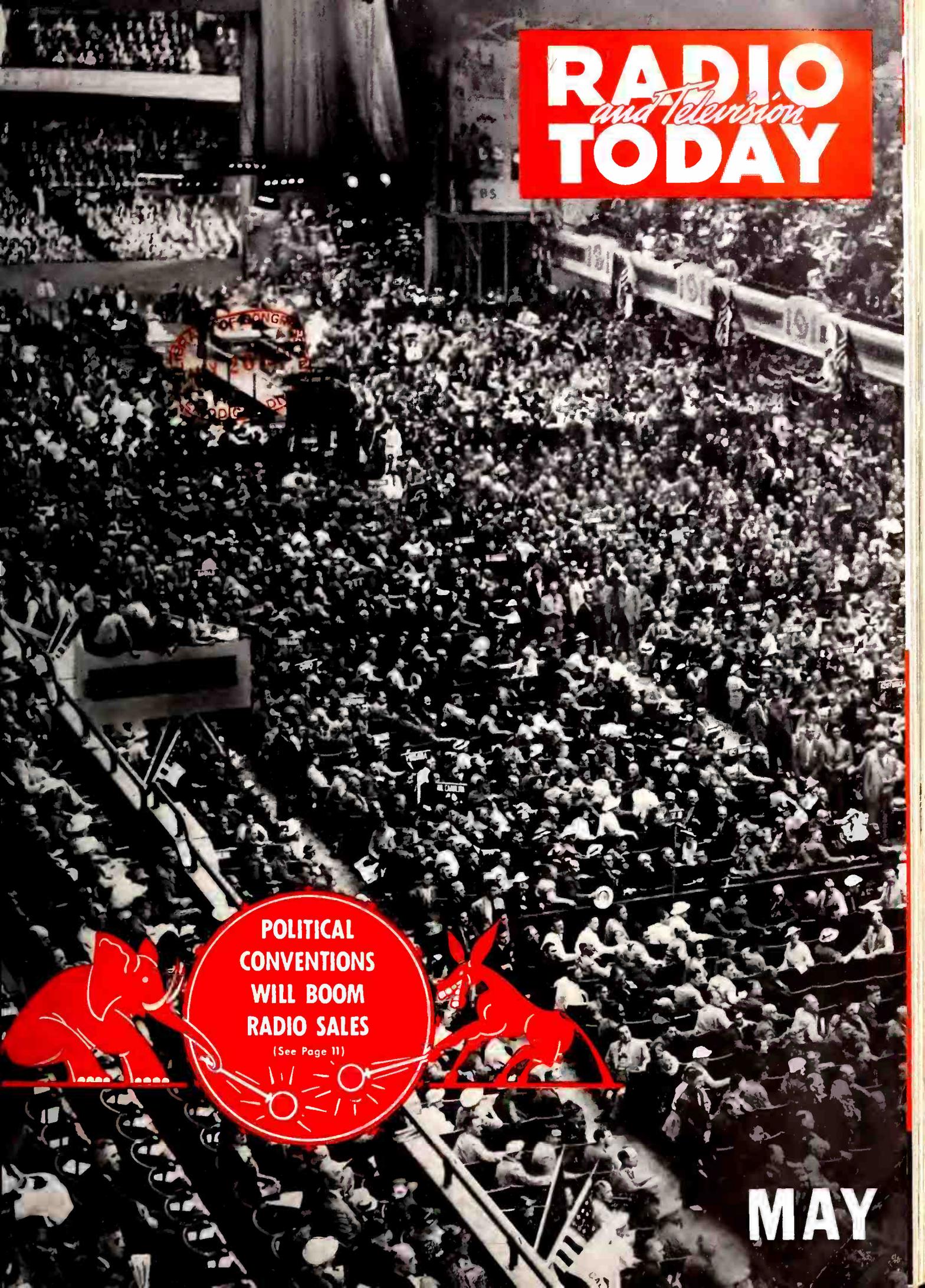


RADIO *and Television* TODAY



**POLITICAL
CONVENTIONS
WILL BOOM
RADIO SALES**

(See Page 11)

MAY

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

The *One* Line That Gives You *All* The Answers On Condenser

Mallory gives you every answer to condenser replacement because the entire line has been developed around an exhaustive study of millions of condensers now in use...and the experience gained in supplying millions of condensers to leading manufacturers for use as original equipment.

It is no idle boast to say that no manufacturer gives you a condenser line with wider replacement possibilities.

For inexpensive, compact receivers Mallory provides Tubular Condensers with over 50 ratings to choose from... with common anode, common cathode and separate sections too.

Mallory FP (Fabricated Plate) Capacitors bring a new high in efficiency and performance. Millions are in use as original equipment. FP Capacitors give you

Replacement

features not duplicated in any other condenser. Smaller sizes, unusually low R.F. impedance, surge-proof construction, improved seal against heat and humidity... these are just a few.

Mallory Type TP (paper)... and Mallory Wet Electrolytic Condensers are equally dependable...equally adapted to efficiently meet the service requirements for which you need such replacements.

Decide now to solve your condenser replacement problems by depending on Mallory. It costs no more. You'll get tops in service from Mallory selected, nation-wide distributor setup.



Use

P. R. MALLORY & CO., Inc.
MALLORY
APPROVED
PRECISION PRODUCTS

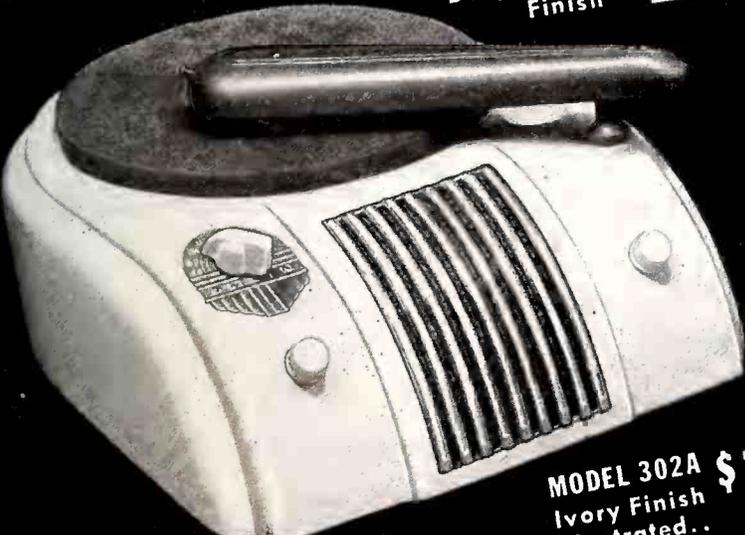
P. R. MALLORY & CO., Inc.
INDIANAPOLIS INDIANA

Cable Address—PEMALLO

ARVIN HAS THE

Hot Numbers!

Radio-Phonograph Combination
MODEL 302 \$14.95
 Deep Brown Finish



MODEL 302A \$16.95
 Ivory Finish Illustrated..

... And more Radio Dealers are "steaming-up" on Arvins every day.

● The new Arvins are made-to-order for fast sales. Beauty . . . style . . . performance, they've got all that plus low prices that make folks take notice.

Arvin sales are 'way ahead of last year . . . and moving faster every day. Be sure to see Arvin's hot numbers . . . compare them on any basis and you'll see why they sell so well.

NOBLITT-SPARKS INDUSTRIES, INC., COLUMBUS, IND.
 Prices slightly higher in West and extreme South

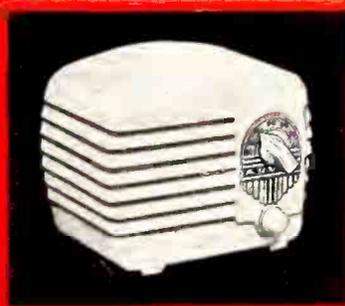
They Sizzle with Sales Appeal

This Arvin Radio-Phonograph is plenty hot. Plays 10" and 12" records or brings in radio broadcasts with rich tone. Self-starting constant speed phonograph motor. Four tubes, including rectifier. 20-foot attached aerial. Unbreakable cabinet. Carrying case only \$2.95 extra.



LOW COST CAR RADIOS

Model 510, a compact but powerful superhet with illuminated thumb-wheel dial for fast, easy tuning. Easily installed under instrument panel. A real performer at this low price . . . \$14.95
Model 610 with four push buttons and thumb-wheel dial tuning . . . \$17.95



Arvin Model 402A. This snappy little set thrills everyone. A small but mighty AC-DC radio in a smartly styled unbreakable cabinet. 20-foot aerial attached. Size 6 1/4" wide, 5 1/4" high, 3 1/8" deep. Three tubes including rectifier. Ivory finish (Model 402 walnut) . . . \$6.95

Model 502, a larger, more powerful superhet. Has lighted dial. Ivory or walnut finish . . . \$9.95



Arvin 602 Models. Powerful AC-DC superheterodynes with built-in loop antenna and carrying handle. 6 tubes including rectifier. Fine performance. Permanent magnet speaker. Lighted airplane type dial. Size: 11 1/2" wide, 9 1/2" high, 6 1/4" deep.

Model 602A ivory plastic cabinet . . . \$18.95

Model 602 walnut plastic cabinet . . . \$16.95



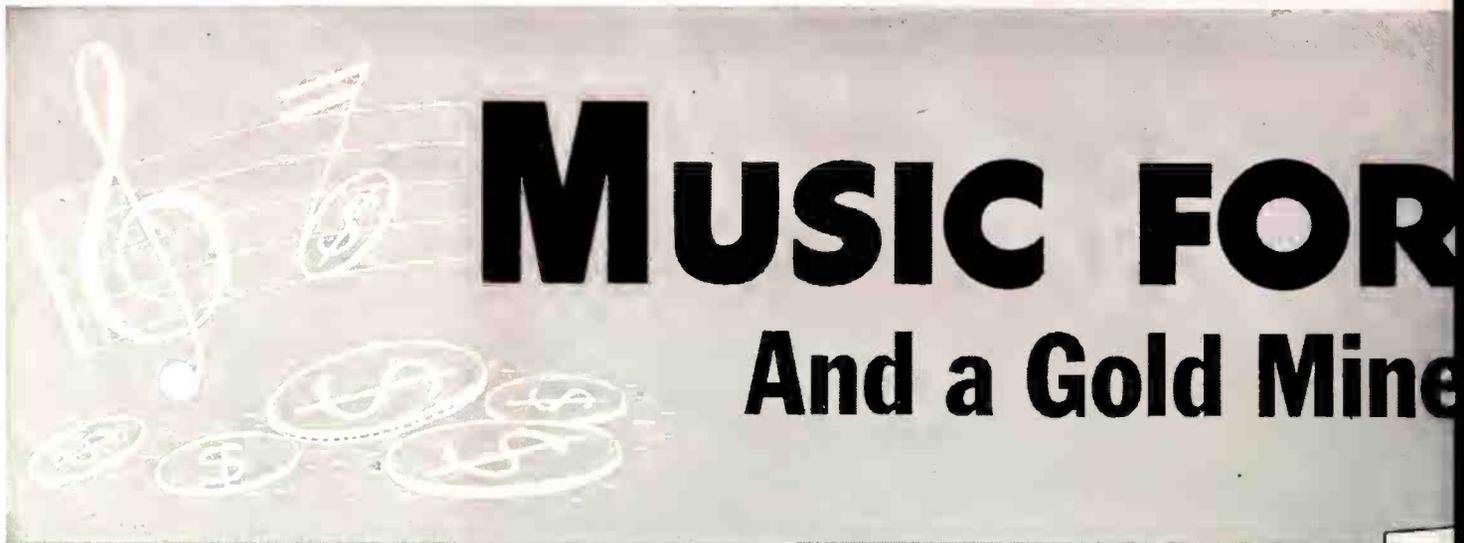
HOTTEST BATTERY-ELECTRIC PORTABLE

Model 802, complete with batteries . . . \$24.95

Folks like everything about this radio . . . its fine performance on batteries outdoors, on AC-DC current indoors. Superheterodyne circuit. Built-in loop antenna.

Model 803, same as above, except Underwriters' approved for 110 AC or battery operation . . . \$26.95

PROFIT WITH ARVIN HOT NUMBERS



New Victor Black Label Classics

*Musical masterpieces by world famous artists
in popular editions at popular prices*

RCA Victor opens the World's Greatest
Treasure House of Music to the mass market
...with fine recordings for as little as

75¢

GET IN on the ground floor of this sensational new Victor Record merchandise opportunity. For the first time in Victor history, the world's finest music—performed by world famous artists—at the lowest prices in Victor history.

Victor Black Label Classics are superb, newly pressed electrical recordings. They are made from carefully preserved "master" records whose numbers have been withdrawn from the catalogue to make way for new monthly releases. Each record is a splendid performance. Music lovers can double their record libraries and you can double your Victor Record sales!

*Music Everybody Loves
... Names Everybody Knows—at unheard
of prices!*

Immortal compositions of the great masters—many of music's most magical names are included in the new Victor Black Label Classics. Beethoven—Brahms—Tschaikowsky; Kreisler—Barbirolli—Rubinstein—and others, equally notable, equally desirable, definitely saleable—with more to be added! At 75c for 10-inch records and \$1.00 for 12-inch records, Victor opens its music treasury to more millions—opens a gold mine to RCA Victor dealers!



**MILES FROM PORT
YET SAFETY AT ARMS LENGTH!**



24-HOUR SHIP-TO-SHORE COMMUNICATIONS SERVICE PROVIDED BY GREAT LAKES COASTAL STATIONS WITH THE AID OF

**RAYTHEON
TUBES**

The new marine radiotelephones make it almost as easy for a boat owner to "call up" his home, office or the Coast Guard as though he were on land. He merely picks up a telephone handset and talks! Stations like the Lake Bluff Coastal Radio Station on the western shore of Lake Michigan and the Loraine Station on Lake Erie handle the traffic . . . "hooking up" the boat by a land wire to any telephone in the world!

With transmitters and receivers on the air 24 hours a day, the station equipment takes a beating. It isn't any wonder that RAYTHEONS carry the burden.

RAYTHEONS were chosen because tube efficiency and dependability is important. Yet they are just "stock" tubes, such as are used by thousands of servicemen for replacement work . . . servicemen who know that the way to be the biggest service organization in town is to insist on quality parts. Yet RAYTHEONS *cost no more!*

Your Raytheon Distributor has an unusual tube deal for you. See him without delay.

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

RAYTHEON
MAKES THEM ALL

WORLD'S LARGEST EXCLUSIVE

RADIO TUBE MANUFACTURERS



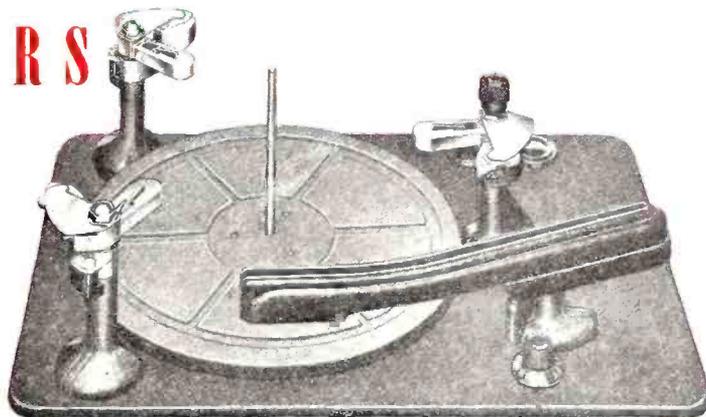
Since 1902

Seeburg

AUTOMATIC RECORD CHANGERS

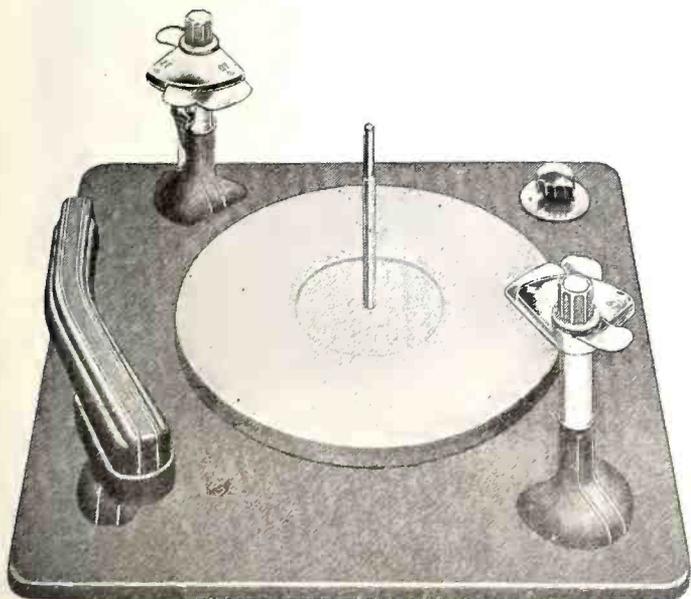
AND RECORDERS

CHOSEN PRECISION
EQUIPMENT FOR THE
FINE PRODUCTS OF
AMERICA'S FOREMOST
RADIO MANUFACTURERS



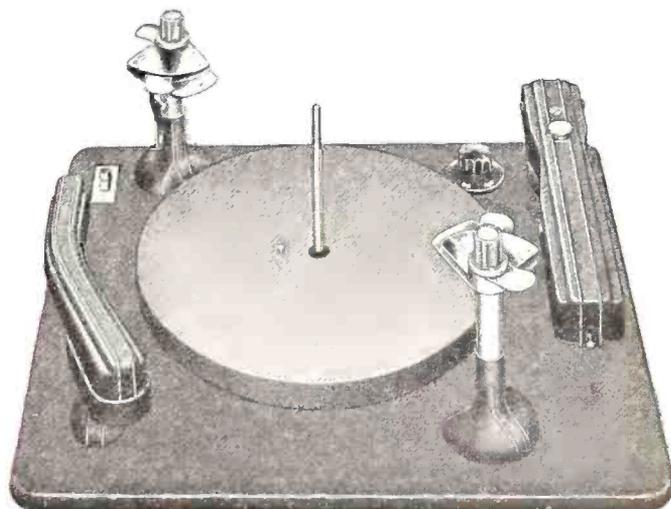
SEEBURG AUTOMATIC RECORD CHANGER MODEL "H"

Plays fifteen mixed 10" and 12" records—gravity type. Guide arm and lifter cam feature permits playing of extremely warped records. Three-point suspension with two ailess bearings in each post. Play-Meter can set to play from 1 to 15 records or repeat a record up to 15 times, then stop automatically. Tone Arm is in extreme outward position when stopped automatically. No need to lift off record when re-loading, one control knob turning blades and arms to re-loading position. Pressure an Play-Meter knob rejects record.



SEEBURG AUTOMATIC RECORD CHANGER MODEL "J"

Compact; 14" long, 14" wide, 3" deep. Handles 14 ten inch or 10 twelve inch records, gravity type. Two post suspension. No screws or brackets on top surface. Simplest changer mechanism. Long main bearing, ball thrust. One control button for all operations. Rigid counterbalanced pickup arm with crystal cartridge. Selector blades will not chip or break records. Needle pressure, 2½ oz. Handles warped records and all commercial thickness variations. Tone Arm, held in outward position by latch under panel, automatically released by starting switch.



SEEBURG RECORD-O-MATIC

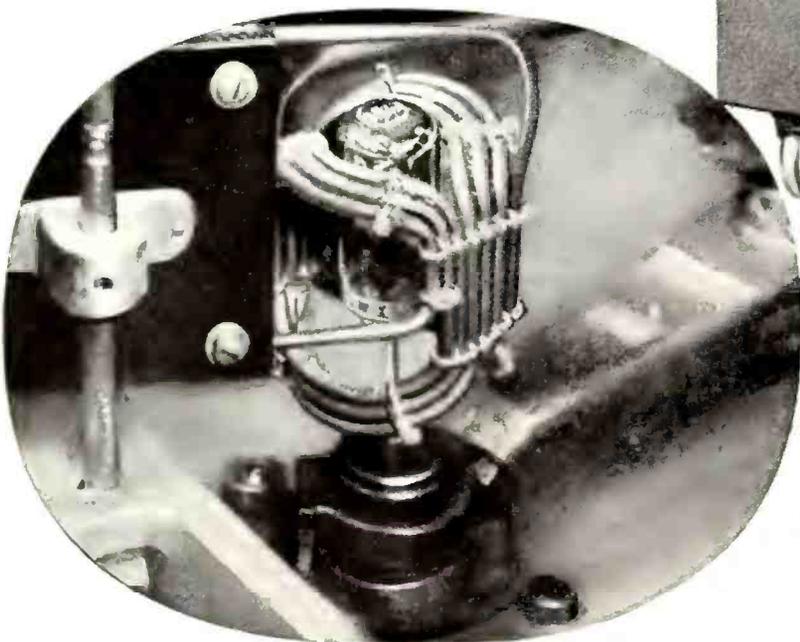
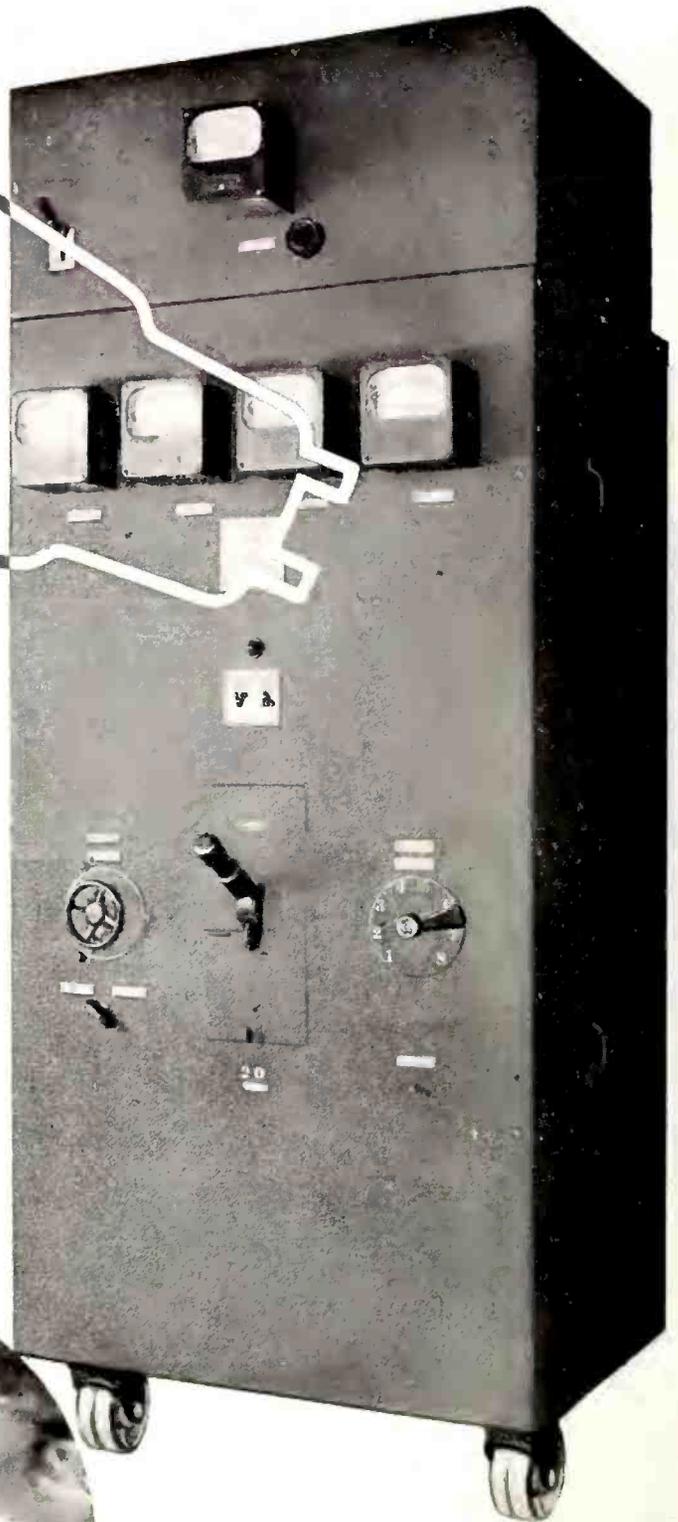
Has all advantages of Model "J" Changer. In addition: Cutting head assembly contains no steel stampings—all parts cast for rigidity; hardened cone bearings at all essential points; lead screw has support bearings at each end; larger main bearing and ball thrust to carry weighted turntable; 1¼ oz. pressure crystal pickup in aluminum tone arm gives long record life; crystal or magnetic cutting heads; cutter has plunger type, automatic engagement with lead screw; separate switch for manual play-back frees Tone Arm from automatic mechanism—any size record may be played manually.

YOU'RE GETTING
Even Better
SYLVANIA TUBES
BECAUSE OF THIS
SYLVANIA BOMBARDER

THANKS to the extreme accuracy of this Sylvania designed and built "bombarder," the gases absorbed in the metal parts of a tube are completely eliminated from Sylvania Radio Tubes. And, note this, *without injuring the metal parts in any way!*

A high frequency induction "heat treatment" does the job while the tubes are being evacuated. Apply too little heat and gases remain to hinder proper tube operation. Too much heat and the metal is permanently injured! That is why Sylvania's skilled engineers design and build their own "bombarders" that heat each metal part, never too much, never too little.

The result insures the *quality performance* of every Sylvania Radio Tube—a performance that makes satisfied customers for you!



SYLVANIA

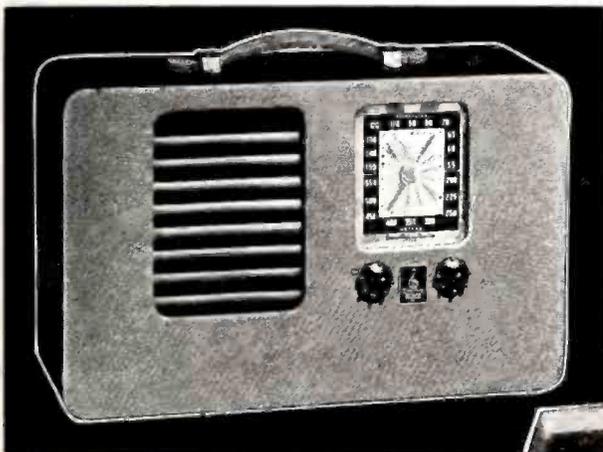
SET-TESTED RADIO TUBES

HYGRADE SYLVANIA CORPORATION, EMPORIUM, PA. • ALSO MAKERS OF HYGRADE LAMP BULBS

The Fastest Selling "Trio" in America Today!
 Cash In NOW on these Forerunners of the 1941 Line of:

Emerson

... with "EVERYTHING" in Promotion



"3-WAY" PORTABLE

Model 357 (above)

1. PLAYS ON AC
2. PLAYS ON DC
3. PLAYS ON OWN POWER

No outside wires whatsoever.

With "Miracle Tone Chamber . . . 5-Inch Permanent Magnet Dynamic Speaker . . . Large "Eye-Ease" Dial . . . Automatic Volume Control . . . Attractive, sturdy case finished in fine-grained simulated leather—tan front, maroon frame.

\$19⁹⁵

COMPLETE WITH BATTERIES



Prices Slightly Higher in West and South

The Emerson "CAMPAIGNER"

Model 333

\$12⁹⁵

With "Miracle Tone Chamber" . . . Super-Size Chassis . . . Wider-Range (6½-Inch) Electro Dynamic Speaker . . . Large "Inner-Ceptor" Loop Antenna, for increased sensitivity . . . no outside wires, just plug in.

ASK anyone who has "been around" and he'll tell you Emerson is FIRST in "3-Way" Portables! . . . He'll tell you the same thing about the Emerson PHONORADIOS — and more of the same good news about the Emerson "CAMPAIGNER."

Ask your Emerson DISTRIBUTOR about the advertising and promotion and he, too, will tell a grand story of SALES-MAKING drive. Then your own judgment will tell you to get on the band wagon . . . and CASH IN on EMERSON!

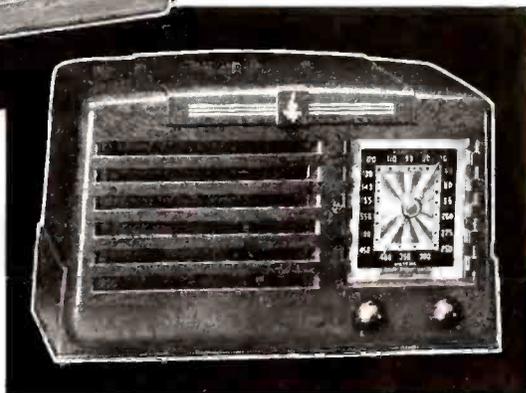


Emerson PHONORADIO

Model 345

AC Superheterodyne with "Miracle Tone Chamber" . . . AC Superheterodyne . . . "Inner-Ceptor" Loop Antenna . . . Under Cover Instrument Panel for Both Radio and Phonograph . . . Crystal Pick-Up . . . Self-Starting Constant Speed Motor . . . Plays all size records, including 12", with lid closed.

\$29⁹⁵



EMERSON RADIO AND PHONOGRAPH CORPORATION • NEW YORK, N. Y.

"World's Largest Maker of Small Radios"

There is a COMPLETE line of "3-Way" Portables from \$19.95 to \$34.95 list. There are several PHONORADIOS from \$29.95 up. There are a LOT of other new table models—and a lot of money-making opportunities RIGHT NOW in the EMERSON proposition. Get details from your distributor.



"We're convinced that for the very finest in test equipment, receiving tubes, power tubes and amateur equipment, RCA is the answer. We say the RCA Franchise is the heart of our business because it has done so much to make profits for us!"



"It's the Heart of Our Business!"

Say H. B. Bennett and W. D. Jenkins, Radio Supply Co., Norfolk, Va., about RCA Franchise

RCA "Full-Line" Franchise Can Pump Profits for You!

IN NORFOLK, it's the Radio Supply Company —well-known and successful because H. B. Bennett and W. D. Jenkins have the personalities and abilities that make friends and build business!

They'll tell you that the profit-priming RCA "Full-Line" Franchise is tops today more than ever before, with RCA *Amateur* Equipment added to the line!

Backed by worldwide RCA experience in short-wave communication, RCA Amateur Receivers have *everything!* Ask any "ham" about the AR-77 illustrated—hear him rave about its unmatched signal-to-noise ratio, its Polystyrene insulation, its temperature-compensation and *adjustable* noise-limiter!

If you want more business—better business—get the facts on the better-than-ever RCA Franchise today!

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



Go RCA for the "Full-Line" Franchise

- ★ Amateur Equipment
- ★ Test Equipment
- ★ Receiving Tubes
- ★ Power Tubes

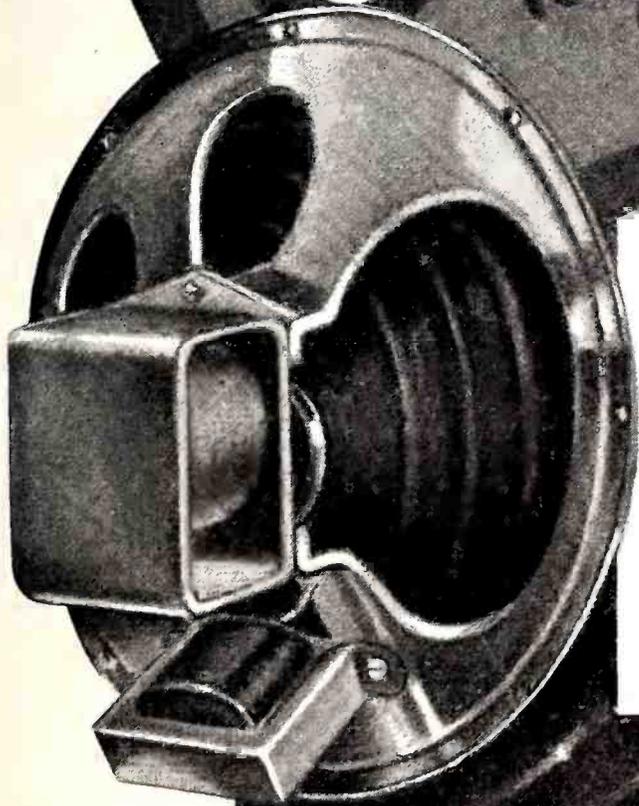


Tubes and Test Equipment

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

\$2.30 LIST*

For a
Jensen
REPLACEMENT
SPEAKER



With a JENSEN replacement speaker you *know* you are giving your customer the best there is.

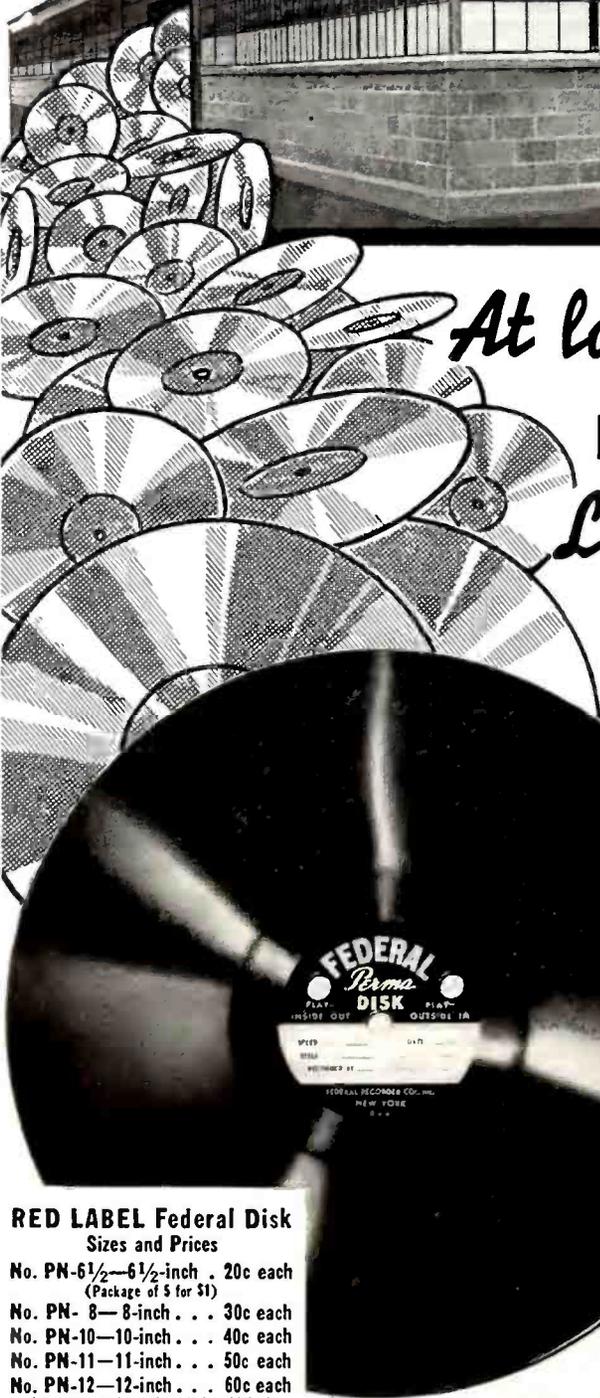
Yet you can sell genuine JENSEN replacements at prices so low that your customer pays no premium for JENSEN quality. So there really isn't any reason to use anything but the best.

