in ivory with chrome trim; permanent magnet speaker; plays 10 and 12-inch records; attached aerial for radio, 20 feet long. List price \$16.95, carrying case for radio-phonograph and records \$2.95 extra. Noblitt-Sparks Industries Inc., Columbus, Ind.



MAJESTIC

PORTABLE—Convenient portable radio, can be carried along to almost all outdoor sports. Equipped with strong carrying leather handle. Housed in an attractive durable case.



CONSOLE—New 1940 console, encased in a modern attractive cabinet, has 10 pushbuttons which provide for automatic tuning. Features horizontal slide-rule dial. Majestic Radio and Tele. Corp., 50th and Rockwell Sts., Chicago, Ill.

SARGENT

COMMUNICATIONS RECEIVER—Model WAC-44 with 2 stages of preselection, crystal filter, built-in 5 inch speaker, frequency monitor. Tunes 9.5 to 550 meters in 5 bands; iron core i.f. transformers; send-receiver switch; 11 tubes; beat oscillator. Net price complete \$139.00. E. M. Sargent Co., 212 9th St., Oakland, Calif.



STEWART-WARNER

TABLE-TYPE—Model 07-5R6 housed in a handsome cabinet with grille sections, front panels, and handle in solid American walnut; manual tuning; illuminated linear magic dial with band identifi-

cations; 4-inch electro-dynamic speaker. Measures 7 $\frac{1}{2}$ high, 14 $\frac{1}{4}$ wide, 5 $\frac{3}{4}$ inches deep.

CONSOLE—Model 01-9A7, 10-tube superhet with built-in antenna; 8 pushbuttons (6 for station selection, 1 for manual, 1 for phono-switch). Features illuminated glass linear dial; 12-inch electro-dynamic speaker; provision for record player and television. Modern designed cabinet made of walnut stumpwood (front), sliced walnut (top), decoration of Carpathian elm (center). Stewart-Warner Corp., 1826 Diversey Parkway, Chicago, Ill.



PHILCO



RADIO-PHONOGRAPH—Model 515, housed in attractive 18th century designed cabinet, is available in walnut or mahogany; equipped with an inter-mix record changer; eight tubes; built-in antenna; electric pushbutton tuning; improved crystal phonograph pickup; horizontal dial with the important foreign stations named and located.



RADIO-PHONOGRAPH—Model 527, a modern style cabinet, designed to receive television; equipped with automatic record changer; playing 12 ten-inch or 10 twelve-inch records; six tubes; electric pushbutton tuning; tone control for both radio and phonograph. Philco Radio & Television Corp., Tioga & C Sts., Philadelphia, Pa.

Every house needs
Westinghouse



SMASH HITS IN SELLING SHOWMANSHIP



Tru-Zone Cold, with True-Temp Control and new Fiberglas insulation, lets Westinghouse dealers in 1940 sell the SUREST, STEADIEST food protection temperature control in any household refrigerator.

DEALERS TO PROFIT FROM BIGGEST PROGRAM IN WESTINGHOUSE HISTORY

On the air . . . it's "Musical Americana," the new, distinctive, and *different* radio program! Every Thursday night, over a big-time network of 95 stations, it makes new friends for Westinghouse—and Westinghouse dealers!

"The Middleton Family at the World's Fair"—big 50-minute all-color movie—shows in 2,500 theatres, 10,000 showings—making new friends for Westinghouse and Westinghouse dealers.

Magazines, newspapers, 24-sheet posters, all add up to a 1940 program that gives Westinghouse dealers the greatest pre-selling support they ever had. And for showroom demonstration, 1940 provides new dramatic selling helps to close sales *faster for '40*. If not already a Westinghouse dealer, write or wire for 1940 facts.

WESTINGHOUSE ELECTRIC & MFG. CO.
MANSFIELD, OHIO



RADIO

"Musical Americana" sets a new standard in radio programs — NBC Blue Network every Thursday, 8 p.m., Eastern Standard Time.



MOVIES

10,000 "Middleton Family" showings in full Technicolor cover 2,500 theatres. Set of 7 Technicolor Minute Movies also available for dealers.



MAGAZINES

8 national magazines carry 29 full-color advertisements; aggregate circulation more than 18,000,000.



NEWSPAPERS

Refrigerator ads scheduled and paid for by Westinghouse appear in 118 key city newspapers with total circulation more than 19,000,000.



POSTERS

New 24-sheet posting schedule covers selected trading areas; posters also available for dealer showings.



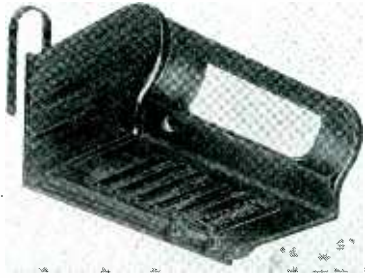
DRAMATIC SALES HELPS

New sales-closing material is more dramatic, colorful, and convincing than ever.

Westinghouse Refrigerators

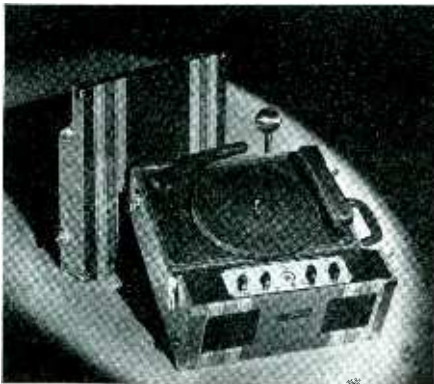
"The Line of Least Resistance"

AUTOMATIC



COMPANION—A bedlamp and 5-tube superhet tuning from 545 to 1650 kc. known as model 430; lamp works independent of radio; attaches to head of bed; illuminated slide-rule dial; built-in loop; available in walnut, mahogany or maple; list price \$19.95 to \$24.95. Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston, Mass.

WESTERN SOUND



RECORDER—Attractive luggage style case measuring 16 wide, 17 long, 8 inches high; 6 watts class "A" amplifier; heavy duty electric motor; improved crystal cutting head; true track crystal pickup; visual volume level electric eye indicator; streamlined crystal microphone with 8 foot cord. Western Sound & Electric Labs., Inc., Milwaukee, Wis.

MAGIC CLOCK



TIME CLOCK—Turns on or off any electrical appliance such as radio, fan, heater, etc. at pre-determined time. Each key depressed represents 15 minutes of time, any number of keys may be pressed at one time. Magic Clock Co., 4817 So. Western Ave., Los Angeles, Calif.



HICKOK

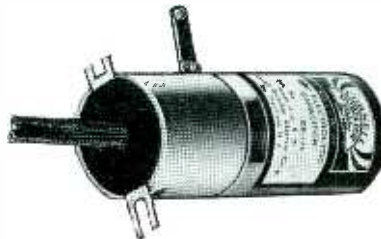
JUMBO TESTER—Model 4922-S volt-ohm-milliammeter with new $9\frac{1}{4}$ inch rectangular meter. Measures a.c. and d.c. volts of 0-10-2500 in 5 ranges; d.c. milliamperes 0-5-50-500; ohms from .05-30, .5-10,000, 50-1,000,000, 500-10,000,000; d.c. microamperes 0-500; decibels -10 to +15, +29, +43; output 0-10-2500 volts in 5 ranges with blocking condenser included. Contains new type rectifier and potentiometer for ohmmeter adjustment. Hickok Elec. Instr. Co., 10514 Dupont Ave., Cleveland, Ohio.

WRIGHT



SPEAKERS—Three 15 inch speakers; a p.m. type with 25 watt power rating, lists at \$78.00; an electro-dynamic with 22 watt rating lists at \$38.00; and a light weight 15 watt electro-dynamic model at \$20.00. All voice coils are 8 ohms impedance. Wright, Inc., St. Paul, Minn.

CORNELL-DUBILIER



REPLACEMENT CAPACITORS—Low cost dry electrolytic condensers available in single, dual, triple and quad units in 38 different varieties of 8, 12, 16 and 24 mfd capacity and 250, 350 and 450 volt ratings. Enclosed in cylindrical cardboard container. Cornell-Dubilier Elec. Corp., South Plainfield, N. J.

CLARION



PORTABLE SYSTEM—Contains 10 to 15 watt amplifier; 10 inch p.m. speakers; complete record player; microphone, stand and cables; housed in single carrying case. Provided with phono and microphone input with 110 and 80 db. gain respectively. Complete, ready to operate \$90.57 list. Transformer Corp. of America, 69 Wooster St., New York, N. Y.

RCA



SIGNALYST—A signal generator designed for radio and television alignment work. Tunes from 100 kc. to 120 mc. in 10 bands. Accuracy of 1 per cent is claimed through use of iron core inductances and air trimmers. Maximum output is 1.3 volts on high range and .05 on low range. Price \$107.50 f.o.b. Camden. RCA Mfg. Co., Camden, N. J.

ATLAS



MUSIC BOX—A new line of walnut speaker enclosures designed for general sound application. Available for 8 and 12 inch speaker at \$5.75 and \$7.50 list. Atlas Sound Corp., 1449 39th St., Brooklyn, N. Y.

... CHOICE OF THREE BANDS *with this* POWERFUL ... EFFICIENT AUTOMOBILE RECEIVER ...



MODEL 1079 7 tubes: 1—6K8, 2—6K7, 1—6Q7,
1—6JS, 1—6N7, 1—6X5.

8 watts undistorted output. Three full bands. 8 inch P. M. speaker. Full range tone control. Automatic Volume control. Squelch circuit. Receiver: 9½x7½x6 inches. Speaker: 9x9x4½ inches. Complete with choice of custom control, ignition suppression equipment and matched antenna.

\$79.50 LIST

With KARADIO you can offer a *choice of any three* of the following bands:

*"Ultra high
and
Long wave"*

1. 1600—540 KC. DOMESTIC
2. 4800—1600 KC. POLICE
3. 17 MC.—5.5 MC. EUROPEAN
4. 150—400 KC. AVIATION
5. 12 MC.—4.2 MC. AMATEUR
6. 37 MC.—12 MC. ULTRA-HIGH

KARADIO 3-band automobile receivers are ideally suited to the requirements of and are extensively used by city, county, and state police; United States Government Weather Bureau; Civil Aeronautics Authority; Radio interference inspectors; and amateur operators.

Custom Controls are available for all model cars from 1936 to 1940 inclusive.

For full particulars, contact your local distributor or write direct to

KARADIO Corporation
2233 UNIVERSITY AVE. ST. PAUL, MINN.

Also
CONVENTIONAL AUTO RADIOS
FIXED FREQUENCY POLICE RADIOS

KARADIO

EASY EXTRA SALES

when you display

PRESTO RECORDING ACCESSORIES

Thousands of home recording sets are now in use. Thousands more will be sold this fall. Every owner of Presto equipment is a prospect for steady, year 'round repeat sales of discs and needles. You can get your share of this highly profitable business if you display Presto recording accessories prominently in your windows and on your record counter. They are attractively packaged, easy to set up, take little space.



ORANGE SEAL DISCS are recommended for high quality recordings, Monogram Discs for educational recordings.

SIZE	PLAYING TIME PER SIDE	LIST PRICES	
		ORANGE SEAL	MONOGRAM
6"	1 minute	\$.40	\$.25
8"	2 minutes	.55	.40
10"	3 minutes	.80	.60
12"	4 minutes	1.00	.75

PRESTO STEEL CUTTING NEEDLES

\$1.00 a box of 3. Dealer carton contains 12 boxes. Each needle cuts 8 to 10 records. Sapphire cutting needles are \$6.00 each, have an average cutting life of 5 hours. Resharpening charge, \$2.00.



PRESTO STEEL PLAYING NEEDLES

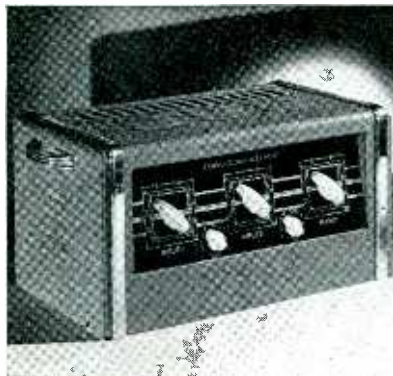
are highly polished and shaped to cause least wear on Presto recordings as well as ordinary phonograph records. Package of 25 needles, \$.25. Dealer carton contains 40 packages.



ORDER THROUGH YOUR JOBBER
OR WRITE DIRECT TO US

PRESTO RECORDING CORPORATION

242 West 55th Street, New York, N. Y.



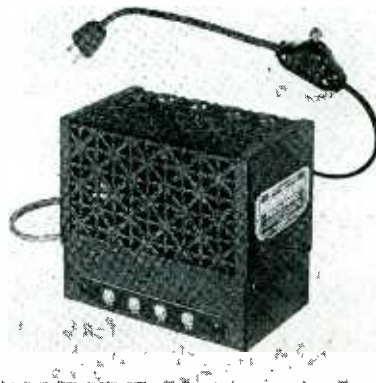
ERWOOD

AMPLIFIER—New amplifier with 28 watts output and less than 5% distortion. Has 2 microphone and one phono channel and 2 tone controls. Variable output impedances available by use of tap switch. Housed in modern wrinkle finish steel case. Erwood Sound Equipment Co., 224 W. Huron St., Chicago, Ill.



RADIO CITY

MULTITESTER—A pocket tester with 23 ranges and 2500 ohm per volt sensitivity. Measures a.c. and d.c. voltages of 0-10-5000 in 5 ranges, d.c. micro-amperes at 0-400; d.c. milliamperes 0-10-100-1000; d.c. amperes 0-10; ohms 0-500-100,000-1 meg.; decibels -10 to +69 in 5 ranges. Bakelite case 3 inch meter. Radio City Products Co., 88 Park Pl., New York, N. Y.

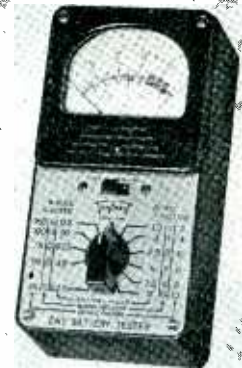


GTC

TWIN-POWER—Model P power pack for eliminating batteries on 6 volt sets. Provides 2 separate 6 volt sources of 1 1/2 amp. each. By using one on vibrator and one on filaments, vibrator hash is reduced. Price \$13.95. General Transformers Corp., 1250 W. Van Buren St., Chicago, Ill.

TRIPLETT

BATTERY TESTER—Model 696 tests all types of dry batteries under load. Has colored "good-bad" scale. Has 11 point selector switch; measures up to 135 volts at 1000 ohms per volt. Triplett Electrical Inst. Co., Bluffton, Ohio.



AMPLIFIER CO.

DIRECT COUPLED AMPLIFIER—High fidelity 30 watt amplifier with variable speed non-overloading pushpull expander; high frequency accentuation and attenuation; pushpull automatic volume compressor, limiter and volume control; non-frequency discriminating scratch suppressor; low and high gain single-ended and pushpull input; calibrated volume indicator; photocell input. Amplifier Co. of America, 17 W. 20 St., New York, N. Y.