**Subject to your usual trade discounts.*



The Federal chemists have achieved an entirely new and exclusive formula for disk coating, absolutely non-inflammable, producing finest recordings with surface noise eliminated.

FEDERAL OPENS RECORDING DISK FACTORY



At last . . . a non-inflammable metal base Disk at the Lowest Prices ever offered

1. Non-Inflammable—Safe for Home
2. Heavy Metal Base—Non-warp, Non-slip
3. Hundreds of Playbacks
4. Half the price of other Professional Disks

Now at last, Federal chemists and research men have achieved an entirely new and exclusive formula for disk coating, absolutely non-inflammable (shavings will not burn), producing the finest and most faithful recordings, WITHOUT SURFACE NOISE. Metal base, heavily coated both sides,—a transcription disk at one-half competitive prices.

So important is this great achievement to the Recorder industry and so eagerly sought by Recorder users, that Federal is equipped to supply a national volume demand. The new modern Federal disk plant at Elkhart, Indiana, is the last word in scientific production facilities; year-round air conditioning throughout, assuring absolute uniformity of product; machinery and processing equipment of the very latest, improved type for mass production. This plant is now under operation. Centrally located, it will be the hub of Recorder disk distribution for the entire nation.

Write Us for the Name of Your Distributor
or Mail or Wire Your Order Direct

FEDERAL RECORDER CO., INC.

Dept. 5211
50 West 57th Street New York, New York 101

RED LABEL Federal Disk
Sizes and Prices

- No. PN-6½—6½-inch . 20c each
(Package of 5 for \$1)
- No. PN-8—8-inch . . . 30c each
- No. PN-10—10-inch . . . 40c each
- No. PN-11—11-inch . . . 50c each
- No. PN-12—12-inch . . . 60c each
(Prices west of Rockies, slightly higher)

MAY 15 1940

RADIO *and Television* TODAY

Conventions Will Boom Radio

As shown on the front cover of this issue, the Republican and the Democratic parties have plans which will boost radio sales. The GOP will hold its national convention at Philadelphia on June 24; and the Democrats will open their session in Chicago July 15. All networks have completed detailed plans for coverage of the events; the nation is all set for the most dramatic broadcasts of the year.

Because of the "third term" question and the extra interest in some of the Republican candidates, the U.S. public will draw closer to its radio receiver this election. Sales of sets, tubes and service are expected to enjoy a real lift. Summer listening this time is a cinch, and the fine part of it is that coupled with the stimulus of the "Listen Before You Vote" campaign, interest will be sustained from June 24 through to November elections.

Sound equipment and portable radios will come in for special use, as local political events and national developments sweep the country.

Strong Tone in Radio Sales

Business trends now indicate that battery portables and compacts, under the influence of the approaching political conventions and the public demand for broadcast news of the war, will set new sales records for May and June.

Meanwhile, radio sales generally are holding up well, with farm sales extra good. Radio inventories are still heavy, though no longer in a serious condition. Wholesale buying is slow, and caution in buying commitments seems to be general.

Where radio sales are spotty, it was due in no small measure to unseasonable weather in April. The major demand is for compacts and lower priced consoles, with demand for radio-phono combinations substantially better than a year ago.

Parts Jobbers Watch FTC Complaint

Launching a case that may have wide effects on present trade-practices in the radio parts field, the Federal

Trade Commission has just issued a complaint against a manufacturer of radio volume and tone controls, charging price discrimination in violation of the Robinson-Patman Act.

The complaint alleges that the respondent sold controls to certain radio-set manufacturers at prices ranging from 10 to 20 cents each, and that it charged radio parts jobbers for products of like grade and quality, prices varying from 36 to 72 cents per control.

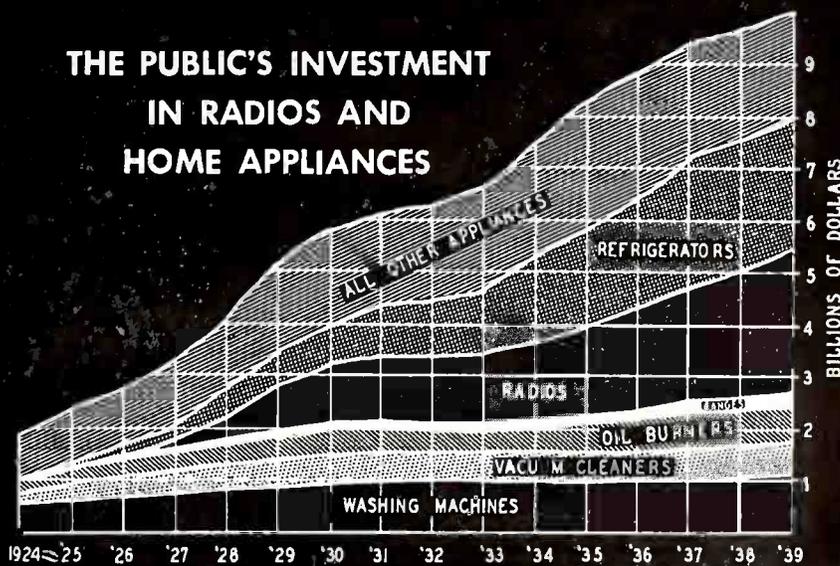
The jobbers, it is alleged, then sold the controls to dealers and radio repairmen at prices ranging from 60 cents to \$1.20.

MAIL-ORDER COMPETITION

It is alleged that the receiver manufacturers named, who make radio sets for a mail-order firm, resold the controls they purchased from the respondent corporation, to the mail-order house at prices ranging from 12 to 24 cents a control, and that the mail-order firm distributed these products in the same territories and places as, and in competition with, the dealers who purchased the respondent's controls from jobbers.

The effect of the discriminations,

THE PUBLIC'S INVESTMENT IN RADIOS AND HOME APPLIANCES



EDITOR, Orestes H. Caldwell;
PUBLISHER, M. Clements;
Managing Editor, Darrell Bar-
tee; Merchandising Editor, H.
L. M. Capron; STAFF, N.
McAllister, G. H. Mayorga,
William E. Moulie, M. H. New-
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Sanborn, B. V. Spinetta, R.
Y. Fitzpatrick, 201 N. Wells
St., Chicago, Ill.; CALD-
WELL-CLEMENTS, INC., 480
Lexington Ave., NEW YORK,
N. Y. Telephone Plaza 3-1340.
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Audit Bureau Circulations.
Vol. 6, No. 5, May, 1940.

according to the FTC complaint, has been and may be to destroy and prevent competition by the parts jobbers and servicemen with the mail-order house.

This case will be followed with intense interest by all parts jobbers. While they feel that the radio trade should be given its fair opportunity to meet mail-order competition, it is also realized that if radio-parts schedules find a new low level of prices, both parts distributors and servicemen will have difficulty in getting enough volume to make ends meet, on a greatly lowered price base.

"Radio Week" at Chicago, June 10-14

Along with the sixteenth annual RMA Convention and the Radio Parts National Trade Show at the Stevens Hotel, Chicago, in June, many allied organizations also will hold important meetings. Exhibit space in the parts show, requiring the entire Exhibition Hall of the Stevens Hotel, is virtually sold out, and interesting programs for the RMA Convention and of other allied industry organizations are being completed.

Chairman Paul V. Galvin of the RMA Convention Committee is arranging an outstanding program for the annual RMA banquet on Wednesday evening, June 12. Meetings of the RMA membership, Board of Directors and other committees will proceed on Tuesday and Wednesday, June 11 and 12, with President A. S. Wells of the Association presiding. The annual industry golf tournament will be held June 13 at the Calumet Country Club.

Following is a summary of the events to be held, all at the Stevens Hotel during "Radio Week" in Chicago:

Sales Managers Club, Eastern and Western Groups—2:00 p.m., Monday, June 10.

Radio Manufacturers Association, Tuesday, June 11, and Wednesday, June 12.

Broadcast report of Radio Show exhibit features by Editor Caldwell of RADIO TODAY — Wednesday, 9:30 p.m. CDST.

National Radio Parts Distributors Association — Dinner for members, 7:00 p.m., Thursday, June 13.

PARTS JOBBERS

National Radio Parts Distributors Association — General meeting, 10:00 a.m., Friday, June 14.

Radio Parts Manufacturers National Trade Show — Annual luncheon, 12:30 p.m., Friday, June 14.

The "Representatives"—Annual meeting, luncheon to be announced

Radio Servicemen of America—Annual Convention, Friday, June 14.

Ten-and-a-Half Million Radios in 1939

Final licensee figures reported for 1939, show that 10,537,605 radio receivers were sold by American radio manufacturers during the year, greatly exceeding sales for the preceding year, 7,000,000 sets. The actual 1939 figure also runs far ahead of the various estimates made for 1939 sales, which ranged from 9 to 9½ million sets. Of the 10½ million sets sold in 1939, it is estimated that 800,000 were exported.

Average retail price of 1939 sets is estimated at \$33.65; with averages for the quarters as follows—1st, \$31.00; 2nd, \$29.60; 3rd, \$33.70, and 4th, \$37.10. These quarterly averages tend to show an increase in unit set price the last half of the year, part of which increase may be due to seasonal causes.

Tube sales for 1939 totaled 98,500,000, according to official returns.



Crosley's v.p. and general manager R. C. Cosgrove, center, reviews with the firm's exec group the plans for Crosley distrib. convention, May 24-25, Cincinnati, where 1941 radios will star. Managers shown are, l. to r., George Stevens, refrigerators; S. C. Mitchell, auto sales; W. M. Shipley, major accounts; Neil Bauer, distrib. sales; L. M. Krautter, advertising and sales promotion; Mr. Cosgrove; T. W. Berger, general sales; E. Reinbold, bottle coolers; R. J. O'Conner, ranges-washers; and H. G. Little of Roy S. Durstine, Inc.

Philco execs, Larry E. Gubb, left, and T. A. Kennally, ready to make top announcements at company's big convention in Chicago, June 10-13.

Current reports of 1940 excise-tax payments on radio sets show an increase of 30 per cent for 1940's first quarter, as against the same period a year ago. While this increase may

be due in part to both seasonal shifts and higher unit prices, some observers draw the conclusion that 1940 set sales may yet reach 12 or 13 million receivers.

In connection with these 1939 and 1940 figures it is of interest to quote the article contributed to RADIO TODAY for October, 1938, by Mr. Ben Abrams, Emerson president, in which he said: "We anticipate a total radio-industry production of 12 to 15 mil-



Thomas F. Joyce of RCA, shown at Motion Picture Convention, where he spoke on television and predicted sales of 25,000 tele sets in NY area alone, within one year after FCC gives okay.

lion sets a year." At the time of Mr. Abrams' statement, the industry's highest output had been 8 million sets.

Ask the Man Who Got One

Radio distributors were recently on the receiving end of some very curious packages. Music, voices and low noises floated from the bundles while express men delivered them and ran. People were reminded of infernal machines, bombs, and sabotage, and there was enough of general excitement to suggest some new branch of un-American activities, or something.

Behind these events was the simple fact that Zenith was in the act of introducing a string of new portables. The radios had been dispatched with the batteries turned on, and the tuning had been done with each distributor's local stations in mind. Incidentally, a number of the packs had been gingerly dunked in water by railway officials, who, after all, have wives and families.

Radio at 1940 N. Y. World's Fair

When the New York World's Fair opened for its second year, May 11, even more complete displays of radio were in prospect than in 1939. Visitors noticed that the RCA building had been greatly enlarged and a new front erected in the direction of maximum traffic approach. Displays of radio set, broadcasting, facsimile, sound and photo-cell applications and the electronic microscope make up the general operating exhibits, while the television receivers have been put in a large number of separate rooms simulating home living-rooms, so that visitors may get the feeling of witnessing television in their own homes.

The General Electric, Westinghouse and Crosley buildings also include radio displays and television demonstrations.

FCC Faces Television, FM, BC-Reallocation Headaches

An unequalled collection of problems are now before the Federal Communications Commission for action.

Frequency-modulation proponents are demanding channel assignments so that the new 1941 receivers can be provided with proper bands. Television is waiting for the go-ahead, so that sales, manufacturing and employment can resume where they were interrupted by the FCC chairman's untimely interference.

Reallocation of 80 per cent of the nation's broadcasting stations, in accordance with the Havana treaty, may have to be delayed further, on account of Mexican-station difficulties. Disposition of the long-delayed network-monopoly report is also before the Commission, along with appointment of new heads of the FCC legal division, to replace Messrs. Dempsey and Koplovitz, resigned to enter private practice.

Never before in the recollection of Washington observers has the Commission been confronted by so many knotty problems while the radio industry waits and waits.

Philco Conv. June 10 Stock to Public

Philco convention of 700 jobbers, with showing of new radio and refrigerator lines, will be held at Edgewater Beach Hotel, Chicago, June 10-13, as reported on a following page.

* * *

Stockholders of Philco Corporation, largest radio receiver manufacturer, have amended articles of incorporation to clear the way for public participation in ownership of the corporation's securities. Heretofore Philco has been a privately-owned company.

Philco Corporation will have outstanding 1,221,100 shares of common stock and 28,385 shares of \$100 par

NEW JOBS FOR RADIO

NBC Blue Network, Wednesdays,
10:30 p.m.: EDST

Dr. O. H. Caldwell
Editor of Radio Today

May 15... "Radio and Business Offices"
May 22... "Radio at NY World's Fair"
May 29... "Sound in the Theatre"
June 5... "Measuring Public Opinion"
June 12 "New Things Ahead in Radio"
(from Chicago Radio Trade Show)

Under the new title of "Radio Magic" the series of broadcast programs which has been conducted weekly since October by Dr. O. H. Caldwell, editor of RADIO TODAY, has now been transferred to a Wednesday evening hour on the NBC Blue network. Scheduled in the Eastern time-zone at 10:30 p.m. daylight-saving time, the programs will be heard in the middle west at 9:30 CDST; in the mountain states at 8:30 MDST, and on the Pacific Coast at 7:30 PDST.

"Radio Magic" presents new uses of radio and radio tubes, of interest to the general public, and is designed to stimulate listeners' interest in radio and to help laymen solve their listening difficulties. Gerald Holland is dramatist, Sherman McGregor director, William Spargrove announcer, Jesse Crawford provides electronic music, and Wallace West is press representative. NBC actors, engineers and sound-effects men make up the staff.

On Wednesday evening, June 12, Editor Caldwell will report from NBC's Chicago studios on new radio devices shown at the Chicago radio trade show which will be of interest to the public as they plan their purchases for the coming radio season.

value \$5 preference stock, but no bonds, mortgages or funded indebtedness of any kind. Application will be made to list the common stock on the New York Stock Exchange.

In discussing the improved financial program made possible by the change, James T. Buckley, president, referred to refrigerator and room-cooler sales and added: "The present prospects for new developments such as high-frequency broadcasting and television, appear to hold unusual promise for Philco. The present management of the company, which has been associated with it for many years past, will continue in office."

45 MILLIONS IN 1939

Sales of Philco Corporation and subsidiaries last year totaled \$45,423,184. The consolidated Philco balance sheet Dec. 31, 1939, showed current assets of \$17,093,320, and current lia-

(Continued on page 37)

THE MERCHANT'S POINT

"WHAT IT TAKES"—AND HOW TO SUCCEED IN SELLING

Merchants succeed.
"Storekeepers" fail.

According to reliable records, the average life of a business enterprise in the United States is 7 years.

About 80 per cent of retail businesses which fail, do so for lack of merchandising skill.

The *merchants* succeed; the "storekeepers" go under.

The qualities which characterize the merchant, and set him apart from, and above, the storekeeper, are vital in any long-time successful merchandising venture, but are hard to isolate and define specifically.

Essentially, a storekeeper is the *selling* agent of one or more manufacturers—while a merchant is the *buying* agent for the public.

HOW YOU LOOK AT IT

The vital difference is one of viewpoint.

The one emphasizes *selling* what he has bought, the other *buying* what he can sell.

Beyond this fundamental viewpoint, a merchant will have to a high degree

- a. The capacity for friendship.
- b. The will to serve.
- c. Courage and opportunism.
- d. Buying skill and merchandising ability.
- e. Vision.
- f. The instinct of the pioneer.
- g. Integrity of purpose.
- h. Honesty and sincerity.

With these qualities a merchant endows his business, that good-will may be created, reputation grow, and the business prosper.

In June there are business opportunities for the radio-appliance storekeeper as well as merchant.

But *there are five times as great opportunities for the merchant as for the storekeeper.*

Let's look over the June market.

BATTERY PORTABLES

The *portable battery radio.*

After the surge of popular demand last year there are few in the radio business who do not sell these wanted sets, or who do not realize that June is a peak portable month.

Merchant and storekeeper alike will

cash in on this June demand for battery portables.

The electric refrigerator.

Consumer buying of electric refrigerators reaches its peak in June.

Merchant and storekeepers know this, and will sell plenty of refrigerators in June.

LOW-PRICED "BOXES"

The storekeeper will sell the low-priced boxes which all the manufacturers are stressing in their advertising, as the *selling* agent of the manufacturer.

But the merchant knows full well that though the public is interested in price, they are more interested in *complete refrigeration.*

He will show the need for, and satisfaction from, the complete refrigeration service which the better boxes render, speaking the language of the *user.*

His "will to serve," his courage, and his merchandising ability will combine to sell his customers the boxes they *need.*

The merchants' profits, and consumer good-will will be much greater than those of the storekeeper who takes orders for the "price leaders," and forgets his obligation to the public and himself.

A lot of people are going to "buy" the low priced, low profit "leaders" unless you sell them up, to the profitable deluxe jobs.

Only man-power can do that, and that's just where the profit pay-off is.

Portables and Auto Radio for June

Portables go to beaches and boats, camps and cottages, lodges and links, for their biggest season in radio history.

Auto Radios go to millions of drivers who must now have political news reports and broadcast flashes of the wars abroad.

Not only can you actually sell more boxes by concentration of selling effort, but you can also substantially increase your turnover and reduce your investment in inventory.

Turnover of 1940 boxes will be an important factor in 1940 refrigeration profits.

AUTO RADIO

Much of the auto radio business has gone to the automobile dealer, because radio storekeepers were out-sold and out-merchandised by the auto merchants. To mere radio "storekeepers" there is no auto radio business.

But there are plenty of radio *merchants* who know better, who are doing a fine job, and who will get their full share of the million and a half auto radios which will be sold this year.

With the political conventions almost here, the news of the European war more important, and the open road calling, June will be a big month in the sales of auto-radio in the biggest year auto radio has ever had.

A SPOT FOR SKILL

The radio merchant will call on his vision, his opportunism, and his merchandising ability to capitalize on this June opportunity for auto-radio sales.

While his cash register is ringing a merry profit tune, his storekeeping contemporary will still be complaining that there is no auto-radio business.

It's the difference in viewpoint and action, which so often is the difference between success and failure, as it is between the merchant and the storekeeper.

ROOM-COOLERS

With his "instinct of the pioneer" the radio merchant looks upon room coolers with different eyes than the storekeeper.

The storekeeper knows that people are not "standing in line" to demand room coolers, and so he is little interested.

But the merchant sees a tremendous latent demand for *relief from summer discomfort.*

He knows this demand will crystallize in direct proportion to his efforts

OF VIEW

RADIO THIS SUMMER

in telling people he can provide this relief, with room coolers.

The radio merchant will combine his function of "the purchasing agent of the public" with his "integrity of purpose" and will pioneer in the merchandising of room coolers.

He may not sell as many room coolers *this* June as he does refrigerators, but every one he does sell, will help him sell five or ten or a hundred more in years to come.

VISION, COURAGE, BANK-BALANCE!

The merchant who pioneers in room coolers today, with vision and courage, will some day sell more room coolers than refrigerators!

When that day comes the storekeepers who "can't see" room coolers today, may still be wondering what

it's all about, with another sales and profit opportunity in the hands of others.

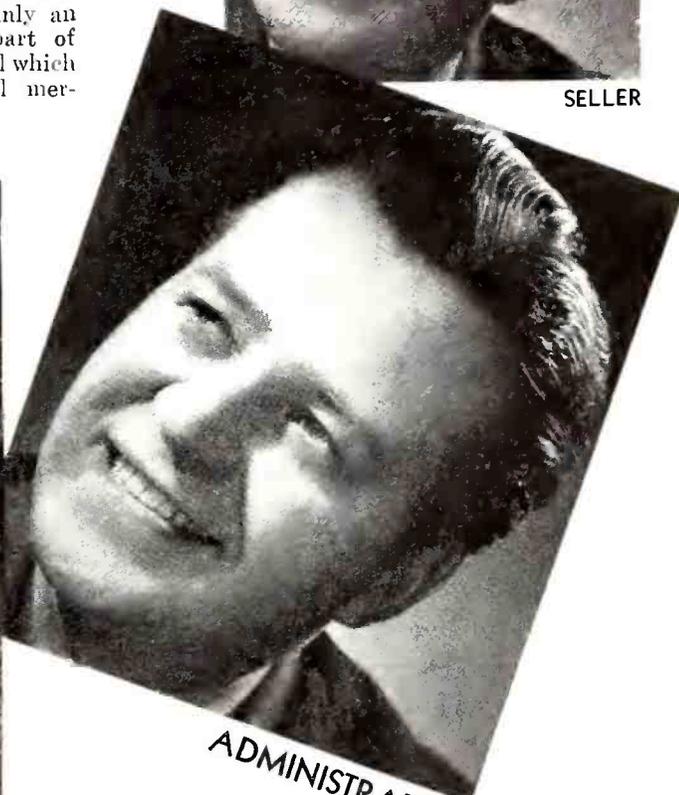
The essential difference between the merchant and the storekeeper may be viewpoint, but the tangible difference is measured in profits, in a growing business, in a growing balance in the bank.

June offers some very real merchandising opportunities to the radio-appliance merchant, even though it is "just another month" to the half-beaten storekeeper.

The alert ones start now to get the summer products on a fast-stepping promotion schedule. Certainly an aggressive start is part of the merchandising skill which characterizes the real merchant.



SELLER



ADMINISTRATOR

BUYER

The successful merchant must be three different men, rolled into one!



WHAT "FM" MEANS TO THE DEALER

Just what frequency modulation means to the radio industry depends upon your viewpoint, and your industry interest.

The engineer sees in FM a technical advance, a new method of transmission, eliminating interference, and capable of a higher degree of fidelity than has heretofore been practical.

The broadcaster sees lower transmitter, operating and maintenance costs, and a transmitting range which closely approximates the trading area of the transmitter's location.

To the broadcaster this means a substantially expanded market for the sale of his "time" to local business, at prices they can afford.

And what is FM.

FM is not a "gadget."

It is a new method of transmission, offering a demonstrably different and better radio reception.

It is free of interference, natural static or man-made electrical disturbance.

Existing receivers cannot receive FM transmission.

One of the first FM models—General Electric's HM-136 with 3-band radio.



MAY OBSOLETE PRESENT SETS

If the record of growth and general interest in FM during the past year means anything at all, it indicates that FM is a new force in radio, which may one day effect a complete obsolescence of existing transmitters and receivers.

So what does FM mean to the dealer?

Interference-free reception of startling tonal realism is certainly something the public *wants* and will pay for.

The replacement cycle, which has been slowing down in the last ten years, will be speeded up.

The trend to compacts will be slowed down, stopped, and finally turned back toward consoles.

The declining unit-sales-price will be stopped and will slowly swing upward again.

This new, and demonstrably superior reception offers a real *selling* opportunity, and alert dealers will forsake their ordertaking of the last few years to adopt again real specialty selling methods.

Combine a new and better product, better selling opportunities, and more profit per sale, with dealer enthusiasm and the result is more sales, more profits, more money in the bank for more dealers.

HOW FM IS BEING SOLD

Dealers in the East are already creating real "*plus* business" with FM.

The most practical sales method is to write, phone, or call, the dealer's own past customers, purchasers of consoles of five or more years ago.

Then arrange for a demonstration—either in the store, or at the home.

The store demonstration is easier—the home demonstration more certain to make the sale.

The successful FM dealers are really selling FM, dramatizing (1) its noise-free reception, which appeals to everyone, and (2) its ultra tonal realism which appeals to every music lover.

The sales price and the margin of profit on FM is high.

Some smart dealers are putting 10 per cent of the selling price of FM in a separate "capital" bank account, and are thus on the way toward add-

ing to their working capital, rejuvenating their entire business, by selling FM.

From the dealer's point of view FM has the potential possibility, aided and abetted by the dealers themselves of answering many, if not most, of their problems, and heralds a return to the "good old days" of radio.

NEXT 5 YEARS

FM, however, is not going to change the dealers' picture completely, immediately, or without the dealers' enthusiastic selling help.

There is no sound factual base for determining the speed with which FM will dominate radio sales.

A conservative estimate of FM sales is 20,400,000 units in 5 years, as follows:

1,000,000	units in 1940
2,400,000	units in 1941
3,900,000	units in 1942
5,600,000	units in 1943
7,500,000	units in 1944

While only about 10 per cent of 1940 receivers are expected to be capable of FM reception, it is estimated that this will grow to over 50 per cent in 5 years.

The radio replacement cycle which has slowly increased from about 4 years to nearly 8 years during the last decade may reasonably be expected to reverse itself under the influence of FM's "urge to buy."

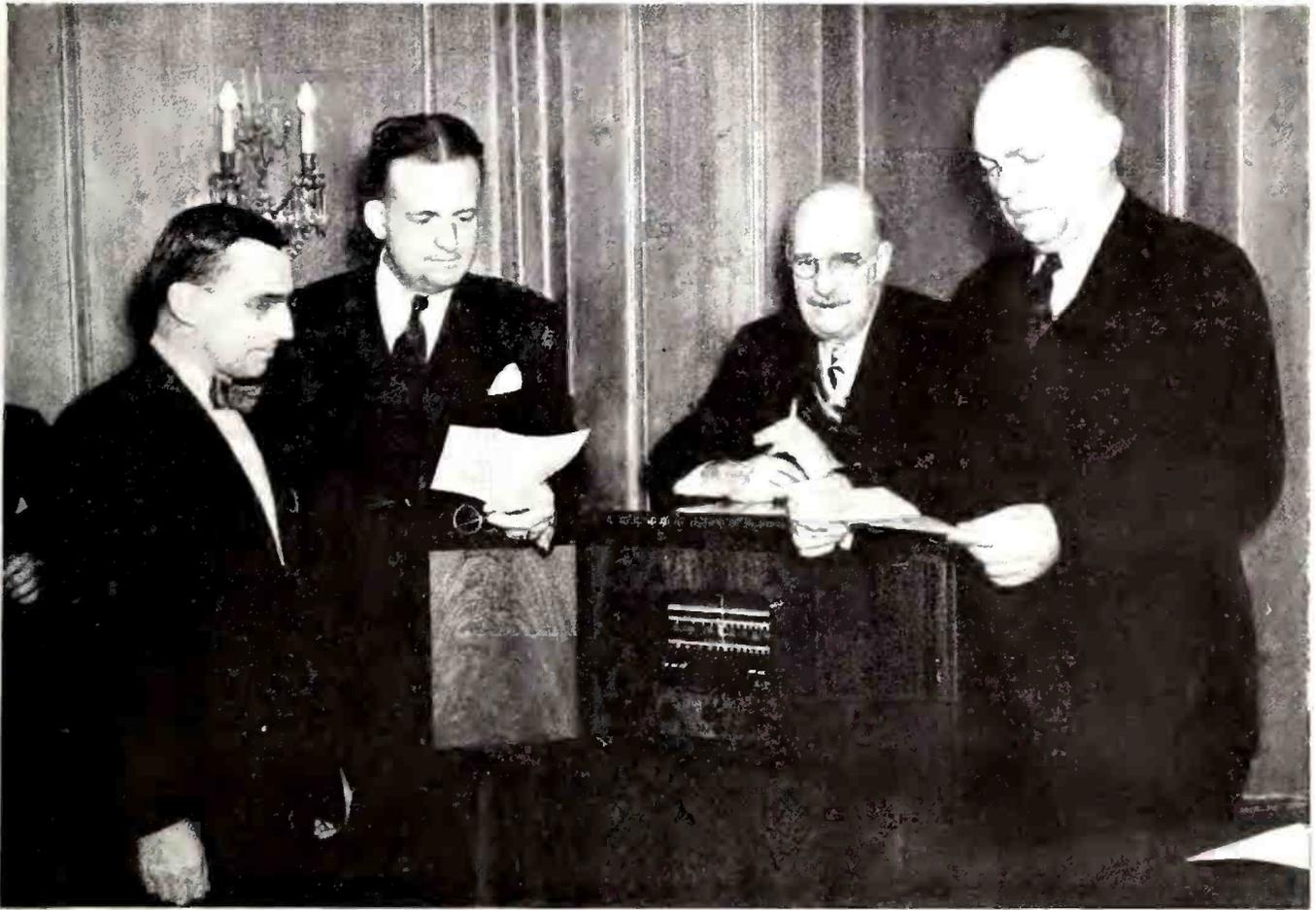
COMBINED FM-AM

Licenses to manufacture frequency-modulation receivers under Major Edwin H. Armstrong's patents, have been taken out by General Electric, Stromberg-Carlson, Stewart-Warner, Zenith, Pilot and Scott.

The best selling FM sets of the immediate future will probably be "combined" units which receive standard band AM (amplitude-modulation) broadcasts and have an FM band too, and the FM adapter which uses the audio amplifier and speaker of any receiver.

The most convincing sales presentation will be the comparative demonstration, which cannot fail to convince the prospect of the superiority and desirability of FM.

To that great majority of radio



Grouped around new Stromberg-Carlson FM receiver (480 M) are Major Edwin H. Armstrong (right), inventor of frequency-modulation, and three broadcasters who have led in commercial installation of FM transmitting stations in the East. From left, Paul DeMars, chief engineer Yankee Network; J. R. Popple, secretary and chief engineer of WOR and Mutual; and John Shepard, III, president Yankee Network, Boston.

dealers who have longed for a radio that would hasten obsolescence, that would get unit prices into the profit zone, that would give them something new to push, FM means salvation.

To those dealers who know only the cut-throat, cut-price selling methods which have eaten away their profits, FM can bring but little help.

But to all dealers, FM means a new and greater opportunity for more sales, more profits, and a brighter business future.

Good Year for Radio

The radio industry is headed for prosperity in 1940, predicts L. L. Kelsey, radio division manager of Stewart Warner Corp., in a new appraisal of the business presented to sectional conventions in Chicago, New York, Dallas and San Francisco.

The Chicago executive named three reasons for his forecast—(1) a presidential year is always a good one for radio, (2) European war has intensi-

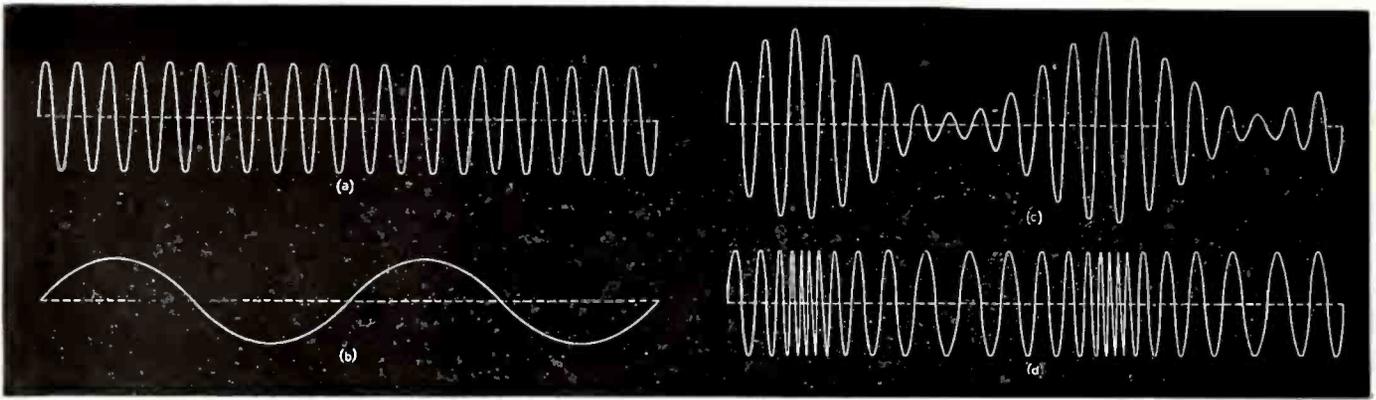
fied the interest in news broadcasts and created a larger audience for short wave programs, (3) general business conditions show improvement.

Mr. Kelsey, in presenting the Stewart Warner line of 34 models for 1940, reported that sales volume of the company in 1939 was up 300% over 1938.

The Stewart-Warner Co. has taken out FM licenses under Armstrong's patents, but will announce its FM plans later, after the FCC has acted in allocating channels for this new service.

Frequency-Modulation Stations—Operating or Under Construction

Location	Call	MC.	Location	Call	MC.	Location	Call	MC.	Location	Call	MC.
California			Maryland			New Jersey			Cincinnati		
Los Angeles (The May Co.)*		43.0	Bethesda	W3XMC	42.6	Alpine	W2XMN	42.8	Cincinnati (WKRC)*		43.4
Connecticut			Massachusetts			Alpine (Yankee Net.)*		43.0	Columbus	W8XVH	43.0
Avon	W1XSO	43.2	Boston (Edison Co.)*		43.2	Newark	W2XOR	43.4	Dayton (WHIO)*		42.6
Meriden	W1XPW	43.4	Boston	W1XK	42.6	New York			Toledo (WSPD)*		43.2
District of Columbia			E. Springfield	W1XSN	42.6	Albany (WOKO)*		43.4	Pennsylvania		
Georgetown	W3XO	43.2	Fall River (WSAR)*		43.2	Binghamton (WNBK)*		42.6	Allison Park (KDKA)*		42.6
Georgia			Paxton	W1XOI	43.0	L. I. City	W2XOR	43.2	Philadelphia (WIP)*		43.4
Atlanta (W. J. Holey)*		43.2	Worcester	W1XSQ	43.4	New Scotland	W2XOY	43.2	Philadelphia (KYW)*		42.6
Atlanta (WATL)*		42.8	Michigan			New York (WABC)*		43.0	Phil. (J. R. Popkin)*		43.0
Columbus (WRBL)*		43.0	Detroit (WJR)*		42.8	New York (W2XWG)		42.6	Rhode Island		
Illinois			Detroit (WWJ)*		43.0	New York (WHN)*		43.2	Providence (Outlet Co.)*		43.4
Chicago (WGN)*		43.2	Detroit (J. F. Hopkins)*		43.4	New York (WOV)*		43.8	Providence (Cherry & Webb)*		42.8
Chicago (WJJD)*		43.4	Grand Rapids (WKZO, Inc.)*		43.4	New York (Muzak Corp.)*		43.6	Tennessee		
Chicago (Moody Institute)*		43.0	Kalamazoo (WKZO, Inc.)*		42.6	Rochester	W8XVB	43.2	Chattanooga (WAPO)*		43.4
Chicago (W9XEN)		42.8	Minnesota			Rochester	W3XAD	42.6	Texas		
Peoria (WMBD)*		43.4	Minneapolis (W9XHW)		42.8	Syracuse (WFBL)*		43.0	Amarillo (KFDA)*		43.2
Kentucky			Minneapolis (W9XHW)		42.8	Syracuse (WSYR)*		43.2	Utah		
Lexington (WLAP)*		43.2	Missouri			Utica (WIBX)*		43.4	Antelope Island		
Maine			Kansas City (KMBC)*		42.6	North Carolina			(Radio Service Corp)*		43.2
Portland (WGAN)*		43.4	St. Louis (KXOK)*		43.0	Greensboro (WBIG)*		42.6	Salt Lake City (KSL)*		42.8
			Mt. Washington (Yankee Net.)*		42.6	Ohio			Wisconsin		
						Canton (WHBC)*		42.6	Milwaukee	W9XAO	42.6
						Cincinnati (WLW)*		43.2	Superior	W9XYH	43.0
									*—Applicants		



(a) Radio carrier wave of constant amplitude.
 (b) Audio (or program) wave for modulating (a).

(c) Carrier and audio waves as combined in "AM."
 (d) Carrier and audio waves as combined in "FM."

HOW FREQUENCY MODU

WHAT TO TELL THE PUBLIC

Just what *is* Frequency Modulation? And how does it differ from Amplitude Modulation, the kind of radio broadcasting we have all been hearing up to now? It is simply a different method of super-imposing the program onto the carrier wave. Let's see what it looks like on the charts on this page.

Now whether we are dealing with Amplitude Modulation or Frequency Modulation, we start with the same kind of radio carrier wave, and also the same kind of telephone current "program wave" as picked up by the microphone. With Amplitude Modulation, the program wave is combined with the carrier in such a way as to change the *power* of the resultant wave. It adds to the power part of the time, and subtracts from the power another part of the time so that the wave radiated by the broadcasting station appears as shown at (c).

BROADCAST ADVANTAGE

In Frequency Modulation the same program wave doesn't change the power of the carrier at all but is made to change its *frequency*, speeding up the carrier-wave part of the time and slowing it down another part of the time so that the resultant wave from a Frequency Modulation station looks like (d).

The chart shows you immediately the advantage which Frequency Modulation offers to the broadcasting station. The program is super-imposed on the carrier without changing its power. In other words, the broadcasting station operates at full power all the time. That means that it can be much more efficient, use less tubes, less current and even save manpower—because the management can let the transmitter run "wide open" all the time and doesn't have to have an engineer who is also a trained musician constantly watching a volume indicator, ready to turn the volume up when the program level gets lost in the background noise, and to turn it down

when a soprano hugs the microphone or the orchestra plays too loud.

In Amplitude Modulation, the broadcasting station has to be built to handle *four times the rated power* of the station on volume peaks. The Stromberg-Carlson Station WHAM, for example, is rated at 50,000 watts but it has to be built with a large enough power supply, tubes, tuning system and antenna to handle 200,000 watts and it would even go above *that* if the engineer wasn't there to turn the volume down when he sees his volume indicator needle swinging too high. This compressing of the "dynamic volume range" in itself, affects the musical quality of the program. Suppose that an orchestra has enough instruments to make a maximum noise equivalent to "100 decibels" volume level when everyone is playing his hardest; an Amplitude broadcasting station might have to squeeze that volume range down to, say, 50 decibels in order to keep the quiet passages up above tube noise and studio noise, and to bring the loud passages down within the capacity of the transmitter. In Frequency Modulation there are no volume peaks as regards the power being radiated; all that volume does is to swing the carrier frequency. So a 50,000 watt Frequency Modulation transmitter can be built to deliver 50,000 watts all the time, and handle the full dynamic volume range of the music.

"LIMITER"; "DISCRIMINATOR"

In a Frequency Modulation broadcasting station the microphone amplifier is made to affect the oscillator tube directly, changing the frequency of the carrier rather than being indirectly added to it by a mixer. At the receiving set you have the same six tube functions and a couple more; the detector circuit in a Frequency Modulation receiver uses *three* tubes instead of one. One of these extra tubes is called a "limiter" tube and its purpose is to fix upon and assign control to the *strongest signal coming in* at the particular wave length or fre-

quency to which your receiver is tuned. Thus the strongest signal gets control.

The other extra tube is called a "discriminator," its function being to *wipe out any noise or signal* other than the strongest signal coming in. The discriminator also wipes out rather effectively any Amplitude Modulation station that might be broadcasting on the same wave length to which you have tuned your Frequency Modulation receiver and, since most static is essentially an Amplitude Modulation signal, the discriminator wipes that out too. The effect is to eliminate natural static, man-made static, in fact, practically any kind of noise. A good Frequency Modulation system eliminates the carrier "hiss" and most of the tube noises from the broadcasting station as well as any hum modulation and tube noise in your receiver. You don't even know a Frequency Modulation radio is turned on until the music plays.

STATIC-FREE

That shows how little residual noise there is in this system. As one writer put it, this kind of radio can "transmit silence." (Of course noise in the studio may still be picked up by the microphone. Also when Frequency Modulation stations are broadcasting phonograph records there may be some needle noise.) But in eliminating most of the noises and distortions that might occur, Frequency Modulation brings radio—from a tone quality standpoint—down to a simple static-free long-distance telephone system.

To show you how quiet and clear and static-free this new system is let me say that movie producers are interested in Frequency Modulation to give better sound recordings on their films. Under this plan, rather than taking portable sound-recording apparatus out "on location" which may be miles away from Hollywood, they will use the best sound recording equipment at the studio and will transmit the program to that point by Frequency Modulation radio.

From a talk by Lee McCanne, Stromberg-Carlson Mfg. Co.

Before leaving this subject, let me point out why a Frequency Modulation receiver must be a little more expensive than an ordinary radio. Remember there are two more tubes in the detector circuit, and a tuning eye is also desirable, so that a good Frequency Modulation radio should have eight or nine tubes minimum. To take full advantages of the better FM tone, the audio amplifier stage must be a good Class A distortionless amplifier. The loud-speaker must be designed to respond to high tones and overtones beyond the range of many of the loud-speakers being produced today, and it must have a suitable baffle.

In Frequency Modulation, if the broadcasting station is an Armstrong wide-swing transmitter sending out high fidelity, then the *tuning system* of your receiving set must be designed to admit or *accept the full frequency swing* of that transmitter. Up to the detector tube, that receiver has to be good. Otherwise the whole reception is distorted. The receiver ought to be selective, too, against interference from the next FM channel, but it must accept the wide band of frequencies on each channel. That means, if you want a cheap FM receiver, the maker can cheat on the cabinet, cheat on the loud-speaker and cheat on the audio amplifier, but the *tuning system* must

be good. And, since the tuning system is one of the most expensive parts of the whole receiving set, you might as well make the rest of it good enough for 8 octave reception.

NO STATION CLASHES

Moreover, an 8 octave FM receiver is *worth* the extra cost, because you will be able to get the full high fidelity program *without* static and *without* interference. That's the odd thing about FM. Frequency Modulation transmitters broadcasting *on the same channel* just don't interfere with each other unless possibly you are on the fringe area of both stations, right on the ragged edge of their service range. Otherwise, the strongest signal takes control and the other one is wiped out. To prove this, *three* FM transmitters all broadcasting different programs on the *same* channel were set up. One was at Albany, another at Troy, the third at Schenectady—all 12 to 17 miles apart. Engineers went out with a receiver on a truck, trying to find a place where they could get interference—bring in two of these stations at once. They didn't find it. In fact they got down to a space of a few *inches*, that outside this space they would get only Troy or Albany or Schenectady—depending on which direction they moved the truck, while inside this small area the program would flop back and forth from one station to another.

TWO TO FOUR HORIZONS

In the ultra short waves, Frequency Modulation radio acts like light, and acts much like television as regards the range of the transmitters. Given enough power and a high antenna, Frequency Modulation stations seem to have a fairly reliable range up to two horizons and a possible service range (to listeners not located behind buildings or mountains or in valleys) up to four horizons. Height of the receiving antenna is important, as well as the height of the broadcasting antenna. This distance limitation is the one limitation to good Frequency Modulation broadcasting; it will be necessary to erect transmitters in every large population center before we can all be assured of this new and better kind of reception.

On the other hand, within its service range, a Frequency Modulation station gives *reliable* reception, day or night, even through thunder storms. Listeners located at a distance from the city but within range of its FM transmitter will probably get better and quieter reception than they would from an AM transmitter in that same city. Listeners located beyond the range of the FM transmitter will, of course, have to rely on the AM station the same as heretofore. High power cleared channel AM stations will probably always be needed, as will the International short wave AM stations. For that reason the system proposed to the Communications Commission by the FM Broadcasters, Inc., is a combination of AM and FM stations whereby the cleared channels on the regular broadcast band will be used for long distance and rural coverage, and FM channels will be used for reliable local service.

LATION WORKS



FM's ability to bring in noise-free reception despite powerful manmade or natural static, is shown in this test in the GE Building at NY World's Fair. Interference source—million-volt arc; reception—undisturbed!



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HOW FREQUENCY MODULATION WORKS

WHAT TO TELL THE PUBLIC

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STATIC-FREE

That shows how little residual noise there is in this system. As one writer puts it, this kind of radio can "transmit silence." (Of course noise in the studio may still be picked up by the microphone. Also, when Frequency Modulation stations are broadcasting phonograph records there may be some needle noise.) But, in eliminating most of the noises and distortions that might occur, Frequency Modulation brings radio—from a tone quality standpoint—down to a single static free long-distance telephone system.

To show you how quiet and clear and static-free this new system is, let me say that movie producers are interested in Frequency Modulation to give better sound recordings on their films. Under this plan, rather than taking portable sound-recording apparatus out "on location" which makes miles away from Hollywood, they will use the best sound recording equipment at the studio and will transmit the program to that point by Frequency Modulation radio.

Before leaving this subject, let me point out why a Frequency Modulation receiver must be a little more expensive than an ordinary radio. Remember there are two more tubes in the detector circuit, and a tuning eye is also desirable, so that a good Frequency Modulation radio should have eight or nine tubes minimum. To take full advantage of the better FM tone, the audio amplifier stage must be a good Class A distortionless amplifier. The loud-speaker must be designed to respond to high tones and overtones beyond the range of many of the loud-speakers being produced today, and it must have a suitable baffle.

If Frequency Modulation, in its broadcasting station is an Armstrong high fidelity transmitter sending out of your receiving set must be designed to admit or *accept the full frequency swing* of the transmitter. Up to the detector tube, that receiver has to be good. Otherwise the whole reception is distorted. To avoid interference selective, too, against interference from the next FM channel, but it must accept the band of frequencies on which you want a clear FM receiver, the loud-speaker and cheat on the audio amplifier, but the *tuning system* must

be good. And, since the tuning system is one of the most expensive parts of the whole receiving set, you might as well make the rest of it good enough for 8 octave channels.

NO STATION CLASHES

Moreover, an 8 octave FM receiver will be able to get the full high fidelity program without static and without interference. That's the old thing about FM, Frequency Modulation transmitters broadcasting on the same channel just don't interfere with each other unless you are on the fringe area of both stations, right on the ragged edge of their service range. Otherwise, the strongest signal takes control and the other one is wiped out. To prove this, these FM transmitters all broadcasting different programs on the same channel were set up. One was at Albany, another at Troy, the third at Schenectady—all 12 to 17 miles apart. Engineers went out with a receiver on a truck, trying to find a place where they could get interference—being in two of these stations at once. They didn't find it. In fact they got down to a space of two *feet*, that outside this space they would get one Troy or Albany or Schenectady—depending on which direction they moved the truck, while inside this small area the program would fall back and forth from one station to another.

TWO TO FOUR HORIZONS

In the ultra short wave, Frequency Modulation radio acts like light, and acts much like television as regards the range of the transmitters. Given enough power and a high antenna, Frequency Modulation stations seem to have a fairly reliable range up to two horizons and a possible service range (to listeners not located behind buildings or mountains or in valleys) up to four horizons. Height of the receiving antenna is important, as well as the height of the broadcasting antenna. This distance limitation is the one limitation to good Frequency Modulation broadcasting. It will be necessary to erect transmitters in very large population centers before we can all be assured of this new and better kind of reception.

On the other hand, within its service range a Frequency Modulation station gives *reliable* reception, day or night, even through thunder storms. Listeners located at a distance from the city but within range of its FM transmitter will probably get better and quieter reception than they would from an AM transmitter in that same city. Listeners located beyond the range of the FM transmitter will, of course, have to rely on the AM station the same as heretofore. High power cleared channel AM stations will probably always be needed, as will the international short wave AM stations. For that reason the system proposed to the Communications Commission by the FM Broadcasters, Inc. is a compromise of AM and FM stations whereby the cleared channels or the regular broadcast band will be reserved for long distance and rural coverage, and FM channels will be used for reliable local service.

FM's ability to bring in noise-free reception despite powerful manmade or natural static, is shown in the test set up at NY World's Fair. Interference source—million-volt arc; reception—undisturbed!

SERVICE—KEY TO GREATER

Volume and Price! Magic words in the philosophy of the radio man. Now make way for a new Formula—Volume and SERVICE!—with a simple but far-reaching distinction:

Where you find low price, you do not always find volume. But, with rare exceptions, wherever you find service running into sizable figures, you put your finger on sizable radio-set sales.

EVERYBODY

Perhaps the outstanding observation of radio selling at the present time is the steadily tightening bond between service and sales—a trend that means much to every man in radio, from the large producer to the smallest retailer or serviceman.

You hear about the “merchandising palaces” and the “service shacks” in every radio market in the U.S. There are stories, too, about the buzz-buzz of fancy “radio laboratories” whose service specialists rule the roost and where the dealer next door is a dreary flop.

Anyway, the industry has *everybody* on its list of radio outlets. The list is a mile long for each city, and droves of radio men are counted as market factors.

There is no accident—no paradox—in the fact that service volume and sales volume parallel each other closely, but the radio man who does not realize the extent of it, and the significance of it, is due for an awakening.

The fact of the matter is that uncertainty and confusion as to *Who Does the Servicing* has taken a terrific toll in faulty marketing plans and excessive cost of sales promotion. It has led to false expectations of volume from segments of the indus-

try that are incapable of producing volume.

An imaginary gulf between sales and service may have had some signs of realism years ago. And a high respect for the place of the independent serviceman is certainly not undeserved. But there is no reason why we should blind ourselves to a positive

For the first time in radio market research, actual field studies have been made of the complete radio trade activity in typical cities and towns. At an expense of several thousand dollars, RADIO TODAY sent its representatives afield to get a veritable census of lines carried, brand preferences, volume, service personnel, test equipment, etc.

The centers surveyed were Dayton, O., Springfield, Mass., Scranton, Pa., Greenfield, Mass. and Huntington, N. Y.

So important are the facts and trends revealed by these surveys that they will be continued in other cities. This article—the first in a series—gives a resume of, and comment upon, the findings in Dayton.

trend. Especially when it means so much to the dealer and serviceman as well as to the manufacturer and jobber.

WE SURVEY

RADIO TODAY sails into this problem as a wholesome but restless fact-finder. The magazine is spending thousands of dollars on personally conducted surveys, to outline the extent and success of various types of radio outlets.

While RADIO TODAY has been aware of a closer link between the functions of servicing and selling, these city-wide surveys were made to express the situation in facts and figures rather than in mooted generalities. Three of these cities were suggested by an advertising agency and marketing counselor. The others were chosen to get re-checks on surveys made two years ago by RADIO TODAY.

It was a week of interviews, questionnaires, adding machines, and in the case of some of the servicemen, side-trips into dark basements where stray dogs and odd furniture are parts of the picture.

NO RADIO MAN ESCAPED

In each city, every radio enterprise of every description was tracked down and checked up a la census, and the survey was aided by the customer lists



**SERVICE LINKED
CLOSER TO SALES**

Latest surveys show that merchandising volume goes hand in hand with available servicing

of leading manufacturers and jobbers. With these findings:

The great bulk of the service work is handled by three divisions of the trade as follows:

- 1—The larger set dealers who operate their own service departments.
- 2—The larger service stations that carry receivers in stock and are, in reality, DEALERS.
- 3—The limited number of independent servicemen who have reached volume proportions.

Those three groups are the largest customers of the manufacturer and his jobber. Sets, parts, test equipment, sound—all have the bulk of their volume concentrated in these groups.

What remains of the local business can hardly justify the label "volume." This implies no disparagement of the many smaller retailers and servicemen who, after all, are an essential part of the radio structure if complete distribution is ever to be a fact. But the small volume that is left emphasizes two things: first, their difficulty in attaining any real size (difficulty in actually making a living) and, second, the fallacy of the manufacturer in having any expectation of volume from this quarter.

VOLUME GUIDE

Possibly the fact of this concentration in volume will become a guide post to both dealer and manufacturer. Certainly there are lessons to be learned from it. Whether it is due to the natural economics of radio, to superior strategy in selling or to other factors, is beside the point. The big outlets have proved themselves to be better merchandisers, with lower unit selling costs, with the ability to adapt themselves to low unit sales, and, most important of all, a great advantage in contacts with the public.

"Contact" may be one solution of the problem and "service" may be the medium. There is no surer way to lose business than to sell a man a radio set and then force him to look elsewhere for service. It cannot be charged against the big fellows that they look upon service as the so-called necessary evil. They know it to be a business builder and it is not unlikely that they will hold tight to the advantage they now have.

aration for frequency modulation, television, and other developments in the offing.

It just happens that the qualities of the new radio merchandise put it definitely in the higher priced class. Radio's new contributions to the home will not be sold for chicken feed. This means that even more sales will be made on time payments, and that more attention must be given to servicing during the paying period.

RADIO'S VITAL STATISTICS IN DAYTON

Retail sales and/or service establishments, listed in directories, mailing services, manufacturers' and jobbers' lists, etc.	137
Verified as Unknown, Out of Business, Radio Discontinued, Dual Names, etc.*	47
Active radio establishments, all kinds, retail only	90
Dealers	68
Dealers with own service departments and Service stores carrying sets in stock	44
Independent service men, full or part time	22
Service men employed by dealers and service stores	73

* . . . Out of radio, 12; out of business, 7; using dual names, 6; using P. O. box only, 1; no such address, 1; unknown at address given, unknown to jobbers, no phone, 20.

Will the smaller outlet regain this advantage? Or has he been a bit discouraged with service during the reign of the midget? Every fact that has come out of the recent surveys in half a dozen cities shows the danger of permitting any gulf between the function of sales and service. And this danger is as great among the small outlets as among the large ones. While raising the danger sign, these surveys have pointed to opportunities and reasons for tying the two closer together by the serviceman as well as the dealer.

Not only is it necessary today but it is of increasing importance in prep-

The immediate future, then, presents an even brighter outlook for the sales-and-service store, which is already a winner. This kind of outlet has established itself at a happy moment, and therefore should be awarded the key place in the whole set-up.

The moral of all this is plain: Dealers must not underestimate the importance of an adequate service closely linked to sales. Alert servicemen need no such prodding. They are already tying sales into service, carrying receivers in stock—and selling them! Many are rated as really big outlets.

WHO SERVICES RADIO IN DAYTON, OHIO?



PORTABLE PARADE

Improved models ready for their biggest sales season.



Philco 3-power portables

★ Models 84T and 85T, of Philco's new line. Battery, AC-DC, 5-tubes, built-in loop aerial. Model 84T has plastic bezel and grille airplane fabric and Buffalo grained case, \$29.95. 85T (shown) has "on and off flag," ostrich grained case with cowhide leather trim, \$39.95. Philco Radio & Television Corp., Tioga & C Sts., Philadelphia, Pa.—RADIO TODAY.



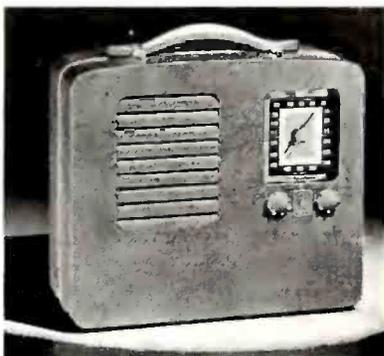
Admiral model 34F5

★ Admiral portables includes model 34-F5, 5-tube, AC-DC, battery superhet with tuning range of 540 to 1550 kc. P.M. dynamic speaker. Escutcheon combines speaker grille and tone chamber. Brown leatherette cabinet, leather carrying handle. \$22.95. Similar model, 35-G6, with front cover lists, \$29.95. Continental Radio & Television Corp., 3800 Cortland St., Chicago, Ill.—RADIO TODAY.

Fada Model PD28

★ Three-way portable, 5-tube superhet. 5 in. PM dynamic speaker, built-in Fa-da-scope loop antenna. Luggage type case of simulated leather, natural pigskin edging, genuine leather handle. \$29.95. Fada Radio & Elec. Co., 30-20 Thomson Ave., Long Island City, N. Y.—RADIO TODAY.

A good-looking companion is this lightweight, compact, 5-tube all-power portable model 213-P, made by Sentinel Radio Corp., Evanston, Ill. It has a 4 in. P.M. dynamic speaker.



Emerson model 338

★ Emerson 3-way luggage type portable, one of new line of four models, has tan Old English grained simulated leather. Features "Inner-Ceptor" loop antenna, miracle tone chamber, 5 in. P.M. dynamic speaker, tell-tale signal, and automatic power shift. \$24.95. Emerson Radio & Phono. Co., 111 8th Ave., New York, N. Y.—RADIO TODAY.



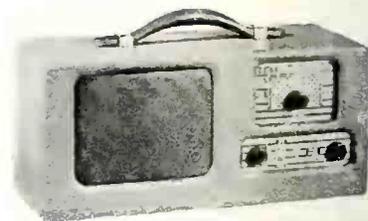
Namco portable

★ One of 3 portables in the new Namco line of radios, Model D-112, 3-way portable with closed-front case, removable cover. Solid brass lock and hardware, Burma-brown simulated grain leather. 5-tube superhet, with 5 in. magnet PM speaker. Self-contained batteries, 110/125 v. 40/60 cycles AC or DC. \$32.50. Namco Mfg. Co., Inc., 142 W. 26th St., New York, N. Y.—RADIO TODAY.



Andrea portable

★ Model 6G61, 6-tube, three-way Universal portable, superheterodyne circuit. Available in brown striped airplane or alligator fabric. Self-contained loop antenna. A. V. C., automatic power changeover. \$29.95. Andrea Radio Corp., 48-20 48th Ave., Woodside, N. Y.—RADIO TODAY.

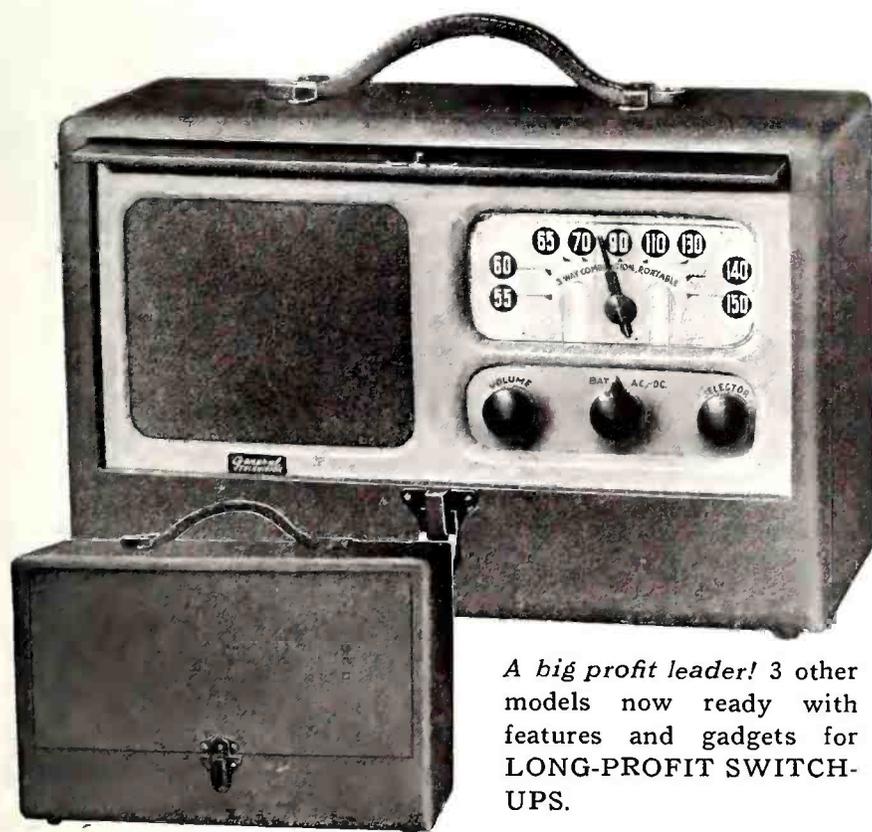


Setchell-Carlson 4-way

★ "66," a 4-way portable, self-powered for outings, 6-8 volts for car, and 110 v. AC-DC. Uses 5 or 10 No. 2 flashlight batteries. Has 3-gang tuning condenser, tuned R.F. stage, 5 in. P.M. dynamic speaker, loop antenna, 5 tubes. Two-tone pig-grain leatherette. Setchell-Carlson, Inc., 2233 University Ave., St. Paul, Minn.—RADIO TODAY.



BEAUTIFUL 5-TUBE SUPER "PUSH-BACK" COVER



A big profit leader! 3 other models now ready with features and gadgets for LONG-PROFIT SWITCH-UPS.

3-WAY PORTABLE AC-DC BATTERY

Just turn it on and it plays . . . anywhere, anytime. No aerial or ground needed.

TWO-TONE CABINET

of handsome Brown Russet simulated leather, with instrument panel of contrasting Beige-Tan. And the price?

\$19⁹⁵

Complete with standard batteries

With A Whacking Discount That Gives You A Real Profit

Wire or Write for Sample TO-DAY.

We Invite Inquiries Concerning the Building of Contract Sets

Our highly-skilled, "geared for action" organization has the answer to your problem, if you want special-brand merchandise for premiums, or for any purpose whatsoever. Our engineering and sales staff will sense what you require and give you quick service. Consult us.

GENERAL TELEVISION & RADIO CORPORATION

511 S. SANGAMON ST.

CHICAGO, ILL.

RECORDERS SPIN

NEW PROFIT PATTERN



Voice recordings were offered free when this smart store staged its opening. Shown here is just one section of American Music Co., Los Angeles, where radio and instantaneous recording are alertly linked for more traffic and more sales.

In a hard-boiled estimate of the retail business to be done in the instantaneous recorder field this summer, radio men have summed it all up by saying:

"The season will be full of political speeches, before and after the national political conventions, and many of the stumpers will need recorders and a supply of blank records. Dozens of sound trucks will need special records to play.

"Another thing—the movie camera fans will shoot more reels this summer than ever before. A big army of them will be needing special recordings to play with their projected pictures.

"Also, the wedding season is here, and in many cases the ceremonies will be recorded, with music and all.

"Business ought to be good, too, around the summer schools this year. The use of instantaneous recorders in the voice-training departments is particularly important when the term is short. Students need all the advantages when they have to crowd a lot of training into a few weeks."

SURE FIRE

All these factors give the recorder business a No. 1 send-off for the weeks to come; the excellent volume to be done should be very welcome to radio dealers in the summer period. But there are additional developments which help, too.

Since the time when manufacturers first began to feature the handsome cabinet-style recorder consoles in their lines, thousands of these instruments have been sold. Obviously, all the buy-

ers will be coming again and again to radio stores for blank discs and accessories. A lot of buying habits are just now being formed, and thus the summer season becomes a specially important time for retailers to establish themselves as recording headquarters.

PROMOTION STEPS

Dealers who never before thought of getting into the recording business are stocking blanks and needles to handle this trade, and are now face to face with concrete evidence of the popular acceptance of home recording.

Further, it happens that the nature of this merchandise gives it a self-publicizing quality. In the majority of cases where recordings are made, they are made for the benefit of a *group* of people, and the records get into a number of hands. By this time, the total public appreciation of special recordings is a large scale affair.

To fit into the summer field of recorder sales are a number of ideas suggested as appropriate for dealers.

A good way to get political groups interested in using recorded speeches is to play a sample. The idea is to have something very tangible to demonstrate, and sometimes speakers get intensely interested in records made by the opposition.

As for the records which are made and sold in connection with home movies, a lot of this business depends upon cooperation with the shops where the camera equipment is sold. Working with these stores, dealers can get their record blanks displayed along

with projectors and cameras, and can loan their finished records to the camera men to use in demonstrations when movies are actually run off in stores.

A list of the local owners of movie cameras may also be secured by working with camera outlets, the names to be the subjects of direct mailings and phone calls by the radio man.

For the dealers who want to try making recordings of marriage ceremonies, their leads can come mostly from the society pages of the newspapers. Dignified personal letters to the people involved will help to line up these prospects, and to convince them that the recording is *not* a stunt, but a fashionable practice.

In selling school authorities on the idea of using recording machines in the speech department in the summer sessions, it is again important to have something to demonstrate. "Before" and "after" records can be used to demonstrate progress during the training periods, and these can be effectively supplemented by testimonials from other school authorities.

In conclusion, it's plain to see that the summer prospects for this merchandise add up to a fine total; a great many buyers will respond heartily to a little action on the part of dealers.

Dealer Uses Recorder In Birthday Stunt

A good job on publicizing special recordings and recording equipment is seen in the efforts of I. M. Irving, local radio dealer who runs the North Eastern Radio Co. Mr. Irving worked with the Rotary Club in a stunt which made the entire membership conscious of this service and this merchandise.

The Rotarians in Scranton make a practice of celebrating the birthdays of the members. When the birthday of the president came along, he was ill, and could not attend the meeting which was to honor him. Mr. Irving suggested that the Club make a special record of greetings from the members.

The Rotarian chief was so pleased with the record, and the members so delighted with the effectiveness of the greeting, that the incident proved to be of great value to the North Eastern Radio Co. Mr. Irving believes that his recorder and his blank records will certainly come in for further use by the townspeople.



RECORDERS ARE SELLING!

THE SMASH HIT TODAY IS THE

Federal RECORDING RADIO

2 AMAZING HOME MODELS



The **CONSOLE**

Here they are—two of the most thrilling, versatile, actually amazing packages of home entertainment that ever appeared on the radio dealer's floor. They're a veritable bomb of sales excitement wherever shown.

"The thrill of hearing your own voice come back to you—talking or singing! The voices of your children, relatives or friends... baby's first word...

Johnny's first cornet solo..." Never have you had an instrument to sell that will literally panic the prospect's "must have" mood as this one feature of the Federal Recording Radio will do.

Add to this the ability to make your own record library from radio programs,—plus all that the finest 9-tube radio has to give,—plus a phonograph of supreme reproducing quality,—plus a home broadcaster, amplifying music or voice at home, at parties, at meetings,—and all this at a price in line with standard radio-phonograph combinations, and you have a presentation that you can't stop selling. This is the most sensational release in the history of the radio-phonograph business, destined to quickly revolutionize the entertainment equipment in millions of American homes.

With the console model, illustrated above, you can make permanent, lasting recordings (on 6, 6½, 8, 10 or 11-inch disks) of any radio programs or anything spoken, sung or played into the sensitive microphone. You can record from the air and over the microphone simultaneously. Recordings can be played back immediately. The latest development in cutting mechanism and a special microphone pre-amplifier stage gives exceptional microphone sensitivity. The console has convenient push-buttons for easy control of radio-phonograph, home broadcasting, microphone and off-the-air recording. Has high fidelity, 9-tube radio receiver with push-button tuning and full-size, 12-inch speaker, special equalized output and pickup circuits and push-pull output tubes, assuring the finest in short wave and domestic reception. Phonograph gives perfect reproduction of records up to 12-inch with lid closed. The efficient home broadcaster multiplies its importance as its many uses are considered. The cabinet is beautiful hand-rubbed walnut finish. Desk stand, super-sensitive microphone and cord.

The Popular **TABLE MODEL**

The table model, right, has the recording, radio, phonograph and home broadcaster features of the console, cuts records in the same sizes and will play up to 12-inch records with lid closed. Both radio and phonograph give the very finest in reception and playback, the cabinet being ample size for full bass response. Beautiful hand-rubbed walnut finish. The Federal Recording Radio Table Model is priced for popular sale and has already aroused amazing reception wherever shown.



2 MODELS FOR PROFESSIONAL AND SCHOOL USE

FEDERAL RECORDERS FOR EVERY PURPOSE

The Symphonic Model Federal Recorder, designed for professional use, incorporates many new and exclusive features. Records on all size disks up to 16-inch. Overhead, fully adjustable cutting head. Speed-governor turntable. Records over microphone and radio simultaneously. Operates at 78 or 33½ RPM. Complete with dynamic microphone, floor stand and cord.

The Little Pro Federal Recorder is the ideal, moderately-priced, portable machine. Makes records up to 12-inch. Has two speeds, overhead, fully adjustable cutting head, steel alloy turntable, and will record voice, music, and radio programs simultaneously. Complete with high grade crystal microphone, desk stand and cord.



Write at Once for Complete Details of the Federal Dealership and Name of Your Nearest Distributor

50 West 57th Street **FEDERAL RECORDER COMPANY, INC.** New York, New York

Dept. 5111

THE RECORD MONTH

The Sales Angle of National Music Week

Contacts made by dealers during National Music Week, May 5 to 12, with musical leaders in their areas, will now be good prospects for classical records and albums, radio-phonograph combinations, furniture radio, and special recordings.