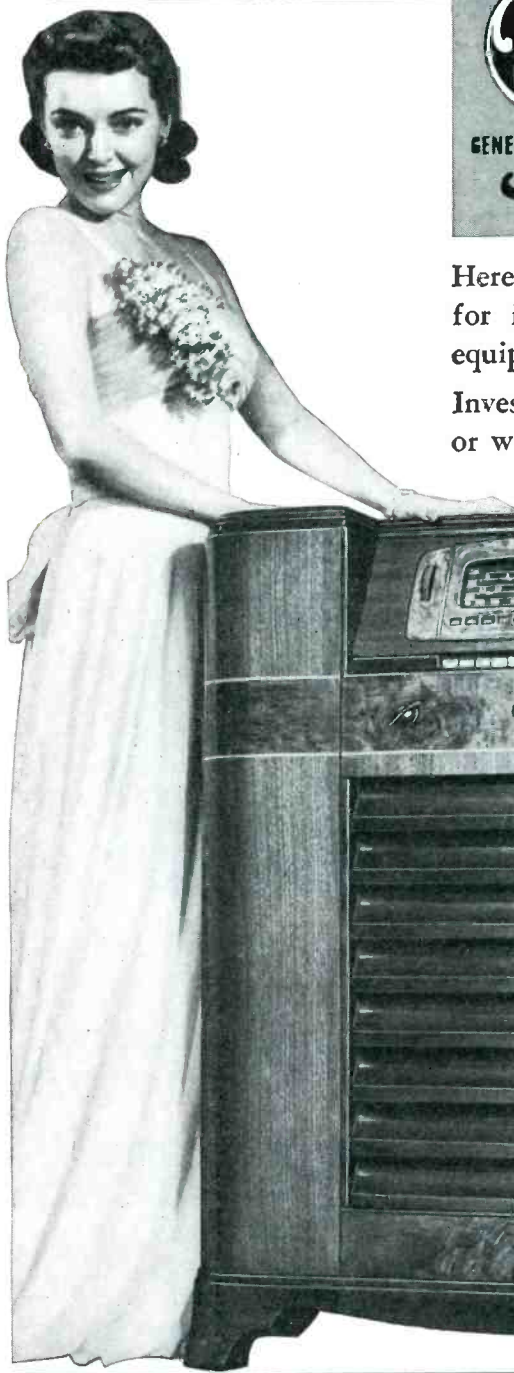
WEBSTER ELECTRIC



INTER-COMMUNICATION—Model illustrated has a separate microphone on top of cabinet. The speaker is for reception only. No manual operation of a "Talk-Listen" switch is required, just trip the keys to talk to one or more stations. When red light appears, station is busy. For confidential conversation remove handset and use as telephone, lifting the handset disconnects both microphone and speaker. Webster Electric Co., Racine, Wis.

ANOTHER G-E RADIO FIRST!

DUAL DYNAPOWER SPEAKERS



Here it is! The radio that every one is talking about — praising for its sparkling new performance. G-E Model HJ-1205 — equipped with *Dual Dynapower Speakers*!

Investigate! Find out how far radio has advanced. Phone, write or wire.

MODEL HJ-1205. Equipped with new and exclusive Plus Value Features which make for better tone. 3 Band foreign-domestic reception—12 Tubes including Cathode-Ray Tuning Indicator and two Rectifiers—and a smartly styled Walnut Veneer Cabinet. Priced for volume selling!

NEW G-E SUPER-POWERED CHASSIS

NEW G-E DUAL DYNAPOWER SPEAKERS 20 1/2 INCHES OF SPEAKER PERFORMANCE

NEW G-E SUPER BEAM-A-SCOPE—NO AERIAL—NO GROUND—QUIETER, FINER RECEPTION

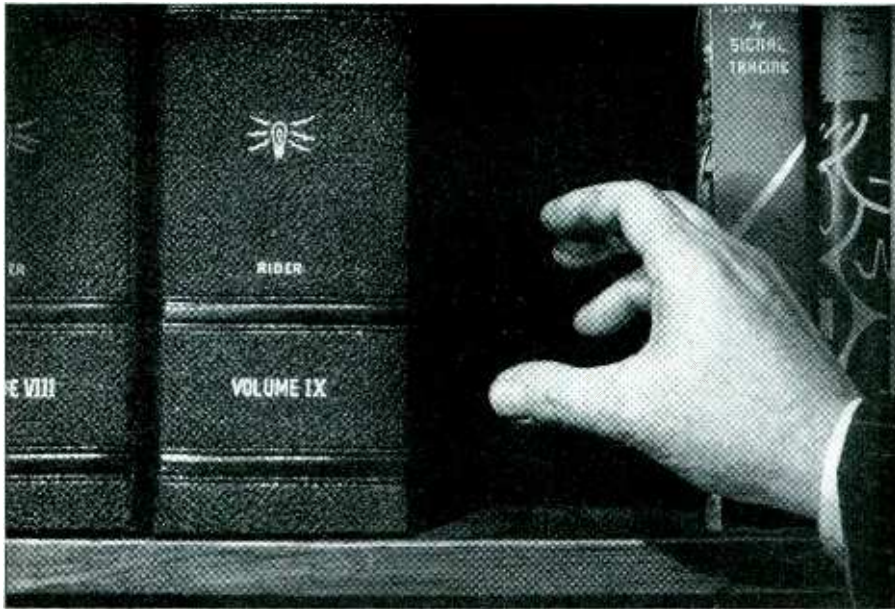
LET YOUR EYES AND EARS DECIDE

EXCLUSIVE SUPER BEAM-A-SCOPE

NEW G-E RADIO STANDS THE P-R-F-T TEST

RADIO AND TELEVISION DIVISION
BRIDGEPORT, CONN.

GENERAL  **ELECTRIC**



The Data that wasn't there!

He was a serviceman and had been rushed all that day. Now it was late in the afternoon that he had promised the set to his pet customer. He reached for the volume of Rider Manual containing the diagram on the set—AND, that was *the Data that wasn't there*. Every Volume of Rider Manual but the very one he needed *then*. Sure he would buy it "tomorrow", but tomorrow in his, as it will probably be in your case, was too late. A haphazard job—wasted time—a broken delivery promise—a disgruntled customer—IT ISN'T WORTH IT!

It isn't worth trying to "get by" without all ten Rider Manuals. You know you will eventually buy them all and you might as well enjoy their benefit today. Get your full money's worth out of every Rider Manual. Buy it the day it comes out. Certainly you need Vol. X now!

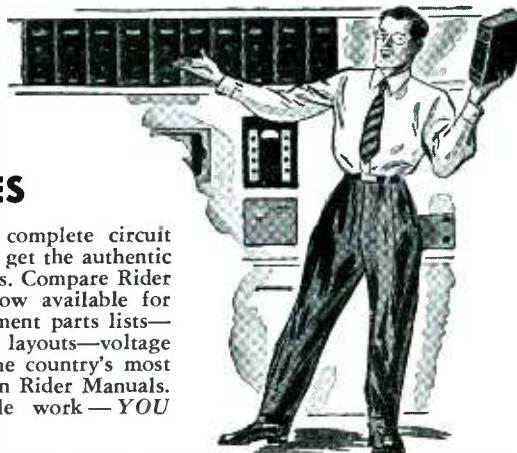
YOU NEED ALL TEN VOLUMES

Nowhere else will you find such complete circuit data; from no other source will you get the authentic material contained in Rider Manuals. Compare Rider Manuals with any other service now available for completeness of I-F peaks—replacement parts lists—data on push-button tuning—chassis layouts—voltage data, etc., and you will see why the country's most successful servicemen all have all ten Rider Manuals. For faster, easier, more profitable work—**YOU NEED all ten!**

Glance at your Rider Manuals—make a note of missing numbers and take that note to your jobbers and place the order for the Data you are sure to need. But don't do it "tomorrow"—do it today—don't put yourself in the position of the man who reached for "the Data that wasn't there."

CHECK THIS LIST ORDER TODAY "The Serviceman's Most Inexpensive Necessity" RIDER MANUALS

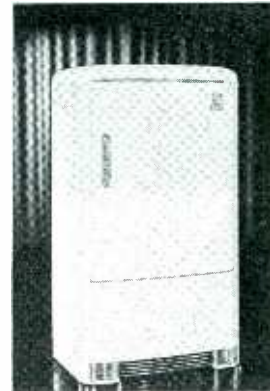
Volume	Price	Covering
X	\$10.00	1939-40
IX	10.00	1938-39
VIII	10.00	1937-38
VII	10.00	1936-37
VI	7.50	1935-36
V	7.50	1934-35
IV	7.50	1933-34
III	7.50	1932-33
II	7.50	1931-32
I	7.50	1920-31



JOHN F. RIDER, Publisher
404 FOURTH AVENUE, NEW YORK CITY
 Export Division: Rocke-International Elec. Corp., 100 Varick St., N. Y. C. Cable ARLAB

FRIGIDAIRE

REFRIGERATOR—New 1940 model, equipped with double-easy quickcube trays; extra-large meat fender; new stainless chromium shelves; glass-topped hydrators, guards freshness and moisture of fruits and vegetables; one-piece steel cabinet. Frigidaire Division, General Motors Sales Corp., Dayton, Ohio.



CROSLEY

WASHER—Model M736 has a splash proof, bottle neck tub of enameled porcelain, cushioned in rubber; capacity of tub 9 1/2 lbs. of dry clothes, 25 gals. of water. Measures 14 1/2 deep and 23 inches in diameter; has an adjustable pressure cleansing wringer; automatic switch to stop motor at set time. Motor completely insulated, no oiling required. Crosley Corp., 1329 Arlington St., Cincinnati, Ohio.



GIBSON

REFRIGERATOR—Model E-640, a new 1940 line, has adequate storage room; equipped with 6 metal trays; individual vegetable and fruit pans; and convenient sliding shelves. Gibson Electric Refrigerator Corp., Greenville, Mich.



Here's the New Meissner ANALYST

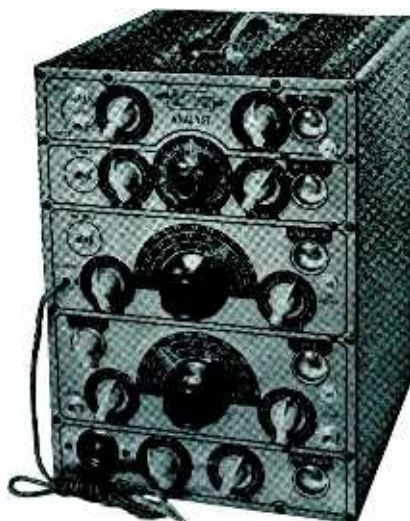
**IN KIT
FORM**

•
**BUILD IT
YOURSELF**

•
**SAVE HALF
THE COST**

•
**COMPLETE KIT
ONLY**

•
\$60 Net



**FIVE
CHANNELS**

•
AUDIO
50-50000 cycles

VOLTS
5-15-50-150-500

OSCILLATOR
0.6 to 15.0 MC

RF-IF
95 to 1700 KC

LINE CURRENT
0.1 to 3.0 Amp.

A Complete Service Lab in One Instrument

The same tried and proven circuits—the same dependable components—the same time and money saving performance—now offered in a new dress—a new panel finish and design that makes reading and operation even easier than ever.

It is unnecessary to repeat the numerous advantages of signal-testing over old-time servicing procedures. It is a proven fact, however, that every day you try to get along without this remarkable instrument is costing you money! It will eliminate the

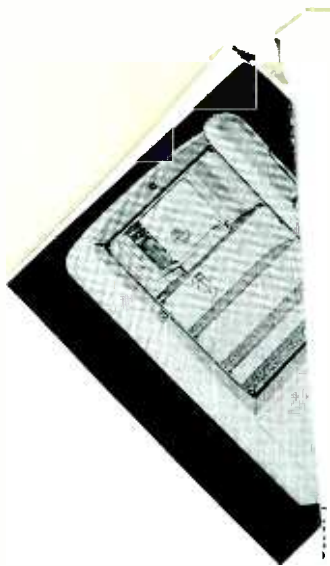
long hours frequently spent in trying to locate some obscure fault and will make trouble location the simplest part of your work.

All measurements are made quickly, easily and accurately—during actual operation—without affecting the receiver circuits a bit.

All channels of the receiver may be thoroughly tested—individually or simultaneously. A separate panel for every channel!

Don't delay! See the Meissner Analyst at your Jobber's today—or write for fully illustrated descriptive folder.

To obtain any of the literature below, check the items you want, clip the lower part of this ad, write your name and address in the margin and mail to the address below.



Hot off the Press!



A brand new 168-page book, full of live, interesting, up-to-the-minute radio constructional data and information. Contains complete diagrams and instructions for all the Meissner Kit Receivers as well as complete data on ready-wired units.

18-pages of latest Television data covering theory and practical application in plain language. See your Jobber at once or order your copy direct from factory. Only 50c net.

FREE DESCRIPTIVE FOLDER

Complete details of the Meissner Analyst, fully described and illustrated in a big four-page folder. Get your copy at once.

BIG FREE CATALOG

The big 1940 48-page catalog contains complete information, illustrations and prices on the entire Meissner line of high-grade kits and parts for the serviceman.

INSTRUCTION MANUAL

See description at left. Be sure to enclose 50c in cash, stamps or money order. Order yours today!

TIME PAYMENT PLAN

The Meissner Analyst and many other products may be purchased on easy monthly payment plan. Small carrying charge. See your jobber for details.

DEPT. R-2



APRIL, 1940

PAGE 49



Radio would have kept Old Roanoke on the Map

TODAY, if colonists should try to settle in some remote corner of the earth, radio would keep them in constant communication with their homeland. The services of the Radio Corporation of America would do much to prevent a tragedy such as that of early Roanoke.

In the first place, the colonists would take along a radio transmitter, built by the RCA Manufacturing Company, and to operate it skilled radio technicians, trained perhaps by RCA Institutes. Then when troubles beset them, the colonists would get in touch with R.C.A. Communications—an organization that would radio their messages

throughout the world. They would be guided in RCA Laboratories.

The two great national short-wavelength casting Company with education, and entertainment. And, they'd listen to Victor Radios and Records played on RCA.

Whether or not you enterprize, RCA is prepared in the field of radio, television,

ould be a source of news, entertainment to the isolated colonists. And, they'd listen to Victor Radios and Records played on RCA. Whether or not you enterprize, RCA is prepared in the field of radio, television, a colonial every



Radio Corporation of America

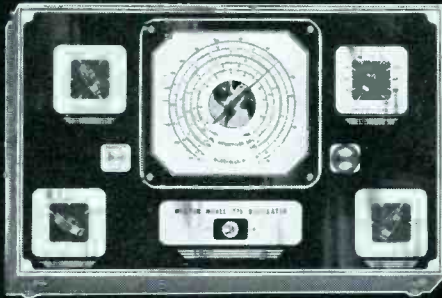
RADIO CITY, N. Y.

RCA Manufacturing Co., Inc. • National Broadcasting Company
Radiomarine Corporation of America • R.C.A. Communications, Inc. • R

THE BEST BUYS ARE MADE "FOR KEEPS"!



Model 776 Checkmaster . . . A tube checker with complete analyzer ranges! Tests high filament voltage tubes, ballast, miniatures, locktals and 0Z4 tubes; provides noise, short and leakage tests; has spare socket, and spare tube compartment. Contains 23 circuit testing ranges for troubleshooting. Compact, inexpensively priced!



Model 776 Oscillator . . . Hand calibrated dial (no trimmers or padders used). Uniform output level regardless of frequency. Constant signal free from drift or shift in frequency. Complete attenuation of signal on all bands.



Model 669 Vacuum Tube Voltmeter and Signal Detector . . . Hear as well as measure the signal with this inexpensive instrument. Measures gain in video and sound amplifying channels—peak voltages in thyatron generators in oscillator circuits—grid potentials on cathode ray tubes—and other essential measurements in sound receivers.



Pocket Size Dry Battery Tester . . . Inexpensive unit tests dry batteries under load. "Replace-Good" scale instantly shows when the battery is delivering sufficient potential for good reception. Pin jacks for following voltages: 1.5—4.5—6—7.5—45 and 90 volts.

Long life

PLUS DEPENDABILITY AND VERSATILITY MAKE THESE WESTON'S REAL PROFIT BUILDERS!

"We buy WESTON Instruments and buy less often," says this successful serviceman. "Proper design and high quality materials and construction make them last for years, and stay dependable for their entire life. So by paying but little more, we save many dollars every year . . . hard-earned dollars which we otherwise would be forced to spend for rebuilding or for replacing obsolete equipment." » » » That's talking the serviceman's language! Lower instrument costs . . . better work . . . more profit at the end of each year.

If you, too, are anxious to cut instrument costs . . . and have the added advantage and satisfaction of working with quality instruments, you'll investigate WESTON'S when you make your next buy. Remember, the difference in initial cost is negligible . . . but the saving over the years is decidedly worth while. Let us send all the facts now. Return coupon below.

WESTON Radio Instruments

WESTON ELECTRICAL INSTRUMENT CORPORATION
581 Frelinghuysen Avenue, Newark, New Jersey
Send complete information on WESTON Radio Instruments.

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

Farnsworth \$\$ Position

Cost of organization, preparation for future stability considered reasonable

FORT WAYNE—In a statement to stockholders February 7 E. A. Nicholas, president of Farnsworth Television & Radio Corporation, said that the company's operating loss in the first eight months of the current fiscal year ending April 30 "did not exceed \$250,000, including non-recurring items of more than \$85,000."

The company, Nicholas pointed out, started production last September, following acquisition of its plants in April, feels that "with the period of preparation substantially behind it and an organization established liquid position is a cause for optimism as to the outlook for the coming year." "Initial operating loss," Nicholas explained, "may properly be regarded as part of the cost of establishing the company in the industry on a basis that insures future stability."

Farnsworth's balance sheet at the end of December, Nicholas further stated, "shows working capital of approximately \$2,000,000, more than half of which is represented by cash in banks. The company has no bank loans outstanding, accounts payable are normal."

Philco Aims High For 1940 Refrigeration

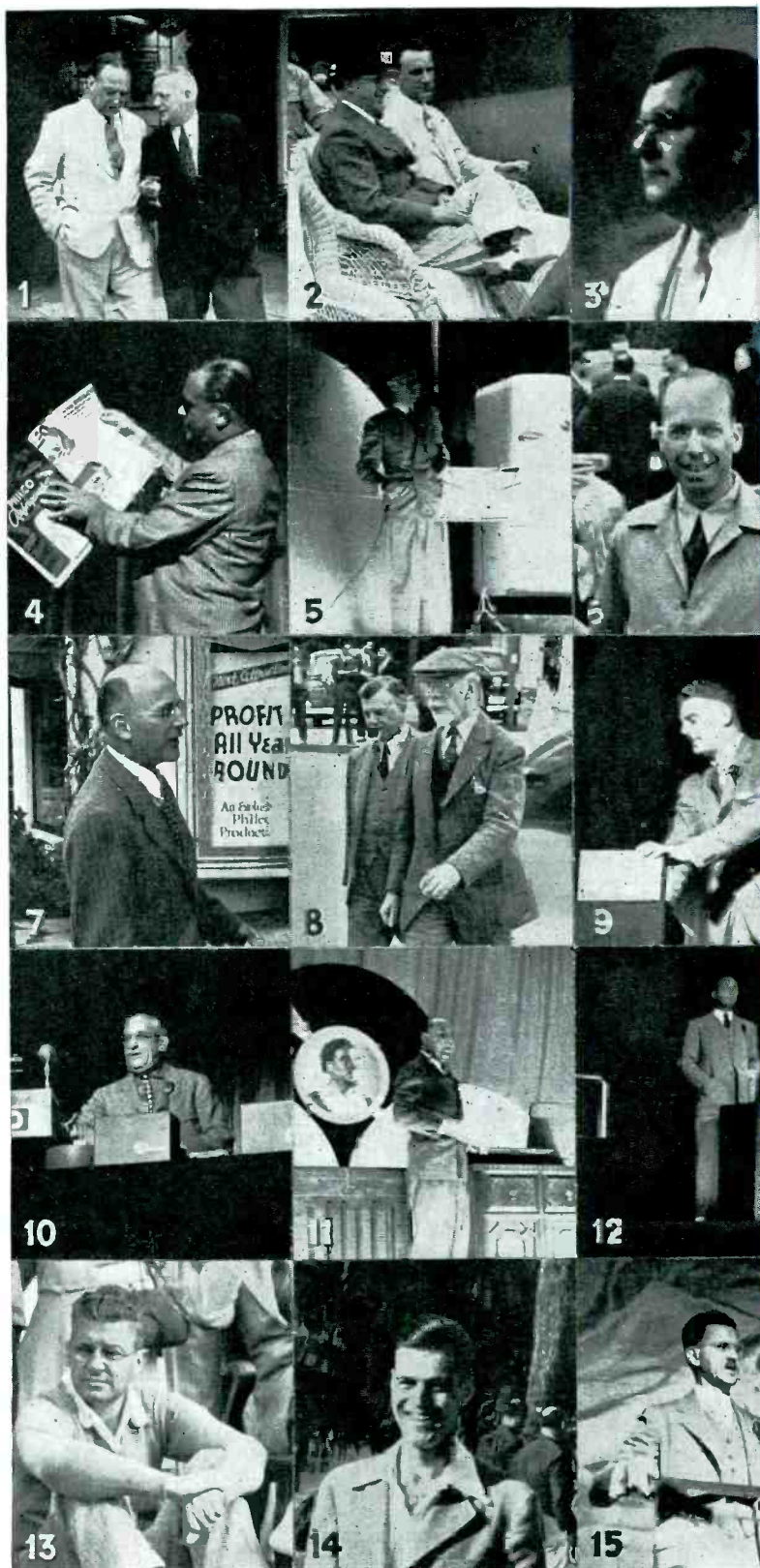
Distributors see new boxes, order heavily. Applaud new packaged air conditioners, shortwave auto-radios, mid-winter phono combinations and console special

PALM BEACH—800 Philco Radio & Television Corporation distributors and guests gathered here in the week of January 15, heard high company officials aim an ambitious domestic refrigeration plan at the top ranks of the business, applauded new packaged air conditioners, auto-radios with shortwave tuning, mid-winter compacts, combinations and a radio console special.

Featured in refrigeration was a line of 4, 5, 6 and 8 ft. Philco refrigerators with "Conservador" (the tradename Conservador alone appeared on nameplates last year) with heavy emphasis on the popular 6 ft. sizes. Played up were dry and moist cold, giant size frozen food compartments, a new development called "Freshener Shelf." Exhibited were samples of ads calculated by virtue of their message, frequency of appearance and copy punch to familiarize the consumer with the line in the quickest possible way. (Refrigeration orders placed at the convention by distributors are rumored to total very nearly the goal privately set by execs before the meeting).

Platform position second only to re-

Philcomen Face RR's Candid Cameraman At Palm Bea



EXECS, ON, AND OFF THE PLATFORM—1 . . . Philco Larry Gubb, Stuart Lauer. 2 . . . James T. Buckley and William H. Grindich. 3 . . . Kennally. 4 . . . Sayre Ramsdell. 5 . . . W. Paul Jones. 6 . . . John C. 7 . . . Harry Boyd Brown. 8 . . . Fred Williams and American Steel H. W. McAteer. 9 . . . C. E. Carpenter. 10 . . . March Fisher. 11 . . . John C. 12 . . . Larry Hardy. 13 . . . Ernest B. Loveman. 14 . . . James W. Skin 15 . . . Robert W. Herr.

frigeration went to Philco-York air conditioners (trademarked York-Coolwave in 1939). Featured were two window-sill models, the larger of which startled distributors with its large area cooling capacity, two consoles and a third requiring water circulation and designed for "tough" areas. All boasted two separate motors, permitting wintertime circulation without refrigeration. Here, too, heavy consumer advertising was promised, including direct-mail circularization of professional men such as doctors, dentists.

Simultaneously introduced despite intended convention emphasis upon refrigeration and air-conditioning was a new Philco auto-radio line. Unique feature offered was shortwave as well as broadcast band tuning, simplification of dials despite this twin purpose, further effort to ease installation by making sets still more compact. (Importance of Philco's accessory business was brought vividly to distributors' attention during this meeting by a statement from the platform that dry battery sales alone had exceeded \$1,000,000 last year).

Winding up the convention were new "PT" compact radio model introductions, several new console radio-phonograph combinations intended to jack up the percentage of Philco sales in the upper price brackets (Executives told distributors that combinations represented one means of upping dollar volume, did well in the line last year but not as well as the company had anticipated). Greeted with enthusiasm was a straight radio console introduced to help "sweeten" the mid-winter market, offered at a special promotional price.

Distributors and guests headquartered at the Palm Beach Biltmore, were extended all privileges of the nearby Sun & Surf Club.

Eight Days, Two Months

NEW YORK—In a press release dated January 21, Emerson Radio & Phonograph Corporation's president, Ben Abrams, advises that sale of new 1940 "Silver Jubilee" radio models in the first 8 days following their announcement booked production lines solid for two months, a record for the company.

The sets were recently introduced in celebration of Emerson's 25th birthday, involved models ranging in price from \$9.95 to \$29.95.

NEWA Convention Dates

NEW YORK—From the office of E. Donald Tolles, managing director of the National Electrical Wholesalers Association here, comes word that the group's 32nd Annual Convention is to be held at The Homestead, Hot Springs, Virginia, May 19-23.

Adams New Ansley V. P.

NEW YORK—Ernest J. Adams has been appointed vice president and general manager of the Ansley Radio Corporation.

Stewart-Warner Shows On

Chicago, New York, Dallas, San Francisco, all see set additions

CHICAGO—Twelve new Stewart-Warner radios (increasing the number of models in this line from 31 to 43) are being introduced to distributors as this issue goes to press. Included are two table plastics, six wooden table models, three consoles and one phono-combination.

Unveilings take place at local conventions in Dallas (Adolphus Hotel) February 13 and in San Francisco (St. Francis Hotel) February 15. Distributors attended similar meetings February

7 at Chicago (Knickerbocker Hotel) and February 10 at New York (Biltmore Hotel).

Meetings conducted in each instance by radio division manager, L. L. Kelsey. Charles R. D'Olive, refrigerator division manager, simultaneously discloses refrigeration sales and promotion plans.

RTA Elects Officers

LONG BEACH, CAL.—Harry Ward, Jr. has been re-elected president of the Radio Technician's Association of this city. Wesley Ferrel simultaneously became vice president and treasurer; Wally Swan, secretary.



The test bench illustrated above is not an elaborate affair. It was built for about \$10.00 by a serviceman eight years ago and is still doing duty.

We like this test bench not only for the fine instruments shown, but because it's an ideal service set-up to get out the most work in the shortest and most convenient manner. It's neat, it's efficient, it's business-like and it's attractive—it's not a junk shop nor is it a store window mannequin. That's why it is a real work bench.

Please note that your instruments are solidly placed on a shelf about 9" above the table surface. As compared to a rack and panel or built-in job, this alone means that on only a 5' bench, you have saved over 1000 square inches of working space because the instruments require no working space at all. Add to this—the instrument probes come out at a natural "reach for" position—over your work, not behind it. And the instrument panels too—all indicators and controls in full view. No squat—no stoop—no squint. Give yourself a rest.

Do a better job, too, by using the modern and improved instruments now available. For the most complete and modern service shop imaginable only three instruments are required. On the left a Model 560 Vedolyzer is illustrated (a 562 Audolyzer could be substituted); on the right is one of the new 561 R. F. and A. F. Signal Generators. Open on the work bench or on the shelf above, or tucked away in the compartment below the

bench (not shown) there should be a 504 Set and Tube Tester instantly available for bench work or an urgent outside service call. This is the only instrument which need be portable. You could spend over a thousand dollars and still not have as complete an equipment set-up as these three instruments will give you. In only three instruments you have:

1. C. R. oscilloscope, 3" tube, standard controls all on front panel.
2. Three stage vertical amplifier, wide range video.
3. Vacuum tube voltmeter, 29 ranges A. C., D. C., R. F. volt and resistance.
4. Wave meter, 3 band.
5. Multi-input R. F., I. F. and A. F.
6. A. F. oscillator, 15 to 15,000 cycles.
7. R. F. oscillator, variable amplitude or frequency modulated.
8. Carrier meter, vacuum tube.
9. Modulation monitor, with vacuum tube voltmeter circuit.
10. Frequency modulator, double image, positive self-synchronizing.
11. Tube Tester, patented circuit which tests all present or future tubes regardless of tube base terminations or filaments.
12. Leakage tester, tests 7-ways for quality, "hot" or super-sensitive leakage, etc.
13. Condenser tester, tests all electrostatic condensers for leakage up to 20 megohms.
14. Electrolytic tester, accurately tests them all. Settings on tube roller chart and tested on "English Reading" scale.
15. Complete push button multimeter, 31 necessary ranges of A. C. and D. C. volts, micro-amperes and amperes, output ranges, ohms and megohms.

All of this and more in only three instruments; more additional ranges and functions than we can describe here. Write now for your free Test Bench booklet and get your perfect Service and Profit Set-up.



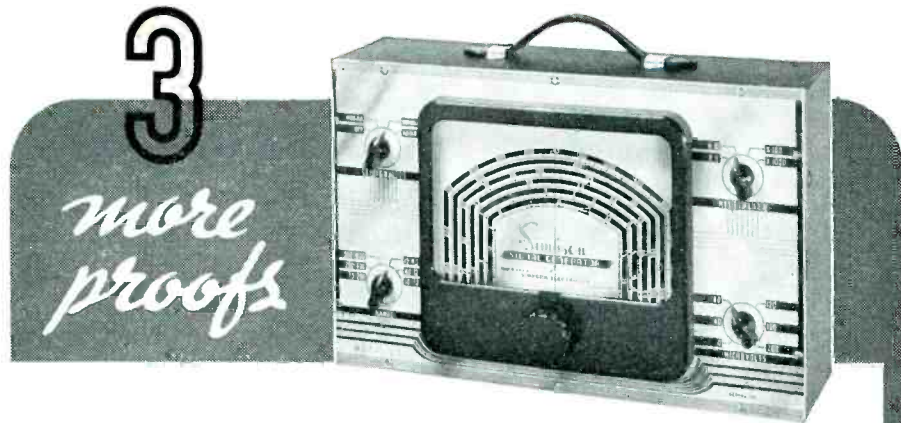
GET YOUR TEST BENCH PLANS FREE!