Letters and phone calls to new acquaintances made during the celebration, such as local musical committees, composers, instructors, church leaders, school authorities, and civic officials, will now be appropriate. Names used in local newspaper stories on the Week should be carefully checked by retailers.

As a rule, these people are the ones most seriously interested in good music, and will be willing to pay higher prices for better merchandise.

Combos Cited as Summer Stimulant

Home entertainment habits are being changed by radio-phonograph combinations, declares L. M. Sandwick, sales manager for the Electro-Acoustic Products Division of Magnavox, Ft. Wayne, Ind. After an extensive trip among dealers in the central and southwestern parts of the U. S., Mr. Sandwick declared that the listeners' interest in programs of their own taste and choosing had accounted

for a spurt in dealer sales during summer.

"Unusual activity by Magnavox dealers indicates summer sales far greater than expected, and these retailers thus get relief from any summer slump that might occur in radio volume," was the report.

During the tour, it was arranged that Earle Goetze, Kansas City, Mo., and J. T. Neislar, Dallas, Tex., are to represent Magnavox in their areas.

Dealer Features Bar For Records

One of the most spectacular advertisements for records in the city of Scranton, Pa., is the vertical, pillar-size sign in the disc department of Scranton Dry Goods Co., which says "RECORD BAR." Manager Williams of the firm's radio-appliance department has installed a record bar in this lively section of the store, and he believes in announcing it, in 3-ft. letters.

Mr. Williams says that customers keep flocking in, now that the bar is doing its stuff. The practice is to keep a record playing constantly, between shoppers, so that all the people on the floor will be given a chance to get interested.

The bar is placed at the corner of the radio department, with consoles displayed neatly at each end. It is finished with a cheerful color which contrasts pleasantly with other store

Wax Worth Watching

CONNIE BOSWELL with orchestra singing Never Took a Lesson in My Life—Decca 3101.

TOMMY DORSEY and his orchestra playing Imagination with VR by Frank Sinatra—Victor 26581.

THE CHARIOTEERS with orchestra singing The Gaucho Serenade—Columbia 35424.

BING CROSBY with John Scott Trotter and orchestra singing I Dream of Jeanie With the Light Brown Hair—Decca 3098.

"FATS" WALLER and his Rhythm playing Cheatin' on Me with VR and piano by Mr. Waller—Bluebird B10658.

JOHNNY MESSNER and his orchestra playing Little Curly Hair in a High Chair with vocal by Mr. Messner and Johnny, Jr.—Varsity 8238.

JAN GARBER and his orchestra playing It Happened in Kahala from "It's a Date" with VR—Varsity 8224.

FRANKIE MASTERS and his orchestra playing The Woodpecker Song with VC by Marion Francis and The Masters Voices—Vocalion 5443.

JAN PEECEE with orchestra singing Without a Song—Royale 1873.

AL GOODMAN and his orchestra playing eight waltzes by Johann Strauss—Columbia Album C13.

GLENN GRAY and his Casa Loma Orchestra playing Sierra Sue with VC by Kenny Sargent—Decca 3122.

OZZIE NELSON and his orchestra playing Alice Blue Gown with VR by Rose Anne Stevens—Bluebird B10659.

effects, and offers customers complete convenience with its several listening posts. Store reports are that the fixture is a sales tonic.

The bar is the product of A. Bitter Construction Corp., 27-01 Bridge Plaza North, Long Island City, N. Y.

Prizes for Pictures of Record Libraries

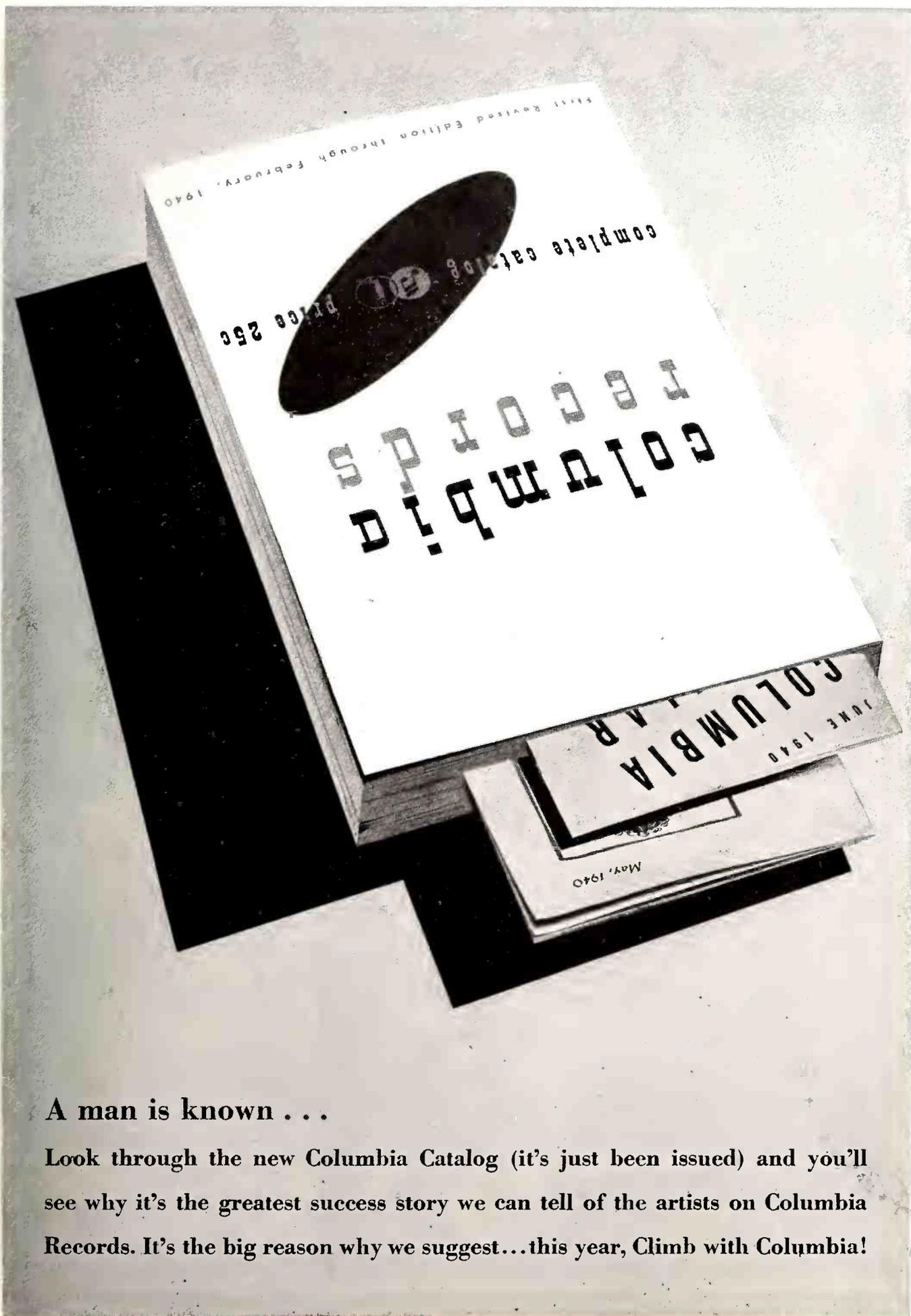
A contest with prizes amounting to \$500 in records has been announced by RCA Victor for the best photographs of home record libraries. The news was of special interest because of the fact that many record dealers have camera departments, and can create extra interest in record cabinets, the discs themselves, and in cameras and accessories.

First prize is \$100 in records; second, \$75 worth of records; third, \$25 worth of records; followed by ten prizes of a choice of a five-pocket album, or five single records, and 100 prizes of one record each.

Sponsors said that qualifying entrants need not have large, elaborate collections, nor submit professional photographs. "A good, clear snapshot of a handful of prized selections, as stored for normal usage, will serve. Awards will be made solely on the basis of the picture and the attractiveness of the library itself."



A brand new idea for effective display of children's records, shown with Helen Gunnis in her record shop in Milwaukee. Colorful packages help to sell discs.



A man is known . . .

Look through the new Columbia Catalog (it's just been issued) and you'll see why it's the greatest success story we can tell of the artists on Columbia Records. It's the big reason why we suggest...this year, Climb with Columbia!

TELEVISION

100 Tele Sets Now Sold Weekly in N. Y.

RADIO TODAY has just completed a survey of the N. Y. metropolitan area to find out how many television sets are now being sold by radio dealers in New York and vicinity, and also what number of such sets may be expected to move in response to public demand as soon as the Federal Communications Commission lifts its present ban on television commercialization.

Our census of dealers and manufacturers doing business in the New York City area indicates that without any advertising or promotion at least one hundred television sets are now being sold each week as a result of the public's demand for television and despite the FCC's recent cautionary statements regarding television.

At first, upon the FCC chairman's outburst against television, television-set sales dropped off to ten sets a week. But as rapidly as the public discovered that entertaining television pictures were still on the air, people resumed buying sets. Such sales have now again reached a definite average of 100 sets weekly, from RADIO TODAY'S survey just completed.

EXPECT 500 WEEKLY

Dealers tell us that as soon as full-commercial television is available, with CBS joining NBC on the television channels, they expect to increase their present sales fivefold; that is, to be selling a total of 500 television sets a week in the New York metropolitan area.

This represents 25,000 television-set sales a year unleashed immediately in the N. Y. region, as soon as FCC gives its long-delayed authorization. With Boston, Hartford, Philadelphia, Schenectady and Washington linked for television service, the number will at once increase to 50,000 yearly, representing sales of \$15,000,000 available for employment and payrolls, but all now held up awaiting FCC "go-ahead."

GE's Relay

The first practical long-distance television relay system in the world, which has been in operation for several weeks between New York City and television station W2XB of the General Electric Company at Schenectady, N. Y., was fully described by Dr. W. R. G. Baker, manager of the company's radio-television activities, for the benefit of the half-million persons residing in the Albany-Troy-Schenectady area, which has just begun to be served by television and which will benefit from the first workable attempt at a "hook-up" ever made in this country.

NBC's television programs originating in New York City, atop the Empire State Building, are rebroadcast by the G-E transmitter located in the Helderberg mountains, 12 miles south of Schenectady. Advantage is taken of the fact that the Hudson River forms practically a trough through a mountain range, and that fairly high hills are available for the transmitter and the relay station.

The relay transmitter and receiver

TELEVISION DATES

- March 8, 1880—Underlying principles described
- April 15, 1931—NBC's Empire State tower transmitter begins operation
- April 30, 1939—Regular tele programs, NY City
- Jan. 15, 1940—FCC holds hearings on "limited commercial operation"
- Feb. 29, —FCC gives approval
- March 12, —NY dealers plan campaign
- March 20, —Public announcements, NY City
- March 23, —Chairman cancels approval
- April 2, —Chairman uses 125 stations to "explain", and promote television to nation-wide audience
- April 3, —Radio sales start falling off throughout U. S. due to fear of tele
- April 8 —Additional hearings on tele begins before FCC at Washington

are located about three miles south of the G-E television transmitter proper, on a peak 1800 feet above sea level. The receiving antenna consists of a double rhombic erected on four towers, each 150 feet in height, looking toward the Empire State Building, 129 miles to the South. The regular television transmitter is 1500 feet above sea level, and at this location a small receiving antenna looks back at a small transmitting antenna at the relay station.

Du Mont Granted NY Telecast License

A construction permit for a television broadcasting station in New York City has been granted by FCC to Allen B. Du Mont Labs., Inc., of Passaic, N. J. Transmitter and studios will be located on the top floor of the 42-story office building at 515 Madison Avenue.

The new Du Mont transmitter will operate on Television Channel 4, or the 78-84 mc. band, as a Class 2 television broadcaster for program research. It is planned to utilize the Du Mont flexible system of television, whereby changes in number of lines, number of frames and interlacing schemes can be confined to the transmitter, with the receivers automatically following any transmitted signal.

Du Mont's New York City transmitter will be in addition to the experimental transmitter W2XVT at Passaic, in operation for a year.



Television show in L. S. Ayres store, Indianapolis, Ind., by traveling television demonstration truck of Farnsworth Corporation.

GENERAL ELECTRIC **FIRST** IN FREQUENCY MODULATION



MODEL HM-136

A 4-band radio that tunes in Standard American Broadcasts, Foreign and Domestic Short-wave Stations, as well as the new Frequency-Modulation Broadcasts.

General Electric was *the first* manufacturer to foster Frequency-Modulation Broadcasting—*the first* to introduce Frequency-Modulation Receivers—one of the pioneers to offer a full line of Frequency-Modulation Transmitters!

Follow the leader! Keep up to date! Find out what General Electric is doing to promote this new type of broadcasting and reception.

RADIO & TELEVISION DEPT.
BRIDGEPORT, CONN.

Special F-M Receivers



← **MODEL HM-85**
Tuning Range: Frequency-Modulation—39 to 44 megacycles. Dynapower Speaker. Exquisite Cabinet.

MODEL HM-80
Dynapower Speaker—Slide-rule, Full-vision Dial—Smartly Styled Cabinet. Tuning Range: Frequency-Modulation—39 to 44 megacycles.



THE NEW G-E FREQUENCY-MODULATION TRANSMITTERS

Fine new models—with output ratings of from 250 watts to 50 kilowatts! This outstanding equipment—engineered by G.E.—hits a new high in high-fidelity broadcasting. Distortion is less than 1½ per cent from 30 to 7,500 cycles and less than 3 per cent up to 15,000 cycles! Investigate! The demand for General Electric F-M equipment is growing rapidly.



LOOK TO GENERAL ELECTRIC FOR FREQUENCY-MODULATION! TELEVISION! RADIO!

GENERAL ELECTRIC

"PARTS-JOBBER'S JOB"

Maintaining standards and principles, coupled with energetic selling, is way Bill Osborne defines it.

The WRO Laboratories are located in Croton-on-Hudson, N. Y., with a branch outlet in Middletown, N. Y.. Only 35 miles from New York City, proprietor Bill Osborne is close enough to feel the pressure of distributors from the metropolitan area. And covering a territory of nearly 4300 square miles, he bucks plenty of competition from other sections. Without going into details, you can readily understand the various difficulties accompanying Osborne's competition; for parts-jobber readers are all acquainted with the natural difficulties of even the best-situated distributor. Such difficulties, however, have been met—and to a large extent overcome—by Bill's policy of maintaining the standards which he believes must eventually lead the radio parts business to the land of promise. Let's get down to facts.

Prompt delivery to trade and adequate stock on wheels, are two principles in WRO's success.



Naturally, over a period of years, WRO Laboratories has become a traveling billboard for the 65 manufacturers represented. And because Bill has made it part of the business' natural function, WRO has come to mean Service to new customers as well as old. Another feature of WRO is dependable products. . . Bill's own attic is crammed with vacuum-tube voltmeters, oscillographs, bridges, decade boxes, thermocouple meters—and he uses them. Before selling a product, Bill sells it to himself, giving it the acid test. The "returned parts racket" does not flourish at WRO.

ANTI-"BASEBALL"

To prevent—as far as possible—the expense and red tape of replacing units, and for other obvious reasons, WRO concentrates on as few lines as possible. These lines, generally speaking, are the most widely advertised, the most progressive, the most stable. Duplicate lines are handled only for the benefit of a few customers.

Manufacturers who "baseball" their items, to use Bill's favorite term for unscrupulous business practices, are assured of a sharp rebuff from Osborne. To illustrate: WRO stocked an item after examination showed it to be the best available in that particular line. One of the most expensive on the market, Osborne was unable to sell it to a number of his customers until they had suffered heavily from the return of an inferior line they had stocked. The returned items came thick and fast. Osborne's sales of his more expensive item, to one dealer in particular, skyrocketed to a high plateau and stayed there for several months. His customers were highly pleased. Then sales began to fall off sharply. Investigation showed that another distributor was underselling, and that the manufacturer was doing nothing to prevent the "baseballing." Osborne went to the mat with the manufacturer. He made it perfectly clear that he wanted to handle that particular line exclusively—but to make it profitable for him, the manufacturer must make the territory equally exclusive. When the manufacturer saw that there was no room for compromise, WRO was given the line, to the mutual profit of manufacturer and distributor. The battle was won by *not* attempting to undersell the chiseler.

Today that same manufacturer issues bulletins to its jobbers, upholding the same principle by which WRO came out on top! The "baseballing" must

stop if fair business practices and fair profits are to win. The determining factor rests as much with the distributor as with the manufacturer.

WRO sees no advantage in spreading its sales efforts thinly over too large a number of items. But to keep the profit level at about 20 per cent, and the volume of business increasing, the growing needs of the serviceman are kept in mind. Thus, a jobber can meet the serviceman's needs for tools through WRO. These lines are not pushed, nor listed in the catalog. But WRO customers know they do not have to search for another distributor just because a customer wants to make a purchase outside the strict limits of radio parts.

NEW FIELDS

Keeping in touch with current trends has meant, to Bill, purchasing a television set and also dabbling in FM. Anyone who happens to be in the WRO Laboratories while a telecast is on is invited to watch it. "Television is here to stay, whether some people like it or not," says Bill, "and I'm not hurting my future business by helping to build interest in it." So far there has been no call for television parts, but WRO has stocked dipole antennas since the announcement of regular broadcast from the Empire State Building. The advent of commercially profitable FM saw FM kits being delivered to WRO. Wherever there is a clean profit, WRO customers find Osborne ready to supply them.

Total value of parts on hand is roughly \$10,000. This includes shelf stock and truck stock at both Croton and Middletown. When this figure changes, it will increase, further eliminating back-ordering. Average value of stock in the Croton truck is \$300. This stock level is maintained at all times; items sold during a trip are replaced religiously before the next route is covered. That means frequent check-up on all fast-moving items; it also means the continuation of that type of dependable service which makes friends of customers and boosters of friends. It keeps the lines which he carries in first place wherever Bill makes calls.

"What do you do in the way of advertising, Bill?"

"Nothing much," was the reply, but then Bill remembered that there were several items charged to advertising on the WRO book. The forthcoming WRO catalog is the biggest job to date.

(Continued on page 64)

when
batters
step up
to the
plate



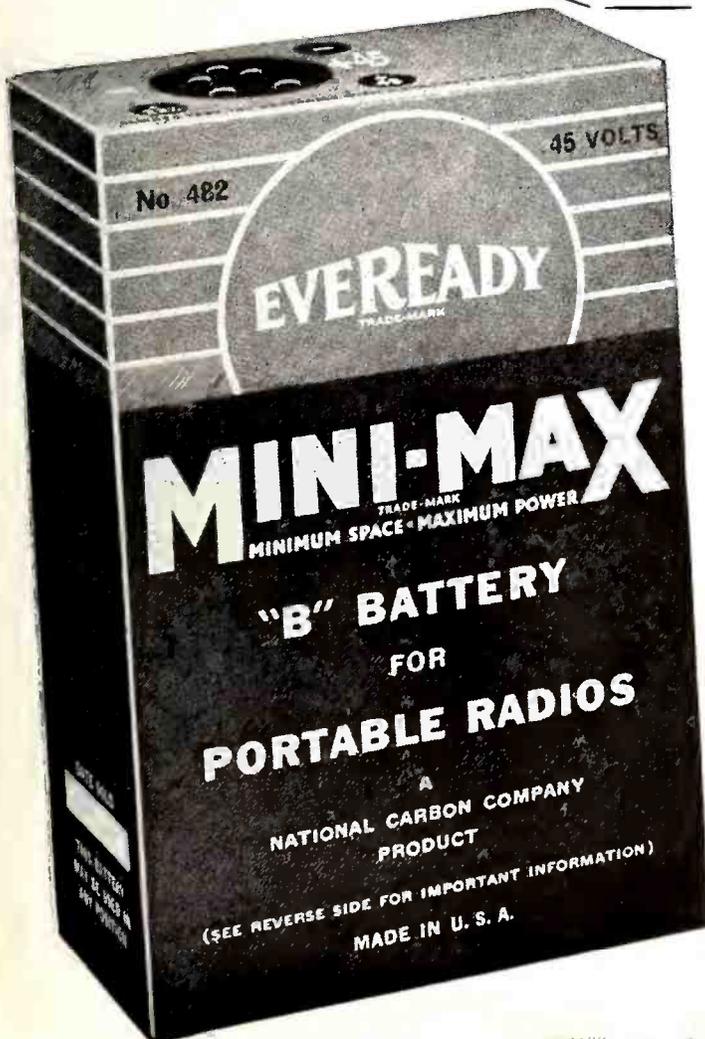
...BATTERY CUSTOMERS
STEP UP TO
YOUR COUNTER!

Baseball season is portable radio season... when portable sets start working overtime—and replacement buying of batteries swings into high.

To get your share of this replacement demand be ready to stock and push the sensational "Eveready" "Mini-Max" "B" battery—the battery that makes portable sets really portable!

The "Eveready" "Mini-Max" "B" battery has set a brand new standard for portable "B" battery size and performance. Combining minimum size and weight with maximum power it delivers twice the service life of any other "B" battery of equal size. That's why approximately 30 leading manufacturers have designed portable sets using this remarkable battery.

Be sure you have enough "Eveready" "Mini-Max" "B" batteries on hand to take care of demand that's starting now. Order today for extra profits tomorrow!



These leading radio manufacturers have designed sets to use the "Eveready" "Mini-Max" "B" battery—

- | | |
|--------------------|--------------------|
| ARVIN | MOTOROLA |
| AUTOMATIC | NAMCO |
| COLONIAL | PACKARD BELL |
| CROSLY | PILOT |
| DETROLA | RCA |
| DEWALD | SENTINEL |
| EMERSON | SONORA |
| FADA | SPARTON |
| FARNSWORTH | STEWART WARNER |
| GAROD | STROMBERG CARLSON |
| GENERAL ELECTRIC | TELEX |
| GENERAL TELEVISION | TRAV-LER |
| GILFILLAN | TROY |
| HOWARD | WARWICK |
| KADETTE | WESTINGHOUSE |
| MAJESTIC | WILCOX-GAY |
| MISSION BELL | <i>And Others!</i> |

NATIONAL CARBON COMPANY, INC.

General Offices: New York, N. Y.

Branches: Chicago and San Francisco

Unit of Union Carbide and Carbon Corporation



The words "Eveready" and "Mini-Max" are registered trade-marks identifying products of National Carbon Company, Inc.

NEW SETS



Magnavox amber mahogany

★ New amber mahogany finish on 3 of radio-phonograph models, the Belvedere, Berkeley, and Hepplewhite (illus.). Not a bleached treatment, but a distinctly shaded stain, brings out graining in mahogany. All 3 units have automatic record changers, and all-wave radios. Magnavox Co., Ft. Wayne, Ind.—RADIO TODAY.



DeWald table models

★ No. 407, styled in 6 colors, \$9.95 for walnut finish, \$11.95 for other colors. Has 4 tubes, P.M. dynamic speaker, plastic cabinet. Standard and state police band. DeWald Radio Mfg. Corp., 436-440 Lafayette St., New York, N. Y.—RADIO TODAY.



Zenith table radio

★ Model 6D525, Zenith AC-DC table model with 6-tubes, has Wave-magnet (rotatable for direction) feature. This radio is one of 52 models in new 1941 line of table, chairside, console, combination, portable, farm radios, ranging in price from \$14.95 to \$250, 12 of which are table models, \$14.95 to \$69.95. Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.—RADIO TODAY.



Crosley Roamios

★ Five new auto radios, \$14.99 to \$34.95, for all makes of cars. Easily transferable. Push button

tuning. Four have 5-tubes and self-contained speaker. A-160, 6-tube, two-unit model, has speaker (available in 2 types) mounted separately. 8 in. speaker for cars without grilles. Crosley Corp., 1329 Arlington St., Cincinnati, Ohio.—RADIO TODAY.



Federal recorder-console

★ Combination radio-phonograph and home recorder, has 9 tubes, push-button tuning, 12 in. speaker. Phono plays records up to 12 in. with lid closed. Makes permanent recordings on 6, 6½, 8, 10 or 11 in. disks of radio programs or anything spoken, sung or played into the mike. Plays them back immediately. Also has home broadcaster feature. Walnut cabinet. Federal Recorder Co., Inc., 50 W. 57th St., New York, N. Y.—RADIO TODAY.



Music Master phonos

★ 2 models Music Master all-electric hi-fidelity phonographs, for AC or AC-DC. Table model, \$15.95, portable, \$18.95. AC-DC slightly higher. Music Master Mfg. Co., 508 South Dearborn St., Chicago, Ill.—RADIO TODAY.



Wireless record player, model JM-23, announced by General Electric Co., has non-directional radiating feature. Plays 10 and 12-inch records with lid closed. JM-4 is wired model.

"THE WINNING OF THE WEST"



CAPTAIN MERIWETHER LEWIS

The Tale that Took a Hundred Years to Tell!

In the year 1803, Captains Meriwether Lewis and William Clark with a small band of fearless followers, pushed far into the American Northwest. Theirs was an expedition of vital importance to the newly born United States. It was the first chapter in the American saga of the "Winning of the West." But it was a chapter that remained closed to Americans until 1903... a century later... when the complete journals of Lewis and Clark were discovered and published. Theirs was the tale that took a hundred years to tell!



CAPTAIN WILLIAM CLARK

The family of RCA would have given America a running account!

FROM the moment Lewis and Clark ventured into the unknown, NBC engineers and announcers would flash news of their progress out over the two great NBC broadcasting networks. Portable RCA broadcasting equipment would acquaint the public with the aims of the Expedition through the actual voices of its leaders. Forty-three foreign nations would hear of America's new claim directly via R. C. A. Communications, the world-wide radio message service of the Radio Corporation of America.



The antennae of ships in the loneliest oceans would snatch the news — thanks to another RCA service — Radiomarine. RCA Victor receivers would bring news about Lewis and Clark to listeners all over the world. Talking motion pictures would record their doings through the RCA Photophone Magic Voice of the Screen.

Service through sound and sight! That is... and will continue to be the duty and responsibility of the family of RCA to the people of America... and to you.



RADIO CORPORATION OF AMERICA RADIO CITY, N. Y.

RCA MANUFACTURING CO., INC.
RADIOMARINE CORPORATION OF AMERICA
NATIONAL BROADCASTING COMPANY
R. C. A. COMMUNICATIONS, INC.
RCA LABORATORIES
RCA INSTITUTES, INC.

For Summer Sales and Profits...

PHILCO



**Refrigerators
Air Conditioners
Auto Radios
Portables**

New, Advanced Design
PHILCO REFRIGERATOR

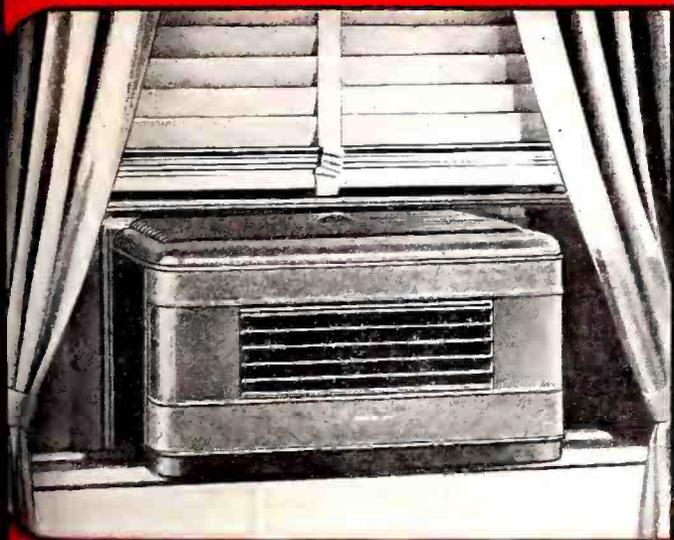
**The Fastest-Selling Quality
Refrigerator on the Market!**

Already, the sensational new 1940 Philco Refrigerator has become the quality leader in the refrigeration field, *selling in volume* at a higher price and a bigger profit to the dealer! The answer is **ADVANCED DESIGN** . . . that offers valuable, *extra services worth the money* to the buyer!

No more wasted space in the center of the refrigerator! Philco discards the old-fashioned freezing unit and gives you, instead, the Horizontal Evaporator and *separate, giant-size* Frozen Food Compartment. Selling features found in no other refrigerator at any price! Supported by the hardest-hitting promotion in refrigeration history! This is your greatest opportunity for refrigerator profits in 1940. Sell Philco and **SELL UP!**

Philco All Year 'Round Means Profit

HOME RADIO • PHONOGRAPHS • TELEVISION • AUTO RADIO • RADIO TUBES • PARTS • REFRIG



Amazing New Retail Business!
PHILCO-YORK AIR CONDITIONERS

The new, low-priced Philco-York Portable Air Conditioner for home and office opens a whole new field of profit opportunities! Gives you real, complete air conditioning in easy-to-handle, package merchandise. Easily, quickly installed . . . no plumbing . . . no wiring. Plugs into any electric socket. Practically every home and office is a prospect . . . there's a model to fit every need. **FULL PROFITS . . . no trade-ins!** Supported by strong advertising campaign!



Only Philco Gives You
SHORT-WAVE AUTO RADIO

New features bring amazing performance and convenience that make the new Philco the easiest-to-sell auto radio in the field.

Philco's amazing new SHORT-WAVE AUTO RADIO makes every car owner a prospect whether he has an auto radio or not! Tunes in foreign stations *direct*. Enables you to switch to American short-wave broadcasts when standard reception is difficult. New sales . . . new profit opportunities! *Only Philco has it!*



Selling Fast! New 1941 Line of
PHILCO PORTABLES

Smart new textures and color patterns . . . brand new performance features . . . new design that gives far greater portability. And what values! Cash in on the tremendous demand for Philco Portables. Get your share of summer profits in the amazing Philco Radio and Radio-Phonograph values your distributor is offering now!

All Year 'Round!

AS - AIR CONDITIONERS - DRY BATTERIES

**Mail
 Coupon
 NOW!**

PHILCO, Dept. 607
Tioga and C Streets, Philadelphia, Pa.
 Please tell me more about the Philco All Year 'Round profit opportunities. I am particularly interested in

- Philco Radios and Radio-Phonographs
- Philco Auto Radios
- Philco Refrigerators
- Philco-York Air Conditioners

NAME _____

STREET _____ COUNTY _____

CITY _____ STATE _____



For Summer Sales and Profits...

PHILCO



Refrigerators
Air Conditioners
Auto Radios
Portables

New, Advanced Design
PHILCO REFRIGERATOR

The Fastest-Selling Quality Refrigerator on the Market!

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Philco All Year 'Round Means Profits All Year 'Round!

HOME RADIO PHONOGRAPHS TELEVISION AUTO RADIO - RADIO TUNES PARTS - REFRIGERATORS AIR CONDITIONERS - GIFT BUYING



Amazing New Retail Business!
PHILCO-YORK AIR CONDITIONERS!

The new, low-priced Philco-York Portable Air Conditioner for home and office opens a whole new field of profit opportunities! Gives you real, complete air conditioning in easy-to-handle, package merchandise. Easily, quickly installed... no plumbing... no wiring. Plugs into any electric socket. Practically every home and office is a prospect... there's a model to fit every need. **FULL PROFITS... no trade-ins!** Supported by strong advertising campaign!



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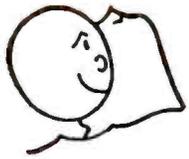
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- Philco Auto Radios
- Philco Refrigerators
- Philco-York Air Conditioners

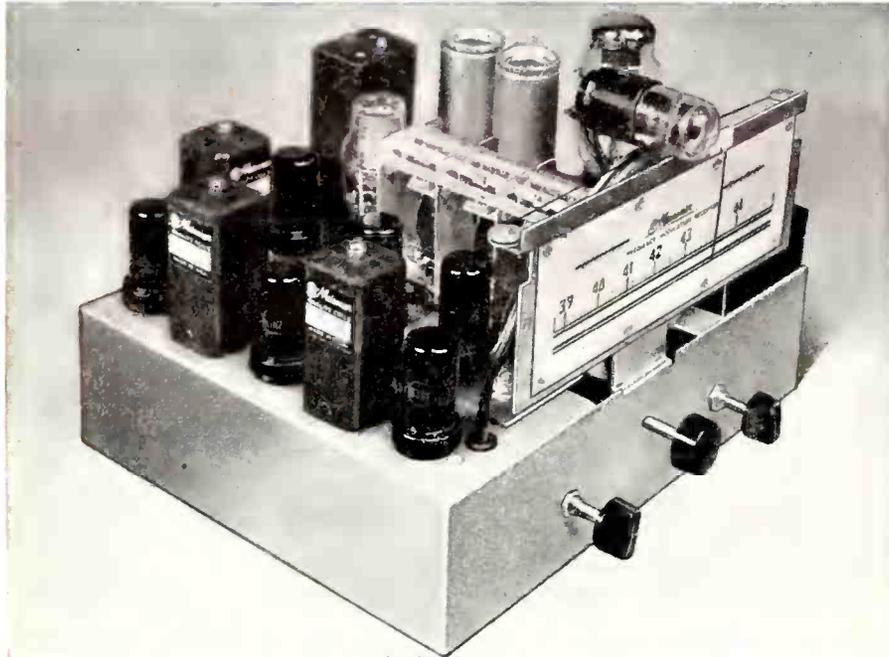
NAME _____
STREET _____ COUNTY _____
CITY _____ STATE _____



Have you stopped to **THINK** what **F-M** means to **YOU?**

and have you considered
the amazing Profit-Possibilities that are yours
with the New Meissner

FREQUENCY MODULATION RECEPTOR



It's easy to figure out—

It certainly doesn't require a lot of mental gymnastics to ascertain the obvious—the fact that Frequency Modulation is here—and here to stay!

The big question is—how soon are **YOU** going to start cashing in on the increasing demand by the music-loving public for noiseless, static-free reception? The stage is all set—new stations are being built all over the country—commercial licensing isn't far off—**AND**, the Meissner F-M Receptor is all ready to begin the first act!

Here's an opportunity you must not neglect—the first real chance to get in on the ground floor since the beginning of radio. The Meissner Receptor provides highest quality F-M reception on *any* radio—feeds the audio system of any good receiver. If a separate F-M receiver is desired—just add the simple audio system to the same chassis.

The Receptor is completely wired and tested—all ready to go (except tubes), with complete instructions for adding the audio system. Investigate the F-M possibilities in your territory **NOW!** See your Jobber at once or write for further details.

INSTRUCTION MANUAL

Get your copy of this big **NEW** 168-page book, "How to Build Radio Receivers". Contains added material on Frequency Modulation theory and design principles as well as complete instructions on the Receptor. See your Jobber or send 50c at once to the address below. Order it today!

COMPLETE CATALOG FREE

Meissner's entire line of receiver components and complete kits is described and illustrated in this big 48-page catalog. Over 600 items of vital interest to the serviceman and experimenter. Write for your free copy today. A postal card will do!

ADDRESS DEPT. T-5



NEW BOOKLETS

A new circular, giving the specifications, features and prices of Amplifier Co. of America's newest line of push-pull, direct-coupled amplifiers, is available to interested readers. Address 17 W. 20th St., New York, N. Y.

Crowe Name Plate & Mfg. Co., 3701 Ravenswood Ave., Chicago, Ill. has released an illustrated booklet, No. 240, giving descriptions and prices of components for receivers, transmitters, television, sound equipment and experimental work.

Copy of Shure Replacement Sales Plan with their Cardioid Microphone Campaign, is available. Address Shure Bros., 225 W. Huron St., Chicago. Includes list of prospects, where to find them, how to sell them, postcards to send them, sales manual to help sell, sound engineer's honor award and advertising in trade magazines.

New catalog of the Webster Electric Teletalk intercommunicators displays complete line, some in natural color. Full page diagram shows how a 57 station selective system may be arranged. Charts show number and type of units which may be interconnected. Webster Electric Co., Racine, Wis.

Spring 1940 Public Address catalog by Clarion features completely new line of mobile systems, recorders, school systems, microphones, speakers, intercommunicators, etc. Transformer Corp. of America, 69 Wooster St., New York, N. Y.

John Meck offers a booklet, entitled, "How to Match Speaker Systems," giving the solution to every day problems in layout and connection of speaker systems. Copies will be sent without charge by writing to John Meck Industries, Randolph at Elizabeth Sts., Chicago, Ill., mentioning this publication.

Specifications and prices of Atlas sound products including speakers, horns, baffles, P. A. systems, mike stands, connectors, etc. are given in new illustrated catalog, F-40. Atlas Sound Corp., 1443-51 39th St., Brooklyn, N. Y.

Erwood's new bulletin on sound equipment contains descriptions, applications, and prices of their P. A. systems and output and input accessories. Erwood Sound Equip. Co., 224 W. Huron St., Chicago, Ill.

Kenyon Quality Transformers is title of new complete catalog giving ratings of all communication transformers. Included is set of five useful graphs for working with power, decibels, impedance, and current. Kenyon Trans. Co., Inc., 840 Barry St., New York, N. Y.

Three new catalogs issued by Universal Microphone Co., Inglewood, Calif., cover microphones, reording machines and accessories, No. 165 displays recording and playback turntables.

PHILCO TO OFFER STOCK TO PUBLIC

(Continued from page 13)

bilities of \$4,480,932, with cash substantially in excess of current obligations.

Philco Corporation was organized on October 11, 1892, as "The Helios Electric Company" and manufactured electric arc lamps and, later, storage batteries. The name of the company was changed to Philadelphia Storage Battery Company on July 25, 1906. By 1920 battery sales volume amounted to \$4,000,000 a year.

Shortly after the introduction of radio in 1920, Philco began the production of storage batteries especially designed for radio receivers. In 1924 it produced a device called "socket power" which provided for the operation of radio sets from electric-light sockets. So rapidly did the demand for "socket power" units grow that by 1927 the company's sales reached \$15,400,000.

The company entered the radio-receiver business in 1928 and since 1931 has led the industry, in volume and number. Sales of radio receivers last year were the largest in the company's history. Approximately 14,000,000 Philco sets have been manufactured and sold.

National Radio Festival Planned

Dealers and servicemen will now have chances to display, demonstrate and to generally promote their products if they'll work with broadcast stations during National Radio Festival. This event is the entire radio industry's promotion drive to precede the "Listen Before You Vote" campaign. Dates are late May and early June, depending on local needs.

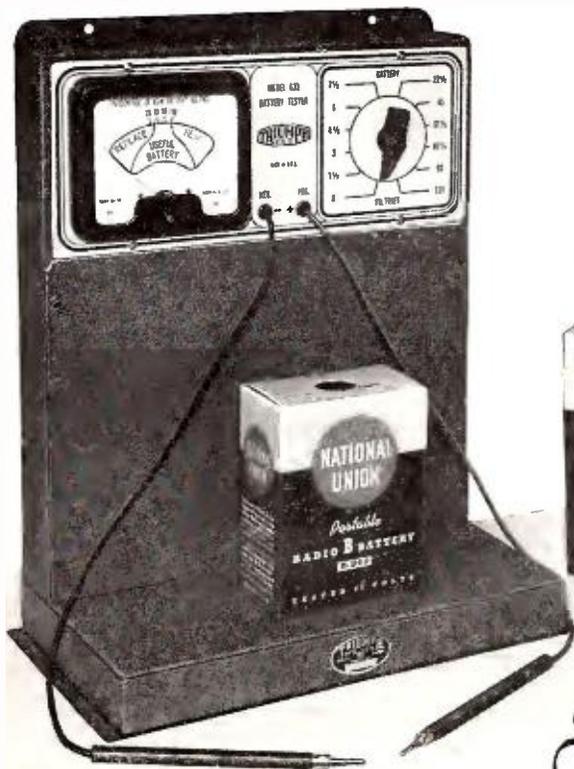
The main theme is a big radio salute to our masses of school children, with local programs and festivals galore, and RMA and NAB as sponsors. RSA is also a part of the radio front. Nearly a hundred stations are already into the Festival, and Arthur Stringer, campaign manager for the NAB-RMA groups, 1626 K St., N.W., Washington, D. C., says that the number of cities involved is the largest ever, for an industry campaign.

Auto Sales in New Gains

An increase of 23 per cent over last year has been chalked up by the auto industry, in its 1940 totals on factory sales of cars and trucks for the first quarter of the year. These statistics released by the Automobile Manufacturers Associations lend a cheerful aspect to the sales opportunities for the car radio dealer and service. Sales for the first three months of this year amounted to 1,310,234, and except for 1929, it was the best first quarter in history.

AND NOW

A BATTERY MERCHANDISER



Sells More Batteries
•
Lets Your Customer See

win trade from drug stores and filling stations

Only \$8.00 Deposit

- Set Switch for Voltage
- Read condition of Battery on percentage of useful life meter
- Made by TRIUMPH
- For Counter use or Can Be Mounted on Wall

Delivery made at once on \$8.00 deposit and order for \$10.00 worth of batteries, dealer prices. Deposit refunded on purchase of 430 points. All purchases of N.U. tubes, condensers and batteries count as points.

MAKE MORE MONEY WITH N.U. BATTERIES

Sold Exclusively to Radio Service Dealers

The N.U. line of radio replacement batteries has been developed exclusively for radio service specialists. All popular types are included. Batteries are attractively packaged in rugged boxes incorporating the standard N.U. color scheme—black and two shades of green.

N.U. Batteries are carefully manufactured from the finest materials obtainable and are fully guaranteed against defects in workmanship and materials. All types equipped with standard plugs for quick and easy replacement installation.

Thoroughly moisture proof for satisfactory and reliable service under all climatic conditions.

Install N.U. replacement batteries for more hours of reliable service and satisfied customers.

N.U. brings you a line of replacement batteries on which you can

make your full radio service profit. It is not necessary now for you to test sets and install batteries without adequate compensation for your time and knowledge.

N.U. has been identified with the radio service dealer and his problems since the beginning. You can definitely make more money handling N.U. products.

★
SEE YOUR DISTRIBUTOR OR SEND COUPON

NATIONAL UNION RADIO CORPORATION
57 State Street, Newark, N. J. RT-540

I am interested in your new Battery Merchandiser calling for only \$8.00 deposit. Please send more information.

Please have salesman call.

Name

Street Address

City State

NATIONAL UNION RADIO CORP.
57 STATE STREET NEWARK, N. J.

NEW MODELS

Latest Products for Summer Sales



Sentinel model 217-P

★ A 6-tube, ac-dc, battery super with tuned R. F. stage, built-in loop aerial. Detachable cover, inclined panel for easy tuning. Leather grained luggage case with snap key lock. Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.—RADIO TODAY.



RCA "Roto-Base"

★ Little Nipper model 46X23, with new RCA "Roto Base" feature, which acts like a turntable for entire set, obtaining maximum signal strength from Magic loop antenna, and greater tuning ease. RCA Mfg. Co., Camden, N. J.—RADIO TODAY.



Federal table model

★ Table model has recording, radio, phono and home broadcaster features. Plays up to 12 in. records with lid closed. Cut records in 6, 6½, 8, 10, or 11 in. disk sizes. Hand rubbed walnut finish cabinet. Federal Recorder Co., Inc., 50 W. 57th St., New York, N. Y.—RADIO TODAY.



Wabash record cabinets

★ New record album cabinets of genuine mahogany or walnut, in 2 sizes. 2-shelf type, holding sixteen 12-in. standard albums; cabinet 36 in. high. Commode end table style, 26 in. high, for six 12-in. albums. The Wabash Cabinet Co., Wabash, Ind.—RADIO TODAY.



Automatic Radio model 432

★ Table model phono-radio with 5-tube, superhet circuit and AC operation. Dynamic-speaker. Built-in antenna. A.V.C. Walnut cabinet. \$29.95. Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston, Mass.—RADIO TODAY.



Knight Commode model

★ Knight model A10773, 8-tube, mahogany veneer commode radio, with fluted doors opening to instrument panel. 2-wave-bands, 5.7 to 18.3 mc. and 540 to 1600 kc. Built-in Air Magnet, push-button tuning, slide rule dial, electric eye, television connection, A.V.C. and dynamic speaker. 110 v., 50-60 cycles, AC. Allied Radio Corp., 833 W. Jackson Blvd., Chicago, Ill.—RADIO TODAY.



Zenith furniture model

★ Four furniture models, \$89.95 to \$200 are included in the 1941 line. Model 8S588, an 8-tube radio-phono combination of mahogany Hepplewhite, features Wavemagnet, Radiorgan (to blend radio tone) and has automatic record changer and 3 bands. Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.—RADIO TODAY.



DeWald Recordomat

★ Table model, 908, one of 3 new units, \$119.95 to \$174.50, combines radio, phonograph, voice and music recorder, radio recorder and micro-



A sincere statement ... Sincerely made

When we announced, not very long ago, our new plans for a bigger and better Clarion Radio line . . . we knew of course, that the Clarion name had hosts of loyal friends . . . and still we were absolutely amazed at the response to our announcement.

From all parts of the country come enthusiastic comments from both jobbers and dealers . . . we are proud that many of them have already joined up under the Clarion banner.

We know that we have the right plan of operation for dealers and jobbers who want to conduct their businesses sanely, and profitably . . . who want to make money.

Our line of Clarion portables and farm sets is as fine as money and skill can combine to make it . . . yet the line is priced right for the customer. Why don't *you* write for our proposition? Maybe we have what you are looking for.



WARWICK MANUFACTURING CORP.
1700 W. WASHINGTON BLVD. • CHICAGO, ILL.



"Shot-in-the-Arm"
for
OFF-SEASON
SALES

WILCOX-GAY'S NEW RECORDIO Apartment Model

The Apartment Model is a new low-priced item in the Wilcox-Gay line. It has all of the dramatic features of the RECORDIO . . . radio, phonograph and recorder. The price opens a new market heretofore untouched. A genuine RECORDIO for less than a hundred dollars. That's real sales ammunition!!

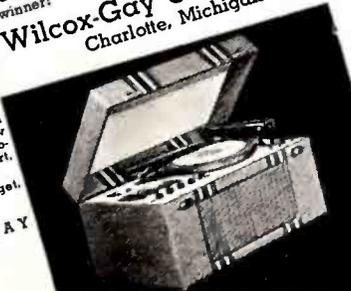
Again . . . Wilcox-Gay blazes new sales with a winner!

Wilcox-Gay Corporation
Charlotte, Michigan

RECORDIO

A "sure-fire" vacation item . . . America will soon turn to the open road . . . and they'll want this new RECORDIO. Complete with radio, phonograph and recorder and done in smart, durable luggage cover. It's new profits from the vacation budget.

ALWAYS WATCH
WILCOX-GAY



ANNOUNCING ★ HOME RECORDING DISC

HERE IT IS . . . A NON-INFLAMMABLE
PROFESSIONAL QUALITY DISC
PRICED FOR HOME RECORDERS

Check These Entirely New Features:—

- 1 Non-Inflammable Thread
- 2 No Surface Noise
- 3 Indefinite Shelf-Life
- 4 More Than 100 Perfect Playbacks
- 5 Cannot Injure Cutting Needles
- 6 Lowest Prices Ever Offered

PRICES

6 1/2" 5	for \$.90
8" 4	for .95
10" 3	for 1.00

FOR ADDED PROFITS:
Ask about Walco Sapphire
Cutting and Playback
Needles.



JOBBERS: Exclusive Territories Open.
Write or wire today for sample disc.

DELIVERIES AVAILABLE IMMEDIATELY

ELECTROVOX COMPANY

424 MADISON AVENUE, NEW YORK, N. Y.—PLaza 8-2740

THE P. A. PICTURE

National Union To Sell Erwood Sound

Announcement has just been made of a contract entered into by the Erwood Sound Equipment Company of Chicago and the National Union Radio Corporation of Newark, N. J., whereby National Union becomes exclusive sales agent in the United States for Erwood Sound Systems.

All sound systems will be manufactured and advertised by Erwood. National Union will handle all matters pertaining to sales, sales promotional work, credit, collections, etc. The Erwood line will be merchandised through jobbers and dealers, independent of National Union. A jobber who does not handle National Union tubes will not be barred from selection as an Erwood Sound distributor and vice versa.

UNTAPPED MARKET

Commenting on this new arrangement, President John Erwood stated: "Our previous experience in the sound business has demonstrated to us the importance of selling effort in connection with development of the sound business. We have felt for a long time that there is a big untapped market waiting for development and that this will not come until the radio service dealer generally sees the opportunity and begins to put forth real effort to tell his clientele what sound is all about.

"We feel that National Union's far flung sales staff will carry the mes-

sage of sound far and wide and bring about, in a relatively short time, a market development that would take us years and years to accomplish. When one considers, also, that this additional distribution can be accomplished by an actual saving in cost to the ultimate consumer, it certainly would seem advantageous all around. We do not have to duplicate a sales and credit staff, our internal organization staff can be kept to a minimum and the entire efforts of our organization can be spent on development and manufacturing, with increased emphasis on ability to take advantage of the latest engineering and manufacturing developments. We are convinced that this marriage of Erwood and National Union is going to be a good thing for the industry."

HUTCHINS ENTHUSIASTIC

Henry Hutchins, general sales manager of National Union, outlined his company's aims as follows: "National Union's interest is in helping the radio service dealer make more money and build a bigger, better, and more enduring business."

"We are convinced that sound is a real item of profit for the radio service dealer. Sound requires technical knowledge to sell and to service. It represents a high unit sale. It is bound to appeal to the best men in the radio service business because it offers them a wider field for exploitation and profit."

"We recently introduced a line of Sound X-tra Tubes which are tubes especially adapted for audio and



Henry Hutchins of National Union Radio Corp. announces large-scale plans for sales of Erwood sound equipment.

sound work. These new tubes, plus improvements in sound engineered by Erwood, bring technical improvements that will appeal to many new prospective sound users."

"We hope to carry the Erwood name far and wide, to help more radio service dealers become interested in sound, to help set them up in business and to help them sell."

Sound Dealers Get Discount Break

A new system of discounts has been announced by the Universal Microphone Co., Inglewood, Cal., to fit the needs of local dealers who, in turn, sell microphones, stands and accessories to schools and colleges, churches, lodges, amateurs, radio stations, music salons and others. The new price list enables each dealer to extend a discount to such organizations and, at the same time, make a legitimate profit for himself.

The additional discount has not been gained by increased list price. Actually ten standard items have been reduced.

The discount spread, it is said, will be particularly welcome in smaller areas where dealers must undertake considerable pioneer and preliminary work previous to sales, including demonstrations and talks to committees and boards.

The new price list, says James R. Fouch, president and general mana-



"Expect the biggest sound business ever," says C. A. Poole, Daytona Beach, Fla., in reporting prospects for this summer. Mr. Poole, shown with part of his equipment, does work for ball parks, beach races and other big outdoor events.

ger, has not been made at the expense of decreasing any discounts to jobbers or dealers or thru a raise in prices. It follows, he says, mass production and the installation of newly patented technical equipment.

Replacement Market for Microphones

Pointing out that "for the first time in sound history, sound dealers can now sell a microphone as separate sound equipment in itself," Shure Brothers, 225 West Huron St., Chicago, explain that sound men no longer have to wait until a customer can afford to buy a new amplifier. "Where a user of sound equipment would not even consider paying out a lot of money for a new sound system, he would be willing to spend as little as \$32.50 or \$45 list for a new microphone, if he could greatly improve his present system. The Shure Cardioid will do this—where others cannot!

For the first time therefore, you can make a sale where there was no prospect for a sale before!", is the Shure microphone replacement message to sound men.

"It's an easy market to sell!" continues the statement. "Users of sound systems are your best prospects. They are already sold on the idea of using sound, and they always want better sound reproduction. It's your big opportunity!"

For the benefit of sound dealers, Shure Brothers provide a replacement sales manual and promotional cards for prospects.

Stromberg Names Three Engineers

Appointed by Stromberg Carlson's chief engineer Fred C. Young to head up sound system engineering is Anthony G. Schifano, who formerly operated the Rochester (N. Y.) Radio Supply Co.

Other changes in the SC engineering division announced by Mr. Young were the appointment of Dr. George R. Town to take charge of television research and the appointment of Clyde E. Ingalls, formerly head of the firm's television laboratory, to take charge of a laboratory to develop and maintain experimental and factory instruments.

Production Hiked on Mystic Mike

Olson Manufacturing Co., 362 Wooster Ave., Akron, Ohio, reports that increased sales of its "Mystic Mike," or wireless communicator, has made it necessary to increase output by adding additional assembly lines, so that the factory is now capable of producing 1200 units per week. This new wireless microphone will transmit sound very efficiently to nearby radios. Provision is also made for the connection of a record player so that record music may be transmitted. The entire unit is housed in an attractive bakelite cabinet.



John Erwood Speaking:

"Since we have pioneered in sound, we can and do put years of accumulated knowledge and experience into every Erwood instrument."

"Does a whale of a job!"
This Model 4575 Erwood 75-Watt Public Address System will "deliver" for you in every possible way.



Provides four low impedance, high gain input channels, with automatic volume control . . . rack and panel construction.

Because of noticeable absence of hum under even extraordinary conditions, this is the ideal amplifier, where extra power is needed for tremendous crowds . . . where pick-ups from as many as four microphones are reproduced with fidelity and clarity.

Write to-day for our complete catalog describing this and other quality ERWOOD sound equipment

Erwood Sound Equipment Co.
 226 W. Huron Street Chicago, Ill.



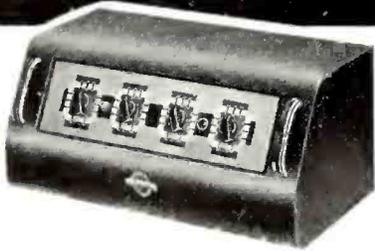
KEEP YOUR EYES OPEN

Look at the Farnsworth line-up from any angle — merchandising plans, product, values, advertising promotion — and you'll see 1940's brightest, eye-opening, profit set-up. For the BIG MONEY in radio sales this year, take this tip: *Keep your eye on Farnsworth.*

DON'T CLOSE YOUR EYES TO BIGGER PROFITS

WATCH **FARNSWORTH** FOR '40

HOW CAN YOU MISS
the Big Money
in P.A.
WITH CLARION?



READ WHAT THEY'RE SAYING!★

- ★ Our most successful year in public address due to your cooperation.
- ★ Thank you for the advice given to me by your Engineering Department . . . for the leads referred to me by your Sales Department.
- ★ You are doing us fellows in the field a favor.
- ★ Your engineers deserve great credit.
- ★ One of the best Christmas presents I received was the renewal of our agency contract.

LOOK WHAT CLARION'S DONE!

New functional design now strengthens Clarion buy-appeal with *eye-appeal*. The Clarion line for 1940 looks like no other sound amplifying equipment on the market. Individual, distinctive—it's easy to recognize Clarion P.A. on the job. Clarion goes on selling for you after you've banked your first profit . . . attracting the eye, impressing the prospect with its originality of design.

CASH IN ON THIS PROFIT PLAN!

More than great engineering advances make Clarion the **BIG MONEY** line in P.A. As a member of the Clarion Institute of Sound Engineers (nation-wide Clarion reps), you enjoy factory purchasing power; exclusive sales territory; free engineering service; the backing of national advertising plus local sales promotion. It costs nothing to become a C.I.S.E. member; it will pay you big dividends in prestige and profits!

Send for application form NOW!

Only one Clarion representative to a territory. Here's your chance to join the big money-makers in P.A. Act now—get the full facts. Send for application form today!

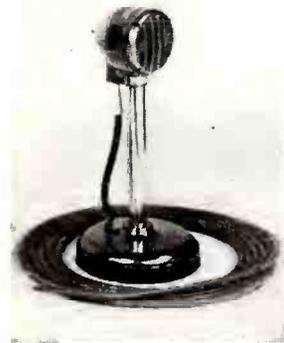
- ★ From actual letters received at our Sales Office. Photostatic copies will be forwarded on request.

Complete Clarion Line Will Be Displayed At Chicago Trade Show

**CLARION INSTITUTE OF
 SOUND ENGINEERS
 TRANSFORMER CORP. OF AMERICA
 69-WOOSTER ST. • NEW YORK, N. Y.**

P. A. EQUIPMENT

New products for sound



Universal crystal mike

★ Model KO is high output mike in desk stand mount for recording, amateur, PA, call systems, etc. Output level is 48 DB below 1 volt per bar. Frequency range 50 to 6000 cps. With 10 feet low capacity cable but less stand, list \$16.25. Universal Microphone Co., Inglewood, Calif.—RADIO TODAY.

Wesbar car horn mount

★ Loud speaker mounting unit for tops of cars is easily attached without drilling holes; does not mar surface. Four vacuum cups with glycerine film and drip rail clamps hold heavy plywood platform firmly. Model 410 lists at \$7. Wesbar Stamping Corp., W. Bend, Wisc.—RADIO TODAY.



Knight 30-watt PA

★ Versatile amplifier operates from 6 volts DC or 110 volts AC, has built-in automatic record changer. Four input channels for two mikes, and two phono. Frequency response, 30 to 12,000 cps. 24 amp DC drain; standby switch. Allied Radio Corp., 833 W. Jackson Blvd., Chicago, Ill.—RADIO TODAY.

Amphenol 3-pole plugs

★ A new polarized three-prong plug and receptacle have special lock ring mounting for metal chassis. Either unit may be mounted, or a special covering cap used for cable terminals. Model 60-F and 60-M. American Phenolic Corp., 1250 W. Van Buren St., Chicago, Ill.—RADIO TODAY.

Electrovox recording disc

★ New light-weight recording disc features are, non-inflammable, non-warping, low surface noise, long playback life. The discs may be cut with either steel or sapphire, and come in 6½, 8 and 10 inch sizes. Cuttings will not burn. Electrovox Co., 424 Madison Ave., New York, N. Y.—RADIO TODAY.



RCA monitor speaker

★ Model 64-B is a high fidelity monitor speaker unit with permanent magnet reproducer. Folded horn loads cone. Wide angle distribution and reproduction from 60 to 10,000 cycles are realized. Available in black, grey, and walnut finishes. RCA Mfg. Corp., Camden, N. J.—RADIO TODAY.

Va-Co recording discs

★ Group of 8, 10, and 12 inch flexible acetate and aluminum base acetate recording discs list from \$.35 to \$.65, and \$.50 to \$1 respectively. Also new recording disc cutting compound and recording needles. F. L. Cook, 606 Parkman Ave., Los Angeles, Calif.—RADIO TODAY.

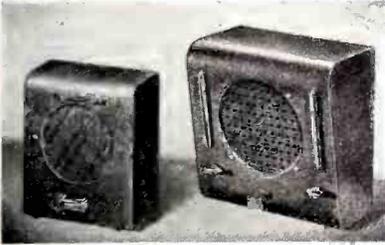


Aerovox HV wet electros

★ Wet electrolytic capacitors rated in 4, 8, and 16 mfd. have surge voltage ratings of 600. Largest unit measures 1½ x 4 15/16 inches. The self-healing properties and higher voltage rating make them useful where heavy surges occur. Aerovox Corp., New Bedford, Mass.—RADIO TODAY.

ACA 30-watt amplifier

★ Push-pull direct coupled amplifier features extremely uniform frequency response over complete audio spectrum. Fifteen special features including audio spectrum control, volume indicator, AVC, remote volume control may be incorporated in basic unit. Model ACA-30DC lists at \$135. Amplifier Co. of America, 17 W. 20th St., New York, N. Y.—RADIO TODAY.



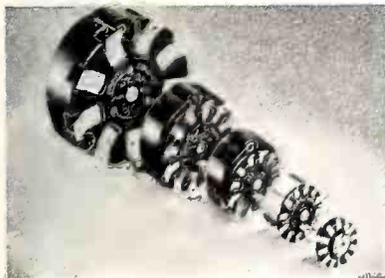
Talk-a-Phone page amplifiers

★ Power amplifiers for paging systems are available in 5 and 15 watt sizes for use in high noise level areas. Units have their own speaker and any number of them may be connected to existing channels. Talk-A-Phone Mfg. Co., 1847 S. Millard Ave., Chicago, Ill.—RADIO TODAY.



Atlas PM drivers

★ Three new permanent magnet speaker units for use with reflexed projectors have Alnico magnets. The units have non-corrosive diaphragms, and machined surfaces are cadmium plated. PM 23, 18 watts, lists at \$30. PM 25 and PM 26 deliver 20 watts, list at \$45 and \$50. V. C. impedance is 15 ohms. Atlas Sound Corp., 1447 39th St., Brooklyn, N. Y.—RADIO TODAY.



Ohmite power switches

★ Higher current ratings for line of tap switches. Model 111 rated at 10 amps, 150 v. AC; model 212 at 15 amps, 150 v. AC; model 312 at 25 amps, 300 v. AC; model 412 at 50 amps, 300 v. AC; model 608 at 100 amps, 300 v. AC. Multi-point single pole rotary units may be connected in tandem. Ohmite Mfg. Co., 4835 Flournoy St., Chicago, Ill.—RADIO TODAY.



KEEP YOUR EARS OPEN

● Keep your ears cocked for the big radio news of 1940 — a profit-packed line by Farnsworth, engineered inside and out, top and bottom, for sheer SELL-ability and profits. Be ready to listen to a story that will mean music for your ears and money in your pockets.

HEAR THE WHOLE PROFIT-STORY FOR YOURSELF

WATCH **FARNSWORTH** FOR '40



Centralab plays no Favorites

A thoroughly democratic gent is Old Man Centralab . . . for he keeps his "promises" no matter what "system" you use. Whether you are talking to a handful of listeners

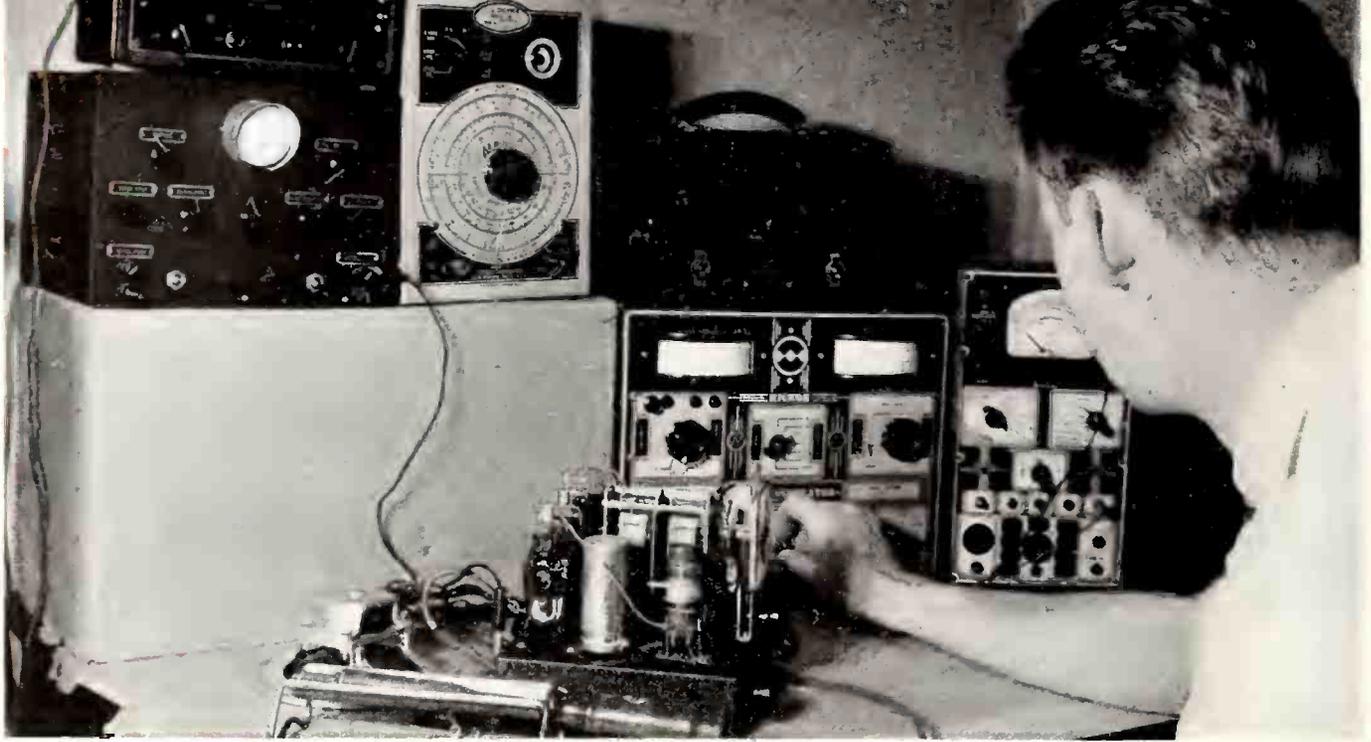
or to a frenzied football field . . . Centralab parts stand up under all decible deluges. An overwhelming majority of the boys vote for CENTRALAB VOLUME CONTROLS — CENTRALAB RESISTORS — CENTRALAB SWITCHES.

"always specify

Centralab

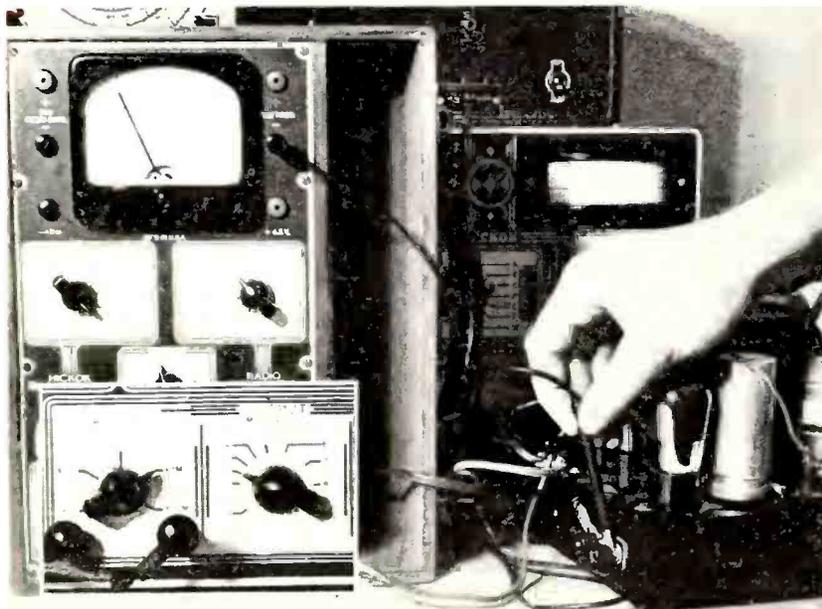
DIV. of GLOBE UNION INC.

900 E. Keefe Ave.
Milwaukee, Wisc.



COUPLING THE SIGNAL

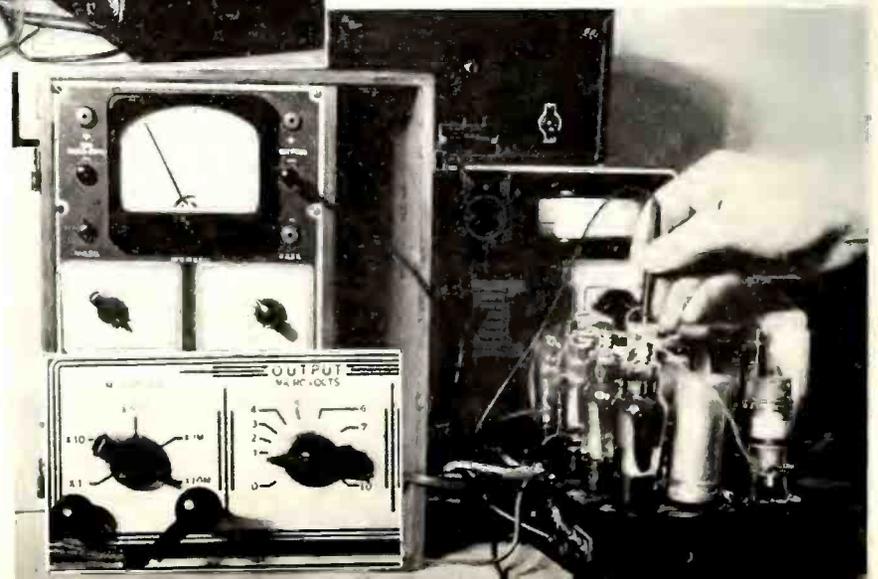
How to boost the signal transfer through receivers.