We do not make or offer for sale any panels or test benches. But it is a definite part of our policy to help all service men. Therefore, we have prepared a large 4-page booklet in which we discuss service benches in general, give valuable cost data, actual designs with detailed instructions for building, and our suggestions for necessary accessories. Sent free.

SUPREME

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

EXPORT DEPT., Associated Exporters Co., 145 W. 45th Street, New York.
Cable Address: LOPRCH, N. Y.



OF SIMPSON LEADERSHIP

THESE three recent additions to the Simpson line are three more proofs that Simpson Testing Equipment is showing the way. Each of these instruments incorporates features never before found in instruments of this kind.

Compare the design, workmanship, performance and beauty of Simpson Instruments with any testing equipment selling at any price. You will then decide to let Simpson speed, convenience and accuracy make your work easier and increase your profit.

Ask for catalog covering the Simpson line

SIMPSON ELECTRIC CO.
5216-18 Kinzie Street, Chicago



HIGH SENSITIVITY IN MODEL 260

• The compact set tester for television and general servicing. Ranges to 5,000 volts—both A.C. and D.C. at 20,000 ohms per volt D.C. and 1,000 ohms per volt A.C. Resistance readings from 10 megohms down to 1/2 ohm and five Decibel ranges from -10 to +52 D.B. Dealers net price.....\$27.50

THE NEW MODEL 310 SIMPSON SIGNAL GENERATOR

• Your kind of Signal Generator—designed down to the most minute detail for highest accuracy, greatest stability, minimum leakage and good wave form. Smooth vernier control permits close settings and knife edge pointer assures accurate readings. The big 9-inch meter makes it easy to read. Dealers net price....\$37.50



NEW MODEL 245 BATTERY TESTER

• Tests all dry batteries the right way—under load. Ranges have been selected so that useful limits of all A and B batteries fall within designated colored sectors of scales. Load is thrown on and off with convenient toggle switch. When "off," becomes accurate volt meter with ranges of 0-2-4-8-50-100-150 volts at 1000 ohms per volt. Pocket size, finely built. Dealers net price only.....\$7.85

SIMPSON

INSTRUMENTS THAT STAY ACCURATE



TUBEMAN—Raytheon's Earl Dietrich looks straight into our lens

RCA Reviews "PTL" Moves

Tells trade press 12-month effort behind 36 tube types among initial equipment customers will be intensified

NEW YORK—To a Waldorf-Astoria luncheon January 23 went trade paper editors, invited to hear about RCA's experiences with 36 tube types classified by this company as "preferred" and strongly recommended to set manufacturing customers as initial equipment for new receiver and allied equipment designs during the past year.

Conducting the meeting was the Camden company's L. W. Teegarden; ad exec, Dave Finn; his assistant, John Allen; public relationsman, Julius Haber; agency exec., Walter Krauss; engineers, Hollands and Schmidt.

Said these RCAsmen concerning their campaign, entering its 13th month:

"RCA's 'preferred' tube list represented only 32 per cent of the firm's initial equipment shipments in January 1939 but by December had reached 82 per cent. . . .

"Future commitments already on hand from RCA tube division customers (including the firm's own set division) present a production picture deemed sufficiently stable to permit initial equipment tube planning as far ahead as July. . . .

"Harrison and Indianapolis tube plant employment had held up better since the holiday peak was passed than at any time in RCA's history. . . .

"Greater concentration of initial tube orders from RCA upon fewer types in recent months and the expectation that this trend will continue permits improvements in product quality due to specialization, plus production cost economies and savings to the user. . . .

Said Teegarden: "RCA is well pleased with the results of its initial equipment 'preferred tube list' drive to date, considers this campaign definitely in the interests of the industry at large, would welcome similar moves by other tube makers even where such competitors might prefer to recommend a somewhat more extensive 'preferred' list or other tube types, but we shall intensify our own promotional effort in any event."

Said Finn: "Reduction in tube types

ONAN ELECTRIC PLANTS ALTERNATING AND DIRECT CURRENT

ONAN ELECTRIC PLANTS furnish DEPENDABLE ELECTRICITY in the field where current is not otherwise available for RADIO and ELECTRICAL Apparatus Demonstration. Operate Transmitters and Receivers, Telephonic Communication Systems, Moving Picture Projectors, Promote Radio and Electrical Sales in districts remote from Power Line Service.

350 to 50,000 WATTS



Any Voltage—Any Frequency—Over 40 STOCK MODELS. COMPLETE, Ready for Shipment and Immediate Operation. Thousands of ONAN ELECTRIC PLANTS in Daily use in ALL PARTS OF THE WORLD on Farms, in Schools, Theatres, Public Buildings, City, State and Federal Departments, and for Emergency Standby Service.

Write NOW for Literature and Discounts.

D. W. ONAN & SONS
631 Royalston Ave. Minneapolis, Minn.

will result in worthwhile economies all along the line from manufacturer to ultimate consumer, just as it did when sparkplug makers cut type groups from 200 to 9, lamp makers slashed from 80 to 5, concerns like Knox cut hat styles from 3,500 to 20, Regal Shoe from 2,500 to 100."

Implied by several RCAs was a possibility that simplification of tube type structures could simultaneously effect important economies in the parts business. News was an announcement that RCA had, or would shortly, completely discontinue production of a round dozen early receiving tube types, giving distributors ample advance notice. Of further interest was the statement that testimonial ads were to carry the RCA "preferred tube list" story to the trade, the first featuring an endorsement of the drive by a trade Association secretary, the second by a well known service field figure and others by set makers.

Sonora Reps Meet

Hear about "package plan" promotion

CHICAGO—Sales representatives of the Sonora Radio and Television Corporation gathered here January 10 to hear Joe Gerl outline the firm's new "package plan" promotion schedule, see new 1940 spring models.

A long list of activities included a tour of the Sonora factory, explanation of new manufacturing techniques, lunch and dinner at the Chicago Towers Club. Gerl predicted easy fulfillment of the 1940 goal set for Sonora in 1940.

Now Transducer Laboratories

NEW YORK—Manufacturing and experimental facilities of the Transducer Corporation have been assumed by Transducer Laboratories of 42 West 48th Street, under the direction of B. Eisenberg.

The firm will henceforward handle all microphone repairs and sales as well as new experimental work in the electro-acoustic and allied fields.



100,001ST—J. S. Sayre and Parker H. Erickson pose for the press beside the 100,001st Bendix Home Laundry shipped from the South Bend plant

ESTIMATED RECORD SALES

1930	45,000,000	\$40,000,000
1931	20,000,000	\$18,000,000
1932	10,000,000	\$ 9,000,000
1933	12,000,000	\$10,000,000
1934	16,000,000	\$12,000,000
1935	20,000,000	\$14,000,000
1936	25,000,000	\$17,000,000
1937	30,000,000	\$20,000,000
1938	36,000,000	\$25,000,000
1939	50,000,000	\$40,000,000

Sylvania Ups Four


EMPORIUM—Bernard J. Erskine, son of the company's president, has been advanced to the post of assistant to the

vice president of the Hygrade Sylvania Corporation. Arthur L. Milk has also been made assistant to the vice president. Robert P. Almy, formerly eastern division manager of the renewal section, succeeds Milk as sales supervisor. E. T. Reid has been given complete charge of the Hygrade Sylvania tube order department.

Fernandez With Fada

LONG ISLAND CITY—Diego Fernandez has been made manager of the Fada Radio and Electric Company's export division.


He has, in the past, served in a similar capacity with such firms as Zenith, Parris-Dunn.



CARDIOIDS

solve tough P. A. problem

46 WESTERN ELECTRIC MIKES USED IN LOUDSPEAKER AREA



Like many similar halls, the Chamber of the Connecticut House of Representatives had undesirable acoustic characteristics. The normal speaking voice couldn't cover the large area. Raising the voice resulted in echoes so bad that only those nearest the speaker could hear.


Then Western Electric Cardioids came to the rescue.

Now legislators speak in normal tones—are heard clearly. Though

there are 46 mikes in the loudspeaker area, feedback is successfully reduced to the minimum.

This is just one example of the many ways Western Electric's 639-A can solve your tough problems. It's three-mikes-in-one—a Cardioid, a ribbon, a dynamic—directional, bi-directional, non-directional.

Get full details. Send the coupon for details now.



Western Electric

CARDIOID DIRECTIONAL MIKE

GRAYBAR ELECTRIC CO., Graybar Bldg., New York.
Please send booklet describing Western Electric's New 639A Mike. RR2-40

NAME _____

ADDRESS _____

CITY _____ STATE _____

Stressing
**RELIABILITY—HUM
 SUPPRESSION and
 20% OVERLOAD
 CAPACITY**



Model 3545

● Provides advanced engineering in volume compression and expansion circuits—hum suppressed to a new low level. Hear this new amplifier.

Be sure to enter the ERWOOD Slogan Contest. \$350.00 in merchandise. Write for free information.



MR. JOHN ERWOOD
President

says "Without doubt our present line of sound equipment represents 'tops' in the art as it stands today."

The Sound Engineers' biggest problem—is stressed in all Erwood designs. Each item has been designed to insure sound satisfaction under various acoustic conditions and wide variations in power supply.

Send for complete catalogue

Erwood SOUND EQUIPMENT CO.
 222 W. HURON ST. CHICAGO, ILL.

BRACH NEW '40 LINE AUTO AERIALS

Includes

- ★ STANDARD SIDE COWLS
- ★ CONCEALED BRACKET SINGLE INSULATOR TYPE WITH ANGLE ADJUSTMENT
- ★ CONCEALED BRACKET 2-INSULATOR TYPE
- ★ SPECIAL DESIGNS FOR PRIVATE BRAND
- ★ HINGE WHIPS

PATENTED FEATURES

Brach Quality Aerials Approved by Leading Car Manufacturers

LITERATURE UPON REQUEST

L. S. BRACH MFG. CORP.
 NEWARK, N. J.

World's Largest Makers of Antenna Systems

Sylvania Cuts 10 Tube Nets

Leaves lists unchanged, offers jobber-dealer rebates. Deplores necessity for reduction, hitting competition

EMPORIUM—To radio jobbers February 2 from renewal equipment sales manager, Paul S. Ellison, of Hygrade-Sylvania's radio tube division went a letter announcing a net price reduction on types 6A7, 6A8G, 6Q7G, 25Z5, 26, 27, 41, 42, 75 and 77, representing approximately 24 per cent of the firm's renewal sales demand.

List prices remained unchanged.

Sylvania jobbers were offered a rebate on the basis of physical inventories in their own stocks and in the hands of dealers as of February 5. Or, if they preferred, could instead purchase these ten types at special net prices up to February 17.

Said Ellison: "Once again, competition has seen fit to make changes in the costs of a few types of tubes, this being the third such change since October 1. On this occasion, lists are involved as well as jobbers' nets.

"Sylvania recognizes differentials in jobbers' costs, legitimate differences in the nature and extent of sales promotion, and varied plans of selling and stocking which are normal in any business and will always exist. But the constant changes and upsets in list prices, the unnatural stockings of certain items in disproportionate relation to their sale, and the evident disregard of the jobbers' problems, are policies to which we can not subscribe.

"We decry and deplore this latest move, which is all too likely to upset the radio tube market; but first of all, we intend to maintain our policy of keeping Sylvania jobbers fully competitive at all times."

New Shure S.M.

CHICAGO—Jack Berman, associated for the past six years with Shure Brothers, has just been appointed sales manager of the firm. He takes over the job left vacant by his brother Gene, who recently formed his own company in the photographic equipment field.

Mannheims Upped By IRC

PHILADELPHIA—Hans Mannheims, former assistant manager of the International Resistance Company's foreign sales department, has just been made manager of that department, succeeding Robert E. Kaiser.

Bergman With U.S. Record

NEW YORK—J. H. Bergman has been appointed manager of a newly formed Record Accessory Division at United States Record Corporation, will present a new and popular priced line of record supplies and accessories to the trade shortly.



FIRST TIME—Onetime professor of commerce in the University of Southern Cal., now ad manager for Universal Microphone, *Dr. Ralph L. Powers* has never before been "mugged" by trade-press cameramen, breaks the ice with this shot snapped upon his return from a 30,000-mile tour of Australia and New Zealand, Honolulu, Pago Pago and Suva

Motorola Jobbers Meet

Hear Galvin execs headline eye, ear, price appeals. See seven new models. Get consumer ad support

CHICAGO — "Motorola" distributors, dealers, convened here during the week of January 9 at the Edgewater Beach, saw seven new Galvin Manufacturing Corporation auto-radio models ranging in price from \$24.95 to \$69.95, heard company execs "hang their hat" on eye, ear and price appeal, learned that the company would for the first time carry its story in a big way direct to the consumer.

Scheduled for appearance in such consumer media as *Life*, *Time*, *Esquire*, *Saturday Evening Post*, *American Weekly*, *Collier's*, *Fortune*, *Look*, *This Week* and 47 Motor Club publications throughout the country were ads. (Combined circulation of the above magazines is well in excess of 24,000,000).

From exec, Victor A. Irvine, following the convention, came word that Galvin engineers fully believe they have this year achieved in auto radios tone quality comparable to that obtainable in fine home radios. Irvine further remarked that distributors and dealers had given the new line heavy play, placing orders for double the number of sets shipped during January last year.

Lippin With Fada

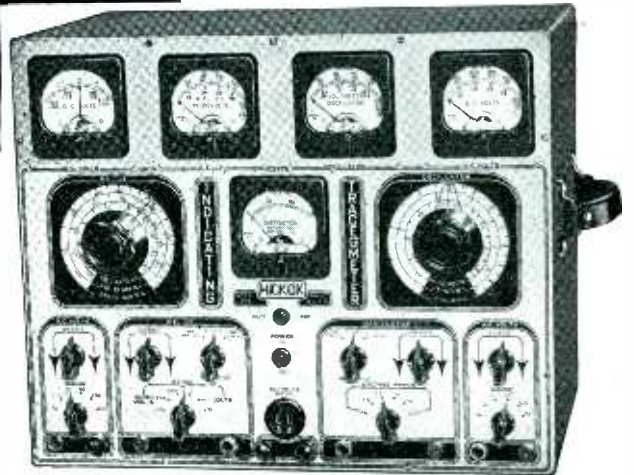
CHICAGO—Bernard Lippin has been appointed Fada Radio and Electric Company midwestern district manager, replacing J. A. Keim, will make his headquarters at the Medina Club.