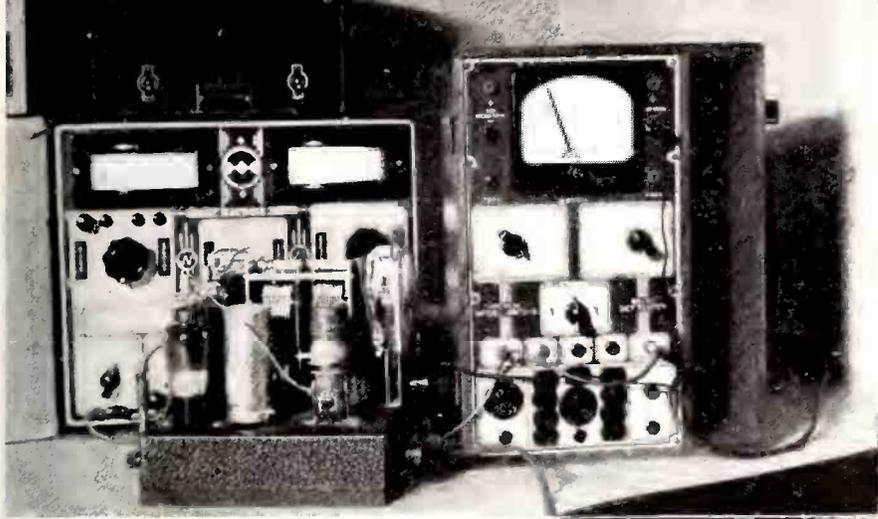


Servicing techniques in pictures by Radio Today

Coupling of the signal from the antenna post to the grid of the RF tube is checked with calibrated signal generator and output meter. Inset picture of generator shows 2,000 microvolts input at antenna terminal. Note position of needle on output meter.

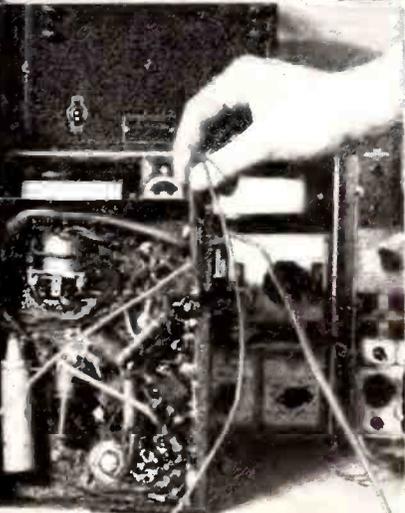
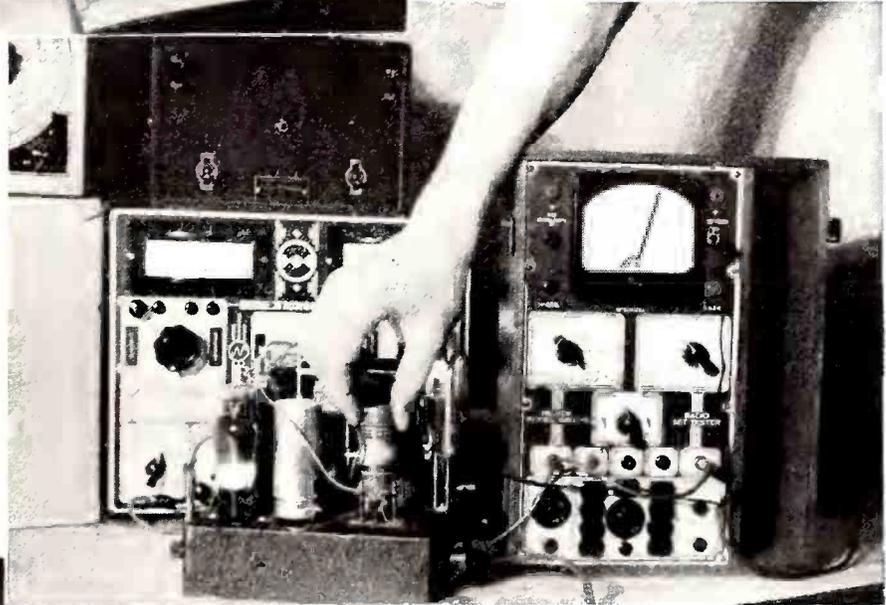
Signal is now being fed into grid of RF tube. Output of signal generator has been advanced to 7,000 microvolts to bring output meter up to same reference position. Gain of transformer is $7,000/2,000$ or 3.5. Values vary from 2 to 10 depending on number of tubes.





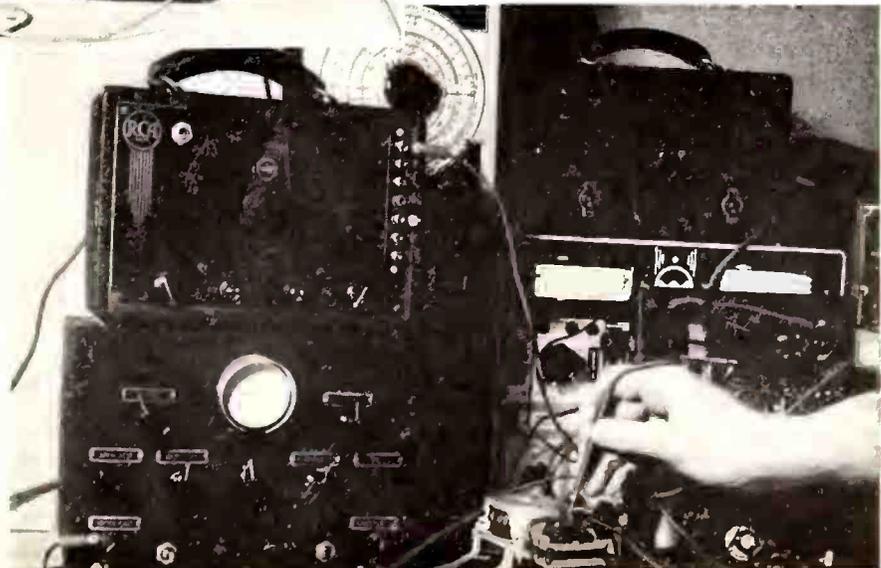
The transformer, or coupling ratio of RF coils usually drops at high frequency end of band. Here a 1,600 kc. signal is fed into set at the antenna post. The output meter connected in audio plate circuit comes up about one third scale.

Adding a one turn loop of insulated wire around grid end of RF coil boosts coupling at 1,600 kc. One end of loop is connected to antenna lead, while other end is free. Loop acts as small capacitor and makes gain more uniform over the tuning range.



Transformer, capacity-resistance, and direct coupling will be found in audio sections of receivers. An AF signal generator is connected ahead of the coupling device while an oscilloscope picks up the signal on the other side. Signal loss, distortion, and frequency range are checked.

The AF signal is traced down to the speaker voice coil while the oscilloscope is watched for indication of hum pickup in the cable from the set. By comparing the wave form at the set and at the speaker, the bad cases of hum may be localized. The volume control should be run through its range in checking for distortion.



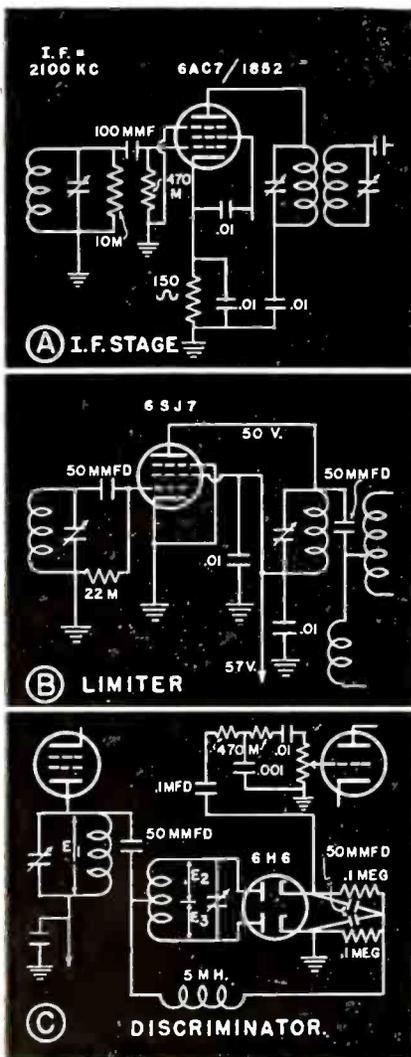
SERVICING "FM" SETS

Three circuits in frequency modulation receivers differ from AM sets. Characteristic functions of limiter, and discriminator.

Frequency modulation receiver circuits differ from conventional amplitude sets in three basic respects. First, the IF amplifiers have a much broader frequency "pass" characteristic, second a "limiter" circuit has been added to the FM set, third, the FM second detector is entirely different from the AM types.

Fig. 1A is the circuit of an IF stage used in the Stromberg-Carlson 425 FM receiver. The intermediate frequency is 2100 kc. in contrast to the usual 455. This high frequency is necessary to give a "flat top" broad enough to permit the wide band of 200 kc. to pass through without being attenuated at the extreme limits of the "swing." To

Fig. 1—Typical circuits found in FM sets. These are used in Stromberg-Carlson model 425.



further smooth out the resonant peak in the IF transformer, a loading resistor of 10,000 to 15,000 ohms is used across the secondary. This loading resistor has the effect of making the total impedance reflected back into the primary consist of more resistance and less reactance. The variations of capacitive and inductive reactance over the range of 200 kc. is therefore made less effective in determining the transformer gain.

AMPLITUDE LIMITER

Another circuit incorporated in FM receivers is the amplitude limiter. Fig. 1B shows the typical circuit using a 6SJ7. The tube is operated at 0 bias, and with very low plate and screen voltages. Its purpose is to limit the amplitude variations that are bound to occur through the noise pickup, and variations in signal strength.

Symmetrical limiting action is obtained on both positive and negative cycles of the signal. On the positive half of the FM cycle, the plate current of the tube is limited to an almost uniform value because of the low plate and screen voltages and the rectification taking place in the grid circuit.

With the tube operating at such low plate and screen potentials, the plate is unable to handle all the electrons supplied by the cathode and the current is limited by saturation. Further action occurs in the grid circuit of the 6SJ7. In the circuit it is noticed that the grid is isolated for DC from the IF transformer by a capacitor and is returned to ground through a 22M resistor. On the positive half cycles, the grid acts as a rectifier. The current that flows thus builds up a bias voltage across this resistor and the plate current is further reduced. This rectified signal is used in some circuits for AVC.

On the negative half cycles of the signal, the sharp cut-off features of the tube limit the plate current. Fig. 2A shows the approximate plate current characteristic of the limiter.

The signal level applied to the limiter is sufficiently great to cut-off the plate current even at the minimum amplitudes. Thus the peaks of noise, and signal strength variations are leveled out.

FREQUENCY DETECTOR

The third variation found in FM sets is the second detector, more commonly called the discriminator. This circuit functions much the same as the discriminator used in AFC sets.

The frequency modulated signal must be converted back into amplitude

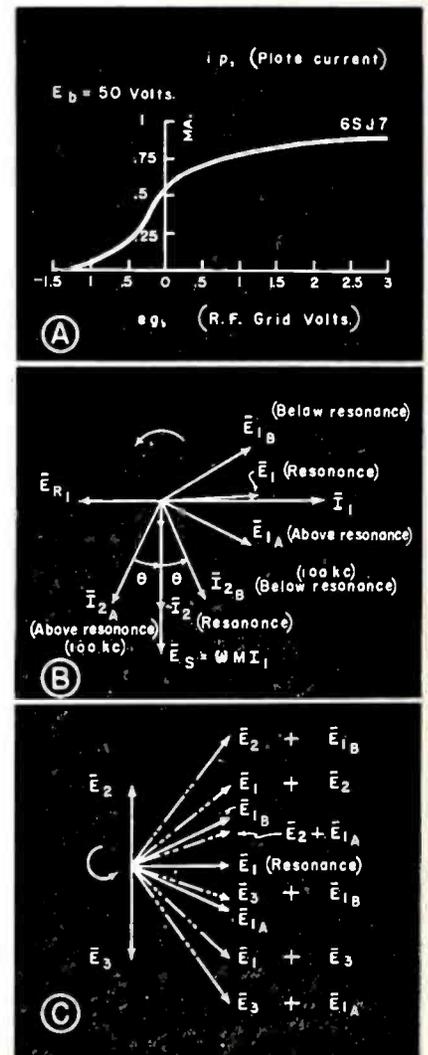
modulation in order to deliver to the ear the variations in loudness which have been incorporated in the original FM signal in the form of amount of frequency "swing."

The discriminator follows the limiter tube and the voltage that appears across the split secondary of the last IF transformer should vary in frequency only. Actually the limiter does show variations of gain in the plate circuit due to changes in the impedance of the transformer primary with frequency. The output of the discriminator is linear, however.

In Fig. 1C, the discriminator circuit is shown. The voltage across the pri-

(Continued on page 51)

Fig. 2—Limiter plate current curve in A. B and C are diagrams of voltage relations in discriminator.



SAVE ON CONTROLS.

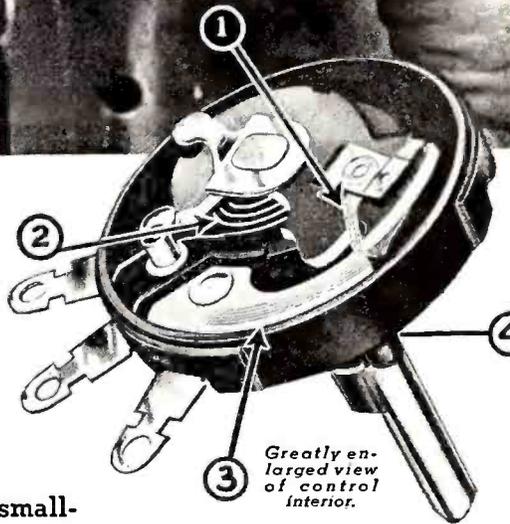


- ★ They always fit . . . and they'll handle almost all replacement jobs.
- ★ Plug-in shafts . . . easier to install . . . fewer "Specials" required.
- ★ One stock does the work of two . . . Use midgets to replace both midgets and the larger, standard-size controls.
- ★ Small in size . . . Designed for real dependability.



by Using **IRC MIDGETS**

Universally!



Greatly enlarged view of control interior.

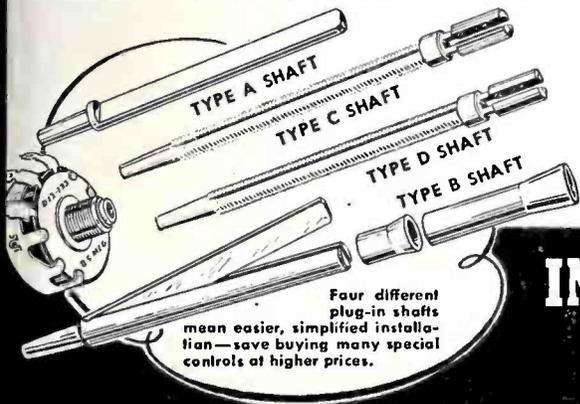
Although IRC Controls are made in every type for every radio need, there is a fast-growing trend on the part of servicemen and jobbers to concentrate on IRC Midget Controls for every replacement need. And it is a logical move! It means stock simplification in that a small supply of IRC Midgets equips you for the big majority of jobs. It means using replacement controls

you are sure will fit—even in the smallest of modern sets. It means easier installations, thanks to the exclusive IRC plug-in shaft features. Above all, it means real dependability, for IRC Midgets have every engineering feature of the larger size "standard type" IRC Controls.

The Only Midgets With EVERY STANDARD-SIZE CONTROL FEATURE

When you buy an IRC Midget you get an exact miniature of the famous IRC standard "CS" Control. Nothing has been left out. Not a single important design feature has been changed. Exclusive features include (1) IRC 5-Finger "Knee-Action" Silent Element Contactor; (2) IRC Spiral Spring Connector; (3) IRC Metallized-type Resistance Element; and, (4) Thrust Washer used to avoid end play in shaft.

Certainly, it is a trend well worth your while to investigate. A study of their possibilities will quickly convince you that IRC Midgets offer the biggest savings in time, space and stock simplification, *plus* the utmost in true dependability.



Four different plug-in shafts mean easier, simplified installation—save buying many special controls at higher prices.

INTERNATIONAL RESISTANCE COMPANY

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

In Canada: 187 Duchess St., Toronto, Ont.

CIRCUITS FOR SERVICE

Data and schematics of current models. Details of new service instrument. Typical trouble hints.

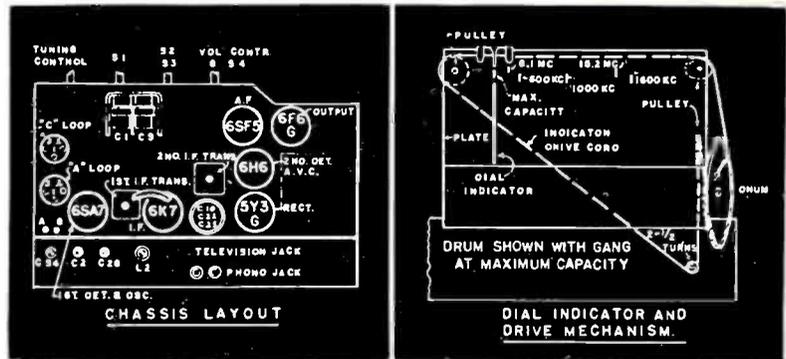
RCA Console Model K61

The circuit of this 6-tube set is shown below, and in a separate diagram, the dial cable hook-up and also the chassis layout are shown.

This conventional super uses a combination detector-oscillator with tuned loops for the broadcast and short wave pickup. Tuning range is 540 to 1560 on the broadcast band, and 5.8 to 18 mc. on short wave.

The six push buttons are set up in the order of the station frequencies, low frequencies on the left end. The buttons are pulled off, and the button rods are loosened with a small screwdriver. The set should be operating for a short warm-up period before adjustments are made.

The desired set-up station is tuned in manually and the corresponding push rod depressed. When the station is tuned "dead center," the rod is tightened. The rod should not be turned more than a quarter turn after it begins to grip. The others are set up in order following the same procedure.



Top view of chassis and front of dial cord plate for RCA K61

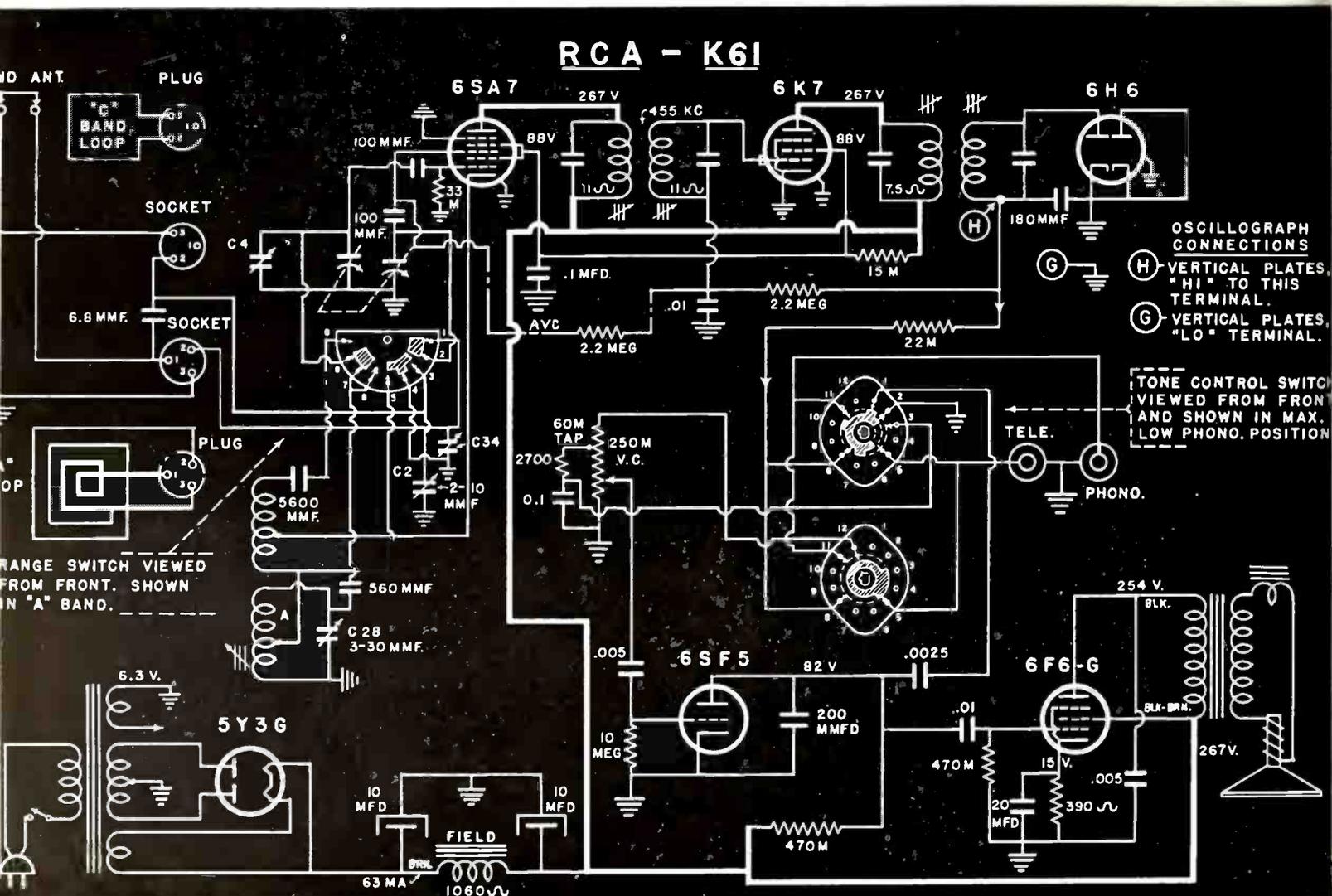
In the diagram of the dial cord arrangement, marks are shown which have been stamped into the metal plate supporting the assembly. These reference marks are used during alignment since the dial scale is fastened to the cabinet and can not be used during service procedure.

With the condenser plates at full mesh, the pointer should cover the

mark at the extreme left, identified as max. capacity. Move pointer if necessary.

IF ALIGNMENT

The cathode ray alignment indication is recommended and points for connection are shown in the circuit (Continued on page 50)



OSCILLOGRAPH CONNECTIONS
 (H) VERTICAL PLATES, "HI" TO THIS TERMINAL.
 (G) VERTICAL PLATES, "LO" TERMINAL.

--- TONE CONTROL SWITCH VIEWED FROM FRONT AND SHOWN IN MAX. LOW PHONO POSITION

FOR NEW TEST REQUIREMENTS OF

Frequency Modulation



1. F.M. assigned channels 40 to 44 mc.
— band width 100-200 kc.
2. F.M. intermediate frequencies 2 to 5 mc.
— each stage aligned at exactly the same point.
3. Checking limiter and discriminator circuits.

HERE ARE THE ANSWERS:



WESTON Model 787
U.H.F. Oscillator



WESTON Model 776
direct-reading Oscillator



WESTON Model 772
Super-Sensitive Analyzer

1. The WESTON Model 787 is the only service Oscillator which reads 40 kc. per division at 40 mc. This precise tuning is absolutely essential to test the band width of F.M. receivers. Each instrument is individually hand calibrated at 2 mc. intervals. (The broad frequency coverage of Model 787...from 22 to 150 mc. fundamental frequencies...safeguards against obsolescence in the event of changes in assigned channels.)

2. The WESTON Model 776 Oscillator supplies an absolutely stable signal source. Laboratory tests have shown that the frequency drift is less than .05% at 5 mc. for an operation period of several hours. This stability is the result of newly improved control circuits. With Model 776, too, an individually hand calibrated scale insures dependable accuracy over its entire frequency range of from 50 kc. to 33 mc., fundamental frequencies.

3. Because of frequency limitations of present visual aligning equipment, current measurements down to 1 microampere offer the only means of checking I.F. alignments, cut-off point on limiter tube, and adjustment of discriminators. WESTON Model 772 Super-Sensitive Analyzer offers all ranges necessary to make these sensitive measurements; plus additional ranges for all customary voltage, current and resistance measurement needs.

Full particulars on the above instruments are available in bulletin form, and will gladly be sent on request. Weston Electrical Instrument Corporation, 597 Frelinghuysen Avenue, Newark, New Jersey.

WESTON Instruments

SERVICE NOTES

(Continued from page 48)

diagram. If an output meter is used, the instrument is connected across the voice coil and volume control is set at full on.

The test oscillator is set at 455kc., and the signal is fed to the grid of the 6K7 IF tube through 0.1 mfd. capacitor. The dial is tuned to quiet point between 1500 and 1700. Adjust the second IF transformer for peak output or visual alignment on oscilloscope.

Connect the signal generator to the first detector grid through the 0.1 and adjust the first IF transformer for resonance at 455 kc.

RF ALIGNMENT

With the signal generator set at 15.2 mc., the tuning dial set at 15.2 mc., feed a signal through 0.1 to the first detector grid. Adjust oscillator trimmer C_4 for peak response.

Use a two-turn radiation loop, 18 inches in diameter connected to the signal generator for following adjustments. Loop should be 4 to 6 feet from set.

With test oscillator and dial at 15.2 mc., adjust C_2 antenna trimmer while rocking condenser. Use maximum capacity position if two peaks are found.

Set oscillator and receiver at 6.1 mc., adjusting spacing between leads and chassis of the "C" band loop. Repeat adjustment of C_2 at 15.2 mc. as outlined immediately preceding.

On the broadcast band, the dial and generator are tuned to 1500 kc. Adjust antenna and oscillator trimmers C_{34} and C_{28} for peaks.

Using a 600 kc. signal, rock the tuning condenser through 600 kc. mark while adjusting the oscillator iron core for a peak.

Repeat the step at 1500 kc. just preceding the last.

All alignment steps with the radiation loop connected to the generator should be done with the set in the cabinet and both loops connected.

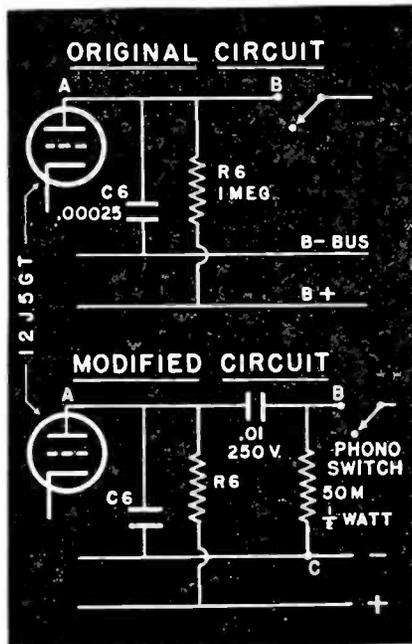
When the set is operated on the loop antennas, the Ant. and Gnd. terminals are connected together.

Keep the AC switch leads away from the 6SF5 tube socket. Keep the leads

to the loops separated. The two 100 mmfd. mica condensers in series with the tuning gangs should be dressed away from each other. The audio coupling condenser, .005 mfd., should be kept away from the power leads.

The normal power consumption of the set is 75 watts. Power output is 2.5 watts undistorted, 4.5 maximum.

Circuit Change in Silvertone 6326



Microphonics are a common complaint in this tube combination. Trouble is due to 12J5GT audio tube. One solution is to insulate the base of the tube from the socket with a felt washer cut out to pass the key and pins. A tight fitting shield is put over the tube and prevented from touching the chassis. With the tube thus supported by its pins, less microphonics are introduced. The second change is indicated in the diagram. The slight decrease in the gain of the stage also prevents motorboating during warm-up periods. The added resistor may be a 1/2-watt size.

Screen Types Identified for Du Mont Tubes

An identification letter has been added to the cathode ray tube type numbers of the Allen B. Du Mont Labs., Inc., Passaic, N. J. The new letters merely refer to the type of screen coating material, and do not indicate any change in electrical characteristics. The new type numbers, included in a booklet available from Du Mont, have A for medium persistence green; B, long persistence green; C, short persistence blue; D, medium persistence white.

Ken-Rad Book of Recommended Tube Types

Detailed technical data for twenty-five different tubes in the recommended list for various classes of radio service. The information for each tube in the list includes, physical size, base connections, typical operating voltages, interelectrode capacities, and the characteristic plate, and grid operating curves. The handbook is issued by Ken-Rad Tube & Lamp Corp., Owensboro, Ky.

Book Review

Frequency Modulation

By John F. Rider

Published by John F. Rider, Inc.
404 Fourth Ave., New York, N. Y.

Price \$1

Hot on the heels of the newest thing in radio broadcasting, the new book, FM meets the immediate needs of the serviceman.

The subject of frequency modulation, what it is, how it works, and what the system will mean to the serviceman is concisely covered in the 136-page volume. Devoid of complicated mathematical analysis of the generation and detection of frequency modulated waves, clear, understandable diagrams and statements explain the fundamentals of the system.

SUBJECTS COVERED

Running through the table of contents, frequency modulation, what happens at the transmitter, what happens at the receiver, the transmission of the FM signals, FM receiving antennas, and servicing FM receivers, are the subjects that meet the eye. The basic system of signal tracing is interpreted to FM requirements.

Besides serving as a text to acquaint servicemen with the technique involved in locating and repairing FM sets, this new text will be a reference for the many questions ask of the serviceman. A complete chapter devoted to the transmission of FM signals discusses coverage, noise ratios, etc. The chapter on receiving antennas permits estimations of the material, time, and space required for installation.

This book is well recommended to servicemen as a straightforward treatment of the practical side of frequency modulation.



SERVICING FM SETS

(Continued from page 46)

mary coil is connected to the center of the secondary through the 50 mmfd. capacitor which has very little reactance at the IF at 2100 kc. The 5 mh. choke in the lead from the center of the secondary to the junction of the diode load resistors serves as the path for the rectified current and at the same time is of sufficiently high impedance to keep the center of the secondary above ground by the amount of the voltage across the primary.

The two equal diode load resistors are by-passed for the IF with 50 mmfd. capacitors. The audio voltage is taken off the upper cathode while the lower one is grounded.

UNBALANCED VOLTAGES

The variation in frequency is translated into a variation of voltage by the property of the changing of phase relationship between the voltages across the primary and secondary of a tuned transformer. Just how one plate of the 6H6 has more voltage on it at one side of the resonant frequency, and how the other plate gets more voltage on the other side, is best explained with a vector diagram. Fig. 2B and 2C show the theoretical time relations between the maximum values of the various voltages in the circuit.

The length of the line, or vector, represents the magnitude of the peak value of a sine wave. The vector is assumed to rotate counter clockwise at a speed proportional to its frequency. The angle between the vector and the horizontal axis at any instant in the cycle is the phase angle which may be translated into time. Two quantities in phase have the same frequency and reach their maximums or minimums at the same instant.

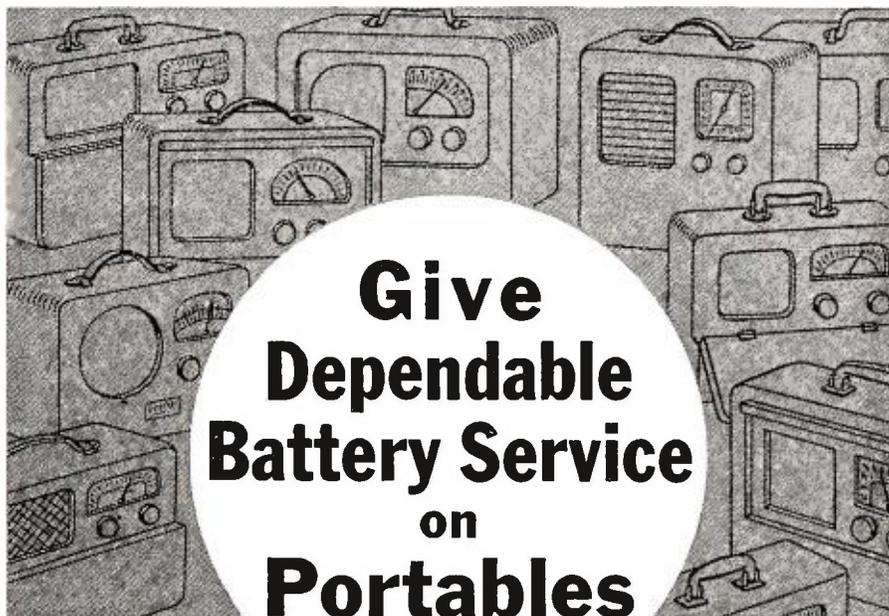
In Fig. 2B, the current that flows through the primary of the discriminator transformer is labeled I_1 . The magnetic flux and the current producing it are in phase. This flux linking with the secondary windings induces the voltage, E_s . The induced secondary voltage causes the current I_2 to circulate through the coil and condenser. If the frequency of the signal is above the resonant frequency of the transformer, the secondary circuit will be predominantly inductive and the current flowing in the secondary will lag. This condition is shown in Fig. 2B. This lagging secondary current builds up a flux that induces a voltage back into the primary and causes the voltage across the primary to lag behind the current. The reverse action happens when the frequency swings to the low side of resonance, that is the voltage across the primary leads the current.

Since the primary current and secondary voltage always bear a relation of 90 degrees leading current, the effect of swinging the frequency through resonance is to change the phase angle between the primary and secondary voltages.

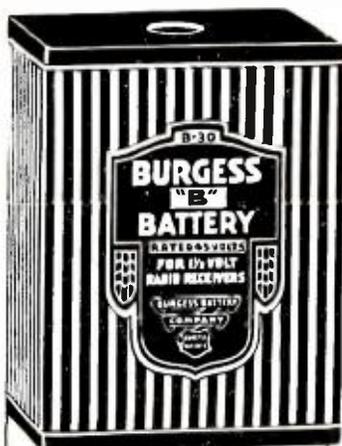
In Fig. 2C, the addition of the primary and secondary voltages is shown. Because of the center tapped secondary winding, the secondary voltage E_s is divided into two equal parts that

(Continued on page 52)

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SERVICING FM SETS

(Continued from page 51)

are 180 degrees out of phase with each other as far as the diode rectifiers are concerned.

When the frequency is "on the nose," $E_1 + E_2$ and $E_1 + E_3$ are equal in magnitude. When these two voltages are rectified by the discriminator, the DC developed across the two equal load resistors balances out. There are DC voltages across each load resistor, but just as there would be no voltage between the two positive terminals of a pair of flashlight cells with their negative cases connected, no DC appears between the two cathodes. This fact is used in aligning the discriminator.

The primary is adjusted for maximum voltage across one diode load and the secondary is tuned for no voltage across the two resistors. The peak IF is used.

AUDIO DEVELOPED

As the frequency goes above and below resonance, the vector sums of the primary and each half of the secondary voltage are no longer equal. $E_2 + E_{1A}$ and $E_3 + E_{1A}$ are not equal after the frequency starts its excursion above resonance, therefore, one diode will have a higher plate voltage than the other during this time. The other diode has the higher voltage on the low side of resonance.

Since the diodes are no longer recti-

fying equal voltages, a difference in voltage across the two load resistors will result. Since the frequency is "swinging" across the resonant point at the audio frequency, the rectified voltage will be the audio signal.

The difference between the two voltages that appear at the diodes will be proportional to the amount of frequency departure from the central resonant frequency.

The discriminator thus changes variations in frequency and rate of variation into volume and frequency of the audio signal.

These three portions of the FM receiver are all that require special consideration by the serviceman. Alignment of the transformers may be made with the sweep-oscillator and oscilloscope, or more easily with a signal generator delivering the peak IF, and a microammeter. While the transformers are flat, there is still a sufficient peak for definite indication on a 100 microamp meter which should be connected in the limited grid return.

Watch future issues of RADIO TODAY for complete servicing data on FM circuits.

Radio Courses on Short Waves

A unique instruction course in the technical operation of all phases of radio receivers, transmitters and new developments is being given over the air each week by short-wave station WRUL in Boston. During the latter part of May and the month of June the Modern Radio Course over WRUL will be of particular interest to servicemen.

The Elementary Modern Radio Course begins each Monday evening at 7.45 PM EDT (6.45 PM EST), and listeners may dial to either 6.04 MC, which is received throughout the Eastern portion of the United States, or to 11.79 MC, which is received more than 500 miles from Boston.

The lectures during the latter part of May will include a thorough discussion of methods of modulation, the construction of radio telephone transmitters, and the fundamental operation of broadcasting equipment. A complete instruction booklet for this Elementary Course may be obtained for one dollar by writing to station WRUL, University Club, Boston, Mass.

ADVANCED COURSE

Also at this time, station WRUL is offering an Advanced Course in Modern Radio, which thoroughly covers the fundamentals of frequency modulation, the construction of receiving sets for frequency modulation and discussion of ultra high frequency antenna design for both transmitters and receivers. Following the Frequency Modulation lectures, this course will also include a discussion of frequency doubling, and single side band transmission methods. In connection with the Advanced Course, the World Wide Broadcasting Foundation has prepared a very comprehensive textbook, complete with wiring diagrams, wave form charts, mathematical formulas, and a wealth of material hitherto unpublished on this general subject.

WHY Eleven RIDER MANUALS?

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No serviceman can anticipate the year, make and model of the next set that will come to his bench. It may be anywhere up to ten years old. For this reason you must have the volume of Rider Manuals that contains the servicing information on that particular set, OR ELSE risk a haphazard job—wasted time—a broken delivery promise and a disgruntled customer. Get your full money's worth out of every Rider Manual—buy it the day it comes out. Benefit

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The booklet is also made available for the sum of only one dollar, in United States currency or money order, which may be sent to the same address mentioned herein.

The course of lectures is given by Dr. C. Davis Belcher, who was formerly a Government Radio Inspector in the Boston area, and is a well known authority on the subject. Dr. Belcher directs the lectures in the Advanced Modern Radio Course each Monday evening, starting at 8.30 PM EDT (7.30 PM EST). The Advanced Modern Radio Course is also repeated on Tuesday evenings at 11.30 PM EDT (10.30 PM PST) for the benefit of listeners on the West Coast of North America. For this repeat broadcast the frequencies of 6.04 and 11.79 MC are also used.

In addition to the Modern Radio Course, this educational short-wave station WRUL is also offering an interesting series in the Elements of Aviation, on Thursday evenings at 8.30 PM EDT (7.30 PM EST), and is just starting a new course in Photography on Wednesday evenings at the same hour.

RSA Convention Features Announced

RSA has scheduled its Third Annual Convention for the Stevens Hotel, in Chicago, Friday, June 14.

The Convention will open at 2:00 P.M. of that day with a Membership Meeting, to be followed immediately with the RSA Extension Course, a series of lectures and round table discussions.

FM—of special interest to everyone in the radio industry today—will be the topic of the lecture to be delivered at 8:00 P.M., by an outstanding engineer. A complete demonstration will accompany the lecture.

New Raytheon Tube Data

Base diagrams, tube dimensions, and tabulated characteristics of the tube types manufactured by the Raytheon Production Corp., 55 Chapel St., Newton, Mass., are included in the new booklet, Characteristic Data Chart, just released.

Advanced Radio Training Course Planned

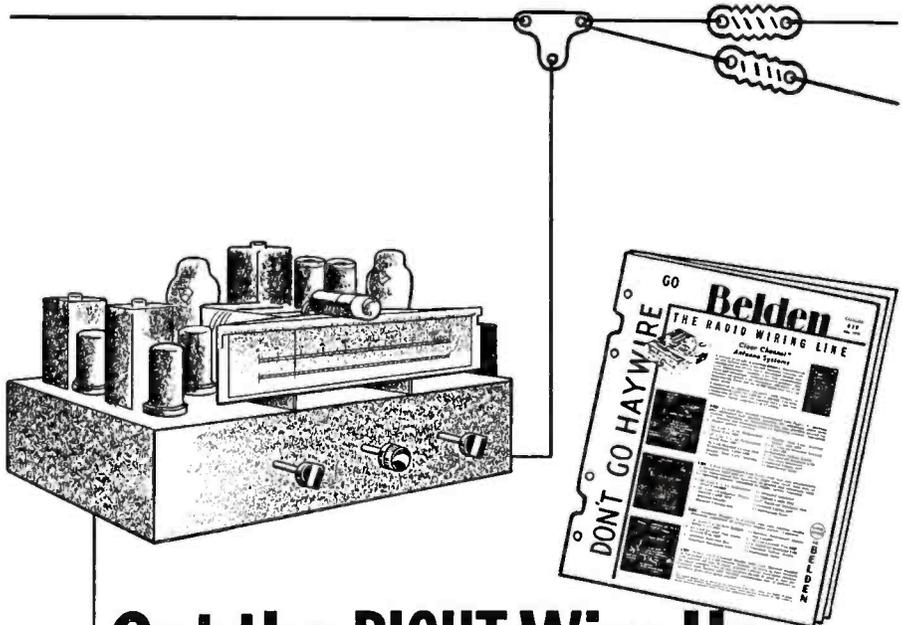
The first of a series of post graduate courses for experienced servicemen will be held in Jackson, Miss., July 15 to 27 inclusive.

The course, limited to those servicemen who have graduated from a radio school or had at least two years' experience in the field, is being organized by Harold Davis, Inc., jobber of 428 W. Capitol St., Jackson, Miss., and is being sponsored by leading parts and instrument manufacturers.

No tuition is being charged of the servicemen, but applicants must be equipped with letters of recommendation from a jobber with whom they have done business.

Further details, including room and board facilities, may be obtained from Mr. Davis.

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★ Now available in double-section units as well as single. Center strap provides common negative terminal. 25 to 450 v. D.C.W. 8-8, 8-16, 16-16, 10-10 and 20-20 mfd.



★ Single-section DANDEES, introduced two years ago or more, have by now won universal acceptance as general-utility electrolytics. 25 to 450 v. D.C.W. 4 to 100 mfd. An additional line of 6, 12 and 15 v. units provides 1000, 2000 and 3000 mfd. in unbelievably small bulk.

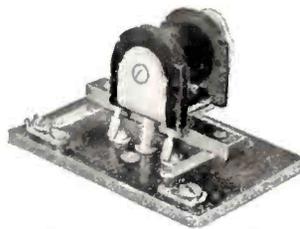
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★ He can show you these DANDEES. Order a few popular values and have them on hand for emergency repairs or for compact assemblies. Ask for our latest catalog—more pages, more items, more choice. Or write us direct.



Simpson Micro-kit

★ Carrying case kit houses three of the new line of 8 Micro-Testers. These new units feature compact, light-weight, multi-purpose instruments. Case has room for test leads and any three of the volt, ohm, mill, or amp. meters. Simpson Electric Co., 5216 W. Kinzie, Chicago, Ill.—RADIO TODAY.



Staco control relay

★ High frequency switching relay has myclex base and cross arms, 4-amp. silver contacts. Triple-X insulation on model RBA-1 for work up to 15 mc. Chatterless operation on 110 AC. Price, \$1.65. Standard Electrical Prod. Co., 317 Sibley St., St. Paul, Minn.—RADIO TODAY.

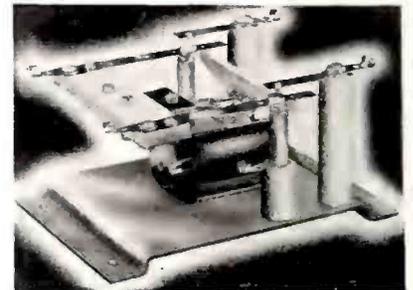


Ex-Stat antenna

★ Vertical rod antenna with universal mounting and rotary base permits mounting at any angle. Iron-core matching transformer mounted in porcelain shell. The antenna has a maximum of noise reduction, all-wave range, and simplified installation. Tilton Electric Corp., 15 E. 26th St., New York, N. Y.—RADIO TODAY.

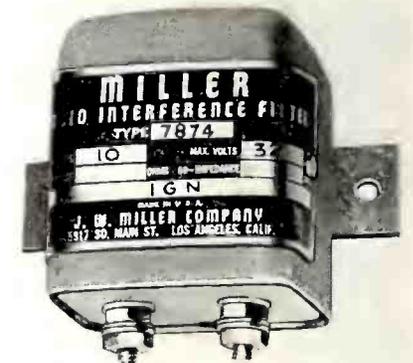
Ward auto antenna

★ "Flex-Angle" auto antenna is single mounting unit which may be adjusted to vertical position regardless of body contour. Telescoping rod may be moved through a 16 degree arc, sufficient for all cars. Ward Products Co., 1523 E. 45th St., Cleveland, Ohio.—RADIO TODAY.



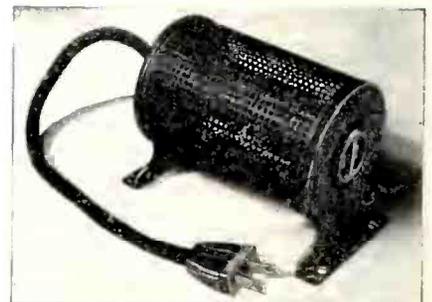
Meissner aerial relay

★ DPDT relay for antenna switching of high frequency transmitter, will carry 1 kw. Straight feed-through construction is used; ceramic insulation. Standard unit provided for operation on 110 volts AC. Meissner Mfg. Co., Mt. Carmel, Ill.—RADIO TODAY.



Miller noise filter

★ Type 7874 filter is designed for battery side of ignition systems in marine combustion engines. Rated at 10 amps, the filter lists at \$5. One of complete line of household and industrial filters. J. W. Miller Co., 5917 S. Main St., Los Angeles, Calif.—RADIO TODAY.



Clarostat resistor

★ Series HT units are a new line of voltage-dropping resistors in power ratings of 100 watts up. May be used for operating 110 volt equipment on 220 volts. Housed in metal case, unit has short cord, and outlet receptacle. Clarostat Mfg. Co., 285 N. Sixth St., Brooklyn, N. Y.—RADIO TODAY.



Solar C analyzer

★ Dynamic condenser analyzer checks capacitors either in the set or out. Open, shorted, and intermittent units are quickly spotted. Model BQC has built-in Wein bridge for measuring capacity from 10 mmfd. to 70 mfd. Model QC has dynamic checker only. Solar Mfg. Corp., Bayonne, N. J.—RADIO TODAY.

General Cement Carbon-X

★ New coating compound for noisy volume controls of the carbon type. Compound is applied to the worn spot of noisy controls thus leveling out the sudden changes in resistance causing trouble. No. 1205, lists \$.60 for 2-oz. General Cement Mfg. Co., 1041 Kilburn Ave., Rockford, Ill.—RADIO TODAY.

Hexacon soldering iron

★ Extra heavy duty iron No. 700 is rated at 700 watts. Screw tip is 1 1/4 in. diameter. Hexagon steel barrel is dent proof and element core cannot turn in outer housing. Extra flexible twine-braid cord. List, \$25. Hexacon Electric Co., 161 W. Clay Ave., Roselle Pk., N. J.—RADIO TODAY.

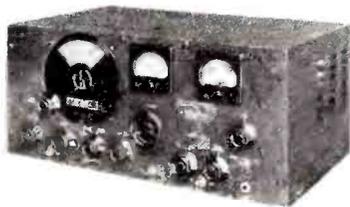


United photo controls

★ Three new photoelectric control units have telephone type relays for maximum AC loads of three amps, unity power factor. Operation speeds up to 10 per second. Model 60 lists at \$24; has separately housed photocell for short control distances. Models 62 and 64 list at \$27 and \$29. Model 64 has three-inch collector lens for maximum sensitivity. United Cinephone Corp., 43-37 33rd St., Long Island City, N. Y.—RADIO TODAY.

Triplett mod. monitor

★ Model 1696-A modulation monitor has single carrier level calibration adjustment, per cent modulation meter with fast up-swing, slow downstroke, and instantaneous peak indicator. 115 volts AC. Net, \$34.84. Triplett Electrical Instrument Co., Bluffton, Ohio.—RADIO TODAY.



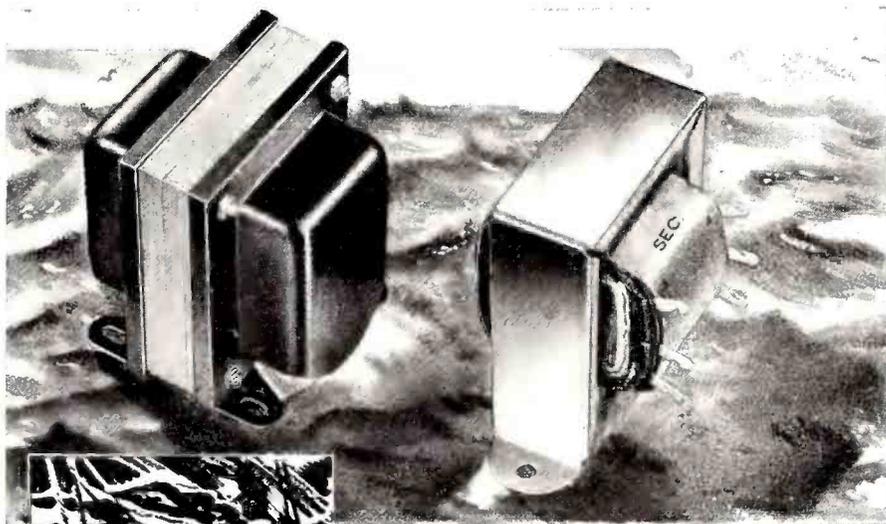
Hallicrafters AM-FM

★ Model S-27 covers 27 to 145 mc. in three bands providing reception on both AM and FM stations. Features include acorn tubes in RF sections, regulated oscillator power supply, automatic noise limiter,

push-pull audio, tuning meter. Fifteen tubes-self-contained except for speaker. Hallicrafters Inc., 2611 S. Indiana St., Chicago, Ill.—RADIO TODAY.

Standard test leads

★ High voltage test leads made in two styles, Saf-T-Prod, and Multiprod. First type has kinkless stranded wire with 15,000 volt insulation, steel prods, flanged finger guard. Multiprod leads have built-in precision resistor for 5000 and 10,000 volts for use with 1 ma. meter. Standard Technical Devices, Inc., 3008 Ave. M, Brooklyn, N. Y.—RADIO TODAY.



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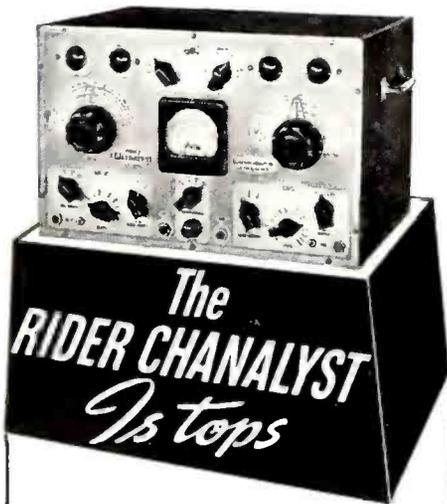
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other scientifically selected materials such as high silicon content steel, used in all laminations, make Utah Transformers uniformly dependable. These fully guaranteed transformers are individually boxed, with complete instruction sheets.

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RCA RIDER CHANALYST \$10750

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It will pay for itself by saving your time...
...upping your profits.

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.



Test Equipment

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

SERVICE NOTES

Solar Dynamic Capacitor Checker Announced

Two new instruments for analyzing the action of condensers while they are in use have just been announced by the Solar Mfg. Corp., Bayonne, N. J.

The BQC and QC instruments are compact, easy to operate units, the first of which has a bridge for measuring capacity from 10 mmfd. to 70 mfd. Both instruments have the dynamic testing circuit which uses a radio frequency oscillator, and an electronic "eye" as an indicator.

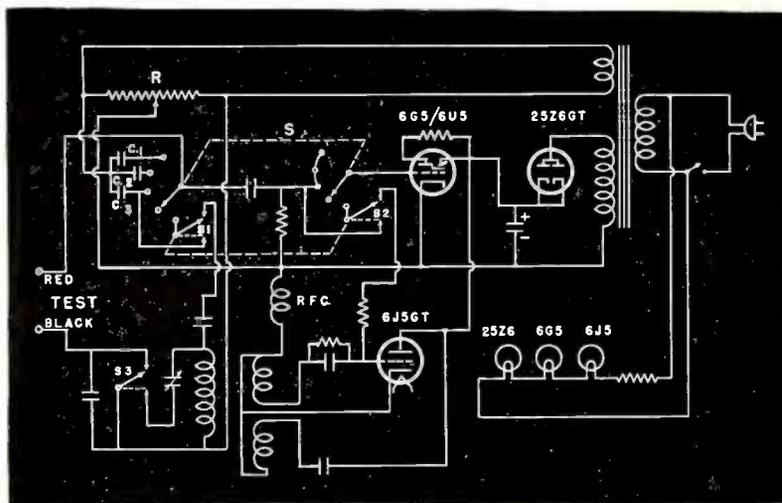
The two checkers will spot open, intermittent, and shorted, as well as good capacitors whether they are in a circuit, or entirely separate. These conditions are all determined by observation of the "eye."

sistor R is the balance arm of the Wein bridge circuit across which the AC voltage from the transformer winding is applied.

BRIDGE USED

When the BQC is being used to measure capacity, the condensers C_1 , C_2 and C_3 are the standards for the three ranges from 10 mmfd. to 70 mfd., and they are connected in series with the test capacitor, which is connected to the terminals at the left, across the calibrated resistor R. The AC voltage drop across the standard and unknown are balanced with R, when the 6U5 tuning eye is at its maximum "open" position. Open and shorted capacitors are quickly found by rotating the calibrated resistor to extreme ends of the scale.

The dynamic testing of condensers both in and out of circuits is accomplished by rotating the selector switch S to the lowest point and con-



Schematic of the BQC Solar capacitor checker which uses Wein bridge and RF oscillator in compact unit.

The circuit diagram shown is for the BQC model. The rotary selector switch, S, chooses the three ranges of capacity measurement, or the dynamic test position. The ganged switches S_1 and S_2 and the switch S_3 are the "short" test selectors. Re-

necting the capacitor, or leads, to the jacks marked Test. The 6J5GT oscillator is a modified Hartley with the plate circuit at ground potential for RF and the cathode and grid held above ground by the RFC. The third tuned coil has the test condenser con-

nected across it in series with a capacitor which is small enough to keep the total capacity across the coil fairly low. When a good capacitor is connected across the test terminals, the oscillator functions and the grid bias developed across its leak closes the "eye." The range of the capacitors which may be thus checked is 40 mmfd. to 50 mfd.

Intermittent condensers are conspicuous by a flickering of the "eye." No variation in the "eye" shadow indicates an "open." Power factor may be estimated by the degree of opening of the "eye" on the capacity measurement test, while RF impedance has the same indication on the dynamic test. The more distinct and pronounced the opening of the "eye" is, the lower the power factor and RF impedance, which are desirable factors in filter and by-pass capacitors.

Condenser Assemblies New with Sprague

Simplifying the job of duplicating complicated capacitor blocks, the Sprague Products Co., North Adams, Mass., are supplying free with condenser orders from their jobbers, a metal mounting strap for combining individual capacitors into any desired unit. Using the single unit capacitors already available, more compact and less expensive repairs are possible.

Clear the Air at the Antenna

One of three possible paths of noise entrance into the set is the antenna and its lead-in. This is potentially one of the worst noise routes.

When the serviceman has surveyed the noise conditions on the power line, the home appliance radiation possibilities, and finally winds up at the antenna system as the offender, there are several angles to consider before tearing the old flat top down.

The first thing is the proximity of the feed wire to electric circuits, telephone circuits, and house plumbing. Where a single wire lead-in runs up the side of the house on nail-knobs, it is quite possible for it to be paralleling the AC risers. Line disturbances, from oil burners, vacuum cleaners may be coupling with the lead-in.

BALANCED LEAD-IN

Two solutions are apparent. If it is possible to move the lead-in to a quiet area, this is perhaps the simplest. The better method is to install a twisted pair, low impedance line from the antenna to the set.

The balanced to ground construction of the lead-in wires cancels out noise voltages which may be induced. The low impedance characteristic of the line further prevents noise pick-up. These matched pair lines require the use of transformers at both the antenna and receiver end for most sets.

The second solution to the noisy

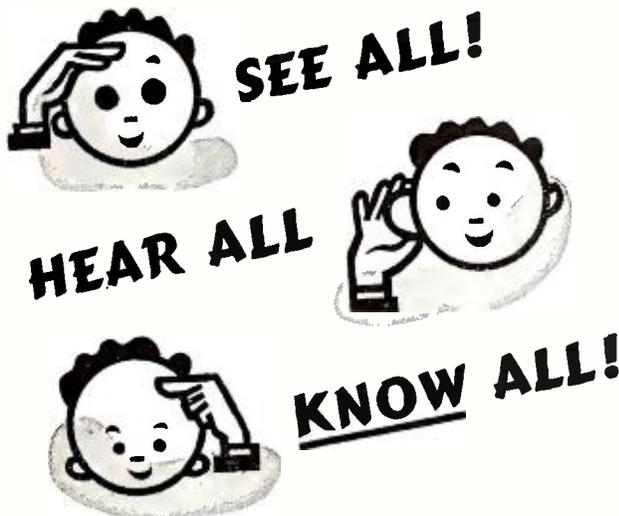
antenna is relocation of the "flat top." This is more or less a trial and error job. A loop antenna portable will be of considerable assistance in finding areas of least noise. In general, the antenna may be erected so that its length points toward the direction of most noise. Height, and freedom from surrounding objects, especially wire circuits are the most important considerations.

Pointers on Noise Elimination Profits

A full program for radio interference elimination for the individual

serviceman was presented at an April meeting of the Philadelphia Radio Servicemen's Association, by Leon Podolsky, chief engineer for Sprague Products Co. He dealt with (1) natural disturbances (2) "Monkey chatter between stations, and (3) man-made interference, and gave the details on how they may be eliminated, with extra profits for the serviceman.

Catalog No. 122 of Radio City Product's test equipment, features 16 models including newest additions to the RCP line. Free on request at Radio City Products, 88 Park Place, New York City.



● Step into radio's profit picture by sitting in on Farnsworth's Profit Preview—the dramatic dealer meeting that will make you stand up and cheer. You'll agree it's the biggest Money-making Show of the season. There's a seat waiting for you. See the facts! Hear the facts! Check the facts!

GET THE FACTS ON FARNSWORTH FIRST!

WATCH **FARNSWORTH** FOR '40

A GOOD NAME GOES A LONG WAY



Ken-Rad makes dependable tubes—the top-performing tubes that every radio user wants. Specify Ken-Rad on your next order.

KEN-RAD TUBE & LAMP CORP.
OWENSBORO, KY.
Export Dept.
116 Broad St., New York, U.S.A.
Cable Address: Minthorn, New York

KEN • RAD

DEPENDABLE RADIO TUBES

New

USALITE

TRADE MARK

"A" & "B" RADIO BATTERIES
for ALL 1.4 volt
PORTABLE RECEIVERS



• Top-quality, high efficiency batteries for EVERY PORTABLE RADIO NEED. 1½ and 6 Volt "A" batteries made in 4, 6 and 8-Cell types; latest Power-Paks providing various sizes and combinations of "A" and "B" power in one complete unit; the latest development in 45 Volt "B" batteries—all accurately designed and built to meet your requirements of economy and superior performance.

Manufacturers, distributors, chain-stores, write for prices, literature to-day!

Built Right • Priced Right
Powered for extra long service

U. S. ELECTRIC MFG. CORP.
222-228 WEST 14th ST. NEW YORK

Chicago—323 W. Polk Street



A jobber makes buyers out of two prospects for auto radio. James H. Simon, center, head of Simon Distributing Corp., Washington, D. C., successfully demonstrates the new Motorola car receivers.

Zenith Shows 1941 Radiorgan Line

To see the "Zenith Radiorgan Line" for 1941, some 800 guests went to the company's distributor meeting in Chicago April 29-May 1. Vice-president E. A. Tracey unveiled the new sets after opening remarks by Commander E. F. McDonald, Jr., president, and Hugh Robertson, executive vice-president.

Mr. Tracey described the coming radio sales season as an extra good one, and declared that "our portables got off to an early start to take advantage of the Memorial Day and the Fourth of July business . . . national political convention in June and July and the election in November all point toward increased consumer sales beginning immediately."

The 52 Zenith models include 12 table models listing from \$14.95 to \$69.95; an assortment of five chairside stylings priced from \$39.95 to \$94.95; a group of ten full consoles from \$49.95 to \$119.95; eleven combinations in table, chairside, furniture and console designs from \$29.95 to \$250.00; three universal portables with patented detachable Wavemagnets at \$29.95 and \$39.95; a choice of nine rural models designed for 1½ volt, 6 volt, 1½ volt and 110 volt AC-DC operation; and two wireless record players.

The addition of FM receivers to the line will follow as soon as FCC plans are announced, and three other radio products are forthcoming. The nature of the latter will be revealed later.

New Zealand Listener Cites Ken-Rad

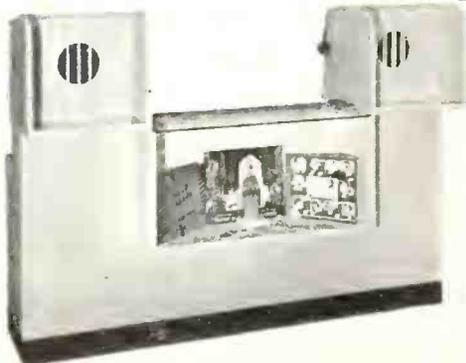
How modern radio tube aids distant radio reception has been demonstrated in a request for confirmation of reception from Frank A. Wilson, who wrote to Station WOMI, Owensboro, Ky., from Mornington, Dunedin, New Zealand. Mr. Wilson, 8,000 miles away, reported a very steady signal and good musical tone. His set uses Ken-Rad tubes, and his letter also asked for literature on the firm's products.

Sentinel Head on Tour

A string of personal conferences with leading jobbers in the New England and Middle Atlantic states have just been wound up by E. Alschuler, president of Sentinel Radio Corp. While absent from Chicago he also attended the RMA Spring Meeting in New York City.

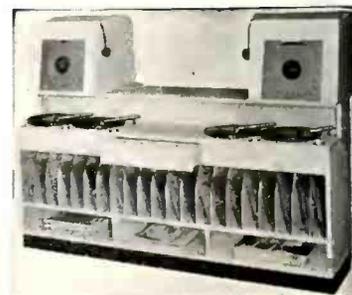
The RECORD BAR* you've been waiting for!

THE COMPLETE RECORD DEPT. IN THE SPACE REQUIRED BY AN ORDINARY COUNTER AT A COST OF 25% OF THE USUAL RECORD DEPT.



←FRONT VIEW . . . BACK VIEW→

- Ideal unit for small dealers needing maximum economy in equipment and floor space. Takes only 12 sq. ft. floor space—Fits any size or shape of store—Island fixture or against wall.
- Provided with record bins to hold 500—either 10" or 12" records and albums.
- Four listening stations with separate turntables and amplifiers. Two earphones and two speakers. (Available with or without EQUIPMENT.)
- Enclosed glass showcase for display of albums, accessories.
- Provided with needle and accessories drawer; space for wrapping material.
- Latest releases under glass in each listening station.
- Standardized design. Add-a-unit when necessary. Retain original intact.



A. BITTER CONSTRUCTION CO., 2701 Bridge Plaza No., Long Island City, N. Y.

EST. 1920

*Patent pending. Copyrighted.

Send for Free Folder

**New Distributor Div.
Manager for Stromberg**



Promoted to position of distributor division manager for Stromberg-Carlson, Clifford J. Hunt.

Clifford J. Hunt has been picked by Stromberg Carlson to manage the firm's distributor division, according to news from SC general sales manager Lloyd Spencer. Mr. Hunt has for the past 12 years been the Stromberg representative in the Philadelphia-Baltimore-Washington area. He succeeds the post left vacant by Fred N. Anibal, recently named rado sales manager.

**Radio Special Pulls
Out June 10th**

The Radio Industry Special, the train to take radio trade representatives to the Trade Show, will leave New York City on Sunday afternoon, June 10th, arriving in Chicago Monday morning, June 11th.

Perry Saftler, in charge of the arrangements, reports that the interest in the special this year is the best yet.

As usual, the party will leave the train at Englewood in Chicago and go to the Stevens in a caravan under motorcycle escort.

Those wishing to join the party on the Special should contact Mr. Saftler at 53 Park Place, New York City.

**Quality Boxes in
42% Sales Increase**

After a coast-to-coast survey of the results of the Philco tie-up with Birds Eye Frosted Foods, it is reported by Philco assistant general sales manager James H. Carmine that sales of Philco advanced design refrigerators have increased 42 per cent. Even at this early stage in the big promotion, the Philco executive found dealers and distributors enthusiastic about the tie-up and glad for the chance to sell-up and increase average unit sales.

The promotion, as announced earlier, provides for the giving away of Frosted Food dinners by Philco dealers, and a valuable interchange of prospects between dealers for the two products.

Mr. Carmine's report shows that Philco boxes are being widely displayed by Birds Eye dealers, and that many special promotions are under way. He said that the model LH-6 is still the pace-setter in the quality field.

**Whittingham in Another
Promotion at Norge**

Sales, production, and engineering at Norge Division, Borg-Warner Corp., Detroit, will now be supervised by H. H. Whittingham, who has been promoted to post of vice-president and assistant general manager. The news comes from Howard E. Blood, Norge president and general manager.

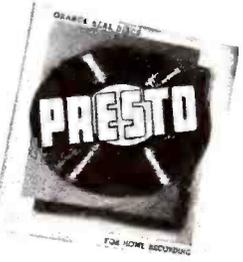
Mr. Whittingham has worked with the automotive and accessory fields since 1919, and has held executive positions with Norge since 1927. Early last year he was made vice-president in charge of engineering.

**Sentinel Exec Sees
Good Year**

A report from George Russell, sales manager for Sentinel Radio who has just checked market conditions in southern areas, is that "all signs are up. . . it's a radio year that will find filling orders a bigger problem than selling sets."

**COMPARE YOUR
RECORDINGS WITH
PRESTO**
Send for FREE Presto Disc
and sample recording

● Just fill out the coupon below—no obligation. We will send you free of charge a Presto disc. On one side you will find a sample recording made on the Presto Recorder. The other side will be blank so that you can make a recording with your own equipment and compare the result. Discover the advantages of using genuine Presto discs and Presto cutting needles. Send for your free disc today.



MAKE A NOTE OF THESE LIST PRICES:

PRESTO ORANGE SEAL DISCS (Medium Aluminum base)*—6" ea. \$.40; 8" ea. \$.55; 10" ea. \$.80; 12" ea. \$1.00.

PRESTO BLUE LABEL DISCS (Light Aluminum base)*—6" ea. \$.25; 8" ea. \$.40; 10" ea. \$.60.

PRESTO MONOGRAM DISCS (Composition base)*—6" ea. \$.25; 8" ea. \$.40; 10" ea. \$.60; 12" ea. \$.75.

*Sold only in display cartons of 10 discs.

PRESTO SAPPHIRE CUTTING NEEDLES, average cutting life 5 hours, each \$6.00. Charge for resharpening sapphire needles, ea. \$2.50.

PRESTO STELLITE CUTTING NEEDLES, average cutting life 2 hours, each \$1.25. Charge for resharpening, ea. \$.65.

PRESTALLOY CUTTING NEEDLES, average life 10 to 15 hours, well suited for school and home use, ea. \$2.00.

PRESTO SAPPHIRE PLAYING NEEDLES, Playing life 500 hours on Presto recordings, ea. \$1.25.

PRESTO TRANSCRIPTONE PLAYING NEEDLES, semi-permanent, playing life 40 to 50 hours on commercial records, each \$1.00.

PRESTO DISCLUBE, a record preservative that hardens the surface of the groove, 2-oz. can, \$.45.

**ORDER THROUGH YOUR JOBBER
FILL IN YOUR NAME HERE:**

Presto Recording Corp., 242 West 55th Street
New York, N. Y. RT540

Please send free sample disc to:

Name.....

Firm Name.....

Street and No.....

City and State.....

PRESTO RECORDING CORPORATION
242 W. 55th St., New York, N. Y.
World's Largest Manufacturers of
Instantaneous Sound Recording Equipment

This year watch
CROSLEY

MADE BETTER TO
WORK BETTER



• The combination of high tensile strength that assures a lasting bond, and faster, cleaner work made possible by quick acting flux of pure water white rosin, has given Gardiner Rosin-Core Solders an outstanding reputation for efficiency and economy on radio work by expert or amateur. Yet, due to modern production methods and big sales, Gardiner Solders cost less than even ordinary kinds. Made in various alloys and core sizes . . . and in gauges as small as 1/32 of an inch . . . in 1, 5 and 20-lb. spools.



4815 S. Campbell Ave., Chicago, Ill.

Erwood Addresses Sound Engineers

Sound engineers of the Boston, Mass., area attended a meeting last month staged by Joe DeMambro, of DeMambro Radio Supply, at Turn Hall at Lawrence, Mass., where John Erwood of Erwood Sound Equipment Co. was the featured speaker. Mr. Erwood used several of his new amplifiers to demonstrate his talk on "Sound of Today," for the 40 guests at the meeting.

Guests also heard about the new merchandising plan offered by National Union, and the new line of batteries for portables, recently introduced by NU.

Philco at Chicago June 10-13

Philco's new radio and radio-phonograph line will be shown to Philco distributors and key dealers at the Edgewater Beach Hotel in Chicago, June 10-13. Approximately 700 are expected to attend.

Ten speakers are scheduled on the program which will stress the "all year 'round" theme and display, and discuss refrigerator and air-conditioning lines as well as the new radios and radio-phonographs.