**METERIZED - DYNAMIC
SIGNAL TRACING . . .**

**Fundamental
Measurements on Five**

**HICKOK
METERS**

**NOW—the
Signal can be
measured as
well as traced
in any five
circuits at the
same time.**



HERE ARE THE MEASUREMENTS POSSIBLE:

1. Measure the signal in microvolts at any point in the entire RF-IF section.
2. Measure the actual oscillator voltage thruout its entire range.
3. Measure all of the D.C. Voltages, A.V.C., A.F.C., Power Supply, etc.
4. Measure any A.F. and A.C. voltage in any circuit.
5. Measure the actual wattage consumption of any A.C. system to 300 watts.

Any or all of the above measurements can be made without disturbing normal set operation.

All measurements can be made at the same time.

**MAIL THE COUPON
FOR COMPLETE INFORMATION.**

ADDRESS ALL INQUIRIES TO
THE HICKOK ELECTRICAL INSTRUMENT CO.
10514 DUPONT AVE. • CLEVELAND, OHIO, U.S.A.

**New HICKOK
Engineering
ACHIEVEMENT
Model 155
TRACEOMETER**

1940 SERVICING REQUIREMENTS WILL BE MORE EXACTING. NOW YOU CAN GET FULL BENEFITS OF SIGNAL TRACING WITH THIS NEW HICKOK TRACEOMETER INVESTIGATE TODAY!!

**The Hickok Electrical Instrument Co.,
10514 Dupont Ave., Cleveland, Ohio**

Gentlemen:
Please send complete information on the new No. 155 TRACEOMETER.

NAME

ADDRESS

CITY..... STATE

**A GOOD NAME
GOES A LONG WAY**

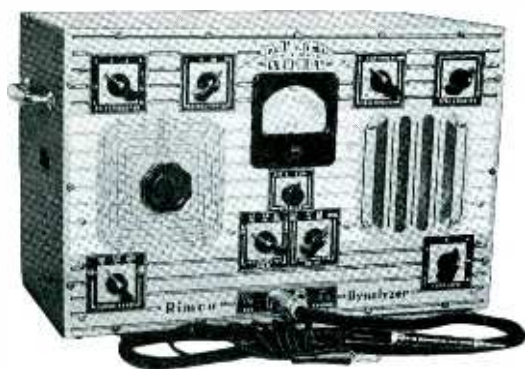


Ken-Rad Radio Tubes are being used in ever-increasing numbers by radio manufacturers as original equipment. Their rigid requirements prove Ken-Rad the best buy.

Ken-Rad Tube & Lamp Corp.
Owensboro, Ky.

KEN-RAD
DEPENDABLE RADIO TUBES

NATIONAL UNION GIVES DYNALYZER signal tracer on special LIMITED OFFER



\$3700 DEPOSIT!

(Regularly \$88.50 Dealer Price)

1600 points* . . . and this complete 3 channel tester is yours!

*Points are easy to make when you sell National Union Tubes and Condensers.

OFFER EXPIRES MARCH 15th . . . ACT NOW

Look at these great features. Read why you should own a DYNALYZER for better work!

1. Accurately measures signals from 95 K.C. to 15 M.C. in ANY I.F. or R.F. Channel—Only 1 tuning control required.
2. Meter enables visual tests of Osc. or Control Channels, voltage measurements up to 2,000,000 ohms per volt, and resistances up to 10 megohms.
3. Built-in Speaker enables "Listening-in" on (1) any other channel while (2) meter being used for Osc. Tests and while (3) speaker of radio is used to listen to audio channel of radio.

It Pays to Sell National Union Tubes and Condensers! National Union Equipment Offers Build Better Business! Ask Your Parts Wholesaler

Get **COMPLETE** information on the **DYNALYZER** and **SPECIAL LIMITED OFFER** now!

National Union Radio Corporation

Newark, New Jersey

181,440 Switching Combinations

Your Best Insurance Against Obsolescence!

ROVING SWITCH, C-B designed and tooled, connects all present and future basing combinations to C-B DYNATEST CIRCUIT without wiring changes. * * * Tests open elements as well as shorts. * * * ALL FILAMENT VOLTAGES including 117 volts on 23 point switch with spare positions and dry filament winding for future additions. * * * All existing sockets, including midgets, with spares for future. RECORD DATA SYSTEM, new and exclusive, permits easy reference and replacement without reeling off yards of roll chart. * * * Portable RADIO BATTERIES TESTED under load on English-reading scale. * * * PORTABLE and COUNTER Testers combined in one. * * * DATA SHEET 225 has all information and discussion of obsolescence. A postcard will bring it to you.



The CLOUGH-BREngle CO., 5501 Broadway, CHICAGO, ILL.

Atlas Doubles Space

BROOKLYN—The Atlas Sound Corporation is doubling its present factory space and manufacturing facilities at 1447-51 Thirty Ninth Street.

President and general sales manager, R. C. Reinhardt, predicts that the 1940 presidential campaign plus a greatly increased demand for industrial sound equipment will keep the wide-awake sound operator busier than ever, is preparing the plant for this anticipated business.

Westinghouse Ups Mills, Beatty

EAST PITTSBURGH—Appointment of Reese Mills as assistant sales manager of the Westinghouse Electric & Manufacturing Company's merchandising division is announced by Frank R. Kohnstamm, sales manager. He will fill a vacancy created by the recent resignation of Raymond C. Cosgrove.

Kohnstamm has also announced the appointment of R. M. Beatty to succeed Mills as manager of the Westinghouse range and water heater department.

Dealer Helps

SET CIRCULAR—A revised and enlarged circular showing every receiver model in the line, with a chart including features of each model, has just been prepared by *Stromberg-Carlson*. Gives data on frequency modulation and television, describes the No. 6 antenna kit, Wave Wizard and headphone kit.

DISPLAY STANDS — *Continental Radio and Television* has two new floor display stands (smaller of two pictured, in use in window of Chicago's Zigel



Furniture) containing spaces for actual Admiral radio models. Done in several colors, ruggedly constructed, they both carry effective sales messages in their lettering.

MANUAL — *Meissner Manufacturing Company* of Mt. Carmel, Illinois has just received from its printers copies of the firm's latest instruction manual entitled "How to Build Radio Receivers." Includes charts, radio formulae, schematic circuit diagrams, pictorial wiring diagrams. Contains complete data on the "Signal Shifter", "Signal Booster", Converter, Crystal Calibrator and other specialties as well as on the entire line of Meissner receiver kits. Also includes

18 pages of television data. Sold by jobbers (or by the factory direct) at 50 cents net.

RANGE BIBLE—*Landers, Frary & Clark* of New Britain, Connecticut offers a new three color booklet containing pictures, specifications, complete selling data about its 1940 line of "Universal" electric ranges. Includes description of aluminum ware cooking utensils especially desirable for use with these appliances.

SOUND CATALOG—The "Audio-graph" sound equipment line is completely described in a new catalog just offered by John Meck Industries, Ran-

dolph at Elizabeth Streets, Chicago. Gives complete details on all models, many accessories. On request to readers mentioning *RADIO and Television RETAILING*.

NEW SET DATA—A new line folder incorporating all the models in firm's 1940 line of receivers has just been published by the *Majestic Radio and Television Corporation*. Included are new Spring models. 2600 West Fiftieth, Chicago.

DISPLAY CARD — The *Aerovox Corporation* of New Bedford, Mass., has a new red and black display card featuring a large picture of its "L-C-Checker," suitable for use in windows, on counters or on walls, is distributing this card to jobbers.

Distribution News

STROMBERG-CARLSON — *Stanley H. Manson* is now in charge of sales in this company's Kansas City branch. *William C. Lewis* takes over Manson's former duties as sales rep in the western New York area.

U. S. RECORD—*Inter-State Radio & Supply Company* of Denver has "Varsity" and "Royale" disc distribution in Colorado, Wyoming, the northern part of New Mexico, eleven counties in Nebraska.

EMERSON—*Omaha Appliance Company* has this line for distribution in the entire State of Nebraska, *Paul W. Jacobus* at the helm.

NORGE—*V. J. McGranahan Distributing Company* of Toledo has this line, handling 21 counties of northwestern Ohio. *Compton-Knodel Distributing Company* is the new name of the former *Harten-Knodel Distributing Company*, now in new offices and display rooms at 309 John Street, Cincinnati. The Dayton offices at 1115 E. Third will continue to function on Norge service.

STEWART-WARNER — Seven new distributors on radio line include: *Graybar Electric* of Cincinnati, *Forston Distributing* of Houston, *Appliance Merchandisers* of Rockford, *Old Dominion of Toledo*, *Ball Store Fixture* of Dayton, *Royal Eastern Electrical* of New York, and *Behrer-Nason* of White Plains. Six new distributors for the appliance line: *Ball Store Fixture* of Dayton, *E. M. Roberts, Jr.* of Phoenix, *Royal-Eastern Electrical* of New York, *Z.C.M.I. Wholesale Appliance* of Salt Lake, *Old Dominion of Toledo* and *Behrer-Nason* of White Plains.

ARCTURUS — *Flint Harding* now represents this tube manufacturer in the northwest territory, working out of Minneapolis. *Charles R. Pollard, Jr.* of Baltimore gets Maryland and Virginia.

COMPLETE YOUR STOCK with more AMERICAN Microphones

Big Year Ahead for P. A.

Request Catalog With "New Items" Release.

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AMERICAN MICROPHONE COMPANY

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"NO TROUBLE

when you use
OHMITE
Resistors!"



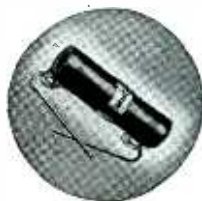
—because dependability and long life go hand in hand with Ohmite vitreous-enameled wire-wound Resistors! It's proved by servicemen, amateurs and prominent manufacturers

everywhere who specify Ohmite for their resistor requirements.

—so be sure of your installations too, Mr. Serviceman—Use OHMITE! See your jobber today.

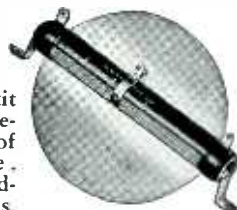
OHMITE BROWN DEVILS

Tough, dependable, vitreous-enameled resistors for voltage dropping, bias units, bleeders, etc. 10 and 20 watt sizes; 1 to 100,000 ohms.



OHMITE DIVIDOHMS

Keep 'em in your kit for quick replacements or change of resistance value. Ideal voltage dividers. 10 to 200 watts. Resistance to 100,000 ohms.



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OHMITE

RHEOSTATS RESISTORS TAP SWITCHES

RECORDIO

RECORDER..... RADIO..... PHONOGRAPH

Wilcox-Gay thanks its dealers and distributors for their support in the introduction of this new product and for their patience during the past eight months while repeated increases in our production have failed to meet public demand.

The RECORDIO has now been thoroughly established by Wilcox-Gay as the greatest development in radio in a decade and one which raises rather than lowers levels of price, profit and performance.

The demand for RECORDIO has only started. It is evident that its expanding popularity will cause sales of RECORDIO to increase during the spring months while ordinary radio demands decline and continued increases in our facilities promise adequate deliveries. Every home without one is a good prospect for RECORDIO. The "triple treat radio".

The Wilcox-Gay RECORDIO is successful because of numerous important engineering improvements, all of which are covered by patent applications pending. Any infringement of our rights will be suitably and promptly prosecuted.

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Governmental and commercial radio engineers all agree that Pincor Dynamotors take the grief out of "B" power supply problems. They are built properly to give thousands of hours of smooth, quiet, dependable operation under all conditions. Types and capacities to meet any requirements for aircraft, marine and broadcast service, police units, sound systems, auto radios, etc. 10 to 850 watts. Input, 6 to 110 volts; output, up to 1750 volts. Mail coupon for complete information.

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Export Address: 25 Warren St., N. Y., N. Y.
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 Please send information on Pincor Dynamotors, Motor Generators and special power supply units.

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Also send me Rotary Converter Catalog.

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Engineered to perfection, ATR Replacement Vibrators set high standards of performance and construction. Their greater life and reliability is made possible by new designs utilizing 3/16" diameter tungsten contacts with full wiping action. Other important features:

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- Highly Efficient Magnetic Circuit with formed Base.
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- Highest Precision Construction and Workmanship.

Write for FREE ATR 1940 16-PAGE VIBRATOR GUIDE

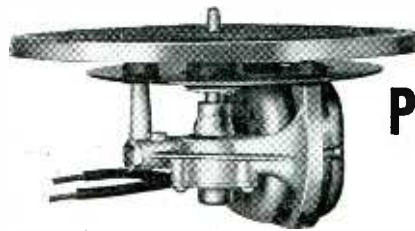
The most comprehensive and complete in the industry, covering ATR replacement vibrators for practically all standard vibrator-operated receivers, including Automotive, Aviation, Police and Household Sets.

ATR vibrators, the heart of vibrator-operated power supplies, are proven units of the highest quality, engineered to perfection. They are backed by more than ten years of vibrator design and research, development and manufacturing—ATR pioneered in the vibrator field. American Television & Radio Co., has consistently devoted its efforts and energies to the perfection and production of vibrators, and associated equipment, and today, after ten years of painstaking, persistent and diligent work resulting in steady development and progress, is considered the World's leader in its field. All ATR Products incorporate only the best materials and workmanship and are carefully manufactured under rigid engineering inspections and tests, making them the finest that can be built.

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Above: New, light-weight induction-type "CX" model motor. Fan cooled. Bearings in sealed oil bath. Noiseless. Self-starting.

ELECTRIC or spring-wound—light-weight for portables and table

models, or heavy-duty for consoles and large combinations—get General Industries Motors. Built for maximum performance. Delivered ready to install. Priced to equip phonographs and combinations for popular demand.

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Give frequency and voltage of current you use, and size of turntable wanted.

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for the Service Department

Signalyst

Designed for servicemen to facilitate r.f.-i.f. alignment on broadcast and television receivers, a new signal generator by RCA, tuning from 100 kc. to 120 mc., may be used to run overall television tests when modulated by square waves or composite picture signals.

As the schematic shows, a 6J5 in a Colpitts circuit generates r.f. frequencies between 100 kc. and 120,000 kc. in 10 bands. The output of the oscillator is capacity coupled to the number 3 grid of a 6SA7 which functions as buffer modulator. Modulating voltage, either 400 cycles generated by the triode section of the 6F7, or external voltage of any frequency up to 5 mc., is introduced to the number 1 grid of the modulator.

The modulating voltage in the plate circuit of this buffer is capacity coupled to the output system consisting of a shielded resistance ladder attenuator and the metering circuit using the 6H6 rectifier and d.c. meter. Metering is done at a fixed level up to 50,000

microvolts, the subdivision of this voltage is accomplished by means of the attenuator.

Also included in the circuit is a heterodyne detector for calibration purposes. This uses the pentode section of the 6F7. The audio oscillator is converted to an audio amplifier when the detector is in use. Regulated plate and screen voltages and a regulated plate supply for an associated crystal calibrator are additional features.

All tuning is accomplished with adjustable iron core coils and air trimmer capacitors for stability on each range. The tuning condenser has a positive gear drive with two ratios of 90 to 1 and 16 to 1.

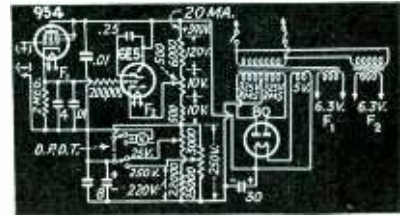
On bands from 100 kc. to 15 mc. the minimum output is 1 microvolt; from 15 mc. to 30 mc. the minimum is 5 microvolts; 30 mc. to 60 mc., 25 microvolts; and 60 mc. to 120 mc., 50 microvolts.

The metering circuit may be used to give positive zero beat positions for calibration work since any slight tuning error will cause fluctuation in the meter.

Slide Back V.T.V.M.

Useful for service and experimental work, the voltmeter circuit illustrated here has two ranges of 0-25 and 0-250 volts.

A few components of the circuit are critical and are as follows: The 4 mfd. condenser in the cathode of the 954 should be a low leakage paper type,

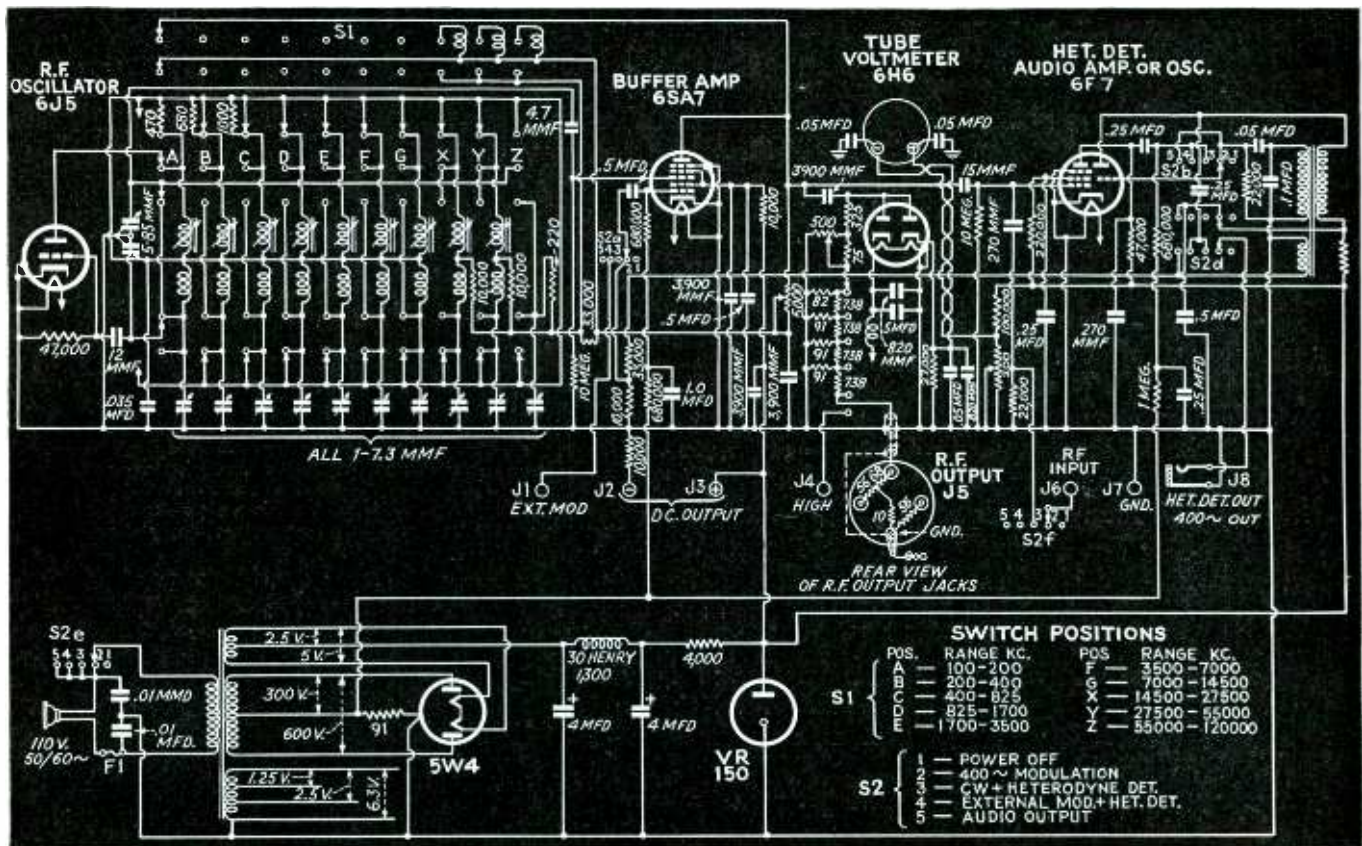


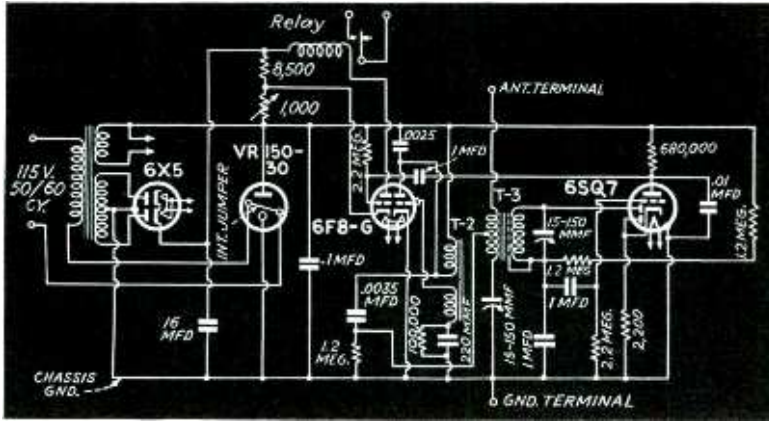
whereas the .01 mfd. unit in the same circuit should be a mica condenser.

The 6,000 ohm and 22,000 ohm resistor in the voltage divider should have a rating of 5 watts. All potentiometers should be wire wound linear types rated at 2 watts except the 25,000 ohm control which should be 4 watts. The voltmeter is a 1,000 ohms per volt type.

For zero adjustment of the 6E5, short the 954 input terminals, set the 3,000 and 25,000 ohm potentiometers so that the voltmeter reads zero and adjust the 500 ohm potentiometer until the eye is just closed.

The d.c. or a.c. voltage to be measured will cause the eye to reopen. Then adjust the first two controls again until the eye just closes once more.





Capacity Operated Relay

The electronic control by RCA, the schematic of which is shown here, is a capacity operated relay of the momentary contact type. It may be used to operate other electrical or mechanical devices through changes in capacity due to the approach of a person or other conducting object to within several feet of the short antenna. It is also useful for operating displays, controlling electric motors, opening doors or other similar applications.

The device is essentially a capacity bridge with the antenna to ground capacity as the unknown capacity. A person approaching the antenna increases its capacity causing the bridge to become unbalanced. The increase in bridge output is rectified and amplified to operate the relay.

The capacity bridge consists of the balanced transformer T-3, the antenna, and the balancing condenser C-8. The primary of transformer T-3 is balanced, with the oscillator connected to the mid-tap. If C-8 is adjusted equal to the antenna capacity, the current in the two halves of the primary will be equal in magnitude, but opposite in direction so that no voltage is induced in the secondary. An increase in antenna capacity will unbalance the circuit and a voltage will appear across the secondary. This voltage is rectified by the 6SQ7 and impressed across the 1.2 meg. resistor. Thus an increase in antenna capacity results in an increase in the voltage.

A two-stage amplifier consisting of the 6SQ7 and part of the 6F8G amplifies the voltage across this resistor sufficiently to operate the relay.

The oscillator is of the tuned plate type, utilizing for the oscillator tube one-half of the 6F8G, and for the transformer, T-2, which has a magnetite core.

The power supply includes a VR150-30 voltage regulator tube. The control is designed so that it is unaffected by normal or severe line voltage fluctuations.

Unlike other capacity operated devices, this control is designated to be

responsive to capacity increases exceeding a predetermined rate of change. In other words, the device will operate only on changes of capacity which occur within a predetermined short interval of time. The device will not operate because of slow changes in capacity, such as those caused by temperature and humidity. It is continually balancing itself against changes in antenna capacity whether or not these changes are rapid or large enough to operate the relay.

For this reason, even though the relay has been operated due to rapid and sufficient change in antenna capacity, it will, in about 20 to 30 seconds balance itself and restore the relay. That is why it is termed, momentary contact type.

It can be used, however, to trigger off continuous or manual reset devices.

Magnetic Tape Recorder

The recording medium in the "Soundmirror" and "Voice Reflector" by Brush is a continuous loop of steel tape. A magnetic pattern is created along the tape which varies in intensity with the corresponding variations in sound current supplied from an associated microphone and ampli-

fier. During reproduction, the magnetic pattern recreates by induction a similar varying electrical potential which is amplified sufficiently to operate a loudspeaker.

The block diagram shows the various components of the system and their relation to each other.

The magnetic tape assembly consists of a rectangular metal frame on which are mounted 4 cylindrical rollers which carry the steel tape. The tape itself is a special alloy steel and is helically wound in a continuous loop around the rollers. Two additional rollers guide the tape through the sound modulating unit. A motor drives the tape at a uniform speed by means of a fabric belt to one of the cylindrical rollers.

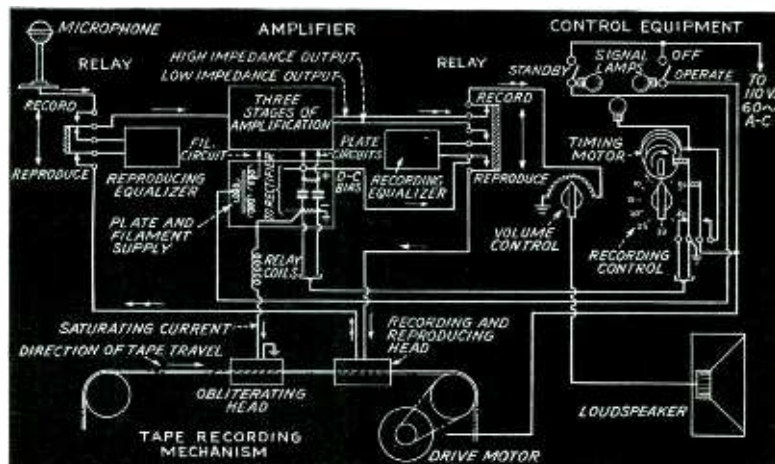
The sound modulating unit consists of an obliterating head, and a recording head which also serves for reproducing. During recording, the tape is first subject to a saturating magnetic flux in the obliterating head to remove any previous record. It then immediately comes through the recording head where it is subject to a recording flux. This varies in intensity with the sound vibration picked up by the microphone.

While recording, the microphone is connected to the input of the amplifier and the output to the recording head. When reproducing, the recording head acts as a pickup device and connects to the amplifier input. The output then goes to the speaker.

The recording time of both units is 55 seconds or slightly less than one minute. This is figured on an approximate tape speed of 3½ feet per second.

Audio Frequency

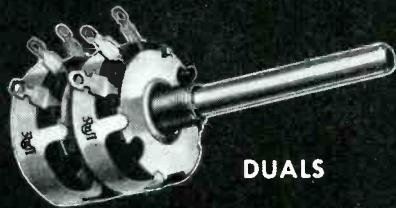
ONCE UPON A TIME there was a serviceman who bought a hunting license so he could go wave trapping.



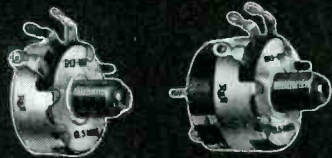
Every REPLACEMENT TYPE FOR Every RADIO NEED



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Positive "clockspring" connection—no slide—no friction—no noise.

IRC 5-FINGER "KNEE ACTION" CONTACTOR

Amazingly uniform — permanently quiet.

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Moisture-proof — durable — outstandingly smooth.

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Assures smooth rotation prevents end play of shaft.

4 EXTRA FEATURES . . NO EXTRA COST!

Only in IRC Volume Controls do you get the exclusive features illustrated above — and an important thing to remember is that you get them at not one cent of extra cost. They mean more for your money. They are your assurance of the smoothest-acting volume controls you ever tried. They mean IRC Controls are quiet — and built to stay quiet.

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FREE! 1940 SUPPLEMENT TO THE IRC GUIDE IS OUT . . . Most complete, up-to-the-minute listing available. Covers control replacements for practically every receiver made since Edition No. 2 of the IRC Guide was issued. The new Supplement — and the Guide if you need it—free upon request from your jobber or direct from IRC.

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VOLUME CONTROLS

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Constant Amplitude Recording

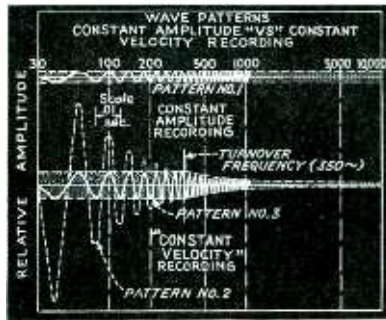
There are two general types of recording in common use, namely: "Constant velocity" and "constant amplitude."

Practically all commercial records today are cut by a modified "constant velocity" method where the amplitude decreases progressively with an increase in frequency. Because of this fact the high frequency notes are of much lower level than low notes and often are lost or impaired by record scratch.

With "constant amplitude" recording, constant sound pressure for all frequencies at the microphone is represented by the same amplitude cut in the record. Thus the high frequencies are of greater level and override noise.

In the illustration, wave patterns are shown which represent groove undulations for both types of recording. These wave patterns for purposes of illustration are shown with progressive increase in frequency. In pattern No. 1, which represents "constant amplitude" recording, it will be noted that for constant sound pressure at the microphone, the amplitude of the groove undulations is constant regardless of the frequency. In pattern No. 2, which represents "constant velocity" recording, it will be noted that for constant sound pressure at the micro-

phone, the amplitude of the groove undulations decreases as the frequency increases in such a manner that a frequency of 1,000 c.p.s. has only one-tenth the amplitude of a frequency of 100 c.p.s. and a frequency of 10,000 c.p.s. has only one-hundredth the amplitude of 100 c.p.s.



Since this latter method would necessitate excessive amplitudes at the lower frequencies to obtain sufficient amplitudes at the higher frequencies for satisfactory reproduction, and since these excessive amplitudes would severely limit the number of grooves which could be recorded without "crossover" or "echo" effect, commercial "constant velocity" records are usually cut "constant amplitude" from the lowest frequencies, up to approximately 350 c.p.s., as indicated in pattern No. 3.

Assuming that for average recording the amplitude for a frequency of

1,000 cycles will be the same for "constant velocity" recording as for "constant amplitude" recording as shown in Figure 1, then the amplitude for a frequency of 5,000 cycles for "constant velocity" recording will be only $\frac{1}{5}$ the amplitude for "constant amplitude" recording. (This, of course, assumes that the cutters used in both methods of recording have a uniform characteristic up to 5,000 cycles per second.) Thus, "constant amplitude" recording has considerable advantage over commercial "constant velocity" recording, since the cutter automatically provides the higher amplitudes at the high frequencies required for noise reduction during reproduction.