"Ever since our plans for this June convention began to take shape, we have been confident that Philco would make headline news in the radio industry," stated Sayre Ramsdell, vice president. "What Philco



John Erwood, of Erwood Sound Equipment Co. announces sales-making tie-up with National Union Radio Corp., Newark, N. J.

has to present for 1941 represents the culmination of months of research and the fulfillment of the dreams of Philco research engineers."

"Philco has enjoyed eleven years of leadership in the field, and the coming year promises to be even greater in view of recent contributions of its research laboratories," said Ramsdell.

Federal Makes Improved Disks at New Factory

The first unit of a new recording disc factory at Elkhart, Ind., has been completed by the Federal Recorder Co., Inc., according to news from the Federal president Max M. Pochapin. The plant is described as "the newest, largest, and most modern disc plant in the country."

The firm began delivery on the records on April 22, and will gear up the production pace until capacity is reached. Mr. Pochapin has announced that Federal is ready to meet all demands for inexpensive quality discs.

The Elkhart plant was rushed to completion because it was felt that new low-priced recording blanks were needed to stimulate the instantaneous recording business. Facilities at the new factory can produce them at the rate of 250,000 a week, it was said.

The new Federal product comes in five sizes, from 6 1/2 to 12 inches—a heavily coated, non-inflammable special metal base record. The company's chemists recently developed a new formula to make the disc non-inflammable; the shavings will not burn.

The Elkhart plant is located at the factory site of C. G. Conn, Ltd., world's largest makers of hand instruments, and majority stockholders in the Federal firm. All the latest manufacturing devices and methods are in use there. Federal general offices and showrooms are at 50 W. 57th St., New York City.



• It's playing the sweet music of the cash register. For Farnsworth thinks from the dealer's point of view . . . has worked to put more dealer-profit back into the radio business. You'll find the Farnsworth Line for '40 is sizzling hot in every price bracket . . . highly competitive, profitable, trade-building for your store.

RIDE THE FARNSWORTH ROUTE TO REAL PROFITS

WATCH **FARNSWORTH** FOR '40

Radio Vets to Form Club

The much-discussed Radio Veterans organization will be formed at the time of the Radio Parts National Trade Show in Chicago, June 11-14. John Olsen, a manufacturer's Agent in Pittsburgh, has started plans to get the "Old Timers" Club formed this year.

Definite plans will be announced in the Trade Show Directory and Program. It is not likely that the Club will start activities at the 1940 Trade Show, but will lay plans for a general get-together of those who have been engaged in radio, in a commercial way, for fifteen years or more, at future Trade Shows.

They Choose OXFORD Speakers

● Sound Specialists and Servicemen choose OXFORD speakers. Through the years they have found that Oxford is usually first to make available the type of speakers needed for the ever changing radio and sound field. Oxford's complete line of small replacement speakers is tops for quality and economy.

Not only a pioneer in ultra small speakers, Oxford has many firsts in larger P.A. speakers. Those who want the best, choose speakers that are—

Accepted by Sound Judgment

Your nearest parts distributor can supply the proper Oxford speaker for any sound application or replacement job. Write Dept. RT 1 for free copy of Oxford Speaker Encyclopaedia.



OXFORD-TARTAK
RADIO CORPORATION
915 W. VAN BUREN ST. • CHICAGO, U. S. A.

Offers Services on Portable Radio Batteries

In connection with current promotions on the Porto-Power line of radio batteries, manufactured by the Acme Battery Corp., 59 Pearl St., Brooklyn, N. Y., the company calls attention to a "special design and construction service" featured in its laboratories.

The firm maintains a full staff of technicians for the planning and construction of portable radio batteries, and is ready to offer guidance on any unusual problems. As the sales season for portables gets going full blast, Acme points out that radio men may need a consulting service that emphasizes speed and economy.

Belden Gives Clough New Promotion

The new vice-president in charge of sales at the Belden Mfg. Co., Chicago, is Herbert W. Clough, according to an announcement by the Belden president, Whipple Jacobs.

Mr. Clough started with the Belden firm in 1922, and enjoyed a number of promotions including the responsibility for the jobbing division. When Mr. Jacobs was elected president about a year ago, Mr. Clough succeeded him as general sales manager.



H. W. Clough, now the vice-pres. in charge of sales for Belden.

"NOT HOW BIG
WE CAN GROW
BUT
HOW WELL WE
CAN SERVE!"

LLOYD H. COFFIN, President
HYTRON CORP.



LEADERSHIP is not a question of size but rather one of IMPORTANCE. When that fact is fully understood, one sees why HYTRON has been synonymous with Leadership for 19 years.

During all these years, Hytron has manufactured radio tubes exclusively—without side lines or outside interests. Every effort has been directed to making radio tubes better than they have ever been made before: Hytron originated the Bantam* GT design which has since been adopted by every tube manufacturer. The Hytron instant-heating transmitting beam tetrode is another example of leadership!

Hytron developed the first practical miniature hearing aid tube! Of the 77 tube types introduced in 1938, Hytron led with 28, most of them in GT. In 1939, Hytron introduced 30 out of 140 types—all of them in GT, which is the first step towards industry standardization. Since the GT is interchangeable with the Metal G† and MG series, jobber-dealer inventory problems are greatly reduced. The first power output pentode (type 47) was conceived and perfected by Richard S. Briggs, now Hytron's Chief Engineer.

**ONE BRAND . . ONE QUALITY,
the finest at no extra cost.**

For 19 years, the Hytron Corp. has had but **ONE MANAGEMENT, ONE OWNERSHIP, ONE POLICY, ONE BRAND, ONE QUALITY!** Devotion to duty and singleness of purpose has brought about an amazing reaction for: Each of our 19 years has seen an increased volume of business! Each year Hytron has obtained a larger percentage of total tube sales—both initial equipment and replacement sales.

We think that Hytron is the kind of company YOU want to do business with. Small enough to give you friendly, personal service, but important enough to head the "Quality Parade."

Remember that when you buy HYTRON you buy more than a radio tube—you are buying quality that only our 19 years' unique EXPERIENCE can produce.

*Trade-name registered

†Officially recognized by R. M. A.

HYTRON
CORPORATION
MANUFACTURERS OF RADIO TUBES SINCE 1921



23N. DARBY ST.
SALEM, MASS.

Speed Up Your Record Sales . . . Supply your record clerks with our CONSOLIDATED CATALOGUE, showing all records of a title at a glance, and also that which appears

on the reverse side.

(See illustration at left)

This is a complete catalogue showing about 2000 titles and kept up-to-date bi-weekly for a very nominal sum. Send for sample book and complete information.

ALEX. A. GETTLIN
1616 WALNUT ST.
PHILA., PA.

THE JUMPIN' JIVE

- VI —26304 Lionel Hampton—Memories of You
- BB —10330 Van Alexander—Ragtime Cowboy Joe
- DE —2612 Jimmy Dorsey—Shoot the Meat Balls to Me
- DE —2756 Andrews Sisters—Chico's Love Song
- VO —5005 Cab Calloway—Trylon Swing

JUMPIN' ON THE BLACKS AND WHITES

- CO —35232 Teddy Wilson—Little Things that Mean so Much

JUMP SESSION

- VI —26206 Don Redman—Class Will Tell
- BB —10172 Charlie Barnet—Swing Street Strut

JUNGLE DRUMS

- VI —26426 Xavier Cugat (P.9)—La Cumparsita
- BB —10091 Artie Shaw—It Had to Be You
- DE —2069 Henry King—Peanut Vendor
- VO —4537 Sidney Bechet—Hold Tight
- VA —8237 Three Suns—Hoiriger Schottische

* Step Out

to the **TRADE SHOW**
and step up your profits

June 11, 12, 13, 14

Stevens Hotel, Chicago

You have to be alert these days to get the business and reap the profits . . . You have to be right up to date on all activities of your industry . . . You have to look ahead and be prepared to take full advantage of the new trends in products and merchandising plans.

That's why you should be at the Trade Show. That's where you will get the "low-down" on what's ahead . . . That's where you will meet with hundreds of others and get ideas that are vital to the successful operation of your business.

Step Out to the Trade Show and
Step Up Your Profits!

JOBBER DAYS

Tues., Wed., Thurs., June 11, 12, 13

*Open on these days to Jobbers,
Manufacturers, Manufacturers' Agents, and
Manufacturers' Engineers*

OPEN HOUSE

Friday, June 14

*Trade Show open on this day to entire
Radio Trade*



RADIO PARTS CITY
NEW IDEAS
NEW MERCHANDISING
NEW SALES PLANS

Radio Parts National Trade Show

*Sponsored by Radio Manufacturers Association and Sales Managers Club
Executive Office • 53 WEST JACKSON BOULEVARD • CHICAGO*

SALES HELPS

Display for New Portable Market



Philco has just introduced an eight-color display to be used with its new line of 1941 portables. It is a merchandising aid to dealers and jobbers, designed to emphasize the pleasurable qualities of the new models, as people begin to spend more time out-of-doors on summer week-ends and trips.

Sales-Winning Merchandiser for Batteries

A new sales aid for radio batteries has been released by National Union Radio Corp., 57 State St., Newark, N. J. The instrument is a battery tester of the direct type, with a switch setting proper voltages, and a meter showing percentage of useful life.

This tester is Model 633 made by Triumph Mfg. Co., Chicago, finished in attractive two-tone brown with red knob. It can be used on counters, or on walls, for customers to actually see what the condition of a battery is.

The merchandiser is part of the NU promotion on its full line of batteries developed exclusively for radio men.

Father's Day to Be Radio Event

The promotion of Father's Day this year as an event of business significance has already been started by the National Council for the Promotion of

Father's Day, 32 E. 57th St., New York City. The holiday falls on June 16th.

Representing the radio industry among the council's co-chairmen is Henry C. Bonfig of RCA. J. W. Dunbar of GE represents the electrical industry.

Presto Offers Sales Aid on Recording Blanks

An aggressive promotion drive on sales of recording blanks has been started by Presto Recording Corp., 242 W. 55th St., New York, N. Y. The company is ready with a series of sales helps and sample recordings for dealers and jobbers to use while the interest in home recording runs high. Presto is making a vigorous effort to assist retailers to make a new profit from the sale of blank discs which are needed for the thousands of home recorders now in use.

The firm has introduced new "Blue Label" discs, as part of the campaign. These blanks have a light aluminum base, and come in 6", 8" and 10" sizes, priced at \$2.50, \$4, and \$6 per box of ten. Presto also makes the "Orange Seal" and the "Monogram" blanks.

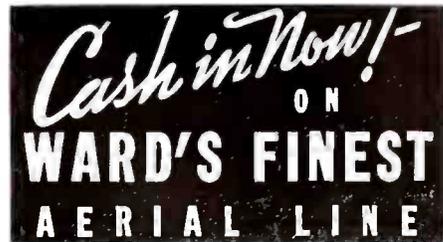
Added to the company's assortment of cutting needles are three new ones. The "Stellite" needle compares favorably with sapphire products, and may be resharpened. The "Prestalloy" is presented as a good general purpose needle, suitable for home and school use, and the "Transcriptone" is a semi-permanent item with a playing life of 40 to 50 hours.

New Puzzle Tag

A green puzzle tag, entertaining for youngsters and grownups alike, is now offered by Hygrade Sylvania to their dealers and servicemen through jobbers. The idea was discovered by Sylvania jobber Ross Hahn, Tele Radio Co., Knoxville, Tenn., who gave it an initial whirl in his territory with uncommon success.

Dealer imprint appears on the front of the tag together with problem directions which are appended with dealer copy aimed to lure customers into the store which reads, "We will be glad to solve it for you if requested, and we can help solve your radio problems, too." The Sylvania tube and carton appears on the back with this copy, "Ask for Sylvania Set-Tested Radio Tubes."

DEALERS and SERVICEMEN



... ALL THESE FEATURES AT NO EXTRA COST!!

- Tri-mount model with extra brackets for Underhood-Alligator-Hinge.
- Uni-Plug Silver to Silver contacts. Fits all Motorola and Bayonet.
- High-Q, low capacity, low loss, water-proofed, non-kink leads.
- Flex - Angle Model - fits all body contours, 16 degree adjustment-Chrysler and Torpedo.
- Time saving installations with Ward's new EZ-IN plug, silver contact.
- The only auto aerial with ceramic stanchions.



● DISPLAY WA 78

A new Dealer display by Ward that is a truly efficient silent salesman. BE SURE TO SEE WARD AT THE SHOW IN CHICAGO—BOOTHS 922-924

The
WARD PRODUCTS
Corp.
WARD BUILDING CLEVELAND, OHIO



MUSICAL TOWERS

For Bigger Sales and Service Returns

Here's a sure profit-maker! Handle the complete Sunco amplifying system of tower and belfry chimes. It's the best sound installation proposition in the field—not only do you get the best equipment, but also expert technical assistance and sales help.



Sunco "Master" has wide range of usage. Broadcasts chimes or organ music. Powered for 2, 6, and 12 mile dia. coverage. Can be used as P.A. unit. Automatic record changer play 10" and 12" records mixed. We have many specially recorded low-noise acetate discs for this work. Ask about them. **REAL MONEY FOR SOUND EQUIPMENT SPECIALISTS**—Protected territory, everything furnished, speakers, accessories, installation and service directions. Get the facts about this money-making offer. No obligation, **WRITE TODAY!**

SUNDT ENGINEERING COMPANY
4763 Ravenswood Ave., Chicago, Illinois

Sell & Use LITTELFUSES



Get this new catalog FREE. Shows complete line of Littelfuses for radio, transmitters, rectifiers, meters, instruments. **FUSE MOUNTINGS**—all kinds. When you want fuses—**LITTELFUSE!** See your jobber or write:

Write for Catalog



LITTELFUSE INC.
4763 RAVENSWOOD AVE. CHICAGO, ILL.

PARTS JOBBERS

"PARTS JOBBER'S JOB"

(Continued from page 30)

Substantially bound, well-covered, indexed, and tabbed for easy reference, it compares in size with the best known mail-order catalogs in the country. Also, customers are supplied with addressed postal cards for ordering between calls. Customers write with WRO pencils on WRO pads. Each pad bears an illustration of a stock item, and it is not unusual for a page to be handed to Bill with the notation, "Six of these." Blotters and decorative calendars complete WRO advertising.

So WRO has grown to a substantial size. Intense coverage, alertness to trends, price maintenance, quality goods, exclusion of duplicate lines wherever possible, dependability, service and sincerity have entrenched this distributor in seven counties.

Parts Distributors Meet

As a further step in the development of NRPDA, a number of sectional meetings held under the chairmanship of Arthur Moss, Executive Secretary, 5 W. 86th St., New York, N. Y.

A large dinner meeting took place in Philadelphia at the Benjamin Franklin Hotel on April 21. The following were present:

R. M. Peffer, Radio Distributing Co., Harrisburg, Pa.; M. P. Moskowitz, M & H Sporting Goods Co., Philadelphia; Wellington Kratz, Kratz Brothers, Norristown; Samuel Z. Kratz, Kratz Brothers, Norristown; R. A. Sylvester, Hazleton; J. D. Strauss, J.R.S. Distributors, York; John Stern, Radio Electric Service, Philadelphia; Louis Herbach, Herbach & Rademan, Philadelphia; Gene J. Rothman, Radio Electric Service, Philadelphia; Mr. and Mrs. G. O. Zimmerman, Zimmerman Wholesalers, Hagerstown, Md.; Mr. and Mrs. George Barbey, Barbey Co., Reading.

On Tuesday evening in the Hotel Manger, Boston, a meeting of New England Jobbers took place. The guests included:

H. Jappe, The Eastern Co., Cambridge; George O. Lloyd, Sager Electrical Supply, Boston; Mike Scott, Radio, Wire, Television, Inc., Boston; Milton Deutschmann, Radio Shack Corp., Boston; A. W. Mayer, A. W. Mayer Co., Boston; W. H. Childs, Electrical Supply Corp., Cambridge; L. A. Crosby, Electrical Supply Corp., Cambridge; F. J. Wessner, Radio Service Laboratory, Manchester; S. R. Joseph, Allan Joseph, J. Bernard Joseph, Radio Maintenance Supply Co., Worcester (Mrs. S. R. Joseph); L. A. Richmond, Springfield Radio Co., Springfield; T. F. Cushing, Springfield; Carl B. Evans, Mrs. Carl B. Evans, Evans Radio, Concord, N. H.; B. J. Carpenter, Springfield Radio Co., Springfield.

On Thursday, April 25 at the Hotel New Yorker a small luncheon meeting was held. The following were present:

I. L. Golob, H. L. Dalls, Inc., New York, N. Y.; Aaron Lippman, Lippman Co., Newark, N. J.; A. Pinkel, Hornbeam Distributing Co., Brooklyn, N. Y.; B. Bims, Hornbeam Sales Co., Brooklyn, N. Y.; A. Wellington, Sylvan-Wellington, Inc., New York, N. Y.

Jones of Sylvania in Meeting Series

Hygrade Sylvania jobbers in the central areas were sponsors of a series of service meetings conducted by Walter L. Jones, Sylvania commercial engineer. The jobbers included Decca Distributing Corp., Radio Parts, Inc., Shuler Supply Co., New Orleans; Auto Service Co., Birmingham; Bryant & Trimble, Inc., Chattanooga Paper & Woodware Co., Chattanooga; Tele Radio Supply Corp., Knoxville; Electra Distributing Co., Nashville.

Mr. Jones found particularly lively interest among servicemen in oscillator circuits and battery receivers.

NRPDA Adds Members

The following parts jobbers were recently added to the membership roster of the National Radio Parts Distributors Association. Radio Inspection Service, 227 Asylum St., Hartford, Conn.; Wedmeyer Radio Co., 221 East Liberty St., Ann Arbor, Mich.; M. N. Duffy & Co., 2235 Grand River, Detroit, Mich.; Radio Tube Merchandising, 508 Clifford St., Flint, Mich.; Shand Radio Specialties, 203 N. Kearsley St., Flint, Mich.; Toledo Radio Specialties, 217 10 St., Toledo, Ohio.

WHEN THE
POSTMAN
KNOCKS...
OPPORTUNITY
KNOCKS!



• You wouldn't throw a wad of dollar bills in the waste-basket. So watch your mail closely from now on. It's going to bring you a double opportunity . . . a chance to get all of the profitable Farnsworth facts . . . a chance to really go places in '40, and put a wad of money in your bank account.

WATCH **FARNSWORTH** FOR '40

The Annual
TRADE SHOW
and **ANNOUNCEMENT NUMBER** of

RADIO
and Television
TODAY

June 1940 Issue

**SHOW
EDITION**

For distribution
at the show

**ISSUED
JUNE 18**

Final closing date, June 3

**FINAL
EDITION**

Including all contents
of Show Edition

**ISSUED
JUNE 15**

Final closing date, apply

22,000 CIRCULATION A. B. C.



SERRATED-SHAFT Controls

★ Series KS Clarostat Serrated-Shaft Replacement Volume Controls are designed as replacement volume and tone controls for 1939 and 1940 receivers using slot and knurl type shafts with special knobs. By using these replacement controls, it's no longer necessary to hunt for knobs that will fit and match. Serration runs full length of brass shaft. 2 3/4" long shaft. All required values. ★ Ask jobber about these and other Clarostat controls. ★ Or write us direct for data. Clarostat Mfg. Co., Inc., 281 N. 6th St., Brooklyn, N. Y.



WAXES AND COMPOUNDS FOR INSULATION & WATERPROOFING of ELECTRICAL and RADIO COMPONENTS

● such as transformers, coils, power packs, pot heads, sockets, wiring devices, wet and dry batteries, etc. Also WAX SATURATORS for braided wire and tape and WAXES for radio parts. The facilities of our laboratories are at your disposal to help solve your problems.

Zophar **MILLS, Inc.**
FOUND D 1846
128 - 26th ST., BROOKLYN, N. Y.



A. Bitter, of Bitter Construction Co., reports wide acceptance for his "Record Bar," as record dealers in U. S. and Canada call it a real merchandiser.

DeNike Given NY Post for NU

National Union Radio Corp., Newark, N. J. has advanced G. E. "Ed" DeNike to the post of New York state district sales manager. Mr. DeNike had, for the past 9 years, been the advertising manager for NU. He will now cover the northeastern part of Pennsylvania, and all of New York state except the metropolitan NYC area. His headquarters will be at 76 Monroe St., Geneva, N. Y.

The complete set of NU products now includes tubes, condensers, panel lamps, photoelectric cells, exciter lamps, batteries, and Erwood sound equipment.

Crossley is Du Mont Rep in Chicago

The well known consulting engineer, Alfred Crossley, of 549 W. Randolph St., Chicago, has been named by Allen B. Du Mont Laboratories of Passaic, N. J., as the Du Mont factory representative in the Chicago area.

Mr. Crossley has been active in consulting and sales engineering since 1932. He is a member of IRE, the Chicago Radio Engineers Club, and he once served as chairman of the RMA radio receiver committee.

Carson Heads Sales for Namco Radios

Fred C. Carson has been appointed sales manager for Namco Mfg. Co., Inc., 142 W. 26th St., New York City, radio manufacturers who recently announced that they would market a complete line of sets for the domestic market. Namco had previously specialized in export markets. Mr. Carson was formerly vice-president in charge of sales for Colonial Radio. He is now making an extensive tour of the Eastern states, lining up distributors for the new line.



NON-OBSOLESCENCE VIBRATOR TESTER

TRIPLET
MODEL 1671

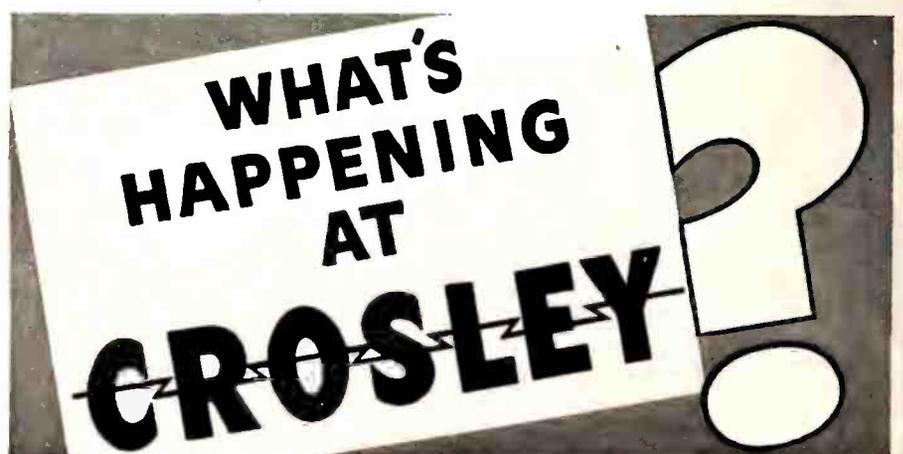
- Tests All Standard 6-Volt Vibrators
- Easy to Operate—Roll Chart Shows Button Settings
- Uses Standardized 5,000 Ohms—8 Mfd. Load
- RED DOT Lifetime Guaranteed Instrument
- Flexible Push Button Switching Permits Placing Proper Voltages on Each Reed, Guarding Against Obsolescence

Another anti-obsolescence feature is the special adapter with leads, included with accessories, to check new vibrators without waiting for instructions from the factory. Checks vibrators not suited for present socket hook-ups or base arrangements . . . Three-scale instrument: 0-10 volts scale shows input voltage to vibrator for start or running tests . . . 0-100 scale permits inter-comparison of vibrator output under standardized input conditions.

Tester fused against shorted vibrators. Dealer Net Price **\$39.84**

The New 1940-41 Line of Triplett Test Equipment Will Be Displayed in Booths 619-621—Chicago Radio Parts Show Write for Catalog . . . Section 195 Harmon Drive

THE TRIPLET ELECTRICAL INSTRUMENT COMPANY
Buffalo, Ohio



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

Farnsworth Sales Conference Set for June 3 and 4



Appointed sales manager for Farnsworth division, E. J. Hendrickson.

The Second Annual International Sales Conference of the Farnsworth Television and Radio Corp. is planned for the Edgewater Beach Hotel, Chicago, June 3-4, according to news from Pierre Boucheron, general sales manager, who said that 300 representatives of the firm's distributors from U. S. and abroad are expected.

The meeting will feature the new and more complete lines for the 1940-41 season, along with plans for advertising and sales promotion. The announcements will include important ones on television, FM, and home recording equipment. A sales clinic and demonstrations by sales manager E. J. Hendrickson will be a feature of the second day.

Conference talks will be made by E. A. Nicholas, president; E. H. Vogel, executive vice-president; B. Ray Cummings, vice-president in charge of engineering; J. P. Rogers, vice-president and treasurer; Edwin M. Martin, patent counsel and secretary; J. H. Pressley, chief engineer; John S. Garceau, advertising and sales promotion manager, and others.

Mr. Boucheron has announced the appointment of E. J. Hendrickson as sales manager of the Farnsworth division, to round out the company's executive sales personnel. I. G. Hunter, the veteran head of Capehart sales, remains in that post.

Golenpaul Celebrates 10 Years with Aerovox

As the time for the Chicago Parts Show approaches, it is pointed out that one of the popular figures there, Charley Golenpaul of Aerovox Corp., celebrates his tenth year with his company.

On this occasion he is honored as one of the best-known speakers in the industry, an executive with a specially wide acquaintance among jobbers and servicemen. It is recalled that Mr. Golenpaul organized the eastern section of the Sales Managers Club, and was its first general chairman. He has been most active in jobber, service and ham groups throughout the U. S.



for Original Equipment and Replacement.

ACME batteries are backed by a 25-YEAR REPUTATION

for responsibility, dependability and quality—in radio and numerous industrial fields.

ACME makes the most complete line of batteries—a line to meet every requirement, fitting all standard makes of portables—a safe and sure source of supply for jobbers, dealers and servicemen.

ACME has completely equipped laboratories and a staff of technicians for the planning and construction of portable radio batteries.

If you have a battery problem, Acme can save you time and money with an economical solution.

If you want a line that you can sell with confidence, get in touch with us today.

Write for illustrated bulletin "J"



PINCOR ROTARY CONVERTERS

Engineered right . . . built right. That is why this complete line of Pincor Rotary Converters can always be depended upon to give thousands of hours of trouble-free service for operation of public address systems, gaseous signs, fluorescent lights, power amplifiers, radios, A.C. motors, musical instruments and other electrical apparatus, even under the most adverse conditions. Available with or without filter for converting 6, 12, 32, 110, 220 or special voltages D.C. to 110 or 220 volts A.C. Capacities: 40 to 5000 watts. Quiet, smooth, light weight and compact. Send for complete information today. Use coupon below.

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CHICAGO, ILL.

Export Address:
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Cable: Simoutrice, New York



PIONEER GEN-E-MOTOR CORPORATION
Dept. R-2E, 466 W. Superior St.
Chicago, Ill.

Please send me complete information on Pincor Rotary Converters.

Name

Address

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

Simplest
WAY TO REPLACE
BALLASTS

- 4 STANDARD TYPES of Amperite Regulators replace over 200 types of AC-DC Ballast Tubes now in use.
- Not to be confused with ordinary dropping resistors. Amperite actually regulates.
- Amperite Regulators are equipped with a patented Automatic Starting Resistor which prevents initial surge and saves pilot lights.
- Amperite AC-DC Regulators; List \$1.00. Amperite Replacements for 2V Battery Set ballasts List \$1.25

WRITE FOR REPLACEMENT CHART "S"

AMPERITE Co. 561 Broadway, N. Y. C.

AMPERITE



H. A. Crossland



Fred A. Ray



G. S. Peterson

Three Regional Managers for GE Radio Sales

Following the "rapid expansion of the radio receiver business and the addition of many new distribution outlets," it has been announced by the General Electric radio set sales division manager Perry Hadlock that three regional sales managers have been picked to operate in place of a single sales manager.

Fred A. Ray, formerly the sales manager, has been appointed eastern sales manager, with headquarters at Bridgeport. The central manager will be George S. Peterson, with offices at Chicago and the western post will be filled by Henry A. Crossland at San Francisco. The new set-up will result in better coordination of radio sales activities, it is said.

P. A. Tilley, formerly manager of GE distribution services, has been named assistant to W. R. G. Baker, manager of the radio and television division.

Major Armstrong Clears Up Point in FM-Tele Issue

Editor, RADIO TODAY:

In your issue for April there is a statement in an article entitled "Frequency Modulation Expects FCC Go-Ahead" to the effect that it would cost \$100,000 to change the wave length of the NBC transmitter on the Empire State tower from Channel No. 1 to Channel No. 2.

This statement is not correct. Nothing like this amount is involved, nor would it, in fact, cost NBC anything to make the change. At the first meeting of the FM Broadcasters, where this same question was discussed, the National Broadcasting Company's representative objected to making the change from the No. 1 to the No. 2 channel on the ground of expense. I thereupon stated that I would assume the expense of making the change. This offer still stands.

I would appreciate it if you would publish this letter in order to dispel that impression which seems to have been created, that very great hardship would be imposed upon the Radio Corporation should the retuning of its New York television transmitter become necessary. It hardly seems necessary to add that the clearing of No. 1 Channel would make way for the installation of hundreds of FM stations throughout the entire country.

Very truly yours,
EDWIN H. ARMSTRONG.
Columbia University

Department of Electrical Engineering
New York, N. Y.



A DATE THAT'S WORTH DOLLARS TO YOU

• Your Farnsworth distributor will soon be back from the big Farnsworth Radio Convention. He'll have all the advance news about the sensational Farnsworth Line for '40. Get in touch with him. Get all the facts . . . and we are convinced your business judgment will tell you it's

worth going **FARNSWORTH** in '40

Schott Company Names Eastern Rep.

The Walter L. Schott Co., 5264 W. Pico Blvd., Los Angeles, has named Ben Joseph as sales representative for New York, New England, and the Philadelphia, Baltimore and Washington areas. The Schott firm make a complete line of refinishing kits, chemicals, solvents, polishes, etc. presented along with a new series of counter displays. The company will shortly announce "a sensational new line of tools for the radio serviceman."

Presenting SIMPSON "Micro-Testers"

HERE'S A SLICK IDEA —

Simply pick three instruments from the eight illustrated here to form a kit, as shown below. Almost invariably there is some combination of three Micro-Testers that will fit individual requirements like a glove. For example three testers, Models 280, 281 and 282 are priced at \$31.25 complete in sturdy leatherette case. Test leads extra.



MODEL 280 A.C. Ammeter
with self contained transformer.
Ranges: 0-1, 0-2.5, 0-5, 0-10 and
0-25 Amps. Your price..... **\$9.75**

MODEL 281
A.C. Current
Voltmeter.
Ranges: 0-150,
0-300 and 0-500
volts.
Your price... **\$9.25**



MODEL 282
D.C. Ohmmeter.
Ranges: 0-1000,
0-10,000 and 0-
100,000 ohms. 0-1,
0-10 megohms.
Your price... **\$9.75**



MODEL 283
D.C. Milliammeter.
Ranges: 0 - 1 - 5 - 10 -
25 - 50 - 100 -
250 - 500 - 1000
M.A. Your net
price... **\$9.25**



MODEL 284
D.C. Microammeter.
Ranges: 0 - 50 - 100 - 250 -
500 - 1000 micro-
amperes. Your
net price... **\$9.75**



MODEL 285
D.C. Ammeter
(self-contained).
Ranges: 0-1.0-2.5,
0-5, 0-10, 0-25
Amps. Your net
price... **\$9.25**



MODEL 286
A.C. Voltmeter
(Rectifier Type).
Ranges: 0-5-10-
25 - 50 - 100 -
250 - 500 - 1000
A.C. Volts. Your
net price... **\$9.75**



MODEL 287
D.C. Voltmeter.
Ranges: 0-1-2.5-5-
10 - 25 - 50 - 100 -
250 - 500 - 1000
D.C. Volts. Your
net price... **\$9.25**



EIGHT COMPACT TESTERS THAT COVER EVERY REQUIREMENT—

THERE IS something new and better in testing instruments. It is one more Simpson "streamlined" idea—eight instruments, each having a wide range, which singly or in combination cover every conceivable requirement of servicing, analyzing and production testing at low cost.

Note, for instance, the Model 280 illustrated above. For the first time a current transformer and indicating instrument have been combined in one small case to meet the need for a compact, multiple-range A.C. Ammeter at an almost unbelievably low price. Providing a complete range, from a fraction of an ampere up to 25 amperes, this instrument fills a vital spot in every manufacturing plant, laboratory or service organization.

And the Model 280 is merely typical of the group of eight "Micro-Testers" in the types and ranges listed. From them, combinations can be selected that will exactly fit your needs. The result will be an analyzer, typified by the kit above, that is easy to use, easy to keep up-to-date, easy to pay for.

There is Simpson precision in every detail of these "Micro-Testers" and Simpson beauty in the red Bakelite case and meter, graced by a satin-silver panel with black characters, switch knobs and binding posts. All measure 2 7/8" by 5 1/4" by 1 3/4" and weigh about 20 ounces.

Ask for new bulletin covering Micro-Testers in detail.

SIMPSON ELECTRIC CO., 5216-18 Kinzie St., Chicago, Ill.

SIMPSON

INSTRUMENTS THAT STAY ACCURATE

3-WAY PORTABLE RADIO (AC-DC BATTERY)

\$17.95

MODEL 33-F5

Reduced from \$19.95 because of the tremendous demand for Admiral Portable Radios and the resulting savings in large scale production.

- Automatic Power Switch
- Aeroscope Magic Antenna
- Streamlined Tweed Cabinet
- 32% Less Weight
- P.M. Dynamic Speaker
- Equipped with General Dry Batter



Admiral



Model 34-F5—5 tube super with heavy duty P.M. dynamic speaker. Brown leatherette cabinet. Leather carrying handle **\$22.95**



Model B34-G6—6 tube super with 7 oz. P.M. super deluxe speaker. Stage of RF increases sensitivity seven-fold. Guaranteed car performance! Two tone leatherette cabinet. Leather carrying handle **\$24.95**



Model 37-G6—6 tube super with 7 oz. P.M. super deluxe speaker. Stage of RF increases sensitivity seven-fold. Guaranteed car performance! Combination leatherette and butt walnut cabinet. **\$29.95**



Model 35-G6—6 tube super with 7 oz. super deluxe speaker. Stage of RF increases sensitivity seven-fold. Guaranteed car performance! Brown leatherette cabinet, detachable cover and leather handle **\$29.95**

Prices slightly higher in Far West and South

Equipped with R.C.A. Preferred Type Tubes

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