The stylus displacement (amplitude) of a crystal cutter, when properly connected to its driving amplifier, is proportional to the input voltage for all frequencies. It therefore cuts "constant amplitude." In reproducing the "constant amplitude" record with a high fidelity crystal pickup the relationship of the higher and lower frequencies as picked up by the microphone is maintained since the output voltage of the crystal pickup is proportional to stylus displacement. Considerable noise reduction takes place in reproduction since the output voltages generated by the high frequency undulations are considerably greater than the output voltages generated by the tiny irregularities in the record material (surface noise). While it may appear that these higher amplitudes may interfere with the reproducing stylus tracking the grooves at these higher frequencies, this difficulty can be practically disregarded, considering the fact that both speech and musical sounds contain much less energy for the higher frequencies than they do for the lower frequencies. Also "high fidelity" pickups are available with low inertia vibratory systems which are capable of tracking high frequency undulations of rather high amplitude.



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HERE is a "customer acceptance" tube tester that is impressive in the quick "readings" it gives with its fine, business-like appearing 7-inch meter. A quick spin of the Illuminated Roll-Dex Speed Chart will give you the settings in a flash. Entire chart scanned in less than 10 seconds. Has all tube sockets including Locals, Bantam Jr., and the new 1.4-volt Miniatures. Tests High Voltage series including 117Z6G. Gaseous Rectifiers and Ballast tubes. Future tubes provided for by filament voltages in 20 steps from 1.1 to 110 volts. Noise test jack and separate line voltage control meter. Suede finish Silver Grey and Maroon case and panel of heavy, streamlined steel. With RED • DOT Lifetime Guaranteed Instrument. Dealer Net Price \$29.84.

Write for Catalog—Section 202, Harmon Drive



**NEW 1940
BATTERY TESTER**

Model 696 speedily checks all dry batteries under proper loads. Eleven loads from 1½ to 135 available by selector switch control. This tester is the first to provide a GOOD sector for all dry batteries in common use.

Net Price \$7.84



**Counter Type
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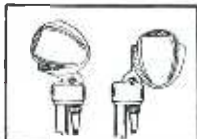
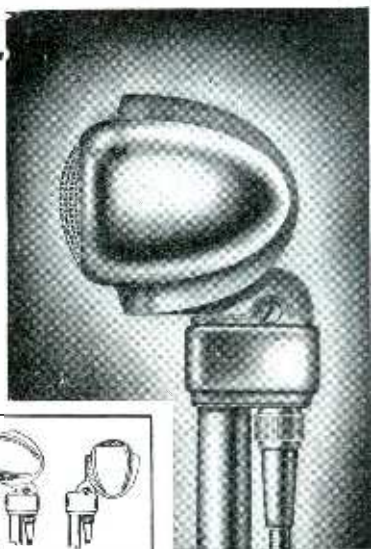
Audio Frequency

CABINET REPAIR ACCESSORIES mentioned in "First Aid To Cabinets" last month may be obtained from H. Behlen and Bros., 10 Christopher St., New York, N. Y.

Complete repair kits are available from RCA, Stromberg Carlson and other set manufacturers.

Many readers tried to obtain padding lacquer (which incidentally consists of lacquer solvent and a little oil) from local paint stores without success. A ready-mixed padding lacquer is being marketed under the trade name of Qualisol.

Make More Profitable Sales
with the NEW TURNER
Model 22D Dynamic Microphone



Has 90° Tilting Head. 8 Ft. Removable Cable Set, High Impedance. Complete with Chamoisette Mike Pouch. **\$20.00** List
Deduct \$1.50 for 50 ohm model
Add \$1.50 for 25 Ft. Cable Set

Here's a mike that offers handsome profits! Fully protected for the ham and rugged enough for the toughest P.A. job. Works well indoors or out, with exceptionally low feedback. Full satin chrome finish. Advanced engineering style. No returned-goods headaches with the Turner 22D. Level—54dB. Range 40-8000 cycles. Packed with diagrams. Write for Free Turner Catalog

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In one handy manual you have all the diagrams of the most often serviced radios today. Over 80% of all sets you service every day are included. These important hint-giving, trouble-shooting circuits make your job easier, permit faster and better repairs.

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Circuit data, hints, information are time-savers and money-makers for you. Let this diagram manual be your guide to bigger profits and easier service work. Why work blind-folded when 4 out of 5 diagrams you will ever need are included in this new, low-priced manual. Compiled by M. N. Beitman, B.S., author, radio serviceman, teacher in Chicago schools

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Helpful diagrams will cut hours of work, point to the fault quickly, assist you on the tough jobs. Carry this manual on the job; use it in the shop; look up the circuit, alignment data, service hints. The low price will be repaid many times the very first day. Plan to use the manual this week. Answer today!

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Write address below and send this corner.

New Tubes



1840—Known as the Orthicon, this is a special form of cathode-ray tube by RCA useful in television transmission for picking up a scene and converting it to an electrical signal. Contains a mosaic plate on which the scene to be transmitted is focused by a lens, and an electron gun which provides a cathode-ray beam for scanning the image on the mosaic. As shown in the illustration, connections are brought out both ends.

1848—An iconoscope by RCA of the electromagnetic deflection type. Performs a service similar to the 1840 but has larger and higher potential elements.

928—A gas phototube by RCA with caesium surfaced, cylindrical mesh cathode which has non-directional light pick-up characteristics. Ratings are

Anode Supply Voltage.....	90 volts
Anode Current.....	15 microamps
Sensitivity.....	.65 microamps/lumens
Gas Amplification Factor.....	not over 10
Resistance of load (for current greater than 2 microamps).....	.4 meg
(for current less than 2 microamps).....	.1 meg

12SR7—Similar to the 6R7 but of single-ended construction and 12.6 volt 0.15 amp. heater (RCA).

New Book

PRINCIPLES OF TELEVISION ENGINEERING (McGraw-Hill Book Co., \$5.00) by Donald G. Fink presents complete engineering information to enable the technical worker to make the transition from radio to television practice.

Ten chapters cover the whole television field of design, operation and maintenance. Discusses image reproduction; television camera action; formation, deflection and synchronization of scanning beams; video signals; transmitting and receiving methods and equipment. Many other pertinent points are also explained in simple easily understood style.



★ Believe it or not (with due apologies to Ripley) the very cheapest capacity you can use is offered by the full-sized heavy-duty AEROVOX metal-can electrolytics.



★ With honest-to-goodness full-rated dry electrolytic sections, with nothing subtracted by way of ultra-etching or tricky treatment of foils, with adequate separators and electrolyte and can surface for prompt and effective radiation of generated heat, these units stand up to hour-after-hour operation, day in and day out, for many years on end.



★ So if you're building or servicing on that sort of basis, by all means use these full-sized, tried-tested-proved jobs. To do otherwise is to spend far more money in the long run.



Ask Your Jobber . . .

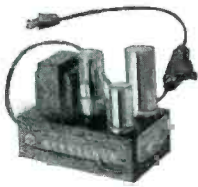
★ Let him show you some of these heavy-duty AEROVOX electrolytics—Types E, G, I, EM, SM, GM. Ask for new 1940 catalog and note extensive listings. Or write us direct.



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FOR DEALERS IN **HIGH LINE** DISTRICTS

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Model "L" Porta-Power supplies "A", "B", and "C" power to any 4- to 8-tube farm battery set using 2-volt tubes. List \$9.95. Dealers net price **\$5.97**

NEW . . . TWIN-POWERED MODEL "P" CONVERTS 98% OF ALL 6-VOLT BATTERY RADIOS TO ALL-ELECTRIC OPERATION

★ TWIN-POWER provides TWO sources of 6 volts each; a separate source to the vibrator and a separate source to the filaments. This eliminates vibrator disturbance and assures high fidelity performance. Operates on 105-125 volts, 50-60 cycle current.

Make big profits by selling Porta-Power, converting "traded-in" battery sets and using on your service bench.

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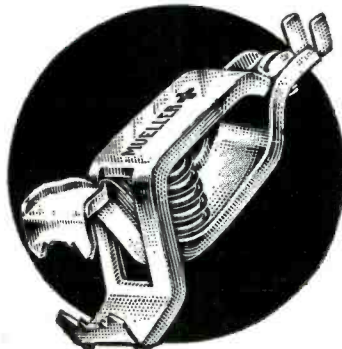
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FREQUENCY MODULATION

WHAT THE SERVICEMAN must know to install and service receivers

By C. A. NUEBLING*

IF all the statements and estimates concerning the future of frequency modulation were reduced by 50 per cent, the potential market for such receivers would still be sizeable.

Frequency modulated receivers, when the serviceman sees them, will require installation and adjustment that will be somewhat different from our present procedures. Certain service differences are known now, others will pop up from time to time.

In order to inform the uninitiated about frequency-modulation, the transmitters used for this purpose differ quite widely from present amplitude practice. The receivers however, are almost identical to the ones we are familiar with now. This really is a break for the serviceman.

Frequency-modulated receivers on the market usually consist of an r.f. stage, converter, 2 i.f. stages, limiter, discriminator and audio. The first 3 stages mentioned are identical to those of any superhet except for a wider band-pass. This is accomplished, as might be expected, with overcoupled transformers and shunt resistances.

The limiter stage, which incidentally is the noise reducer, looks like any i.f. stage except that it runs at low plate voltage and zero initial bias. With high signal input the tube is completely saturated. This means that the plate current cannot increase further than it is normally. Consequently, no matter how much amplitude signal (or noise, which is mostly amplitude-modulated) you put on the grid, the plate current cannot change (Fig. 2) and the signal does not get through. Changes in frequency (frequency modulation) do get through, however.

The discriminator, following the limiter, serves as the detector. This circuit is similar to the discriminator

used in automatic frequency control receivers.

Referring to Fig. 1, the i.f. signal is applied to the detector transformer L_1 . The secondary is a centertapped winding with the outer

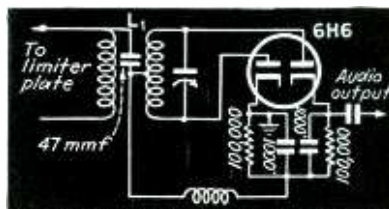


Fig. 1—Typical detector circuit used in frequency-modulated receivers

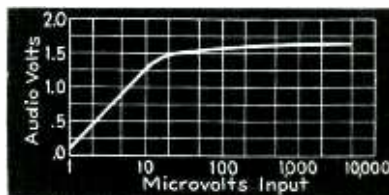


Fig. 2—Plate current curve of the limiter tube. Signals on the grid above 40 microvolts produce little plate current change

ends connected to the 6H6 detector plates. Two 100,000 ohm resistors are connected in a series across the 6H6 cathodes and it is across these that the audio appears. The transformer in this case was tuned to 2.1 mc.

An i.f. signal of this frequency which is not modulated will swing the detector plates positive and negative by equal amounts, resulting in equal but opposite voltages across the cathode resistors. These voltages cancel and no audio output takes place. When the incoming signal is frequency-modulated it will be swinging above and below the i.f. frequency by an amount proportional to the percentage modulation. As the modulated signal swings off the resonant frequency of 2.1 mc., unequal voltages develop across the cathode resistors. The number of times per second that the signal swings above and below the resonant point produces the audio signal. Hence, the volume of an audio signal is transmitted as the magnitude of the carrier frequency swing and the frequency of an audio signal as the rate at which the carrier is swung.

The output of the discriminator then feeds the audio circuit. Voltage for a.v.c. is usually taken off the limiter circuit when a.v.c. is used. Many sets have only a manual gain control.

Antennas

The fact that f.m. operates on the ultra high frequencies naturally brings additional service complications into the picture.

Foremost among these is the an-

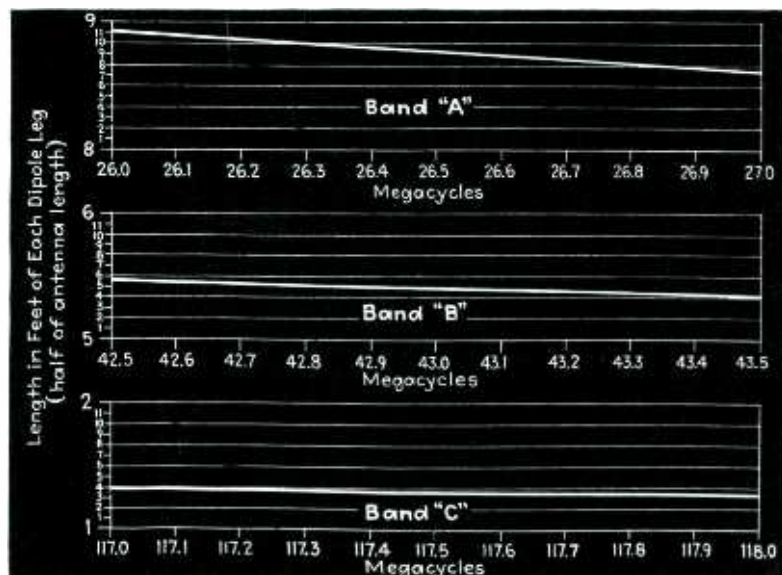


Fig. 3—Length of each leg of a doublet antenna for various frequencies in the three frequency-modulated bands

*Technical Editor

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tenna; a piece of wire stuck on the antenna post will not usually work well on these frequencies unless the transmitter is in the immediate vicinity.

The chart in Fig. 3 shows the proper length for each leg of a dipole antenna for frequencies in the 3 f.m. bands.

Feeders may consist of low-loss twisted-pair, concentric, or open wire line in conjunction with a matching transformer.

When reception is desired in areas local to the transmitter, the antenna may be cut for the center of one band and forgotten. If a desired station is at a distance, cutting the antenna to exact resonance will help to improve signal strength.

Troubles such as oscillator instability, drifting, insulation leakage and others which are common in broadcast receivers will probably be even more troublesome in f.m. sets because of the high frequencies on which they operate. Heavy layers of dust, dirt and mould on insulation are usually sufficient to knock the high frequency oscillator out after the set has been in use for a considerable time.

Alignment

Tracking of r.f. and oscillator stages should present little difficulty as the tuned circuits are quite broad. In most instances these may be aligned with sufficient accuracy by ear.

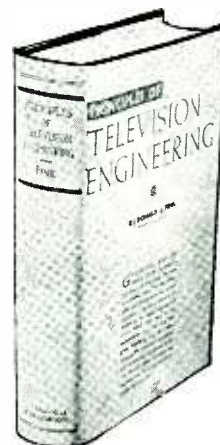
Alignment of i.f. stages in f.m. receivers will seldom be necessary due to the wide band width and stability of such transformers. Should it become necessary to do so, a cathode-ray oscillograph and signal generator with a superimposed ± 300 kc. sweep frequency will be required. Connection and procedure of alignment will be the same as usual.

The discriminator stage should be aligned with the same equipment but the curve indicated on the oscillograph will be different. Proper alignment of this tuned circuit will be indicated when a figure X is seen on the screen. The crossover point of the X should be at the center so the figure is perfectly symmetrical.

One important point to remember when aligning these receivers is to keep the signal input high enough so that the noise limiter is functioning. This point is indicated when an increase in signal input no longer increases the height of the curve.

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Managing Editor, *Electronics*

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TRICKS

AIRLINE 62-254

Intermittent, "B" batteries discharge rapidly . . . inspect speaker leads for short to frame. Unsolder leads and cover with spaghetti tubing.

AIRLINE 62-293

Intermittent . . . replace black and white striped wire connected between terminal 8 of the 6C5 nearest front of set and terminal of band switch.

AIRLINE 62-2126

Dead . . . open secondary of antenna coil. Coil must be removed to find trouble.

AK 206

Oscillation from 19 to 20 meters . . . this may be corrected by moving lead to control grid of 2A7 toward the front of set.

DETROLA 5B

Distortion after about 10 minutes operation . . . look for open section of candohm resistor located at the right of the ground connection. Replace with 100 ohm 5 watt unit.

FIRESTONE S7425-3

Intermittent . . . one of the i.f. terminal lugs intermittently shorting to back of speaker.

G-E F63

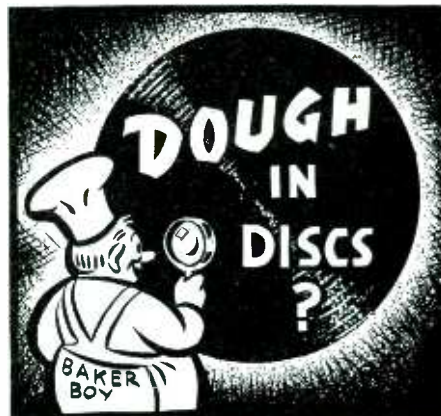
Antenna coil burned out . . . defective wave band switch which goes beyond stop position and places 98 volts on the winding.

GENERAL MOTORS 601574

Tubes light but vibrator is dead . . . remove power transformer from can. This will disclose an oblong condenser, part number R11549DX, connected to the "A" line choke. Replace this unit.

KNIGHT B-10563

Noise which disappears when set is removed from cabinet may be due to dial escutcheon rubbing against tin-foil inlaid dial. Ground escutcheon by running wire from it to chassis.



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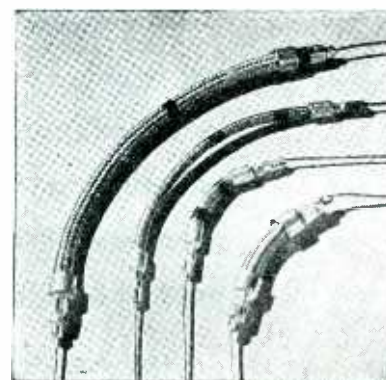
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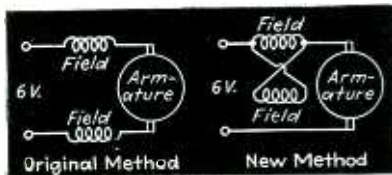


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MAJESTIC 310-B

On all sets of this type using i.f. plate feed for automatic volume control, a slight leak will bias the control grids positive, causing them to block. Replace defective condenser with 50 to 100 mmf. mica condenser.

MOTOROLA 82A, 109K1

Violent oscillation or thumping on high frequency end of s.w. band, around 20 mc. . . . insert 60 ohm non-inductive resistor directly in the grid lead at the grid cap of the mixer tube.

PHILCO 54

If vernier dial slips when tuning, oil the bearings of the gang condenser before tinkering with the dial mechanism.

RCA T6-9

Crackling, fading . . . voltage divider on rear underside of chassis making erratic contact with lug. Replace with separate resistors of 3500-13000-85-40-175 ohms.

STEWART WARNER R180A

Insensitive, dial off calibration, impossible to align at low end of dial . . . add .0025 mfd. condenser to the .0054 unit which is already across the padder.

SEARS-ROEBUCK 4585

Distortion . . . shorted second detector plate bypass condenser.

SILVERTONE 4426, 4427, 4446, 4447, 4526, 4546

No gain in r.f. section . . . look for high resistance leak in wave band switch which disturbs a.v.c. on this stage.

STROMBERG CARLSON 60

Oscillation or distortion . . . check grounding on shield can of 6B7.

TRUETONE 667

High background noise on local stations . . . look for broken lead on r.f. section of gang condenser.

TRUTONE D-689

Mushy tone, unstable performance . . . check 6A7G for gas.

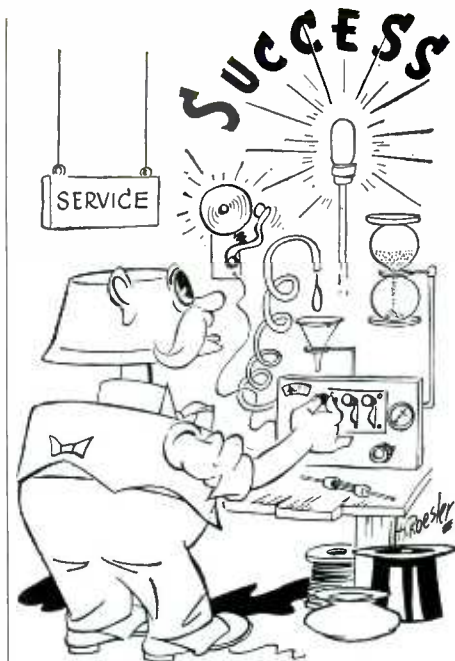
TRUTONE AUTO RADIO (with remote permability tuning)

Noisy on remote control . . . open head and bond r.f., oscillator, and mixer coil cans to mounting strap with braid.

WESTINGHOUSE 315 WR

Noisy, cracking . . . check 95 ohm choke under i.f. transformer located between 6A8 sockets. Replace with 750 ohm resistor.

A.f.c. operates only when approaching station from high frequency side. Connect 150 ohm resistor across 140 ohm section of large voltage divider on under side of chassis and realign i.f. and discriminator.



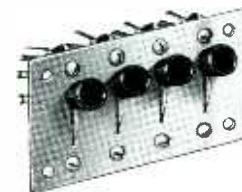
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ZENITH 91, 92

Poor bass response and low sensitivity . . . look for open .5 mfd (part 22-113) in the cathode of the second detector.

WELLS GARDNER 5E

Noisy . . . replace condenser between plate of 34 i.f. and grid of second detector. This is a special capacity but can be replaced with a .0001 mfd mica unit.

ZENITH 420

Motorboats . . . check .0005 mfd plate bypass on 56 second detector for open.

ZENITH 1205, 1503

Improper action of volume control . . . suspect 6J5 audio tube.
Poor radiorgan action is often caused by defective 6F8G.

ZENITH 5724, 5725

Noisy on automatic tuning . . . washer on latch bar of pushbutton assembly grounding; poor contact on band switch.

Signals cut out above 1400 kc. . . . 5 megacycle trimmer screwed in too tight.

Oscillation . . . open screen bypass; grid lead of 6K7 near a.v.c. lug or plate lead of 6A8; wave trap open or improperly adjusted.

Police Reception For Auto Sets

Most two gang auto sets can be easily converted to receive local police calls. However, before any changes are made in a receiver, an investigation should be made to determine whether there are any local regulations regarding police receivers in automobiles.

Adjust a signal generator to the frequency of the desired police station and feed this signal into the grid of the mixer after having disconnected the stator of the gang section tuning the mixer. If the frequency of the station is not too high it should be possible to tune this in as an image of the oscillator setting.

Leaving the dial set at this position connect a single leaf trimmer condenser in series with the stator of the gang that was disconnected. Transfer the signal generator to the antenna lead and peak this new trimmer. So that normal broadcast reception may be had, connect an ordinary toggle switch across the trimmer, so that this may be shorted out. It is important that all leads be kept short.

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\$9.90
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McGraw-Hill Publishing Company, Inc. Publication Office: 99-129 North Broadway, Albany, N. Y. Editorial and Executive Offices: 330 West 42nd Street, New York, N. Y.

ZENITH 75232

Audio oscillation when volume is advanced . . . check C19 a 12 mfd condenser for open.

ZENITH 95365

Howling off resonance . . . look for defective .05 mfd condenser in a.v.c. circuit; replace with 400 volt unit.

ZENITH 15U269

To reduce the number of complaints on the split-dial mechanisms be sure to carefully lubricate all bearings and tighten all set-screws; especially the two that hold the lever on the wave band switch. If these work loose, the entire dial assembly will jam.

ZENITH 55-127, 55-150

Fading after a few minutes operation . . . replace 6A8G cathode resistor. This is a 400 ohm unit.

WHAT THE PUBLIC WANTS

(Continued from page 22)

cent would like to see wood the chief material, 40.5 per cent cloth-covered wood, 5.4 per cent combinations of materials and 2.7 per cent plastic. 52.7 per cent prefer walnut finishes. 31.5 per cent assorted finishes or colors and 15.8 per cent mahogany.

Dials Et. Al.

Further tabulation indicates that 74 per cent of all dealers contacted during the entire month would like to see less elaborate dials on sets that come through in 1940 lines while 25.8 per cent apparently want dials more "gaudy."

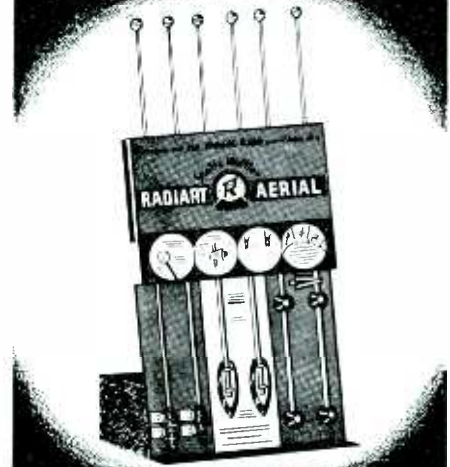
We also note that 66.6 per cent like "open" panels on their radios while 33.4 per cent would like to see a strengthened trend toward concealing controls.

Perhaps most interesting of all is a re-affirmation by the trade that it likes to see its radios frankly look like radios. At least that's what 79.7 per cent told us. 20.3 per cent wanted new models concealed or disguised or camouflaged to look like something else.

. . . And that, gentlemen, is as far as we had time to carry our study up to presstime. Next month we go on to features, technical design and "gadgets" . . . which we suspect will be equally helpful to designers and perhaps more interesting to certain of our regular readers.

IT'S HERE!

Your New RADIART AERIAL Display



• Dealers and Servicemen who remember how Radiart Displays have helped to sell more aerials, better aerials, profitable aerials, will hurry an order in to a Radiart jobber.

BULLETIN 640-A
tells all about Radiart's

- Ro-TENNA (Wind-up)
- Mirror Combinations
- Universal Mount Cowl
- "Static-Muffler" MAGIC RING and dozens of other features



The RADIART Corporation
CLEVELAND, OHIO

RADIART VIBRATORS

Guaranteed 1 YEAR

The Shelvador



**6 CUBIC
FOOT
SHELVADOR** **\$ 99.⁹⁵**

Super-powered with the genuine hermetically sealed Crosley unit. Cabinet is of one piece welded construction on which flawless white Dulux finish is bonderized and baked. Porcelain on steel food compartment. Evaporator door. Automatic electric light. Famous Shelvador on all models. Manufactured to same high quality specifications as entire Crosley line, it's the industry's No. 1 value.

PRICED WITH 5-YEAR WARRANTY



NEW
Freezorcold



FREEZES ICE CUBES . . . KEEPS FROZEN FOODS

The FREEZORCOLD is a new and obviously useful feature incorporated in ALL Shelvadors from \$119.95 up. This miniature cold storage plant has tremendous appeal to women who are quick to see the advantage of this proper place to keep frozen food.

It stores frozen foods . . . keeps 8 to 12 lbs. of fresh meat UNTIL WANTED . . . freezes meats, poultry, game and fish. This permits purchases in large quantity. Keeps ice cream . . . pie dough . . . cakes fresh.

These many uses permit increases in diet variety YET tend to reduce food budgets . . . a topic of keen interest to any housewife anywhere.

THE CROSLY CORPORATION,
Home of "the Nation's Station"

sells refrigerators

AN EXCLUSIVE ~~CROSELY~~ ADVANTAGE

Shelves-in-the-door (*Shelvador*) sell refrigerators. Only Crosley has the Shelvador! By their proper use a woman can gain at least an extra shelf of space in her refrigerator. Women are quick to see this advantage. It's easy to demonstrate that the Shelvador saves steps. It saves food by keeping tag ends and little foods in sight. When food is in sight and handy the open door period is short. This saves current. The convenience of the Shelvador is a sales feature NO other refrigerator has. It's an exclusive talking point. It works. Hundreds of thousands of women sing its praise. It sells refrigerators! All models have the famous Shelvador—with those convenient shelves in the door by which every woman can store more food and store it easier than in any other refrigerator built.

Outstanding exclusive feature proves sales power

6 CUBIC FOOT
SHELVADOR
plus **FREEZORCOLD**

... that new, exciting, sales-stimulating Freezorcold—that miniature cold storage plant for household use that promises women both new economy and new variety in their food budgets.

PRICED WITH 5-YEAR WARRANTY

Crosley gives you value, action and profit in 1940. The Crosley line is beautiful—beautifully styled, beautifully made and beautifully finished. It's a joy to thousands of dealers on whose floors it already glistens. Women's eyes sparkle when they see it. It's exciting in its profit potentialities and it's "hot" with promotional models at \$99.95, \$119.95 and \$139.95. These three models out-point competition with selling points. These three models are easy steps to the convincing values of the long profit models.

These new Crosley Shelvador leaders are quality refrigerators. There is no skimping or substitution of sub-standard parts. These models are standard Crosley quality materials, fabrication and finish throughout!

Two of these models are equipped with the new Crosley Freezorcold, that amazing miniature cold storage plant for household use. This dramatically demonstrable feature is holding women's interest now. It's a real excuse to replace old refrigerators.

No other refrigerator has it!

6 CUBIC FOOT SHELVADOR

PLUS

Crisper, Storabin,
Quick Release
Ice Tray, Remov-
able Shelf and the
NEW
FREEZORCOLD

\$139.95

PRICED WITH 5-YEAR WARRANTY



This fully equipped Shelvador offers extraordinary promotion possibilities. No other refrigerator presents ALL these improved and practical major features at such a matchless competitive price!

ATTRACTIVE 8 FOOT MODELS TOP CROSELY SUPER 1940 LINE!

Crosley dealers are in an outstanding competitive position with Crosley Shelvadors this year. Many generous profit Shelvadors provide easy step-ups to luxury models of great beauty and finish. Extraordinary values in two brand-new 8 foot models and one new 6-foot model add even greater power to the most outstanding line in Crosley history.

WRITE, PHONE or WIRE
YOUR CROSELY DISTRIBUTOR OR THE FACTORY

Prices slightly higher west of Rockies.

CINCINNATI

—WLW—70 on your dial

- POWEL CROSELY, Jr., President

Here's Your 1940 Auto Radio Department

WITH THIS YEAR'S FASTEST
SELLING AUTO RADIO LINE

Learn How to Get
This Beautiful \$15.00
"MAINLINER"
DISPLAY BOARD
Free

Nationally Advertised
to 60,000,000 Readers
in 11 Leading Magazines



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